

# icae

International Conference on Applied Energy

**Qatar • Doha**

Energy Transitions for a Sustainable Future

# **15th** International Conference on Applied Energy

**Dec. 3-7, 2023**



[www.applied-energy.org/icae2023](http://www.applied-energy.org/icae2023)



## **Welcome to the 15th International Conference on Applied Energy (ICAIE2023): Energy Transitions toward Carbon Neutrality**

Welcome to the 15th International Conference on Applied Energy (ICAIE2023)! After three years of online and hybrid events due to Covid-19, we are excited to announce that ICAIE2023 will be held as an onsite event from December 3 to 7, 2023 at Qatar University in Doha, the host city of FIFA World Cup 2022. Our theme this year is ‘Energy Transitions toward Carbon Neutrality,’ and the conference will feature keynotes, invited speeches, plenary sessions, workshops, oral presentations, and exhibitions. ICAIE2023 aims to address the interdisciplinary challenges related to the ultimate goal of a sustainable future. Our topics include clean energy conversion technologies, renewable energy (including hydrogen energy), mitigation technologies, intelligent energy systems, energy storage, energy sciences, energy management and firm sustainability, and policy, ethics, energy economics, and regulations. As a special topic, Hydrogen Energy will be highlighted.

Please visit [www.applied-energy.org](http://www.applied-energy.org) or contact [icae2023@applied-energy.org](mailto:icae2023@applied-energy.org) for more information. If you would like to propose and organize a session, panel, workshop, or special forum, please contact us. All papers will be peer-reviewed, and accepted papers are required to be presented orally at the conference. Selected papers from ICAIE2023 will be recommended for further consideration of publication in prestigious journals including Applied Energy and Advances in Applied Energy. We look forward to meeting you at ICAIE2023 in Doha, Qatar!

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# Acknowledgements



# Nexus



| Program of ICAE2023                                                |                                        |                                      |                                       |                                              |                                     |                                       |                                          |                                                                                                                                                                                                                                                              |      |
|--------------------------------------------------------------------|----------------------------------------|--------------------------------------|---------------------------------------|----------------------------------------------|-------------------------------------|---------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Conference Venue: Student Affairs Building (I11), Qatar University |                                        |                                      |                                       |                                              |                                     |                                       |                                          | *Note that the registration is always open during the conference. The above is the official centralized registration time. Please contact WeChat (doing_do)/ Email (icae2023@applied-energy.org) for registration outside of the official registration time. |      |
| *Note that all time is local time                                  |                                        | Official Registration Time           |                                       |                                              |                                     |                                       |                                          |                                                                                                                                                                                                                                                              |      |
|                                                                    |                                        | Date                                 | Registration Venue                    |                                              | Doha Time                           |                                       |                                          |                                                                                                                                                                                                                                                              |      |
|                                                                    |                                        | Dec 2, 2023 (Saturday)               | Ground Floor(surround A1)             |                                              | 14:00 ~ 18:00                       |                                       |                                          |                                                                                                                                                                                                                                                              |      |
|                                                                    |                                        | Dec 3, 2023 (Sunday)                 | Ground Floor(surround A1)             |                                              | 8:00 ~ 18:00                        |                                       |                                          |                                                                                                                                                                                                                                                              |      |
| Time                                                               | Day 1: Dec 3                           |                                      |                                       |                                              |                                     |                                       |                                          |                                                                                                                                                                                                                                                              |      |
| 9:00-10:00                                                         | Openning, General Conf. (Room A1)      |                                      |                                       |                                              |                                     |                                       |                                          |                                                                                                                                                                                                                                                              |      |
| 10:00-12:30                                                        | Exhibition (including Coffee Break)    |                                      |                                       |                                              |                                     |                                       |                                          |                                                                                                                                                                                                                                                              |      |
| Room No                                                            | C243                                   | C244                                 | C245                                  | C246                                         | B219                                | B220                                  | E215                                     | E216                                                                                                                                                                                                                                                         | A1   |
|                                                                    | 1-A1                                   | 1-B1                                 | 1-C1                                  | 1-D1                                         | 1-E1                                | 1-F1                                  | 1-G1                                     | 1-H1                                                                                                                                                                                                                                                         | 1-I1 |
| Session Chair                                                      | Dr.Weicong Xu/<br>Dr.Bartosz Kątski    | Dr.Wenlong Shang/<br>Dr. Xiaodan Shi | Dr. Yuntian Chen                      | Prof. Roland Span                            | Prof. Meihong Wang                  | Dr.Arthur Stobert/<br>Dr. Zhiling Guo | Asso Prof. Wandong/<br>Dr. Zhenjia Lin   | Prof. Jarek Milewski                                                                                                                                                                                                                                         |      |
| 10:30-10:45                                                        | 162                                    | 467                                  | 495                                   | 4                                            | 601                                 | 41                                    | 8                                        | 111                                                                                                                                                                                                                                                          |      |
| 10:45-11:00                                                        | 296                                    | 621                                  | 138                                   | 139                                          | 684                                 | 463                                   | 169                                      | 128                                                                                                                                                                                                                                                          |      |
| 11:00-11:15                                                        | 458                                    | 286                                  | 140                                   | 263                                          | 79                                  | 492                                   | 376                                      | 159                                                                                                                                                                                                                                                          |      |
| 11:15-11:30                                                        | 489                                    | 614                                  | 146                                   | 300                                          | 150                                 | 216                                   | 481                                      | 178                                                                                                                                                                                                                                                          |      |
| 11:30-11:45                                                        | 523                                    | 315                                  | 120                                   | 323                                          | 45                                  | 593                                   | 27                                       | 257                                                                                                                                                                                                                                                          |      |
| 11:45-12:00                                                        | 673                                    | 34                                   | 461                                   | 379                                          | 618                                 | 65                                    | 52                                       | 325                                                                                                                                                                                                                                                          |      |
| 12:00-12:15                                                        | 228                                    | 682                                  | 507                                   | 578                                          | 600                                 | 166                                   | 199                                      | 342                                                                                                                                                                                                                                                          |      |
| 12:15-12:30                                                        | 348                                    |                                      | 689                                   | 103                                          | 514                                 | 676                                   | 592                                      | 428                                                                                                                                                                                                                                                          |      |
| 12:30-13:30                                                        | lunch                                  |                                      |                                       |                                              |                                     |                                       |                                          |                                                                                                                                                                                                                                                              |      |
|                                                                    | 1-A2                                   | 1-B2                                 | 1-C2                                  | 1-D2                                         | 1-E2                                | 1-F2                                  | 1-G2                                     | 1-H2                                                                                                                                                                                                                                                         | 1-I2 |
| Session Chair                                                      | Prof. Erik Dalquist/<br>Dr. Liang Wang | Mr. Nur Cahyo/<br>Dr. Sanli Tang     | Asso Prof.Ocean Cheung                | Dr. Shuai Yao/<br>Dr. Meysam Majidiezhad     | Dr. Yue Zhou/<br>Dr. Yiming Yao     | Dr.Patrik Klintenberg                 | Dr.Ying Du/<br>Dr. Xiaodan Shi           | Prof.Ahmad Khalaf Sleiti                                                                                                                                                                                                                                     |      |
| 13:30-13:45                                                        | 372                                    | 380                                  | 37                                    | 631                                          | 490                                 | 666                                   | 260                                      | 13                                                                                                                                                                                                                                                           |      |
| 13:45-14:00                                                        | 265                                    | 544                                  | 389                                   | 635                                          | 35                                  | 47                                    | 2                                        | 69                                                                                                                                                                                                                                                           |      |
| 14:00-14:15                                                        | 573                                    | 634                                  | 167                                   | 185                                          | 78                                  | 164                                   | 650                                      | 234                                                                                                                                                                                                                                                          |      |
| 14:15-14:30                                                        | 606                                    | 177                                  | 173                                   | 568                                          | 88                                  | 440                                   | 49                                       | 235                                                                                                                                                                                                                                                          |      |
| 14:30-14:45                                                        | 250                                    | 267                                  | 176                                   | 90                                           | 525                                 | 294                                   | 63                                       | 259                                                                                                                                                                                                                                                          |      |
| 14:45-15:00                                                        | 85                                     | 80                                   | 183                                   | 222                                          | 149                                 | 370                                   | 114                                      | 261                                                                                                                                                                                                                                                          |      |
| 15:00-15:15                                                        | 598                                    | 531                                  | 202                                   | 208                                          | 362                                 | 528                                   | 161                                      | 313                                                                                                                                                                                                                                                          |      |
| 15:15-15:30                                                        | 488                                    | 44                                   |                                       | 117                                          | 434                                 | 459                                   | 203                                      | 354                                                                                                                                                                                                                                                          |      |
| 15:30-16:00                                                        | Coffee Break                           |                                      |                                       |                                              |                                     |                                       |                                          |                                                                                                                                                                                                                                                              |      |
|                                                                    | 1-A3                                   | 1-B3                                 | 1-C3                                  | 1-D3                                         | 1-E3                                | 1-F3                                  | 1-G3                                     | 1-H3                                                                                                                                                                                                                                                         | 1-I3 |
| Session Chair                                                      | Dr. Liang Wang                         | Dr. Anders Avelin                    | Prof. Junjie Yan/<br>Dr. Jakub Jurasz | Prof. Xiaosen Li/<br>Asso Prof. Zhenyuan Yin | Dr. Fang Guo/<br>Asso Prof. Jie Yan | Dr. Wenlong Shang/<br>Dr. Yue Zhou    | Asso Prof. Xianming Ye/<br>Prof. Peng Li | Dr. Bo Liu/<br>Dr. Yong Hao                                                                                                                                                                                                                                  |      |
| 16:00-16:15                                                        | 196                                    | 99                                   | 7                                     | 651                                          | 295                                 | 534                                   | 343                                      | 539                                                                                                                                                                                                                                                          |      |
| 16:15-16:30                                                        | 582                                    | 108                                  | 95                                    | 219                                          | 572                                 | 547                                   | 402                                      | 540                                                                                                                                                                                                                                                          |      |
| 16:30-16:45                                                        | 448                                    | 147                                  | 160                                   | 627                                          | 653                                 | 591                                   | 646                                      | 542                                                                                                                                                                                                                                                          |      |
| 16:45-17:00                                                        | 471                                    | 299                                  | 170                                   | 630                                          | 393                                 | 603                                   | 678                                      | 549                                                                                                                                                                                                                                                          |      |
| 17:00-17:15                                                        | 554                                    | 345                                  | 180                                   | 559                                          | 86                                  | 655                                   | 64                                       | 616                                                                                                                                                                                                                                                          |      |
| 17:15-17:30                                                        | 449                                    | 450                                  | 190                                   | 207                                          | 112                                 | 20                                    |                                          | 669                                                                                                                                                                                                                                                          |      |

| Time          | Day 2: Dec 4                                                                                                                            |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------|---------------------------------------------|--------------------------------------------|-----------------------------------------|----------------------------------------|---------------------|---------------------------------------------------------------------------|--|
| 9:00-9:10     | Opening of ICAE2023(Room A1)                                                                                                            |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
| 9:10-9:50     | Keynote 1 Nexus for Net Zero: Fueling and Refining Energy Decarbonization with Generative AI, Quantum (Prof. Fengqi You, Room A1)       |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
| 9:50-10:30    | Keynote 2 Challenges in the development of lithium-ion batteries (Prof. Haofeng Chen, Room A1)                                          |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
| 10:30-11:00   | Coffee Break                                                                                                                            |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
| 11:00-11:40   | Keynote 3 Carbon Capture, Utilisation and Storage (CCUS) study through Systems Engineering techniques (Prof. Meihong Wang, Room A1)     |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
| 11:40-12:20   | Keynote 4 Comprehensive Interdisciplinary Assessment and Economics of Negative Emission Technologies (Prof. Reinhard Madlener, Room A1) |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
| 12:30-13:30   | Lunch                                                                                                                                   |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
| Room No       | C243                                                                                                                                    | C244                                  | C245                                       | C246                                        | B219                                       | B220                                    | E215                                   | E216                | A1                                                                        |  |
|               | 2-A1                                                                                                                                    | 2-B1                                  | 2-C1                                       | 2-D1                                        | 2-E1                                       | 2-F1                                    | 2-G1                                   | 2-H1                | 2-I1                                                                      |  |
| Session Chair | Prof. Ahmad Khalaf Sleiti                                                                                                               | Dr. Jun Zhao/<br>Dr. Yuntian Chen     | Prof. Zaoxiao Zhang                        | Dr. Susumu Yada/<br>Dr. Alaa Krayem         | Dr. Qing Yu                                | Prof. Qie Sun/<br>Prof. Paola D' Orazio | Dr. Zhiling Guo/<br>Prof. Fengqi You   | Prof. Jakub Kupecki |                                                                           |  |
| 13:30-13:45   | 476                                                                                                                                     | 181                                   | 205                                        | 381                                         | 516                                        | 87                                      | 256                                    | 429                 | Panel:Hydrogen<br>Integration for<br>Accelerated<br>Energy<br>Transitions |  |
| 13:45-14:00   | 266                                                                                                                                     | 253                                   | 326                                        | 182                                         | 551                                        | 409                                     | 264                                    | 432                 |                                                                           |  |
| 14:00-14:15   | 339                                                                                                                                     | 280                                   | 366                                        | 46                                          | 575                                        | 230                                     | 269                                    | 438                 |                                                                           |  |
| 14:15-14:30   | 360                                                                                                                                     | 329                                   | 369                                        | 9                                           | 584                                        | 252                                     | 284                                    | 445                 |                                                                           |  |
| 14:30-14:45   | 17                                                                                                                                      | 509                                   | 184                                        | 92                                          | 626                                        | 417                                     | 287                                    | 446                 |                                                                           |  |
| 14:45-15:00   | 174                                                                                                                                     | 517                                   | 510                                        | 145                                         | 656                                        | 464                                     | 293                                    | 478                 |                                                                           |  |
| 15:00-15:15   | 558                                                                                                                                     | 596                                   | 520                                        | 187                                         | 680                                        | 585                                     | 318                                    | 479                 |                                                                           |  |
| 15:15-15:30   | 407                                                                                                                                     | 521                                   | 577                                        | 237                                         | 121                                        | 602                                     |                                        | 519                 |                                                                           |  |
| 15:30-15:45   | 515                                                                                                                                     | 268                                   |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
| 15:45-16:00   | 665                                                                                                                                     |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
| 15:30-16:00   | Coffee Break                                                                                                                            |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
|               | 2-A2                                                                                                                                    | 2-B2                                  | 2-C2                                       | 2-D2                                        | 2-E2                                       | 2-F2                                    | 2-G2                                   | 2-H2                | 2-I2                                                                      |  |
| Session Chair | Asso Prof. Farzin Golzar/<br>Dr. Mohammed Guezgouz                                                                                      | Dr. Xianhua Nie/<br>Dr. Bashar Shboul | Prof. Sasan Sadrizadeh/<br>Dr. Xiaojun Luo | Dr. Weiling Luan/<br>Asso Prof. Xianming Ye | Dr. Junfei Guo/<br>Dr. Mpyana Danny Bajany | Dr. John W. Ballantine                  | Prof. Ottorino Veneri/<br>Dr. Wei Wang | Prof. Qie Sun       |                                                                           |  |
| 16:00-16:15   | 42                                                                                                                                      | 494                                   | 351                                        | 341                                         | 125                                        | 85                                      | 84                                     | 281                 |                                                                           |  |
| 16:15-16:30   | 434                                                                                                                                     | 129                                   | 359                                        | 367                                         | 148                                        | 98                                      | 126                                    | 530                 |                                                                           |  |
| 16:30-16:45   | 54                                                                                                                                      | 200                                   | 469                                        | 395                                         | 155                                        | 115                                     | 221                                    | 576                 |                                                                           |  |
| 16:45-17:00   | 225                                                                                                                                     | 72                                    | 522                                        | 422                                         | 279                                        | 254                                     | 321                                    | 677                 |                                                                           |  |
| 17:00-17:15   | 390                                                                                                                                     | 137                                   | 465                                        | 622                                         | 349                                        | 679                                     | 324                                    | 552                 |                                                                           |  |
| 17:15-17:30   | 437                                                                                                                                     | 239                                   | 172                                        | 51                                          | 427                                        | 412                                     | 337                                    | 106                 |                                                                           |  |
| 16:00-19:00   | Technical Visit to one world cup stadium                                                                                                |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
| 19:00-21:00   | Gala Dinner                                                                                                                             |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |
| 9:00-17:00    | Workshop on Renewable Energies and Climate Change<br>(New Engineering Building- H07 College Board meeting Room C262)                    |                                       |                                            |                                             |                                            |                                         |                                        |                     |                                                                           |  |

| Time          | Day 3: Dec 5      |                                              |                                         |                               |                                                |                                         |                                     |                                            |                      |
|---------------|-------------------|----------------------------------------------|-----------------------------------------|-------------------------------|------------------------------------------------|-----------------------------------------|-------------------------------------|--------------------------------------------|----------------------|
| Room No       | C243              | C244                                         | C245                                    | C246                          | B219                                           | B220                                    | E215                                | E216                                       | A1                   |
|               | 3-A1              | 3-B1                                         | 3-C1                                    | 3-D1                          | 3-E1                                           | 3-F1                                    | 3-G1                                | 3-H1                                       | 3-I1                 |
| Session Chair | Prof. Roland Span | Prof. Li Chen/<br>Prof. Guoyan Zhou          | Dr. Mahmoud Alzoubi/<br>Dr. Xiaojie Lin | Prof. Rebei                   | Asso Prof. Guosheng Jia/<br>Dr. Freerk Klasing | Dr. Yichuan Ma/<br>Dr. Takahiro Yoshida | Dr. Xinhai Yu                       | Prof. Li Chen/<br>Dr. Yi Zong              |                      |
| 8:30-8:45     | 195               | 144                                          | 91                                      | 594                           | 451                                            | 278                                     | 672                                 | 355                                        | Hydrogen<br>Workshop |
| 8:45-9:00     | 652               | 274                                          | 165                                     | 30                            | 496                                            | 430                                     | 683                                 | 436                                        |                      |
| 9:00-9:15     | 333               | 276                                          | 102                                     | 283                           | 564                                            | 123                                     | 580                                 | 309                                        |                      |
| 9:15-9:30     | 408               | 319                                          | 357                                     | 535                           | 571                                            | 563                                     | 59                                  | 486                                        |                      |
| 9:30-9:45     | 582               | 347                                          | 536                                     | 625                           | 574                                            | 285                                     | 439                                 | 512                                        |                      |
| 9:45-10:00    | 194               | 511                                          | 671                                     | 188                           | 613                                            | 406                                     | 56                                  | 643                                        |                      |
| 10:00-10:30   | Tea/Coffee Break  |                                              |                                         |                               |                                                |                                         |                                     |                                            |                      |
|               | 3-A2              | 3-B2                                         | 3-C2                                    | 3-D2                          | 3-E2                                           | 3-F2                                    | 3-G2                                | 3-H2                                       | 3-I2                 |
| Session Chair | Prof. Jiawei Chen | Dr.Bashar Shboul/<br>Asso Prof.Wandong Zheng | Dr. Ying Du/<br>Mr. Guotao Wang         | Prof.Rebei/<br>Dr. Junwei Liu | Dr. Patrik Klintenberg                         | Prof. Zaoxiao Zhang                     | Dr.Xiaodan Shi/<br>Dr.Zhiling Guo   | Dr.Meysam Majidiezhad/<br>Dr. Wei Wang     |                      |
| 10:30-10:45   | 605               | 223                                          | 66                                      | 73                            | 317                                            | 171                                     | 468                                 | 22                                         | Hydrogen<br>Workshop |
| 10:45-11:00   | 628               | 255                                          | 163                                     | 141                           | 378                                            | 297                                     | 529                                 | 28                                         |                      |
| 11:00-11:15   | 647               | 302                                          | 375                                     | 236                           | 453                                            | 637                                     | 562                                 | 38                                         |                      |
| 11:15-11:30   | 132               | 454                                          | 466                                     | 303                           | 455                                            | 210                                     | 649                                 | 100                                        |                      |
| 11:30-11:45   | 157               | 513                                          | 541                                     | 316                           | 561                                            | 247                                     | 15                                  | 105                                        |                      |
| 11:45-12:00   | 608               | 156                                          | 500                                     | 16                            | 566                                            | 258                                     | 273                                 | 533                                        |                      |
| 12:00-12:15   | 213               | 233                                          | 53                                      | 71                            | 569                                            | 61                                      | 636                                 | 107                                        |                      |
| 12:15-12:30   | 218               | 400                                          | 97                                      | 416                           | 579                                            | 62                                      | 312                                 | 110                                        |                      |
| 12:30-13:30   | Lunch             |                                              |                                         |                               |                                                |                                         |                                     |                                            |                      |
|               | 3-A3              | 3-B3                                         | 3-C3                                    | 3-D3                          | 3-E3                                           | 3-F3                                    | 3-G3                                | 3-H3                                       | 3-I3                 |
| Session Chair | Prof. Yi Wang     | Dr. Zhenjia Lin                              | Dr. Anders Avelin                       | Prof.Guoyan Zhou              | Dr.Holger Schlör/<br>Dr. Gbemi Oluleye         | Dr. Mohammed<br>Guezgouz                | Asso Prof. Haoran Ji/<br>Dr.Ying Du | Prof. T.D. Bui/<br>Asso Prof. Zhenyuan Yin |                      |
| 13:30-13:45   | 6                 | 209                                          | 12                                      | 189                           | 197                                            | 399                                     | 70                                  | 50                                         |                      |
| 13:45-14:00   | 101               | 152                                          | 675                                     | 191                           | 377                                            | 498                                     | 14                                  | 462                                        |                      |
| 14:00-14:15   | 58                | 48                                           | 127                                     | 586                           | 211                                            | 526                                     | 81                                  | 310                                        |                      |
| 14:15-14:30   | 175               | 431                                          | 128                                     | 94                            | 311                                            | 545                                     | 131                                 | 444                                        |                      |
| 14:30-14:45   | 82                | 142                                          | 251                                     | 104                           | 553                                            | 633                                     | 154                                 | 363                                        |                      |
| 14:45-15:00   | 411               | 387                                          | 642                                     | 32                            | 235                                            | 641                                     | 365                                 | 241                                        |                      |
| 15:00-15:15   | 392               | 497                                          | 685                                     | 615                           | 301                                            | 383                                     | 397                                 | 557                                        |                      |
| 15:15-15:30   | 158               | 385                                          | 640                                     | 535                           | 500                                            | 231                                     |                                     | 456                                        |                      |

| Time        | Day 4: Dec 6                                                                                 |
|-------------|----------------------------------------------------------------------------------------------|
| 9:00-12:15  | Group1 and Group 2:Visit Qatar National Museum/Visit the Doha EXPO 2023/Visit the Souq Waqif |
| 14:00-17:15 | Group3 and Group 4:Visit Qatar National Museum/Visit the Doha EXPO 2023/Visit the Souq Waqif |

|                                                            |
|------------------------------------------------------------|
| H <sub>2</sub> =Hydrogen Energy                            |
| ESS=Energy Storage System                                  |
| ES=Energy Sciences                                         |
| MT = Mitigation Technologies                               |
| CECT=Clean Energy Conversion Technology                    |
| EE=Energy Management, Policy, Economics and Sustainability |
| IES=Intelligent Energy System                              |
| RE=Renewable Energy                                        |
| Panel                                                      |
| Online                                                     |

# Conf. proceedings and preprints

Selected best papers from the conference will be considered for publication in a special issue jointly in **Applied Energy**, **Advances in Applied Energy**.



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# General Information

## Organized by

Applied Energy Innovation Institute (AEii)

## Co-organized by

Qatar University

## Supported by the international journals

Applied Energy

Advances in Applied Energy

## Date

December 3-7, 2023

## Time Difference

GMT +3 hours

## Time Zone Converter

| City Location & Time Zone | Time       |            |       |       |       |
|---------------------------|------------|------------|-------|-------|-------|
| Doha, Conf. Time          | 9:00       | 10:00      | 11:00 | 12:00 | 13:00 |
| London                    | 6:00       | 7:00       | 8:00  | 9:00  | 10:00 |
| Johannesburg              | 7:00       | 8:00       | 9:00  | 10:00 | 11:00 |
| New Delhi                 | 10:30      | 11:30      | 12:30 | 13:30 | 14:30 |
| Beijing                   | 13:00      | 14:00      | 15:00 | 16:00 | 17:00 |
| Tokyo                     | 14:00      | 15:00      | 16:00 | 17:00 | 18:00 |
| San Paulo                 | 2:00       | 3:00       | 4:00  | 5:00  | 6:00  |
| New York, Toronto         | 1:00       | 2:00       | 3:00  | 4:00  | 5:00  |
| San Francisco             | 22:00 (-1) | 23:00 (-1) | 0:00  | 1:00  | 2:00  |

# General Information

## Venue

Student Affairs Building (I11), Qatar University,

St 870 31, Doha, Qatar

The 15th International Conference of Applied Energy, ICAE2023, will be held at I11, the Student Affairs Building, at the Campus of Qatar University. A map showing the campus highlighting I11 and the metro station is as follows. Conference participants can take Doha metro to Qatar University and I11 is within walking distance from the metro station. In December, the weather in Doha is pleasant for people to walk. However, shuttle buses connecting the metro and I11 are available.



### Conference Venue I11

Address: Student Affairs Building (I11), Qatar University,  
St 870 31, Doha, Qatar  
TEL: (+974) 4403-3333  
E-mail: QUMCC@qu.edu.qa



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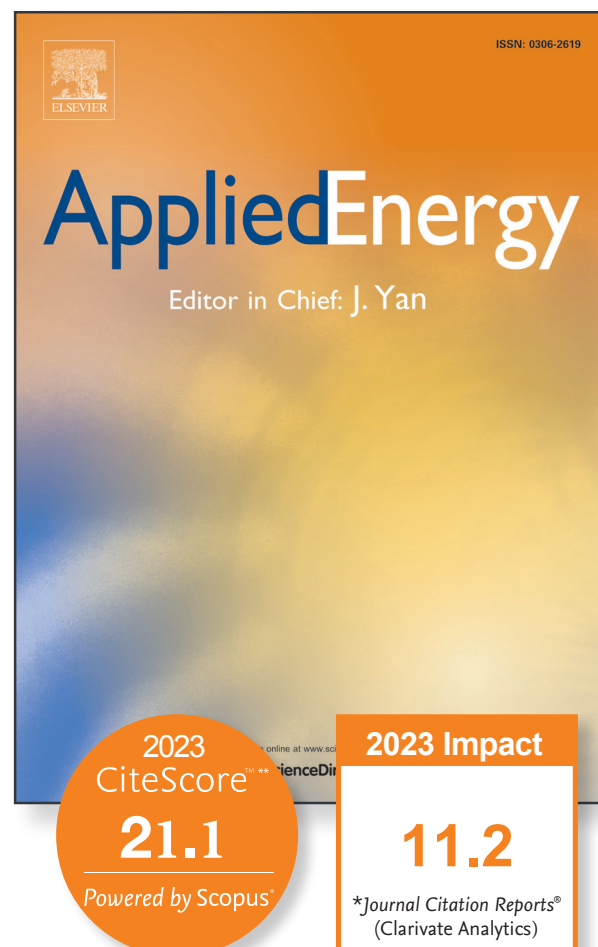
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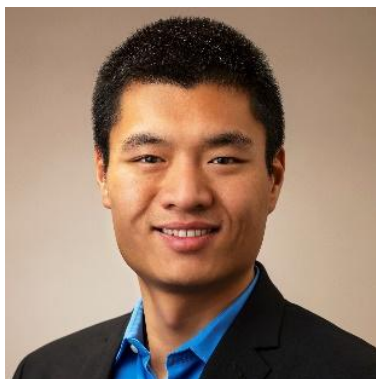
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# Keynote Speakers



**Prof. Fengqi You**

Smith School of Chemical  
and Biomolecular Engineering  
Cornell University

**Moderator:**

**Dr Ottorino VENERI**  
Italian National Research  
Council of Italy (CNR)

## ***Nexus for Net Zero: Fueling and Refining Energy***

## ***Decarbonization with Generative AI, Quantum***

## ***Computing, and Blockchain***

### **Abstract**

As we face escalating challenges in energy sustainability and climate imperatives, cutting-edge information and computing technologies (ICTs)—including generative AI, quantum computing, and blockchain—are emerging as critical players in establishing a nexus with energy systems decarbonization, propelling us toward the aspirational goal of net zero emissions. This presentation will explore the intricate nexus between these transformative ICTs and the decarbonization of energy systems. We will highlight several research initiatives: a deep generative learning-based, data-driven distributionally robust optimization framework for sustainable electric power operations under the variability of wind energy; an innovative quantum deep learning model aimed at bolstering the resilience of energy systems; and the design of carbon-neutral energy systems meticulously tailored to complement these advanced ICTs, collectively supporting our overarching climate goals. We will demonstrate how this symbiotic relationship fosters scientific and technological innovations toward “net zero,” and reciprocally, how decarbonizing energy and power systems promotes the development of low-carbon, sustainable ICT applications. The presentation will culminate with our perspectives on fostering integrated research, spurring interdisciplinary cooperation, and promoting a transformative shift in ICTs towards a net zero future.

### **Bio**

Fengqi You is the Roxanne E. and Michael J. Zak Professor in Energy Systems Engineering at Cornell University. He also serves as the Chair of Ph.D. Studies in Systems Engineering, Co-Director of the Cornell University AI for Science Institute (CUAISci), Co-Lead of the Schmidt AI in Science Program at Cornell, and Co-Director of the Cornell Institute for Digital Agriculture (CIDA). He has an h-index of 80 and authored over 250 refereed articles in journals such as Science, Nature Sustainability, Nature Communications, Science Advances, and PNAS. He is an award-winning scholar and teacher, earning over 20 major national and international awards over the past six years. He is an elected Fellow of the AAAS, AIChE, and RSC.



# Keynote Speakers



**Prof. Haofeng Chen**  
East China University of  
Science and Technology

**Moderator:**  
**Dr Ottorino VENERI**  
Italian National Research  
Council of Italy (CNR)

## ***Challenges in the development of lithium-ion batteries***

### **Abstract**

Lithium-ion batteries (LIBs) are integral to promoting the development of low-carbon, clean and sustainable energy systems and have a wide range of applications in transportation, aerospace, energy storage and other fields. Although the lithium-ion battery is an electrochemical system, there are many key issues and challenges throughout its design, production and use. LIBs have made great progress in developing new materials, advanced formation technology, intelligent management and other aspects. However, better performance, longer service life and increased safety are still huge challenges. The performance life and safety of LIBs are influenced by a combination of multi-physical fields of electrochemical, mechanical and thermal factors, making them complex and multi-physical in nature. There are complex and diverse multiscale degradation mechanisms in LIBs, typically involving interrelated processes where different degradation behaviors can interact and evolve. Despite extensive research efforts, these detailed mechanisms involving multiple physical fields and multiple scales require further clarification. To address this knowledge gap, this paper systematically investigates three key aspects: multi-scale battery degradation behaviors, their impact on performance, lifetime and safety, and the interconnections between different types and scales of degradation behaviors. By adopting a multiscale and multidisciplinary perspective, fragmented ideas from current research are integrated into a comprehensive framework, providing a deeper understanding of the degradation behaviors and interactions within LIBs. We highlight the future difficulties and opportunities for LIBs and present valuable insights and prospects in four key areas: theory, materials, design, and applications, thus providing new directions for meeting the challenges of further development of LIBs.

### **Bio**

Professor Haofeng Chen is a Chair Professor of East China University of Science and Technology, and both the ASME Fellow and IMechE Fellow. He was also a former Associate Editor of the ASME Journal of Pressure Vessel Technology (2011-2017). Professor Chen earned his BEng, MEng and PhD in solid mechanics from Tsinghua University in 1994, 1995 and 1998, respectively. He was then a research fellow at the Nanyang Technological University, and subsequently a research fellow at the University of Leicester. From 2006 to 2008, he was a chartered senior engineer at ALSTOM Power Technology Centre. From 2008 to 2023, he led the Structural Integrity and Life Assessment Research Group at the University of Strathclyde, and has built a major and sustainable research portfolio in structural integrity engineering, particularly in the field of advanced FEA, fracture mechanics, shakedown, ratchetting, high temperature creep and fatigue analysis. Professor Chen has published more than 200 peer-reviewed research papers in these fields, and is among the 2% most influential scientists in the world.

# Keynote Speakers



**Prof. Meihong Wang**

Department of Chemical and  
Biological Engineering  
University of Sheffield

**Moderator:**

**Professor Roland Span**  
**Head of the Chair of**  
**Thermodynamics at RUHR**  
**UNIVERSITÄT BOCHUM.**

## ***Carbon Capture, Utilisation and Storage (CCUS) study through Systems Engineering techniques***

### **Abstract**

This talk will start with an introduction to Systems Engineering, followed by motivations of our research. The main part will be our research on carbon capture and transport in the context of Carbon Capture, Utilisation and Storage (CCUS) for Power Plants. Then the topic will be extended to our current efforts in CCUS for petro-chemical manufacturing (e.g. ethylene plants). We also investigate how to apply Artificial Intelligence techniques for modelling, optimisation and control in CCUS.

### **Bio**

Professor Meihong Wang leads Process and Energy Systems Engineering Research Group at University of Sheffield, UK with expertise in modelling, optimization and control for power plants, carbon capture utilisation and storage (CCUS), energy storage and bio-energy.

He joined Centre for Process Systems Engineering at Imperial College London and UCL in 1999. He worked at Alstom Power, Cranfield University and University of Hull from 2004 to 2016. He has published over 200 papers. He has been investigators in over 20 research projects worth over £20 million from UK Research Councils, European Union and Industry.

One of his publications was awarded Ludwig Mond Prize 2014 by IMechE. He was joint winner of Nigeria Prize for Science 2019 (the biggest and most prestigious prize in Africa). He was Siemens PSE MBI Prize Winner 2022.



# Keynote Speakers



**Prof. Reinhard Madlener**

Dept. of Industrial Economics  
& Technology  
Management (NTNU  
Trondheim)  
RWTH Aachen University

**Moderator:**

**Professor Roland Span**  
**Head of the Chair of**  
**Thermodynamics at RUHR**  
**UNIVERSITÄT BOCHUM.**

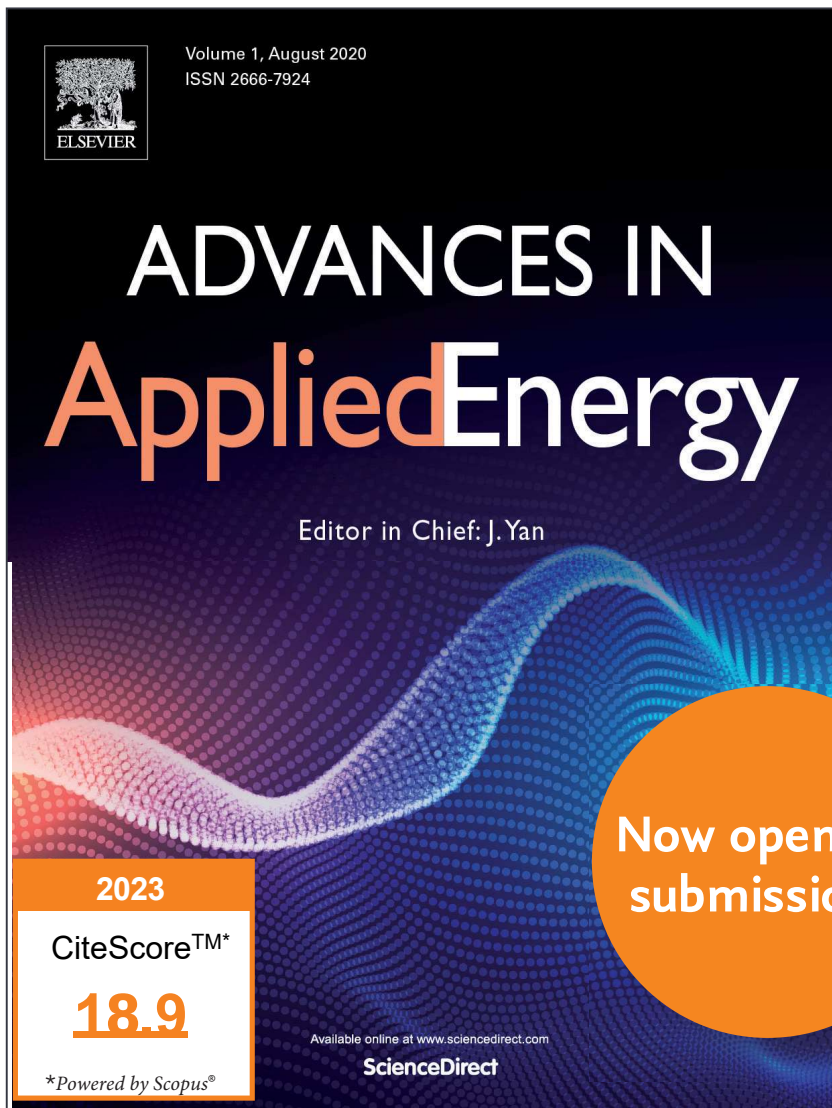
## ***Comprehensive Interdisciplinary Assessment and Economics of Negative Emission Technologies***

### **Bio**

Dr. Reinhard Madlener is Full Professor of Energy Economics and Management at RWTH Aachen University since 2007 and Vice-President (former President) of the Swiss Association for Energy Economics (SAEE). Moreover, he is the founding and current Director of the Institute for Future Energy Consumer Needs and Behavior (FCN), which forms an integral element of the interdisciplinary and integrated E.ON Energy Research Center established at RWTH Aachen University in 2006. Also, he is a member of the RWTH Aachen Steering Committee of the Profile Area “Energy, Chemical and Process Engineering (ECPE)” . Last but not least, since 2019, as a representative of the NTNU Energy Transition Initiative (NETI), he is also Adjunct Professor at the Department of Industrial Economics and Technology Management, Norwegian University of Science and Technology (NTNU). Professor Madlener’s main research interests, on which he has published extensively over the last 25 years, are in the fields of energy economics and policy; sustainable energy systems; energy efficiency and rebound; transportation research; the adoption, temporal & spatial diffusion of innovation; and investment in innovative energy technologies under uncertainty and portfolio / system considerations.

The main teaching activities of Professor Madlener comprise Energy Economics, Environmental & Resource Economics, Economics of Technological Diffusion, Behavioral Energy and Environmental Economics, Economics of Technical Change, Smart Grid Economics and Management, and Energy Markets. He acted as Senior Editor of the Energy Policy journal until 2021 and serves on the Editorial Boards of a number of international scientific journals, including Advances in Applied Energy; Applied Energy; Decision Analytics, Energy Efficiency; Energy, Sustainability & Society; and the Journal of Energy Storage.

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## **Workshop on Renewable Energies and Climate Change**

**9:00 am to 5:00 pm**

**December 4, 2023**

**New Engineering Building- H07**

**College Board meeting Room C262**

Renewable energy sources are considered as the cornerstone and foundation for a safe and sustainable energy future, as more than 30% of the world's countries achieve their electricity supply from renewable energy sources.

The State of Qatar has witnessed a leap in development that dictated an increased demand in the energy sector. Thus state of Qatar started to diversify its energy basket using renewable energy.

The Renewable Energy and Climate Change workshop will be held within as part of the World Congress on Engineering and Technology at Qatar University, in cooperation with the Ministry of Environment and Climate Change and the World Renewable Energy Network (WREN) on Monday, December 4, 2023.

Distinguished guest will be leading the discussion panel:

- (Photovoltaic & Wind Energy Will Supply 70% of Global Electricity by 2035).

Prof. Ali Sayigh – UK.

Chairman of WREC & Director General WREN

Chairman of MED Green Forum

- (Harnessing Offshore Floating Wind Technology: A Cornerstone for Climate Mitigation, Adaptation, and Sustainable Energy Transition Strategies" – Matching the Wind Energy Potential for Qatar)

Prof Dr Eng Abdul Salam K. Darwish

School of Civil Engineering and Built Environment

University of Bolton, UK.

- (Innovative Cooling Strategy)

Jake Locke, UK.

Warwick Thermal Energy Facilities Manager,  
Warwick Sustainable Thermal Energy Technologies  
School of Engineering, University of Warwick,  
Coventry, UK

- (Utilizing Nanomaterials for Hydrogen Production in  
Clean Energy Applications)

Prof. Mazin Auny Mahdi

Department of Physics, University of Basrah, Iraq,

- (Comprehensive study and analysis of main losses  
mechanisms of Cu (In<sub>x</sub>Ga<sub>1-x</sub>) (Se) <sup>2</sup> thin-film solar  
cells using simulation program SCAPS)

Prof. Dr. Wagah Farman Mohammad Al-Azzawi  
&

Mohammed, R. T. Abuhashhash

Faculty of Engineering, National University of  
Science and Technology, Nasiriya, Iraq.

GHERAS Trading & Investment, Amman, Jordan,

- (Sustainable and Green Buildings Development in the  
UAE)

Prof Riadh Al-Dabbagh, UAE.



مدير الندوة :

أ.د سلوان كمال جميل العاني - اللجنة  
الوطنية لحظر الاسلحة - وزارة الدفاع -  
دولة قطر

Professor Salwan K.J. Al-Ani, FInstP

Fellow of the European Academy of Sciences  
(EurASc)

<http://arid.my/0001-1999>

# Panel Sessions

## Hydrogen Integration for Accelerated Energy Transition

**Date:** December 4th, 2023    **Time:** 13:30pm-15:30pm

**Location:** Room A1

**Session chair:** Prof. Meysam Qadrdan, Cardiff University, UK

**Panelists:** Dr Danny Pudjianto, Imperial College London, UK  
Prof. Jianzhong Wu, Cardiff University, UK  
Dr Marcello Contestabile, Qatar Environment & Energy Research Institute, Qatar  
Dr Khalid Alanazi, Imperial College London, UK

**Description:** Many countries around the world have pledged to achieve the Net Zero emission target in the next three decades. Hydrogen is expected to play a crucial role in achieving this target, however, the optimum scales of hydrogen deployment and its applications are uncertain, and significantly depend on circumstances of specific countries and case studies. This panel session will discuss the role and value of hydrogen in the energy transition, with a particular focus on the 'whole system' approach. Barriers and opportunities associated with the large-scale development of hydrogen infrastructure will be discussed in the context of selected countries.

### Agenda:

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 minutes | <b>Prof. Meysam Qadrdan (Session Chair)</b><br>Introduction to the panel and setting the scene.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 15 minutes | <b>Dr Danny Pudjianto</b><br><b>Title:</b> A Holistic Approach to Empower Hydrogen Supporting Net-Zero<br><b>Abstract:</b> The lack of clarity and uncertainty about hydrogen's roles, demand, applications, and economics has hindered hydrogen development. This paper presents a systematic energy model to optimise the planning and operation of an energy system; the model is used to identify the role of hydrogen technologies in decarbonising energy systems, improving system flexibility and enhancing energy system security and resilience against extreme weather. The studies were conducted on the future (year 2050) Great Britain's energy system to understand the hydrogen infrastructure capacity needed and their utilisation from the production, transport, storage, and demand under different scenarios. In the models, hydrogen technologies will compete against other alternative technologies, and the optimisation models will determine the least-cost solution. The studies demonstrate that hydrogen is important for providing flexibility, |

# Panel Sessions

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | energy system security and resilience against extreme weather. Synergy across hydrogen assets reduces the cost of hydrogen heating, which can be cost-competitive against the heat electrification approach.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 15 minutes | <b>Prof. Jianzhong Wu</b><br><br><b>Title:</b> TBC<br><br><b>Abstract:</b> TBC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 15 minutes | <b>Dr Marcello Contestabile</b><br><br><b>Title:</b> The role of hydrogen in the Qatar energy sector (provisional title)<br><br><b>Abstract:</b> TBC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 15 minutes | <b>Mr Khalid Alanazi</b><br><b>Title:</b> A novel framework for simulating market equilibrium in international hydrogen trade<br><b>Abstract:</b> Hydrogen has gained significant attention as a possibly important energy vector in the pursuit of climate change mitigation objectives. Global demand for renewable hydrogen is anticipated to increase across many decarbonization scenarios. To meet this demand, many countries have unveiled strategies aimed at bolstering domestic low-carbon hydrogen production or facilitating imports. Within this context, international trade has emerged as a means of importing hydrogen from regions with low-cost production capabilities. However, investment decisions in the development of international hydrogen markets are moving slowly due to large uncertainties regarding the magnitude of future demand and willingness to pay for hydrogen in key end-use applications. In this study, we develop a novel modelling framework capable of simulating global hydrogen market equilibrium and international trade scenarios in the long-term future. Our methodology includes the development of supply and demand curves, as well as a global hydrogen trade model that takes into account various supply chain options. Using this framework, we are able to derive quantitative insights into equilibrium supply and demand, pricing dynamics, trade flows, costs, and many more. We apply this framework to investigate the optimal development of hydrogen markets in 2050 under a 1.5°C climate change mitigations scenario. Our findings indicate that new hydrogen sectors could see a global demand surge to 195.2 Mt, with international trade constituting a quarter of this demand. |

# Panel Sessions

30 minutes

Structured Q&A

## Speakers' bio

**Session Chair: Prof. Meysam Qadrdan** is a Professor of Energy Networks and Systems at Cardiff University. He is an Industrial Fellow of the Royal Academy of Engineering. He was an EPSRC–UKRI Innovation Fellow from 2018 to 2022. His research covers the expansion and operational planning of interdependent energy networks at different scales from community to national level.



**Panelist 1: Dr Danny Pudjianto** is an Advanced Research Fellow with expertise in energy system modelling and optimisation for planning and operation, energy system economics, regulation, system security, and evaluations of the benefits of emerging technologies in smart grids, active network management, demand response, distributed generation, energy storage, and energy networks. The current focus of his research is on integrated multi-energy systems and smart technology evaluations. He is a senior member of IEEE, a member of IET and the editorial board of Renewable Energy journal and has published more than 100 technical papers and 70 industrial/research reports.



**Panelist 2: Prof. Jianzhong Wu** holds the position of Professor of Multi-Vector Energy Systems and is Head of School of Engineering at Cardiff University. Additionally, he serves as a co-Editor-in-Chief of Applied Energy.



**Panelist 3: Dr Marcello Contestabile** is Principal Economist at the Qatar Environment & Energy Research Institute (QEERI), where he leads economics and policy research. He has 20 years' experience working on techno-economic and policy analysis of low carbon technologies, particularly battery electric and hydrogen fuel cell vehicles and related infrastructures.



# Panel Sessions

**Panelist 4: Mr Khalid Alanazi** is a doctoral candidate at Imperial College's Sustainable Gas Institute (SGI), where he is researching the developmental pathways of a global hydrogen economy, with a focus on international trade. His current research aims to provide insights into future hydrogen markets and their implications for potential exporters and importers. Khalid has 5 years of industry experience, during which he held various roles including energy systems modeler and process engineer at Saudi Aramco. Throughout his career, he has been involved in several large-scale industrial projects in the energy sector. He is a licensed professional engineer (P.E.) and holds several professional designations, in addition to three US patents related to oil and gas processing. Khalid earned an MEng from Cornell University, USA, specializing in energy economics and engineering, and a BSc in chemical engineering from the University of Ottawa, Canada.





# Panel Sessions

## Workshop: Sustainability, Hydrogen and Decarbonization

**Date: December 5th, 2023**

**Organizer: Prof. Ahmad K. Sleiti, Prof. Saud Ghani, Prof. Samer Fikry**

### Abstract

Energy sustainability and security require having uninterrupted access to energy and securing energy supplies at an affordable price, while moving towards net zero emissions remains very important. Worldwide, the industrial sector accounts for significant amount of emissions and is considered a “difficult-to-decarbonize” sector. To enable the industrial sector to reach near-zero CO<sub>2</sub> emissions, several measures need to be taken including alternative strategies for energy efficiency, industrial electrification and adoption of low-carbon fuels, feedstocks, and energy sources (LCFFES). Clean hydrogen production from renewables, nuclear power, or fossil resources with carbon capture can reduce GHG emissions from high energy demand industries such as metal production, cement, vehicles, metals refining, synthetic fuel and biofuel production, and stationary fuel cells for power. This workshop will discuss the latest development in the decarbonization technologies emphasizing the applications of hydrogen in diverse industrial sectors for decarbonization. The workshop will also discuss the techno-economic aspects of adopting hydrogen in the energy transition plans. The workshop will include invited speakers, and panels.

### Workshop Agenda

#### Opening and Welcoming Speech Moderator: TBD

8:30 AM – 8:35 AM **Dr. Saud Ghani**, HOD, MIE, College of Engineering, Qatar University  
8:35 AM – 8:40 AM **Dr. Ahmad K. Sleiti**, MIE

#### Keynote Speakers Moderator: TBD

8:40 AM – 9:05 AM **Speaker 1: Prof. Jay Kapat**, Director of CATER, UCF, USA  
9:05 AM – 9:30 AM **Speaker 2: Dr. G. Subbu**, Institute Fellow at GTI Energy, USA

#### Invited Speakers, Moderator: TBD

Session 1: Decarbonization technologies emphasizing the applications of hydrogen

9:30 AM – 9:45 AM **Speaker 1: Dr. Jitendra Gupta**, Shell Technology Center  
9:45 AM – 10:00 AM **Speaker 2: Prof. Shan-Tung Tu**, East China Univ. of Science and Tech.  
10:00 AM – 10:30 AM **Break**  
10:30 AM – 10:45 AM **Speaker 3: Dr. Muammer Koç**, Prof. of Sustainability, HBKU  
10:45 AM – 11:15 AM **Panel Discussion**

#### Invited Speakers, Moderator: TBD

Session 2: Adopting hydrogen in the energy transition

11:15 AM – 11:30 AM **Speaker 1: Dr. Yusuf Bicer**, HBKU  
11:30 AM – 11:45 AM **Speaker 2: Prof. Mohamed Haouari**, MIE, Qatar University  
11:45 AM – 12:00 PM **Speaker 3: Prof. Ahmad Sleiti**, MIE, Qatar University  
12:00 PM – 12:30 PM **Panel Discussion**  
12:30 PM – 1:30 PM **Lunch Break**

# Advances in Applied Energy

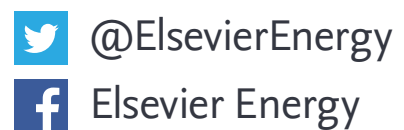
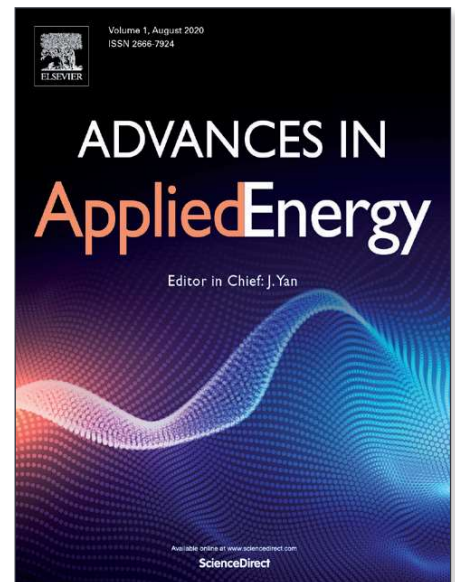
*Advances in Applied Energy* is a new, open access journal for publishing cutting-edge research in the field of applied energy. This new, fully peer-reviewed journal is a companion journal to the highly regarded journal *Applied Energy*.

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# Editorial Board Meeting Notice

This notice is intended for the members of the AE/APEN Editorial Board

Dear Member of the Editorial Board,

We are pleased to announce the upcoming ICAE2023-Editorial Board Meeting scheduled as follows:

|                   | Information                                                                                                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Topic             | ICAE2023-Editorial Board Meeting                                                                                                                                                |
| Time              | December 3, 2023, 03:30-5:30 PM Qatar Time                                                                                                                                      |
| Zoom Meeting Link | <a href="https://u-tokyo-ac-jp.zoom.us/j/88224456810?pwd=Y1bY3q0yflCf46pn7tbLfrDRNjbx7W.1">https://u-tokyo-ac-jp.zoom.us/j/88224456810?pwd=Y1bY3q0yflCf46pn7tbLfrDRNjbx7W.1</a> |
| Meeting ID        | 882 2445 6810                                                                                                                                                                   |
| Passcode          | 788679                                                                                                                                                                          |
| Location          | Engineering complex H07, board room C262<br>(We can gather in I11 at 15:10 and walk to H07 for 6-8 minutes).                                                                    |

We look forward to your valuable participation in the meeting.

Best Regards,

ICAE committee

# Day 1: Dec. 3

|                                                                                                                                                                                 |                                     |                                                                                                                                                                                      |                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00 - 10:00                                                                                                                                                                    | Opening, General Conf.              |                                                                                                                                                                                      |                                                                                                                                                              |
| 10:00 - 12:30                                                                                                                                                                   | Exhibition (including Coffee Break) |                                                                                                                                                                                      |                                                                                                                                                              |
| Room: C243<br>Session Name: Renewable Energy<br>Session Chair: Dr. Weicong Xu, Tianjin University; Dr. Bartosz Kątski, Technical University of Denmark                          |                                     |                                                                                                                                                                                      |                                                                                                                                                              |
| Time                                                                                                                                                                            | Paper ID                            | Author                                                                                                                                                                               | Paper Title                                                                                                                                                  |
| 10:30-10:45                                                                                                                                                                     | 162                                 | Peng Li, Qiong Rao, Zhongrui Gai and Ying Pan                                                                                                                                        | Solar-driven Chemical Looping Methane Dry Reforming on Rh-doped LaCeO3.5 Oxygen Carrier at Mild Temperature                                                  |
| 10:45-11:00                                                                                                                                                                     | 296                                 | Xiaomeng Chen, Feiyu Zhu, Daoliang Li, Xudong Yang, Yang Wang                                                                                                                        | A novel rooftop solar thermal module to reconcile seasonal source-demand mismatch                                                                            |
| 11:00-11:15                                                                                                                                                                     | 458                                 | X.B. Zhao, Z.G. Qu *, J.F. Zhang, Z.Y.Jiang                                                                                                                                          | Enhancing solar-thermal conversion and storage performance of expanded perlite/paraffin wax composites by introducing expanded graphite and carbon nanotubes |
| 11:15-11:30                                                                                                                                                                     | 489                                 | Eliana Gaudino, Antonio Caldarelli, Alessandro Vitaliano Anacreonte, Nicola Bianco, Paolo Strazzullo, Marilena Musto, Francesco Di Giamberardino, Vittorio G.Palmieri, Roberto Russo | Impact of collector array orientation on the performance of a flat plate collectors field for middle-temperature applications                                |
| 11:30-11:45                                                                                                                                                                     | 523                                 | Shuangdui Wu, Hengxin Zhao, YifanWu, Hongli Sun, Borong Lin                                                                                                                          | Influence of control strategy and split-band spectral modulation on the energy performance of electrochromic smart windows                                   |
| 11:45-12:00                                                                                                                                                                     | 673                                 | Bingqing Xu, Zhenyu Tian, Chuanchuan Liu, Yuanchao Liu, Wenjia Li                                                                                                                    | Optimization of Design Parameters for Enhanced Performance of Cavity Coil Solar-to-Fluid Thermal Energy Conversion                                           |
| 12:00-12:15                                                                                                                                                                     | 228                                 | P. Vivekh, D. T. Bui, W.D. Chen, Md. R. Islam, K.X. Yu, D. Zhao, K. J. Chua                                                                                                          | Experimental Study on The Dehumidification Performance of Solar-Powered Composite Superabsorbent Coated Heat Exchanger Dehumidifier                          |
| 12:15-12:30                                                                                                                                                                     | 348                                 | Hui Liu, Jinjia Wei, Qingyang Mei                                                                                                                                                    | Modified Dark Calcium-based Material with Long-term Stability for Effective Solar Energy Storage                                                             |
| 12:30-13:30                                                                                                                                                                     | Lunch                               |                                                                                                                                                                                      |                                                                                                                                                              |
| Room: C243<br>Session Name: Renewable Energy<br>Session Chair: Dr. Liang Wang, The Foundation for Industrial and Technical Research; Prof. Erik Dalquist, Malardalen University |                                     |                                                                                                                                                                                      |                                                                                                                                                              |
| 13:30-13:45                                                                                                                                                                     | 372                                 | M. Umamaheswara Rao, Harsh Jayesh Nagda, Ch. Subrahmanyam                                                                                                                            | The influence of H2S on plasma catalysis and the conversion of CH4 and CO2 in a dielectric barrier discharge reactor for reforming biogas into syngas        |
| 13:45-14:00                                                                                                                                                                     | 265                                 | Hao Xu                                                                                                                                                                               | Worth of knowledge in deep learning of energy tasks                                                                                                          |
| 14:00-14:15                                                                                                                                                                     | 573                                 | Ahmad Adib Rosyadi, Ocktaeck Lim                                                                                                                                                     | A Numerical Investigation of Dual Fuel (Diesel-Propane) Strategy with EGR on The Compression Ignition Engine                                                 |
| 14:15-14:30                                                                                                                                                                     | 606                                 | LIANG WANG, Ingebjørg Neraas, Zsuzsanna Czégény                                                                                                                                      | Pyrolysis of microalgae and lignocellulosic biomasses in a fixed-bed reactor: A comparative study on the composition and application potential of products   |
| 14:30-14:45                                                                                                                                                                     | 250                                 | Xiangyu Yan, Fan Jiao, Yibiao Long, Shiyang Yang, Qibin Liu                                                                                                                          | Concentrated solar-driven methane dry reforming for fuel production                                                                                          |
| 14:45-15:00                                                                                                                                                                     | 85                                  | jing liu, Jun Zhao                                                                                                                                                                   | Comparative environmental and economic performance of typical methanol production routes in China                                                            |
| 15:00-15:15                                                                                                                                                                     | 598                                 | Karim Rabea, Andy Heeley, Abdulaziz Gheit, Kris Milkowski, Kevin Hughes, Derek Ingham, Mohamed Pourkashanian                                                                         | EXPERIMENTAL INVESTIGATION OF THE RISING CO-CURRENT GASIFIER OPERATION FOR CHP AND BIOFUELS PRODUCTION APPLICATIONS.                                         |
| 15:15-15:30                                                                                                                                                                     | 488                                 | Hao Chen, Anton Hedén Sandberg, Giovanni Biancini, Erik Dahlquist, Konstantinos Kyprianidis                                                                                          | Profitability analysis of integrating fast pyrolysis into existing combined heat and power plants for biofuel production                                     |

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| 15:30-16:00                                                                                                                                                                      | TEA/COFFEE BREAK |                                                                                                                                                     |                                                                                                                                                                                    |
| Room: C243<br>Session Name: Renewable Energy<br>Session Chair: Dr. Liang Wang, Stiftelsen for industriell og teknisk forskning (SINTEF)                                          |                  |                                                                                                                                                     |                                                                                                                                                                                    |
| Time                                                                                                                                                                             | Paper ID         | Author                                                                                                                                              | Paper Title                                                                                                                                                                        |
| 16:00-16:15                                                                                                                                                                      | 196              | Xueyu Tian and Fengqi You                                                                                                                           | Sustainable Design and Operations of Hybrid Campus Energy Systems with Economic, Environmental, and Social Considerations                                                          |
| 16:15-16:30                                                                                                                                                                      | 582              | Dalibor Marinković,<br>Daliborka Nikolić,<br>Carsten Seidel, Andreas Seidel-Morgenstern,<br>Achim Kienle, Menka Petkovska                           | Evaluation of possible improvements of forced periodically operated reactor in which methanol synthesis takes place – based on the Nonlinear Frequency Response analysis           |
| 16:30-16:45                                                                                                                                                                      | 448              | Aamir Khan, Chung Yin Yu, Shazia Rehman, Molly Meng-Jung Li, Song Cheng, Shao-Yuan Leu                                                              | Comparison of the aromatics production from lignocellulosic biomass through solvolysis and hydrodeoxygenation to produce Sustainable Aviation Fuel                                 |
| 16:45-17:00                                                                                                                                                                      | 471              | Hao Xu, Pu Yang, Douglas Hungwe, Fumitake Takahashi, Yuki Yamasaki, Kunio Yoshikawa                                                                 | Co-hydrothermal carbonization of polyvinyl chloride and rice straw: Optimization of processing parameters for solid fuel production                                                |
| 17:00-17:15                                                                                                                                                                      | 554              | Yong Boon Tan, Yuming Wen, Yiyang Wang, Chi-Hwa Wang                                                                                                | Machine Learning Model to Predict the Mass Yield of Digestate Hydrothermal Carbonization                                                                                           |
| 17:15-17.:30                                                                                                                                                                     | 449              | Yvette Shihui Yang, Huichuan Zhuang, Ling Leng, Shao-Yuan Leu                                                                                       | Unlocking the Potential of Chain Elongation: Enhanced n-Caproic Acid Production Rate through Microbial Synergetic Interplay                                                        |
| Room: C244<br>Session Name: Intelligent Energy System<br>Session Chair: Dr. Wenlong Shang, Imperial College London; Dr. Xiaodan Shi, Mälardalen University                       |                  |                                                                                                                                                     |                                                                                                                                                                                    |
| Time                                                                                                                                                                             | Paper ID         | Author                                                                                                                                              | Paper Title                                                                                                                                                                        |
| 10:30-10:45                                                                                                                                                                      | 467              | Mateus Gheorghe de Castro Ribeiro;<br>Justin Luke;<br>Sonia Martin;<br>Emmanuel Balogun;<br>Gustavo Vianna Cezar;<br>Marco Pavone;<br>Ram Rajagopal | Towards a 24/7 Carbon-Free Electric Fleet: A Digital Twin Framework                                                                                                                |
| 10:45-11:00                                                                                                                                                                      | 621              | Gang Yu; Xianming Ye                                                                                                                                | An evolutionary game model for EV and charging station adoption                                                                                                                    |
| 11:00-11:15                                                                                                                                                                      | 286              | Wen-Long Shang;<br>Yishui Chen; Xuewang Song; Yanyan Chen; Washington Ochieng                                                                       | Carbon footprint analysis of urban transportation systems                                                                                                                          |
| 11:15-11:30                                                                                                                                                                      | 614              | Ali Alderete Peralta; Nazmiye Balta-Ozkan; Adam Zagorecki                                                                                           | Bounding the risk: Application of agent-based modelling framework to analyse cyber security risk perceptions for the adoption of MaaS                                              |
| 11:30-11:45                                                                                                                                                                      | 315              | Junxiang Zhang                                                                                                                                      | Study on Mobility Patterns of Electric Vehicles and Its Applications in Urban Energy Systems                                                                                       |
| 11:45-12:00                                                                                                                                                                      | 34               | Clemente Capasso, Giovanni Chianese, Stanislao Patalano, Ottorino Veneri                                                                            | Implementation of Machine Learning for automatic estimation of the State of Charge and the State of Health of battery cells for electric vehicles: a short Review and a case study |
| 12:00-12:15                                                                                                                                                                      | 682              | Ruibo Zhao, Dong Wang, Yuan Zeng, Kaisheng Wu                                                                                                       | New Energy Vehicle Charging Facility Industry and Technology Forecast in China                                                                                                     |
| 12:15-12:30                                                                                                                                                                      |                  |                                                                                                                                                     |                                                                                                                                                                                    |
| 12:30-13:30                                                                                                                                                                      | Lunch            |                                                                                                                                                     |                                                                                                                                                                                    |
| Room: C244<br>Session Name: Clean Energy Conversion Technology<br>Session Chair: Mr. Nur Cahyo, PLN Research Institute; Dr. Sanli Tang,University of Chinese Academy of Sciences |                  |                                                                                                                                                     |                                                                                                                                                                                    |
| 13:30-13:45                                                                                                                                                                      | 380              | Tran Quang Khai, Nguyen Ho Xuan Duy, Ocktaeck Lim                                                                                                   | Spray characteristics of high Ethanol-content Diesel blend in the Constant Volume Vessel under CI condition                                                                        |
| 13:45-14:00                                                                                                                                                                      | 544              | Le Trong Hieu, Quach Nhu Y, Ocktaeck Lim                                                                                                            | Improving the dynamic performance of fuel cell electric bicycle under effect of key input parameters                                                                               |

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|-------------|------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 14:00-14:15 | 634              | Esmail M.A. Mokheimer<br>Qazi Talal<br>Mohammad Raghib<br>Shakeel<br>Zubairu Abubakar                     | Investigation of thermoacoustic instability for swirling flames in a dual annular stratified burner                                |
| 14:15-14:30 | 177              | I Komang Gede Tryas<br>Agameru Putra, Nguyen<br>Ho Xuan Duy, Tran<br>Quang Khai, Ocktaeck<br>Lim          | Experimental Analysis of the Influence of Different Ethanol Blending Ratios in Diesel Fuel on the Spray Macroscopic Characteristic |
| 14:30-14:45 | 267              | Jianan Yin, Changqing<br>Dong, Junjiao Zhang,<br>Xiaoying Hu, Junjie Xue,<br>Ying Zhao, Xiaoqiang<br>Wang | The temperature measurement of hydrogen flame based on CCD and IR images                                                           |
| 14:45-15:00 | 80               | Yiran Qian, Meihui<br>Song, Yuyang Leng,<br>Weixiong Chen,<br>Quanbin Zhao, Junjie<br>Yan                 | Comparation and analysis of load changing control methods of closed air Brayton cycle                                              |
| 15:00-15:15 | 531              | Yongrui Jiang<br>Yihao Xu<br>Jiyuan Zhang<br>Xuezhi Dong<br>Junchao Zheng<br>Chunqing Tan                 | Matching Mechanism Research on a Turbine Hybrid Cycle Engine                                                                       |
| 15:15-15:30 | 44               | Liqing Liu, Yi Chen,<br>Huaxia Yan, Qiu Hua<br>Tao, Yiyan Fan                                             | Study on Operational Characteristics of a Hybrid Thermal wheel and Evaporative Cooling Air-conditioning System for Marine Ships    |
| 15:30-16:00 | TEA/COFFEE BREAK |                                                                                                           |                                                                                                                                    |

Room: C244

Session Name: Clean Energy Conversion Technology

Session Chair: Dr. Anders Avelin, Mälardalen University

| Time        | Paper ID | Author                                                                                            | Paper Title                                                                                                                                                 |
|-------------|----------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16:00-16:15 | 99       | Qingyang Wu, Gen Li,<br>Ming Liu, Junjie Yan                                                      | Study on control strategy of AP1000 nuclear power plant coupled with LT-MED system                                                                          |
| 16:15-16:30 | 108      | Shiying Yang, Fan Jiao,<br>Yibiao Long, Xiangyu<br>Yan, Taixiu Liu, Qibin Liu                     | Thermodynamic Analysis of the Novel Carbon Neutral Hydrogen Production System Integrated Solar Chemical Looping Dry Reforming and Photovoltaic Electrolysis |
| 16:30-16:45 | 147      | Yu Yao, Xiaocun Sun,<br>Jintao He, Bowen Lu,<br>Lingfeng Shi, Gequn<br>Shu                        | Experimental Investigation of CO <sub>2</sub> /R32 Mixture Combined Cooling and Power Cycle under Variable Heat Source Condition                            |
| 16:45-17:00 | 299      | Wenjing Ma, Wei Han,<br>Qibin Liu, Jichao Li                                                      | Hydrogen and Electricity Cogeneration System Based on Chemical Recuperation Enabled by Complementary Utilization of Natural Gas and Electricity             |
| 17:00-17:15 | 345      | Junxiang Wang, Limin<br>Zhang, Kaiqi Luo,<br>Ercang Luo, Jianying<br>Hu, Zhanghua Wu, Rui<br>Yang | Experimental validation of a direct-coupled Stirling combined cooling and power system                                                                      |
| 17:15-17:30 | 450      | Luis Antonio Choque<br>Campero<br>Wujun Wang<br>J. Villarroel-Schneider<br>Andrew Martin          | Techno-Economic Analysis of an Integrated Power and Water System based on a Brayting cycle: A case study for rural areas of Bolivia                         |

Room: C245

Session Name: Energy Management, Policy and Economics

Session Chair: Asso Prof. Yuntian Chen, Eastern Institute for Advanced Study

| Time        | Paper ID | Author                                                                               | Paper Title                                                                                                                                                         |
|-------------|----------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:30-10:45 | 495      | Mrs. Tara Alkubaisi<br>Dr. Wei Sun                                                   | Optimal investment for energy transmission options for offshore wind considering multiple energy vectors                                                            |
| 10:45-11:00 | 138      | Quanyu Pan, LinSong<br>Cheng, Pin Jia, Zhikai<br>Wang                                | An effective model for well-testing interpretation on carbonate reservoirs with complex cave connections                                                            |
| 11:00-11:15 | 140      | Kai Wen, Wei Gao, Li Li,<br>Baolong Yang, Chaoferi<br>Nie, Jiaojian Feng, Kai<br>Wen | Energy saving and environmental protection in coupled development of integrated gas-electric system: from the perspective of gas pipe network planning              |
| 11:15-11:30 | 146      | Wenkui HUANG, Leng<br>Tian, zechuan wang                                             | Study on reasonable production allocation method of CO <sub>2</sub> assisted gravity flooding in low permeability reservoir considering pressure sensitivity effect |
| 11:30-11:45 | 120      | Binyu Wang<br>Linsong Cheng<br>Yafei Zhang                                           | A novel dynamic boundary model of pressure propagation for volume fractured horizontal wells in shale oil reservoirs with developed natural fractures               |



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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11:45-12:00                                                                                                                                                                                  | 461              | Tianshou ZHOU,<br>Dan WANG,<br>Hongjie JIA,<br>Yizhe LI,<br>Jiawei LIU          | Energy Station-Network Collaborative Planning of Integrated Energy System Based on Exergy-potential Constraints                                                                           |
| 12:00-12:15                                                                                                                                                                                  | 507              | Bruno Canizes, Fábio Castro, João Soares, José Almeida, Zita Vale               | Optimizing Smart Distribution Network Expansion Incorporating the Seasonal Impacts, CO2 Emissions and Resources Remuneration: A Multi-Stage Stochastic Framework                          |
| 12:15-12:30                                                                                                                                                                                  | 689              | Yanan Zhao,<br>Zhenzhong Zeng                                                   | Increase of extreme wind speed and its implication for offshore wind farm                                                                                                                 |
| 12:30-13:30                                                                                                                                                                                  | Lunch            |                                                                                 |                                                                                                                                                                                           |
| Room: C245<br>Session Name: Mitigation Technology and Energy Storage<br>Session Chair: Asso Prof. Ocean Cheung, Uppsala University                                                           |                  |                                                                                 |                                                                                                                                                                                           |
| 13:30-13:45                                                                                                                                                                                  | 37               | Runye Zhang, Donghui Zhang, Wenbin Li                                           | Multi-scale modeling of CO2 capture in fixed adsorption bed Using computational mass transfer and particle resolution method                                                              |
| 13:45-14:00                                                                                                                                                                                  | 389              | Mingyang Yang, Shijun Huang, Fenglan Zhao, Haoyue Sun, Xinyang Chen, Xinhan Fan | Experimental investigation of CO2 flooding in tight oil reservoirs: Effects of the fracture aperture on production characteristics and oil distribution                                   |
| 14:00-14:15                                                                                                                                                                                  | 167              | Peng Sun, Meng Lin, Shuai Deng                                                  | Performance assessment and optimization of a bipolar membrane electrodialysis system for direct air capture                                                                               |
| 14:15-14:30                                                                                                                                                                                  | 173              | Dingyi Jiang<br>Shouzhuang Li<br>Mika Järvinen                                  | Techno-economic Assessment of an integrated Coal Combustion and Solar-driven Calcium looping CO2 Capture System supplemented by Precipitated Calcium Carbonate from Deactivated Adsorbent |
| 14:30-14:45                                                                                                                                                                                  | 176              | Ling Han, Shuai Deng, Ruikai Zhao, Li Zhao, Peng Sun                            | Feasibility analysis of electric energy-driven CO2 fixation in seawater through the formation of carbonate precipitation                                                                  |
| 14:45-15:00                                                                                                                                                                                  | 183              | Xinhan Fan, Shijun Huang, Fenglan Zhao, Bin Wang, Yuanpeng Luo, Yue Cheng       | Research on the Zonal Coupling Mechanism of Flue Gas-Assisted Cyclic Steam Stimulation                                                                                                    |
| 15:00-15:15                                                                                                                                                                                  | 202              | yue fu, Ming Liu, Junjie Yan                                                    | Coal- fired power plants with large-scale carbon capture systems is optimized using waste heat utilization to operate load-cycling                                                        |
| 15:15-15:30                                                                                                                                                                                  |                  |                                                                                 |                                                                                                                                                                                           |
| 15:30-16:00                                                                                                                                                                                  | TEA/COFFEE BREAK |                                                                                 |                                                                                                                                                                                           |
| Room: C245<br>Session Name: Clean Energy Conversion Technology<br>Session Chair: Prof. Junjie Yan, Xi'an Jiaotong University; Dr. Jakub Jurasz, Wroclaw University of Science and Technology |                  |                                                                                 |                                                                                                                                                                                           |
| Time                                                                                                                                                                                         | Paper ID         | Author                                                                          | Paper Title                                                                                                                                                                               |
| 16:00-16:15                                                                                                                                                                                  | 7                | Ms. Miryam Essadik<br>Dr. Zahra Hajabdollahi<br>Ouderji<br>Pr. Zhibin Yu        | Exergy analysis of the defrosting operation of a flexible heat pump with an integrated latent heat storage                                                                                |
| 16:15-16:30                                                                                                                                                                                  | 95               | Xiaoxuan Chen, Lu Wang, Xinyi Wang, Zhen Li                                     | Theoretical and numerical energy saving analysis on the multi-stage data center cooling system                                                                                            |
| 16:30-16:45                                                                                                                                                                                  | 160              | Lu Wang, Xiaoxuan Chen, Liang Chen, Zhen Li                                     | Radiative Cooling Technology for Data Center Cooling Systems                                                                                                                              |
| 16:45-17:00                                                                                                                                                                                  | 170              | Ibrahim Joseph Mwasubila<br>Joseph, H. Kihedu<br>Cuthbert Kimambo<br>ole Nydal  | Performance investigation of adsorber bed characteristic driven by solar energy: A case of heating and cooling                                                                            |
| 17:00-17:15                                                                                                                                                                                  | 180              | Bashar Shboul                                                                   | Performance Investigation of a Single Effect Evaporator Desalination Unit: A Simulation Model                                                                                             |
| 17:15-17.:30                                                                                                                                                                                 | 190              | Yang Song, Davide Rolando, Gerhard Zucker, Hatef Madani                         | Development and validation of data-driven soft sensors for heat pumps                                                                                                                     |
| Room: C246<br>Session Name: Energy Sciences<br>Session Chair: Prof. Roland Span, Ruhr University Bochum                                                                                      |                  |                                                                                 |                                                                                                                                                                                           |
| Time                                                                                                                                                                                         | Paper ID         | Author                                                                          | Paper Title                                                                                                                                                                               |

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| 10:30-10:45                                                                                                                                                            | 4                | Ziqi Sun; Renbao Zhao;<br>Tiantian Wang; Xin Li                                                                             | A dynamic control technique for improving oil recovery during the in-situ combustion                                                                                             |
| 10:45-11:00                                                                                                                                                            | 139              | Jinchong Zhou, Renyi<br>Cao, Meng Zhang,<br>Bingchen Lyu                                                                    | Pressure Calculation Method and Mechanism of Advance Water Injection in Ultra-low Permeability Reservoirs                                                                        |
| 11:00-11:15                                                                                                                                                            | 263              | ruhang Zhang,<br>Chuandong Li, Xinhai<br>Yu, Zheng Hongxiang,<br>Xinqi Yao                                                  | Development of kW-scale efficient methanol reforming high-temperature proton exchange membrane fuel cells                                                                        |
| 11:15-11:30                                                                                                                                                            | 300              | Yixuan Li, Weicong Xu,<br>Li Zhao, Chen Ruihua                                                                              | Numerical modeling and performance of continuous thermally regenerative electrochemical cycle                                                                                    |
| 11:30-11:45                                                                                                                                                            | 323              | Jitao Wang                                                                                                                  | Quantitatively study on influencing factors of high multiple water flooding based on NMR technology                                                                              |
| 11:45-12:00                                                                                                                                                            | 379              | Bing Bo, Wenbin Yao,<br>Shouxiang Lu                                                                                        | Study on Ignition Characteristics of Rocket Kerosene in Oxygen-rich Atmosphere                                                                                                   |
| 12:00-12:15                                                                                                                                                            | 578              | Hui Yan, Zhu Wang,<br>Meihong Wang, Ming<br>Liu, Daotong Chong                                                              | Thermodynamic Performance and CO2 Emission Characteristics of Solar-aided Coal-fired Power Plant under Off-design Conditions                                                     |
| 12:15-12:30                                                                                                                                                            | 103              | Chenchen Li, Xinli Lu,<br>Wei Zhang, Hao Yu, Jiali<br>Liu, Shuhui Li                                                        | Optimization and analysis of an LNG cold energy power generation model with different multi-energy complementary systems                                                         |
| 12:30-13:30                                                                                                                                                            | Lunch            |                                                                                                                             |                                                                                                                                                                                  |
| Room: C246<br>Session Name: Energy Sciences<br>Session Chair: Dr. Shuai Yao, Cardiff University; Dr. Meysam Majidiezhad, Mälardalen University                         |                  |                                                                                                                             |                                                                                                                                                                                  |
| 13:30-13:45                                                                                                                                                            | 631              | Chengwei<br>Zhang ,Shiqing<br>Cheng,Jing Xu,Xuesi<br>Shen,Chong Zhang                                                       | A Layered Discrete Fracture-Matrix Simulation for Production Data Analysis in Well Intercepting with Multiple Non-Uniform Conductivity Fractures in Layered Tight Gas Reservoirs |
| 13:45-14:00                                                                                                                                                            | 635              | Valentin Scheiff,<br>Susumu Yada, Torbjorn<br>Wass, Rebei Bel Fdhila,<br>Mats Larsson, Philipp<br>Ganter                    | Experimental investigation of Nucleate Boiling Propagation in Thermosyphon Cooling Systems for High-Power Electronic Components                                                  |
| 14:00-14:15                                                                                                                                                            | 185              | Anna K. Sharishoy<br>Joseph H. Kihedu<br>Cuthbert Z. M.<br>Kimambo<br>Ole J. Nydal                                          | Experimental Performance Investigation of Oil-Based Sensible Thermal Storage System for Cooking Applications                                                                     |
| 14:15-14:30                                                                                                                                                            | 568              | Mingyun Luo1, Ziye<br>Ling1*, Xiaoming Fang1,<br>Zhengguo Zhang1*                                                           | Performance optimization of battery cooling system based on phase-change latent heat energy storage                                                                              |
| 14:30-14:45                                                                                                                                                            | 90               | Meiyang Xu, Gaosheng<br>Wei, Chao Huang, Liu<br>Cui, Xiaoze Du                                                              | Experimental Study on Synergistic Enhancement of Thermophysical Properties of Ternary Carbonates by Multidimensional Nanoparticles                                               |
| 14:45-15:00                                                                                                                                                            | 222              | Ahmad Zueter, Minghan<br>Xu, Mohammad<br>Zolfagharroshan, Putra<br>Gani, Mahmoud Alzoubi,<br>Navid Bahrani, Agus<br>Sasmito | Thermal and computational analysis of U-Type geothermal heat exchangers of complex configurations using novel reduced-order models                                               |
| 15:00-15:15                                                                                                                                                            | 208              | Langyu Niu, Linsong<br>Cheng, Pin Jia, Zhikai<br>Wang, Yucheng Wu                                                           | A oil-water-gas three-phase flow model for flowback and early-production prediction of multi-fractured horizontal wells in lamellar shale reservoirs                             |
| 15:15-15:30                                                                                                                                                            | 117              | Yibiao Long, Fan Jiao,<br>Shiying Yang, Qibin Liu                                                                           | Thermodynamic Analysis of Cerium-Based Solar Thermochemical Cycle for Carbon Monoxide Production                                                                                 |
| 15:30-16:00                                                                                                                                                            | TEA/COFFEE BREAK |                                                                                                                             |                                                                                                                                                                                  |
| Room: C246<br>Session Name: Energy Sciences<br>Session Chair: Asso Prof. Zhenyuan Yin, Tsinghua University; Prof. Xiaosen Li, Guangzhou Institute of Energy Conversion |                  |                                                                                                                             |                                                                                                                                                                                  |
| Time                                                                                                                                                                   | Paper ID         | Author                                                                                                                      | Paper Title                                                                                                                                                                      |
| 16:00-16:15                                                                                                                                                            | 651              | Yue Zhang, Bin Wang,<br>Jingchun Feng                                                                                       | Effect of marine environmental factors on the methane hydrate formation kinetics                                                                                                 |
| 16:15-16:30                                                                                                                                                            | 219              | Huihui Su, Enlu Wang,<br>Yifei Xu                                                                                           | An experimental study on the fluid characteristics of a sieve tower with the circular downcomers                                                                                 |
| 16:30-16:45                                                                                                                                                            | 627              | Hui zhang, Jing-Chun<br>Feng, Yongming Shen,<br>Bin Wang, Yan Xie, Yue                                                      | The Impact of Methane Seepage Intensity under Cold Seep In-Situ Conditions on Gas Migration Channels and Hydrate Formation Distribution Mechanisms                               |

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|                                                                                                                                                                                        |          | Zhang                                                                                                                                                                      |                                                                                                                                                          |
| 16:45-17:00                                                                                                                                                                            | 630      | Yan Xie, Jingchun Feng, Junwen Wang, Xingyu Chen, Yi Wang, Zhenwu Zhou, Bin Wang, Si Zhang, Zhifeng Yang                                                                   | Depressurization-induced CH4 hydrate dissociation and CH4 leakage characteristics under conditions of overburden sediment with different fracture scales |
| 17:00-17:15                                                                                                                                                                            | 559      | Xi Lai, Li Zhao, Xianhua Nie, Qi Zhang                                                                                                                                     | Hydrate-based composition separation of R32/R1234yf mixed working fluids in tetrahydrofuran system                                                       |
| 17:15-17.:30                                                                                                                                                                           | 207      | jibao Zhang, Zhenyuan Yin, Yan Li, Yizhi Rao, Xiang Yuan Zheng                                                                                                             | Effects of thermodynamic promoter THF in promoting H2 hydrate kinetics and the implication on hydrate-based H2 storage                                   |
| Room: B219<br>Session Name: Mitigation Technology and Energy Storage<br>Session Chair: Prof. Meihong Wang, University of Sheffield                                                     |          |                                                                                                                                                                            |                                                                                                                                                          |
| Time                                                                                                                                                                                   | Paper ID | Author                                                                                                                                                                     | Paper Title                                                                                                                                              |
| 10:30-10:45                                                                                                                                                                            | 601      | Ocean Cheung, Michelle Åhlén, Ribooga Chang and Maria Strømme                                                                                                              | Visible light-triggered desorption of CO2 in green coordination polymers                                                                                 |
| 10:45-11:00                                                                                                                                                                            | 684      | Kuankui Guo                                                                                                                                                                | Effect of heat exchange on carbon dioxide capture in flow-focusing microchannel                                                                          |
| 11:00-11:15                                                                                                                                                                            | 79       | Arkadiusz Szcześniak1, Aliaksandr Martsinchyk1, Olaf Dybinski1, Katsiaryna Martsinchyk1,2,3, Kamil Futyma1, Łukasz Szablowski1, Jarosław Milewski1*, Małgorzata Dembowska1 | FEASIBILITY STUDY OF A MOLTEN CARBONATE FUEL CELL AS A CO2 SEPARATOR FOR VARIOUS INDUSTRIAL EXHAUST EMISSIONS                                            |
| 11:15-11:30                                                                                                                                                                            | 150      | Qian Duan, Qingsong An, Boyang Sun, Jinxin Hou                                                                                                                             | Comparative study on cavitation characteristics of different fuels considering thermal effect in injector nozzle                                         |
| 11:30-11:45                                                                                                                                                                            | 45       | Zhihao Xing; Xi Jiang                                                                                                                                                      | A reactive molecular dynamics study on the mechanisms of NOX and N2O formations during ammonia combustion with oxygenated fuel addition                  |
| 11:45-12:00                                                                                                                                                                            | 618      | Qifan Chang<br>Lihui Zheng<br>Naiyuan Zhang<br>Yi Jin<br>Qinhao Zhang<br>Yitian Zhou                                                                                       | Proposing a Novel Reusable Fracturing Fluid for Tight Sandstone Fracturing in the Changqing Gas Field: Environmental and Economic Implications           |
| 12:00-12:15                                                                                                                                                                            | 600      | Ocean Cheung, Michelle Åhlén, Ribooga Chang, Maria Strømme                                                                                                                 | Flue gas CO2 capture with hybrid ultramicroporous materials (HUMs)                                                                                       |
| 12:15-12:30                                                                                                                                                                            | 514      | Wenhao Zhao, Wenjie Qia, Xiaolan Wei, Jing Ding, Jianfeng Lu, Weilong Wang, Shule Liu                                                                                      | Corrosion mechanism of chromium-rich nickel-based alloy in ternary NaCl-CaCl2-MgCl2 molten salt                                                          |
| 12:30-13:30                                                                                                                                                                            | Lunch    |                                                                                                                                                                            |                                                                                                                                                          |
| Room: B219<br>Session Name: Energy Storage System<br>Session Chair: Dr. Yue Zhou,The Hong Kong Polytechnic University; Dr. Yiming Yao, East China University Of Science And Technology |          |                                                                                                                                                                            |                                                                                                                                                          |
| 13:30-13:45                                                                                                                                                                            | 490      | XINYU MA, Baisheng Nie                                                                                                                                                     | Research review on thermal runaway of lithium-ion battery and safety early warning and prevention technology                                             |
| 13:45-14:00                                                                                                                                                                            | 35       | Clemente Capasso, Ottorino Veneri, Luigi Iannucci                                                                                                                          | Impact of User Drive Style on EV Energy Storage System Aging                                                                                             |
| 14:00-14:15                                                                                                                                                                            | 78       | Siyuan ZHAO, Tong LIU, Meng NI                                                                                                                                             | High-Energy-Efficiency Zinc-Air Batteries for Energy Storage                                                                                             |
| 14:15-14:30                                                                                                                                                                            | 88       | Yong Kang Han, Ying Chuan Zhang, Yi Ke Lei, Jie Ni, Cun Man Zhang, Qiang Feng Xiao*                                                                                        | Enhancing Electrochemical Performance of Ni-rich Cathode by utilizing organic anhydride cathode additive                                                 |
| 14:30-14:45                                                                                                                                                                            | 525      | Josefin Rojas Vazquez, Meysam Majidi Nezhad, Maher Azaza, Erik Dahlquist                                                                                                   | Analysis of Li-Ions Degradation Using Incremental Capacity Indicator                                                                                     |
| 14:45-15:00                                                                                                                                                                            | 149      | Yanyan Lu1, Junsheng Zheng 1*, Liming Jin 1*                                                                                                                               | Investigation of the Dynamic Process of Direct Contact Pre-lithiation in Graphite Anode of Lithium-ion Batteries                                         |

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| 15:00-15:15                                                                                                                                                                   | 362              | Baichen Liu, Salvatore De Angelis, Vedrana Andersen Dahl, Søren Bredmose Simonsen, Johan Hjelm    | Electrochemical performance of dual-layer carbon electrodes for aqueous redox flow batteries                                                        |
| 15:15-15:30                                                                                                                                                                   | 434              | Ying Chen                                                                                         | Numerical Simulation of Intragranular and Intergranular Crack in NCM Polycrystalline Particles Under Different Operating Conditions                 |
| 15:30-16:00                                                                                                                                                                   | TEA/COFFEE BREAK |                                                                                                   |                                                                                                                                                     |
| Room: B219<br>Session Name: Energy Storage System<br>Session Chair: Dr. Fang Guo, Tsinghua University; Asso Prof. Jie Yan, North China Electric Power University              |                  |                                                                                                   |                                                                                                                                                     |
| Time                                                                                                                                                                          | Paper ID         | Author                                                                                            | Paper Title                                                                                                                                         |
| 16:00-16:15                                                                                                                                                                   | 295              | Mingzhi Zhao, Yilin Zhu, Dongzi Hu, Yujie Xu, Haisheng Chen                                       | Off-design performance of supercritical compressed carbon dioxide energy storage system                                                             |
| 16:15-16:30                                                                                                                                                                   | 572              | Bartosz Kałski, Nishith B. Desai, Fredrik Haglind                                                 | Thermodynamic optimization of solar aided liquid air energy storage system                                                                          |
| 16:30-16:45                                                                                                                                                                   | 653              | Sajid Mehmood                                                                                     | Numerical model of solar-driven cold storage for small-scale fisheries                                                                              |
| 16:45-17:00                                                                                                                                                                   | 393              | yuxuan Song                                                                                       | Study on Electric Field Distribution Characteristics at the end of Rotor Winding of Pumped-storage Electric Motor                                   |
| 17:00-17:15                                                                                                                                                                   | 86               | Sheng Yang, Hong-Yi Shi, Li-Wu Fan                                                                | A high-supercooling-degree phase change material (PCM) based on erythritol by rheological behavior regulation for seasonal latent heat storage      |
| 17:15-17.:30                                                                                                                                                                  | 112              | Wenting Hu, Ming Liu, Peiye Zhang, Junjie Yan                                                     | Thermodynamic optimization of a supercritical combined heat and power plant based on molten salt heat storage                                       |
| Room: B220<br>Session Name: Energy Management, Policy and Economics<br>Session Chair: Dr. Arthur Stobert, TU Darmstadt; Dr. Zhiling Guo, The Hong Kong Polytechnic University |                  |                                                                                                   |                                                                                                                                                     |
| Time                                                                                                                                                                          | Paper ID         | Author                                                                                            | Paper Title                                                                                                                                         |
| 10:30-10:45                                                                                                                                                                   | 41               | Victor Guillot<br>Edi Assoumou                                                                    | Combined decarbonization of the European and North African power systems: an emphasis on hydrogen trade                                             |
| 10:45-11:00                                                                                                                                                                   | 463              | Pengyu Wei, Dongsheng Cai*, Chiagoziem Chima Ukwuoma, Olisola Bamisile, Qi Huang                  | Optimized Configuration of Hybrid Electric-Hydrogen Energy Storage System Considering Carbon Trading and Wind Power Fluctuation Smoothing           |
| 11:00-11:15                                                                                                                                                                   | 492              | NKOU NKOU Joseph Junior, Dongsheng Cai, Chiagoziem C. Ukwuoma, Olusola Bamisile, Qi Huang         | Trends and Patterns in Green Hydrogen Project Development: A Comprehensive Data-Driven Analysis                                                     |
| 11:15-11:30                                                                                                                                                                   | 216              | Patrik Klintonberg, Fastudo Mabecua, Sebastian Schwede                                            | Is small-scale biogas production a viable source of electricity in rural Sub-Saharan Africa?                                                        |
| 11:30-11:45                                                                                                                                                                   | 593              | Fastudo Mabecua, Nilza Dimande, Adolfo Condo, Patrik Klintonberg, Carlos Lucas, Sebastian Schwede | Barriers to successful implementation of small-scale biogas technology in Southern Africa: What can be learned from past initiatives in Mozambique? |
| 11:45-12:00                                                                                                                                                                   | 65               | Yuanzheng Wang, Renyi Cao                                                                         | A New Development Strategy: Numerical simulation and Field Application of Advanced Gas Injection Approach in Shale Reservoirs                       |
| 12:00-12:15                                                                                                                                                                   | 166              | Florian Siekmann, Holger Schlör, Sandra Venghaus                                                  | Navigating Data Management Challenges and Seizing Opportunities in the Sahel Region: Selecting Weighting Factors within a Sustainability Framework  |
| 12:15-12:30                                                                                                                                                                   | 676              | Mustafa Jaradat, GJU                                                                              | Feasibility and Environmental Considerations of Biodiesel Production from Waste Falafel Oil in Jordan                                               |
| 12:30-13:30                                                                                                                                                                   | Lunch            |                                                                                                   |                                                                                                                                                     |
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| 13:30-13:45                                                                                                                                                                   | 666              | Abel Martinez, Gregorio Iglesias                                                                  | Wind energy resources in South America under climate change                                                                                         |
| 13:45-14:00                                                                                                                                                                   | 47               | Zhao Han and Akiyuki Kawasaki                                                                     | Prospective Assessment of Multiple Environmental Impacts Caused by China's Domestic Demand Growth under the SSP Scenarios                           |
| 14:00-14:15                                                                                                                                                                   | 164              | Jingfeng Zhou, Pamela Fennell, Ivan Korolija,                                                     | Characterization of hotel stock for climate change mitigation in England and Wales                                                                  |

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|                                                                                                                                                                             |                  | Kaixuan Wang, Paul Ruyssevelt                                                                                        |                                                                                                                                                                       |
| 14:15-14:30                                                                                                                                                                 | 440              | Kexin Yang, Qi Zhang, Ge Wang, Xiaoxuan Chen, Hailong Li                                                             | A New Simulation Framework for Charging Strategy Selection in Heterogeneous Policy Scenarios                                                                          |
| 14:30-14:45                                                                                                                                                                 | 294              | Jiaojiao Zhang<br>Shijun Huang<br>Fenglan Zhao<br>Yang Zhao                                                          | Fracture parameter inversion method of deep coalbed methane wells after hydraulic fracturing based on production dynamic analysis                                     |
| 14:45-15:00                                                                                                                                                                 | 370              | Di Fan, Ke Wang                                                                                                      | The effectiveness of Forest Farm Carbon Sink projects in reducing poverty                                                                                             |
| 15:00-15:15                                                                                                                                                                 | 528              | Danbi Kim, Steven Jige Quan                                                                                          | Examining the Relationship between Urban Form Factors and Extreme Heat in Seoul with A Machine Learning Approach                                                      |
| 15:15-15:30                                                                                                                                                                 | 459              | Mauro Zampilli, Ahmed Hassan, Silvia Garlatti, Katarzyna Slopicka, Sara Massoli, Pietro Bartocci, Francesco Fantozzi | Techno-economic assessment of the SURFOLY business model in the circular economy for activated carbon production from olive waste biochar                             |
| 15:30-16:00                                                                                                                                                                 | TEA/COFFEE BREAK |                                                                                                                      |                                                                                                                                                                       |
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| Time                                                                                                                                                                        | Paper ID         | Author                                                                                                               | Paper Title                                                                                                                                                           |
| 16:00-16:15                                                                                                                                                                 | 534              | Parth Bansal<br>Steven Jige Quan                                                                                     | Examining mechanisms linking urban contextual form to building energy use – An empirical study in Seoul                                                               |
| 16:15-16:30                                                                                                                                                                 | 547              | Rafik Yamout, Alaa Krayem, Fredrik Wallin                                                                            | Energy communities in Sweden: the case study of Sättra, Västerås                                                                                                      |
| 16:30-16:45                                                                                                                                                                 | 591              | Haya Helmy, Takahiro Yoshida, Akito Murayama, Amal Bogoreh, Ishwar Ramnarine, Perry Pei-Ju Yang                      | Carbon-neutrality Architecting and New-age Visions for Urban Areas using Systems design (CANVAS) – A case study of Tokyo Nihonbashi                                   |
| 16:45-17:00                                                                                                                                                                 | 603              | Amin Al-Habaibeh ,<br>Matthew Watkins ,<br>Bubaker Shakmak ,<br>Maryam Bathaei<br>Javareshk and Seamus Allison       | Towards more sustainable urban transportation for NetZero cities: Assessing air quality and risk for e-scooter users using sensor fusion and artificial intelligence. |
| 17:00-17:15                                                                                                                                                                 | 655              | Jiaxing Li, Qing Yu, Likun Peng, Siyuan Liu, Haoran Zhang                                                            | Evaluating the Resilience of Highway Electric Vehicle Charging Networks Using Agent-Based Modeling                                                                    |
| 17:15-17.:30                                                                                                                                                                | 20               | Tianle Liu; Mengye Zhu; Lyu Jing; Ye Qi                                                                              | Assessing net employment effects for a just energy transition in China towards carbon neutrality: An nput-Outout approach                                             |
| Room: E215<br>Session Name: Intelligent Energy System<br>Session Chair: Asso Prof. Wandong Zheng,Tianjin University; Dr. Zhenjia Lin, The Hong Kong Polytechnic University  |                  |                                                                                                                      |                                                                                                                                                                       |
| Time                                                                                                                                                                        | Paper ID         | Author                                                                                                               | Paper Title                                                                                                                                                           |
| 10:30-10:45                                                                                                                                                                 | 8                | Sally Shahzad, Wenjie Song, John K. Calautit                                                                         | Heated Vest: A Personal Comfort System to Enhance Thermal Comfort and Energy Use                                                                                      |
| 10:45-11:00                                                                                                                                                                 | 169              | Jiayi Sun, Sui Li , Yixin Dong , Kaiyi Hou                                                                           | Building energy consumption prediction model for edge effects in the case of high-rise buildings                                                                      |
| 11:00-11:15                                                                                                                                                                 | 376              | Omar Osman, Dr. Alissar Yehya, Dr. Elsa Maalouf                                                                      | A Novel Climate Responsive PCM-Insulation System for Building Envelopes                                                                                               |
| 11:15-11:30                                                                                                                                                                 | 481              | Yifan Wu, Hengxin Zhao, Shuangdui Wu, Hongli Sun, Borong Lin.                                                        | Comparative study on thermal performance of novel terminal based on flat heat pipes and traditional fan coil and floor heating                                        |
| 11:30-11:45                                                                                                                                                                 | 27               | Bürgler Florian ,<br>Humbert Gabriele, Heer Philipp, Koirala Binod Prasad                                            | Optimizing Waste Heat Utilization from Small-scale Data Centers in Multi-Energy Building Systems                                                                      |
| 11:45-12:00                                                                                                                                                                 | 52               | Peng Liu, Jing Gong, Bohui Shi, Shangfei Song                                                                        | Predictive Scheduling of Parallel Pump Systems Based on Airport Gate Assignment                                                                                       |

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12:00-12:15                                                                                                                                                      | 199              | Renan Lima Baima<br>Iván Abellán Álvarez<br>Ivan Pavić<br>Emanuela Podda           | Public Sector Sustainable Energy Scheduler – A Blockchain and IoT Integrated System                                                                       |
| 12:15-12:30                                                                                                                                                      | 592              | Alexandre d'Orgeval<br>Valentina Sessa<br>Edi Assoumou<br>Quentin Avenas           | Towards Improved Datacenter Assessment: Review and Framework Proposition                                                                                  |
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| 13:30-13:45                                                                                                                                                      | 260              | Khalid Alanazi, Shivika Mittal, Adam Hawkes, Nilay Shah                            | A novel framework for simulating market equilibrium in international hydrogen trade                                                                       |
| 13:45-14:00                                                                                                                                                      | 2                | Chengkai Zhang,Xianzhi Song,Yinao Su,Gensheng Li,                                  | Real-time prediction of oil and gas drilling rate based on physics-based model and particle filter method                                                 |
| 14:00-14:15                                                                                                                                                      | 15               | Dr. Xiaojun Luo                                                                    | Towards net-zero community through blockchain-based peer-to-peer energy trading among multiple building blocks                                            |
| 14:15-14:30                                                                                                                                                      | 49               | Anna Harman, Lukas Baur, Alexander Sauer                                           | Systematic Comparison of Imputation Models for Automatized Gap Filling on Electrical Load Data of Compressor Composites in the Industrial Sector          |
| 14:30-14:45                                                                                                                                                      | 63               | Weijia Li, Jing Gong, Jiuda Zhang, Haochen Pan                                     | Hybrid modeling digital twin for natural gas station systems of long-distance pipelines                                                                   |
| 14:45-15:00                                                                                                                                                      | 114              | Margi Shah , Yue Zhou , Jianzhong Wu , Max Mowbray                                 | A review of reinforcement learning based approaches for industrial demand response                                                                        |
| 15:00-15:15                                                                                                                                                      | 161              | Jintao He, Yu Yao, Meiyang Zhang, Yonghao Zhang, Bowen Lu, Lingfeng Shi*,Gequn Shu | CO2 Heat Pump for Simultaneous Cooling and Heating: Enhancing Efficiency through Model Predictive Control and Neural Network Identification               |
| 15:15-15:30                                                                                                                                                      | 203              | A. Stobert, H. Ranzau, I. Pfenning, M. Weigold                                     | Interpretable Machine Learning for Deep Reinforcement Learning based Control Strategy Optimization of Industrial Energy Supply Systems                    |
| 15:30-16:00                                                                                                                                                      | TEA/COFFEE BREAK |                                                                                    |                                                                                                                                                           |
| Room: E215<br>Session Name: Intelligent Energy System<br>Session Chair: Asso Prof. Xianming Ye, University of Pretoria; Prof. Peng Li, Tianjin University        |                  |                                                                                    |                                                                                                                                                           |
| Time                                                                                                                                                             | Paper ID         | Author                                                                             | Paper Title                                                                                                                                               |
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| 16:15-16:30                                                                                                                                                      | 402              | Yizhe Li, Dan Wang, Hongjie Jia, Tianshuo Zhou, Jiawei Liu                         | Entropy State Modelling method for Integrated Energy System based on Flow Hub model                                                                       |
| 16:30-16:45                                                                                                                                                      | 646              | Zhang Yuhao, Lun Zhang, Xiaosong Zhang                                             | Dynamic Optimization of Energy Station Layout in District Energy Systems Considering Temporal Load Characteristic                                         |
| 16:45-17:00                                                                                                                                                      | 678              | Yingya Zhou, Linwei Ma, Weidou Ni                                                  | A Community-driven Data Integration Trinity of Framework, Connector Platform, and Operation Strategy to Connect Data Islands in Integrated Energy Systems |
| 17:00-17:15                                                                                                                                                      | 64               | Helder Pereira, Luis Gomes, Zita Vale                                              | Optimizing participation in the local energy market using a deep reinforcement learning approach                                                          |
| 17:15-17.:30                                                                                                                                                     |                  |                                                                                    |                                                                                                                                                           |
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| 10:30-10:45                                                                                                                                                      | 111              | Zhongrui Gai, Yang Li, Yuanhui Shen, Yunlian Liu, Ying Pan                         | Chemical Looping Steam Methane Reforming Using NiFe2O4 as Oxygen Carrier for Hydrogen Production                                                          |
| 10:45-11:00                                                                                                                                                      | 128              | Chuandong Li, Zheng Hongxiang, ruhang zhang, Xinhai Yu, Bo Li, Shan-Tung Tu        | 3D Printing Combined with Dealloying to Prepare Cu/ZnO Structural Catalysts for On-board Methanol Steam Reforming                                         |
| 11:00-11:15                                                                                                                                                      | 159              | Pengfei Wang, Jiawei Chen                                                          | Optimal Sizing Strategy for the Stand-Alone Hydrogen Production System Composed of Wind-PV-Energy Storage System                                          |
| 11:15-11:30                                                                                                                                                      | 178              | Tianlong Yang, Jinrui Zhang, Qiong Rao,                                            | Lanthanide-Based Perovskite Enhance Syngas Production for a Low-Carbon Future through Chemical Looping Dry Reforming of Methane                           |



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|                                                                                                                                                                                    |                  | zhongrui gai, Ying Pan,<br>Yang Li, Hongguang Jin                                                                     |                                                                                                                                                                        |
| 11:30-11:45                                                                                                                                                                        | 257              | Chun Wang, Songtao Ye, Dou An, Huan Xi*                                                                               | Comprehensive battery monitoring and warning system based on hierarchical temporal convolutional network (HTCN)                                                        |
| 11:45-12:00                                                                                                                                                                        | 325              | Wei Li, Zhiguo Qu, Guobin Zhang, Jianlin Fu, Jianfei Zhang*                                                           | Comprehensive Analysis of Bubble Behavior within the PEMWEs Based on the VOF Method                                                                                    |
| 12:00-12:15                                                                                                                                                                        | 342              | Bo Liu, Hao Zhang, Zhengjun Chen, Qiang Yang                                                                          | The gas hold-up feature in a 1.2 m tall alkaline electrolytic cell: a critical limit for the increase of current density                                               |
| 12:15-12:30                                                                                                                                                                        | 428              | Stefano Mingolla<br>Kevin Rouwenhorst<br>Paolo Gabrielli<br>Giovanni Sansavini<br>Magdalena M. Klemun<br>Zhongming Lu | Towards Sustainable Fertilizer Production: Cost Comparison of Flexible and Continuous Electrolytic Ammonia Production                                                  |
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| 14:15-14:30                                                                                                                                                                        | 235              | Gbemi Oluleye, Oliver Morgan, Lucy Elwy                                                                               | Assessing the UK’s attempt to Establish a Zero-carbon Hydrogen Economy in the Industrial Sector                                                                        |
| 14:30-14:45                                                                                                                                                                        | 259              | Dan Zhao, Baisheng Nie                                                                                                | Study on the Distribution of Coal Mine Resources and Gas Carbon Emission in China                                                                                      |
| 14:45-15:00                                                                                                                                                                        | 261              | Cahyani Windarto, Ocktaeck Lim,                                                                                       | Optimization of operating parameters of spark discharge duration effect on low carbon combustion of propane with high pressure direct injection using an ANN-GA        |
| 15:00-15:15                                                                                                                                                                        | 313              | Pengfei Zhu, Zhen Wu, Jing Yao, Fusheng Yang, Zaoxiao Zhang                                                           | The comprehensive review on modeling of solid oxide fuel cells: from large system to fine electrode                                                                    |
| 15:15-15:30                                                                                                                                                                        | 354              | Xiayi Shi, Chunjun Huang, Yi Zong                                                                                     | Techno-Economic Analysis of Alkaline Electrolyzers’ Scaling-up Strategies                                                                                              |
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| Time                                                                                                                                                                               | Paper ID         | Author                                                                                                                | Paper Title                                                                                                                                                            |
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| 16:15-16:30                                                                                                                                                                        | 540              | Yue Zhou, Jun Li, Jian Huang, Liang Zhang, Qian Fu, Xun Zhu, Qiang Liao                                               | Influence of working conditions on temperature variation and performance evaluation of PEM water electrolysis                                                          |
| 16:30-16:45                                                                                                                                                                        | 542              | Qiteng Huang, Bosheng Su, Yilin Wang, Yupeng Huang, Zhi Huang, Shuo yuan                                              | A novel negative carbon emission hydrogen production method for biogas reforming based on moderate reinjection of flue gas                                             |
| 16:45-17:00                                                                                                                                                                        | 549              | Tianchao Kuang, Jun Li, Jian Huang, Liang Zhang, Qian Fu, Qiang Liao, Xun Zhu                                         | Effect of dispersion method on the performance of the anodic catalyst layer for proton exchange membrane water electrolyzer                                            |
| 17:00-17:15                                                                                                                                                                        | 616              | Jakub Kupecki, Maciej Bakala, Stanislaw Jagielski, Anna Niemczyk, Giovanni Cinti                                      | Investigation of pressurized steam electrolysis and co-electrolysis of H2O/CO2 in solid oxide electrochemical cells for highly efficient production of synthetic fuels |
| 17:15-17.:30                                                                                                                                                                       | 669              | Shibo Cui, Yueyang Wang, Zhenyu Tian, Wenjia Li                                                                       | Hydrogen production in an anion exchange membrane photoelectrochemical (AEM-PEC) cell with a hematite photoanode                                                       |

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# Day 2: Dec. 4

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00 - 9:10                                                                                                                                                             | Opening of ICAE2023                                                                                                                   |                                                                                               |                                                                                                                                                     |
| 9:10 - 9:50                                                                                                                                                             | Keynote 1 Nexus for Net Zero: Fueling and Refining Energy Decarbonization with Generative AI, Quantum (Prof. Fengqi You)              |                                                                                               |                                                                                                                                                     |
| 9:50- 10:30                                                                                                                                                             | Keynote 2 Carbon Capture, Utilisation and Storage (CCUS) study through Systems Engineering techniques (Prof. Meihong Wang)            |                                                                                               |                                                                                                                                                     |
| 10:30 - 11:00                                                                                                                                                           | Coffee Break                                                                                                                          |                                                                                               |                                                                                                                                                     |
| 11:00 - 11:40                                                                                                                                                           | Keynote 3 Accelerating Power Grid Decarbonization through Distributed Energy Resources: Insights from the United (Prof. Haofeng Chen) |                                                                                               |                                                                                                                                                     |
| 11:40 - 12:20                                                                                                                                                           | Keynote 4 Comprehensive Interdisciplinary Assessment and Economics of Negative Emission Technologies (Prof. Reinhard Madlener)        |                                                                                               |                                                                                                                                                     |
| 12:30 - 13:30                                                                                                                                                           | Lunch                                                                                                                                 |                                                                                               |                                                                                                                                                     |
| Room C243<br>Session Name: Hydrogen energy<br>Session Chair: Ahmad Khalaf Sleiti, Qatar University                                                                      |                                                                                                                                       |                                                                                               |                                                                                                                                                     |
| Time                                                                                                                                                                    | Paper ID                                                                                                                              | Author                                                                                        | Paper Title                                                                                                                                         |
| 13:30-13:45                                                                                                                                                             | 476                                                                                                                                   | Yongze Li, Jianwei Li                                                                         | A Multi-source Data Fusion Method for Visualizing Image Reconstruction of Hydrogen Leakage Concentration Distribution                               |
| 13:45-14:00                                                                                                                                                             | 266                                                                                                                                   | Jiale Duan, Changqing Dong, Junjiao Zhang, Xiaoying Hu, Junjie Xue, Ying Zhao, Xiaoqiang Wang | Prediction the Moisture Content of Corn Straw, Wheat Straw and Rice Straw Based on Near Infrared Spectroscopy                                       |
| 14:00-14:15                                                                                                                                                             | 339                                                                                                                                   | Ahmad K. Sleiti and Wahib A. Al-Ammari                                                        | Design and analysis of a novel liquid hydrogen production system using dual mixed refrigerant-based cryogenic precooling and liquefaction processes |
| 14:15-14:30                                                                                                                                                             | 360                                                                                                                                   | Luming Yang, Jianwei Li, Qingqing Yang, Tianci Wang, Weitao Zou                               | Quantitative Risk Assessment of Fuel Cell Vehicles Based on Component Leakage Risk Analysis                                                         |
| 14:30-14:45                                                                                                                                                             | 17                                                                                                                                    | Nithin B. Kummamuru, Sammy W. Verbruggen, Patrice Perreault                                   | Experimental investigation of H2 storage in clathrate hydrates through a metallic packed bed reactor                                                |
| 14:45-15:00                                                                                                                                                             | 174                                                                                                                                   | Marco Maggini, Andrea Luigi Facci, Giacomo Falcucci, Stefano Ubertini                         | Simulation-Driven Optimization of Metal Hydride-Packed Hydrogen Storage Systems for Enhanced Performance                                            |
| 15:00-15:15                                                                                                                                                             | 558                                                                                                                                   | Arton Merovci Yunting Ge                                                                      | Low Carbon and High-pressure Hydrogen Production with Highly Efficient Metal Hydride Reactors                                                       |
| 15:15-15:30                                                                                                                                                             | 407                                                                                                                                   | Laveet Kumar and Ahmad K. Sleiti                                                              | Modeling and Analysis of Effect of Various Tank Geometries and Relief Pressure on Liquid Hydrogen (LH2) Boil-Off Losses                             |
| 15:30-15:45                                                                                                                                                             | 515                                                                                                                                   | Jian Yang, Yanzhong Li, Hongbo Tan                                                            | Roadmap to offshore power-liquid hydrogen co-production and hybrid delivery system based on superconducting technology                              |
| 15:45-16:00                                                                                                                                                             | 665                                                                                                                                   | Yang Ye                                                                                       | Performance Optimization of a PCM based Array Metal Hydride Hydrogen Storage Reactor                                                                |
| 15:30-16:00                                                                                                                                                             | TEA/COFFEE BREAK                                                                                                                      |                                                                                               |                                                                                                                                                     |
| Room C243<br>Session Name: Renewable Energy<br>Session Chair: Asso Prof. Farzin Golzar, KTH Royal Institute of Technology; Dr. Mohammed Guezgouz, Mälardalen University |                                                                                                                                       |                                                                                               |                                                                                                                                                     |
| Time                                                                                                                                                                    | Paper ID                                                                                                                              | Author                                                                                        | Paper Title                                                                                                                                         |
| 16:00-16:15                                                                                                                                                             | 42                                                                                                                                    | T. Kobashi, J. Xiao                                                                           | 1km mesh analyses of cities for decarbonization potentials of rooftop PV integrated with EVs as battery                                             |
| 16:15-16:30                                                                                                                                                             | 434                                                                                                                                   | Ying Chen, Kexin Mao, Weiling Luan, Haofeng Chen, Shan-tung Tu                                | Numerical simulation of intragranular and intergranular crack in NCM polycrystalline particles under different operating conditions.                |
| 16:30-16:45                                                                                                                                                             | 54                                                                                                                                    | Li Zhu, Yifan Jing ,Baoquan Yin, Liu Bing                                                     | Building Surface PV Design Based on UAV Photogrammetry, Balancing Energy Production and Aesthetics - Method and Case Study                          |
| 16:45-17:00                                                                                                                                                             | 225                                                                                                                                   | Afroza Nahar Rifat Al Mamun Rudro Md. Faruk Abdullah Al Sohan Rubina Islam Reya               | PREDICTING PHOTOVOLTAIC POWER GENERATION BY MACHINE LEARNING USING TIME SERIES ANALYSIS                                                             |
| 17:00-17:15                                                                                                                                                             | 390                                                                                                                                   | Tianqi Ruan, Wujun Wang, Bjorn Laumert                                                        | Techno-economic analysis of urban bifacial PV in high-latitude area                                                                                 |
| 17:15-17:30                                                                                                                                                             | 437                                                                                                                                   | Matteo Catania, Abdullah Ramoshmoosh                                                          | Improving the performance of a pumped hydro storage plant through integration with floating photovoltaic                                            |

# Day 2: Dec. 4

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|--------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                    |                  | Vincenzo Dipierro,<br>Marco Ficili, Andrea<br>Fusco, Domenico<br>Gioffr , Federico<br>Parolin, Lorenzo Pilotti,<br>Ferdinando Vincenti,<br>Andrea Zelaschi |                                                                                                                                                              |
| Room C244                                                                                                          |                  |                                                                                                                                                            |                                                                                                                                                              |
| Session Name: Clean Energy Conversion Technology                                                                   |                  |                                                                                                                                                            |                                                                                                                                                              |
| Session Chair: Dr. Rodolfo Freitas, Queen Mary University; Dr. Jun Zhao, Beijing University of Chemical Technology |                  |                                                                                                                                                            |                                                                                                                                                              |
| Time                                                                                                               | Paper ID         | Author                                                                                                                                                     | Paper Title                                                                                                                                                  |
| 13:30-13:45                                                                                                        | 181              | Man Zhen, Xuezhi Dong,<br>Chunqing Tan, Aidao<br>Dong                                                                                                      | Thermal cycle performance optimization and advantage analysis of an adaptive cycle engine<br>in various bypass modes                                         |
| 13:45-14:00                                                                                                        | 253              | Bruno Laurini, Yi Zong,<br>Chresten Tr holt,<br>Sebastian Andres<br>Quevedo Parra,<br>Meenakshisundaram<br>Shanmugasundaram                                | Techno-economic analysis on the integration of an electrified clay calcination process into a<br>cement plant                                                |
| 14:00-14:15                                                                                                        | 280              | Jing Luo, Zhe Kang,<br>Qiuyu Liu, Haonan Sun,<br>Junxiang Chen, Zhenlv<br>Mo, Kefu Yao,<br>Yongliang Pan                                                   | Optimization of Fuel Economy Using Cooled LP-EGR within a Hybrid Dedicated Gasoline<br>Engine                                                                |
| 14:15-14:30                                                                                                        | 329              | Ardhika Setiawan,<br>Wonjun Cho, Ocktaeck<br>Lim                                                                                                           | A study of combustion characteristics prediction of dual direct injection fuel (diesel-propane)<br>on RCEM based on an artificial neural network approach    |
| 14:30-14:45                                                                                                        | 509              | Nguyen Ho Xuan Duy,<br>Tran Quang Khai, I<br>Komang Gede Tryas<br>Agameru Putra,<br>Ocktaeck Lim                                                           | A study on vaporization characteristics of gasoline-biodiesel blended under GCI engine<br>conditions                                                         |
| 14:45-15:00                                                                                                        | 517              | Wei Yidi, Zuo<br>Zhengxing, Jiayu Wang,<br>Boru Jia, Feng Huihua,<br>Zhiyuan Zhang                                                                         | A Whole Process Control Strategy of Free-piston Linear generator                                                                                             |
| 15:00-15:15                                                                                                        | 596              | Tze Yeung Cho, Simone<br>Hochgreb                                                                                                                          | Numerical modelling of a looped travelling wave thermoacoustic engine                                                                                        |
| 15:15-15:30                                                                                                        | 521              | Ali, Ocktaeck Lim                                                                                                                                          | A numerical approach on the combustion characteristics and performance of compression<br>ignition engine with EGR fueled with various diesel-butane mixtures |
| 15:30-16:00                                                                                                        | TEA/COFFEE BREAK |                                                                                                                                                            |                                                                                                                                                              |
| Room C244                                                                                                          |                  |                                                                                                                                                            |                                                                                                                                                              |
| Session Name: Clean Energy Conversion Technology                                                                   |                  |                                                                                                                                                            |                                                                                                                                                              |
| Session Chair: Dr. Xianhua Nie, Tianjin University; Dr. Bashar Shboul, Al Al-Baty University                       |                  |                                                                                                                                                            |                                                                                                                                                              |
| 16:00-16:15                                                                                                        | 494              | Sandeep Yadav,<br>Srinivas Seethamraju,<br>Rangan Banerjee                                                                                                 | Thermodynamic Analysis of a Dual-Stage ORC System Utilizing LNG Cold Energy for District<br>Cooling Application                                              |
| 16:15-16:30                                                                                                        | 129              | Guofeng Ma, Ming Liu,<br>Junjie Yan                                                                                                                        | Study on energy consumption characteristics of combined heat and power unit considering<br>overlaps of governing valves                                      |
| 16:30-16:45                                                                                                        | 200              | Shuai Yao, Meysam<br>Qadrdan, Jianzhong<br>Wu, Tong Zhang,<br>Micheal Taylor                                                                               | Generic load analysi of the 5th generation district heating networks based on matrixed model<br>representation                                               |
| 16:45-17:00                                                                                                        | 72               | Kun Hou, Ningze Han,<br>Xiangyang Liu,<br>Maogang He                                                                                                       | Design and Performance Evaluation of a Gas-liquid Interconversion CO2 Energy Storage<br>System Coupled with a Coal-fired Power Plant                         |
| 17:00-17:15                                                                                                        | 137              | Ruihua Chen, Weicong<br>Xu, Shuai Deng, Ruikai<br>Zhao, Li Zhao                                                                                            | The energy storage/release density and net energy density of the electrochemical Brayton<br>cycle: thermodynamic considerations                              |
| 17:15-17:30                                                                                                        | 239              | Yiwei Hu<br>Zhanghua Wu<br>Jingyuan Xu<br>Ercang Luo                                                                                                       | Experimental investigation on a multimode single-unit thermoacoustic system for cooling and<br>heating                                                       |
| Room C245                                                                                                          |                  |                                                                                                                                                            |                                                                                                                                                              |
| Session Name: Mitigation Technologies                                                                              |                  |                                                                                                                                                            |                                                                                                                                                              |
| Session Chair: Prof. Zaoxiao Zhang, Xi'an Jiaotong University                                                      |                  |                                                                                                                                                            |                                                                                                                                                              |
| Time                                                                                                               | Paper ID         | Author                                                                                                                                                     | Paper Title                                                                                                                                                  |
| 13:30-13:45                                                                                                        | 205              | Xinyuan Gao, Shenglai Yang,<br>Jiatong Wang, Lerao Tian,<br>Haiwei Zuo, Xing Zhang, Bin<br>Shen                                                            | Study on Engineering Parameters and Risks of CO2 Geological Storage Based on<br>WR-THM Coupling Model                                                        |



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| 13:45-14:00                                                                                                                                                                               | 326              | Xiunan Sun, Tuo Guo, GuoZhang Chang, JingJing Ma, XiuDe Hu, YuRong He, QingJie Guo                           | Highly selective conversion of CO2 to C2 – C4 olefins over the bifunctional K/BayFeO3-x                                                                                |
| 14:00-14:15                                                                                                                                                                               | 366              | Yali Liu, Chao Zhang, Zhaomin Li                                                                             | Feasibility study of CO2 sequestration by high quality foam in high water-cut reservoirs late development stage                                                        |
| 14:15-14:30                                                                                                                                                                               | 369              | XUAN Bie, Shiyu Zhang, Leyan Gao, yongqing Xu, Yuyao Yang, Xiaoxiao Yang, Qinghai Li, Yanguo Zhang, Hui Zhou | Revealing effect of NH3 on Cu/ZnO/Al2O3 catalyst for reverse water gas shift reaction                                                                                  |
| 14:30-14:45                                                                                                                                                                               | 184              | Huifeng Fan, Yuanhao Mao, Sayd Sultan, Xiaomei Wu, Yunsong Yu, Zaoxiao Zhang                                 | Optimization of the electrochemically mediated amine regeneration (EMAR) for CO2 capture through computational modeling                                                |
| 14:45-15:00                                                                                                                                                                               | 510              | Qi Zhang, Shuai Deng, Ruikai Zhao, Bingyang Zhang                                                            | Multi-optimization of carbon capture by temperature swing adsorption based on artificial neural network surrogate model                                                |
| 15:00-15:15                                                                                                                                                                               | 520              | Chuangde Zhang, Li Chen, Zi Wang, Wen-Quan Tao                                                               | Computational Microfluidic Study of Multiphase Reactive Transport with Mineral Dissolution and Bubble Generation based on Lattice Boltzmann Method                     |
| 15:15-15:30                                                                                                                                                                               | 577              | Ahmed M. Alatyar; Abdallah S Berrouk; Mohamed S. AlShehhi                                                    | Numerical Modelling and Simulation of Turbulent Micro-mixing and Chemical Absorption in Rotating Packed Bed                                                            |
| 15:30-16:00                                                                                                                                                                               | TEA/COFFEE BREAK |                                                                                                              |                                                                                                                                                                        |
| Room C245<br>Session Name: Intelligent Energy System<br>Session Chair: Prof. Sasan Sadrizadeh, Mälardalen University; Dr. Xiaojun Luo, University of the West of England                  |                  |                                                                                                              |                                                                                                                                                                        |
| 16:00-16:15                                                                                                                                                                               | 351              | Shan Liu, Yamin Yan, Jie Yan, Haoran Zhang, Shuang Han, Yongqian Liu                                         | Electricity consumption simulation of residential buildings driven by population trajectory big data                                                                   |
| 16:15-16:30                                                                                                                                                                               | 359              | Jiarui Zhang, Yunfei Mu, Wei Yang                                                                            | Energy Performance of a Residential Zero Energy Building Energy System – R-CELLS in Solar Decathlon China2022                                                          |
| 16:30-16:45                                                                                                                                                                               | 469              | Yin Baoquan<br>Luo Tianyu<br>Zhang Chunyan                                                                   | Research on energy consumption analysis and zero-carbonization transformation of existing universities ---- Take the Balitai Campus of Nankai University as an example |
| 16:45-17:00                                                                                                                                                                               | 522              | Jun Liu, Nannan Sun, Guixiang Zhu, Xu Lyu, Xingyu Liang, Kun Wang                                            | Simulation study of combustion and emission in a low-speed two stroke diesel engine with diesel/methanol dual fuel                                                     |
| 17:00-17:15                                                                                                                                                                               | 465              | Hengxin Zhao , Shuangdui Wu ,Yifan Wu, Hongli Sun , Borong Lin                                               | Application potential analysis of a new dynamic building envelope in public buildings                                                                                  |
| 17:15-17:30                                                                                                                                                                               | 172              | Mr. WANG Zixuan<br>Dr. ASSOUMOU Edi<br>Mr. MONNET Antoine                                                    | The role of hybrid heat pumps in design of resilient residential heating system for France                                                                             |
| Room C246<br>Session Name: Energy Sciences<br>Session Chair: Dr. Susumu Yada, KTH Royal Institute of Technology; Dr. Alaa Krayem, Mälardalens University                                  |                  |                                                                                                              |                                                                                                                                                                        |
| Time                                                                                                                                                                                      | Paper ID         | Author                                                                                                       | Paper Title                                                                                                                                                            |
| 13:30-13:45                                                                                                                                                                               | 381              | Zhihan Deng                                                                                                  | Study on energy regulation of solar assisted heat pump energy storage drying system under high cold and large temperature difference                                   |
| 13:45-14:00                                                                                                                                                                               | 182              | Bin Wang, Shijun Huang, Fenglan Zhao, Yue Cheng, Xinhua Fan                                                  | A comparative study of machine learning algorithms for Predicting steam-assisted gravity drainage (SAGD) production Performance Using Field Data                       |
| 14:00-14:15                                                                                                                                                                               | 46               | Huaxia YAN, Xiaona MA, Yi CHEN, Qihua TAO                                                                    | Performance analysis of wet pad assisted air-cooled battery thermal management system                                                                                  |
| 14:15-14:30                                                                                                                                                                               | 9                | Ibrahim Halil Ozdemir<br>Sally Shahzad (Wyville)                                                             | Energy dependent behaviour and thermal comfort: home and office based workspaces                                                                                       |
| 14:30-14:45                                                                                                                                                                               | 92               | Amin Moosavi, Anna-Lena Ljung, Staffan Lundström                                                             | Investigating the potential and limitations of cell spacing modification for optimized air-based battery thermal management systems                                    |
| 14:45-15:00                                                                                                                                                                               | 145              | Tao Ding; Gang Meng; Yi Sheng Liu; Jing Wei Zhang; Ling Yun Hou                                              | Research on modeling analysis of the thermal temperature probe used in the area of high temperature measurement                                                        |
| 15:00-15:15                                                                                                                                                                               | 187              | Liang Chen, Xinyi Wang, Zhen Li                                                                              | Research on new hydroelectric power generation Technologies                                                                                                            |
| 15:15-15:30                                                                                                                                                                               | 237              | Weiling Luan, Ying Chen, Haofeng Chen                                                                        | Current Progress on Key Safety Issues of Lithium-ion Power Battery                                                                                                     |
| 15:30-16:00                                                                                                                                                                               | TEA/COFFEE BREAK |                                                                                                              |                                                                                                                                                                        |
| Room C246<br>Session Name: Intelligent Energy System<br>Session Chair: Dr. Weiling Luan, East China University of Science and Technology; Asso Prof. Xianming Ye, University of Pretoria. |                  |                                                                                                              |                                                                                                                                                                        |
| Time                                                                                                                                                                                      | Paper ID         | Author                                                                                                       | Paper Title                                                                                                                                                            |

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| 16:00-16:15 | 341 | Meng Wang                                                                                 | Research on Safety Evaluation of Expansion/Aging Lithium Ion Batteries                                                               |
| 16:15-16:30 | 367 | Zixian Zhuang                                                                             | Optimization of AC Self-Heating for Efficient Heating and Minimal Capacity Loss in Lithium-Ion Batteries                             |
| 16:30-16:45 | 395 | jixiang cai, Xuezhe Wei, jiangong zhu, Bo Jiang, xueyuan wang, jinding liang, Haifeng Dai | 3D Reconstruction And Quantitative Characterization Of A NCM523 Cathode For Microstructure-Based Modeling                            |
| 16:45-17:00 | 422 | Gaoqi Lian, Min Ye*, Qiao Wang, Yan Li, Baozhou Xia, Jiale Zhang, Xinxin Xu               | An Enhanced Battery Model Considering Energy Recovery and Temperature for Robust State-of-Charge Estimation of Lithium-Ion Batteries |
| 17:00-17:15 | 622 | Kosaku Nakano, Kenji Tanaka                                                               | Transformer-based online battery state-of-health estimation from electric vehicle driving data                                       |
| 17:15-17:30 | 51  | Koharu Okada, Yusei Sugiyama and Takuro Kobashi                                           | "PV + EV" potentials of 1896 municipalities of Japan                                                                                 |

| Room B219                                                                                                |                  |                                                                                  |                                                                                                                                      |
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| Session Name: Energy Storage System                                                                      |                  |                                                                                  |                                                                                                                                      |
| Session Chair: Prof. Ottorino Veneri, National Research Council of Italy; Dr. Qing Yu, Peking University |                  |                                                                                  |                                                                                                                                      |
| Time                                                                                                     | Paper ID         | Author                                                                           | Paper Title                                                                                                                          |
| 13:30-13:45                                                                                              | 516              | Xianbo Zhou, Kai Jiang, Kangli Wang                                              | Enhancing the Discharge Performance of Liquid Metal Batteries through External Magnetic Fields                                       |
| 13:45-14:00                                                                                              | 551              | Vikalp Jha<br>Muditha Abeysekera<br>Nicholas Jenkins<br>Jianzhong Wu             | Battery digital twin: State of Charge and State of health estimation of LTO battery storage                                          |
| 14:00-14:15                                                                                              | 575              | Muhammad Shuzub Gull<br>Huzaifa Rauf<br>Naveed Arshad<br>Muhammad Khalid         | Developing a Multipurpose Battery Swapping Station to Energize Mobile and Stationary Loads                                           |
| 14:15-14:30                                                                                              | 584              | Han Cui, Patrick Luk, Lu Zhang, Chao Long                                        | Techno-economic Analysis of Second Life Electric Vehicle Batteries for Stationary Energy Storage Applications                        |
| 14:30-14:45                                                                                              | 626              | Sheng Wang, E Zhang, Haomiao Li, Kai Jiang, Kangli Wang                          | Robust online parameter identification for batteries using exponential resetting recursive least squares                             |
| 14:45-15:00                                                                                              | 656              | Lyuming Pan, Jing Sun, Lei Wei, Tianshou Zhao                                    | Understanding Mass Transfer Dead Zones within Redox Flow Batteries: Mechanism, Characteristics, and Strategies                       |
| 15:00-15:15                                                                                              | 680              | Chuanchuan Liu                                                                   | Heat-electricity-metal-oxygen polygeneration system based on the in-situ utilization of lunar soil                                   |
| 15:15-15:30                                                                                              | 121              | Nils Collath, Martin Cornejo, Veronika Engwerth, Holger Hesse and Andreas Jossen | Aging aware operation of battery energy storage systems: Prolonged lifetime, enhanced profitability and improved resource efficiency |
| 15:30-16:00                                                                                              | TEA/COFFEE BREAK |                                                                                  |                                                                                                                                      |

| Room B219                                                                                                 |     |                                                                                   |                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Session Name: Energy Storage System                                                                       |     |                                                                                   |                                                                                                                                                                        |
| Session Chair: Dr. Junfei Guo, Xi'an Jiaotong University; Dr. Mpyana Danny Bajany, University of Pretoria |     |                                                                                   |                                                                                                                                                                        |
| 16:00-16:15                                                                                               | 125 | Zeyang Kang, Maogang He                                                           | Hybrid silver nanowire and black phosphorus–CNF aerogels: multifunctional thermal insulating aerogels for building thermal management                                  |
| 16:15-16:30                                                                                               | 148 | Ruiqiang Sun                                                                      | Thermodynamic analysis of a sCO <sub>2</sub> coal-fired power system integrated with pumped thermal electricity storage                                                |
| 16:30-16:45                                                                                               | 155 | X.K. Yu, Y.B. Tao                                                                 | Experimental study of integrated photovoltaic thermal management system with coupled phase change and water cooling                                                    |
| 16:45-17:00                                                                                               | 279 | Zi-Rui Li, Nan Hu, Liwu Fan                                                       | Optimization of the performance of a shell-and-tube latent heat storage device by enhancing the close-contact melting mechanism                                        |
| 17:00-17:15                                                                                               | 349 | Jiaming Zhang; Haiwen Li; Yue Han; Yanliang Du; Tao Xu; Ting Zou; Dongqiao Zhang. | Development of CaCl <sub>2</sub> · 6H <sub>2</sub> O-mannitol/SiO <sub>2</sub> shape-stabilized composite phase change material for the radiant chilled ceiling system |
| 17:15-17:30                                                                                               | 427 | Rima Aridi, Alissar Yehya                                                         | Enhancing the integration of encapsulated phase change materials in building envelopes for eco-environmental benefits                                                  |

| Room B220                                                                                                 |          |                                                   |                                                                        |
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| Session Name: Energy Management, Policy, Economics and Sustainability                                     |          |                                                   |                                                                        |
| Session Chair: Prof. Qie Sun, Shandong University; Prof. Paola D' Orazio, Technische Universität Chemnitz |          |                                                   |                                                                        |
| Time                                                                                                      | Paper ID | Author                                            | Paper Title                                                            |
| 13:30-13:45                                                                                               | 87       | Lijie Huang, Minhyun Lee , Ruixiaoxiao Zhang, and | Economic feasibility analysis of community solar projects in Hong Kong |



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|             |     | Geoffrey Qiping Shen                                                                                                                 |                                                                                                                                                            |
| 13:45-14:00 | 409 | AZLIN MOHD AZMI                                                                                                                      | Sustainable Energy City: Learning from Japan's Model                                                                                                       |
| 14:00-14:15 | 230 | Huaitao Zhu, Gongnan Xie, Abdallah S. Berrouk                                                                                        | Enhancing Performance of Multi-pressure Evaporation ORC/SCO2 Brayton Cycle through Genetic Algorithm and Machine Learning Optimization                     |
| 14:15-14:30 | 252 | Kun Yang, Shenglai Yang, Xinyue Liu, Jiyu Chen, Jiayi Yu                                                                             | Study on microscopic development characteristics and influencing factors of nanopores during CO2 huff and n-puff in Lucaogou Formation shale oil reservoir |
| 14:30-14:45 | 417 | Paola D' Orazio, Garima Vasishtha                                                                                                    | Critical Minerals and the Low-Carbon Transition: Economic Implications for Emerging Markets and Developing Economies                                       |
| 14:45-15:00 | 464 | Kun Xiao, Ximu Liu, Yujian Ye                                                                                                        | Market Bidding Strategy for Energy-Operating Reserve Market of Wind-Storage Power Station Considering Multiple Uncertainties                               |
| 15:00-15:15 | 585 | José Almeida, Fernando Lezama, João Soares, Bruno Canizes, Fábio Castro, Gabriel Puerta, Leonardo H. Macedo, Zita Vale, Ruben Romero | Hybrid-Adaptive Differential Evolution with Iterated Local Search for Long-Term Transmission Network Expansion Planning Optimization                       |
| 15:15-15:30 | 602 | Silvia Laera, Gianvito Colucci, Valeria Di Cosmo, Daniele Lerede, Matteo Nicoli, Laura Savoldi                                       | Technology-specific hurdle rates for Energy System Optimization Models                                                                                     |

15:30-16:00

TEA/COFFEE BREAK

Room B220

**Session Name: Energy Management, Policy, Economics and Sustainability**  
**Session Chair: Dr. John W. Ballantine, Brandeis International Business School**

|             |     |                                                                                                                                         |                                                                                                                                                      |
|-------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16:00-16:15 | 85  | jing liu, Jun Zhao                                                                                                                      | Comparative environmental and economic performance of typical methanol production routes in China                                                    |
| 16:15-16:30 | 98  | Xinqi Yao, Xinhai Yu, Shan-Tung Tu                                                                                                      | Powering hydrogen refueling stations with local renewable curtailment – A Lanzhou case study                                                         |
| 16:30-16:45 | 115 | Woo Jae Shin, Yeim Lee, Yejin Yu, Han Ho Song                                                                                           | Designing Clean Hydrogen Incentive Scheme based on Life Cycle Greenhouse Gas Emissions and Cost Analysis Using MINLP                                 |
| 16:45-17:00 | 254 | I Wayan Warsita, Wonjun Cho, Ocktaeck Lim                                                                                               | An Experimental Study on the Performance Investigation of Independent High-Pressure Pump with Dimethyl Ether (DME) and Propane as Alternative Fuels. |
| 17:00-17:15 | 679 | Dou Huang, Junxiang Zhang, Zhiling Guo, Wenjie Guo, Haoran Zhang                                                                        | Understanding Human Mobility Patterns from Urban Energy Consumption Records: A Data-Driven Approach                                                  |
| 17:15-17:30 | 412 | Takahiro Yoshida, Hideo Suda, Koichi Oota, Makiyo Maekawa, Takuo Inoue, Junya Yamasaki, Ryoichi Nitani, Rikutarō Manabe, Akito Murayama | A roadmap toward carbon neutrality of the building sector in a central urban area of Tokyo                                                           |

Room E215

**Session Name: Intelligent Energy System**  
**Session Chair: Dr. Zhiling Guo, The Hong Kong Polytechnic University; Prof. Fengqi You, Cornell University**

| Time        | Paper ID | Author                                                                          | Paper Title                                                                                                                                                          |
|-------------|----------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13:30-13:45 | 256      | Jiaxin Chi, Zhanghua Wu, Lei Xiao, Jingyuan Xu, Liming Zhang, Ercang Luo        | Multi-unit heat-driven thermoacoustic refrigerator with cascade configuration of cooler core                                                                         |
| 13:45-14:00 | 264      | BC. Wang, G. Mhenni, GG. Cheng, JN. Ding T. Bui                                 | Thermodynamic analysis of a compact counterflow indirect dew-point evaporative cooler                                                                                |
| 14:00-14:15 | 268      | Hafiz Aman Zaharil (Corresponding Author) & Hong-Xing Yang                      | Performance evaluation of Direct Parabolic Trough Supercritical Brayton Cycle with Direct Contact Membrane Distillation (DCMD) for co-generation of power and water. |
| 14:15-14:30 | 269      | Han-Gyeong Chu Seongkwon Cho Cheol-Soo Park                                     | Development of FDD model for a real-life case using transfer learning with synthetic data                                                                            |
| 14:30-14:45 | 284      | Timothée Hornek, Sergio Potenciano Menci, Joaquín Delgado Fernandez, Ivan Pavić | Comparative Analysis of Baseline Models for Rolling Price Forecasts in the German Continuous Intraday Electricity Market                                             |
| 14:45-15:00 | 287      | Jiaxin Gao, Qinglong Cao, Yuntian Chen                                          | Photovoltaic power forecasting based on PV-Client                                                                                                                    |
| 15:00-15:15 | 293      | Jinyu Liu, Hongye Guo, Qinghu Tang, En Lu, Qiuna Cai, Qixin Chen                | High-dimensional Bid Learning for Energy Storage Bidding in Energy Markets                                                                                           |

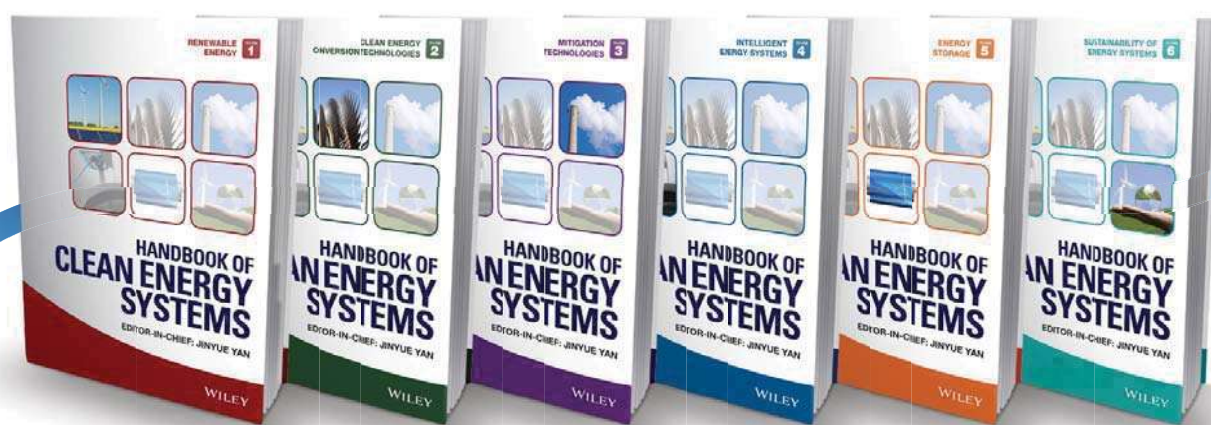
# Day 2: Dec. 4

|                                                                                                                                                                               |                  |                                                                                                                                 |                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:15-15:30                                                                                                                                                                   | 318              | Ruizhe Deng, Yuntian Chen                                                                                                       | Combining self-supervision learning and pre-trained transformer for distributed photovoltaic power forecasting                                   |
| 15:30-16:00                                                                                                                                                                   | TEA/COFFEE BREAK |                                                                                                                                 |                                                                                                                                                  |
| Room E215<br>Session Name: Intelligent Energy System<br>Session Chair: Prof. Ottorino Veneri, National Research Council of Italy; Dr. Wei Wang, Beijing Institute of Industry |                  |                                                                                                                                 |                                                                                                                                                  |
| Time                                                                                                                                                                          | Paper ID         | Author                                                                                                                          | Paper Title                                                                                                                                      |
| 16:00-16:15                                                                                                                                                                   | 84               | Shangting Jin, Yunfei Mu, Kangning Zhao, Hongjie Jia, Guoqiang Zu, Xiaonan Liu, Yan Qi                                          | Charging Pricing Strategy of Fast Charging Station Considering Electric Vehicle Charging Right Trading Mechanism                                 |
| 16:15-16:30                                                                                                                                                                   | 126              | Benedikt Tepe, Sammy Jablonski, Anupam Parlikar, Holger Hesse, Andreas Jossen                                                   | Vehicle-to-X Service Provision for various Modes of e-Transportation with Consideration of the Influence on Lithium-Ion Battery Utilization      |
| 16:30-16:45                                                                                                                                                                   | 221              | jiasen tai, fenlong chen                                                                                                        | EV charging load forecasting based on model driven and data driven                                                                               |
| 16:45-17:00                                                                                                                                                                   | 321              | Xiaohong Dong, Yanqi Ren, Xiaodan Yu*, Xing Dong,Mingshen Wang                                                                  | An electric vehicle flexibility characterization method based on the behavior data of users                                                      |
| 17:00-17:15                                                                                                                                                                   | 324              | Zirun Jia, Zhenpo Wang, Zhenyu Sun, Peng Liu, Zhaosheng Zhang                                                                   | A Data-Driven Approach for Anomaly Detection in Electric Vehicle Battery Systems                                                                 |
| 17:15-17:30                                                                                                                                                                   | 337              | Yiming Yao, Ying Chen, Weiling Luan, Hailong Li                                                                                 | In-situ Observation of Crack Initiation and Propagation in The NCM811 Cathode particle                                                           |
| Room E216<br>Session Name: Hydrogen energy<br>Session Chair: Prof. Jakub Kupecki, Institute of Power Engineering                                                              |                  |                                                                                                                                 |                                                                                                                                                  |
| Time                                                                                                                                                                          | Paper ID         | Author                                                                                                                          | Paper Title                                                                                                                                      |
| 13:30-13:45                                                                                                                                                                   | 429              | Zhi Huang, Bosheng Su, Yilin Wang, Yupeng Huang , Shuo Yuan, Jiahao Cai, Xiaoyu Yang, Zhiqiang Chen                             | Novel hydrogen production system based on biogas multi-grade chemical energy conversion                                                          |
| 13:45-14:00                                                                                                                                                                   | 432              | Huchao Song, Xinyue Zhang, Xiaolong Lin, Hao Bian, Yinhe Liu                                                                    | System design and integration for Sorption Enhanced Electrified Steam Methane Reforming                                                          |
| 14:00-14:15                                                                                                                                                                   | 438              | Chiagoziem C. Ukwuoma, Dongsheng Cai, Chibueze D. Ukwuoma, Gladys W. Muoka, Olusola Bamisile, Qi Huang, Chidera O. Ukwuoma      | Security Concerns for Using Deep Learning Models in Predicting Hydrogen Production: A Comparative Study on Adversarial Attack                    |
| 14:15-14:30                                                                                                                                                                   | 445              | Chiagoziem C. Ukwuoma, Dongsheng Cai, Chibueze D. Ukwuoma, Favour AB Ekong, Emmanuel S.A Gyarteng, Qi Huang, Chidera O. Ukwuoma | Evaluation of Explainable Deep Learning Models in Predicting Hydrogen Production                                                                 |
| 14:30-14:45                                                                                                                                                                   | 446              | Yu Shao, Bin Wang, Lingzhi Yang, Yong Hao                                                                                       | Re-acquirement of hydrogen from hydrogen-blended natural gas via synergistic conversion of hydrogen and carbon dioxide                           |
| 14:45-15:00                                                                                                                                                                   | 478              | Shuo Yuan, Bosheng Su, Zhi Huang, Yilin Wang, Yupeng Huang, Liang Li, Zhiqiang Chen, Su Wang                                    | Performance investigation of a novel solar-driven thermochemical reactor for green hydrogen production using helical flow channels               |
| 15:00-15:15                                                                                                                                                                   | 479              | Junjie Wang, Jun Li, Jian Huang, Liang Zhang, Qian Fu, Xun Zhu, Qiang Liao                                                      | Effect of the wettability of the cathode microporous layer on performance and hydrogen permeation in proton exchange membrane water electrolysis |
| 15:15-15:30                                                                                                                                                                   | 519              | Lingzhi Yang, Xiao Li, Ke Guo, Yunyun Wu, Yu Shao, Yong Hao                                                                     | Hydrogen production via low-temperature methanol autothermal reforming promoted by in-situ CO2 adsorption                                        |
| 15:30-16:00                                                                                                                                                                   | TEA/COFFEE BREAK |                                                                                                                                 |                                                                                                                                                  |
| Room E216<br>Session Name: Hydrogen energy<br>Session Chair: Prof. Qie Sun, Shandong University                                                                               |                  |                                                                                                                                 |                                                                                                                                                  |
| 16:00-16:15                                                                                                                                                                   | 281              | Mohammed Taha, Nick Lundvall, Konstantinos                                                                                      | Techno-economic evaluation of hydrogen production for airport hubs                                                                               |

# Day 2: Dec. 4

|               |                                          |                                                                     |                                                                                                                                     |
|---------------|------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|               |                                          | Kyprianidis, Awais<br>Salman, Stavros Vouras,<br>Valentina Zaccaria |                                                                                                                                     |
| 16:15-16:30   | 530                                      | Jian Yang, Yangzhong<br>Li, Hongbo Tan                              | Optimized design and performance evaluation of a novel hybrid energy submarine pipeline for offshore power-liquid hydrogen delivery |
| 16:30-16:45   | 576                                      | Hongwei Yue, Hongwen<br>He*, Xuyang Zhao, Mo<br>Han                 | An adaptive internal state observer based on the cubature Kalman filter algorithm for a vehicular PEMFC system                      |
| 16:45-17:00   | 677                                      | Roland Span                                                         | Thermodynamic Properties of Hydrogen and Related Mixtures – Why Improvements are Relevant for a Global Hydrogen Economy             |
| 17:00-17:15   | 552                                      | Luqiao Yao, Jianwei Li,<br>Tianci Wang, Luming<br>Yang              | Measurement of hydrogen leakage pressure based on laser beam profile deformation technology and BP neural network                   |
| 17:15-17:30   | 106                                      | Lei Wang, Bolong Mao,<br>Yanping Ren                                | Low-carbon economic scheduling optimization of distribution network with hydrogen storage system                                    |
| 16:00 - 19:00 | Technical Visit to one world cup stadium |                                                                     |                                                                                                                                     |
| 19:00 - 21:00 | Gala Dinner                              |                                                                     |                                                                                                                                     |

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of our future  
energy systems?



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# Day 3: Dec. 5

| Room C243<br>Session Name:Renewable Energy<br>Session Chair:Prof. Roland Span RUHR-UNIVERSITÄT BOCHUM      |                  |                                                                                                                           |                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Time                                                                                                       | Paper ID         | Author                                                                                                                    | Paper Title                                                                                                                                                              |
| 8:30-8:45                                                                                                  | 195              | Si Li, liang zhang                                                                                                        | Performance of an all-aqueous thermally regenerative flow battery using CNT/carbon cloth composite electrode                                                             |
| 8:45-9:00                                                                                                  | 652              | Yu-Hao Xiang, Jun-Jun Wu, Yi-Wen Lv, Hong Wang, Xun Zhu, Qiang Liao                                                       | Modeling the Phase-Change Cooling of Molten Slag Granule: An Appraisal                                                                                                   |
| 9:00-9:15                                                                                                  | 333              | David Aliaga<br>Christian Romero<br>Rodolfo Feick<br>Alasdair Campbell                                                    | Enhancing Energy Efficiency in Chilean Cryogenic Gas Plants with Liquid Piston Systems: A Dynamic Modelling and Simulation Study                                         |
| 9:15-9:30                                                                                                  | 408              | Primary Author Name: Mohamed Hassan Ali<br>Co-other Name: Heba I. Khafajah                                                | Impacts of System Configurations on Exergy Destruction and Efficiency: An In-depth Analysis of Thermal Oil and Organic Rankine Cycle Interactions                        |
| 9:30-9:45                                                                                                  | 582              | Dalibor Marinković,<br>Daliborka Nikolić,<br>Carsten Seidel, Andreas Seidel-Morgenstern,<br>Achim Kienle, Menka Petkovska | Evaluation of possible improvements of forced periodically operated reactor in which methanol synthesis takes place – based on the Nonlinear Frequency Response analysis |
| 9:45-10:00                                                                                                 | 194              | Yichao An, Fang Zhou, Yu Shi, Liang Zhang*, Jun Li, Qian Fu, Xun Zhu, Qiang Liao                                          | Reduced-graphene-oxide-modified nickel foam as anode electrode for increased performance of a non-aqueous thermally regenerative flow battery                            |
| 10:00-10:30                                                                                                | TEA/COFFEE BREAK |                                                                                                                           |                                                                                                                                                                          |
| Room C243<br>Session Name:Renewable Energy<br>Session Chair:Prof.Jiawei Chen,Chongqing University          |                  |                                                                                                                           |                                                                                                                                                                          |
| 10:30-10:45                                                                                                | 605              | Azeez Qudah, A. Almerbati, Esmail M.A. Mokheimer                                                                          | Optimizing Photovoltaic and Battery Integration for RO Desalination Using Differential Evolution Algorithm                                                               |
| 10:45-11:00                                                                                                | 628              | Jie Shi                                                                                                                   | Research on Optimal Configuration of Energy Storage Capacity Considering High Proportion of Stable Photovoltaic Consumption                                              |
| 11:00-11:15                                                                                                | 647              | Hongjun Tan, Zhiling Guo, Yuntian Chen, Haoran Zhang, Jinyue Yan                                                          | Rooftop Solar Potential Analysis and Comparison of Different Land Uses Using Remote Sensing                                                                              |
| 11:15-11:30                                                                                                | 132              | Jiachen Liu, Shunqi Zeng, Zhongguan Wang*, Li Guo                                                                         | Primary Frequency Regulation Characteristics Assessment and Allocation of Wind Farm Based on Data-driven Linear MPC                                                      |
| 11:30-11:45                                                                                                | 157              | Lei Wang,Cheng Zhao,Yanping Ren                                                                                           | Design of Key Parameters of Mooring System and Dynamic Response Analysis for Semisubmersible Wind Turbines                                                               |
| 11:45-12:00                                                                                                | 608              | Dr Siti Diana Nabilah<br>Mohd Nasir<br>Prof Ben Richard Hughes<br>Ms Azlizawati Ibrahim                                   | Numerical Analysis on Conceptual Feasibility of Hybrid Windcatcher and Turbine Roof Ventilator for Optimum IEQ and Wind Power Harvesting                                 |
| 12:00-12:15                                                                                                | 213              | Toufik TAHRI, Mohamed Dekkiche, Mouloud DENAI                                                                             | A Comparative Study of Solar Tracking Systems in Grid-Connected Photovoltaic/Electrolyzer/Fuel Cell Power System for the Electrification of a Village                    |
| 12:15-12:30                                                                                                | 218              | Mohamed Dekkiche, Toufik TAHRI, Mouloud DENAI                                                                             | Design and optimisation of a hybrid photovoltaic/fuel cell power system for an isolated village based on HOMER pro                                                       |
| 12:30-13:30                                                                                                | Lunch            |                                                                                                                           |                                                                                                                                                                          |
| Room C243<br>Session Name:Renewable Energy<br>Session Chair:Asso Prof.Yi Wang, Chinese Academy of Sciences |                  |                                                                                                                           |                                                                                                                                                                          |
| Time                                                                                                       | Paper ID         | Author                                                                                                                    | Paper Title                                                                                                                                                              |
| 13:30-13:45                                                                                                | 6                | Ashmore Mawire                                                                                                            | An experimental comparison of food cooking tests using two different solar cookers                                                                                       |
| 13:45-14:00                                                                                                | 101              | Peiye Zhang, Ming Liu, Wenting Hu, Ruiqi Mu, Junjie Yan                                                                   | A model predictive control strategy to enhance dynamic performances of parabolic trough solar receiver-reactor of methanol decomposition reaction                        |
| 14:00-14:15                                                                                                | 58               | Hao Yu; Xinli Lu; Wei Zhang; Jiali Liu                                                                                    | Integrated research on hot dry rock power generation and heat extraction with utilization of an increasing-pressure endothermic power cycle (IPEPC)                      |



# Day 3: Dec. 5

|             |     |                                                                                       |                                                                                                                                   |
|-------------|-----|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 14:15-14:30 | 175 | Rodolfo S. M. Freitas<br>Cheng Chen<br>Xi Jiang                                       | Liquid synthetic fuels design guided by chemical structure: A machine learning perspective                                        |
| 14:30-14:45 | 82  | Hongxia Wang, Pengfei Zhu, Zhen Wu, Zaoxiao Zhang*, Wei Shen, Kai Chen, Bingqing Hong | A multi-level low-carbon carbide acetylene production system driven by biomass energy and its performance optimization            |
| 14:45-15:00 | 411 | Laveet Kumar and Ahmad K. Sleiti                                                      | Dynamic Modeling and Analysis of Solar Industrial Process Heating (SIPH) for Food industry                                        |
| 15:00-15:15 | 392 | Yi Wang, Xiao-Sen Li, Xuan Kou, Jing-Chun Feng                                        | From Laboratory Scale to Field Scale: Investigation of Gas Production Test from Methane Hydrate Reservoir                         |
| 15:15-15:30 | 158 | Po-Yuan Chang, Jia Yaw Chang                                                          | The Development of Advanced Electrode Materials for Environmentally Sustainable Mg-O <sub>2</sub> /CO <sub>2</sub> Fuel Batteries |

| Room C244                                                                                                               |          |                                                                  |                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------|----------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Session Name:Clean Energy Conversion Technology                                                                         |          |                                                                  |                                                                                                                                                                                 |
| Session Chair:Prof. Li Chen, Xi'an Jiaotong University Prof. Guoyan Zhou ast China University of Science and Technology |          |                                                                  |                                                                                                                                                                                 |
| Time                                                                                                                    | Paper ID | Author                                                           | Paper Title                                                                                                                                                                     |
| 8:30-8:45                                                                                                               | 144      | Dongmei Yao, Junsheng Zheng, Pingwen Ming                        | Effects of surface functionalization on interface bonding of graphite/epoxy composites                                                                                          |
| 8:45-9:00                                                                                                               | 274      | Qilin Shuai, Yiheng Wang, Wei Wu, Qingsong Hua                   | Reinforcement Learning-Based Energy Management for Fuel Cell Vehicles Incorporating Temperature Dynamics                                                                        |
| 9:00-9:15                                                                                                               | 276      | Binyamin, Ocktaeck Lim                                           | Research on mass transport characteristics and power performance under various flow channel streamlined water-drop block configurations for proton exchange membrane fuel cells |
| 9:15-9:30                                                                                                               | 319      | Azamy Mariam S I A, Ocktaeck Lim                                 | 360KW Vessel Fuel Cell System Simulation Using Simcenter Amesim                                                                                                                 |
| 9:30-9:45                                                                                                               | 347      | Lang CAI, Caizhi ZHANG                                           | Droplet dynamic characteristics in PEM fuel cell with variable-section channels                                                                                                 |
| 9:45-10:00                                                                                                              | 511      | Yifan Wang, Xiaoyi Ding, Wei Sun, Gareth Harrison, Pengcheng Guo | Design of Efficient and Safe Wind-P2G-SOFC-GT Hybrid Systems through Machine Learning Enhanced Optimisation                                                                     |

|             |                  |  |  |
|-------------|------------------|--|--|
| 10:00-10:30 | TEA/COFFEE BREAK |  |  |
|-------------|------------------|--|--|

| Room C244                                                                                           |     |                                                                                         |                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Session Name:Clean Energy Conversion Technology                                                     |     |                                                                                         |                                                                                                                                                     |
| Session Chair:Dr.Bashar Shboul, Al al-Bayt University; Asso Prof.Wandong Zheng, Tianjing University |     |                                                                                         |                                                                                                                                                     |
| 10:30-10:45                                                                                         | 223 | Chong Zhai, Wei Wu, Jingjie Zhang                                                       | Comparative studies between adiabatic plate frame membrane and hollow fiber membrane desorber in a compact and efficient absorption chiller         |
| 10:45-11:00                                                                                         | 255 | Li Zhu, Shibai Cui                                                                      | Study on Urban Dimension of Disaster Capacity for Storm Surges in China                                                                             |
| 11:00-11:15                                                                                         | 302 | Le Vu Tran, Sivanand Somasundaram, Swapnil Dubey, Jacques Mouchet                       | Design of energy efficient ice-skating rink using phase change material                                                                             |
| 11:15-11:30                                                                                         | 454 | minqi su                                                                                | Investigation on frost free air source heat pump system integrated with recirculated regenerated desiccant wheel                                    |
| 11:30-11:45                                                                                         | 513 | Mingxi Xie, Guorui Huang, Yanjun Dai                                                    | Theoretical Investigation and Performance Analysis of an Integrated Deep Dehumidification System Based on Pressure and Temperature Swing Adsorption |
| 11:45-12:00                                                                                         | 156 | Qifan Wang, Minxia Li, Chaobin Dang, Dandan Su, Xuetao Liu, Zhipeng Wang, Jiaxing Zhang | 3D Numerical simulation of heat transfer characteristics of falling-film evaporation of R32/R134a outside a horizontal tube                         |
| 12:00-12:15                                                                                         | 233 | Yihe Yu, Junfeng Cao, Minxia Li, Kan Xu, Zhendong Fu                                    | Simulation and experimental study of a cyclone separator under microgravity condition                                                               |
| 12:15-12:30                                                                                         | 400 | Muhammad Reshaeel, Mohamed I. Hassan Ali                                                | Optimization of a VRF System with Vapor Injection for Cooling Load at High Ambient Temperatures: Thermodynamics Study                               |

|             |       |  |  |
|-------------|-------|--|--|
| 12:30-13:30 | Lunch |  |  |
|-------------|-------|--|--|

| Room C244                                                            |          |                                         |                                                                                                                                     |
|----------------------------------------------------------------------|----------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Session Name:Energy Management, Policy, Economics and Sustainability |          |                                         |                                                                                                                                     |
| Session Chair:Dr.Zhenjia Lin, The Hong Kong Polytechnic University   |          |                                         |                                                                                                                                     |
| Time                                                                 | Paper ID | Author                                  | Paper Title                                                                                                                         |
| 13:30-13:45                                                          | 209      | Gbemi Oluleye, Thomas Savage, Fushan Hu | A Novel Stochastic Market Potential Optimisation Model for Clean Technology Uptake Modelling                                        |
| 13:45-14:00                                                          | 152      | Jonas Wendt, Arthur Stobert             | Development of Forecasting Models for German Energy Prices and Carbon Intensity as a Decision Basis for Energy Flexibility Measures |

# Day 3: Dec. 5

|             |     |                                                                |                                                                                                                                                                                            |
|-------------|-----|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00-14:15 | 48  | Holger Schlör, Sandra Venghaus                                 | The rural-urban energy-water gap of West African households - Marshallian demand functions and the utility function of the household                                                       |
| 14:15-14:30 | 431 | Amin Al-Habaibeh, Benjamin Nweke                               | Challenges And Opportunities of the Implementation of NetZero Strategy: Analysis of Key Issues that Affect the Adoption of Domestic Renewable Energy in the UK from Consumers' Perspective |
| 14:30-14:45 | 142 | Baobiao Pu, Renyi Cao, Zhihao Jia, Linsong Cheng, Yongchao Xue | Machine Learning Evaluation Method of Inter-well Sand Body Connectivity by CatBoost Model: A Field Example from Tight Oil Reservoir, Ordos Basin, China                                    |
| 14:45-15:00 | 387 | Alonso Alegre-Bravo, Lindsay Anderson                          | Rethinking the Role of Access to Electricity Indicators in Latin America: Towards Energy Justice                                                                                           |
| 15:00-15:15 | 497 | Yi Shen Tew, Lanyu Li, Xiaonan Wang                            | Construction of Knowledge Graph for Material and Energy Flow Integration in Biochemical Industry                                                                                           |
| 15:15-15:30 | 385 | Yao Huang Delin Fang Saige Wang                                | Greenhouse gas emissions reduction pathways of wastewater treatment facilities in China based on energy recovery and utilization                                                           |

## Room C245 Session Name:Renewable Energy Session Chair:Dr. Mahmoud Alzoubi,Queen's University;Dr. Xiaojie Lin,Zhejiang University

| Time       | Paper ID | Author                                                                    | Paper Title                                                                                                                            |
|------------|----------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 8:30-8:45  | 91       | Emanuel J. Nyirenda, Joseph H. Kihedu, Cuthbert Z. M. Kimambo             | Transient Behaviour of Pump as Turbine Coupled to Self-Excited Induction Generator Under Variable Load Conditions                      |
| 8:45-9:00  | 165      | Shuhui Li, Xinli Lu, Wei Zhang, Jiali Liu, Hao Yu, Chenchen Li            | Investigation of an office building geothermal heating system integrating heat pump and energy storage                                 |
| 9:00-9:15  | 102      | Jingxuan Xie, Jiansheng Wang                                              | Flexible operation strategy for geothermal power generation adapted to the uncertainty of demand response                              |
| 9:15-9:30  | 357      | Nianling Kuang, Linlong Liang, Yimeng Kang, Binbin Jiang                  | High power density of open structure flexible thermoelectric generator and energy management electronics based on body heat harvesting |
| 9:30-9:45  | 536      | Jiali Liu, Xinli Lu, Wei Zhang, Hao Yu, Maoqin Hu, Shuhui Li, Chenchen Li | A Case Study on Well Structure Optimization Based on Improving the Heat Extraction Efficiency of Geothermal Wells                      |
| 9:45-10:00 | 671      | Yali Fan, Chuanshan Dai, Haiyan Lei, Fei Ma, Jun Li                       | Performance of optimized underground pipe network for hydrothermal geothermal energy                                                   |

## 10:00-10:30 TEA/COFFEE BREAK

## Room C245 Session Name:Energy Management, Policy, Economics and Sustainability Session Chair:Dr.Ying Du, The Hong Kong Polytechnic University; Guotao Wang, The Hong Kong Polytechnic University

|             |     |                                                                                                     |                                                                                                                                                    |
|-------------|-----|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:30-10:45 | 66  | Meysam Khojasteh, Pedro Faria, Zita Vale                                                            | A Robust Strategy for Energy Management in Local Energy Communities                                                                                |
| 10:45-11:00 | 163 | Xiangying Shan, Hao Wang, Weichao Yu, Kai Wen, Jing Gong, Honglong Zheng, Ranran Wei, Shengyuan Wei | A Methodology to Determine the Maximum Allowable Repair Time for Critical Units of Natural Gas Pipeline System Using Gas Supply Reliability Theory |
| 11:00-11:15 | 375 | Lucija Matulin, Tomislav Capuder, Tomislav Plavšić                                                  | Short-term probabilistic load forecasting based on conformalized quantile regression                                                               |
| 11:15-11:30 | 466 | Lloyd Corcoran, Pranaynil Saikia, Carlos E. Ugalde-Loo, Muditha Abeysekera                          | Methodology to Quantify the Cooling Demand in Typical UK Dwellings                                                                                 |
| 11:30-11:45 | 541 | Weike PENG, Yuntian Chen                                                                            | Toward Carbon Neutrality: Challenges and Opportunities in Deeply Integrating Hong Kong's Grids with the Power System in Guangdong Province         |
| 11:45-12:00 | 503 | Amin Lahnaoui, Gianmarco Aniello, Wilhelm Kuckshinrichs                                             | Assessing the feasibility of a green hydrogen economy in Africa with composite indicators: the case of West Africa                                 |
| 12:00-12:15 | 53  | Xiong Yin, Kai Wen, Yichen Li, Yan Wu, Weihe Huang, Yunqi Hao, Yi Li, Jing Gong                     | Energy flow analysis of complex natural gas pipeline network considering the hydrogen injection and storage of energy                              |
| 12:15-12:30 | 97  | Yutaro Akimoto, Keiichi Okajima, Shin-nosuke Suzuki                                                 | Time-series evaluation of net energy potentials of solar power generation and electric vehicles in Japan                                           |

## 12:30-13:30 Lunch

# Day 3: Dec. 5

## Room C245 Session Name:Clean Energy Conversion Technology Session Chair:Dr.Anders Avelin, Mälardalen University

| Time        | Paper ID | Author                                                                                                       | Paper Title                                                                                                                                        |
|-------------|----------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 13:30-13:45 | 12       | Dmitry Pashchenko                                                                                            | Ammonia Fired Combined Cycle Power Plant with Chemically Recuperated Gas Turbine                                                                   |
| 13:45-14:00 | 675      | Xueyao Xiong, Guo-yan Zhou, Zunquan Liu, Shan-Tung Tu, Xing Luo                                              | Experimental Investigation of Temperature Fluctuation Characteristics Associated with Thermal Striping Phenomena                                   |
| 14:00-14:15 | 127      | Yuanhao Mao, Huifeng Fan, Sayd Sultan, Xiaomei Wu*, Zaoxiao Zhang*                                           | Electrochemically mediated CO2 capture process with high CO2 capacity polyamine absorbents — The basic properties and optimization direction       |
| 14:15-14:30 | 128      | Chuandong Li, Zheng Hongxiang, ruhang zhang, Xinhai Yu, Bo Li, Shan-Tung Tu                                  | 3D Printing Combined with Dealloying to Prepare Cu/ZnO Structural Catalysts for On-board Methanol Steam Reforming                                  |
| 14:30-14:45 | 251      | Seyyed Majid TalebiZonoozi, Behrouz Jalilpour, Samad jafarmadar, Behzad KarimzaD, Mohammadhasan Behrouzivand | Experimental and CFD Exploration of Centrifugal Double Suction Pump Behavior in Turbine Running Mode for Innovative Small Power Plant Applications |
| 14:45-15:00 | 642      | Nur Cahyo, Yayak Triasdian                                                                                   | Agglomeration Analysis in Combustion of CFB Coal-Fired Power Plant                                                                                 |
| 15:00-15:15 | 685      | Fanbei Kong, Baisheng Nie, Xiaopan Luo, Zhaoying Shao                                                        | Microstructural evolution of a palladium-based nanofilm catalyst during ventilation mine methane oxidation                                         |
| 15:15-15:30 | 640      | Rachmat Hermawan, Muhammad Idris, Nono Darsono                                                               | A Comparison Impact of Various Biomass Utilization in Indonesian Cofiring Coal-Fired Power Plant                                                   |

## Room C246 Session Name:Energy Sciences Session Chair:Prof. Rebei Mälardalen University

| Time       | Paper ID | Author                                                                                                   | Paper Title                                                                                                                                                       |
|------------|----------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8:30-8:45  | 594      | Mohammad Zolfagharroshan, Minghan Xu, Muhammad S.K. Tareen, Ahmad F. Zueter, Mary Kang, Agus P. Sasmito. | Geothermal Energy Potential from Abandoned Oil and Gas Wells in Appalachian Basin of New York and Pennsylvania                                                    |
| 8:45-9:00  | 30       | Yu-Zhi Zhu, Si-Bo Wan, You-Rong Li                                                                       | Numerical Simulation of Poiseuille-Rayleigh-Benard Convection for Density Extreme Fluid in a Horizontal Rectangular Channel                                       |
| 9:00-9:15  | 283      | Yonghui Miao, Haiyan Lei, Rui Xue, Chuanshan Dai                                                         | Lab-scale Experiment on Enhanced Open-loop Geothermal Single Well Heat Extraction Using Heat Pipes                                                                |
| 9:15-9:30  | 535      | Qirui Yang, Li Chen*, Xinjian Zheng, Lingran Gu                                                          | Topology Optimization of Dual-Fluid Printed Circuit Heat Exchangers with Supercritical CO2 Considering Variable Thermophysical Properties Based on Density Method |
| 9:30-9:45  | 625      | Abdulsalam M.A. Hasan1, Esmail M.A. Mokheimer Dhahran, Saudi Arabia                                      | Performance Analysis of a Counter-flow Cooling Tower Under Different Weather Conditions                                                                           |
| 9:45-10:00 | 188      | KAI ZHAO, Li Zhao, Chang He, Qinglin Chen, Bingjian Zhang                                                | Optimal design of complex large-scale heat exchanger networks                                                                                                     |

## TEA/COFFEE BREAK

## Room C246 Session Name:Energy Sciences Session Chair:Prof.Rebei, Mälardalen University

|             |     |                                                                           |                                                                                                                             |
|-------------|-----|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 10:30-10:45 | 73  | Ziwen Zhang, Jianchun Chu, Xiangyang Liu, Maogang He                      | Exploring high-ionic conductivity antiperovskite electrolytes for all-solid-state batteries by machine learning             |
| 10:45-11:00 | 141 | Qiong Rao, Tianlong Yang, Jinrui Zhang, Yang Li, zhongrui gai, Ying Pan   | Light-enhanced Catalyzed Hydrogenation of Gaseous CO2 over Nanostructured Ni-Fe/La0.8Sr0.2FeO3                              |
| 11:00-11:15 | 236 | Jie Peng, Jianfeng Chao, Qifan Wang, Xuetao Liu, Minxia Li, Chaobin Dang, | Influence of lubricating oil on heat transfer and pressure drop characteristics of R134a flow condensation in mini-channels |

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|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                            |                  | Yu Zhang                                                                         |                                                                                                                                                                                 |
| 11:15-11:30                                                                                                                                                | 303              | Yifan Zhou, Junwei Liu, Jinyue Yan                                               | Eco-Building Materials: Metakaolin-based Geopolymer for CO2 Emission Reduction and Enhanced Energy Efficiency                                                                   |
| 11:30-11:45                                                                                                                                                | 316              | Boyuan Wang<br>Zijian Chen<br>Haitao Zhao                                        | Robotics and Artificial Intelligence Accelerated Data-driven Energy Materials Discovery                                                                                         |
| 11:45-12:00                                                                                                                                                | 16               | Lu Ning, Dong Xiaohu, Chen Zhangxin, Liu Huiqing, Zeng Deshang, Xiao Zhan, Li Yu | Molecular Transition Mechanisms of Heavy Oil in Hybrid CO2-surfactant Thermal Systems for Post-steam Reservoirs                                                                 |
| 12:00-12:15                                                                                                                                                | 71               | Lan Tian, Maogang He                                                             | Characterization of Thermoelectric Properties of Sputtered Molybdenum Disulfide Thin Films                                                                                      |
| 12:15-12:30                                                                                                                                                | 416              | Shengmei Zhang                                                                   | Types of Phase Change Materials and Encapsulated Methods for Microcapsules: Review and One Case Study                                                                           |
| 12:30-13:30                                                                                                                                                | Lunch            |                                                                                  |                                                                                                                                                                                 |
| Room C246<br>Session Name:Energy Sciences<br>Session Chair:Prof.Guoyan Zhou, East China University of Science and Technology                               |                  |                                                                                  |                                                                                                                                                                                 |
| Time                                                                                                                                                       | Paper ID         | Author                                                                           | Paper Title                                                                                                                                                                     |
| 13:30-13:45                                                                                                                                                | 189              | Li Zhao, Kai Zhao, Chang He, Qinglin Chen, Bingjian Zhang                        | Simultaneous optimization and screening of integrated HEN-AR system for zeolite/NH3 working pair                                                                                |
| 13:45-14:00                                                                                                                                                | 191              | Shasha Han, Xingtao Li, Chang He, Bingjian Zhang, Qinglin Chen                   | Performance optimization of Organic Rankine cycle systems for waste-heat recovery: Phase change heat exchanger sizing based on infinitesimal method                             |
| 14:00-14:15                                                                                                                                                | 586              | Ahmad K. Sleiti and Wahib A. Al-Ammari                                           | Enhanced Gas Pipeline Multiple Leak Detection Using Artificial Neural Networks in Complex Multiphase Flow Conditions                                                            |
| 14:15-14:30                                                                                                                                                | 94               | ZhongFu Lu, JingZheng Tian, ZaoXiao Zhang, Wei Shen, Kai Chen, Bingqing Hong     | Numerical Study of Heat Transfer inside a Hexagonal Enclosure Containing a Finite Heat Source                                                                                   |
| 14:30-14:45                                                                                                                                                | 104              | Donghao Jin, Heyang Wang, Xin Liu, Chaoqun Zhang, Xinying Li                     | Prediction of oxide scale layer distribution of boiler platen superheater by a coupled combustion and hydrodynamic model                                                        |
| 14:45-15:00                                                                                                                                                | 32               | Si-Bo Wan, You-Rong Li                                                           | Numerical Investigation on the Effect of Container Geometry on Water Evaporation in Pure Vapor at Low Pressures                                                                 |
| 15:00-15:15                                                                                                                                                | 615              | Tomas Nhabetse, Boaventura Cuamba, ole Nydal, Claudio Tingote                    | Experimental Investigation of an Oil-Based Heat Pipe Evacuated Tube Collector for Cooking Application                                                                           |
| 15:15-15:30                                                                                                                                                | 535              | Qirui Yang, Li Chen, Xinjian Zhang, Lingran Gu                                   | Topology Optimization of Dual-Fluid Printed Circuit Heat Exchangers with Supercritical CO2 Considering Variable Thermophysical Properties Based on Density Method               |
| Room B219<br>Session Name:Energy Storage System<br>Session Chair:Guosheng Jia, Dr. Freerk Klasing; Deutsches Zentrum für Luft- und Raumfahrt (DLR)         |                  |                                                                                  |                                                                                                                                                                                 |
| Time                                                                                                                                                       | Paper ID         | Author                                                                           | Paper Title                                                                                                                                                                     |
| 8:30-8:45                                                                                                                                                  | 451              | Yali Liu                                                                         | Surfactant modification of expanded graphite to fabricate composite glycine water-based phase change material for cold energy storage                                           |
| 8:45-9:00                                                                                                                                                  | 496              | Pengchao Li, Xuejing Yang, Fang Guo, Xudong Yang                                 | A dynamic prediction method for the outlet fluid temperature of the large-scale borehole thermal energy storage system based on the multi-channel parallel neural network model |
| 9:00-9:15                                                                                                                                                  | 564              | Freerk Klasing, Thomas Bauer                                                     | Repurposing of supercritical coal plants as grid storage with adapted 620 °C nitrate salt technology                                                                            |
| 9:15-9:30                                                                                                                                                  | 571              | Yao Lin, Fu Xiao, Shengwei Wang                                                  | Experimental studies on a mobilized three-phase absorption thermal energy storage system for distributed heating and cooling supply                                             |
| 9:30-9:45                                                                                                                                                  | 574              | Guo Fang, Yongfei Li, Lei Zhang, Pengchao Li, Xudong Yang                        | Analysis on the Long-term performance of a large-scale seasonal borehole thermal energy storage system                                                                          |
| 9:45-10:00                                                                                                                                                 | 613              | Hamidreza Ermagan, Leyla Amiri, Agus P. Sasmito                                  | Improved Rock-based Thermal Energy Storage (RTES) with Perforated Plate Based on Double Thermocline Design                                                                      |
| 10:00-10:30                                                                                                                                                | TEA/COFFEE BREAK |                                                                                  |                                                                                                                                                                                 |
| Room B219<br>Session Name:Energy Management, Policy, Economics and Sustainability<br>Session Chair:Dr.Patrik Klintenberg, Blekinge Institute of Technology |                  |                                                                                  |                                                                                                                                                                                 |

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:30-10:45                                                                                                                                                                              | 317      | Mohammed Guezgouz*,<br>Fredrik Wallin, Meysam Majidi Nezhad                                       | Does Peak Load Occur at the Same Time as High Electricity Prices? A Case Study of Sports Facilities                                                   |
| 10:45-11:00                                                                                                                                                                              | 378      | Sanja Duvnjak Zarkovic,<br>Patrik Hilber, Ebrahim Shayesteh                                       | Outage Statistics and Trends in Sweden – What does data tell us?                                                                                      |
| 11:00-11:15                                                                                                                                                                              | 453      | Neda Maleki<br>Xianwei Xie<br>Arslan Musaddiq<br>Tobias Olsson<br>David Mozart<br>Fredrik Ahlgren | Unraveling Energy Consumption Patterns: Insights through Data Analysis and Predictive Modeling                                                        |
| 11:15-11:30                                                                                                                                                                              | 455      | Bo Huang, Jia He                                                                                  | Direct quantification of global anthropogenic CO2 emissions: Insights from Satellite Observations                                                     |
| 11:30-11:45                                                                                                                                                                              | 561      | Fangfang Li, Li Zhu                                                                               | Evaluation of Water-Energy-Carbon Nexus in University Campuses Based on Machine Learning Algorithms - Taking Nankai University in China as an Example |
| 11:45-12:00                                                                                                                                                                              | 566      | Yefei Bai*, Wei Pan,<br>Cong Yu                                                                   | Impact of passive design measures on energy performance gap: A case study of high-rise residential buildings in Hong Kong                             |
| 12:00-12:15                                                                                                                                                                              | 569      | Cong Yu, Wei Pan                                                                                  | Improving accuracy on energy use for high-rise office buildings via considering microclimate effect                                                   |
| 12:15-12:30                                                                                                                                                                              | 579      | Adel Ahmadihosseini,<br>Azlan Aslam,<br>Ferri Hassani,<br>Agus Sasmito                            | Investigating the efficiency of microwave treatment in mine-to-mill operations: an energy-based analysis                                              |
| 12:30-13:30                                                                                                                                                                              | Lunch    |                                                                                                   |                                                                                                                                                       |
| Room B219<br>Session Name:Energy Management, Policy, Economics and Sustainability<br>Session Chair:Dr.Holger Schlör, Forschungszentrum Jülich; Dr.Gbemi Oluleye, Imperial College London |          |                                                                                                   |                                                                                                                                                       |
| Time                                                                                                                                                                                     | Paper ID | Author                                                                                            | Paper Title                                                                                                                                           |
| 13:30-13:45                                                                                                                                                                              | 197      | Anupam Parlikar,<br>Nils Collath,<br>Benedikt Tepe,<br>Holger Hesse,<br>Andreas Jossen            | The Lifetime Carbon Footprint of Lithium-Ion Battery Systems in Exemplary Applications                                                                |
| 13:45-14:00                                                                                                                                                                              | 377      | John Ballantine                                                                                   | Epistemology of Net Zero: Shifting World - Faster Transition to Cleaner Hydrogenby 2035                                                               |
| 14:00-14:15                                                                                                                                                                              | 211      | Mohammed Ali<br>Steve Evans                                                                       | Enhancing Industrial Sustainability Policy: The Unrecognized Role of Best Practice in Energy Efficiency                                               |
| 14:15-14:30                                                                                                                                                                              | 311      | Changjing Ji                                                                                      | Research on The Economic and Emission Impacts of the Expansion Strategy of the National Carbon Market                                                 |
| 14:30-14:45                                                                                                                                                                              | 553      | Xuequn Chong, Yi Shen<br>Tew, Lanyu Li, Xiaonan Wang                                              | Digital twin assists multi-scale carbon reduction in chemical industry parks                                                                          |
| 14:45-15:00                                                                                                                                                                              | 235      | Gbemi Oluleye, Oliver Morgan, Lucy Elwy                                                           | Assessing the UK’ s attempt to Establish a Zero-carbon Hydrogen Economy in the Industrial Sector                                                      |
| 15:00-15:15                                                                                                                                                                              | 301      | Xuan Kou, Tian Liang, Yi Wang, Xiao-Sen Li                                                        | Sustainable Utilization of Hydrogen Energy: Facing the Crisis of Traditional Energy                                                                   |
| 15:15-15:30                                                                                                                                                                              | 500      | Amin Lahnaoui,<br>Mohamadu Balde,<br>Wilhelm Kuckshinrichs                                        | Analyzing the current opportunity for green hydrogen and its derivatives in Sub-Sahara Africa                                                         |
| Room B220<br>Session Name:Intelligent Energy System<br>Session Chair:Yichuan Ma, Dr. Takahiro Yoshida The University of Tokyo                                                            |          |                                                                                                   |                                                                                                                                                       |
| Time                                                                                                                                                                                     | Paper ID | Author                                                                                            | Paper Title                                                                                                                                           |
| 8:30-8:45                                                                                                                                                                                | 278      | Dayin Chen, Xiaodan Shi, Haoran Zhang, Jinyue Yan                                                 | A distributed Phone-based Ambient Temperature Estimation System                                                                                       |
| 8:45-9:00                                                                                                                                                                                | 430      | Linda Lundmark<br>Mariana Flor Lopez<br>Farzin Glozar<br>Rafael Guedez                            | Forecasting and optimization of dispatch schedule for PV coupled with BESS in apartment building                                                      |
| 9:00-9:15                                                                                                                                                                                | 123      | Chiho Jimba, Yutaro Akimoto, Keiichi Okajima                                                      | Resilience evaluation of Positive Energy Building in Japan                                                                                            |
| 9:15-9:30                                                                                                                                                                                | 563      | D.M. Bajany , X. Ye, G. Yu, S. Koch, Y. Ye, B Nkuna, T. Cantle-Jones                              | Sharing renewable energy from independent power producers via mobile energy storage                                                                   |
| 9:30-9:45                                                                                                                                                                                | 285      | Behrouz Nourozi, Rebei Bel Fdhila, Amir Vadiee, Sasan Sadrizadeh                                  | Innovative Approaches to Sustainable Heating and Cooling in Nordic Residential Buildings: Wastewater Heat Recovery and Geo-Assisted Cooling Solutions |



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|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:45-10:00                                                                                                                                       | 406              | Mostafa Ismail, Kabbir Ali, Mohamed I Hassan Ali                                                        | Overall energy assessment of multifunctional glazing system integrating semitransparent PV technology with a spectrally selective liquid-filter |
| 10:00-10:30                                                                                                                                      | TEA/COFFEE BREAK |                                                                                                         |                                                                                                                                                 |
| Room B220<br>Session Name:Energy Management, Policy, Economics and Sustainability<br>Session Chair:Prof.Zaoxiao Zhang, Xi'an Jiaotong University |                  |                                                                                                         |                                                                                                                                                 |
| 10:30-10:45                                                                                                                                      | 171              | ZHU Li; CAO Meng-ying                                                                                   | Evaluation and Obstacle Factor Analysis of Energy Transition in Coal Resource-based Cities to Achieve Carbon Neutrality Goals                   |
| 10:45-11:00                                                                                                                                      | 297              | Beidong Wang, Shenglai Yang, Jiangtao Hu, Sishi Lin, Qiaoling Wang, Lufei Bi                            | Study on high pressure imbibition characteristics of ultra-deep carbonate rocks based on nuclear magnetic resonance method                      |
| 11:00-11:15                                                                                                                                      | 637              | Yangmin Ren, Yongyue Zhou, Shiyu Sun, Fengshi Guo, Mingcan Cui, Jeehyeong Khim                          | Design of Permeable Reactive Barrier for Petroleum-polluted Groundwater                                                                         |
| 11:15-11:30                                                                                                                                      | 210              | Jiangtao Hu, Shenglai Yang, Xiangshang ZHAO, Sishi Lin, Beidong WANG, Qiaoling Wang, Lufei BI           | Pore structure characteristics of deep carbonate gas reservoir based on CT scanning                                                             |
| 11:30-11:45                                                                                                                                      | 247              | Shuai Zhao, Shenglai Yang, Yun Luo, Li You, Yubo Liu                                                    | Factors Controlling Stress Sensitivity of Shale Oil Reservoirs: Mineral Composition and Mechanical Properties                                   |
| 11:45-12:00                                                                                                                                      | 258              | Fahad N. Alotaibi, Abdallah S. Berrouk, Kyriaki Polychronopoulos                                        | Industrial-Scale Comparative Analysis of Fixed Bed and Fluidized Bed for Dry Methane Reforming: CPFD Analysis and Machine Learning Optimization |
| 12:00-12:15                                                                                                                                      | 61               | Zechuan Wang, Leng Tian, Jinbu Li, Junguo Dong, Feng Xiao, Lian Zhao, Qinghua Tian, Xiaolong Chai       | Study on water invasion law and development strategy of fractured gas reservoir based on pore throat structure                                  |
| 12:15-12:30                                                                                                                                      | 62               | Ximeng Xu, Chao Ma                                                                                      | Optimal Operation of a Photovoltaic-Energy Storage System Considering Forecast Uncertainty                                                      |
| 12:30-13:30                                                                                                                                      | Lunch            |                                                                                                         |                                                                                                                                                 |
| Room B220<br>Session Name:Intelligent Energy System<br>Session Chair:Dr.Mohammed Guezgouz, Mälardalen University                                 |                  |                                                                                                         |                                                                                                                                                 |
| Time                                                                                                                                             | Paper ID         | Author                                                                                                  | Paper Title                                                                                                                                     |
| 13:30-13:45                                                                                                                                      | 399              | Dongliang Xiao; Zhenjia Lin; Haoyong Chen; Haodong Zeng                                                 | A Stochastic Dominance-Constrained Approach for Industrial Demand Response with Intermittent Renewable Energy and Volatile Electricity Prices   |
| 13:45-14:00                                                                                                                                      | 498              | Xingli Ding Xudong Yang                                                                                 | A novel control strategy of space heating equipment for peak shaving based on operating data                                                    |
| 14:00-14:15                                                                                                                                      | 526              | Wu Zhijun, Mu Yunfei, Guo Haochen                                                                       | Low Carbon Scheduling Method for Integrated Community Energy System Based on Extended Carbon Emission Flow and Demand Response                  |
| 14:15-14:30                                                                                                                                      | 545              | Newell Sarpong Boateng, Carla Alejandra Calle Garcia, Marco Ciro Liscio, Paolo Sospiro, Giacomo Talluri | Smart Grid implementation in China: A Cost-Benefit Analysis                                                                                     |
| 14:30-14:45                                                                                                                                      | 633              | Haoran Ji                                                                                               | Real-Time Topology Identification-Tracking Framework of Distribution System via Graph Database and Bayesian Networks                            |
| 14:45-15:00                                                                                                                                      | 641              | Zhang ZhiCheng                                                                                          | A Distributed Multi-Stage Power Restoration Strategy for Active Distributed Network Considering Switching Sequence                              |
| 15:00-15:15                                                                                                                                      | 383              | Hieu Le Trong, OckTaeck Lim, NhuY Quach                                                                 | Improving the dynamic performance of fuel cell-powered bicycle under effect of key input parameters                                             |
| 15:15-15:30                                                                                                                                      |                  |                                                                                                         |                                                                                                                                                 |
| Room E215<br>Session Name:Clean Energy Conversion Technology<br>Session Chair:Dr. Xinhai Yu,East China University of Science & Technology        |                  |                                                                                                         |                                                                                                                                                 |
| Time                                                                                                                                             | Paper ID         | Author                                                                                                  | Paper Title                                                                                                                                     |
| 8:30-8:45                                                                                                                                        | 672              | Zhanglin Ruan, Handong Wu, Ruilin                                                                       | Particle swarm optimization Fuzzy algorithm applied to temperature control in PEM fuel cell systems                                             |



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|                                                                                                                                                                      |                  | Wang, Wenjia Li,<br>Zhenyu Tian                                                       |                                                                                                                                                                             |
| 8:45-9:00                                                                                                                                                            | 683              | Wei Zhang                                                                             | Multi-phase and multi-species transport inside air-breathing photocathode of photocatalytic fuel cell                                                                       |
| 9:00-9:15                                                                                                                                                            | 580              | Roberto Scaccabarozzi;<br>Chiara Artini;<br>Maurizio Spinelli;<br>Stefano Campanari   | Molten Carbonate Fuel Cell Integration in a DRI Production Plant for the Decarbonization of the Steel Industry                                                              |
| 9:15-9:30                                                                                                                                                            | 59               | Bohan Li, Chaoyang Wang, Junjie Yan                                                   | Three-dimensional numerical investigation on the transient response characteristics of DIR-SOFC during increasing electrical load process                                   |
| 9:30-9:45                                                                                                                                                            | 439              | Guomeng Wei, Zhiguo Qu, Weiwen Chen, Jianfei Zhang                                    | Analysis of Technology and Economy of Island Self-Sufficient Renewable Energy System Based on SOFC                                                                          |
| 9:45-10:00                                                                                                                                                           | 56               | Qiangqiang Zhang, Xin Li                                                              | Performance analysis of a combined solar thermochemical high-temperature electrolysis system                                                                                |
| 10:00-10:30                                                                                                                                                          | TEA/COFFEE BREAK |                                                                                       |                                                                                                                                                                             |
| Room E215<br>Session Name: Intelligent Energy System<br>Session Chair: Dr. Xiaodan Shi, Mälardalen University; Dr. Zhiling Guo, The Hong Kong Polytechnic University |                  |                                                                                       |                                                                                                                                                                             |
| 10:30-10:45                                                                                                                                                          | 468              | E.R. Joy , R.C. Bansal, C. Ghenai, E. Gryazina, R. Kumar, Sujil. A                    | Multivariate Regression for Electricity Load Forecasting in Power Systems                                                                                                   |
| 10:45-11:00                                                                                                                                                          | 529              | Yichuan X. Ma, Lawrence K. Yeung                                                      | DAF-GAN: Day-ahead forecasting of building HVAC energy consumption using multi-channel generative adversarial networks                                                      |
| 11:00-11:15                                                                                                                                                          | 562              | Xuyang Zhao, Hongwen He1*, Jianwei Li, Zhongbao Wei, Ruchen Huang, Hongwei Yue        | Battery thermal-health jointly concerned charging scheduling for Solar PV penetrated Energy-Transportation Nexus: a DRL-based approach empowered by a Cyber-Physical system |
| 11:15-11:30                                                                                                                                                          | 649              | Zhiling Guo, Qing Yu, Hongjun Tan, Haoran Zhang, Jinyue Yan, Yanxiu Jin, Kechuan Dong | Façade Parsing with Occlusion in the Context of Distributed Solar Photovoltaic Potential Estimation                                                                         |
| 11:30-11:45                                                                                                                                                          | 650              | Zhengyaun Lin, Zhiling Guo, Hongjun Tan, Dou Huang, Haoran Zhang, Jinyue Yan          | Leveraging Generative AI for A Better PV Panels Installation Planning                                                                                                       |
| 11:45-12:00                                                                                                                                                          | 273              | BIN JIANG, Shiqing Cheng, Cao Wei                                                     | Optimization method for three-dimensional intelligent equilibrium flooding in thin interbed reservoirs A case study in P Oilfield China                                     |
| 12:00-12:15                                                                                                                                                          | 636              | Yongyue Zhou, Yangmin Ren, Shiyu Sun, Fengshi Guo, Mingcan Cui, Jeehyeong Khim        | Predicting the degradation kinetic constants of organic pollutants in sonoelectrochemical system using machine learning methods                                             |
| 12:15-12:30                                                                                                                                                          | 312              | Shibo Zhu, Xiaodan Shi, Haoran Zhang, Xuan Song, Jinyue Yan                           | PF-HoLo: Personalized Federated Learning Framework for Household Load Prediction                                                                                            |
| 12:30-13:30                                                                                                                                                          | Lunch            |                                                                                       |                                                                                                                                                                             |
| Room E215<br>Session Name: Intelligent Energy System<br>Session Chair: Asso Prof. Haoran Ji, Tianjing University; Dr. Ying Du, The Hong Kong Polytechnic University  |                  |                                                                                       |                                                                                                                                                                             |
| Time                                                                                                                                                                 | Paper ID         | Author                                                                                | Paper Title                                                                                                                                                                 |
| 13:30-13:45                                                                                                                                                          | 70               | Kaiqing Qiu, Wei Gan, Yue Zhou, Wenlong Ming, Jianzhong Wu                            | Coordinated Operation of Mobile Emergency Generators and Local Flexible Resources for Distribution Network Resilience Enhancement                                           |
| 13:45-14:00                                                                                                                                                          | 14               | Yuxin Liu, Han Zhu, Zhuohui Zhang, Zhengrong Li, Bin He                               | Decentralized power cooperative dispatch based on the coupling of MAPPO and digital twin for BIPV cluster with ESS                                                          |
| 14:00-14:15                                                                                                                                                          | 81               | Xiaoyu Wang, Xiaolong Jin, Hongjie Jia, Yunfei Mu, Wei Wei, Xiaodan Yu, Shuo Liang    | Coordinated Optimal Operations for Integrated Community Energy Systems and Multiple Prosumers with Peer-to-Peer Behaviors                                                   |
| 14:15-14:30                                                                                                                                                          | 131              | Zeyu Tian, Zhu Wang, Zhaoyang Sha, Daotong Chong, Hui Yan                             | The evaluation of response processes to frequency fluctuations in a Virtual Power Plant (VPP) using different optimization approaches                                       |
| 14:30-14:45                                                                                                                                                          | 154              | Boyu He, Xiaolong Jin, Hongjie Jia, Yunfei Mu, Xiaodan Yu, Shuo Liang                 | Dispatch of Low-carbon Campus Power System Considering Flexible Loads and Green Power                                                                                       |
| 14:45-15:00                                                                                                                                                          | 365              | Christine van Stiphoudt, Sergio Potenciano Menci                                      | Energy Synchronization Platform Concept to Enable and Streamline Automated Industrial Demand Response                                                                       |

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|                                                                                                                                                        |                  | Can Kaymakci,<br>Simon Wenninger,<br>Dennis Bauer,<br>Sebastian Duda,<br>Gilbert Fridgen,<br>Alexander Sauer |                                                                                                                                                                        |
| 15:00-15:15                                                                                                                                            | 397              | Yanze Xu, Yunfei Mu,<br>Zeqing Wu, Xiaolong<br>Jin, Hongjie Jia                                              | Multi-objective optimal dispatch method for residential building cluster considering virtual energy storage                                                            |
| 15:15-15:30                                                                                                                                            |                  |                                                                                                              |                                                                                                                                                                        |
| Room E216<br>Session Name:Hydrogen Energy<br>Session Chair:Dr. Yi Zong;Prof. Li Chen, Xi'an Jiaotong University                                        |                  |                                                                                                              |                                                                                                                                                                        |
| Time                                                                                                                                                   | Paper ID         | Author                                                                                                       | Paper Title                                                                                                                                                            |
| 8:30-8:45                                                                                                                                              | 355              | Kaixuan Feng, Ruixiang Lin, Yuyan Hu, Yuheng Feng, Tongcheng Cao                                             | Experimental and theoretical study on the NO reduction by H2 over char decorated with Ni at low temperatures                                                           |
| 8:45-9:00                                                                                                                                              | 436              | Danny Pudjianto, Goran Strbac                                                                                | A Holistic Approach to Empower Hydrogen Supporting Net-Zero                                                                                                            |
| 9:00-9:15                                                                                                                                              | 309              | Xiaodan Wang                                                                                                 | Developing advanced hydrogenation technology for photoelectrocatalytic hydrogen production                                                                             |
| 9:15-9:30                                                                                                                                              | 486              | Kangling Sheng, Xiaojun Wang, Fangyuan Si, Zhao Liu, Jinghan He, Yizhi zhang                                 | Capacity configuration optimization of hydrogen-based steelmaking system with high renewable energy penetration                                                        |
| 9:30-9:45                                                                                                                                              | 512              | Akshaykumar N. Desai, Surajeet Mohanty, Venkatasailanathan Ramadesigan, Suneet Singh                         | Modelling of membrane swelling-shrinking induced mechanical degradation of the Low-Temperature PEMFC                                                                   |
| 9:45-10:00                                                                                                                                             | 643              | Wenjing Ning, Xingbao Lyu, Yi Yuan, Li Chen, Wen-quan Tao.                                                   | Performance analysis of proton exchange membrane fuel cell-based combined heat and power system with Lithium-ion battery under hierarchical energy management strategy |
| 10:00-10:30                                                                                                                                            | TEA/COFFEE BREAK |                                                                                                              |                                                                                                                                                                        |
| Room E216<br>Session Name:Hydrogen Energy<br>Session Chair:Dr.Meysam Majidiezhad, Mälardalen University; Wei Wang                                      |                  |                                                                                                              |                                                                                                                                                                        |
| 10:30-10:45                                                                                                                                            | 22               | Gabriele Humbert, Hanmin Cai, Binod Prasad Koirala, Philipp Heer                                             | Cost-Effective Hydrogen Generation: Concurrent Optimization of Component Sizes and System Operation                                                                    |
| 10:45-11:00                                                                                                                                            | 28               | Yuqi Zhang, Wenzhi Cui, Longjian Li, Chen Zhan, Junyi Cui                                                    | Effect of nickel powder morphology on hydrogen evolution performance of the prepared aligned porous electrode                                                          |
| 11:00-11:15                                                                                                                                            | 38               | Sanli Tang, Zhongrui Gai, Yang Li, Mingkai Liu, Ying Pan                                                     | Scalable Bimetallic Nano Oxygen Carrier for Green Hydrogen from Mid-temperature Methane Chemical Looping Reforming                                                     |
| 11:15-11:30                                                                                                                                            | 100              | Tiantian Wang, Renbao Zhao, Hao Wang, Ningning Jiang, Xin Li, Haitao Ren, Ziqi Sun                           | Investigation on hydrogen production through in-situ heavy oil gasification process under different atmospheres conditions                                             |
| 11:30-11:45                                                                                                                                            | 105              | Lei Wang,Xuesong Chang                                                                                       | Research on Capacity Configuration of Wind Solar Off-grid Hydrogen Production System                                                                                   |
| 11:45-12:00                                                                                                                                            | 533              | Sara Ramezani; Fahimeh MollaAhmadi; Amir Safari                                                              | A Hydrogen-driven Sustainable Marketing Strategy for Future Energy Hubs                                                                                                |
| 12:00-12:15                                                                                                                                            | 107              | Junxiao Xia, Jiawei Chen, Lei Wang                                                                           | Power Coordination Control Method of Wind Turbine Considering Power Demand Characteristics of Hydrogen Production System                                               |
| 12:15-12:30                                                                                                                                            | 110              | Lei Wang, Yingzi Xian, Yanping Ren                                                                           | Energy Scheduling Method for Wind-Solar-Storage Off-Grid Hydrogen Production System based on Adaptive Model Predictive Control                                         |
| 12:30-13:30                                                                                                                                            | Lunch            |                                                                                                              |                                                                                                                                                                        |
| Room E216<br>Session Name:Renewable Energy<br>Session Chair:Dr.T.D. Bui, National University of Singapore; Asso Prof.Zhenyuan Yin, Tsinghua University |                  |                                                                                                              |                                                                                                                                                                        |
| Time                                                                                                                                                   | Paper ID         | Author                                                                                                       | Paper Title                                                                                                                                                            |
| 13:30-13:45                                                                                                                                            | 50               | Eliana Gaudino, Roberto Russo, Marilena Musto, Antonio Caldarelli, Daniela De Luca, Paolo                    | Hemispherical Emittance in Multilayer Solar Absorbers: A MATLAB-Based Approach for Optimizing Solar Thermal Efficiency                                                 |

# Day 3: Dec. 5

|             |     |                                                    |                                                                                                                                                               |
|-------------|-----|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |     | Strazzullo, Emiliano Di Gennaro, Umar Farooq       |                                                                                                                                                               |
| 13:45-14:00 | 462 | Serhat Yesilyurt, Asal Saeidfar                    | Investigating the transient response of a low Pt-loaded PEMFC under various operating conditions                                                              |
| 14:00-14:15 | 310 | Yuanhong Tong, Haiyan Lei, Chuanshan Dai           | Numerical Simulation of In-Situ Heat Extraction in Hot Dry Rock Single Well                                                                                   |
| 14:15-14:30 | 444 | Min Li, LiYuan Song, Ju Cao, Chenbo Bai, Lanyu Li  | Correlation analysis of meteorological factors on daily solar photovoltaic power generation                                                                   |
| 14:30-14:45 | 363 | Rui Xu, Zhaoyang Chen, Xiao-Sen Li, Yi Wang        | Pore-scale investigation into the effects of fluid perturbation during hydrate formation                                                                      |
| 14:45-15:00 | 241 | Alhulw H. Alsjhammari, Musaad Alsrshdi, T. A. Taha | Graphitic Carbon Nitride based Zinc Sulfide as catalyst for Hydrogen production from Hydrolyzed Sodium Borohydride                                            |
| 15:00-15:15 | 557 | M. Hussein N. Al Assadi, Kabir Suraj               | Detrimental 2p-3d Hybridisation in Ni Nanosheets Supported on Strontium Dioxide for Catalytic H <sub>2</sub> Production, Necessitating Thickness Optimisation |
| 15:15-15:30 | 456 | Gan Huang                                          | Hybrid photovoltaic-thermal solar collectors based on semi-transparent perovskite solar cells                                                                 |

# Presentation Guide

## Presentation

ICAE2023 will be hold both on-line and on-site. All accepted papers will be oral presentations.

Speakers are required to copy your slides to the computer of the conference room in advance.

If you take part in on-line conference, it is recommended to download the app of Zoom (<https://zoom.us/>) and connect to the Zoom meeting room 15mins before your session starts.

Please change your user name to your full name and your paper ID; Prepare a short bio, around 50 words, and share it in chat of Zoom. Your presentation should be in accordance with your allocated time. **It is 15mins for each paper, including a 12mins presentation and a 3mins Q&A.**

Please always refer to the latest conference program, which can be downloaded from the conference website: [www.applied-energy.org](http://www.applied-energy.org), for actual presentation time.

The links of Zoom will be sent before the opening of the conference. If you need any help, please do not hesitate to contact us via [icae2023@applied-energy.org](mailto:icae2023@applied-energy.org).

If you have any trouble with using Zoom, please see: <https://support.zoom.us/hc/en-us>

## Presentation Venues

The following website lists all presentation venues with the associated Zoom links for online access to the sessions (each Zoom link is specific for one physical room):

[ICAE2023 Presentation Online Link](#)

# Useful Information - Dress Code

## **Qatari University dress Code**

**Male:** Men are advised not to wear short pants.



**Female:** Women are advised not to wear short pants and T-shirts. Long sleeves and long pants are recommended.



**and**





# Useful Information - Registration

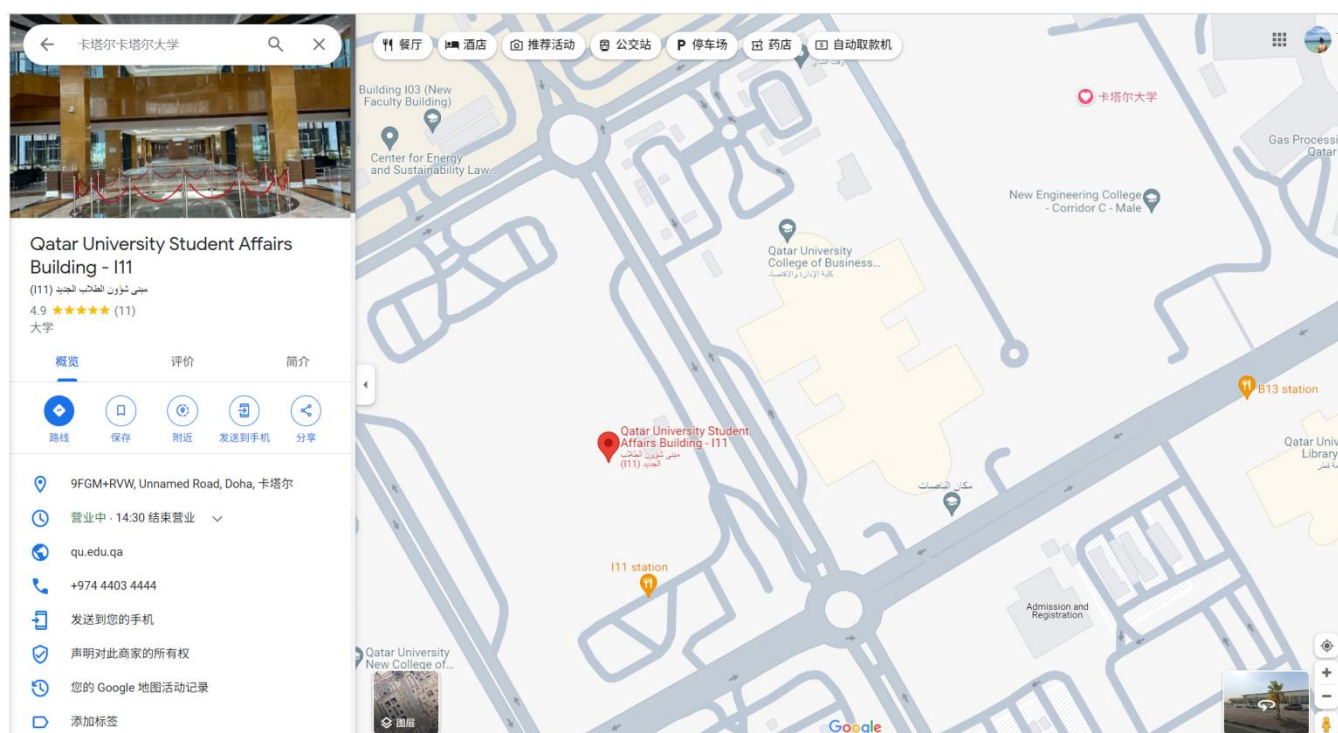
## Registration

### Official Registration Time

| Date                   | Registration Venue            | Doha Time     |
|------------------------|-------------------------------|---------------|
| Dec 2, 2023 (Saturday) | Ground Floor<br>(surround A1) | 14:00 ~ 18:00 |
| Dec 3, 2023 (Sunday)   | Ground Floor<br>(surround A1) | 9:00 ~ 18:00  |

\*Note that the registration is always open during the conference. The above is the official centralized registration time. Please contact WeChat (doing\_do)/ Email (icae2023@applied-energy.org) for registration outside of the official registration time.

\* The conference will be held in **Student Affair Building Complex (Building I11) at Qatar University**.



# Useful Information - Registration

## WhatsApp/WeChat Group (important info)

Please scan and join our ICAE2023 WhatsApp group chat or WeChat group chat for the latest updates and announcements.



<https://chat.whatsapp.com/GNifrRqHo9K9NkgtZUVxjY>

## WhatsApp Group Chat

群聊: ICAE 2023 WG

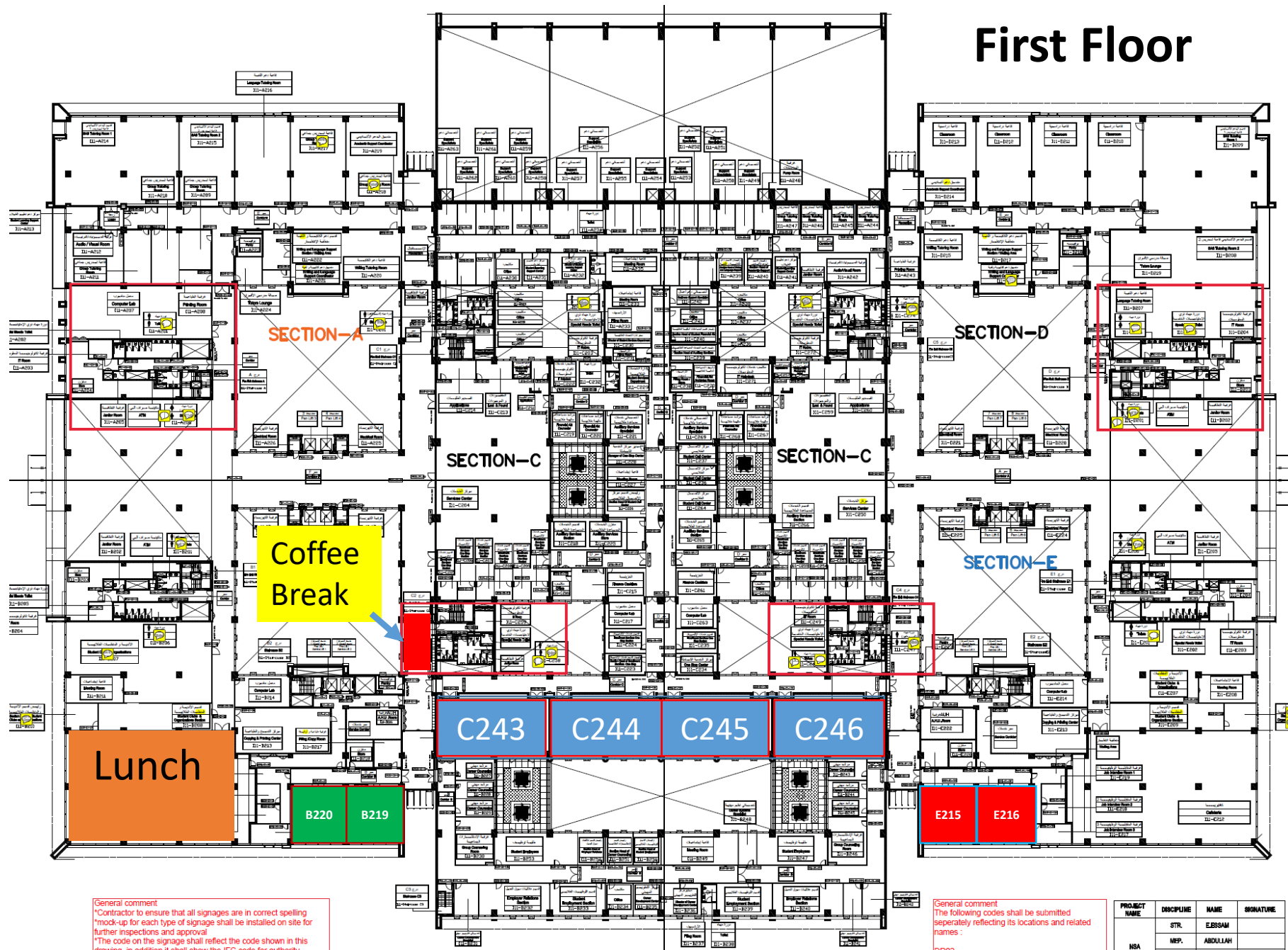


该二维码7天内(12月1日前)有效, 重新进入将更新

## WeChat Group Chat

please add the WeChat ID of the ICAE2023 volunteer: Qu-est-ce-que-tu-es0 or doing do

# First Floor



General comment  
\*Contractor to ensure that all signages are in correct spelling  
\*mock-up for each type of signage shall be installed on site for further inspections and approval  
\*The code on the signage shall reflect the code shown in this drawing, in addition it shall show the IFC code for authority

General comment  
The following codes shall be submitted separately reflecting its locations and related names :  
M-R7

| PROJECT NAME | DISCIPLINE | NAME     | SIGNATURE |
|--------------|------------|----------|-----------|
| NSA          | STR.       | E.BSAM   |           |
|              | MPP.       | ABDULLAH |           |





# Useful Information – Meal and Visits

## Meal, Banquet and Visit

### Meal and Banquet arrangement

|           | Dec 3                      | Dec 4                   | Dec 5                   |
|-----------|----------------------------|-------------------------|-------------------------|
| Tea Break | Ground Floor (surround A1) | First Floor (near C243) | First Floor (near C243) |
| Lunch     | First Floor (near B220)    | First Floor (near B220) | First Floor (near B220) |
| Banquet   | N/A                        | Gala Dinner             | N/A                     |

### Visit

| Technical Visit                                                                 | Social Visit                                                                             |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| The Energy Centre and Al-Bayt Stadium<br>(Qatar 2022, world Cup Opening Venue). | Visit the Doha EXPO 2023                                                                 |
|                                                                                 | Visit the Souq Waqif                                                                     |
|                                                                                 | Visit Museum of Islamic Art / Qatar National<br>Museum (subject to further confirmation) |

### Doha EXPO 2023



Doha Expo 2023 will be held from 2 October 2023 to 28 March 2024 in Doha, Qatar! Officially recognised by the Bureau International des Expositions (BIE) as a Category A1 World Horticultural Expo, Doha Expo will undoubtedly be Qatar's most anticipated event of 2023!

With the success of the 2022 Football World Cup, Qatar has gained the attention of the world, hosting 1.2 million visitors from around the globe and winning worldwide acclaim for the excellence of its transport, accommodation, restaurants, amusements, cultural attractions and many other facilities. Here are the world's top modern city, there are beautiful cultural venues, there is the desert and the sea coexist Middle East style, where people from all over the world can fully feel the exotic cultural charm of Qatar!

# Useful Information – Meal and Visits

## Souq Waqif

Built on the site of Doha's centuries-old trading bazaar, on the banks of Wadi Musheireb, it feels dislocated, especially against Doha's striking, modern skyline. The market's mud buildings evoke memories of a bygone era, but today it remains a hub of activity where commerce and life collide. The winding lanes of Souq Waqif are a vivid reminder of traditional street life.

<https://visitqatar.cn/highlights/iconic-places/12-things-to-do-in-souq-waqif>



## Qatar National Museum

<https://qm.org.qa/en/>

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**Qatar's home for arts and culture.**

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EXHIBITION  
**THE PRESENT, THE FUTURE OF THE PAST**  
Until 16 December 2023  
Fire Station: Artist in Residence



EXHIBITION  
**MASTERPIECES OF FURNITURE DESIGN**  
Until 9 December 2023  
M7



EXHIBITION  
**DAN FLAVIN / DONALD JUDD: DOHA**  
Until 24 February 2024  
Qatar Museums



EXHIBITION  
**DISTILLED LESSONS: ABSTRACTION IN ARAB MODERNISM**  
Until 5 March 2024  
Muslat: Arab Museum of Modern Art



## Technical Visit: 4<sup>th</sup> December

The first **100 registrants** will be taken for a technical visit to the Energy Centre and Al-Bayt Stadium (Qatar 2022, World Cup Opening Venue). After the visit, the participants will join the Gala dinner at the Stadium.

Registration Link: [here](#)

**Buses will depart at 4:00 pm from Student Affairs Building (I11) – in front of the Main Lobby**



### **Gathering point for pick up for:**

- 1. Technical visit**
- 2. Gala Dinner**
- 3. Social visit**

Scan QR code for location on the Google map. There are also maps showing the pickup point at the end of this document.



## Gala Dinner: 4<sup>th</sup> December

It is our privilege to welcome all registered conference participants to the Gala Dinner which is arranged at Al-Bayt Stadium.

**Departure from Student Affairs Building (I11) – in front of the Main Lobby are scheduled as following:**

- **The first batch of buses will depart starting at 05:00 pm**
- **The second batch of buses will start at 06:00 pm**

Please note that around 100 people are requested to travel early at 5:00 pm so that we can manage with the available buses.

**Return transportation at 9:00 pm from Al-Bayt Stadium to Qatar University Metro station**

**Gathering point for pick up for:**

- 1. Technical visit**
- 2. Gala Dinner**
- 3. Social visit**

Scan QR code for location on Google map. There are also maps showing the pickup point at the end of this document.



## Social Visits: 6<sup>th</sup> December

In total, **200 registrants** will be taken for social visits, which are arranged to **EXPO 2023** or **Qatar National Museum**. All participants will be given a tour of **Souq Waqif**.

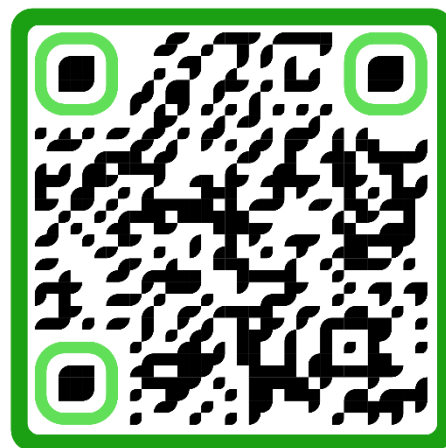
For more details, please refer to the below tables and note that:

- The registration will be on a first-come-first-serve basis.
- The visits will involve some bit of walking. Please wear comfortable footwear.
- The pick up point will be from Student Affairs Building (I11) – in front of the Main Lobby, please refer to the location QR code (same QR code for Gala dinner and technical visit)
- The return destination will be Qatar University metro station.

| 6th December Morning Session   |                                                        |
|--------------------------------|--------------------------------------------------------|
| Group 1 (3 Buses) (50 PERSONS) |                                                        |
| TIMINGS                        | DESCRIPTION                                            |
| 9:00                           | PICK UP FROM QATAR UNIVERSITY GOING TO NATIONAL MUSEUM |
| 9:00 - 9:15                    | Drive to NATIONAL MUSEUM                               |
| 9:15 - 10:30                   | NATIONAL MUSEUM                                        |
| 10:30 -10:45                   | Drive to SOUQ WAQIF                                    |
| 10:45 - 12:00                  | SOUQ WAQIF                                             |
| 12:00 - 12:15                  | DRIVE BACK TO QATAR UNIVERSITY                         |



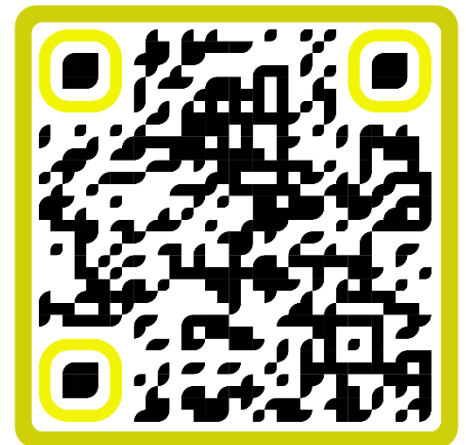
| 6th December Morning Session   |                                                   |
|--------------------------------|---------------------------------------------------|
| Group 2 (3 Buses) (50 PERSONS) |                                                   |
| TIMINGS                        | DESCRIPTION                                       |
| 9:00                           | PICK UP FROM QATAR UNIVERSITY GOING TO EXPO QATAR |
| 9:00 - 9:15                    | Drive to EXPO QATAR                               |
| 9:15 - 10:30                   | EXPO QATAR                                        |
| 10:30 -10:45                   | Drive to SOUQ WAQIF                               |
| 10:45 - 12:00                  | SOUQ WAQIF                                        |
| 12:00 - 12:15                  | DRIVE BACK TO QATAR UNIVERSITY                    |



| 6th December Afternoon Session |                                                        |
|--------------------------------|--------------------------------------------------------|
| Group 3 (3 Buses) (50 PERSONS) |                                                        |
| TIMINGS                        | DESCRIPTION                                            |
| 2:00 PM                        | PICK UP FROM QATAR UNIVERSITY GOING TO NATIONAL MUSEUM |
| 2:00 - 2:15 pm                 | Drive to NATIONAL MUSEUM                               |
| 2:15 - 3:30 pm                 | NATIONAL MUSEUM                                        |
| 3:30 - 3:45                    | Drive to SOUQ WAQIF                                    |
| 3:45 - 5:00                    | SOUQ WAQIF                                             |
| 5:00 - 5:15                    | DRIVE BACK TO QATAR UNIVERSITY                         |



| 6th December Afternoon Session |                                                   |
|--------------------------------|---------------------------------------------------|
| Group 4 (3 Buses) (50 PERSONS) |                                                   |
| TIMINGS                        | DESCRIPTION                                       |
| 2:00 PM                        | PICK UP FROM QATAR UNIVERSITY GOING TO EXPO QATAR |
| 2:00 - 2:15 pm                 | Drive to EXPO QATAR                               |
| 2:15 - 3:30 pm                 | EXPO QATAR                                        |
| 3:30 - 3:45                    | Drive to SOUQ WAQIF                               |
| 3:45 - 5:00                    | SOUQ WAQIF                                        |
| 5:00 - 5:15                    | DRIVE BACK TO QATAR UNIVERSITY                    |

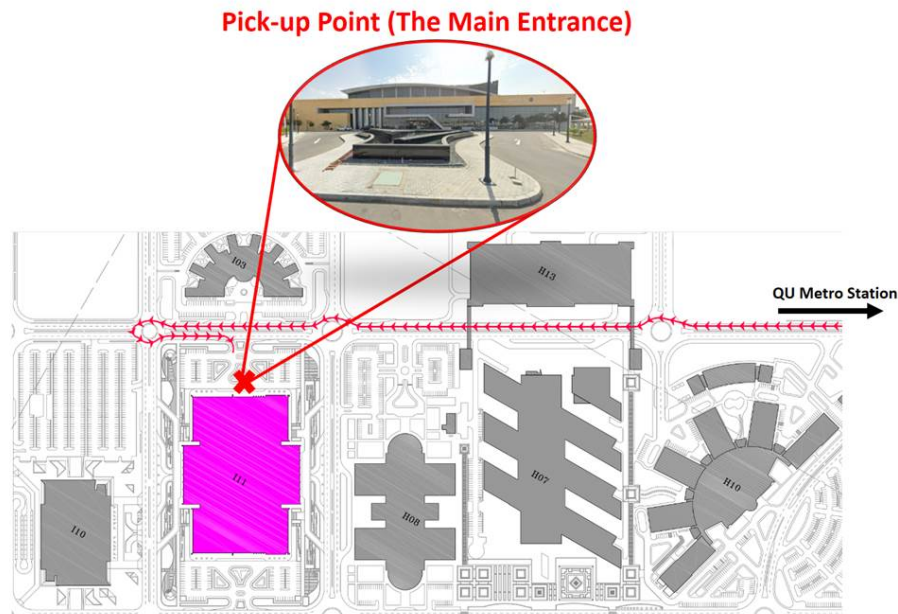


At the end of the tours, participants can choose to return to QU metro Station or to leave the tour and make their own onwards travel arrangements.

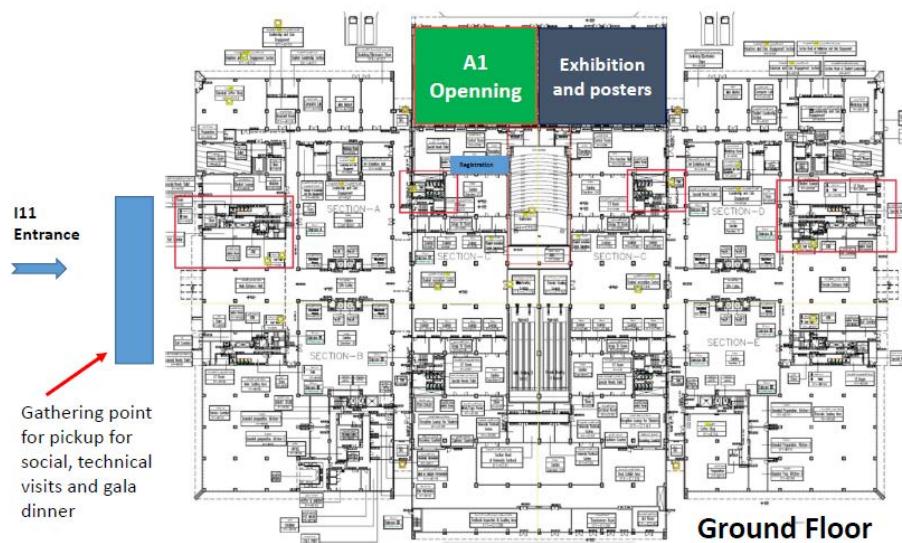




You can also refer to the following two maps for gathering point for pickup:



l11 is highlighted in pink



### Plan for ground floor of I11



# Useful Information - Travel

## International travel

All air travelers from other countries will arrive at Doha's Hamad International Airport. For details on the options of ground transportations to and from the airport, please visit: <https://dohahamadairport.com/airport-guide/to-from-the-airport>.

## Public Transport in Doha

Getting around Qatar is relatively easy, thanks to the country's size and well-maintained roads. Travelling by car is the main way to get around but Qatar's public transport has seen a vast improvement in recent years, largely due to the expansion of its bus and metro services.

Most roads throughout Qatar lead to and from the capital city of Doha, where visitors will land at Hamad International Airport. Getting from one end of the country to another takes only a few hours by car. Many visitors opt for a taxi as it's a very convenient (but expensive) way to get around Qatar.

## Taxis

Taxis can be hired for short distances and trips. Karwa Taxi is operated by the state-run Mowasalat transport company. Besides having the biggest fleet of cars, it's the only taxi brand licensed to operate at Hamad International Airport. Other available services are the app-based Uber and Careem taxis.

Doha taxi fares are metered with a minimum tariff of 10 riyals, followed by 1.6 riyals per km during the day or 1.9 riyals per kilometer for trips at night. You can find taxis at roadside taxi ranks and almost every hotel and shopping mall. If you're not using a taxi app, call Karwa toll-free at 800-TAXI (8294) or at +974 4458 8888 (extra charge of 4 riyals levied).



# Useful Information - Travel

## Metro

Doha Metro is one of the newest forms of public transport available in Qatar. There are currently three lines in operation, red, gold and green. All passengers need to buy a travel card to use the Doha Metro. Single trip costs 2 QAR.

The Red Line: runs for 40 km from Al Wakra north to Lusail, with 17 stations that include West Bay QIC, Katara and Qatar University. This line also connects Hamad International Airport at Terminal 1 with downtown Doha.

The Green Line: runs east to west from Al Mansoura to Al Riffa. The line has 11 stations with notable stops like Hamad Hospital, Al Shaqab and Qatar National Library.

The Gold Line: an east-west route with 11 stations extending from Ras Bu Abboud to Al Aziziyah. Qatar National Museum and Souq Waqif are among the key stops along the Gold Line.

The conference venue, Qatar University, is served by the Red Line of Doha Metro system. Travelling from Doha's Hamad International Airport (HIA) to Qatar University by metro takes approximately 40 minutes.



## Car hire

Car hire is a relatively affordable transport option in Qatar. Several operators can be found at the international airport in Doha, or you could arrange for a car by calling ahead or making an online reservation. Car rental service is available from international brands like Hertz and AVIS, as well as local rental operators.

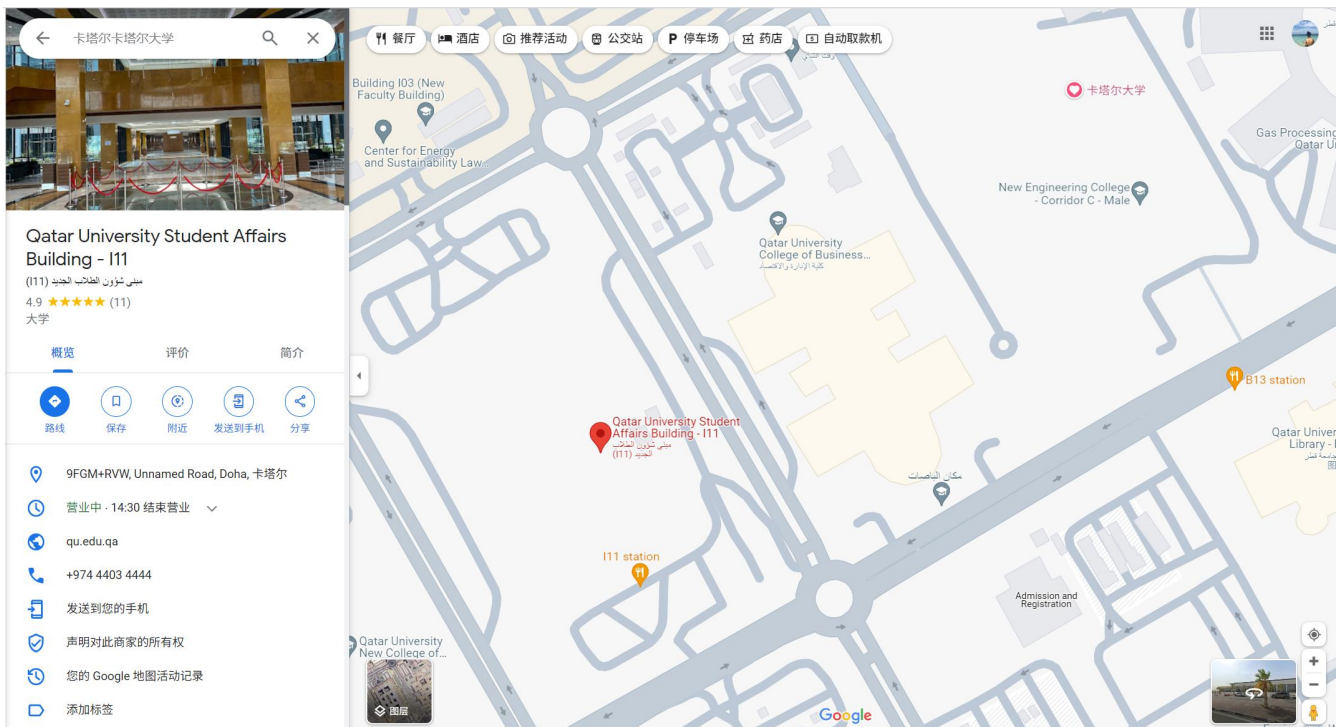
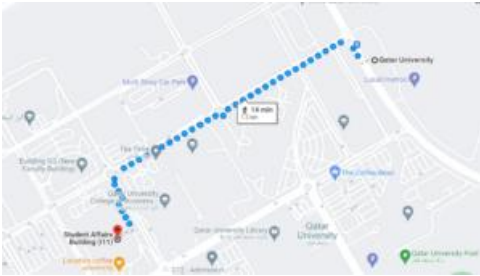
When renting a car in Qatar, foreign drivers need to show their passport and carry either an international driving license or a license issued from a GCC (Gulf Cooperation Council) country.

# Useful Information - Travel

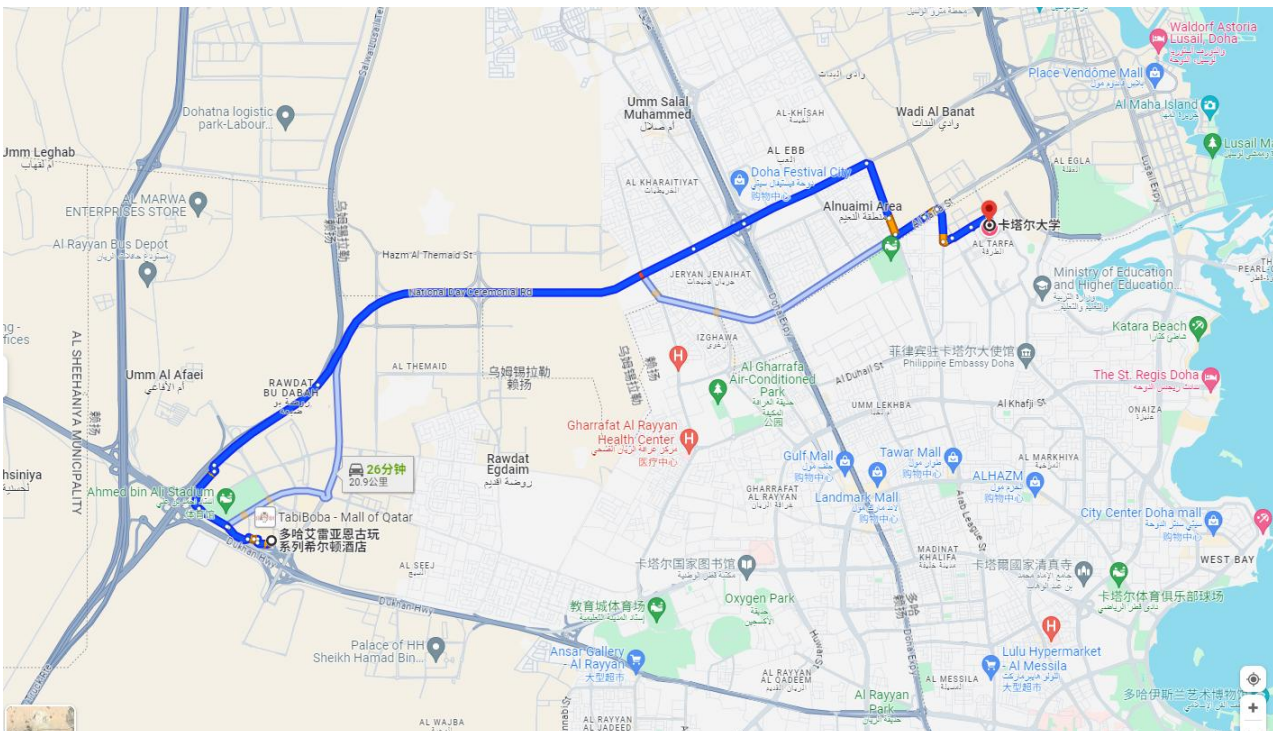


## Travel within the campus of Qatar University

The conference will be held in **Student Affairs Building Complex (Building I11) at Qatar University**. It is within 15 minutes walking distance from the Qatar University metro station. Alternatively, campus bus services provide connection between the Metro station and a number of buildings within the university campus.









# Useful Information - Hotel

## 2. Double Tree by Hilton Doha Downtown

[https://www.hilton.com/en/hotels/dohnodi-doubletree-doha-downtown/?SEO\\_id=GMB-EMEA-DI-DOHNODI](https://www.hilton.com/en/hotels/dohnodi-doubletree-doha-downtown/?SEO_id=GMB-EMEA-DI-DOHNODI)

[Home](#) [Rooms](#) [Hotel Info](#) [Offers](#) [Gallery](#) [Location](#) [Dining](#) [Events](#)

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### DoubleTree by Hilton Doha Downtown

22 NOV WED

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1 Room, 1 Guest

Special Rates

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5.0 [5 Reviews](#)  
Based on 32 guest reviews

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Address  
C. Bino Road  
Doha, Qatar

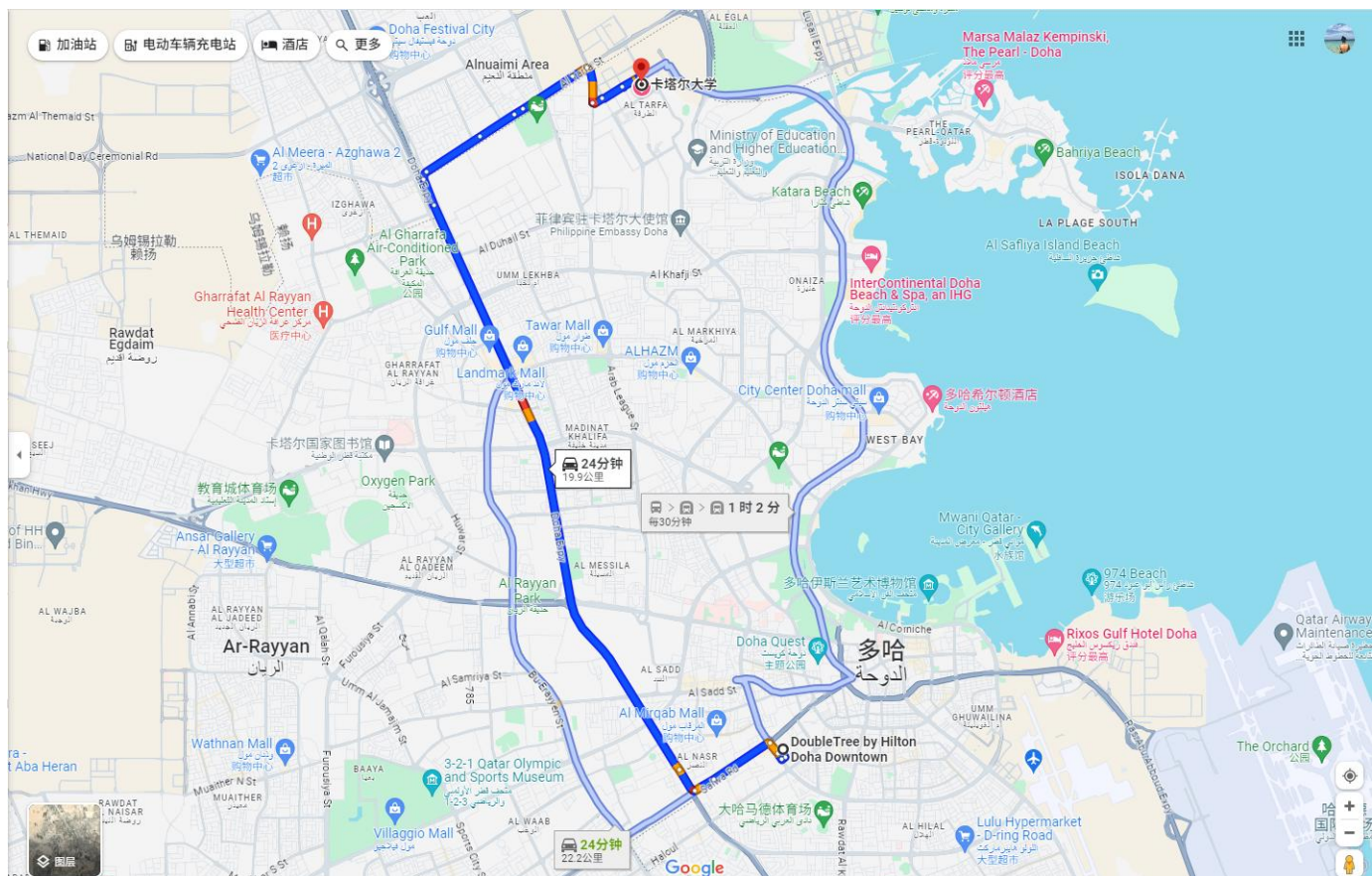
Arrival Time  
Check in 3 pm → Check out 12 pm

#### Contemporary style in central Doha

Just off Salwa Road, our hotel is 10 minutes from the city center, Mushreib Museum, Souq Waqif, and the National Museum of Qatar. Hamad International Airport and Qatar University are 20 minutes away. Enjoy the view from our pool deck, relax at the spa, and keep up your routine in the fitness center. We also have an on-site restaurant and lounge.

#### Our amenities

- Connecting Rooms
- Digital Key
- On-site restaurant
- Room service
- Free parking
- Concierge
- Outdoor pool
- Business center
- Free WiFi
- Spa
- Fitness center
- Pets not allowed



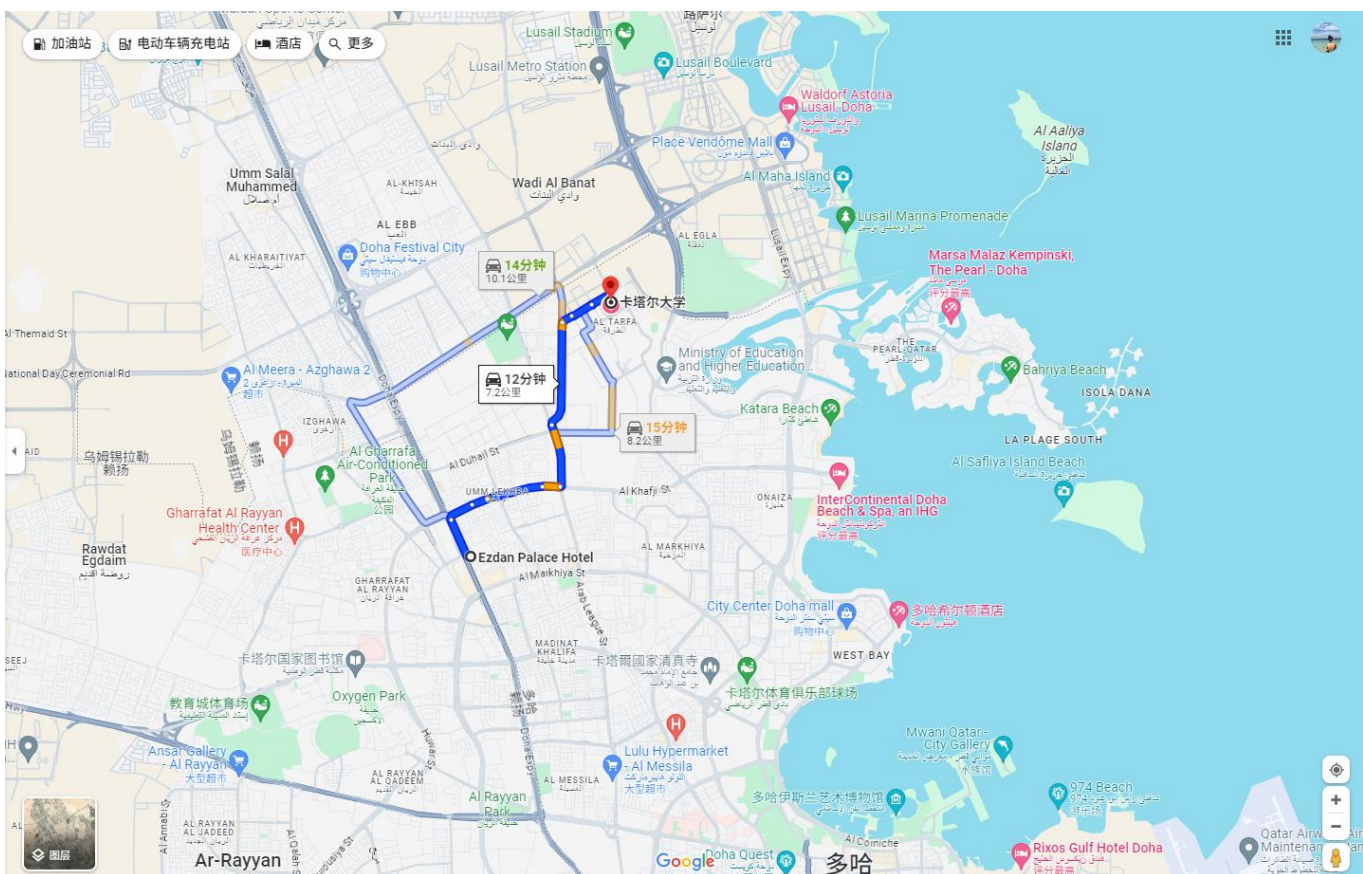
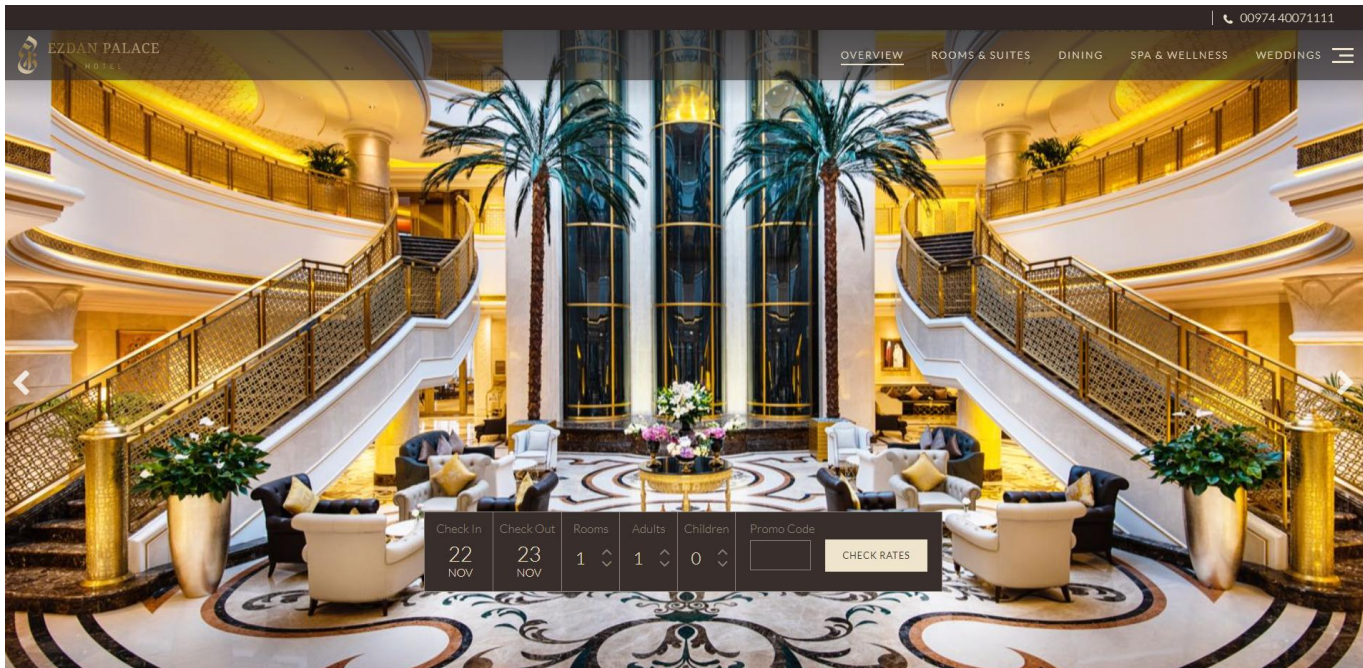






## Useful Information - Hotel

<https://www.ezdanpalace.qa/>



## 5. JOURI, a Murwab Hotel



# Useful Information - Hotel

[https://bookings.travelclick.com/111834?adults=2&children=0&currency=HKD&datein=01/01/2024&domain=www.google.com&gclid=CjwKCAiAx\\_GqBhBQEiwAIDNAZthObk5HEOYM2SVF2ABiXAKBBj7KE20JpfyCYFiDDTVuYA76PRVghoCjWMQAvD\\_BwE&gdp=hotelfinder&hotelID=111834&languageid=5&nights=1&rateplanID=7120695&roomtypeID=498205&subchan=GOOGLE\\_HK\\_desktop\\_CPA&utm\\_campaign=ds\\_9090959734&utm\\_content=HPA\\_111834\\_mapresults\\_1\\_HK\\_desktop\\_2024-01-01\\_selected\\_9090959734\\_705144237\\_standard&utm\\_medium=meta&utm\\_source=googleha#/accommodation/room](https://bookings.travelclick.com/111834?adults=2&children=0&currency=HKD&datein=01/01/2024&domain=www.google.com&gclid=CjwKCAiAx_GqBhBQEiwAIDNAZthObk5HEOYM2SVF2ABiXAKBBj7KE20JpfyCYFiDDTVuYA76PRVghoCjWMQAvD_BwE&gdp=hotelfinder&hotelID=111834&languageid=5&nights=1&rateplanID=7120695&roomtypeID=498205&subchan=GOOGLE_HK_desktop_CPA&utm_campaign=ds_9090959734&utm_content=HPA_111834_mapresults_1_HK_desktop_2024-01-01_selected_9090959734_705144237_standard&utm_medium=meta&utm_source=googleha#/accommodation/room)

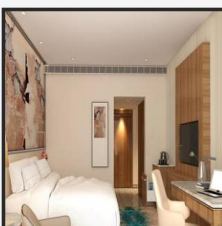
ADULTS & CHILDREN  
2/0  
↓

DATES OF STAY  
Jan 1-2  
↓

ACCOMMODATIONS  
Superior King

TOTAL  
\$ 0.00  
ALL ROOMS \$ 0.00

ENGLISH (HKD)  
↓

ROOMS[Unlock Private Offers](#) (for exclusive discounts) Add Code

### Superior King

2 People 1 King Bed 32 m<sup>2</sup> / 344 ft<sup>2</sup>

Superior room with 32 sqm. Limited connecting rooms are subject to availability. No space to place an extra bed

[View Room Details And Enhancements](#)

Advance Purchase - Breakfast  
Details

\$ 712.62

\$ 712.62

BOOK

## Superior King

Superior room with 32 sqm. Limited connecting rooms are subject to availability. No space to place an extra bed

### ROOM DETAILS

2 People

1 King Bed

32 m<sup>2</sup> / 344 ft<sup>2</sup>

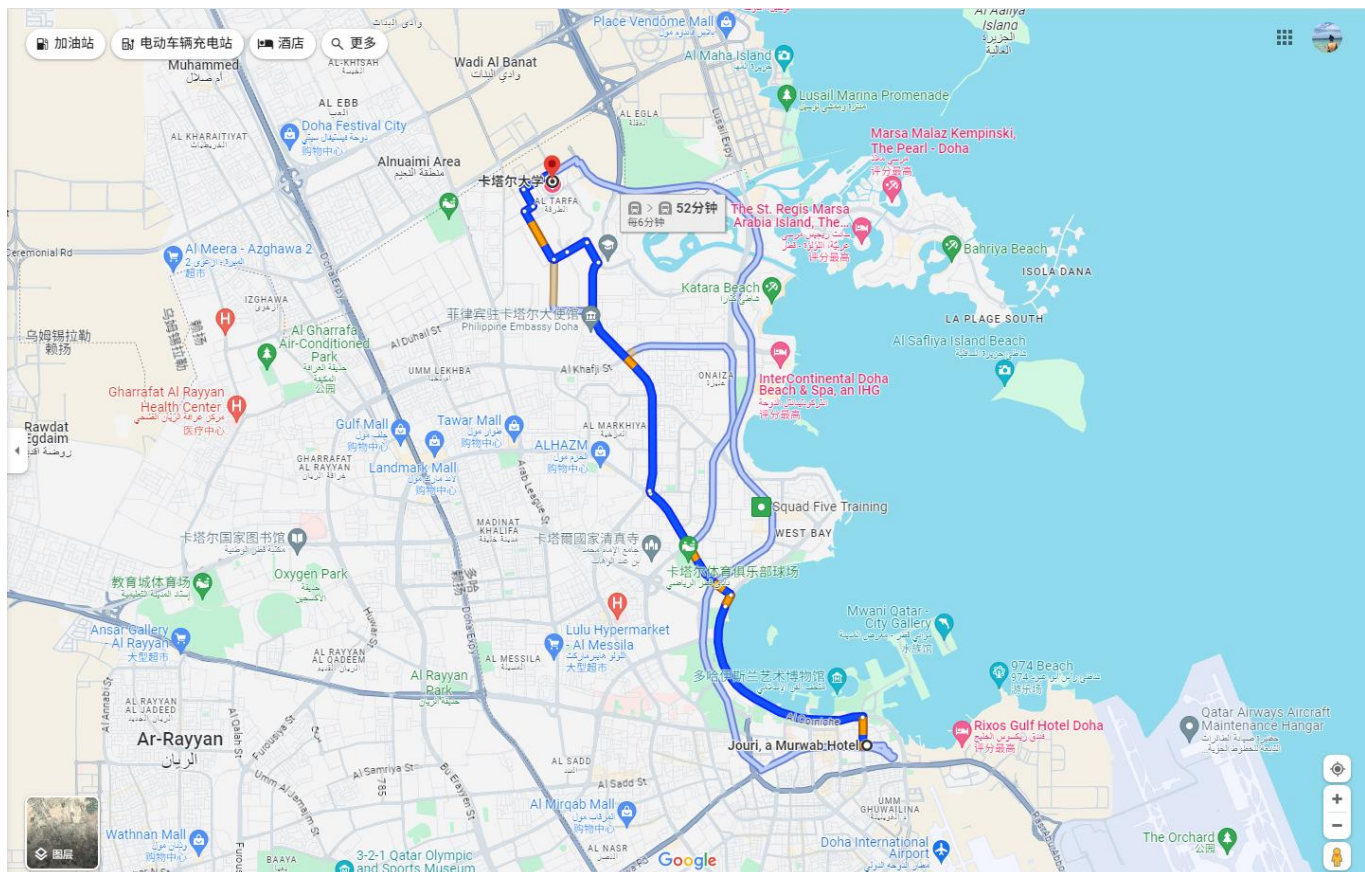
### Current Rate Selection

Advance Purchase - Breakfast [Details](#)

\$ 712.62 x 1 Night \$ 712.62

Subtotal \$ 712.62

[ADD ROOM & CHECKOUT](#)



## 6. MILLENNIUM PLAZA DOHA

[https://www.millenniumhotels.com/zh/bookings/?hotelcode=14695&checkin=2024-01-01&checkout=2024-01-02&rooms=1&adults=2&children=0&utm\\_source=googlehpa&utm\\_medium=metasearch&utm\\_campaign=&utm\\_content=mapresults&currency=HKD&subchan=GO&dsclid=57794377786331136&gclid=CKSihaT91olDFT5MwgUdyW4GzQ&gclsrc=ds&viewrates=all](https://www.millenniumhotels.com/zh/bookings/?hotelcode=14695&checkin=2024-01-01&checkout=2024-01-02&rooms=1&adults=2&children=0&utm_source=googlehpa&utm_medium=metasearch&utm_campaign=&utm_content=mapresults&currency=HKD&subchan=GO&dsclid=57794377786331136&gclid=CKSihaT91olDFT5MwgUdyW4GzQ&gclsrc=ds&viewrates=all)

The map displays a route in Doha, Qatar, starting from the city center and heading towards Millennium Plaza Doha. Key locations along the route include:

- Start Point:** Near the intersection of major roads in central Doha.
- Landmarks:** Al Kharaitiyat, Al Thaimaid, Ar-Rayyan, and the Doha Festival City are visible along the initial part of the route.
- Shopping Centers:** The route passes by several commercial hubs, including Tawar Mall, Landmark Mall, and City Center Doha mall.
- Diplomatic Missions:** The Chinese Embassy (菲律宾卡塔尔大使馆) is located near the middle of the route.
- End Point:** Millennium Plaza Doha, situated near the Doha International Airport.

A callout box indicates a travel time of 22 minutes and a distance of 18.1 km. The map also shows various parks, beaches, and other points of interest throughout the city.

<https://all.accor.com/ssr/app/accor/rates/8112/index.zh.shtml?dateIn=2024-01-01&nights=1&compositions>



# Useful Information - Hotel

=2&stayplus=false&snu=false&accessibleRooms=false&hideWDR=false&hideHotelDetails=false&gclid=CjwKCAiAx\_GqBhBQEiwAIDNAZqqvqnJ56crYmncxngO4SwniwmslQtzL\_E2odRozgNHAlmEH8wgKRcCcDMQAvD\_BwE&utm\_campaign=8112-HK-cpa-desktop-selected-0--mapresults-20590336069-0-0-1&utm\_medium=partenariats&hmGUID=49b723ee-796a-49ae-109b-6b67c7d8bc63&utm\_source=Google%20Hotel%20Ads

all.accor.com/ssr/app/accor/rates/8112/index.zh.shtml?datein=2024-01-01&nights=1&compositions=2&stayplus=false&snu=false&accessibleRooms=false&hideWDR=false&hideHotelDetails=false&g...

地图 ProcessOn - 我的... DeepL Google翻译 - Goo... OpenAI PolyU HongKong 文蔚楼 Microsoft 实验工具 Scholarships Nexus Social Media Papers

选择您的服务

2人1晚价格

15 您搜索的房型

筛选：☐ 免费取消 ☐ 包括早餐 ☐ 无障碍客房

高级房，配备1张大床、宽敞的浴室和工作台

1 特大床

4个人最多 40 m² 位于城市边

请参阅 客房详情

标准房价 (4)

交易和/或套餐费率 (1)

提前预订优惠价格

不可退

在线付款

尊享 10%。填写详细联系方式加入会员。加入免费。

公共 116,74 \$US

会员 105,07 \$US

收藏条件

多哈西海铂尔曼酒店

酒店 5 ⭐ | All 4.7/5 查看评论

入住 15:00 | 退房 12:00

2024年1月1日 → 2024年1月2日

1 晚

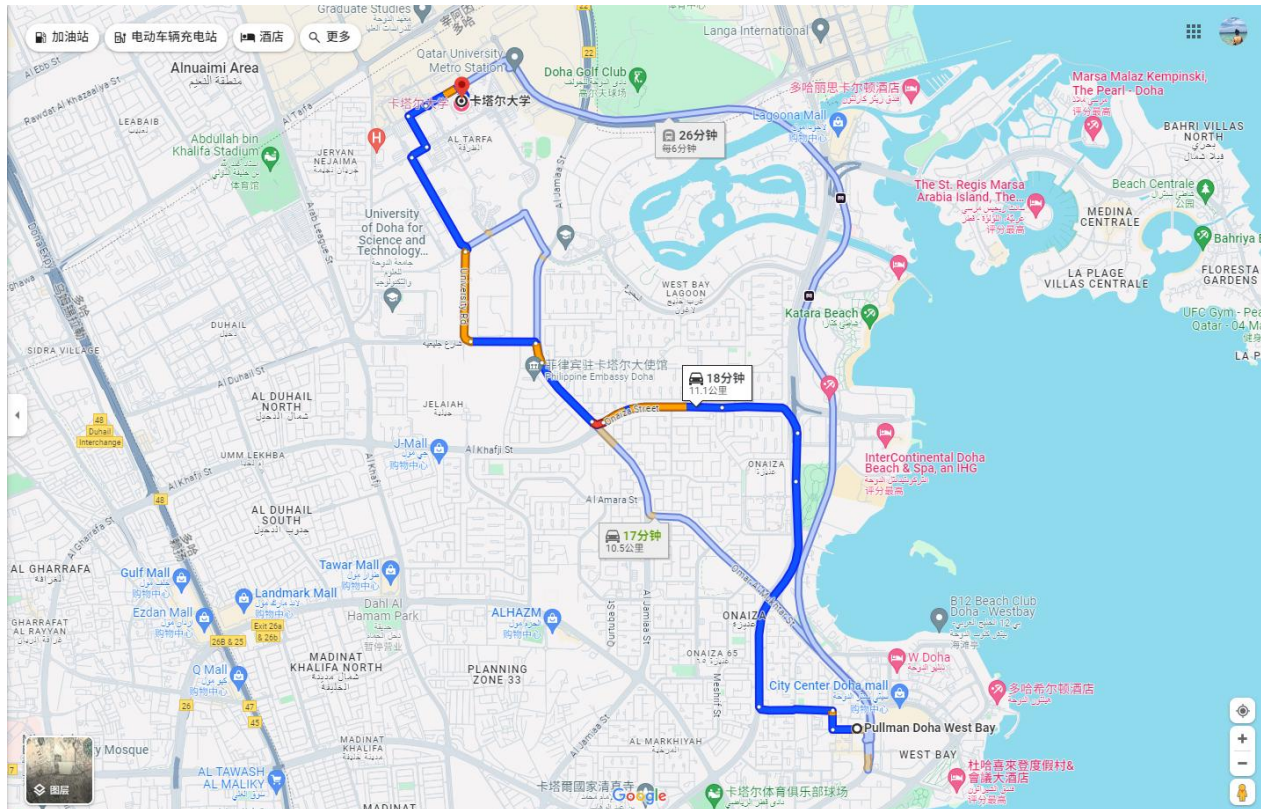
2 位成人

查看 105,07 \$US

查看购物车详细信息

总计 (含税费) 105,07 \$US 即 96,27 €

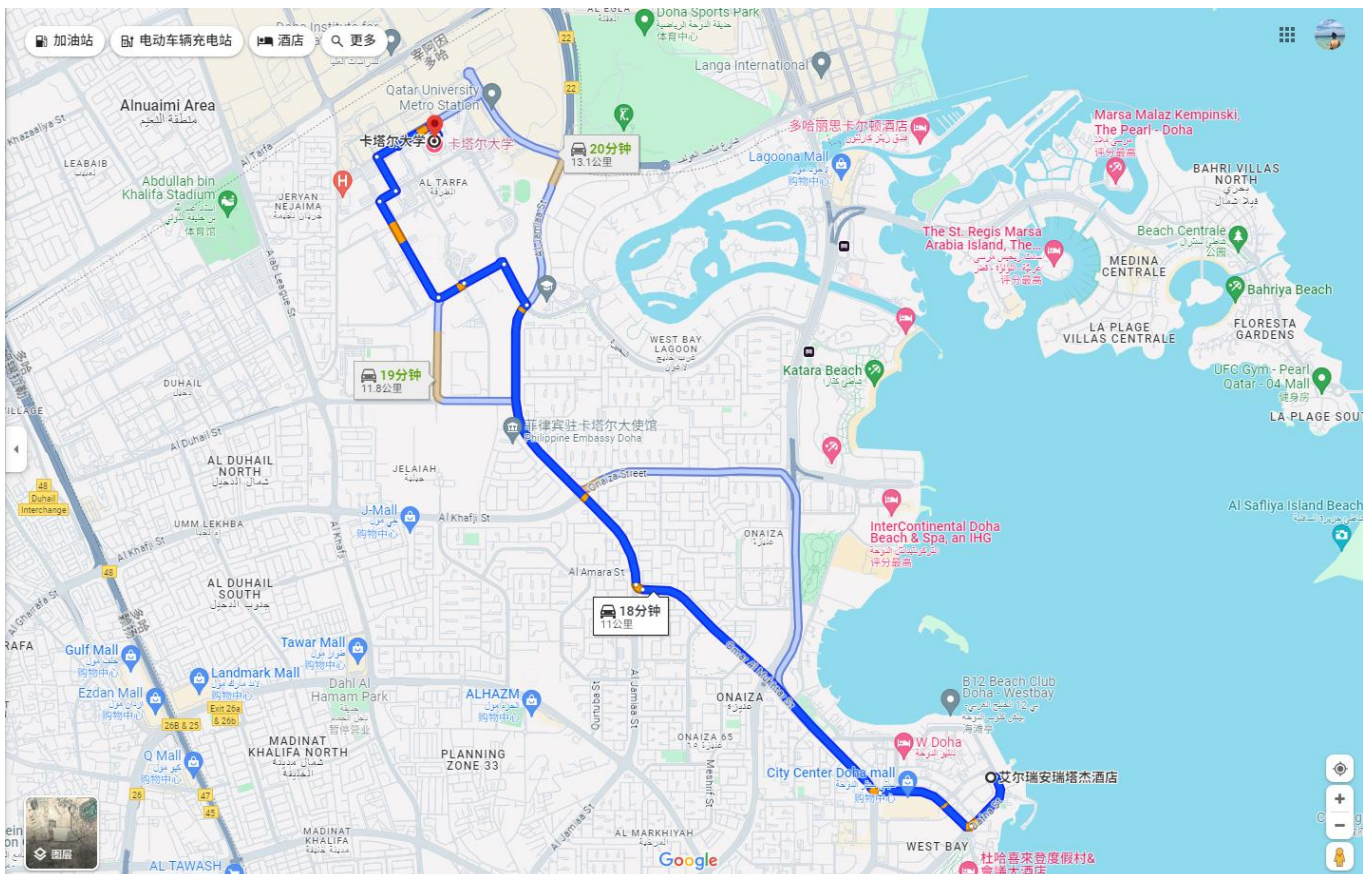
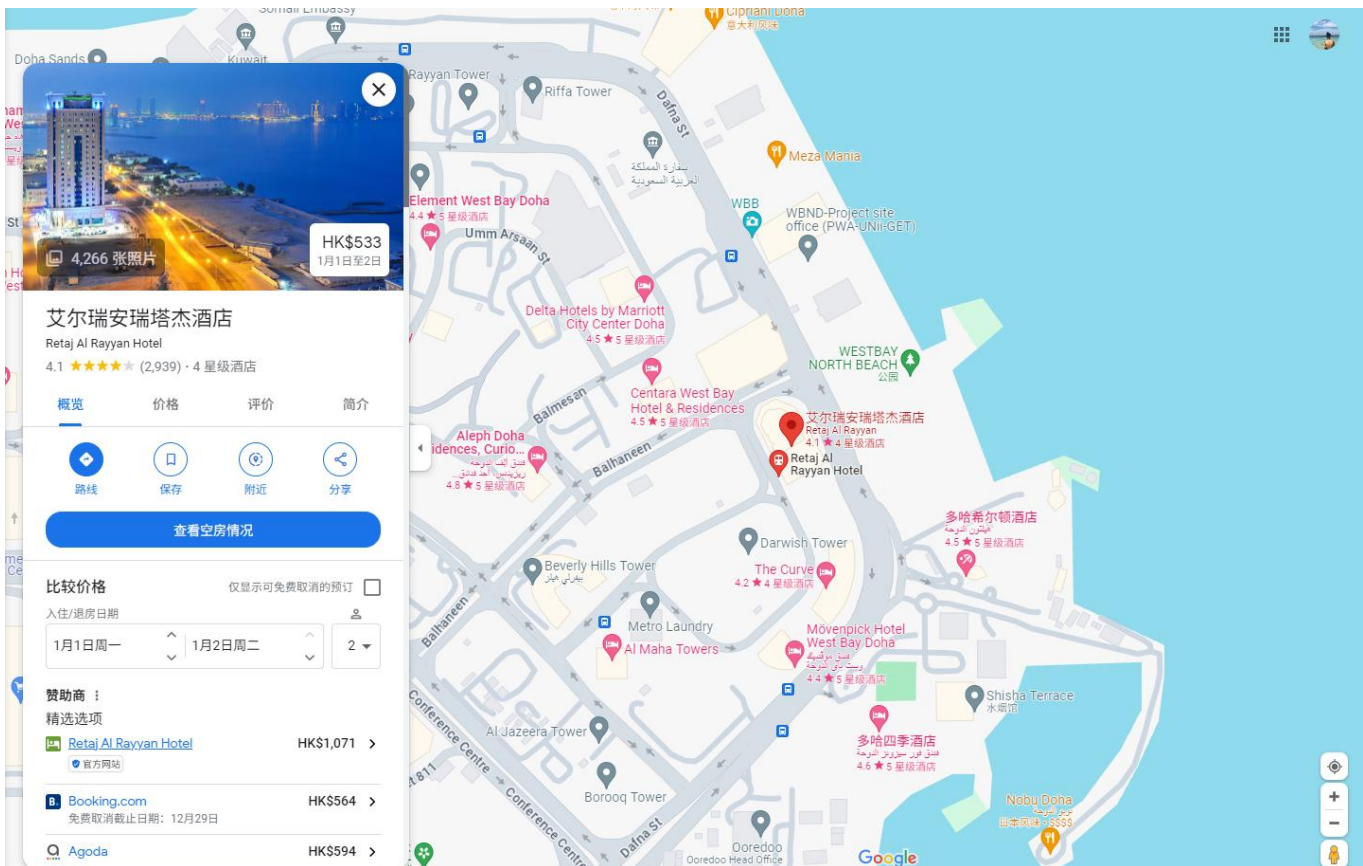
验证



## 8. Retaj Al Rayyan hotel



# Useful Information - Hotel

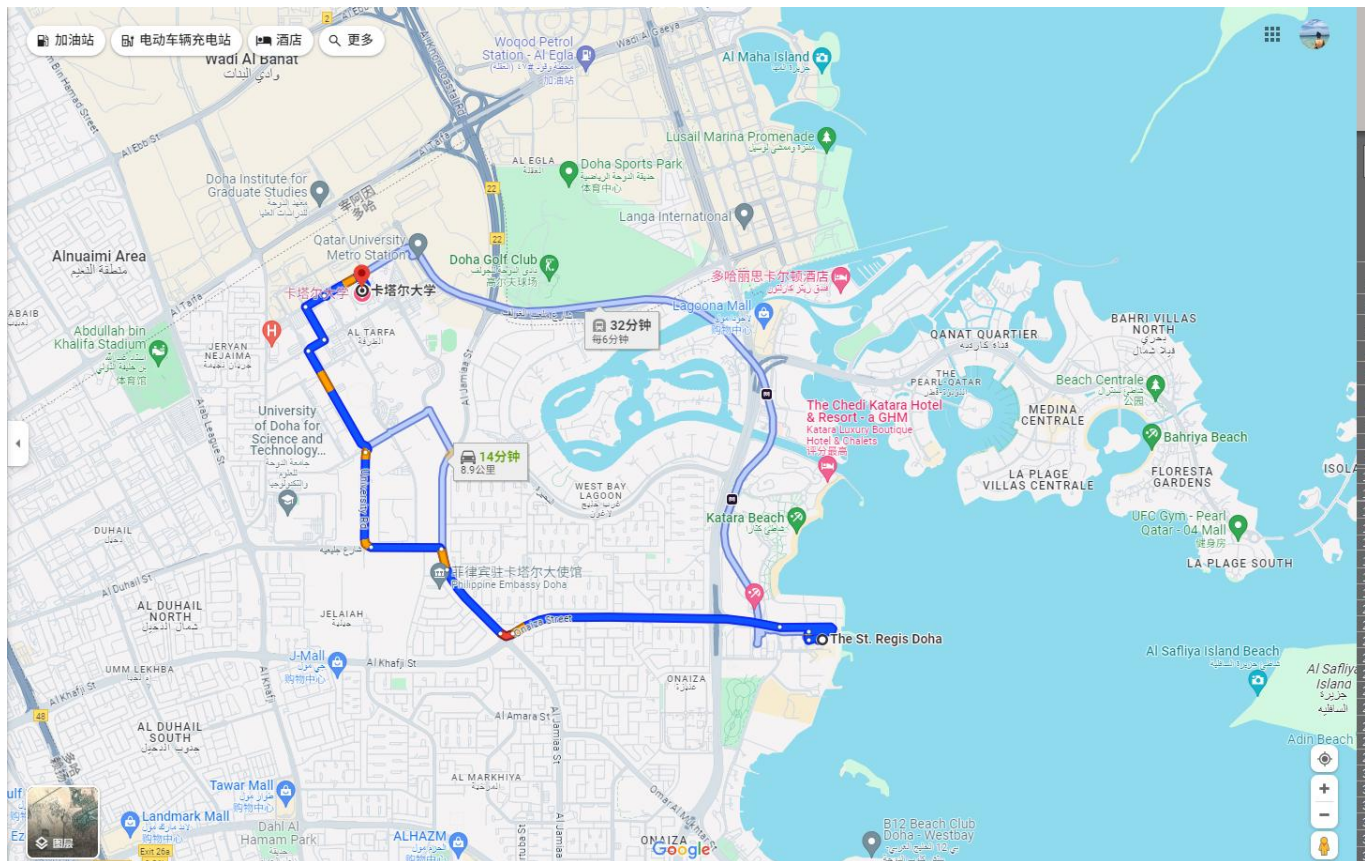


## 9. St Regis



# Useful Information - Hotel

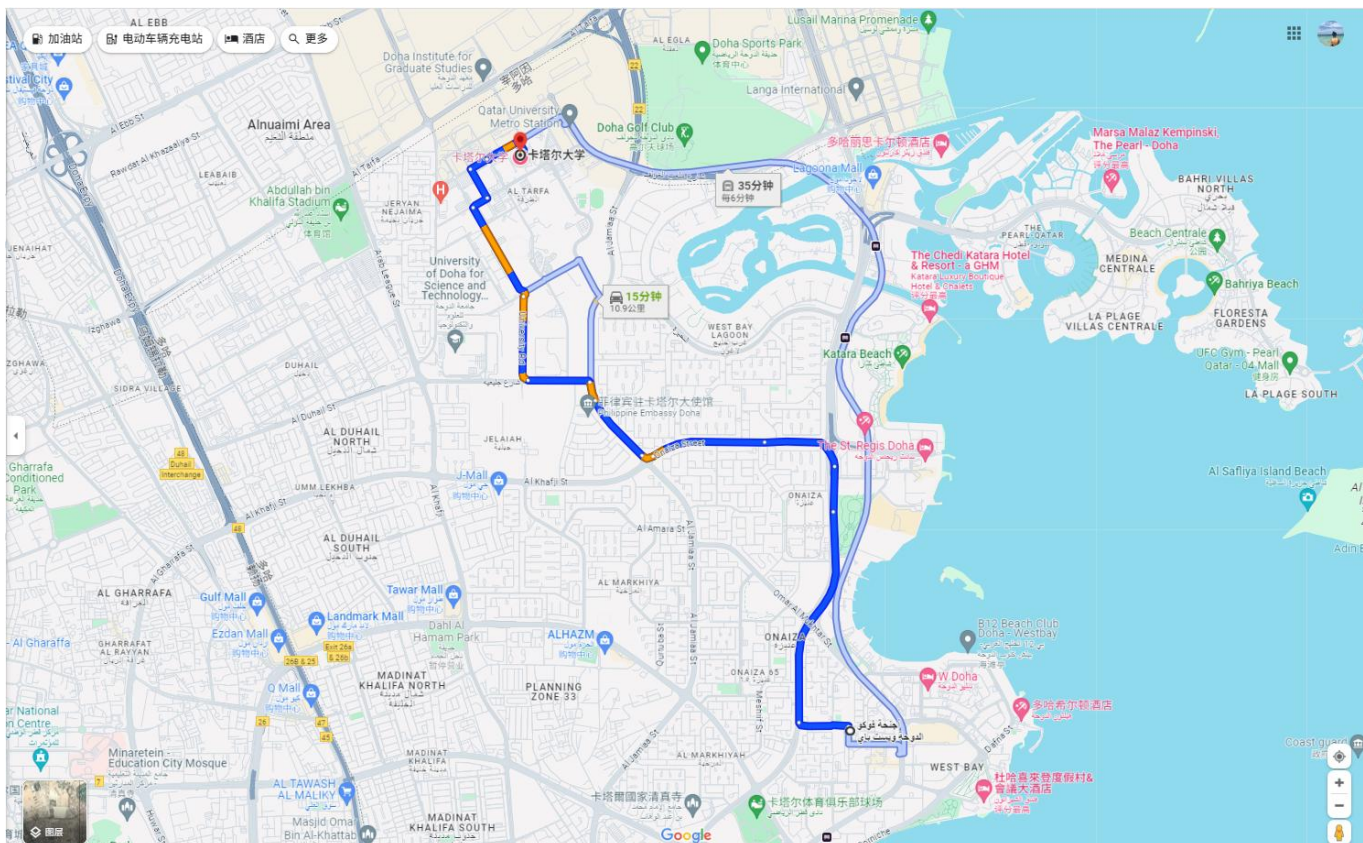
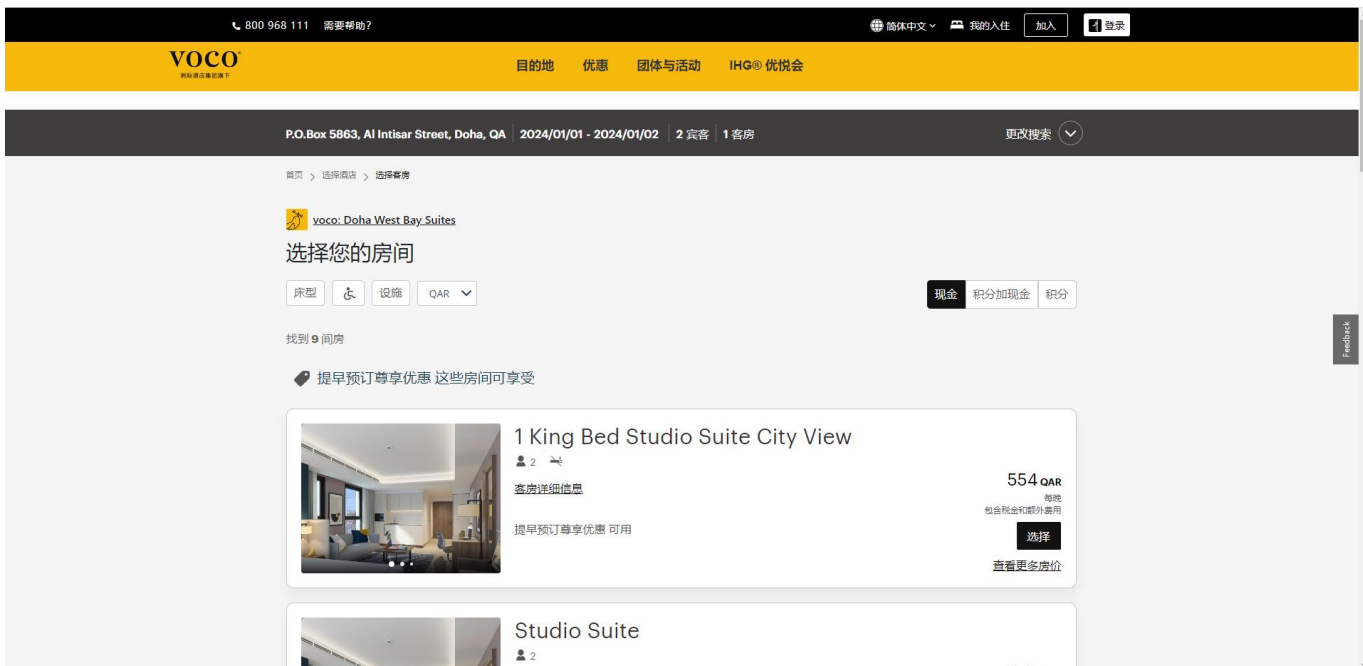
The screenshot displays a hotel booking interface. On the left, a card for 'The St. Regis Doha' shows a price of HK\$2,196 for a stay from January 1st to 2nd. Below this, there are tabs for 'Overview', 'Price', 'Reviews', and 'Introduction'. A 'Compare Prices' section lists options from The St. Regis Doha (HK\$2,506), Trip.com (HK\$2,503), and Hotels.com (HK\$2,503). On the right, a map of Doha shows the hotel's location near the West Bay Lagoon and Katara Beach. Various landmarks like the Doha Golf Club and Langa International are also visible.





# Useful Information - Hotel

https://www.ihg.com/voco/hotels/cn/zh/find-hotels/select-roomrate?fromRedirect=true&qSrt=sBR&glat=FR  
EE\_hpa\_free\_HK\_desktop\_DOHVO\_mapresults\_1\_QAR\_2024-01-01\_selected\_\_\_FALSE\_CXSGIDAP0&qSIH  
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# About Doha



Doha is the capital city of Qatar, a vibrant and modern metropolis located on the Arabian Peninsula. With a rich history dating back centuries, Doha has transformed into a thriving destination that seamlessly blends tradition with innovation.

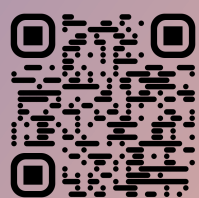
Historically, Doha was a small fishing and pearling village. However, the city experienced rapid development with the discovery of oil in the 1940s, propelling Qatar into prosperity. Today, Doha stands as a symbol of the country's remarkable growth and economic success.

From a tourist perspective, Doha offers a variety of attractions that showcase its cultural heritage and contemporary allure. Visitors can explore the historic Souq Waqif, a bustling market filled with traditional Qatari architecture, handicrafts, and spices. The Museum of Islamic Art is another must-visit, housing a remarkable collection of Islamic artifacts from around the world.

Doha is also known for its futuristic skyline, boasting iconic structures such as the impressive skyscrapers of West Bay and the ultramodern waterfront development called the Pearl-Qatar. The city's commitment to hosting major international events is evident with venues like the Aspire Zone, which hosted the 2006 Asian Games, and the state-of-the-art Education City.

With its blend of history, culture, and modernity, Doha offers a unique and captivating experience for travelers seeking to explore the Arabian Gulf's dynamic energy and Qatari hospitality. International Conference on Applied Energy (ICAE2023) hope you enjoy the mythology in Doha!





For more at  
[www.applied-energy.org/icae2023](http://www.applied-energy.org/icae2023)