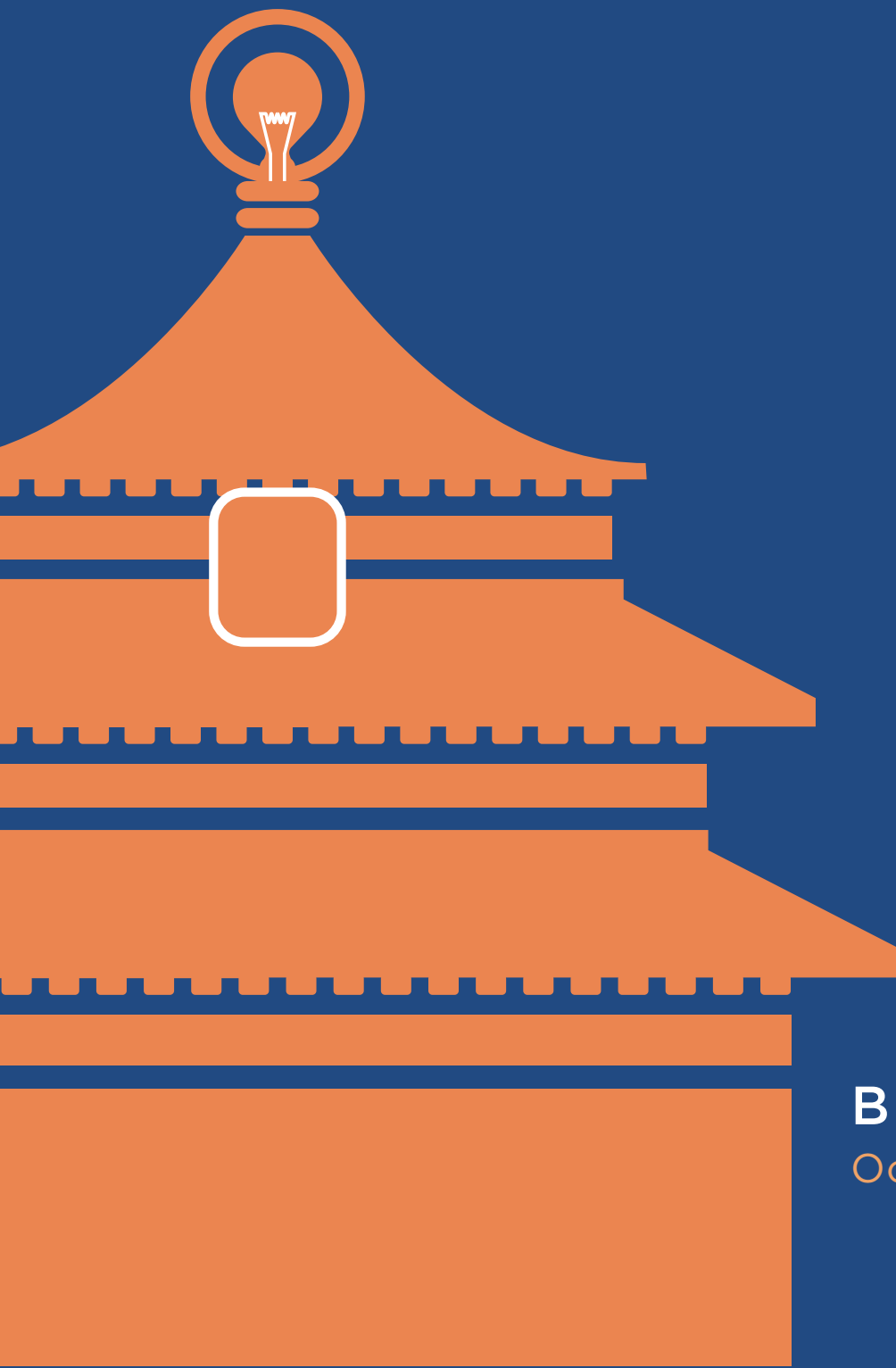


# icae

International Conference on Applied Energy

## 8th International Conference on Applied Energy



**Beijing, China**

October 8-11, 2016





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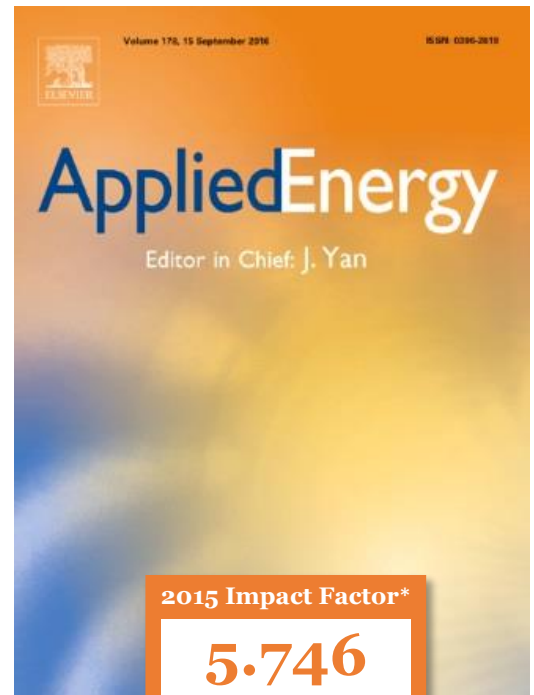
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## Editor-in-Chief

**Prof. Jinyue Yan**

*KTH Royal Institute of Technology, Stockholm, and Mälardalen University, Västerås, Sweden*



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# Welcome to ICAE2016

**icae**  
International Conference on Applied Energy

**Beijing, China**



8<sup>th</sup> International  
Conference on  
Applied Energy

**October 8-11, 2016**

The Local Organizing Committee of ICAE2016 warmly invites you to attend the 8th International Conference on Applied Energy during Oct 8-11, 2016, in Beijing, China. The theme of ICAE2016 is “Transformative Innovations for a Sustainable Future”. As the conference chairmen, it is a great honor for us to make an invitation for all of you to this exciting event, with the cordial hospitality and the warm welcome of Beijing City.

As a continuation of this prestigious conferences series, we will follow the style of the former seven successful Conferences, held in Hong Kong, Singapore, Perugia/Italy, Suzhou/China, Pretoria/South Africa, Taipei/Taiwan and Abu Dhabi/ United Arab Emirates, to have you enjoy the program and social activities provided by the host.

ICAE2016 will include keynote and invited speeches, plenary sessions, oral presentations, and poster sessions on different topics including

- Clean Energy Conversion Technologies
- Energy Management, Policy, Economics and Sustainability
- Energy Sciences
- Energy Storage
- Intelligent Energy Systems
- Mitigation Technologies
- Renewable Energy

We are looking forward to seeing you in Beijing.

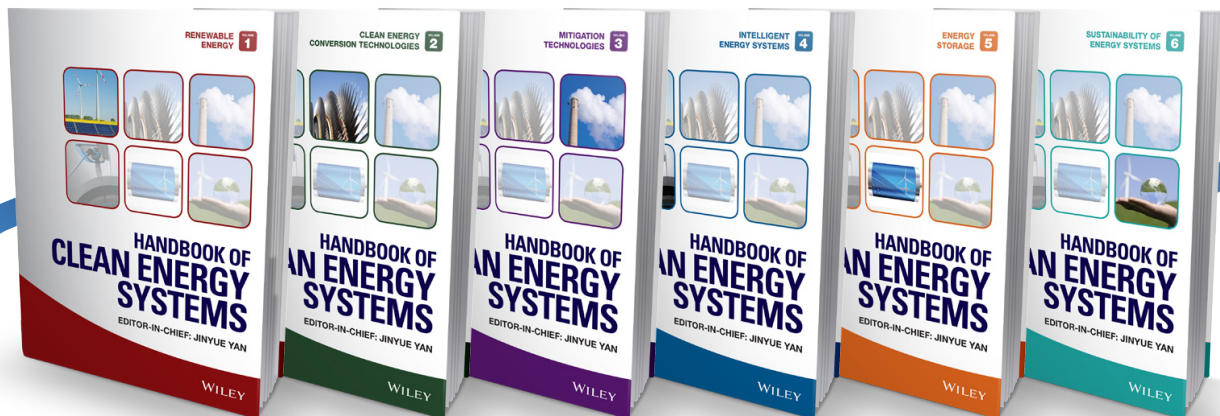
**Conference Chairs**

**Prof. Jinyue Yan**

**Prof. Fengchun Sun**



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issues associated  
with the development  
of our future  
energy systems?



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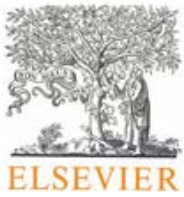
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# Acknowledgements



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## Brief Introduction |

Due to increasingly severe atmospheric environment pollution and smog problems, the society begins to pay close attention to energy conservation and new energy application. PM2.5 emissions, which have great impact on public health and seriously affect the international image of China, are increasingly attracting the attention of the society from all walks of life. Electric vehicles have become the main development direction of automobile industry, which will certainly be the main means for smog control, lower energy security, energy conservation and emissions reduction in transportation field, with the technological advantages of diversified energy sources, zero emission or ultra-low emission, high energy conversion efficiency.

On the basis of Beijing Laboratory for New Energy Vehicles - the first regional co-innovation center approved in Beijing by Beijing Municipal Education Commission Collaborative Innovation Center for Electric Vehicles in Beijing is led by Beijing Institute of Technology, and constituted with the joint of core teams on Beijing electric vehicle research and development: BAIC Group, Beijing Jiaotong University, Beijing University of Technology, Beijing Electric Power Company of SGCC, Beijing Information S&T University, etc. In September 2012, with the joining of Tsinghua University, Institute of Electrical Engineering, CAS, China North Vehicle Research Institute, and North China University of Technology, it forms a core and stable team with clear theory and technology levels, reasonable subject constitution and a clear division of responsibilities.

Collaborative members of Co-Innovation Center have been long-term devoting themselves to the research on basic theory and key technology of electric vehicles. Since the ninth national "five-year" plan, collaborative innovation team members have been supported especially by the Ministry of Education, Ministry of Science and Technology, Ministry of Industry and Information Technology, the General Armaments Department and Beijing Municipal Government. For the past decade, it has presided over 6 items of national 973 plan, 34 subjects of national 863 plan, 62 items of Beijing municipal science and technology project, and the total consumption of all kinds of scientific research funds is more than 2 billion yuan. It has been made a series of achievements: Won 10 national awards, 23 provincial awards, and eight defense awards; Got 283 authorized invention patents; Helped develop 17 national and industry standards, and 21 local standards; Published 28 monographs and 400 academic papers indexed by SCI; Related technical achievements transformation output is about 65 billion yuan; Cumulatively built five national laboratories or experimental bases, 14 provincial laboratories or experimental bases.

The Center has realized the effective collection and coordination of superior resources among the coordinated units in electric vehicles. It can not only commit to solve the existing bottleneck problems in electric vehicle field, such as lacking interdisciplinary fusion, the chasm between science and industry, loose and repetition in the technical research, low efficiency in achievements transformation, poor collaboration across industry, but also promote the trinity innovation ability among the university talents, disciplines, and scientific research, becoming a world-class innovation base for electric vehicle technology with first-rate conditions, first-class talents and first-class achievements. It will both provide technology and talent security for Beijing to form an output value of billions, internationally competitive electric vehicle industry. It also provides strong support and makes a positive contribution for the social and economic development in the capital and the national innovation system construction.



# Committees

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WES-CUE 2017


# Call for Papers

A focal point for ideas, research findings and best practices on low carbon cities and urban energy, WES-CUE 2017 will address a range of critical issues in engineering and sustainability. The WES-CUE 2017 Technical Committee invites the submissions of technical papers for presentation at the Summit in the following areas:



### Transport

- Aviation
- Rail
- e-Mobility/ Public Transport
- Unmanned Vehicles & Systems
- Unmanned Aerial Vehicles
- Traffic Management
- Logistics & Freight Management
- Shipping & Port Services
- Internal Combustion Engines & Fuels
- Modelling & Simulation




### Building

- Energy Efficiency in Buildings
- Smart Home Energy Management Systems
- Building Management Systems
- Sustainable Building Envelopes
- Low Carbon Materials
- Cooling & Heating Systems
- Energy Standards
- Modelling & Simulation
- Sky-rise Greening




### Industry

- Green Manufacturing
- Food Processing & Storage
- Energy Efficiency in Industrial Processes
- ICT Infrastructure/ Data Centres
- Modelling & Simulation
- Urban Farming



### Environment

- Waste Water Management & Reclamation
- Solid Waste Management
- Land Reclamation
- District Cooling & Heating
- Recycling & Waste Management
- Waste to Energy



### Power Generation & Energy Storage

- Solar Thermal Systems
- BIPV & Renewable Energy Applications in Urban Systems
- Wind Power
- Hydro Power
- Bio-energy
- Wave and Tidal
- Smart Grid
- Advanced Storage Systems
- Economics of Electricity Generation
- Geo-thermal Energy
- Baseload Power Generation



### Urban Planning

- Low Carbon Economy
- Urban Planning Integrated with Energy Systems
- Policy and Integrated Master-Planning
- Smart & Sustainable Urban Design
- Urban Emission Mitigation

Authors can submit a 300-word abstract at [www.wes-ies.org](http://www.wes-ies.org) from 10 October 2016 to 27 January 2017. All abstracts must follow the specific format via online submission. For enquiry, contact IES Secretariat at +65 6461 1240 or email [veron.poh@iesnet.org.sg](mailto:veron.poh@iesnet.org.sg)

The abstracts selected by the Abstract Review Committee, comprising various international field experts, will be invited to submit full papers for presentation at the Summit. Final acceptance will be made upon registration of at least one author for each paper at special individual rate of S\$800 (valid for full conference pass and dinner), subjected to prevailing GST. Accepted papers for presentation at the WES-CUE 2017 will be published in the Energy Procedia. Selected full papers presented at WES-CUE 2017 will be invited to re-submit for a special issue in Applied Energy.



### Call for Paper Timeline

- Abstract Submission Opens – 10 Oct 2016
- Abstract Submission Closes – 27 Jan 2017
- Notification of Abstract Acceptance/ Author Registration – 10 Mar 2017
- Full Paper Submission – 15 May 2017

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Applied Energy Symposium & Forum: Low Carbon  
Cities and Urban Energy (WES-CUE 2017)  
Joint Conference  
19 - 21 July 2017  
Suntec Singapore



# Keynote Speakers



**Prof. Lawrence L.  
Kazmerski**

**Member Research  
Staff (Emeritus),  
National Renewable  
Energy Laboratory,  
Golden, CO, USA**

**Research Professor,  
University of Colorado  
Boulder, Boulder, CO,  
USA**

**Visiting Professor,  
IIT-Bombay, India**

## **Keynote: Photovoltaics Technology: Where we are, how we got here, and where we are going**

*“New York Times, April 26, 1954: MURRAY HILL, N.J.—A solar battery, the first of its kind, which converts useful amounts of the sun’s radiation directly and efficiently into electricity, has been constructed here by Bell Telephone Laboratories... It may mark the beginning of a new era, leading eventually to the realization of one of mankind’s most cherished dreams—the harnessing of the almost limitless energy of the sun for uses of civilization”.*

The birth of modern photovoltaics (PV) traces only to the mid-1950s, with the Bell Telephone Laboratories’ development of an efficient, single-crystal Si solar cell. The inventors (Daryl Chapin, Calvin Fuller, and Gerald Pearson) did not envision that their 2-cm<sup>2</sup>, 6%-efficient solar cell would lead to our world of electricity projecting terawatts generated from this simple device. They did not really foresee the surge of manufacturing and deployment in Asia, the embracing of the green-energy benefits in Europe, and the paradoxical investment in these technologies by the petroleum-abundant Arab countries—nor the evolution from those milliwatts of the 1950s to the multi-GW production of today. Since then, Si has dominated the technology and the markets, from space through terrestrial applications. In this presentation, we examine the current status of PV—where we are with the technology (costs, manufacturing, markets) and the industry. We will examine at the status of R&D, and look toward the future—the prospects, potential, gaps, needs, and coming generations of solar electricity. We will look back to time, providing insights into the Bell Labs activities and personalities involved—their motivations, their expertise, and how these beginnings have brought us closer *“the realization of one of mankind’s most cherished dreams”*.

### **Bio**

Lawrence L. Kazmerski is Emeritus Research Staff Member of the National Renewable Energy Laboratory, having served as Executive Director, Science and Technology Partnerships at NREL since 2009. Kazmerski is currently Research Professor at the University of Colorado Boulder. Previously, Kazmerski served as the founding Director of the National Center for Photovoltaics for the period 1999-2008. He received his B.S.E.E. in 1967, M.S.E.E. in 1968, and his Ph.D. degree in electrical engineering in 1970—all from the University of Notre Dame. His research at the University of Maine included NSF- and ERDA-funded work in thin-film photovoltaics and the report of the first thin-film copper-indium-diselenide (CIS) solar cell. Kazmerski has more than 320 publications and some 200 invited talks. He has been recognized with several national and international awards, including the World PV Prize, the IEEE William R. Cherry Award, the AVS Peter Mark Memorial Award, and the ASES Charles Greeley Abbot Award. In 2013, Kazmerski was presented the ISES Christopher A. Weeks Award for contributions in accelerating PV research, development, and deployment around the world. He is a Fellow of the IEEE, a Fellow of the APS, a Fellow of the AVS, and a Fellow of the American Solar Energy Society (ASES). Kazmerski is a member (elected 2005) of the National Academy of Engineering.





**Prof. Heping Xie**

**President of Sichuan  
University  
Academician of  
Chinese Academy of  
Engineering**



**Prof. Liang Bin**

**Head of Chemical  
Engineering  
Department, Sichuan  
University**

**Keynote: Mineralization, a profitable and prosperous CCUS route**

Mineralization of CO<sub>2</sub> with rock or volcanic ash is investigated for long term storage of CO<sub>2</sub>. We present here a new CCUS route for sequestering CO<sub>2</sub> and handling solid waste by mineralization of CO<sub>2</sub> with industrial solid waste such as CaCl<sub>2</sub>, CaSO<sub>4</sub> and minerals, such as K-feldspar. China produces roughly 60% of the total global industrial solid waste, resulting in great environmental challenges. Many basic solid wastes like CaO (Carbide slag from PVC production, steel slag) can react with CO<sub>2</sub> exothermally, and are thermodynamically favorable reactions. In Sichuan University, a novel CMC device (CO<sub>2</sub> mineralization cell) was developed to convert energy released during CO<sub>2</sub> mineralization into electrical power. A well-designed CMC cell can produce electricity with a power density of 55 W/m<sup>2</sup> and produce NaHCO<sub>3</sub> by reacting CaO with CO<sub>2</sub> and NaCl or Na<sub>2</sub>SO<sub>4</sub>. Mineralizing 1 ton of CO<sub>2</sub> allows us to handle 2-3 tons of carbide waste, produce 140 kWh of electricity and 1.9 tons of soda. It is the only route so far to output energy from the mineralization process. This work is the first case to convert the energy released during CO<sub>2</sub> mineralization to electricity. Solid wastes such as CaCl<sub>2</sub> and CaSO<sub>4</sub> were utilized to activate the mineral K-feldspar, which lowered the activation temperature by 300-700°C. The activated ore was mineralized with CO<sub>2</sub> and leached to produce K-fertilizer. The mineralized slag can be used for cement feedstock. This novel mineralization process provides new routes of CCUS to produce chemicals, sequester CO<sub>2</sub> and handle solid waste with low energy consumption. Mineralization of CO<sub>2</sub> can therefore become a profitable CCUS route.

**Bio**

Xie, Heping is an academician of the Chinese Academy of Engineering, and a well-known scientist in energy research and coal minerals. He is the President of Sichuan University, Chairman of Sichuan Province Society of Science, Fellow of State Academic Degree Committee, and Director of State Scholarship Board. He is a pioneer of CCUS research and practice in China. His scientific achievements include his research on the model of rock breakage and disaster induction mechanism, the first use of fractal theory in the research of rock. He developed the new CCUS route, CMC process, to generate electricity by CO<sub>2</sub> mineralization. He published more than 200 peer-reviewed papers and 6 books, and received 6 important awards including the national award of natural science and the national award of scientific progress.

Liang, Bin, Professor in the chemical engineering and low carbon technology. He received his doctorate degree in Tianjin University in 1989. He worked as a visiting scholar in Delft University, The Netherlands, Pacific Northwest National Laboratory, US and New York State University, US. His research interests include industrial catalysis, chemical reaction processes, CO<sub>2</sub> capture and mineralization, as well as biofuels. He has lead more than 40 projects from both fundamental research foundation and industrial sectors. He has published about 250 papers and 1 books.



**Prof. Goran Strbac**

**Imperial College,  
London, UK**

***Keynote: Role and value of flexibility in future low carbon energy systems***

In the context of the key challenges associated with decarbonisation of energy system this talk will examine the importance of flexibility and system integration in facilitating cost effective and secure transition to lower carbon energy systems. This will involve presenting quantitative evidence associated with the benefits that emerging flexible technologies can provide, covering time scales from real time system operation to multi-year investment horizons across local and international energy infrastructures. Furthermore, the importance of the whole-systems approach will be discussed, particularly in the context of effectiveness of the future energy infrastructure operation and development, while considering uncertainties in deployment of low carbon technologies. The presentation will also identify associated market, regulation and policy challenges that will need to be addressed to ensure security and effectiveness of future low carbon energy systems. This talk will highlighting the benefits of the development of efficient and non-discriminatory market mechanisms, coordinated operation of distribution and transmission systems and the integration of wholesale and retail markets, highlighting the need to move beyond present asset-biased regulatory models towards a setup that will directly reward innovation, incentivize more intelligent use of the existing infrastructure and ensure that consumer choices drive future system development. Given growing system complexity and the plethora of competing solutions, it will important to review the role of regulators and ensure that market designs and business models are fit for purpose in the context of significant technological advances and smart grid paradigm.

***Bio***

Goran Strbac is a Professor of Energy Systems at Imperial College London, with comprehensive energy system modelling experience gained over 25 years. He led the development of novel advanced analysis approaches and methodologies in the area of energy system integration including electricity, gas and heat infrastructures, that have been extensively used to inform electricity industry, governments and regulatory bodies about the technical, economic and market challenges associated with future low carbon energy systems including analysis of the role and value of emerging technologies and smart control systems. He is a member of the UK Government Panel of Experts scrutinizing the Electricity Market Reform implementation, member of the Steering Committee of the Smart Grids European Technology Platform, involved in EU Smart Cities Action Cluster on Sustainable Districts and Built Environment, Director of the UK Centre for Grid Scale Energy Storage, Member of Future Power Networks Joint Expert Group of the UK Institute for Engineering and Technology, member of the International Energy Agency Annex 25, member of UK Committee of CIRED. He co-authored 5 books and published over 180 technical papers. <http://www.imperial.ac.uk/people/g.strbac/publications.html>



**Dr. Chengyin Yuan**

**Deputy General  
Manager of Beijing  
Electric Vehicle Co. Ltd**

**VP of Beijing Pride  
Power System  
Technology Ltd**

***Keynote: Electric Vehicle and battery pack development in China***

Electric vehicle industry is developing rapidly in China in last five years, and as one of the most important components. Electric vehicle battery will be used widely in the future after its retirement from the vehicle. The recycling of electric vehicle battery is important for setting up the sustainable supply chain of electric vehicle industry. This talk will present the current development of electric vehicles and battery recycling status in China. Taking the Beijing Electric Vehicle Company as an example, this talk will extend the detailed introduction of the related technique combined with ongoing research work for battery recycling.

***Bio***

Dr. Chengyin Yuan, is currently Deputy General Manager at the Beijing Electric Vehicle Co. Ltd, and VP at the Beijing Pride Power System Technology Ltd. He received his Ph.D in Mechanical Engineering from the University of Illinois at Urbana-Champaign, and master and bachelor degrees from Tsinghua University. Prior to joining BJEV, he was a senior researcher at General Motors Global Research and Development Center in Warren, Michigan. Chengyin's work has resulted in more than 30 technical publications and around 30 China, U.S. and international patents and patent applications. Throughout his career, Chengyin has received numerous awards including 2010 SME Richard E. Morley Outstanding Young Manufacturing Engineer Award, 2010 SAE Foundation Young Manufacturing Leadership Award, Beijing Municipal Government Distinguished experts, BAIC Distinguished Chief Scientist, GM's "Best of the Best" Chairman's Honor Award and the Boss Kettering Award, etc. As the program leader, he has involved into more than 10 national and Beijing government funded projects with more than 50 million RMB funding support.



**Gaopeng Li**

**Chief Engineer of  
National Engineering  
Technology Research  
Center for Electric Bus  
Control and Safety**

**Deputy Technical  
Director of Zhengzhou  
Yutong Bus Co., Ltd**

***Keynote: Research, development and industrialization of the Electric Bus in China***

The development of the electric bus technology faced three major bottlenecks, the low integration and high cost of powertrain system, the short service life and poor environmental adaptability of the battery power system, the low energy efficiency and short driving range. The speech will give the detailed introduction of the typical technological innovation for the above bottlenecks in China. Taking an example with Zhengzhou Yutong Bus company, the products based on the above technologies have promoted more than 40 thousand sales of Electric Bus in China, and it is also in demonstration operation in France, Poland, etc., simultaneously, bringing significant economic and social benefits, reducing 50 thousand liters of fuel consumption, 150 tons of CO2 and 180 tons of PM 2.5 emission each year.

***Bio***

Gaopeng Li is the Chief Engineer of National Engineering Technology Research Center for Electric Bus Control and Safety, and the Deputy Technical director of Zhengzhou Yutong Bus Co., Ltd. He is the Council of National Engineering Laboratory for Electric Vehicles, the Innovative Science and Technology Team Leader of Henan Province and the Member of the Twelfth All-China Youth Federation. He commits to the energy-saving and new energy bus key technology research and development, and presided the development of the series energy saving and new energy bus products, formed the most complete energy saving and new energy bus product type spectrum. He authorized 40 patents and won 11 scientific and technological awards, including the national scientific and technological progress.



# Panel Sessions

## Day 1

**13:40-15:20**

**Room: 201#A**

### Integrated Energy Networks

Energy systems (e.g. electric power systems, natural gas networks, hydrogen production and transportation, district heating and cooling systems, electrified transportation, and the associated information and communication infrastructure) are undergoing a radical revolution. This revolution is affecting and integrating various energy production, energy supply networks and consumption, and is leading to a paradigm shift in how the balance of supply and demand is assured in the electricity grid. It is significantly increasing the coupling, interactions and synergies between energy networks at various scales, e.g. from multinational, national, community scale down to building level. This panel will discuss the next generation integrated energy networks including the latest development of Energy Internet and Multi-Vector Energy Systems. This Panel is co-supported by the Special Committee of Energy Internet, China Electrotechnical Society, and the Applied Energy UNiLAB on Synergies between Energy Networks.

**Chair:** Prof. Jianzhong Wu

**Participants:** Prof. G Strbac, Prof. Q Wu, Dr. Y Zhang, Prof. U Desideri

## Day 1

**15:50-17:30**

**Room: 201#A**

### UNiLAB

The UNiLAB is an international virtual lab of collective intelligence in Applied Energy for research& innovation without borders. The mission/objectives of the UNiLAB are: to unlock the world's creativity to remove the traditional barriers to research and innovation; to empower ever-growing Applied Energy's community of researchers and innovators to find success through the UNiLAB platform; to maximize the win-win benefits through international cooperation in focused topics.

**Chair:** Prof. Jinyue Yan

**Participants:** Prof. CS Wang, Dr. P Linga, Prof. JZ Wu, Prof. R Span, Prof. ST Tu, Prof. LX Tian, Dr. Y Ding, Prof. CF Sun, Prof. C Wang

## Day 2

**08:10-09:50**

**Room: 201#A**

### Scholarly Publication

The goal of this panel session is to provide background information on academic publishing. It outlines the various important steps that an author needs to follow in preparing his manuscript for a successful publication in an international journal. This presentation will also give you an overview of the publishing market and ethics.

**Chair:** Mrs Fernanda Ogochi

**Presentation:** Prof. J Yan, Prof. SK Chou, Prof. U Desideri

## Day 2

**10:20-12:00**

**Room: 201#A**

### Fuel Cells R&D and Demonstration: Introducing the World First Largest PEM Fuel Cell in China

Within the framework of the European project DEMCOPEM-2MW and a cooperation with China, in the last part of 2016 is scheduled the first operation of the world's largest PEM fuel cell power plant, rated at 2 MW. The plant demonstration is located at a Chlor-Alkali industry site in North China. The Panel hosts representatives from the project leaders, including fuel cell and plant manufacturers, as well as representatives from Chinese R&D on fuel cells, introducing the plant first operating results and discussing the potential of large PEM installations for the industry in China and worldwide.

**Chair:** Prof. S Campanari

**Participants:** Dr. P Mu, Dr. JJ Coolegem, Dr. JH ten Have, Mr. B Xu

## Day 2

13:40-15:20

Room: 201#A

### Energy Resilient Urban Systems

Urban resilience has become an increasingly pressing issue with high frequency of natural or human-induced disasters in cities, which led to energy shortage, heat wave, flooding and other consequences. Contemporary cities, however, were not necessarily designed with resiliency in mind. Urban form and infrastructural systems are often produced according to organizational principles other than resilience to climate change. Research on urban energy systems is emerging that sees cities as systems of energy, materials, water, transportation and informational flows. The understanding of properties behind such as multi-scale system complexity and cross-sectorial interdependency are keys to develop a resilient and sustainable urban future. This perspective gives rise to a central question: What are the transformative strategies of *Energy resilient urban systems* to make cities more efficient in performance, more renewable in resource management, and more resilient in their systems behavior? The Panel brings in scholars from areas of energy, engineering, architecture, city planning, systems modeling and social sciences. The Session on *Urban energy systems* also invites paper submissions to ICAE 2016 to address the related issues and beyond.

**Chair:** Prof. P Yang, Prof. Y Yamagata

**Participants:** Prof. J Yan, Prof. E Dhalquist, Prof. J Wu, Prof. J Crittenden, Prof. D Castro, Prof. R Wennersten, Prof. W Ding

## Day 2

15:50-17:30

Room: 201#A

### The Future of 'Design + Energy'

Social Innovation in Energy requires synthesis of Design and Energy as an integrated process. What to look forward to? Can Design be the next game-changing catalyst? This panel will be focused on a discussion of what the future Design + Energy may have. To target at the compelling issues of our time – energy & resources shortage, aging society, regional and cultural transitions, social behaviour changes – that represent significant challenges for the future development of global energy solutions. The discussion will explore these challenges through reviewing experimental energy solutions from the development of various energy conservation systems, intelligent navigation systems, to the urban, architectural and spatial developments. The panel will be assembled by researchers and young scientists who have already been focusing on this emerging sector – Design Energy Innovation. Panelists will be prepared with their own questions as well as any submitted prior to the conference, and open question and answer periods will be included. The audiences will benefit from this discussion which will reveal opportunities created by implementing new energy technologies into people's lives and making real differences to important issues and opportunities which impact on behaviour changes.

**Chair:** Prof. Stephen Wang

**Participants:** Prof. David Chiaramonti, Prof. Xin Cui, Prof. Agus Sasmito, Prof. Nadia Maizi, Ms. Anna Frost, Mr. Pili Roberto

## Day 3

08:10-10:50

Room: 201#A

### Applied Energy Summer School: Open-source Modelling Tools

Applied Energy Summer School (AEss), associated with UNILAB, a specialized platform to facilitate networking and communications in energy areas and strengthen the multi-disciplinary collaborations, aims to build an academic, professional and persistent community for young scholars and experts by providing training courses, teamwork projects, plant tour opportunities and career development. The courses are delivered through a combination of academic lectures on open-source modelling tools, career development module, team-project-design, and on-site tour of renewable pilot projects where students have the opportunity to see working systems that utilize clean energy.

**Chair:** Dr. PE Campana

**Participants:** Prof. J Yan, Prof. B Chen, Mr. Y Zhang

## Venue information

The venue of ICAE2016 is The Beijing International Convention Center. It is located in the flourishing Yayuncun area along Beijing's North Fourth Ring Road, where the central axis of the city meets the Fourth Ring Road, and right next to the national Olympic stadiums like the Bird's Nest and the Water Cube. It's a 20 km trip east to the airport, a 9 km journey south to Tiananmen Square, a 10 km excursion west to the Summer Palace, and an 80 km sojourn north to the Badaling section of the Great Wall and with the Olympic Village only a stone's throw away.



### *From Capital Airport*

Airport Express → Subway Line 10 → Subway Line 8

Airport Express Shuttle Bus Line 5

Airport Express → Subway Line 10 → Bus Route 380

Airport Express Shuttle Bus Line 6 → Bus Route 696

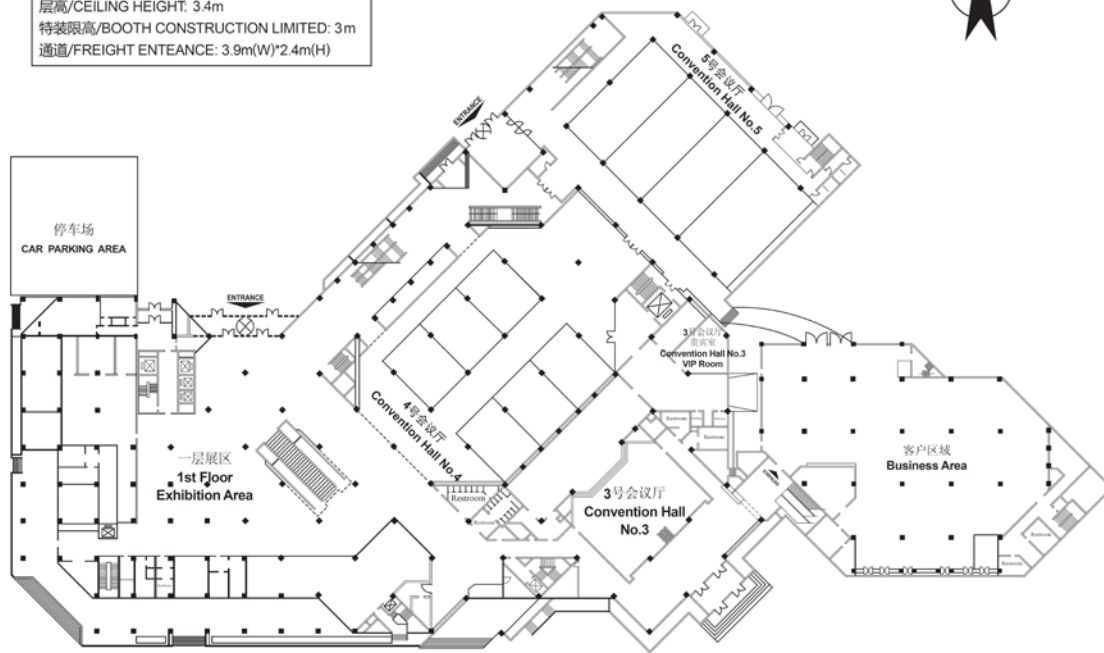
Airport Express → Subway Line 10 → Bus Route 82



# BICC 一层平面图

## PLAN OF BICC LEVEL 1

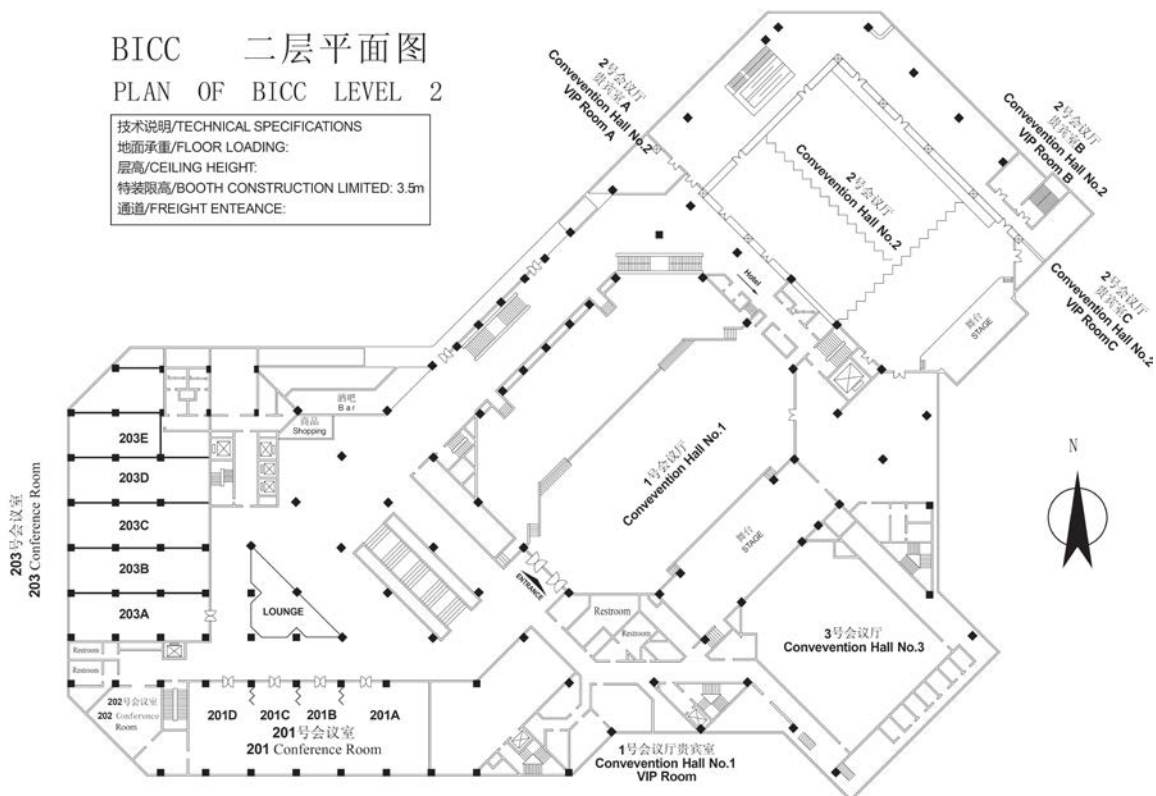
技术说明/TECHNICAL SPECIFICATIONS  
 地面承重/FLOOR LOADING:  
 层高/CEILING HEIGHT: 3.4m  
 特装限高/BOOTH CONSTRUCTION LIMITED: 3m  
 通道/FREIGHT ENTEANCE: 3.9m(W)\*2.4m(H)



# BICC 二层平面图

## PLAN OF BICC LEVEL 2

技术说明/TECHNICAL SPECIFICATIONS  
 地面承重/FLOOR LOADING:  
 层高/CEILING HEIGHT: 3.5m  
 特装限高/BOOTH CONSTRUCTION LIMITED: 3.5m  
 通道/FREIGHT ENTEANCE:



## Planned technical tour

The visit to the BAIC BJEV, Collaborative Innovation Center of Electric Vehicles, and SHENWU GROUP will be arranged on Oct. 12 with maximum 100 positions available for the tour. More information will be provided during the conference at the registration desk.

# Speaker's Guide

## Presentation

Length of presentation material should be in accordance with your allocated time. You are requested to load your presentation files before the session starts. Each oral presentation at the breakaway venues is limited to 20 minutes, which include the questions and answers. Please refer to this program booklet for actual presentation times. You are kindly requested to be present in the relevant presentation venue at least 10 minutes before the session starts.

Each presentation room is equipped with a laptop computer with a data projector. PowerPoint is the standard presentation format. The computers in the meetings rooms are provided to Window-based PC Users. Conference volunteers will be available to assist you in case you encounter difficulties to use the IT equipment.

## Presentation Venues

The opening ceremony and keynote speeches will be held at the Convention Hall No. 2. The following table lists all the presentation venues with abbreviations which are used in the detailed programs in the late part of this booklet.

<b>SESSION</b>	<b>VENUE ROOM</b>
A	201#B
B	201#C
C	201#D
D	203#A
E	203#B
F	203#C
G	Convention Hall 4#A
H	Convention Hall 4#B
I	Convention Hall 4#C
J	Convention Hall 4#D
K	Convention Hall 4#E
L	Convention Hall 4#F
M	201#A



# 北汽

# EU260



## Prolong the endurance



PEU integrated control system

- Unique SmartCell™ intelligent power-driven system to realize intelligent management of electric quantity and endurance;
- Comprehensive and scientific charging management; 80% of the total electric quantity can be reached by half an hour of charging, with driving range of 200km.
- Famous international ternary lithium cell is applied, making it trustworthy and have long service life.
- Utilization ratio of power can reach up to 96%, with only 16kwh consumed per hundred kilometers.



## Enjoy entertaining networking



i-link intelligent operating system

- i-link intelligent operating system
- All-round interconnection of i-Link intelligent connection brand to create ecology of the Internet of things;
- Exclusive customized navigation function provides query of charging pile on the journey and recommend the optimal driving routes.
- Play on-board WeChat to enjoy "micro-life" in the car



## Pleasure and safety in the journey



Professional sports power-driven safe chassis

- Safe European SAAB body with typical reindeer antlers
- Active safety system integrated with ABS+EBD+EBA+CBC
- Front and rear parking radar outperforming counterparts;
- Enjoy the pleasure during the journey and the service commitment of guaranteeing core parts for 8 years/150,000km (driving mileage shall prevail).

## Service commitment

- Provide quality guarantee of 8 years/150,000km (driving mileage shall prevail) for core parts.
- Provide quality guarantee of 3 years/120,000km (driving mileage shall prevail) for vehicles.
- Provide free maintenance for first 2 times.
- Maintenance time during guarantee period will not exceed 48 hours, otherwise other cars will be provided for free use.
- 24h test on technical conditions of vehicles and maintenance reminders or door-to-door service will be conducted on a regular basis.
- Set urgent emergency rescue phone in cities selling the vehicles and provide 24h rescue service;
- Customer's cell battery can be replaced by a new one after expiry of the guarantee period;
- Organize and provide customers with members' value-added and special offer activities.
- Provide one-to-one service and share "Smart Service".



# Applied Energy

## Highly Cited Research Papers Awards 2015

State of charge estimation of lithium-ion batteries using the open-circuit voltage at various ambient temperatures, Xing Y, He W, Pecht M, Tsui KL

Experimental investigation of the lithium-ion battery impedance characteristic at various conditions and aging states and its influence on the application, Waag W, Kabitz S, Sauer DU

Energy efficiency analysis of a series plug-in hybrid electric bus with different energy management strategies and battery sizes, Hu X, Murgovski N, Johannesson L, Egardt B

Activated carbons prepared from hydrothermally carbonized waste biomass used as adsorbents for CO<sub>2</sub>, Hao W, Bjorkman E, Lilliestrale M, Hedin N

A feasibility study of a stand-alone hybrid solar-wind-battery system for a remote island, Ma T, Yang H, Lu L

A data-driven multi-scale extended Kalman filtering based parameter and state estimation approach of lithium-ion polymer battery in electric vehicles, Xiong R, Sun F, Chen Z, He H

Paraffin/diatomite composite phase change material incorporated cement-based composite for thermal energy storage, Xu B, Li Z

The dynamic links between CO<sub>2</sub> emissions, economic growth and coal consumption in China and India, Chandran Govindaraju VGR, Tang CF

Chemical-looping combustion of solid fuels - Status of development, Lyngfelt A

Lithium iron phosphate based battery - Assessment of the aging parameters and development of cycle life model, Omar N, Monem MA, Firouz Y, Salminen J, Smekens J, Hegazy O, et al.

Conversion of sewage sludge to clean solid fuel using hydrothermal carbonization: Hydrochar fuel characteristics and combustion behavior, He C, Giannis A, Wang J-Y

Lithium availability and future production outlooks, Vikstrom H, Davidsson S, Hook M

Microencapsulation of n-octadecane phase change material with calcium carbonate shell for enhancement of thermal conductivity and serving durability: Synthesis, microstructure, and performance evaluation, Yu S, Wang X, Wu D

Systematic optimization of subcritical and transcritical organic Rankine cycles (ORCs) constrained by technical parameters in multiple applications, Maraver D, Royo J, Lemort V, Quoilin S

A data-driven based adaptive state of charge estimator of lithium-ion polymer battery used in electric vehicles, Xiong R, Sun F, Gong X, Gao C

Green energy: Water-containing acetone-butanol-ethanol diesel blends fueled in diesel engines, Chang Y-C, Lee W-J, Lin S-L, Wang L-C

Forecasting models for wind speed using wavelet, wavelet packet, time series and Artificial Neural Networks, Liu H, Tian H-Q, Pan D-F, Li Y-F

Thermogravimetric analysis and kinetics of co-pyrolysis of raw/torrefied wood and coal blends

Lu K-M, Lee W-J, Chen W-H, Lin T-C

A new model for State-of-Charge (SOC) estimation for high-power Li-ion batteries, He Y, Liu X, Zhang C, Chen Z

Short-term wind speed prediction using an unscented Kalman filter based state-space support vector regression approach, Chen K, Yu J





# Applied Energy

## Highly Cited Review Papers Awards 2015

Biodiesel from microalgae: A critical evaluation from laboratory to large scale production, Rawat I, Ranjith Kumar R, Mutanda T, Bux F

A review of solar collectors and thermal energy storage in solar thermal applications, Tian Y, Zhao CY

Advances in CO<sub>2</sub> capture technology: A patent review, Li B, Duan Y, Luebke D, Morreale B

A review on novel processes of biodiesel production from waste cooking oil, Talebian-Kiakalaieh A, Amin NAS, Mazaheri H

Geothermal heat pump systems: Status review and comparison with other heating options, Self SJ, Reddy BV, Rosen MA

Pretreatment methods to enhance anaerobic digestion of organic solid waste, Ariunbaatar J, Panico A, Esposito G, Pirozzi F, Lens PNL

Adsorbents for the post-combustion capture of CO<sub>2</sub> using rapid temperature swing or vacuum swing adsorption  
Hedin N, Andersson L, Bergstrom L, Yan J

Recent advances in liquid biofuel production from algal feedstocks, Daroch M, Geng S, Wang G

Enzymatic biodiesel: Challenges and opportunities, Christopher LP, Hemanathan Kumar, Zambare VP

A review on simulation-based optimization methods applied to building performance analysis, Nguyen A-T, Reiter S, Rigo P

Qualitative and quantitative analysis of lignocellulosic biomass using infrared techniques: A mini-review, Xu F, Yu J, Tesso T, Dowell F, Wang D

A review of efficiency penalty in a coal-fired power plant with post-combustion CO<sub>2</sub> capture, Goto K, Yogo K, Higashii T

Achieving better energy-efficient air conditioning - A review of technologies and strategies, Chua KJ, Chou SK, Yang WM, Yan J

Thermal comfort and building energy consumption implications - A review, Yang L, Yan H, Lam JC

Hydrogen storage in clathrate hydrates: Current state of the art and future directions, Veluswamy HP, Kumar R, Linga P

State-of-the-art analysis of the environmental benefits of green roofs, Berardi U, GhaffarianHoseini A, GhaffarianHoseini A

Optimal sizing, operating strategy and operational experience of a stand-alone microgrid on Dongfushan Island, Zhao B, Zhang X, Li P, Wang K, Xue M, Wang C

A review of waste heat recovery technologies towards molten slag in steel industry, Zhang H, Wang H, Zhu X, Qiu Y-J, Li K, Chen R, et al.

Modelling of tar formation and evolution for biomass gasification: A review, Font Palma C

Technologies for extending zinc-air battery's cyclelife: A review, Pei P, Wang K, Ma Z

# Program at a Glance

Registration: October 08: 14:00-16:00; October 09/10: 8:00-17:00; October 11: 8:00-12:00

## Day 1: October 9

09:00-09:10	Opening													
09:10-09:50	Keynote 1													
09:50-10:30	Keynote 2													
10:30-10:45	Tea/Coffee Break													
10:45-11:25	Keynote 3													
11:25-11:45	Keynote 4													
11:45-12:05	Keynote 5													
12:05-13:00	Lunch													
13:00-13:40	Poster Session I													
13:40-15:20	1-A3	1-B3	1-C3	1-D3	1-E3	1-F3	1-G3	1-H3	1-I3	1-J3	1-K3	1-L3	1-M3	
	RE	RE	IS	IS	ES	EM	EM	ES	CEC	MT&ES	MT&ES	MT&ES	PS	
15:20-15:50	Tea/Coffee Break													
15:50-17:30	1-A4	1-B4	1-C4	1-D4	1-E4	1-F4	1-G4	1-H4	1-I4	1-J4	1-K4	1-L4	1-M4	
	RE	RE	IS	IS	ES	EM	EM	CEC	CEC	MT&ES	MT&ES	IS	PS	
17:30-19:00	Editorial Board Meeting													

## Day 2: October 10

8:10-09:50	2-A1	2-B1	2-C1	2-D1	2-E1	2-F1	2-G1	2-H1	2-I1	2-J1	2-K1	2-L1	2-M1	
	RE	RE	IS	IS	ES	EM	EM	EM	CEC	CEC	MT&ES	IS	PS	
9:50-10:20	Tea/Coffee Break													
10:20-12:00	2-A2	2-B2	2-C2	2-D2	2-E2	2-F2	2-G2	2-H2	2-I2	2-J2	2-K2	2-L2	2-M2	
	RE	RE	IS	IS	ES	EM	EM	EM	CEC	CEC	MT&ES	MT&ES	PS	
12:00-13:00	Lunch													
13:00-13:40	Poster Session II													
13:40-15:20	2-A3	2-B3	2-C3	2-D3	2-E3	2-F3	2-G3	2-H3	2-I3	2-J3	2-K3	2-L3	2-M3	
	RE	RE	IS	IS	ES	EM	EM	RE	CEC	CEC	MT&ES	MT&ES	PS	
15:20-15:50	Tea/Coffee Break													
15:50-17:30	2-A4	2-B4	2-C4	2-D4	2-E4	2-F4	2-G4	2-H4	2-I4	2-J4	2-K4	2-L4	2-M4	
	RE	RE	IS	IS	ES	EM	EM	RE	CEC	CEC	MT&ES	MT&ES	PS	
18:00-22:00	Conference Banquet													

## Day 3: October 11

8:10-09:50	3-A1	3-B1	3-C1	3-D1	3-E1	3-F1	3-G1	3-H1	3-I1	3-J1	3-K1	3-L1	3-M1	
	RE	RE	RE	IS	ES	EM	RE	EM	EM	CEC	MT&ES	CEC	PS	
9:50-10:20	Tea/Coffee Break													
10:20-12:00	3-A2	3-B2	3-C2	3-D2	3-E2	3-F2	3-G2	3-H2	3-I2	3-J2	3-K2	3-L2		
	CEC	RE	RE	IS	ES	EM	EM	RE	EM	CEC	MT&ES	RE		
12:00-13:00	Lunch													
13:00-15:00	3-A3	3-B3	3-C3	3-D3	3-E3	3-F3	3-G3	3-H3	3-I3	3-J3	3-K3			
	RE	CEC	RE	MT&ES	IS	ES	EM	CEC	CEC	CEC	CEC			
15:00-15:30	Tea/Coffee Break													
15:30-17:30	3-A4	3-B4	3-C4	3-D4	3-E4	3-F4	3-G4	3-H4	3-I4	3-J4	3-K4			
	RE	RE	IS	MT&ES	IS	ES	EM	RE	MT&ES	CEC	CEC			

MT&ES = Mitigation technology and energy storage; CEC=Clean energy conversion; EM=Energy management, policy and economics; ES=Energy sciences; IS=intelligent system; RE=Renewable energy



# Yutong Plug-in Hybrid Electric Bus



## 1 Introduction of Hybrid Bus

### ReCtrl™ Technology Green Power

Fuel conservation 50%,  
PM emission reduction 90%

ReCtrl™ technology with the vehicle control unit, motor control unit and composite power control unit as the core, realized the electrification and intelligence, efficient operation and easy driving of the vehicle.

ReCtrl™ technology provides complete bus solutions: energy saving and reliable products, convenient charging program and information management platform.

## 2 Exhibition of Hybrid Bus

ZK6180CHEVNP3  
LNG-electric hybrid



18m

ZK6125CHEVPG21  
Diesel-electric hybrid



12m

ZK6125CHEVNP3  
CNG-electric hybrid



12m

ZK6120PHEVNP3  
CNG/LNG-electric hybrid



11.5m

ZK6120CHEVPG21  
Diesel-electric hybrid



11m

ZK6120CHEVNP3  
CNG/LNG-electric hybrid

ZK6105PHEVNP3  
CNG/LNG-electric hybrid



10.5m

ZK6105CHEVNP3  
CNG/LNG-electric hybrid

10m

ZK6105CHEVPG21  
Diesel-electric hybrid



10m



Yutong APP  
(English)



# Yutong Battery Electric Bus



## 1 Introduction of Battery Electric Bus

Yutong battery electric buses are equipped with ReCtrl™ technology. Relying on Yutong electric powertrain platform, the bottlenecks of driving range, battery life and vehicle safety were breakthrough and low energy consumption and zero emissions of the products were easily achieved. Products are manufactured by Yutong advanced automation production process, more secure and more reliable.

## 2 Exhibition of Battery Electric Bus



E12  
12m



E10  
10m



E8  
8m



E8MINI  
8m



E7 PLUS  
7m



E6  
6m







## **UNiLAB**

An international virtual lab of collective intelligence in Applied Energy.

**RESEARCH &  
INNOVATION  
WITHOUT BORDERS**

## **MISSION/OBJECTIVES**

Unlock the world's creativity to remove the traditional barriers to research and innovation.

Empower ever-growing Applied Energy's community of researchers and innovators to find success through the UNiLAB platform.

Maximize the win-win benefits through international cooperation in focused topics.

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

# Day 1

# Oral Presentations

TIME	DAY 1: October 09		
09:00-09:10	<b>OPENING (Convention Hall No 2)</b>		
09:10-09:50	Prof. Lawrence L. Kazmerski Photovoltaics Technology: Where we are, how we got here, and where we are going		
09:50-10:30	Prof. Heping Xie & Prof. Bin Liang Mineralization, a profitable and prosperous carbon capture, utilization and storage (CCUS) route		
10:30-10:45	<b>TEA/COFFEE BREAK</b>		
10:45-11:25	Prof. Goran Strbac Role and value of flexibility in future low carbon energy systems		
11:25-11:45	Dr. Chengyin Yuan Electric Vehicle and battery pack development in China		
11:45-12:05	Dr. Gaopeng Li Research, development and industrialization of the electric bus in China		
12:05-13:00	<b>LUNCH</b>		
13:00-13:40	<b>POSTER SESSION I</b>		
Room: 201#B			
Session Name: Biomass pyrolysis and gasification (I)			
Session Chair: Liang Wang, David Chiaramonti			
Time	Paper ID	Author	Paper Title
13:40-14:00	71	Yu-Fong Huang	Microwave pyrolysis of lignocellulosic biomass
14:00-14:20	138	Zhiqiang Wu, Wangcai Yang, Lin Chen, Haiyu Meng, Jun Zhao, Shuzhong Wang	Catalytic effects of the typical alkali metal on gaseous products distribution and char structure during co-pyrolysis of low rank coal and lignocellulosic biomass
14:20-14:40	145	Wei-Hsin Chen	Fuel property variation of biomass undergoing torrefaction
14:40-15:00	170	Wennan Zhang, Khanh-Quang Tran	Thermogravimetric and online gas analysis on various biomass fuels
15:00-15:20	580	Khanh-Quang Tran	Simultaneously boosting the mass and fixed-carbon yields of charcoal from forest residue via atmospheric carbonization
Room: 201#C			
Session Name: Biofuels			
Session Chair: Zhixin Yu, Maria Westerholm			
Time	Paper ID	Author	Paper Title
13:40-14:00	227	Lida Simasatitkul, Amornchai Arpornwichanop	Economic evaluation of biodiesel production from palm fatty acid distillate using a reactive distillation
14:00-14:20	251	Rudy Syah Putra, Arida Liyanita, Erlina Puspitasari, Nadia Arifah, Sawaludin Sawaludin	Enhanced electro-catalytic process on the synthesis of fame using cao from eggshell
14:20-14:40	491	Dawei Wu	Characterization of lubricant degeneration and component deterioration on diesel engine fueling with straight plant oil
14:40-15:00	723	Haitao Lu, Xinhai Yu, Shan-Tung Tu	Low-cost and high-efficient extraction of lipids from chlorella by using industrial ionic liquids
15:00-15:20	340	Xiuxiu Sun, Wang Yajun, Hanzhengnan Yu, Yuesen Wang	Effects of viscosity index improver on morphology and graphitization degree of diesel particulate matter

**Room: 201#D****Session Name: Energy performance in building****Session Chair: Xiaojing Zhang, Xiaohua Xia**

Time	Paper ID	Author	Paper Title
13:40-14:00	148	Shiming Deng, Huaxia Yan	Simulation study on a three-evaporator air conditioning system for improved humidity control
14:00-14:20	288	Pei Zhou, Junqi Wang, Gongsheng Huang	An evaluation of heat transfer coefficient in an independent zonal temperature control with CFD
14:20-14:40	550	Bo Qiu, Xiaodong Fan	Energy visualization for smart home
14:40-15:00	578	Chun Yin, Xuegang Huang	Tracking the minimum energy consumption for the lighting system through modified extremum seeking method
15:00-15:20	112	Alessandro Fonti, Gabriele Comodi, Stefano Pizzuti, Alessia Arteconi, Lieve Helsens	Low order grey-box models for short-term thermal behavior prediction in buildings

**Room: 203#A****Session Name: Electric vehicles (I)****Session Chair: Hongwen He, Lin Cheng**

Time	Paper ID	Author	Paper Title
13:40-14:00	296	Hui Meng, Lun Ran, Jing Chen, Zihao Jiao	Goal-driven approach to optimize matching mechanism in electric vehicles ride-sharing system
14:00-14:20	279	Jochen Linssen, Heidi Ursula Heinrichs, Bastian Gillessen, Wilfried Hennings	Electrification of commercial road transport – Attainable effects and impacts on national energy supply systems
14:20-14:40	344	Zhang Fei, Guo Fen, Huang Hong, Li Chaopeng	A study of driving cycle for electric special-purpose vehicle in Beijing
14:40-15:00	80	Jichao Hong	Research on parameter matching and control strategy of load isolation pure electric vehicles
15:00-15:20	18	Duo Yang, Yujie Wang, Rui Pan, Chen Zonghai, Ruiyang Chen	A neural network based state-of-health estimation of lithium-ion battery in electric vehicles

**Room: 203#B****Session Name: Turbine expander, compressor and ejector****Session Chair: Roland Span, Zoltán Sebestyén**

Time	Paper ID	Author	Paper Title
13:40-14:00	308	Maria Alessandra Ancona, Lisa Branchini, Francesco Melino, Andrea De Pascale, Michele Bianchi	Performance increase of a small-scale liquefied natural gas production process by means of turbo-expander
14:00-14:20	358	Xiaoling Yu, Qin Tan, Wenhua Li, Zhao Lu, Liwen Jin	Numerical study of the reed valve impact in the scroll compressor by FSI model
14:20-14:40	589	Weixiong Chen, Kangkang Xue, Kaihua Li, Daotong Chong, Junjie Yan	Numerical investigation on the performance of different primary nozzle structures in the supersonic ejector
14:40-15:00	861	Kang Huang	Influence of structural parameters of two-throat nozzle ejector on performance of two-phase flow ejector refrigeration system
15:00-15:20	864	Yanshuang Huai	Experimental study on performance of double-throttling device transcritical CO <sub>2</sub> ejector refrigeration system

**Room: 203#C****Session Name: Carbon dioxide emissions reduction****Session Chair: Reinhard Madlener, Kwang Jing Yii**

Time	Paper ID	Author	Paper Title
13:40-14:00	139	Kwang Jing Yii, Caroline Geetha	The nexus between technology innovation and CO <sub>2</sub> emissions in Malaysia: Evidence from granger causality test
14:00-14:20	140	Linan Che, Ke Wang	Shadow price of CO <sub>2</sub> in China's iron and steel industry: A parametric approach based estimation
14:20-14:40	594	Jingli Fan, Xin Pan, Jiaquan Li	Production-based and consumption-based CO <sub>2</sub> transfers among major countries: a flow chart analysis
14:40-15:00	748	Shuai Geng, Chongqing Xu, Lijun Lin, Guihuan Yan, Jianguo Jiang, Xiaoyang Hui	Evaluation framework of city's carbon emission reduction responsibility
15:00-15:20	881	Qi Zhang	Study on the implementation pathways and key impacts of rps target in china using a dynamic game-theoretical equilibrium power market model

**Room: Convention Hall 4 (1st floor) - A****Session Name: Sustainable growth and climate change****Session Chair: Qi Zhang, Konstantinos Chalvatzis**

Time	Paper ID	Author	Paper Title
13:40-14:00	42	Clinton Aigbavboa	Sustainable construction practices: "a lazy view" of construction professionals in the South Africa construction industry
14:00-14:20	48	Guochang Fang, Lixin Tian	How to optimize the development of carbon trading in China—Enlightenment from evolution rules of the EU carbon price
14:20-14:40	302	Xi Yang	System optimization and co-benefit analysis of China's deep de-carbonization effort towards its INDC target
14:40-15:00	492	Yaqian Mu, Wenjia Cai, Can Wang	Using sectoral approach as complement to the INDC framework: an analysis based on the CGE model
15:00-15:20	651	Alun GU, Yue Zhang, Bolin Pan	Relationship between industrial water consumption and economic growth in China based on environmental Kuznets curve

**Room: Convention Hall 4 (1st floor) - B****Session Name: Hydrate energy processes (I)****Session Chair: Praveen Linga, Yi Wang**

Time	Paper ID	Author	Paper Title
13:40-14:00	223	Zeng Wang, Weiguo Liu, Mingjun Yang, Yanghui Li, Yongchen Song, Lei Wang	Influence of porous media on methane hydrate formation from ice powders
14:00-14:20	230	Lanlan Jiang, Minghao Yu, Mingjun Yang, Yongchen Song, Weizhong Li	Numerical studies of methane gas production from hydrate decomposition by depressurization in porous media
14:20-14:40	161	Junnan He, Yinan Liu, Ruikai Zhao, Shuai Deng, Li Zhao, Zhiwei Ma	A literature research on the performance evaluation of hydrate-based CO <sub>2</sub> capture and separation process
14:40-15:00	215	Li Ai, Jiafei Zhao, Jiaqi Wang, Yongchen Song	Analyzing permeability of the irregular porous media containing methane hydrate using pore network model combined with CT
15:00-15:20	84	Pengfei Wang, Yongchen Song, Mingjun Yang, Shenglong Wang	Methane hydrate formation and decomposition properties during gas migration in porous medium



**Room: Convention Hall 4 (1st floor) - C****Session Name: Hydrogen energy processes (II)****Session Chair: Jürgen-Friedrich Hake, Jinsheng Xiao**

Time	Paper ID	Author	Paper Title
13:40-14:00	717	Byeong Wan Kwon	H <sub>2</sub> production from reforming biogas (CH <sub>4</sub> +CO <sub>2</sub> ) in the Ni-doped Sr <sub>0.92</sub> Y <sub>0.08</sub> TiO <sub>3</sub> perovskite catalyst
14:00-14:20	34	Jinsheng Xiao, Pierre Bénard, cheng ji, Richard Chahine	Estimation of final hydrogen temperatures during refueling 35 MPa and 70 MPa tanks
14:20-14:40	49	Chunqiong Miao	Optimal hybrid power system using renewables and hydrogen for an isolated island in the UK
14:40-15:00	412	Chao Wang, Xiaoyan Cai, Ying Chen, Zhengdong Cheng, Pengcheng Lin, Zhi Yang, Sifan Sun	Improved hydrogen production by glycerol photoreforming over Ag <sub>2</sub> O-TiO <sub>2</sub> nanocomposite mixed oxide synthesized by a sol-gel method
15:00-15:20	708	Taegy Kim, Soon-mo Kwon, Myoung Jin Kim, Shinwang Kang, Kil-su Park	Compact hydrogen generator for high energy-density fuel cell system of high-endurance unmanned aerial vehicles

**Room: Convention Hall 4 (1st floor) - D****Session Name: Carbon capture and storage (I)****Session Chair: Xi Jiang, Yukun Hu**

Time	Paper ID	Author	Paper Title
13:40-14:00	794	Halina Pawlak Kruczek, Halina Pawlak - Kruczek	Effectiveness of CO <sub>2</sub> capture by calcium looping with regenerated calcium sorbents - post-calcination sampling
14:00-14:20	292	Zaoxiao Zhang, Yunsong Yu, Xiaomei Wu, Zhen Qin	Experimental study of CO <sub>2</sub> absorption in a diameter-varying spray tower
14:20-14:40	958	Worrada Nookuea, Fu Wang, Jie Yang, Yuting Tan, Hailong Li, Eva Thorin, Xinhai Yu, Jinyue Yan	Viscosity data of aqueous MDEA-[Bmim][BF <sub>4</sub> ] solutions within carbon capture operating conditions
14:40-15:00	563	Maryam Aimazroueia, Omar Asada, Mohammad Abu Zahraa, Toufic Mezhera, I-Tsung Tsaia	CO <sub>2</sub> -enhanced oil recovery system optimization for contract-based versus integrated operations
15:00-15:20	625	Tao Wu, Haitao Zhao, Xueliang Mu, Pengfei Cao	HG <sub>0</sub> capture over MoS <sub>2</sub> nanosheets containing adsorbent: effects of temperature, space velocity, and other gas species

**Room: Convention Hall 4 (1st floor) - E****Session Name: Carbon capture and storage (II)****Session Chair: Stefano Campanari, Geoffrey Hammond**

Time	Paper ID	Author	Paper Title
13:40-14:00	442	Yuan Chi, Yi Zhang, Wanli Xing, Shuyang Liu, Yongchen Song	Competitive adsorption/desorption of CH <sub>4</sub> /CO <sub>2</sub> /N <sub>2</sub> mixture on anthracite from China for ECBM operation
14:00-14:20	599	Hongyin Chen, Weilong Wang	CO <sub>2</sub> adsorption capacity of fau zeolites in presence of H <sub>2</sub> O: a monte carlo simulation study
14:20-14:40	619	Xiaolan Wei, Xiang Huang, Weilong Wang, qiheng huang, Jing Ding	Experimental and computational investigation of CO <sub>2</sub> capture on mix-ligand metal-organic framework UiO-66
14:40-15:00	776	Zhiwu Liang, Helei Liu, Min Xiao, Paitoon Tontiwachwuthikul	A novel model for correlation and predication of the equilibrium CO <sub>2</sub> solubility in seven tertiary solvents
15:00-15:20	255	Jia-nan Zheng, Mingjun yang, Yongchen Song, Dayong Wang, Bingbing Chen	Research on the CO <sub>2</sub> gas uptake of different hydrate structures with cyclopentane or methyl-cyclopentane as co-guest molecules

Room: Convention Hall 4 (1st floor) - F			
Session Name: Phase change materials and energy storage			
Session Chair: Sourav Mitra, Bin Chen			
Time	Paper ID	Author	Paper Title
13:40-14:00	791	Xinjing Zhang	Design and performance analysis of the distributed generation system based on a diesel engine and compressed air energy storage
14:00-14:20	876	Siming Zhang, Liyu Zhang, Xiaohu Yang, Xiaoling Yu, Fei Duan, Liwen Jin, Xiangzhao Meng	Experimental investigation of a spiral tube inserted in latent thermal energy storage tank using paraffin as PCM
14:20-14:40	904	Huoyan Hu, Xing Jin, Dongjie Shi, Xiaosong Zhang	Optimal location of PCM layer in building walls under nanjing (China) weather conditions
14:40-15:00	134	Miriam Benedetti, Ilaria Bertini, Francesca Bonfà, Silvia Ferrari, Vito Introna, Domenico Santino, Stefano Ubertini	Assessing and improving compressed air systems' energy efficiency in production and use: findings from an explorative study in large and energy-intensive industrial firms
15:00-15:20	31	Fei Ma, Fei Ma, Xinjie Shi	Flow and heat transfer characteristics of micro-encapsulated phase change material slurry and energy transport evaluation
13:40-15:20	<p style="text-align: center;"><b>Room: 201#A</b></p> <p style="text-align: center;"><b>PANEL SESSION: Integrated energy networks</b></p> <p style="text-align: center;">Chair: Prof. Jianzhong Wu; Participants: Prof. Goran Strbac, Prof. Qinghua Wu, Dr. Yibin Zhang, Prof. Umberto Desideri</p>		
15:20 – 15:50	<b>TEA/COFFEE BREAK</b>		
Room: 201#B			
Session Name: Biomass pyrolysis and gasification (II)			
Session Chair: Marco Antonelli, Raza Naqvi			
Time	Paper ID	Author	Paper Title
15:50-16:10	209	David Chiaramonti, andrea maria rizzo, Marco Pettorali, Matteo Prussi, Renato Nistri, Luigi Pari	Integration of SRF and carbonization farm for small forestry farms
16:10-16:30	372	Norfadhilah Hamzah, Mohammad Zandi, Koji Tokimatsu, Kunio Yoshikawab	Woody biomass characterization for 100 megawatt-hours (MW) power generation
16:30-16:50	272	Khanh-Quang Tran	CO <sub>2</sub> gasification of charcoals in the context of metallurgical application
16:50-17:10	364	Siriwat Unyaphan, Thanyawan Tarnpradab, Fumitake Takahashi, Kunio Yoshikawa	An investigation of low cost and effective tar removal techniques by venturi scrubber producing syngas microbubbles and absorbent regeneration for biomass gasification
17:10-17:30	205	Wei-Hsin Chen, Quang-Vu Bach	Effect of wet torrefaction on thermal decomposition behavior of microalga Chlorella vulgaris ESP-31

**Room: 201#C****Session Name: Renewable power generation****Session Chair: Xinhai Yu, Joann Whalen**

Time	Paper ID	Author	Paper Title
15:50-16:10	194	Lingling Zheng	Hole blocking layer-free perovskite solar cells with over 15% efficiency.
16:10-16:30	581	Chengxi Zhang, Weiling Luan, Yuhang Yin	High efficient Planar-heterjunction perovskite solar cell based on two-step deposition process
16:30-16:50	137	Fhazhil Wamalwa, Xiaohua Xia, Sam. M Sichilalu	Optimal control of hydrokinetic-powered pumpback system for a hydropower plant in dry season: A case study
16:50-17:10	166	Mingming Zhu, Ce Zheng, Dongke Zhang	Characterisation of asphaltenes extracted from an oil sand and two petroleum vacuum residues using HRTEM
17:10-17:30	189	Antonio Pantaleo, Adio Miliuzzi, valeria russo, Sergio Camporeale, Nilay Shah, Christos Markides	CSP/biomass hybrid externally fired gas turbines: thermo-economic assessment

**Room: 201#D****Session Name: Modeling and analysis of EV systems****Session Chair: Fredrik Wallin, Kai Liu**

Time	Paper ID	Author	Paper Title
15:50-16:10	207	Yiping Lou, Xiaoguang Yang, Wenhuan Wang	Customers' attitude on new energy vehicles' policies and policy impact on customers' purchase intention
16:10-16:30	699	Mpyana Danny Bajany, Xiaohua Xia	A MILP model for truck-shovel scheduling to minimize fuel consumption
16:30-16:50	768	wang yu, LI jun, Tan Xiaojun	Research on the classification method for the secondary uses of retired lithium-ion traction batteries
16:50-17:10	803	Pan Liu, Bolan Liu	Road roughness identification and shift control study for a heavy-duty powertrain
17:10-17:30	826	Kai Liu, Jiang-bo Wang	Improving the estimation accuracy of electric vehicle energy consumption considering the effects of ambient temperature

**Room: 203#A****Session Name: Electric vehicles (II)****Session Chair: Erik Dahlquist, Ottorino Veneri**

Time	Paper ID	Author	Paper Title
15:50-16:10	175	Jichao Hong	Voltage fault detection and precaution of batteries based on entropy and standard deviation for electric vehicles
16:10-16:30	297	Bo Pang	Magnetic integration of LCC compensation topology with minimized extra coupling effects for wireless EV charger
16:30-16:50	322	Ottorino Veneri, Clemente Capasso, Samir Kouro, Sebastian Riviera	Charging architectures integrated with distributed energy resources for the electric sustainable mobility
16:50-17:10	332	Xue Xue, Zhenpo Wang, changhui Qu, Lei Zhang	Design and control strategy optimization for four-wheel independently actuated electric vehicles
17:10-17:30	17	Yujie Wang, Rui Pan, Duo Yang, Xiaopeng Tang, Chen Zonghai	Remaining useful life prediction of lithium-ion battery based on discrete wavelet transform

**Room: 203#B****Session Name: Advanced energy processes****Session Chair: Francesco Melino, Wennan Zhang**

Time	Paper ID	Author	Paper Title
15:50-16:10	421	Yang Jingjing, Liu Di	Numerical simulation of sudden gas pipeline leakage in urban block
16:10-16:30	608	Mei Lin	Probability density function of streamwise velocity fluctuation in turbulent T-junction flows
16:30-16:50	780	Er Shi, Yecong He, Sun Xiaoqin, Changwei Jiang	Entropy generation and natural convection of air under a magnetic quadrupole field in a square enclosure
16:50-17:10	952	Md Lokman Hosain, Rebei Bel-Fdhila, Kristian Rönnerberg	Air-Gap flow and thermal analysis of rotating machines using CFD
17:10-17:30	905	Chuan Wang, Jonas Zetterholm, Magnus Lundqvist, Jürgen Schlimbach	Modelling and analysis of oxygen enrichment to hot stoves

**Room: 203#C****Session Name: LCA of energy systems (I)****Session Chair: Konstantinos Chalvatzis**

Time	Paper ID	Author	Paper Title
15:50-16:10	547	Hansi Liu, Xunmin Ou, Xiongwen Zhang	Life cycle analysis of distributed energy system projects' energy consumption and GHG emission – a case of beer brewery auxiliary power supply in China
16:10-16:30	700	Han Hao, Qinyu Qiao, Fuquan Zhao, Zongwei Liu, Shuhua Jiang	Comparative study on life cycle CO <sub>2</sub> emissions from the production of electric and conventional vehicles in China
16:30-16:50	753	Bo Zhang, Mani Sarathy, Amir F.N. Abdul-Manan	Optimizing blendstock composition and ethanol feedstock to reduce gasoline well-to-pump CO <sub>2</sub> emission
16:50-17:10	812	YI Yi, Ziyi Wang, Qie Sun, Ronald Wennersten	Life cycle assessment of delivery packages in China
17:10-17:30	827	Wencong Yue, Yanpeng Cai, Meirong Su, Qian Tan, Meng Xu	Carbon footprint of copying paper: Considering temporary carbon storage based on life cycle analysis

**Room: Convention Hall 4 (1st floor) - A****Session Name: Assessment of climate change mitigation options****Session Chair: Qie Sun, Shixue Wang**

Time	Paper ID	Author	Paper Title
15:50-16:10	781	Shuyin Guo, Ye Xu	Impacts of climate change on electricity demand in the city of Beijing, China
16:10-16:30	888	Olusegun Oguntona, Clinton Aigbavboa	Biomimetic strategies for climate change mitigation in the built environment
16:30-16:50	9	Xingxing Zhang, Jingchun Shen, Tong Yang, Llewellyn Tang, Song Pan, Yupeng Wu, Jinshun Wu, Peng Xu	Assessment of the effectiveness of investment strategy in solar photovoltaic (PV) energy sector: a case study
16:50-17:10	22	Ling Xiong, Zhiyong Tu, Lan Ju	Reconciling regional differences in financial development and carbon emissions: a dynamic panel data approach
17:10-17:30	851	Reinhard Madlener, Eide Hammann, Christoph Hilgers	Economic feasibility of a compressed air energy storage system under market uncertainty: a real options approach



**Room: Convention Hall 4 (1st floor) - B****Session Name: Thermophysical properties and cycle analysis****Session Chair: Roland Span, Shandong Tu**

Time	Paper ID	Author	Paper Title
15:50-16:10	931	Shengchun Liu, Baomin Dai, Zhili Sun, Yitai Ma	Thermodynamic performance analysis of CO <sub>2</sub> transcritical refrigeration cycle assisted with mechanical subcooling
16:10-16:30	122	Xin Cui, Balaji Mohan, Md Raisul Islam, Kian Jon Chua	Modelling and performance evaluation of an air handling unit for an air treatment system with regulated outdoor-air fraction
16:30-16:50	57	Pan Gao, Wufeng Jin, Zheng Yafei	Experimental study on ventilation effect on concentration distribution of R32 leaking from floor type air conditioner
16:50-17:10	244	Chien Nguyen, Jong-Taek Oh, Choi Kwang-II, Pham Quang Vu	Boiling heat transfer of R32, CO <sub>2</sub> and R290 inside horizontal minichannel
17:10-17:30	923	Li Xiaowei, guoyao yu, Wei Dai, Ercang Luo	A resonance tube coupled duplex stirling cooler

**Room: Convention Hall 4 (1st floor) - C****Session Name: Cogeneration and polygeneration (I)****Session Chair: Taegyu Kim, Stefano Campanari**

Time	Paper ID	Author	Paper Title
15:50-16:10	567	Giulio Guandalini, Stefano Campanari, Stefano Foresti, Jorg Coolegem, Jan ten Have	Simulation of a 2 MW PEM fuel cell plant for hydrogen recovery from chlor-alkali industry
16:10-16:30	746	Xi Jiang, Xuejin Zhou	Analysis of the chemical structure in a nonpremixed H <sub>2</sub> /N <sub>2</sub> flame using large eddy simulation with detailed chemistry
16:30-16:50	810	Hongsheng Wang, Yong Hao	Thermodynamic study of solar thermochemical methane steam reforming with alternating H <sub>2</sub> and CO <sub>2</sub> permeation membranes reactors
16:50-17:10	865	Tariq Shamim, Technology, Mohammed Khan	Influence of specular coefficient on the hydrodynamics and bubble statistics of an annular fluidized bed reactor
17:10-17:30	35	Jinsheng Xiao, Pierre Bénard, Richard Chahine, Xu Wang	Final hydrogen mass determined from refueling parameters

**Room: Convention Hall 4 (1st floor) - D****Session Name: Combustion and emissions****Session Chair: Halina Pawlak - Kruczek, Zaoxiao Zhang**

Time	Paper ID	Author	Paper Title
15:50-16:10	39	Xuan Liu, Qiongliang Zha, Kai Xu, Changan Wang, Debo Li, Qiang Lv, Yongxin Feng, Jun Zhong, Defu Che	Numerical study on combustion and heat transfer properties under oxy-fuel condition in a 600 MW utility boiler
16:10-16:30	94	Simone Giorgetti, Ward De Paepe, Laurent Bricteux, Alessandro Parente, Francesco Contino	Carbon capture on a micro gas turbine: assessment of the performance
16:30-16:50	172	Zaoxiao Zhang, Tingting Zhang, Yunsong Yu	Simulations on hybrid reaction process in piperazine and monoethanolamine mixed solution absorbing CO <sub>2</sub>
16:50-17:10	886	Hyungwoong Ahn, Yue Hu	Techno-economic analysis of a natural gas combined cycle power plant integrated with a Ca-looping process for post-combustion capture
17:10-17:30	693	Dandan Wang, Feng Liu, Sheng Li, Lin Gao, Jun Sui	Upgrading low-temperature steam to match CO <sub>2</sub> capture in coal-fired power plant integrated with double absorption heat transformer

**Session Name: Carbon capture and storage (III)****Session Chair: Sheng Li, Nadia Maizi**

Time	Paper ID	Author	Paper Title
15:50-16:10	221	Pengfei Lv, Yu Liu, Hongsheng Dong, Lanlan Jiang, Yongchen Song, Bohao Wu, Shuyang Liu, Zhe Wang	Pore-scale displacement mechanisms investigation in CO <sub>2</sub> -brine-glass beads system
16:10-16:30	859	Tariq Shamim, Technology, Oghare Ogidiana, Technology	Numerical analysis of a solar assisted chemical looping combustion system for CO <sub>2</sub> capture
16:30-16:50	325	Bin Liu, Xiong Liu, Cheng Lu, Ajit Godbole, Guillaume Michal, Anh Tieu	Decompression modelling of pipelines carrying CO <sub>2</sub> -N <sub>2</sub> mixture and the influence of non-equilibrium phase transition
16:50-17:10	964/965	Yuting Tan, Worrada Nookuea, Hailong Li, Eva Thorin, Jinyue Yan	Property impacts on plate-fin multi-stream heat exchanger (cold box) design in CO <sub>2</sub> cryogenic process: part i. heat exchanger modeling and sensitivity study
17:10-17:30	326	Ying Teng, Yu Liu, Lanlan Jiang, Guohuan Lu, Dayong Wang, Yongchen Song, Yinting Fan	Experimental study of density-driven convection in porous media by using MRI

**Room: Convention Hall 4 (1st floor) - F****Session Name: Distributed energy systems and microgrid****Session Chair: Bin Ye, Dennis Y.C. Leung**

Time	Paper ID	Author	Paper Title
15:50-16:10	93	Yibo Chen, Hongwei Tan, Xiaodong Song	Day-ahead forecasting of non-stationary electric power demand in commercial buildings: hybrid support vector regression based
16:10-16:30	569	Kateryna Morozovska, Patrik Hilber	Study of the monitoring systems for dynamic line rating
16:30-16:50	782	Xiaolong Jin, Wei Lin, Yunfei Mu, Hongjie Jia, Xiandong Xu, Xiaodan Yu	Multi-objective optimal hybrid power flow algorithm for integrated community energy system
16:50-17:10	852	Francesco Spagnolo, Vincenzo Mulone	Grid-connected microgrids to support renewable energy sources penetration
17:10-17:30	893	Mingshen Wang, Yunfei Mu, Hongjie Jia, Shiguang Li, Ting Yu	A unified management and control model of demand-side resources

**Room: 201#A****PANEL SESSION: UNiLAB**

Chair: Prof. Jinyue Yan; Participants: Prof. CS Wang, Dr. Praveen Linga, Prof. JZ Wu, Prof. Roland Span, Prof. ST Tu, Prof. LX Tian, Dr.Y. Ding, Prof. CF SUN, Prof. C Wang

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# Day 2

# Oral Presentations

## Room: 201#B

### Session Name: Biomass pyrolysis and gasification (III)

#### Session Chair: KunioYoshikawa, Matthäus Bäßler

Time	Paper ID	Author	Paper Title
08:10-08:30	392	Muhammad Aziz, Ilman Nuran Zaini	Energy-efficient conversion of microalgae to hydrogen and power
08:30-08:50	425	Tian Li	CFD simulation of devolatilization of biomass with shrinkage effect
08:50-09:10	455	Zsuzsanna Czegeny, liang Wang, Eszter Barta Rajnai, Zoltán Sebestyén, Zsolt Barta, Roger Khalil, Øyvind Skreiberg, Morten Grønli, Emma Jakob	Effect of temperature and duration of Torrefaction on the thermal behavior of stem wood, bark, and stump of spruce
09:10-09:30	521	Marco Baratieri, Francesco Patuzzi, Vittoria Benedetti	Gasification char as a potential substitute of activated carbon in adsorption applications
09:30-09:50	485	Rajesh S Kempegowda, Øyvind Skreiberg, Khanh-Quang Tran	Biocarbonization process for high quality energy carriers: techno-economics

## Room: 201#C

### Session Name: Solar photovoltaic system

#### Session Chair: Gang Pei, Yaodong Wang

Time	Paper ID	Author	Paper Title
08:10-08:30	118	Peishi Wu, Xiaoming Ma, Junping Ji, Yunrong Ma	Review on life cycle assessment of energy payback of solar photovoltaic systems and a case study
08:30-08:50	136	Yongqiang Luo, Ling Zhang, Zhongbing Liu, Jing Wu, Xiliang Wang, Lie Xie, Xiu Xu, Xiaohui Lv	Building integrated photovoltaic thermoelectric wall system: balancing simulation speed and accuracy
08:50-09:10	154	Kok-Keong Chong	Prototype of dense-array concentrator photovoltaic system using non-imaging dish concentrators and cross compound parabolic concentrator
09:10-09:30	182	Mei Sun, Peipei Zhang, Cuixia Gao, Jiawen Ji, Benjamin Chris Ampimah	Based on the network perspective to identify the market leading enterprise-photovoltaic industry as an example
09:30-09:50	685	Meng Wang, Jinqing Peng, Nianping Li, Lin Lu, Hongxing Yang	Experimental study on thermal performance of semi-transparent PV window in winter in Hong Kong

## Room: 201#D

### Session Name: Power system and microgrid

#### Session Chair: Xiaohua Xia, Jones Rory

Time	Paper ID	Author	Paper Title
08:10-08:30	187	Qi Qi, Jianzhong Wu	Increasing distributed generation penetration using network reconfiguration and soft open points
08:30-08:50	579	Chun Yin	Peak searching for multimodal optimization through gradient-based stochastic extremum seeking technique
08:50-09:10	673	Vincent Mazaauric, Nadia Maizi, Vincent Krakowski, Xiang Li	Power system synchronism in planning exercises: From Kuramoto lattice model to kinetic energy aggregation
09:10-09:30	736	Xiaolong Jin, Fengyu Qi, Yunfei Mu, Hongjie Jia, Xiandong Xu, Tong Wang, Xiaodan Yu	Model predictive control approach for building microgrid considering dynamic thermal characteristics of building
09:30-09:50	501	Fan Feng, Zhengwei Li	A methodology to identify multiple equipment coordinated control with power metering system

**Room: 203#A****Session Name: Energy management system in electric vehicle****Session Chair: Min Ye, Daobin Mu**

Time	Paper ID	Author	Paper Title
08:10-08:30	352	Jun Xu, Bin Wang, Binggang Cao, Zhen Yan, Qingxia Yang	Duty-ratio based adaptive sliding-mode control method for boost converter in a hybrid energy storage system
08:30-08:50	355	Yang Zhao	Electric vehicle battery fault diagnosis based on statistical method
08:50-09:10	376	Jen-Chiun Guan, Bo-Chiuan Chen	Adaptive power management strategy for a Four-mode hybrid electric vehicle
09:10-09:30	394	Pingliang Zeng, Xiaohong Dong, Yunfei Mu, Hongjie Jia, Xiaodan Yu	Heuristic planning method of EV fast charging station on a freeway considering the power flow constraints of the distribution network
09:30-09:50	400	Jinquan Guo, Hongwen He, Chao Sun	Road grade prediction for predictive energy management in hybrid electric vehicles

**Room: 203#B****Session Name: Hydrate energy processes (II)****Session Chair: Praveen Linga, Xiaosen Li**

Time	Paper ID	Author	Paper Title
08:10-08:30	135	Yi Wang, Jing-Chun Feng, Xiao-Sen Li	Experimental investigation into methane hydrate dissociation by thermal stimulation with dual vertical well
08:30-08:50	370	Zheng Li, Dongliang Zhong, Jin Yan, Yi-Yu Lu	Efficient CO <sub>2</sub> capture from a simulated shale gas using Tetra-n-butylphosphonium bromide semicathrate hydrate
08:50-09:10	507	Zheng Rong Chong, Praveen Linga, Zhenyuan Yin	Production behavior from hydrate bearing marine sediments using depressurization approach
09:10-09:30	571	Jing Cai, Chungang Xu, Zhaoyang Chen, Xiao-Sen Li	Hydrate-based methane recovery from coal mine gas in scale-up equipment with bubbling
09:30-09:50	641	Gaurav Bhattacharjee, Vivek Barmecha, Darshan Pradhan, Rajesh Naik, Omkar Singh Kushwaha, Rahul Mawlankar, Syed G. Dastager, Rajnish Kumar, Kirti Zare	The biosurfactant Surfactin as a kinetic promoter for methane hydrate formation

**Room: 203#C****Session Name: Urban energy: system & design****Session Chair: Perry Yang, Yoshiki Yamagata**

Time	Paper ID	Author	Paper Title
08:10-08:30	854	Konstantinos Chalvatzis, Alexis Ioannidis	Energy supply security and financial vulnerability: the case of southern Europe and Ireland
08:30-08:50	846	Perry Yang, Steven Jige Quan, Florina Dutt, Erik Woodworth, Yoshiki Yamagata	Local climate zone mapping for energy resilience: A Fine-grain and 3D Approach
08:50-09:10	222	Zhengwei Li, Xin Wang	A systematic approach to evaluate the impact of urban form on urban energy efficiency: a case study in Shanghai
09:10-09:30	248	Yoshiki Yamagata, Daisuke Murakami	Spatially-explicit resilience modeling for PV electricity supply-demand balance
09:30-09:50	871	Perry Yang, Florina Dutt, Steven Jige Quan, Erik Woodworth, Daniel Castro-Lacouture, Ben J. Stuart	Modeling algae powered neighborhood through GIS and BIM integration



**Room: Convention Hall 4 (1st floor) - A****Session Name: Energy policy analysis****Session Chair: Qi Zhang, Geoffrey Hammond**

Time	Paper ID	Author	Paper Title
08:10-08:30	144	Bo Zhang, Technology (Beijing), Qu Xue	Demand-driven primary energy requirements by Chinese economy 2012
08:30-08:50	190	Nan Wang, Gento Mogi	From regulation to deregulation: an empirical study of Japan electric utility R&D investment behavior under transition
08:50-09:10	224	Yousef Saif, Ali Almansoori	An optimization framework for the climate, land, energy, and water (CLEWS) nexus by a discrete optimization model
09:10-09:30	271	Natalia Restrepo, Jorge Uribe, Diego Manotas	Effects of oil and stock market prices on oil firms returns: Amultivariate quantile approach
09:30-09:50	406	Haizhong An, Shupe Huang	Does the exchange rate matter for the oil-stock nexuse?

**Room: Convention Hall 4 (1st floor) - B****Session Name: Heat transfer simulations****Session Chair: Marialaura Di Somma, Hsuan Chang**

Time	Paper ID	Author	Paper Title
08:10-08:30	683	Ji Feng, Kong Qiongxiang, Chunlei Yang, Zhen Miao, Xiao He	Numerical simulation of a radiant floor cooling office based on CFD-BES Coupling and FEM
08:30-08:50	225	Yantao Yin, Qiao Xiaoyu, Chen Kai, Mei Lin, Qiuwang Wang	Mean pressure distributions on the vanes and flow loss in the branch in a T pipe junction with different angles
08:50-09:10	249	Shen Tian, Yuping Gao, Shuangquan Shao, Hongbo Xu, Changqing Tian	A local air velocity measurement method for estimating infiltration heat load through doorway of the cold store
09:10-09:30	751	Ismael Matino, Valentina Colla, Stefano Baragiola	Electric energy consumption and environmental impact in unconventional EAF steelmaking scenarios
09:30-09:50	807	Jimin kim, Taehoon Hong, Jaemin Jeong, Myeonghwi Lee, Changyoon Ji	Automatic calibration model of a building energy simulation using optimization algorithm

**Room: Convention Hall 4 (1st floor) - C****Session Name: Boilers and turbines****Session Chair: Lin Gao, Hongtao Wang**

Time	Paper ID	Author	Paper Title
08:10-08:30	127	Phil Bowen, Agustin Valera-Medina, HUA XIAO, Micheal Howard, Stephen Dooley	Reduced chemical mechanisms for Ammonia/Methane Co-Firing for gas turbine applications
08:30-08:50	180	Yong Liu, Yundi Fu, Zhiguo Qu	Numerical investigation of moisture separators with corrugated plates
08:50-09:10	192	Ziwei Bai, Guoqiang Zhang, Yongping Yang	Analysis of recuperated combined cycle with small temperature rise under design/off-design conditions
09:10-09:30	381	Maddalena Pondini, Annamaria Signorini, Gasparino Nuovo Pignone, Valentina Colla	Steam turbine control valve and actuation system modeling for dynamics analysis
09:30-09:50	664	Yukun Hu	Further improvement of fluidized bed models by incorporating zone method with Aspen Plus interface

Room: Convention Hall 4 (1st floor) - D			
Session Name: Industrial energy systems			
Session Chair: Wei-Hsin Chen, Xuesong Bai			
Time	Paper ID	Author	Paper Title
08:10-08:30	5	Fuyan Gao, Eric J. Hu	Effects of multi-factors on stability of bubble petroleum coke water slurry
08:30-08:50	26	Hanzhengnan Yu, xiuxiu sun, Yuesen Wang, Hongsheng Zhang	Numerical investigation on combustion and emission of a diesel engine using two-stage injection strategy
08:50-09:10	286	Yongxiu He, Yuexia Pang , Han Shu	Numerical study of dynamic response of different fuels jet diffusion flame to standing waves in a longitudinal tube
09:10-09:30	88	Xiuxiu sun, Sun Xiuxiu	Comparison the performance of n-heptane, n-dodecane, n-tetradecane and n-hexadecane for different conditions
09:30-09:50	109	Zhilong Cheng, Shangshang Wei, Zhigang Guo, Yan Liu, Jian Yang, Qiuwang Wang	Visualization study on the methane segregation injection technology in iron ore sintering process
Room: Convention Hall 4 (1st floor) - E			
Session Name: Battery storage			
Session Chair: Michael K.H. Leung, Caiping Zhang			
Time	Paper ID	Author	Paper Title
08:10-08:30	25	Jin Xuan, Dennis Y.C. Leung, Huizhi Wang, Manuel Ojeda, Binbin Chen	A hydrogel template synthesis of TiO <sub>2</sub> nanoparticles for aluminium-ion batteries
08:30-08:50	101	Xu Lu	Numerical modelling of a dual electrolyte membraneless electrolytic cell for CO <sub>2</sub> to fuel conversion
08:50-09:10	163	Farshad Barzegar, Abdul hakeem Bello, Julien K. Dangbegnon, Ncholu Manyala, Xiaohua Xia	Asymmetric carbon supercapacitor with activated expanded graphite as cathode and Pinecone tree activated carbon as anode materials
09:10-09:30	291	Xuning Feng, Zhengyu Chu, Minggao Ouyang, Languang Lu, Jianqiu Li, Xuebing Han	Non-destructive fast charging strategy of the lithium ion battery based on the control-oriented electrochemical model
09:30-09:50	176	Ximing Cheng	Engineering-oriented modeling for thermal behaviors of 18650 Li-ion batteries
Room: Convention Hall 4 (1st floor) - F			
Session Name: Energy performance in buildings			
Session Chair: Yang Bai, Ramesh Bansal			
Time	Paper ID	Author	Paper Title
08:10-08:30	124	Xi Chen, Hongxing Yang, Weilong Zhang	A proposed new weighting system for passive design approach in BEAM Plus
08:30-08:50	611	Mengjie Song, Ning Mao	A numerical study on the effects of envelope thermal loads on energy use and thermal environment In bedrooms with a task/ambient air conditioning (TAC) system
08:50-09:10	741	Fabrizio Leonforte, Niccolò Aste, Claudio Del Pero, Rajendra Adhikari, Harold Huerto, Michela Buzzetti, Stefano Della Torre	CFD comfort analysis of a sustainable solution for church heating
09:10-09:30	779	Angelo Aquino, John Kaiser Calautit, Ben Richard Hughes, Sally Salome Shahzad, Siti Diana Nabilah Nasir	Thermal comfort and indoor air quality analysis of a low-energy cooling windcatcher
09:30-09:50	946	Zhanyu Ma, Jiyang Xie, Hailong Li, Qie Sun, Zhongwei Si, Jun Guo, Fredrik Wallin	Analysis of key factors in heat demand prediction with neural networks

<b>08:10-09:50</b>	<b>Room: 201#A</b>  <b>PANEL SESSION: Scholarly publication</b>  Chair: Mrs. Fernanda Ogochi; Participants: Prof. Jinyue Yan, Prof. SK Chou, Prof. Umberto Desideri
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<b>09:50 – 10:20</b>	<b>TEA/COFFEE BREAK</b>
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<b>Room: 201#B</b>  <b>Session Name: Biomass pyrolysis and gasification (IV)</b>  <b>Session Chair: Tiejun Wang, Joann Whalen</b>
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Time	Paper ID	Author	Paper Title
10:20-10:40	494	Tian Li	Gasification of high heating-rate biomass-derived chars at elevated temperatures
10:40-11:00	517	Mirko Morini, Andrea Zubani, Agostino Gambarotta	A model for the prediction of pollutant species production in the biomass Gasification Process
11:00-11:20	941	Lan Zhang	The recovery of energy, nitrogen and phosphorous from three agricultural wastes by pyrolysis
11:20-11:40	774	Syed Muhammad Raza Naqvi	Comparison of gas quality from black liquor and wood pellet gasification using modelica simulation and pilot plant results
11:40-12:00	553	Noor Asma Fazli Bin Abdul Samad, Suriyati Saleh, Nur Hazirah Huda Mohd Harun	Development of kinetics model for torrefaction of empty fruit bunch from palm oil waste

<b>Room: 201#C</b>  <b>Session Name: Solar photovoltaic system (II)</b>  <b>Session Chair: Christos Markides, Zhicong Chen</b>
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Time	Paper ID	Author	Paper Title
10:20-10:40	770	Hao Lua, Lin Lua, Yuanhao Wang	Numerical study on pollution process of polydispersed dust particles on solar photovoltaic panels mounted on building roofs
10:40-11:00	734	Haruhiko Yamasaki, Hiroshi Yamaguchi, Chayadit Pumaneratkul, Takahiro Maki, Yuhiro Iwamoto	Experimental study on the performance of CO <sub>2</sub> -based photovoltaic-thermal hybrid system
11:00-11:20	744	Fabrizio Leonforte, Daniele Testa, Roberto Fusco, Niccolò Aste, Claudio Del Pero, Michela Buzzetti	Visual performance of yellow, orange and red LSCs integrated in a Smart Window
11:20-11:40	834	Yan Hu, Yuanhao Wang, Hong Zhong, Hongxing Yang	TiO <sub>2</sub> /Silane coupling agent composed two Layers structure: A novel stability super-hydrophilic self-cleaning coating applied in PV Panels
11:40-12:00	867	Luyao Liu, Qinxing Wang, Haiyang Lin	Power generation efficiency and prospects of floating photovoltaic systems

**Room: 201#D****Session Name: Energy performance in buildings (II)****Session Chair: Shiming Deng, Jonn Are Myhren**

Time	Paper ID	Author	Paper Title
10:20-10:40	502	Oluleke Bamodu, Liang Xia, Llewellyn Tang	A numerical simulation of air distribution in an office room ventilated by 4-way cassette air-conditioner
10:40-11:00	784	Siming Zhang, Song Gao, Yuang Wang, Xiangzhao Meng, Zhao Min, Lianying Zhang, Liwen Jin, Charles Chun Yang	Numerical investigation on the relationship between human thermal comfort and thermal balance under radiant cooling system
11:00-11:20	15	Xiaoqing Zhang, Ning Xiong, Valeriy Vyatkin, Arash Mousavi	Cooling energy consumption investigation of data center IT room with vertical placed server
11:20-11:40	630	Sally Salome Shahzad, Ben Richard Hughes, John Kaiser Calautit, Siti Diana Nabilah Nasir	Computational and field test analysis of thermal comfort performance of user-controlled thermal chair in an open plan office
11:40-12:00	656	Anna Frost, Hailong Li, Fredrik Wallin, Azaza Maher	Patterns and temporal resolution in commercial and industrial typical load profiles

**Room: 203#A****Session Name: Electric vehicles (III)****Session Chair: Umberto Desideri, Hao Mu**

Time	Paper ID	Author	Paper Title
10:20-10:40	410	Lu Yi, Hongwen He, Jiankun Peng	Combinatorial optimization algorithm of MIGA and NLPQL for a Plug-in Hybrid Electric Bus parameters optimization
10:40-11:00	423	Saeid Habibi, qiang song, song li	Research on a new series powerline configuration and its DC voltage stabilization control Strategy
11:00-11:20	459	Wentong Shi, Li Junqiu, Xin Jin	Two-layer thermal model and experiment of cylindrical lithium-ion battery for sinusoidal alternate current heating
11:20-11:40	511	Ocktaeck LIM	A simulation and experimental study of operating characteristics of an electric bicycle
11:40-12:00	515	Hui Jia, Hongwen He, Weiwei Huo, Mei Yan	Stochastic dynamic programming of air conditioning system for electric vehicles

**Room: 203#B****Session Name: Hydrate energy processes (III)****Session Chair: Praveen Linga, Xiaosen Li**

Time	Paper ID	Author	Paper Title
10:20-10:40	653	Nilesh Choudhary, Omkar Singh Kushwaha, Gaurav Bhattacharjee, Suman Chakrabarty, Rajnish Kumar	Molecular dynamics simulation and experimental study on the growth of methane hydrate in presence of methanol and sodium chloride
10:40-11:00	695	Hari Prakash Veluswamy, Praveen Linga, Kulesha Priyalal Premasinghe	CO <sub>2</sub> hydrates – Effect of additives and operating conditions on the morphology and hydrate growth
11:00-11:20	204	Yi Wang, Jing-Chun Feng, Xiao-Sen Li	Huff and puff induced hydrate dissociation above and below the phase equilibrium point with low gas saturation
11:20-11:40	305	Dongliang Zhong, Wen-Chun Wang, Yi-Yu Lu, Jin Yan	Using Tetra-n-butyl Ammonium Chloride Semiclathrate Hydrate for methane separation from low-concentration coal mine gas
11:40-12:00	197	Weiguo Liu, Yanghui Li, Yongchen Song, Qi Wu, Zhaoran Wu, tingting lu	Mechanical properties of Stratified hydrate-bearing sediments

**Room: 203#C****Session Name: Energy performance in buildings (III)****Session Chair: Perry Yang, Yoshiki Yamagata**

Time	Paper ID	Author	Paper Title
10:20-10:40	754	Vinod Kumar Venkiteswaran, Surenthira Stephen Ramachanderan	Carbon (CO <sub>2</sub> ) footprint reduction analysis for buildings through green rating tools in Malaysia
10:40-11:00	831	Perry Yang, Michael Tobey, Steven Jige Quan, Yihan Wu, Jiang Wu, Annette Wiedenbach, Yogendra Chauhan	Material based urban modeling: An approach to integrate smart materials in a Near-Zero community design
11:00-11:20	213	Kanae Matsui	An information provision system as a function of HEMS to promote energy conservation and maintain indoor comfort
11:20-11:40	848	Perry Yang, Michael Tobey, Steven Jige Quan	Multi-disciplinary design optimization of mixed-use structure and energy performance
11:40-12:00	468	Ayotunde Dawodu, Ali Cheshmehzangi	Passive cooling energy systems SWOT analyses for energy-use reductions at three spatial levels

**Room: Convention Hall 4 (1st floor) - A****Session Name: Economic and market assessments of new technologies****Session Chair: Mei Sun, Jingchun Feng**

Time	Paper ID	Author	Paper Title
10:20-10:40	527	Yanxia Li, Wenjia Cai, Can Wang	Economic assessment of wind and solar photovoltaic development in China
10:40-11:00	568	Huajiao Li, Haizhong An	How does the coal stock market, carbon market and coal price co-fluctuation with each other in China: A co-fluctuation matrix transmission network perspective
11:00-11:20	596	Hendrik Broering, Reinhard Madlener	Simulation and evaluation of the economic merit of cloud energy storage for prosumers: The case of Germany
11:20-11:40	610	Yingzhu Li	Economic, social and environmental impacts of energy subsidies: case study of Malaysia
11:40-12:00	674	Kwang Jing Yii, Caroline Geetha, Vivin Vincent Chandran	Estimating the elasticity of energy over consumption at micro level: A case study in Sabah, Malaysia

**Room: Convention Hall 4 (1st floor) - B****Session Name: Sustainability assessment of renewable energy applications****Session Chair: Geoffrey Hammond, Catherine Ross**

Time	Paper ID	Author	Paper Title
10:20-10:40	884	Juan C. Gonzalez Palencia, Yuki Otsuka, Mikiya Araki, Seiichi Shiga	Impact of new vehicle market composition on the light-duty vehicle fleet CO <sub>2</sub> emissions and cost
10:40-11:00	36	Stephen Jia Wang, Patrick Moriarty	Strategies for household energy conservation
11:00-11:20	177	Zaoxiao Zhang, Zhen Qin, Xiaomei Wu	Carbon exergy footprint to evaluate the greenhouse impact of operating units
11:20-11:40	823	Hongtao Wang	Energy self-sufficient wastewater treatment plants: feasibilities and challenges
11:40-12:00	313	Tianqi Li, Tony Roskilly, Yao Dong Wang	A Regional life cycle sustainability assessment approach and its application on solar photovoltaic



Room: Convention Hall 4 (1st floor) - C			
Session Name: Organic rankine cycle (ORC)			
Session Chair: Roberto Pili, Chao Liang			
Time	Paper ID	Author	Paper Title
10:20-10:40	303	Xuan Wang, Gequn Shu, Hua Tian	Dynamic response performance comparison of ranking cycles with different working fluids for waste heat recovery of internal combustion engines
10:40-11:00	76	Yiji Lu, Yao Dong Wang, Tony Roskilly	Design and parametric study of an Organic Rankine cycle using a scroll expander for engine waste heat recovery
11:00-11:20	106	Lan Xiao, Shuang-Ying Wu, Han Yang, Chun Li	Comparative investigation on thermo-economic performance between ORC and LiBr absorption refrigerating cycle in waste heat recovery
11:20-11:40	110	Zhilong Cheng, Yan Liu, Jingyu Wang, Jian Yang, Qiuwang Wang	System design and thermodynamic analysis of a sintering-driven organic Rankine cycle
11:40-12:00	143	Dong Bensi, Guoqiang Xu, Guoqiang Xu, Laihe Zhuang, Yongkai Quan	Potential of low temperature organic Rankine cycle with zeotropic mixtures as working fluid
Room: Convention Hall 4 (1st floor) - D			
Session Name: Industrial energy system (I)			
Session Chair: Francesco Patuzzi, Tao Wu			
Time	Paper ID	Author	Paper Title
10:20-10:40	159	Muhammad Aziz	Highly energy-efficient conversion of lignite to H <sub>2</sub> and power
10:40-11:00	253	he zhao, Song Chen	Numerical study of a methane Jet Diffusion Flame in a longitudinal tube with a standing wave
11:00-11:20	256	Arif Darmawan, Muhammad Aziz, Koji Tokimatsu, Dwika Budianto	Cofiring assessment of hydrothermally-treated empty fruit bunch and low rank coal in a drop tube furnace
11:20-11:40	565	Norbert Modlinski	Development of prognostic tool for high-temperature corrosion risk assessment in pulverised coal boilers based on the waterwalls boundary layer monitoring system and CFD simulations
11:40-12:00	624	Pengfei Cao, Tao WU, Stephen Adegbite	Thermodynamic equilibrium analysis of CO <sub>2</sub> reforming of methane: carbon elimination and adjustment of H <sub>2</sub> /CO ratio
Room: Convention Hall 4 (1st floor) - E			
Session Name: Battery energy storage systems			
Session Chair: Clemente Capasso, Rui Xiong			
Time	Paper ID	Author	Paper Title
10:20-10:40	482	Amin Lahnaoui, Bastian Gillessen	Tilt angle and orientation impact on the techno-economic performance of photovoltaic battery systems
10:40-11:00	552	Kosmas Kavadias, Dimitris Apostolou, Ioannis Kaldellis	Analytical hydrogen production and storage simulation for the "Kos-Kalymnos" system
11:00-11:20	613	aihua Tang, Cheng Lin, Jilei Xing	Lithium-ion battery state of charge/state of health estimation using SMO for EVs
11:20-11:40	790	Menglian Zheng, Jiahui Fu, Tao Wang, Xinhao Wang, Jie Sun	Dynamic flow rate control for vanadium redox flow batteries
11:40-12:00	878	Rui Xiong, Min Ye, Hui Guo	An online model-based battery parameter and state estimation method using multi-scale dual adaptive particle filters

Room: Convention Hall 4 (1st floor) - F

Session Name: Emission mitigation modelling and analysis

Session Chair: Erik Dahlquist, Marco Antonelli

Time	Paper ID	Author	Paper Title
10:20-10:40	38	Chuntao Yang, Xiaolan Wei	Effect of nickel base alloy on NOx emissions from binary molten nitrate salts in thermal energy storage process
10:40-11:00	797	Oral	Investigation of Multilevel Injector for Ramp-up Process in Vertical Well using Steam Assisted Gravity Drainage Method
11:00-11:20	749	Liwen Lin	Mitigation strategy for AC side to suppress CM current flowing on DC cables of the motor drive system
11:20-11:40	231	Yan Hu, Hongxing Yang, Hong Zhong, Yuanhao Wang	Development of an Antimony Doped Tin Oxide/TiO <sub>2</sub> double-Layers Coated HGM: A High Reflectivity and Low Transmittance Building Thermal Conservation Material
11:40-12:00	257	Shahid Rabbani, Mohamed Sassi, Tariq Shamim, Technology	Numerical Modelling and Simulation of Gas-Liquid Trickle Flow in trickle Bed Reactor using an Improved Phenomenological Model

**Room: 201#A**

**PANEL SESSION: Fuel Cells R&D and Demonstration: introducing the world**

**first largest PEM fuel cell in China**

Chair: Prof. Stefano Campanari; Participants: Prof. Stefano Campanari, Dr. Pan Mu, Dr. Jorg Jorg Coolegem, Dr. Jan H. ten Have, Mr. Bing Xu.

10:20-12:00

**LUNCH**

12:00-13:00

**POSTER SESSION II**

Room: 201#B

Session Name: Biomass Pyrolysis and Gasification (V)

Session Chair: Khanh-Quang Tran, Matthäus Bähler

Time	Paper ID	Author	Paper Title
13:40-14:00	605	Alessandro Manni, Stefano Cordiner, Vincenzo Mulone, Vittorio Rocco, Fabio Codignole Luz	Analysis of Residual Biomass fast pyrolysis at laboratory scale: experimental and numerical evaluation of spent coffee powders energy content
14:00-14:20	665	Chaudhary Awais Salman, Sebastian Schwede, Eva Thorin, Jinyue Yan	Predictive modelling and simulation of integrated pyrolysis and anaerobic digestion process
14:20-14:40	670	Tiejun wang	Bio-gasoline production by coupling of biomass catalytic pyrolysis and oligomerization process
14:40-15:00	707	Matthaus Bähler, Aekjuthon Phounglamcheik, Pawel Donaj, Marko Amovic, Rolf Ljunggren, Klas Engvall	Pyrolysis of wood in a rotary kiln pyrolyzer: Modeling and pilot plant trials
15:00-15:20	529	Marco Baratieri, Eleonora Cordioli, Francesco Patuzzi	Experimental and modelling analysis of char decomposition: experiences with real scale gasification systems

**Room: 201#C****Session Name: Pyrolysis and gasification (IV)****Session Chair: Kunio Yoshikawa, Hongtao Wang**

Time	Paper ID	Author	Paper Title
13:40-14:00	566	Jesus Zambrano, Emma Nehrenheim	Optimizing the operation of a photo-bioreactor
14:00-14:20	721	Yiji Lu, Tony Roskilly , Yao Dong Wang	Study of a novel dual-source chemisorption power generation systme using scroll expander
14:20-14:40	773	Panagiotis Evangelopoulos, Weihong Yang, Efthymios Kantarelis	Experimental investigation of pyrolysis of printed circuit boards for energy and materials recovery under nitrogen and steam atmosphere
14:40-15:00	894	SieTing Tan, Haslenda Hashim, Jeng Shiun Lim, Wai Shin Ho	Potential of biomass to resource as an action to mitigate transboundary haze in ASEAN country
15:00-15:20	921	Tongcai Wang, Shan-Tung Tu, Weiling Luan, Jerry Yan, Tongjun Liu	Performance improvement of high-temperature silicone oil based thermoelectric generator

**Room: 201#D****Session Name: Energy efficiency in buidings (I)****Session Chair: Guangcai Gong, Ward De Paepe**

Time	Paper ID	Author	Paper Title
13:40-14:00	51	Jiayu Chen, Gongsheng Huang, Xiaowei Luo, Yujie Lu	HVAC energy saving in IPS-enabled large space: An occupancy distribution based demand-driven control approach
14:00-14:20	141	Yi Chen	Energy saving potential of hybrid liquid desiccant and evaporative cooling air-conditioning system in Hong Kong
14:20-14:40	158	Evan Wanjiru, Xiaohua Xia, Sam. M Sichilalu	Optimal operation of integrated heat pump-instant water heaters with renewable energy
14:40-15:00	246	Sayanthan Ramakrishnan	Experimental and numerical study on energy performance of buildings integrated with phase change materials
15:00-15:20	356	Junqi Wang, Gongsheng Huang, Pei Zhou	Event-driven optimal control of complex HVAC systems based on COP-mins

**Room: 203#A****Session Name: Electric Vehicle (IV)****Session Chair: Ottorino Veneri, Marco Antonelli**

Time	Paper ID	Author	Paper Title
13:40-14:00	548	Ottorino Veneri, Clemente Capasso	Integration between super-capacitors and ZEBRA batteries as high performance hybrid storage system for electric vehicles
14:00-14:20	606	Hong Zhang, Jiajian Song, QiangQiang Yang, Lin Fu	Study and realization on power energy distribution control for auxiliary power unit
14:20-14:40	635	Wenyu Zhou, Ming Lv, Ying Yang, Lljie Liang, Yao Lu	Energy management strategy of a plug-in parallel hybrid electric vehicle using fuzzy control
14:40-15:00	758	Zeyu Chen, Wenyu Zhou, Ke Xu, Rui Xiong	Driving cycle development for electric vehicle application using principal component analysis (pca) and k-means clustering method: with the case of Shenyang,China
15:00-15:20	922	Zhongbao Wei, Binyu Xiong, Dongxu Ji, King Jet Tseng	Online state of charge and capacity dual estimation with a multi-timescale estimator for lithium-ion battery

**Room: 203#B****Session Name: Combustion****Session Chair: Rebei Bel Fdhila, Antonio Pantaleo**

Time	Paper ID	Author	Paper Title
13:40-14:00	219	Zhengqian Zha	Experimental investigation on the combustion characteristics of premixed CH <sub>4</sub> /O <sub>2</sub> flame in a micro plate channel.
14:00-14:20	456	siyuan hu, Xue-Song Bai, cheng gong	Dual fuel combustion of n-heptane/methanol/air/EGR mixtures
14:20-14:40	337	XINYAN LI, Xiao Jin, Zhiguo Zhang, Guoneng Li, NUOMIN HAN	Nonlinear dynamic measurement of self-sustained thermoacoustic oscillations in a swirling combustor with a heat exchanger
14:40-15:00	512	siyuan hu, Xue-Song Bai	Numerical and experimental study on laminar methane/air premixed flames at varying pressure
15:00-15:20	909	Tariq Shamim, Technology, A. Raouf Tajik, Technology, Rashid Al-Rub, Technology, Mouna Zaidani, Technology	A Simplified Two Dimensional CFD Modelling of the Flue-Wall in Anode Baking Furnace for the Aluminum Production

**Room: 203#C****Session Name: Energy efficiency****Session Chair: Reinhard Madlener, Ronald Wennersten**

Time	Paper ID	Author	Paper Title
13:40-14:00	575	Chenghua Zhang, Jianzhong Wu, Chao Long	Review of Existing Peer-to-Peer Energy Trading Projects
14:00-14:20	943	Ziyi Wang, Qie Sun, Ronald Wennersten	Energy efficiency for power generation systems
14:20-14:40	21	Stephen Jia Wang, Patrick Moriarty	Can electric vehicles deliver on energy and carbon reductions?
14:40-15:00	47	Nan Li, Wen-ying Chen	Provincial energy consumption and emission projection-Shanxi case study
15:00-15:20	98	Ivan Postnikov	A methodology for optimization of component reliability of heat supply systems

**Room: Convention Hall 4 (1st floor) - A****Session Name: Energy economics****Session Chair: Xingping Zhang, Juan C Gonzalez Palencia**

Time	Paper ID	Author	Paper Title
13:40-14:00	796	Victor Nian, Hari Malamakkavu Padinjare Variam	Incentivizing the adoption of nuclear and renewable energy in Southeast Asia
14:00-14:20	60	Xiangtao Zhuan, Wei Li, Fei Yang	Optimal operation scheduling of a pumping station in east route of South-to-North water diversion project
14:20-14:40	853	Reinhard Madlener, Alexander Kirmas	Economic viability of second use electric vehicle batteries for energy storage in residential applications
14:40-15:00	933	Qinxing Wang, Nianzhi Huang, Haiyang Lin, Hailong Li, Ronald Wennersten, Qie Sun	Potential of energy saving in a data center – application of an agent-based modelling
15:00-15:20	908	Haiyang Lin, Qinxing Wang, Qie Sun, Ronald Wennersten	Agent based modeling for estimating energy-saving potential of offices under different pricing mechanisms

**Room: Convention Hall 4 (1st floor) - B****Session Name: Heat pump and solar system****Session Chair: Chii-Dong Ho, Hui Hong**

Time	Paper ID	Author	Paper Title
13:40-14:00	645	Siti Diana Nabilah Nasir	Effect of urban street canyon aspect ratio on thermal performance of road pavement solar collectors (RPSC)
14:00-14:20	850	Marco Binotti, Marco Astolfi, Stefano Campanari, Paolo Silva, Giampaolo Manzolini	Preliminary assessment of sCO <sub>2</sub> power cycles for application to CSP Solar Tower plants
14:20-14:40	860	Guoqing He, Tianji Liu, Zhiyuan Li	Experiments of a heat pump water heating system using stored solar energy to defrost
14:40-15:00	872	Huide Fu, Tao Zhang	Performance analysis of an integrated solar-assisted heat pump system with heat pipe PV/T collectors operating under different weather conditions
15:00-15:20	953	Hong Li, Liangliang Sun	Performance Evaluation of Hybrid Ground-coupled Heat Pump Indirect Heating Systems

**Room: Convention Hall 4 (1st floor) - C****Session Name: Advanced cycles****Session Chair: Shuai Deng, Hailong Li**

Time	Paper ID	Author	Paper Title
13:40-14:00	500	Oyenyi Oyewunmi, Steven Lecompte, Christos Markides, Martijn van den Broek, Michel De Paepe	Preliminary experimental results of an 11 kWe organic Rankine cycle
14:00-14:20	561	Guoqiang Xu, Liang Li, Yunting Ge, Savvas Tassou	Modelling of plate heat exchangers and their associated CO <sub>2</sub> transcritical power generation system
14:20-14:40	562	Yunting Ge, Liang Li, Savvas Tassou	Experimental study on a small-scale R245fa organic Rankine cycle system for low-grade thermal energy recovery
14:40-15:00	629	Oyenyi Oyewunmi, Steven Lecompte, Christos Markides, Martijn van den Broek, Michel De Paepe	An assessment of subcritical and supercritical organic Rankine cycles for waste-heat recovery
15:00-15:20	755	Bosheng Su, Wei Han	A novel liquid desiccant dehumidification system driven by low-temperature heat for industrial application

**Room: Convention Hall 4 (1st floor) - D****Session Name: Cogeneration and polygeneration (II)****Session Chair: Anders Avelin, Chuan Wang**

Time	Paper ID	Author	Paper Title
13:40-14:00	73	Marina Montero Carrero, Ward De Paepe, Svend Bram, Francesco Contino	Thermodynamic analysis of water injection in a micro gas turbine: Sankey and Grassmann diagrams
14:00-14:20	103	Wei Wu	Design and control of stand-alone combined heat and power systems using CO <sub>2</sub> /CH <sub>4</sub>
14:20-14:40	202	Guohong Tian, Jun Li	A case study of a CHP system and its energy use mapping
14:40-15:00	428	Massimiliano Renzi, Camilla Riolfi, Marco Baratieri	Influence of the syngas feed on the combustion process and performance of a micro gas turbine with steam injection
15:00-15:20	438	Martina Caliano, Nicola Bianco, Giorgio Graditi, Luigi Mongibello	Analysis of a biomass-fired CCHP system considering different design configurations



Session Name: Urban energy: system & design (II?)			
Session Chair: Geoffrey Hammond, Guochang Fang			
Time	Paper ID	Author	Paper Title
13:40-14:00	737	Yiming Wei, Bin Wang, Meimei Xue, Biying Yu, Ye Ma	Evaluating the environmental benefits of ride-sharing: a case of Beijing
14:00-14:20	947	Anqi Gao, Zhenyu Tian, Ziyi Wang, Qie Sun	Comparison between the technologies for food waste treatment
14:20-14:40	763	Shibao Lu	Research on synergistic development of urbanization and energy consumption
14:40-15:00	586	Wei Fang, Haizhong An, Huajiao Li, Xiangyun Gao, Xiaoqi Sun	Urban economy development and ecological carrying capacity: Taking Beijing city as the case
15:00-15:20	179	Kaiyan Luo, Xingping Zhang, Qinliang Tan	A game theory analysis of China's agri-biomass-based power generation supply chain: a co-opetition strategy
Room: Convention Hall 4 (1st floor) - F			
Session Name: Solar photovoltaic system (II)			
Session Chair: Lin Lu, Wei Han			
Time	Paper ID	Author	Paper Title
13:40-14:00	689	Kosmas Kavadias, Dimitris Zafirakis, Athanasios Paliatsos	Application of typical meteorological years for sizing building integrated pv systems under zero load rejections
14:00-14:20	19	Siyang Hu, Dennis Y.C. Leung	Effect of divergent chimneys on the performance of a solar chimney power plant
14:20-14:40	46	Chii-Dong Ho	Investigation of device performance for recycling double-pass V-corrugated solar air collectors
14:40-15:00	686	Zhang Heng, Ye Chentao, Chen Haiping, Li Mingjie, Huang Jiguang	Experimental study of constant temperature operation and constant flow operation in concentrating PV / T system
15:00-15:20	8	Xingxing Zhang, Jingchun Shen, Tong Yang, Llewellyn Tang, Yupeng Wu, Song Pan, Jinshun Wu, Peng Xu	Design strategy of a compact unglazed solar thermal facade (STF) for building integration based on BIM concept
13:40-15:20	<p style="text-align: center;"><b>Room: 201#A</b></p> <p style="text-align: center;"><b>PANEL SESSION: Energy resilient urban systems</b></p> <p style="text-align: center;">Chair: Prof. Perry Yang, Prof. Yoshiki Yamagata; Participants: Prof. Jinyue Yan, Prof. Erik Dhalquist, Prof. Jiang Wu, Prof. John Crittenden, Prof. Daniel Castro, Prof. Ronald Wennersten, Prof. Wowo Ding.</p>		
15:20 – 15:50	<b>TEA/COFFEE BREAK</b>		
Room: 201#B			
Session Name: Biomass combustion			
Session Chair: Wei-Hsin Chen, Khanh-Quang Tran			
Time	Paper ID	Author	Paper Title
15:50-16:10	818	Xi Jiang, Angelo Greco, Daniel Mira	Effects of fuel composition on biogas combustion in premixed laminar flames
16:10-16:30	969	Liang Wang	Release of potassium during devolatilization of spruce bark
16:30-16:50	472	Morten Seljeskog	Variables affecting emission measurements from domestic wood combustion
16:50-17:10	792	Morten Seljeskog, Franziska Goile, Øyvind Skreiberg	Recommended revisions of Norwegian emission factors for wood stoves
17:10-17:30	342	Lin Chen, Shuzhong Wang, Haiyu Meng, Zhiqiang Wu, Jun Zhao	Study on gas products distributions during fast co-pyrolysis of Paulownia wood and PET at high temperature

**Room: 201#C****Session Name: Solar integrated energy systems****Session Chair: Yong Hao, Roland Span**

Time	Paper ID	Author	Paper Title
15:50-16:10	167	Jiyun Qin	The impact of solar radiation on the annual net solar to power efficiency of a Solar Aided Power Generation plant with twelve possible "configuration-operation" combinations
16:10-16:30	226	Yinfeng Wang, Xiaoyuan Wang, Haijun Chen, Yuezhao Zhu, Robert Taylor, Hongtu Fan	CFD simulation of an intermediate temperature, two-phase loop thermosiphon for use as a linear focus solar receiver
16:30-16:50	320	Massimiliano Renzi, Lorenzo Egidi, Luca Cioccolanti, Gabriele Comodi	Performance simulation of a small scale heliostat CSP system: case studies in Italy
16:50-17:10	359	Qinyuan Yuan, Jianfeng Lu, Jing Ding	Transient thermochemical storage performance of methane reforming in semi-cavity reactor heated by solar dish system
17:10-17:30	391	Qibin Liu, Xiaohe Wang	Thermodynamic analysis of the cascaded supercritical CO <sub>2</sub> cycle integrated with solar and biomass energy

**Room: 201#D****Session Name: Hybrid energy systems****Session Chair: Clemente Capasso, Erik Dahlquist**

Time	Paper ID	Author	Paper Title
15:50-16:10	157	Charles Kagiri, Xiaohua Xia	Optimal control of a hybrid Battery/Supercapacitor storage for Neighborhood Electric Vehicles
16:10-16:30	298	Zihao Jiao, Lun Ran, Jing Chen, Hui Meng, Chong Li	Data-driven approach to operation and location considering range anxiety of one-way electric vehicles sharing system: the Beijing case
16:30-16:50	301	Ancona M. A., Bianchi M., Branchini L., De Pascale A., Melino F., Peretto A	Experimental Investigation On A Solar/Hydrogen-Based Microgrid
16:50-17:10	37	Mengqi Hu, Dong Yang, Yanqing Kuang, Rui Dai	A Collaborative Decision Model for Electric Vehicle to Building Integration
17:10-17:30	593	Sathsara Abeysinghe, Jianzhong Wu, Mahesh Sooriyabandara	A Statistical Assessment Tool for Electricity Distribution Networks

**Room: 203#A****Session Name: Electric Vehicles (IV)****Session Chair: Chun Wang, Rui Xiong**

Time	Paper ID	Author	Paper Title
15:50-16:10	866	Xiaofeng Ding, Hong Guo, Si Guo	Efficiency enhancement of traction system based on loss models and golden section search in electric vehicle
16:10-16:30	678	Nana Zhou, Hongwen He, Chao Sun	Efficiency decrease estimation of a permanent magnet synchronous machine with demagnetization faults
16:30-16:50	679	Linlin Fang, Li Junqiu, Wentong Shi	Design and implementation of the state monitoring and balancing management of vehicle power battery
16:50-17:10	705	Mingchun Liu, Juhua Huang, Ming Chao	Multi-states combination nonlinear control of in-wheel-motor-drive vehicle dynamics stability
17:10-17:30	715	Teng WANG, Hui Liu, Lijin Han	Dynamic matching of dual-mode electro-mechanical transmission (EMT) based on the optimal motor efficiency

**Room: 203#B****Session Name: Heat transfer and heat exchangers (I)****Session Chair: Changqing Tian, Steffes Beckett**

Time	Paper ID	Author	Paper Title
15:50-16:10	329	Sayanthan Ramakrishnan	Heat transfer performance enhancement of paraffin/expanded perlite phase change composites with graphene nano-platelets
16:10-16:30	341	Pham Quang Vu, Jong-Taek Oh, Choi Kwang-II, Cho Honggi, Kim Taehun	Flow condensing heat transfer of R410A inside a micro-fin tube
16:30-16:50	470	Peng Liu	Theoretical prediction of longitudinal heat conduction effects on the efficiency of the heat wheel used for ventilation in powerhouse building "Kjørbo" in Norway
16:50-17:10	484	Yuefen Gao, Yongzhao Cheng, Shanshan Nan	Heat transfer performance of the underground CO <sub>2</sub> pipe in the direct expansion ground source heat pump
17:10-17:30	556	Wei Chen, Wenxing Shi, Baolong Wang, Sheng Shang, Xianting Li	A deep heat recovery device between flue gas and supply air of gas-fired boiler by using non-contact total heat exchanger

**Room: 203#C****Session Name: Energy processes and analysis(I)****Session Chair: Stephen Wang, Geoffrey Hammond**

Time	Paper ID	Author	Paper Title
15:50-16:10	116	Nicolas Maslov, Christophe Claramunt, Tianzhen Wang, Tianhao Tang	Evaluating the visual impact of an offshore wind farm
16:10-16:30	152	EKATERINA MEDNIKOVA, Ivan Postnikov, Valery Stennikov	Heat supply systems development: the influence of external factors and reliability
16:30-16:50	214	Yuecheng Li, Jiankun Peng, Hongwen He, Shanshan Xie	The Study on multi-scale prediction of future driving cycle based on Markov chain
16:50-17:10	615	Can Wang, Wenjia Cai, Jingxuan Hui	Achieving China's INDC: biomass development and competition for land
17:10-17:30	314	Xueqin Yang, Zhen Wang, Hailong Li, Fredrik Wallin	Impacts of emission reduction target and external costs on provincial natural gas distribution in China

**Room: Convention Hall 4 (1st floor) - A****Session Name: Energy economics and management****Session Chair: Haizhong An, Kwang Jing Yii**

Time	Paper ID	Author	Paper Title
15:50-16:10	841	Yue-Jun Zhang	Forecasting crude oil prices with the Google Index
16:10-16:30	847	Alexander Sandberg	An analyze of long-term hourly district heat demand forecasting of a commercial building using neural networks
16:30-16:50	875	Khulood Rambo, David Warsinger, Santosh Shanbhogue, John Lienhard, Ahmed Ghoniem	Water-energy nexus in Saudi Arabia
16:50-17:10	783	Wei Zhong, Cristian López, Menglian Zheng	Short-term electric load forecasting based on wavelet neural network, particle swarm optimization and ensemble empirical mode decomposition
17:10-17:30	883	Qi Zhang	Study on the oil import/export quota allocation mechanism in China by using a dynamic game-theoretic model

**Room: Convention Hall 4 (1st floor) - B****Session Name: Heating and cooling (I)****Session Chair: Bin Chen, Yanping Cai**

Time	Paper ID	Author	Paper Title
15:50-16:10	687	Guodong Cui, Shaoran Ren, Liang Zhang	Assessment of heat mining rate for geothermal exploitation from depleted high-temperature gas reservoirs via recycling supercritical CO <sub>2</sub>
16:10-16:30	740	Fabrizio Leonforte, Niccolò Aste, Claudio Del Pero, Rajendra Adhikari, Federico Butera, Alessandra Zanelli	Wet curtain wall: a novel passive radiant system for hot and dry climates
16:30-16:50	777	Ninoslav Holjevac, Tomislav Capuder, Igor Kuzle	Defining key parameters of economic and environmentally efficient residential microgrid operation
16:50-17:10	798	Chayadit Pumaneratkul, Haruhiko Yamasaki, Hiroshi Yamaguchi, Shinichi Kitamura	Supercritical CO <sub>2</sub> Rankine cycle system with low-temperature geothermal heat pipe
17:10-17:30	817	Kwangbok Jeong, Taehoon Hong, Myeongsoo Chae, Changyoon Ji	Framework for the analysis of the potential of ground source heat pump system in Elementary School Facility

**Room: Convention Hall 4 (1st floor) - C****Session Name: Fuel Cell****Session Chair: Dennis Leung, Jarek Milewski**

Time	Paper ID	Author	Paper Title
15:50-16:10	540	Natthika Chingthamai, Yossapong Laoonual, Korakot Sombatmankhong	Experimental investigation of electrospray coating technique for electrode fabrication in PEMFCs
16:10-16:30	632	Tariq Shamim, Technology, Agus Sasmito, Asif Soopee, Technology	Water dynamics in the flow channel of a dead-end anode polymer electrolyte membrane fuel cell
16:30-16:50	681	Pierpaolo Polverino, Marco Sorrentino, Cesare Pianese	Improved fault isolability for Solid Oxide Fuel Cell diagnosis through sub-system analysis
16:50-17:10	706	Marco Sorrentino, Marco Gallo, Dario Marra, Cesare Pianese, Siu Fai Au	Development of a dynamic model for diagnosis and control of an integrated stack module based on solid oxide fuel cells
17:10-17:30	775	Yutong Mu, Wenquan Tao	Numerical study of the gas purging process of a proton exchange membrane fuel cell

**Room: Convention Hall 4 (1st floor) - D****Session Name: Cogeneration and polygeneration (III)****Session Chair: Wei Wu, Yaodong Wang**

Time	Paper ID	Author	Paper Title
15:50-16:10	465	Alessandro Parente, Ward De Paepe, Marina Montero Carrero, Svend Bram, Francesco Contino	Advanced humidified gas turbine cycle concepts applied to micro gas turbine applications for optimal waste heat recovery
16:10-16:30	648	Luo Xiaojun, Fong Kwong Fai	Control optimization of combined cooling and power system with prime mover of solid oxide fuel cell-gas turbine for building application
16:30-16:50	675&676	Baris Burak Kanbur, Liming Xiang, Swapnil Dubey, Choo Fook Hoong, Fei Duan	Micro cogeneration system with LNG cold utilization-Part 1: Energetic, economic and environmental analysis
16:50-17:10	208	Maxime Pochet, Sebastian Verhelst, Véronique Dias, Hervé Jeanmart, Francesco Contino	Multifuel CHP HCCI engine towards flexible power-to-fuel: numerical study of operating range
17:10-17:30	692	Yulong Zhao, Shixue Wang, Yanzhe Li	Thermoelectric power generation using LNG cold energy and flue-gas heat

<b>Room: Convention Hall 4 (1st floor) - E</b> <b>Session Name: Energy storage system</b> <b>Session Chair: Rebei Bel-Fdhila, Jer-Huan Jang</b>			
Time	Paper ID	Author	Paper Title
15:50-16:10	3	Pascal Maas	CFD Simulation of a 100 MWth lithium combustion slag tap furnace as a basis for an energy storage proces
16:10-16:30	79	Ye Huang, Xinjing Zhang	Techno-economic modelling of large scale compressed air energy storage systems
16:30-16:50	114	Sai Chu, Lei Zhang, Chen Hongbing, Danming Luan, Qiang Li	Selection and property study of phase change slurry for solar heat collection
16:50-17:10	132	Fang Liu	Experimental study of a dual-mode CO <sub>2</sub> heat pump system with thermal storage
17:10-17:30	293	Agus Sasmito, Ali Ghoreishi	A conjugate natural convection model for large scale seasonal thermal energy storage units: application in mine ventilation
<b>Room: Convention Hall 4 (1st floor) - F</b> <b>Session Name: Heating and cooling (II)</b> <b>Session Chair: Taehoon Hong, Eva Thorin</b>			
Time	Paper ID	Author	Paper Title
15:50-16:10	299	Mengjie Song, Ying Chen, Liyuan Liao, Shiming Deng	Experimental investigation on the reverse cycle defrosting termination temperature for an air source heat pump unit with a multi-circuit outdoor coil
16:10-16:30	383	Vinod Kumar Venkiteswaran, Surenthira Stephen Ramachanderan	A case study on the use of harvested rainwater to operate Passive cooling water wall (PCWW) for SEGi University tower
16:30-16:50	390	Eleonora Ciarrocchi, Alessia Arteconi, Fabio Polonara, Ru Zhu Wang, Xu Zheng	Assessment of the energy performance of an air source heat pump by response surface methodology
16:50-17:10	418	Nneka Onubogu, Kok-Keong Chong	High acceptance angle optical fiber based daylighting system using two-stage reflective non-imaging dish concentrator
17:10-17:30	564	antonio pantaleo, Sergio Camporeale, Christos Markides, Nilay Shah	Energy performance and thermo-economic assessment of a dual fuel gas-biomass microturbine for trigeneration
15:50-17:30	<b>Room: 201#A</b>  <b>PANEL SESSION: The future of 'Design + Energy'</b>  Chair: Prof. Stephen Wang; Participants: Prof. David Chiamonti, Prof. Xin Cui, Prof. Agus Sasmito, Prof. Nadia Maizi, Ms. Anna Frost, Mr. Pili Roberto		
18:00-22:00	<b>CONFERENCE BANQUET</b>		



# Open-source modelling tools: OptiCE

Applied Energy Innovation Institute (AEii)

## 1. OBJECTIVES AND MISSIONS

Applied Energy Summer School (AEss), associated with UNILAB, a specialized platform to facilitate networking and communications in energy areas and strengthen the multi-disciplinary collaborations, aims to build an academic, professional and persistent community for young scholars and experts by providing training courses, teamwork projects, plant tour opportunities and career development. The missions of AEss are:

- Co-location fosters collaboration, innovation and multi-disciplinary comprehension through face-to-face communication and training courses
- Collaboration leads to creative integration and system solutions to complex problems by exploring linkages among different energy system components and developing a framework of system integration
- Career development shapes the future of youth with interactive exchange with editors, entrepreneurs, product producers, decision makers and investors

## 2. SCOPE AND TASKS

The scope for the AEss 2017 is to create a community that uses and develops OptiCE. OptiCE is an open source model for optimization, simulation and design of clean energy systems for off-grid and on-grid applications.

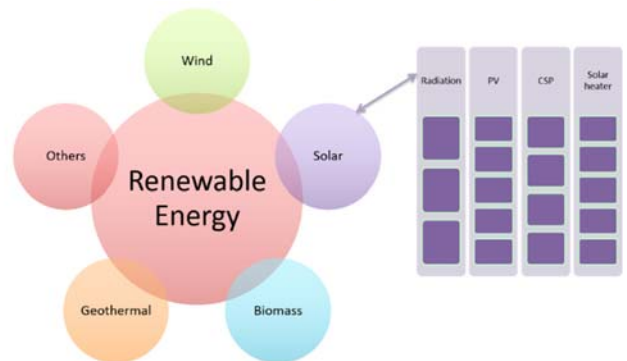
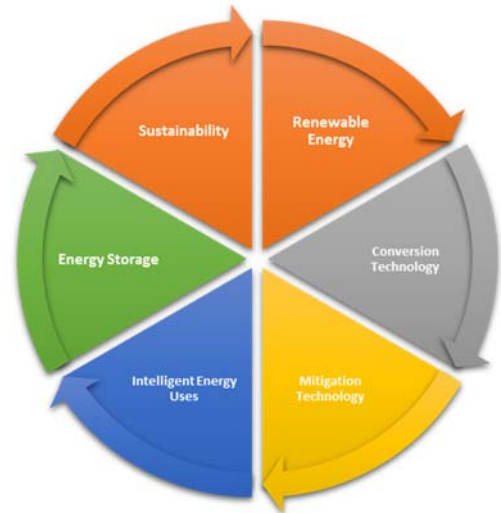
The main objective is to identify some missing power sources and energy storage technologies to be integrated in OptiCE. The practical task is to develop 4-5 new sub-models to be integrated in the original model to create a more robust and useful tools that can be used in the research and consultancy communities. Particular tasks can be devoted to the development of the already existing sub-models, GIS applications, and interface.

## 3. PROGRAM DESIGN

Based on OptiCE, the courses are delivered through a combination of academic lectures, career development module, team-project-design, and on-site tour of renewable pilot projects where students have the opportunity to see working systems that utilize clean energy.



The sessions are designed based on OptiCE toolbox with six modules of applied energy, namely Renewable Energy, Conversion Technologies, Mitigation Technologies, Intelligent Energy Uses, Energy Storage and Sustainability, and divided into four blocks on wind, solar, biomass, geothermal with specialized topics.



## 4. TARGET AUDIENCE

AEss invites highly motivated international students (undergraduate, postgraduate and doctoral students) and young scientists to participate. Experts from KTH Royal Institute of Technology, well-known international research institutes and the prestigious press like Elsevier and/or Wiley will guide students the training courses, discussions, research and project-design.

## 5. CONTACTS

Please, apply by e-mail sending your CV. The call for participants will be closed when the maximum number of participants will be reached.

Deadline for application: To be defined

Acceptance: To be defined

E-mail: [summerschool@applied-energy.org](mailto:summerschool@applied-energy.org)

Tel: +86 1520 1261 495

# Day 3

# Oral Presentations

Room: 201#B			
Session Name: Algal fuels and environmental sustainability			
Session Chair: Jesus Zambrano, Eva Thorin			
Time	Paper ID	Author	Paper Title
08:10-08:30	97	Rasaq Lamidi, Tony Roskilly, Yaodong Wang, Pankaj B. Pathare	Evaluation of CHP for electricity and drying of agricultural products in a Nigerian rural community
08:30-08:50	102	Andrew Zealand, Tony Roskilly, David Graham	The effect of feeding frequency and organic loading rate on the anaerobic digestion of chinese rice straw
08:50-09:10	129	Flabianus Hardi, Mikko Mäkelä, Kunio Yoshikawa	Non-catalytic hydrothermal liquefaction of biomass: an experimental design approach
09:10-09:30	153	Mingming Zhu, Pengfei Liu, Yee-Kwong Leong, Yang Zhang, Zhezi Zhang, Dongke Zhang	An experimental study of the rheological properties and stability characteristics of biochar-algae-water slurry fuels
09:30-09:50	258	Arif Darmawan, Muhammad Aziz, Koji Tokimatsu, Dwika Budiarto	Hydrothermally-treated empty fruit bunch cofiring in coal power plants: modeling and simulation of heat and mass flow using Aspen Plus
Room: 201#C			
Session Name: Solar receivers			
Session Chair: Jing Ding, Massimiliano Renzi			
Time	Paper ID	Author	Paper Title
08:10-08:30	395	Shen Du, Ya-Ling He, Peiwen Li	Numerical study on the optical and radiative properties of the gradually-varied volumetric solar receiver
08:30-08:50	407	Valentina Colla, Vincenzo Iannino, Stefano Dettori, Annamaria Signorini	A fuzzy logic-based tuning approaches of PID control for steam turbines for solar applications
08:50-09:10	574	Wanjun Qu, Ruilin Wang, Jie Sun, Hui Hong, Hongguang Jin	Prototype testing of a 300kWth solar parabolic-trough collector with rotatable axis tracking
09:10-09:30	739	Yabin Jin, Jiabin Fang, Jinjia Wei	Effect of Air-Al <sub>2</sub> O <sub>3</sub> particle mixture on uniformity of heat flux inside a solar cavity receiver
09:30-09:50	778	Jiayin Zhu, Bin Chen	A mathematic model of a color-changed passive solar house
Room: 201#D			
Session Name: Wind power generation (I)			
Session Chair: Wen Tong Chong, Xiong Liu			
Time	Paper ID	Author	Paper Title
08:10-08:30	99	Maciej Dylak, Krzysztof Badyda	Analysis of the impact of wind on electricity prices based on selected European countries
08:30-08:50	151	Nuomin Han, Xinyan Li	Study of static and dynamic performances of miniature Savonius-type wind energy harvesters
08:50-09:10	832	Nugroho Agung Pambudi, Danur Lambang Pristandaru, Basori, Danar Susilo Wijayanto, Husin Bugis, Bambang Dwi Wahyudi	Experimental investigation of wind turbine using nozzle-lens at low wind speed condition
09:10-09:30	264	Mei Sun, Anna Gao, Chunyu Shen, Yiqing Li	An optimization model for China's emission reduction resulting from the shift to wind power
09:30-09:50	324	Xiong Liu, Cheng Lu, Gangqiang Li, Ajit Godbole, Yan Chen	Tower load analysis of offshore wind turbines and the effects of aerodynamic damping

Room: 203#A			
Session Name: Battery storage			
Session Chair: Jarek Milewski, Erik Dahlquist			
Time	Paper ID	Author	Paper Title
08:10-08:30	738	Yu Quanqing, Rui Xiong	Online estimation of state-of-charge based on the H infinity and unscented Kalman filters for lithium ion batteries
08:30-08:50	750	Cao Yu	Straight running stability control based on optimal torque distribution for a four in-wheel motor drive electric vehicle
08:50-09:10	646	Shanshan Xie, Jiankun Peng, Hongwen He	Plug-in hybrid electric bus energy management based on stochastic model predictive control
09:10-09:30	766	Jun Xu, Shiyong Li, Binggang Cao	A novel current disturbance estimation method for battery management systems in electric vehicle
09:30-09:50	785	Rui Xiong, Zeyu Chen, Jiahuan Lu, Jiangman Bi	Comparison study on external short circuits of lithium battery in different temperature conditions
Room: 203#B			
Session Name: Heat exchanger			
Session Chair: Jong-Taek Oh, Ward De Paepe			
Time	Paper ID	Author	Paper Title
08:10-08:30	671	Mrinal Jagirdar, Poh Seng Lee, Ghim Wei Ho	Feasibility study of a parallel plate desiccant coated heat and mass regenerator for dehumidification
08:30-08:50	863	YingWen Liu, Geyu Zhong, Renjie Wu	Deriving correlations of thermal-hydraulic characteristics of H-type finned tube using the response surface methodology
08:50-09:10	869	Liping Xue	Experimental study of frost growth characteristics on surface of fin-tube heat exchanger
09:10-09:30	380	Xiaoqin Sun	Experimental research of a thermoelectric cooling system integrated with gravity assistant heat pipe for cooling electronic devices
09:30-09:50	927	Limin Ma	Experimental performance of a two-phase closed thermosiphon charged with hydrocarbons and Freon refrigerants for renewable energy applications
Room: 203#C			
Session Name: Energy processes and analysis (II)			
Session Chair: Ramesh Bansal, Khulood Rambo			
Time	Paper ID	Author	Paper Title
08:10-08:30	667	Jianfei Cao, Jiankun Peng, Hongwen He	Research on model prediction energy management strategy with variable horizon
08:30-08:50	250	Hongye Guo, Qixin Chen, Gang Chen, En Lu, Kaiwen Zeng, Chao Dong, Shizhao Hu	Electricity market Nash-Cournot equilibrium analysis with high proportion of gas-fired generators
08:50-09:10	328	Koji Tokimatsu, Shinsuke Murakami, Benjamin McLellan, Mikael Höök, Eriko Yasuoka, Masahiro Nishio	Global energy-mineral nexus by systems analysis approaches
09:10-09:30	387	Qingru Sun	Research on stability evolution of international oil trade relationships
09:30-09:50	420	Qun Ding, Wenjia Cai, Can Wang	Impact of household consumption activities on energy consumption in China—evidence from the lifestyle perspective and input-output analysis

Room: Convention Hall 4 (1st floor) - A			
Session Name: Combustion (II)			
Session Chair: Xuesong Bai, Haitao Zhao			
Time	Paper ID	Author	Paper Title
08:10-08:30	333	Jianbo Li, Mingming Zhu, Zhezi Zhang, Kai Zhang, Guoqing Shen, Dongke Zhang	Stratification and chemistry evolution of ash deposits during combustion of Zhundong lignite in a drop tube furnace
08:30-08:50	40	Debo Li, Qiang Lv, Yongxin Feng, Chang'an Wang, Xuan Liu, Kai Chen, Kai Xu, Jun Zhong, Defu Che	Effects of coal blending and operating conditions on combustion and NOx emission characteristics in a tangentially-fired utility boiler
08:50-09:10	544	Qingzhao Chu, Baolu Shi, Zhiqiang Zhu, Bo Li, Ningfei Wang	An experimental investigation on oxy-fuel combustion of methane from low to ultrahigh oxygen mole fractions
09:10-09:30	62	Idowu Adeyemi, Mohammad Abu Zahra, Inas Alnashef	Experimental study of the solubility of CO <sub>2</sub> in novel amine based deep eutectic solvents
09:30-09:50	938	Lan Zhang	The influence of CaO on the pyrolysis behavior and kinetic characteristics of low rank coal
Room: Convention Hall 4 (1st floor) - B			
Session Name: Energy processes and analysis (III)			
Session Chair: Can Wang, Taeyu Kim			
Time	Paper ID	Author	Paper Title
08:10-08:30	932	Shengchun Liu, Zheng Li, Baomin Dai	Energy, economic and environmental analyses of the CO <sub>2</sub> heat pump system compared with boiler heating system in China
08:30-08:50	856	Reinhard Madlener, Stefan Franzen	Optimal expansion of a hydrogen storage system for wind power (H <sub>2</sub> -WESS): a real options analysis
08:50-09:10	50	Xinxin Liang, Yaodong Wang, Tony Roskilly, Huan Guo	Analysis and optimization on energy performance of a rural house in northern China using passive retrofitting
09:10-09:30	108	Gloria Puglia, Gabriele Comodi, Mauro Moroni, Remo Fagnani	A design approach of off-grid hybrid electric microgrids in isolated villages: a case study in Uganda
09:30-09:50	206	Muhammad Kunta Biddinika, Raden Muhammad Ali, Fumitake Takahashi, Raden Ibnu Rosyadi, Ahmad Muhammad Diponegoro, Koji Tokimatsu	Challenges on the adoption of rapid appraisal method for assessment of online information on biomass energy
Room: Convention Hall 4 (1st floor) - C			
Session Name: District heating and cooling			
Session Chair: Ramesh Bansal, Ruyin Long			
Time	Paper ID	Author	Paper Title
08:10-08:30	528	Ayotunde Dawodu, Ali Cheshmehzangi	Impact of floor area ratio (FAR) on energy consumption at meso scale in China: case study of Ningbo
08:30-08:50	371	Zhou Wu, Xiaohua Xia, Han Xu	Interactive dynamics in building maintenance and retrofit
08:50-09:10	265	Chuan Zhang, Ming Pan, Alessandro Romagnoli, Li Zhou, Markus Kraft	Towards intelligent thermal energy management of eco-industrial park through ontology-based approach
09:10-09:30	805	Yu Liang	Numerical simulation of energy utilization coefficient influenced by desktop personalized ventilation modes
09:30-09:50	967	Jingjing Song, Hailong Li, Fredrik Wallin	Cost comparison between district heating and alternatives during the price model restructuring process

Session Name: Combined cooling, heating and power generation			
Session Chair: Ander Avelin, Shixue Wang			
Time	Paper ID	Author	Paper Title
08:10-08:30	799	Lijun Zhang, Xiaohua Xia, Michael Chennells	Economic dispatch of a grid-connected cogeneration ferrochrome plant
08:30-08:50	870	Sourav Mitra	Modeling and simulation of mass recovery process in adsorption system for cooling and desalination
08:50-09:10	375	Lang Wang, Weilong Wang, Jianfeng Lu, Jing Ding	Feasibility analysis of CCHP system with thermal energy storage driven by micro turbine
09:10-09:30	92	Moa Swing Gustafsson	Mapping of heat and electricity consumption in a medium size municipality in Sweden
09:30-09:50	201	Cheng Yang, Zeliang Yang, Xusheng Wang, Chi Zhang	Control strategies of steam-injected gas turbine in CCHP system
Room: Convention Hall 4 (1st floor) - E			
Session Name: Thermal storage (I)			
Session Chair: Christoph Hilgers, Agus Sasmito			
Time	Paper ID	Author	Paper Title
08:10-08:30	294	Agus Sasmito, Jundika Kurnia	Investigation of heat transfer on a rotating latent heat energy storage
08:30-08:50	306	Lichan Du, Heqing Tian, Ming Song, Weilong Wang, Jing Ding, Xiaolan Wei	Thermal stability of the eutectic composition in NaCl-CaCl <sub>2</sub> -MgCl <sub>2</sub> ternary system used for thermal energy storage applications
08:50-09:10	309	Joshua McTigue, Alexander White	A comparison of radial-flow and axial-flow packed beds for thermal energy storage
09:10-09:30	404	Xiaohu Yang, Xiangzhao Meng, Zhenni Wang, Liwen Jin, Qunli Zhang, Qiancheng Zhang, Tian Jian Lu	Direct numerical simulation on melting phase change behavior in open-cell metal foam
09:30-09:50	620	Heqing Tian	Enhanced specific heat of chloride salt with Mg particles for high-temperature thermal energy storage
Room: Convention Hall 4 (1st floor) - F			
Session Name: District heating and CCHP			
Session Chair: Yuejun Zhang, Yanping Cai			
Time	Paper ID	Author	Paper Title
08:10-08:30	479	Tina Lidberg, Jonn Are Myhren	Comparing different building energy efficiency refurbishment packages performed within different district heating systems
08:30-08:50	531	Mirko Morini, Michele Rossi, Agostino Gambarotta, Matteo Stonfer	A library for the simulation of smart energy systems: the case of the campus of the University of Parma
08:50-09:10	764	Nathan Zimmerman, Konstantinos Kyprianidis, Erik Dahlquist	Towards on-line fault detection and diagnostics in district heating networks
09:10-09:30	448	Zelin Li, Qingsong An, Jun Zhao, Shuai Deng, Ligai Kang, Yongzhen Wang	Analysis of design and operation optimization of CCHP system with different feed-in tariff policies
09:30-09:50	906	Sourav Mitra	Modeling the effect of heat source temperature on the performance of two-stage air cooled silica gel + water adsorption system
08:10-09:50	<b>Room: 201#A</b> <b>PANEL SESSION: Applied Energy summer school: open-source modelling tools</b> Chair: Dr. Pietro Elia Campana; Participants: Prof. Jinyue Yan, Prof. Bin Chen, Mr. Yang Zhang		
09:50 – 10:20	<b>TEA/COFFEE BREAK</b>		



Room: 201#B			
Session Name: Engine and emission reduction			
Session Chair: Mehdi Jangi, Tariq Shamim			
Time	Paper ID	Author	Paper Title
10:20-10:40	520	Subir Bhaduri, Francesco Contino, Hervé Jeanmart	Tar tolerant HCCI engine fuelled with biomass syngas: combustion control through EGR
10:40-11:00	524	Ocktaeck Lim	Effects of structural parameters on operating characteristics of a solenoid injector
11:00-11:20	535	Nattakit Tongdee, Chalothorn Thumthae	Thermodynamics analysis for optimal parameters of Gamma-configuration Stirling engine with geothermal in Thailand
11:20-11:40	536	Ocktaeck Lim	Study on characteristics of auto-ignition in gasoline-biodiesel blend fuel with a rapid compression expansion machine
11:40-12:00	243	Puyan Xu, Changwei Ji, Shuofeng Wang	The characteristics in adsorption and desorption of an adsorption-desorption system for HC emissions within the gasoline engines during cold start
Room: 201#C			
Session Name: Solar collector systems			
Session Chair: Hongxing Yang			
Time	Paper ID	Author	Paper Title
10:20-10:40	690	Hongbo Liang	Analysis of Annual Performance for Parabolic Trough Solar Collectors
10:40-11:00	730	Li Zhang, Jiabin Fang, Jinjia Wei	Numerical study on the thermal performance of molten salt cavity receiver with different geometries
11:00-11:20	415	Ruilin Wang, Wanjun Qu, Hui Hong, Jie Sun	An on-site test method for optical efficiency of large-size parabolic trough collectors
11:20-11:40	433	Valentina Colla, Stefano Dettori, Giuseppe Salerno, Annamaria Signorini	Steam turbine models for monitoring purposes
11:40-12:00	819	Jian Jin, Yunyi Ling, Yong Hao	A new method to analyze the characteristics of parabolic trough solar collector systems
Room: 201#D			
Session Name: Wind power			
Session Chair: Xiong Liu, Youmin Zhang			
Time	Paper ID	Author	Paper Title
10:20-10:40	471	Ramesh Bansal, Gulshan Sharma, Ibraheem Nasiruddin	DFIG based AGC of power system using robust methodology
10:40-11:00	545	Angelo Aquino, John Kaiser Calautit, Ben Richard Hughes	Urban integration of aeroelastic belt for low-energy wind harvesting
11:00-11:20	557	Lai Sai Hin, Xiao Hang Wang, Wen Tong Chong, Wong Kok Hoe, Poh Sin Chew, Lip Huat Saw, Wang Chin-tsan	The design, simulation and testing of V-shape roof guide vane integrated with an eco-roof system
11:20-11:40	595	Faisal Mahmuddin	Airfoil lift and drag extrapolation with viterna and montgomerie methods
11:40-12:00	760	Wen Tong Chong, Wong Kok Hoe, Chin tsan Wang, Mohammed Gwani, Yung-Jeh Chu, Wei-Chin Chia, Poh Sin Chew	Cross-Axis-Wind-Turbine: A complementary design to push the limit of wind turbine technology

Room: 203#A			
Session Name: Battery in electric vehicle			
Session Chair: Xiaofeng Ding, Aihua Tang			
Time	Paper ID	Author	Paper Title
10:20-10:40	28	Xiaopeng Tang, Boyang Liu, Furong Gao	State of charge estimation of LiFePO <sub>4</sub> battery based on a gain-classifier observer
10:40-11:00	142	Jianan Zhang, Zhenpo Wang, Fengchun Sun	Heating character of a LiMn <sub>2</sub> O <sub>4</sub> battery pack at low temperature based on PTC and metallic resistance material
11:00-11:20	912	Yin Ding	A short review on layered LiNi <sub>0.8</sub> Co <sub>0.1</sub> Mn <sub>0.1</sub> O <sub>2</sub> positive electrode material for lithium-ion batteries
11:20-11:40	654	Shanshan Xie, Rui Xiong, Yongzhi Zhang, Hongwen He	The estimation of state of charge for power battery packs used in hybrid electric vehicle
11:40-12:00	659	Dongsheng Ren, Languang Lu, Minggao Ouyang, Xuning Feng, Jianqiu Li, Xuebing Han	Degradation identification of individual components in the LiyNi <sub>1/3</sub> Co <sub>1/3</sub> Mn <sub>1/3</sub> O <sub>2</sub> -LiyMn <sub>2</sub> O <sub>4</sub> blended cathode for large format lithium ion battery
Room: 203#B			
Session Name: Heat transfer and heat exchangers (II)			
Session Chair: Rebei Bel-Fdhila, Jing Ding			
Time	Paper ID	Author	Paper Title
10:20-10:40	58	Normah Mohd-Ghazali, Yushazaziah Mohd Yunos, Agus Sunjarianto Pamitran, Sentot Novianto	Analysis of two correlations for the heat transfer coefficient of propane in a small channel
10:40-11:00	68	Simin Huang	Conjugate transport data in flat plate membrane channels employed for air humidification
11:00-11:20	128	Gang Jiang, Hong-wei Lu, Xing Jin	Numerical analysis of the thermal performance of energy pile with U-tube
11:20-11:40	86	Tao Han, Changan Wang, Qi Cao, Wufeng Chen, Defu Che	Investigation on heat transfer characteristics of the H-type finned tube in flue gas with high content of ash
11:40-12:00	104	Lan Xiao, Shuang-Ying Wu, Quan-Wei Chu, Hai-Yan Wu	Parametric analysis of condensation heat transfer characteristics of AMTEC wick condenser
Room: 203#C			
Session Name: Strategic studies of national energy systems			
Session Chair: Koji Tokimatsu, Neha Sehgal			
Time	Paper ID	Author	Paper Title
10:20-10:40	469	Zhijia Chen, Haizhong An	Dynamic modeling of China's natural gas inventory plan and corresponding import strategy
10:40-11:00	813	Neha Sehgal, Krishan Pandey	Striking an energy balance for India through shale gas
11:00-11:20	559	Rina Haiges, Yao Dong Wang, Tony Roskilly, Atanu Ghoshray	Forecasting electricity generation capacity in Malaysia: An ARIMA approach
11:20-11:40	582	Yang Bai, Carol Dahl	A survey on the economy efficiency of the United States' strategic petroleum reserve
11:40-12:00	882	Qi Zhang	Study on the impacts of the LNG market reform in China using a SVM based rolling horizon stochastic game analysis

<b>Room: Convention Hall 4 (1st floor) - A</b> <b>Session Name: Distributed energy system (I)</b> <b>Session Chair: Yunfei Mu, Bin Ye</b>			
Time	Paper ID	Author	Paper Title
10:20-10:40	165	Shuai Deng	Flexible distributed energy system: concept, typical technologies and case study
10:40-11:00	269	Chao Long, Jianzhong Wu, Chenghua Zhang	Feasibility of peer-to-peer energy trading in low voltage electrical distribution networks
11:00-11:20	275	Li Zhou, Markus Kraft, Ming Pan, Janusz Sikorski, Sushant Garud, Martin Kleinlanghorst, Iftekhar Karimi	System development for eco-industrial parks using ontological innovation
11:20-11:40	343	Weiliang Wang, Dan Wang, Hongjie Jia, Zhaoyu Chen, Jia Tang	A decomposed solution of multi-energy flow in regional integrated energy systems considering operational constraints
11:40-12:00	409	Marialaura Di Somma, Bing Yan, Nicola Bianco, Giorgio Graditi, Peter B. Luh, Luigi Mongibello, Vincenzo Naso	Design optimization of a distributed energy system through cost and exergy assessments
<b>Room: Convention Hall 4 (1st floor) - B</b> <b>Session Name: Catalytic enhanced biofuels</b> <b>Session Chair: Agustin Valera-Medina, Motern Seljeskog</b>			
Time	Paper ID	Author	Paper Title
10:20-10:40	980	Janka Dibdiakova, Liang Wang, Hailong Li	Heating value and ash content of downy birch forest biomass
10:40-11:00	85	Changan Wang, Tao Han, Qi Cao, Wufeng Chen, Defu Che	Experimental study on cohesiveness characteristics of raw cement ash at moderate temperature
11:00-11:20	70	Hesam Fatehi, Florian M. Schmidt, Xue-Song Bai, Zhechao Qu	Effect of volatile reactions on the thermochemical conversion of biomass particles
11:20-11:40	210	Khanh-Quang Tran, Wennan Zhang	Fast hydrothermal liquefaction of native and torrefied wood
11:40-12:00	937	Lan Zhang	Co-pyrolysis behaviors of MSW and coal in the radiant pyrolyzing furnace and the tube furnace
<b>Room: Convention Hall 4 (1st floor) - C</b> <b>Session Name: LCA of energy systems (II)</b> <b>Session Chair: Reinhard Madlener, Victor Nian</b>			
Time	Paper ID	Author	Paper Title
10:20-10:40	61	Holger Schlör, Jan Christian Koj, Petra Zapp, Andrea Schreiber, Jürgen-Friedrich Hake	The social footprint of hydrogen production - A social life cycle assessment (S-LCA) of alkaline water electrolysis
10:40-11:00	83	Wei Wu	An economic and environmental assessment for microalgal energy systems
11:00-11:20	133	Hassan Hamdan, Brian Kinsella	Using a VSC based HVDC application to energize offshore platforms from onshore – A life-cycle economic appraisal
11:20-11:40	389	Zhenni Wang, Lianying Zhang, Xiaohu Yang, Liwen Jin, Wenju Hu, Qunli Zhang	Thermo-economic analysis for directly-buried pipes insulation of district heating piping systems
11:40-12:00	461	Holger Schlör, Petra Zapp, Jürgen-Friedrich Hake, Jan Christian Koj, Andrea Schreiber	Towards a life cycle sustainability assessment of alkaline water electrolysis

Room: Convention Hall 4 (1st floor) - D			
Session Name: Industrial energy processes			
Session Chair: Fredrik Wallin, Weilong Wang			
Time	Paper ID	Author	Paper Title
10:20-10:40	973	Limin Ma	Energy consumption optimization of high sulfur natural gas purification plant based on back propagation neural network and genetic algorithms
10:40-11:00	729	Francesca Marchiori, Valentina Colla, Andrea Belloni, Michele Benini, Silvia Cateni, G Nastasi, Antonella Vignali, Marco Lupinelli, Alexander Ebel, Marcus Neuer, Zelong Lei, Costanzo Pietrosanti	Integrated dynamic energy management for steel production
11:00-11:20	403	Xi Jiang, Didi Li	Numerical investigation of the effects of impurity on CO <sub>2</sub> sequestration in stratified formation
11:20-11:40	560	Paul Griffin, Jonathan Norman, Geoffrey Hammond	Opportunities for energy demand and carbon emissions reduction in the chemicals sector
11:40-12:00	836	Le Cao Nhien, Nguyen Van Duc Long, Moonyong Lee	Process design of hybrid extraction and distillation processes through a systematic solvent selection for furfural production
Room: Convention Hall 4 (1st floor) - E			
Session Name: Thermal storage (II)			
Session Chair: Christoph Hilgers, Steffen Beckert			
Time	Paper ID	Author	Paper Title
10:20-10:40	203	Guohong Tian, Jun Li	Investigation of an HD engine thermal storage system
10:40-11:00	413	Marialaura Di Somma, Luigi Mongibello, Giorgio Graditi, Nicola Bianco	Experimental validation of a tool for the numerical simulation of a commercial hot water storage tank
11:00-11:20	984	Changjiang Wang, Qie Sun	Evaluation on performance of cold storage house based on phase change materials
11:20-11:40	538	Shuo Lv, Gui-Hua Zhu, Yang Xu, Ya-Ling He, Bo Shan	Al/Al <sub>2</sub> O <sub>3</sub> form-stable phase change material for high temperature thermal energy storage
11:40-12:00	542	Thomas Nagel, Steffen Beckert	A comparison of heat storage densities of zeolite granulates predicted by the Dubinin-Polanyi theory to experimental measurements
Room: Convention Hall 4 (1st floor) - F			
Session Name: Biomass to energy			
Session Chair: Erik Dahlquist, Kunio Yoshikawa			
Time	Paper ID	Author	Paper Title
10:20-10:40	518	Zoltán Sebestyén, Norbert Miskolczi, Eszter Barta-Rajnai, Emma Jakab, Zsuzsanna Czegeny	Thermocatalytic studies on municipal solid waste
10:40-11:00	570	Roland Span	Oxyfuel combustion – experimental investigation of sorption effects on coal char
11:00-11:20	874	Liang Wang	Impact of torrefaction on woody biomass properties
11:20-11:40	477	Baskoro Lokahita, Kunio Yoshikawa, Fumitake Takahashi	Hydrothermal treatment of postconsumer aseptic packaging material: solid fuel production and aluminum recovery
11:40-12:00	940	Lan Zhang	Pyrolysis characteristics of municipal solid waste in oxygen-free circumstance
12:00-13:00	<b>LUNCH</b>		

**Room: 201#B****Session Name: Algal fuels and environmental sustainability****Session Chair: Lida Simasatitkul, Raza Naqvi**

Time	Paper ID	Author	Paper Title
13:00-13:20	331	Mingming Zhu, Nimas Mayang Sabrina Sunyoto, Zhezi Zhang, Dongke Zhang	Effect of biochar addition and initial ph on hydrogen production from the first phase of two-phase anaerobic digestion of carbohydrates food waste
13:20-13:40	460	Piera Patrizio, Haslenda Hashim, Poh Ying Hoo, Florian Kraxner, SieTing Tan, Wai Shin Ho, Sylvain Leduc	Optimal biomethane injection into natural gas grid - biogas from palm oil mill effluent (POME) in Malaysia
13:40-14:00	647	Mandy Gerber, Sebastian Schwede, Eva Thorin, Florian Bruchmann	Biological syngas methanation via immobilized methanogenic archaea on biochar
14:00-14:20	696	Maria Westerholm	Microbial community ability to adapt to altered temperature conditions influences operating stability in anaerobic digestion
14:20-14:40	752	Anbarasan Anbalagan	Continuous CO <sub>2</sub> and volatile organic compound (VOC) removal in a tubular photo-bioreactor
14:40-15:00	801	Eva Thorin, Jesper Olsson, Sebastian Schwede, Emma Nehrenheim	Biogas from co-digestion of sewage sludge and microalgae

**Room: 201#C****Session Name: Heat pumps and refrigeration systems****Session Chair: Xianting Li, Bin Chen**

Time	Paper ID	Author	Paper Title
13:00-13:20	378	Cai Yang, Liu Di	Optimization of thermoelectric cooler system for application in CPU cooler
13:20-13:40	434	Xiaoran Zhang, Shaopeng Guo, Xiaoran Zhang	Evaluation and analysis of thermal short-circuiting in borehole heat exchangers
13:40-14:00	441	Shuangquan Shao, Weijia Zhang, Changqing Tian, Hainan Zhang	Numerical Investigation on three-fluid heat exchanger for hybrid Energy source heat pumps
14:00-14:20	493	Jingyuan Xu, Jianying Hu, Limin Zhang, Ercang Luo, Wei Dai	Numerical investigation on a looped thermoacoustically-driven cryocooler for natural gas liquefaction
14:20-14:40	710	L.W. Wang	The feasibility of a type of sorption chiller for electric vehicles
14:40-15:00	43	Normah Mohd-Ghazali, Nor Atiqah Zolpakar, Robiah Ahmad, Thierry Mare	Performance of a 3D-printed stack in a standing wave thermoacoustic refrigerator

**Room: 201#D****Session Name: Solar photovoltaic system (III)****Session Chair: Hongxing Yang, Xingxing Zhang**

Time	Paper ID	Author	Paper Title
13:00-13:20	273	Weilong Zhang, Xi Chen	Performance evaluation of vacuum photovoltaic insulated glass unit
13:20-13:40	398	Yi-Peng Zhou, Ya-Ling He, Yu Qiu, Tao Xie	Multi-scale investigation on the optical performance of a concentrated photovoltaic thermoelectric hybrid system by a MC-FDTD coupled method
13:40-14:00	429	ZhongBing Liu	Investigation on a photovoltaic thermoelectric ventilator
14:00-14:20	508	Ying Wen Liu, Lisha An, Liu Liu	Improvement of performance of gas flow channel in a polysilicon CVD reactor with field synergy principle
14:20-14:40	607	Hongyang Zou, Huibin Du	Techno-economic evaluation of China's PV power generation: Is the achievement of grid parity possible?
14:40-15:00	480	Ramesh Bansal, T Adefarati	Impacts of PV-wind-diesel-electric storage hybrid system on the reliability of a power system



**Room: 203#A****Session Name: Energy efficiency in buidings (II)****Session Chair: Fredrik Wallin, Jia Michelle Cui**

Time	Paper ID	Author	Paper Title
13:00-13:20	745	Fabrizio Leonforte, Niccolò Aste, Rajendra Adhikari, Claudio Del Pero	Multi-functional integrated system for energy retrofit of existing buildings: a solution towards nZEB standards
13:20-13:40	426	Haoxin Xu, Jia Yin Sze, Alessandro Romagnoli, Xavier Py	Selection of phase change material for thermal energy storage in solar air conditioning systems
13:40-14:00	396	Yazeed Ghadi, Mohammad Rasul, Masud Khan	The integration of day light with advance fuzzy based controllers for institutional buildings in the region of central Queensland, Australia
14:00-14:20	769	Yazeed Ghadi, Mohammad Rasul, Masud Khan	Energy savings by fuzzy base control of occupancy concentration in institutional buildings
14:20-14:40	808	jimin kim, Taehoon Hong, Myeonghwi Lee	Analysis of energy consumption and indoor temperature distributions in educational facility based on CFD-BES model
14:40-15:00	191	Siwei Lou, Ernest K.W. Tsang, Danny H W Li, Eric W.M. Lee, Joseph C Lam	Towards net zero energy school building designs in Hong Kong

**Room: 203#B****Session Name: Battery modeling and simulation****Session Chair: Lijun Zhang, Dan Wang**

Time	Paper ID	Author	Paper Title
13:00-13:20	338	Jiayi Luo, Hongwen He, Jingda Wu, Jiankun Peng	Parameter matching and simulation analysis of electromechanical coupling device for hybrid electric vehicle
13:20-13:40	346	Jun Xu, Qingxia Yang, Binggang Cao, Bin Wang, Xiuqing Li	State-of-health estimation of lithium-ion battery based on interval capacity
13:40-14:00	347	Jianfei Cao, Hongwen He, Jiankun Peng	Online prediction with variable horizon for vehicle future driving-cycle
14:00-14:20	350	Jiahuan Lu, Zeyu Chen, Rui Xiong	Online estimation of state of power for lithium-ion battery considering the battery aging
14:20-14:40	351	Zhenyu Sun, Peng Liu, Zhenpo Wang	Real-time fault diagnosis method of battery system based on Shannon entropy
14:40-15:00	466	Yang Liu, Cheng Lin, Zhifeng Xu, Shan Wang	Sliding mode observers designed to improve observation accuracy of electric vehicle state information

**Room: 203#C****Session Name: Micro and nano energy technologies****Session Chair: Erik Dahlquist, Zhixin Yu**

Time	Paper ID	Author	Paper Title
13:00-13:20	100	Binbin Chen, Jin Xuan, Huizhi Wang, Dennis Y.C. Leung	Microfluidic aluminum-air cell with methanol-based anolyte
13:20-13:40	274	Xingyu Xu, Lin Lu, Yuanhao Wang, Shujun Wang	Antimony doped tin oxide/multi-walled carbon nanotubes: highly near-infrared blocking coating used for heat conservation windows
13:40-14:00	295	Mai Li, Dajun Wu, Lianwei Wang, Hongxing Yang, Yuanhao Wang	Hierarchical grass like NiCo <sub>2</sub> O <sub>4</sub> nanoflakes on 3-dimensional microporous electrically conductive network with superior electrochemical performance
14:00-14:20	762	Zihao Yao, Weiling Luan	A novel way of real-time crack monitoring based on quantum dots
14:20-14:40	789	Bohao Wu, Lanlan Jiang, Yu Liu, Pengfei Lv, Dayong Wang, Yongchen Song	Pore-scale mass transfer experiments in porous media by X-ray CT scanning
14:40-15:00	75	Yiji Lu, Yao Dong Wang, Tony Roskilly	Experimental exploration of a novel chemisorption composite of SrCl <sub>2</sub> -NEG adding with Carbon coated Ni

**Room: Convention Hall 4 (1st floor) - A****Session Name: Strategic studies of national energy systems (II)****Session Chair: Yang Bai, Yuejun Zhang**

Time	Paper ID	Author	Paper Title
13:00-13:20	367	Shihui Zhang, Can Wang, Wenjia Cai	How shale gas will shape China's future? An evaluation based on dynamic Energy-CGE model
13:20-13:40	759	Konstantinos Chalvatzis, Dimitrios Pappas	Energy and industrial growth in India: the next emissions superpower?
13:40-14:00	986	Haifang Liu	Research on Chinese solar photovoltaic development based on green-trading mechanisms in power system by using a system dynamics model
14:00-14:20	862	Wenhuan Wang, Qiming Li, Yiping Lou, Xiaoguang Yang	China energy-air quality nexus: assessing the air quality-improving synergy effects of energy-saving during the 12th Five Year Period
14:20-14:40	156	Ekaterina Mednikova	Search for a market equilibrium in the oligopoly heat market
14:40-15:00	915	Zhang Jie, Campana Pietro Elia, Zhang Yang, Lundblad Anders, Yan Jinyue	Combating agricultural drought with irrigation: a water-foodenergy optimization approach

**Room: Convention Hall 4 (1st floor) - B****Session Name: Industrial energy systems (I)****Session Chair: Dawei Wu, Dan Zhao**

Time	Paper ID	Author	Paper Title
13:00-13:20	11	Mehdi Jangi, Xue-Song Bai	Modelling of methanol combustion in a direct injection compression ignition engine using an accelerated stochastic fields method
13:20-13:40	72	Muhammad Ikram Mohd Rashid	ADVISOR simulation and performance test of split plug-in hybrid electric vehicle conversion
13:40-14:00	543	Amin Al-Habaibeh	An innovative and integrated approach for using energy from the flooded coal mines for pre-warming of a gas engine in standby mode using GSHP
14:00-14:20	549	Ocktaeck Lim	Spray simulation of n-heptane in a constant volume combustion vessel over a wide range of ambient gas density and fuel temperature
14:20-14:40	188	Thomas Arink, Mohamed Hassan Ali	Metal scrap preheating using flue gas waste heat
14:40-15:00	241	Lei Shi, Changwei Ji, Shuofeng Wang	The combustion characteristic and performance of a dimethyl ether-blended gasoline engine under idle and stoichiometric conditions

**Room: Convention Hall 4 (1st floor) - C****Session Name: Fuel cell (II)****Session Chair: Horng-Wen Wu, Taegy Kim**

Time	Paper ID	Author	Paper Title
13:00-13:20	14	Mayken Espinoza, Martin Andersson, Bengt Sundén	Modeling of a gradient porosity SOFC anode using the Lattice Boltzmann method
13:20-13:40	41	Horng-Wen Wu, Duo-Yao Kang, Shiang-Wuu Perng	Effect of rectangular ribs in the flow channels of HTPEM fuel cell
13:40-14:00	107	Yifei Wang, Dennis Y.C. Leung	Optimization of cathode flooding in scaled-up microfluidic fuel cells
14:00-14:20	200	Shan Jia, Hongtan Liu	Numerical modeling with electrochemical active area (ECA) distribution in the lateral direction in a PEM fuel cell
14:20-14:40	263	Michael K.H. Leung, Li Li, Wenguang Fan, Jin Xuan, Yiyi She, Keqing Zheng	Design principles of current collectors in microfluidic fuel cell with flow-through porous electrodes
14:40-15:00	510	Rajesh S Kempegowda, Øyvind Skreiberg, Khanh-Quang Tran, Pannirselvam Pagandai V	Techno-economic assessment of thermal co-pretreatment and co-digestion of food wastes and sewage sludge for heat, power and biochar production

**Room: Convention Hall 4 (1st floor) - D****Session Name: Biofuels-biodiesel****Session Chair: Weixiong Chen, Umberto Desideri**

Time	Paper ID	Author	Paper Title
13:00-13:20	54	Kun Lin Tay, Wenming Yang, Siaw Kiang Chou, Dezhi Zhou, Jing Li, Yu Wenbin, Feiyang Zhao, Balaji Mohan	Effects of injection timing and pilot fuel on the combustion of a kerosene-diesel/ammonia dual fuel engine: A numerical study
13:20-13:40	519	Ocktaeck Lim	Influence of Injection Strategy on a Compression Ignition Engine Fueled with Gasoline
13:40-14:00	33	Agustin Valera-Medina, Hesham Baej, Nicholas Syred, Cheng Tung Chong, Phil Bowen	Coherent structure impacts on blowoff using various syngases
14:00-14:20	318	Natarajan Shanmugam, Meenakshi Sundareswaran A.U, Abhinav Shankar	Early injected PCCI engine fuelled with bio ethanol and diesel blends-an experimental investigation
14:20-14:40	164	Yang Zhang, Mingming Zhu, Zhezi Zhang, Dongke Zhang	Combustion and emission characteristics of a spark ignition engine fuelled with biogas from two-phase anaerobic digestion (T-PAD)
14:40-15:00	310	Natarajan Shanmugam, Meenakshi Sundareswaran A.U, Akshay Kumar Madhu	Computational analysis of an early direct injected HCCI engine fuelled with bio ethanol and diesel blends

**Room: Convention Hall 4 (1st floor) - E****Session Name: Organic Rankine cycles (III)****Session Chair: Tony Roskily**

Time	Paper ID	Author	Paper Title
13:00-13:20	268	Xiaoya Li	Dynamic modeling of CO <sub>2</sub> transcritical power cycle for waste heat recovery of gasoline engines
13:20-13:40	63	Roberto Pili, Alessandro Romagnoli, Christoph Wieland, Hartmut Spliethoff	Economic feasibility of organic Rankine cycles (ORC) in different transportation sectors
13:40-14:00	321	Weixiong Chen, Junjie Yan, Xiaoqu Han, Sotirios Karellas, Ming Liu, Konstantinos Braimakis, Emmanuel Kakaras	Integration of organic rankine cycle with lignite flue gas pre-drying for waste heat and water recovery from dryer exhaust gas: thermodynamic and economic analysis
14:00-14:20	362	Mingru Zhao, Gequn Shu, Hua Tian, Nanhua Yan	Analysis of an alternative method to optimize the combined model of engine and organic Rankine cycle
14:20-14:40	458	Arnaud Landelle, Nicolas Tauveron, Remi Revellin, Philippe Haberschill, Stephane Colasson	Performance evaluation and comparison of experimental organic Rankine cycle prototypes from published data
14:40-15:00	335	Yongzhen Wang, Jun Zhao, Chao Luo, Shuai Deng, Qingsong An	A critical analysis on performance of ORC through a modified thermodynamic model based on fluid property

**15:00 – 15:30****TEA/COFFEE BREAK**

**Room: 201#B****Session Name: Wind power generation (II)****Session Chair: Nuomin Han, Junjun Deng**

Time	Paper ID	Author	Paper Title
15:30-15:50	857	Faisal Mahmuddin	Rotor blade performance analysis with blade element momentum theory
15:50-16:10	926	Toohid Bagherpoor, Li Xuemin	Structural optimization design of 2MW composite wind turbine blade
16:10-16:30	858	Wei You	Improving wind environment of residential neighborhoods by understanding the relationship between building layouts and ventilation efficiency
16:30-16:50	934	Youmin Zhang, Hamed Badihi	Passive fault-tolerant cooperative control in an offshore wind farm
16:50-17:10	238	Ke Sun, Zhanhong Wan	A model and experiment study of an improved pendulor wave energy converter
17:10-17:30	990	Shiyu Ji, Bin Chen	LCA-based energy-water-land nexus of a typical wind farm in China

**Room: 201#C****Session Name: Modeling and analysis of energy systems****Session Chair: Sheng Li, Masud Khan**

Time	Paper ID	Author	Paper Title
15:30-15:50	698	Yanzhe Li, Shixue Wang, Yulong Zhao	Experimental study on the influence of the core flow heat transfer enhancement on the performance of thermoelectric generator
15:50-16:10	417	Qing Zeng, Baohua Zhang, Jiakun Fang, Zhe Chen	Coordinated operation of the electricity and natural gas systems with bi-directional energy conversion
16:10-16:30	476	Wenjia Li, Yong Hao, Yunyi Ling	Performance analysis of a PV-thermochemical hybrid system
16:30-16:50	592	Ruan Haijun	A reduced wide-temperature-range electro-thermal model and thermal parameters determination for lithium-ion batteries
16:50-17:10	366	Xingtian Zhang, Hongye Pan, Yanping Yuan, Zutao Zhang, Xinlong Liu, Guangdi Hu	A renewable energy harvesting system based on mechanical vibration rectifier (MVR) for applications in railroads
17:10-17:30	77	Xiao Jin, He Zhao, Li Shen	Experimental and numerical study of passive control of self-sustained thermoacoustic oscillations using an electrical heater

**Room: 201#D****Session Name: Modeling and analysis of energy systems****Session Chair: Pietro Elia Campana, Francesco Melino**

Time	Paper ID	Author	Paper Title
15:30-15:50	795	Xiaoqiang Zhang, Jixuan Liu, Huiming Zou, Changqing Tian, Xuelai Zhang	Influence of heat exchanger tube layout on performance of heat pump system for electric cars
15:50-16:10	822	Wen Hui Liu, Wai Shin Ho, Jeng Shiun Lim, Haslenda Hashim, Sharifah Rafidah Wan Alwi, Zarina Abdul Muis, Jiri J. Klemes, Nor Erniza M. Rozali	Optimal design and operation of integrated centralized and decentralized energy systems
16:10-16:30	977	Ming Yang Lee, Haslenda Hashim, Wen Hui Liu, Wai Shin Ho	Extended electric system cascade analysis (ESCA) for a carbon constraint energy generation system
16:30-16:50	374	Fei Qin, Huiming Zou, Changqing Tian	Experimental study on a dual-parallel-evaporator heat pump system for thermal management of electric vehicles
16:50-17:10	402	Jixuan Liu, Huiming Zou, Guiying Zhang, Xiaoqiang Zhang, Changqing Tian	Analysis of maximum return air ratio on no-fogging condition by in-cabin climate simulation for EV
17:10-17:30	666	Longcan Zhang, Mingke Hu, Gang Pei, Jie Ji	PV packing factor: a key parameter in the comprehensive performance evaluation of a photovoltaic/thermal system

**Room: 203#A****Session Name: Regional and household energy systems****Session Chair: Alessandro Fonti, Xin Wang**

Time	Paper ID	Author	Paper Title
15:30-15:50	609	Tungadio Diambomba Hyacinthe	Active power reserve estimation of two interconnected microgrids
15:50-16:10	554	Jia Michelle Cui	To identify appropriate retrofit approaches in reaching a near Passivhaus standard in an EU-funded urban regeneration project
16:10-16:30	339	Xiong Mei, Guangcai Gong	Influence of indoor air stability on dispersion and deposition of suspended particles
16:30-16:50	722	Maomao Hu, Fu Xiao	Investigation of the demand response potentials of residential air conditioner using grey-box room thermal model
16:50-17:10	815	Kui Weng	Performance of UK dwellings in projected future climates
17:10-17:30	925	Jie Ji, Cui He	Experimental study for a micro smart grid to meet the energy demand of a household

**Room: 203#B****Session Name: Emission reduction****Session Chair: Haizhong An, Can Wang**

Time	Paper ID	Author	Paper Title
15:30-15:50	281	Bo Wang, Xiaohua Xia	A preliminary study on the robustness of grouping based maintenance plan optimization in building retrofitting
15:50-16:10	640	Alice Didelota, Nadia Maizi, Vincent Mazauricb, Edi Assoumou, Sandrine Selosse	Balancing energy efficiency and fossil fuel : the role of carbon pricing
16:10-16:30	669	Xiaoling Zhang, and Huan Li	Rural energy poverty and rural sustainability: a missing chapter?
16:30-16:50	918	Jin Xiangfeng, Chen Weidong, Geng Shuai, Xu Chongqing, Yan Guihuan	The decision framework of carbon emission reduction plan based on multi-undertakers
16:50-17:10	985	Chi Zhang, Pietro Campana, Jin Yang, Jingyu Zhang, Jinyue Yan	Can solar energy support milk production? ---a case study of solar energy and alfalfa integration for milk production in China
17:10-17:30	96	Nugroho Agung Pambudi, Kenshi Itaoka, Atsushi Kurosawa, Natsuki Yamakawa	Impact of hydrogen fuel for CO <sub>2</sub> emission reduction in power generation sector in Japan

**Room: 203#C****Session Name: Heat pipe****Session Chair: Shandong Tu, Hassan Ali**

Time	Paper ID	Author	Paper Title
15:30-15:50	155	HowMing Lee	Stainless steel heat pipe fabrication, performance testing and modeling
15:50-16:10	168	Bernard Saw	Numerical analyses on open cell aluminum foams heat sink for lithium-ion batteries
16:10-16:30	184	Junjie Yan, Daotong Chong, Dan Zhang, Yu Wang, Qingzhong Yang	Experimental study on heat transfer characteristics of static flash evaporation process
16:30-16:50	186	Jingyu Wang, Qing Guo, Jian Yang, Yan Liu, Qiuwang Wang	Experimental study of convective heat transfer in grille-sphere composite structured packed bed
16:50-17:10	252	Fei Xin, Qiuwang Wang, Ting Ma	Spray etching rate development of stainless steel in the etchant for printed circuit heat exchanger channels
17:10-17:30	963	Kai Zhu	Experimental study of energy saving performances in chip cooling by using heat sink with embedded heat pipe



<b>Room: Convention Hall 4 (1st floor) - A</b> <b>Session Name: Modeling of energy processes</b> <b>Session Chair: Ronald Wennersten, Zeyu Chen</b>			
Time	Paper ID	Author	Paper Title
15:30-15:50	327	Wentao Fan	Simulation of temperature field of lithium battery pack based on computational fluid dynamics
15:50-16:10	405	Mouhamadou diop, Mohamed Hassan Ali, Chen Xiaomeng	Billets heat treatment using flue gas for energy efficiency and batching cycle time reduction
16:10-16:30	702	Zhe Liu	Effect of stratum ventilation on thermal comfort and energy utilization efficiency of numerical simulation
16:30-16:50	193	Guangzhao Li, Li Zhai, Huiyuan Feng	Optimization method of decoupling capacitor in PCB hardware of electric vehicle controller
16:50-17:10	44	Normah Mohd-Ghazali, Jong-Taek Oh, Robiah Ahmad, Agus Sunjarianto Pamitran, Sentot Novianto	Investigation of compatibility of the heat transfer coefficient correlations for macro and mini channels
17:10-17:30	688	Jie Ji, Huan Guo	Simulation study of an ORC system driven by the waste heat recovered from a trigeneration system
<b>Room: Convention Hall 4 (1st floor) - B</b> <b>Session Name: Industrial energy systems (II)</b> <b>Session Chair: Koji Tokimatsu, Yinguang Chen</b>			
Time	Paper ID	Author	Paper Title
15:30-15:50	369	Changhong Wang	Enhancement of performance of thermoelectric generators with superconducting substrates
15:50-16:10	497	Meng Zhao, Minshan Wei, Panpan Song, Zhen Liu, Zhixing Wang	Effects of the ORC Operating Conditions on the Engine Performances for an Engine-ORC Combined System
16:10-16:30	959	Yinguang Chen	Using mixed sludge-derived short-chain fatty acids enhances power generation of microbial fuel cells
16:30-16:50	838	Salmahaminati, Jumina	Synthesis propyl propanoic from propanoic acid by esterification reaction
16:50-17:10	988	Siyuan Yang, Bin Chen	Socioeconomic drivers of energy-related particulate matter emissions in China
17:10-17:30	457	Salman Raza Naqvi	Catalytic consequences of micropore topology on biomass pyrolysis vapors over shape selective zeolites
<b>Room: Convention Hall 4 (1st floor) - C</b> <b>Session Name: Distributed energy system (II)</b> <b>Session Chair: Victor Nian, Lixin Tian</b>			
Time	Paper ID	Author	Paper Title
15:30-15:50	911	Anna Kaja Lewandowska-Bernat, Umberto Desideri	Opportunities of power-to-gas technology
15:50-16:10	236	Qingsong An, Hao Li, Ligai Kang, Shuai Deng, Jun Zhao, Yan Wang	Strategy analysis of demand side management on distributed heating driven by wind power
16:10-16:30	490	Yuefen Gao, Yongzhao Cheng, Shanshan Nan	Study on the cooling heating and power load prediction method in community building energy planning
16:30-16:50	616	Benachir Medjdoub, Allan Hawas, Amin Al-Habaibeh	Innovative design of an educational physical simulation tool for investigating energy consumption in buildings for enhancing public engagement
16:50-17:10	895	Yang Zhang, Pietro Elia Campana, Anders Lundblad, Lei Wang, Jinyue Yan	The influence of photovoltaic models and battery models in system simulation and optimization
17:10-17:30	147	Xin Wang, Fei Teng, Xi Yang, Rongqiang Wei	Assessing the role of electricity storage in China's high renewable energy penetration future

**Room: Convention Hall 4 (1st floor) - D****Session Name: Thermal storage (III)****Session Chair: Zsuzsanna Czegeny**

Time	Paper ID	Author	Paper Title
15:30-15:50	587	Kathrin Korhammer, Karsten Neumann, Wolfgang K.L. Ruck, Oliver Opel	Micro-scale thermodynamic and kinetic analysis of a calcium chloride methanol system for process cooling
15:50-16:10	602	Pan Gechuanqi, Jing Ding, Jianfeng Lu, Xiaolan Wei, Weilong Wang	Molecular simulations of the thermal and transport properties of molten alkali carbonates
16:10-16:30	614	Shiquan He	Numerical evaluation on a direct-contact thermal energy storage system
16:30-16:50	514	Enrico Munari, Mirko Morini, Michele Pinelli, Pier Ruggero Spina	Experimental investigation and modeling of surge in a multistage compressor
16:50-17:10	718	Emiliano Borri, Gabriele Comodi, Alessandro Romagnoli, Alessio Tafone, Yongliang Li	Techno-economic analysis of a liquid air energy storage (LAES) for cooling application in hot climates
17:10-17:30	319	K.D. Eleftheriou, T. Efstathiadis, A.I. Kalfas	Stator blade design of an axial turbine using non-ideal gases with low real-flow effects

**Room: Convention Hall 4 (1st floor) - E****Session Name: Advanced engines****Session Chair: Francesco Contino, Hui Liu**

Time	Paper ID	Author	Paper Title
15:30-15:50	804	S.Natarajan, K.Akash Trasy, N.Srihari, S.Raja	Effects of injection timing on ci engine performance fuelled with algae oil blend using taguchi analysis
15:50-16:10	278	Dezhi Zhou, Wenming Yang, Jing Li, Kun Lin Tay, Siaw Kiang Chou, Markus Kraft	Efficient combustion modelling in RCCI engine with detailed chemistry
16:10-16:30	430	Bo Wang, Tawfik Badawy, Peter Hutchins, Powen Tu, Hongming Xu, Xinyu Zhang	Numerical investigation of the deposit effect on GDI injector nozzle flow
16:30-16:50	513	Ocktaeck Lim, Yanuandri Putrasari	Performance and emission of gasoline compression ignition engine fueled with gasoline-biodiesel blends 5 and 20 % under single injection strategy
16:50-17:10	814	Dawei Wu	A coupled model of the Linear Joule Engine with embedded tubular permanent magnet linear alternator
17:10-17:30	261	Baiman Chen	The development of a two-stage traveling wave thermoacoustic engine

# Session I

# Poster Presentations

## Poster session I

October 9, 13:00-13:40

Poster ID	Paper ID	Author	Paper title
P1-1	20	Changan Wang, Song Wu, Qiang Lv, Wufeng Chen, Defu Che	Correlations of coal chemical properties in China: quantitative analysis from thousands of data
P1-2	855	Xiaoyuan Chen	A concept of hybrid energy transfer considering the multipurpose utilization of liquefied shale gas, liquefied nitrogen and superconducting dc cable
P1-3	452	Jarek Milewski, Jakub Kupecki, Konrad Motylinski	Dynamic modelling of the direct internal reforming (DIR) of methane in 60-cell stack with electrolyte supported cells
P1-4	584	Zheng Fan, Xu Yang, Huimin Zhang, Wei Xu, Wu Zucheng	Energy harvest from contaminants via coupled redox fuel cells
P1-5	588	Fan Zheng, Wu Zucheng	In-situ production of hydrogen peroxide as oxidant for direct urea fuel cell
P1-6	503	Quanshun Yu	Application of diesel particulate filter on in using on-road vehicles
P1-7	539	Is Fatimah, Septian P Yudha	Kf-modified natural halloysite as green catalyst in microwave assisted biodiesel conversion
P1-8	919	Jingyuan Xu, guoyao yu, Limin Zhang, Zhanghua Wu, Wei Dai, Ercang Luo	A novel multi-stage looped thermoacoustic heat engine using assembly of elastic membrane and a solid mass
P1-9	111	Lingbao Wang, Huashan Li, Xianbiao Bu, Hanzhi Wang, Weibin Ma	Performance study of a double absorption heat transformer
P1-10	267	Jer-Huan Jang, Po-Han Lin, Dao-Yi Huang, Bo-Han Chen	Effect of ignition timing on the emission of internal combustion engine with syngas containing hydrogen using a spark plug reformer system
P1-11	287	Cheng Xie	Investigation on jet characteristics of hydrogen injection and injection strategy for backfire control in a port fuel injection hydrogen engine
P1-12	354	Jer-Huan Jang, Yu-Jen Chiu, Han-Chieh Chiu, Ren-Horn Hsieh	Experimental study on the reaction conditions of a methanol steam reforming process
P1-13	913	Zhixin Yu, Hailong Li, Kristian Stangeland, Dori Yosef Kalai	The effect of temperature and initial methane concentration on carbon dioxide methanation on Ni based catalysts
P1-14	914	Zhixin Yu, Hailong Li, Kristian Stangeland, Dori Yosef Kalai	CO <sub>2</sub> methanation: the effect of catalysts and reaction conditions
P1-15	660	Hanzhi Wang, Huashan Lia, Lingbao Wanga, Xianbiao Bu	Thermodynamic analysis of organic rankine cycle with hydrofluoroethers as working fluids
P1-16	160	Azaza Maher	Finite state machine household's appliances models for non-intrusive energy estimation
P1-17	198	Rory Jones	The actual performance of aspiring low energy social houses in the United Kingdom
P1-18	742	Fabrizio Leonforte, Niccolò Aste, Claudio Del Pero, Rajendra Adhikari	Sustainable building design in Kenya
P1-19	64	Lin Lu	A novel CHP-HP coupling system and its optimization analysis by genetic algorithm
P1-20	24	Zhen Peng	Price-dependent decision of new energy vehicles considering subsidies and backorders
P1-21	131	Yanli Feng	Analytical calculation for predicting the core loss of surface-mounted permanent magnet machine

P1-22	195	Zhijian Song	Research on no load shifting process of AMT in pure electric vehicles
P1-23	229	Xiaolin Xu	Estimate of super capacitor's dynamic capacity
P1-24	260	Wang Xiao-bing, Zhang Jun	Study on the optimal control of DCT's movement for electric vehicle
P1-25	284	Chengming Zhang, Qingbo Guo, Liyi Li, Jiangpeng Zhang, Mingyi Wang	Design and implementation of a loss optimization control for electric vehicle in-wheel permanent-magnet synchronous motor direct drive system
P1-26	290	Chengming Zhang, Qingbo Guo, Liyi Li, Jiangpeng Zhang, Mingyi Wang, Jiwei Cao	Maximum efficiency control of permanent-magnet synchronous machines for electric vehicles
P1-27	300	Chuang Cao, Zhi Li	The diagnosis method of stator winding faults in PMSMs based on SOM neural networks
P1-28	312	Chaopeng Li	Direct yaw-moment control based on fuzzy logic of four wheel drive vehicle under the cross wind
P1-29	357	Fang Jun, Zhijian Song	Study on speed sensor-less vector control of induction motors based on amesim-matlab/simulink simulation
P1-30	365	Zhixing Wang, Minshan Wei, Chong Guo, Meng Zhao	Enhance the heating performance of an electric vehicle ac/hp system under low temperature
P1-31	377	Pengtao ma, Lijin Han, Hui Liu, Hui Zhang	Fuzzy multi-objective optimization of EMT based on the minimum average weighted deviation algorithm
P1-32	385	Mei Yan, Hongwen He, Hui Jia, Menglin Li, Xue Xue	Model predictive control of the air-conditioning system for electric bus
P1-33	424	Fei Gao	Research on coordinated dispatch of active power distribution network containing large-scaled distributed generation and electric vehicle
P1-34	446	Yuqing Wu, Li Cunjin, Zhang Qianqian	The analysis of transdisciplinary integration characteristic for China's pure electric vehicles technology from patent perspective
P1-35	522	Xiaoguang Guo, Hongwen He	Analysis and optimization of a hybrid electric bus's starting condition
P1-36	622	Kaixin Wei	The IGBT losses analysis and calculation of inverter for two-seat electric aircraft application
P1-37	626	Xin Xin	Optimal design of electric vehicle power system with the principle of minimum curb mass
P1-38	633	Xunming Li, Hui Liu	Mode integration algorithm based plug-in hybrid electric vehicle energy management strategy research
P1-39	634	Zepeng Gao	Research on air suspension control system based on fuzzy control
P1-40	642	Wang Ju	Control strategy and simulation of four-wheel-hub vehicles torque distribution on bisectonal road
P1-41	694	Wei Wang, Jingxin Li, Jiuchun Jiang, Dongzhi Wang	Minimize current stress of dual-active-bridge dc-dc converters for electric vehicles based on Lagrange multipliers method
P1-42	733	Mingfei Gao, Jibin Hu, Zengxiong Peng	Study on configuration of power split hybrid electric vehicles base on systematic viewpoint
P1-43	809	Yongxi Yang, Haipeng Liu, Xiaopeng Wu	A computationally efficient pm power loss derivation in thermal modelling for surface-mounted brushless ac pm machine
P1-44	824	Xun Zhang, Hui Liu, Chen Yinqi	Active damping of torsional vibration on the powertrain of power-split vehicle
P1-45	970	Mingfei Gao, Jibin Hu, Zengxiong Peng	Study on optimization for transmission system of electric drive tracked vehicle
P1-46	67	Chao Luo	The comprehensive evaluation of optimization air-condition system based on analytic hierarchy methodology

P1-47	576	Qunli Zhang, Lin Zhang, Yinlong Li	Suitability analysis of the heating method of low temperature air source heat pump applied in north China
P1-48	747	Ji Feng, Kong Qionxiang, Xiao He, Ying Cao, Yanjun Sun, Kangying Chen	Numerical analysis of the dynamic heat transfer through an external wall under different outside temperatures
P1-49	658	Huang JinHua, Gu Bochuan, Liu Fei, Tang Shengwei, You Yi	The research on remote control technology of power system operation cockpit based on application virtualization
P1-50	727	Huang JinHua, Gu Bochuan, Tang Shengwei	The key technology of operation smart system seamless information integration and test
P1-51	311	Yuankai Bian, Hantao Wang, Heather Wyman-Pain, Chenghong Gu, Furong Li	Frequency response in the GB power system from responsive CHPs
P1-52	631	Dandan Su	Sliding mode controller for permanent magnetic synchronous motors
P1-53	772	Avinash Aithal, Gen Li, Jianzhong Wu, Chao Long	Grid side unbalanced fault detection using soft open point in an electrical distribution network
P1-54	242	Wei Mao, Shirong Zhang	Energy efficiency optimization of coal conveying systems with consideration of crushers
P1-55	901	Delin Fang, Bin Chen	Linkages analysis for water-carbon nexus in urban system
P1-56	149	Kai Chen, Jibin Hu, Zengxiong Peng	Analytical framework of gearbox monitoring based on the electro-mechanical coupling mechanism
P1-57	162	Kai Chen, Jibin Hu, Zengxiong Peng	Analysis of active vibration for HEVs through electro-mechanical coupling
P1-58	368	Shudong Shen	Decomposition analysis on the air pollutant baseline emission factors in China's power sector
P1-59	91	Xinyan Song, Cantao Ye	Climate change adaptation pathways for residential buildings in southern China
P1-60	239	Wenchao Li	The demand forecast and equilibrium analysis of electricity consumption-take Jiangsu province as an example
P1-61	489	Ramesh Bansal, N Mbungu, R Naidoo	Real-time electricity pricing: TOU-MPC based energy management for commercial buildings
P1-62	617	Shumin Jiang	Analysis of the Chinese natural gas power generation cost under the market linkage mechanism
P1-63	731	Zehui Kong, Yuan Zou, Teng Liu	Velocity predictions research and prediction horizon determination
P1-64	987	Cuncun Duan, Bin Chen	Energy-water nexus in China: cointegration and scenario analysis
P1-65	989	Saige Wang, Bin Chen	Water-energy nexus in China's electric power system
P1-66	171	Guicai Liu, Yanfen Liao, Xiaoqian Ma, Libao Yin, Jieliang Zhou	A calculation method for CO <sub>2</sub> emission in utility boilers based on BP neural network and carbon balance
P1-67	454	Lukas Lundström	Adaptive weather correction of energy consumption data
P1-68	315	Qinze Liu, Qixin Chen, Gang Chen, En Lu	Optimization of LNG terminal reserve planning for combined gas and electricity system
P1-69	761	Zhen Wang, Yunna Wu	The decision-making of agriculture & solar complementary roof power generation project in rural area
P1-70	829	Meng Xu, Chunhui Li, Shibao Lu	Sustainable water resources utilization on energy industry based on the gray water footprints assessment in Hunan province
P1-71	991	Dan Song, Bin Chen	Energy conversion efficiency analysis of a cement production chain
P1-72	66	Chao Luo	The effect analysis of thermal efficiency and optimal design for boiler system

P1-73	95	Weiwei Shao, Jie Feng, Jiahong Liu, Guiyu Yang, Zhiyong Yang, Jianhua Wang	Research on the status of water conservation in the thermal power industry in China
P1-74	247	Hengjin Zhang, Yanfen Liao, Jia Luo, Le Wu, Wenjun Wan, Xiaoqian Ma, Yousheng Lin	Optimization of the exhaust gas oxygen content for coal-fired power plant boiler
P1-75	254	Hailin Fang, Yanfen Liao, Shihe Chen, Yaqing Zhu, Xiaowei Peng, Xiaoqian Ma, Kai Su	Energy-loss analysis of thermal power unit based on multifactor disturbance theory
P1-76	713	Chenxiao Zheng	Numerical simulation and experimental study of comfort air conditioning influenced by bottom-supply and stratum ventilation modes
P1-77	732	Qi Zhang, Yu Wang	The power system environmental optimal dispatch containing air quality forecast
P1-78	978	Chunsheng Guo, Fangyi Qu, Yong Liu, Xianbo Nian, Ziang Chen, Yong Zou	Numerical simulation of steam injection for heavy oil thermal recovery
P1-79	558	Wadha Al-Marria, Amin Al-Habaibeha, Hafez Abdo	Exploring the relationship between energy cost and people's consumption behaviour
P1-80	650	Bo Li, Sheng-Dong Liu, Yun-Pei Liang	Experimental study of methane hydrate dissociation by depressurization and electrical heating
P1-81	125	Hongtu Fan, Xiaoyuan Wang, Yuezhao Zhu, Minzhao Zhu	Heat transfer simulation and analysis of ice and snow melting system using geothermy by super-long flexible heat pipes
P1-82	262	Baiman Chen	The development of swirling decaying laminar flow in an annular pipe
P1-83	585	Vaclav Novotny, Michal Kolovratnik, Jakub Mascuch, Hung-Yin Tsai	Design of experimental rig for validation of absorption power cycle concept
P1-84	178	Jiafei Zhao, Zhen Fan, Yongchen Song, Bin Wang, Chaomin Sun, Yangmin Kuang	MRI analysis for methane hydrate dissociation by depressurization and the concomitant ice generation
P1-85	183	Yundi Fu, Zhiguo Qu, Liang Zhou	Prediction of the effective thermal conductivity of aerogel nano-porous materials
P1-86	401	Qi Liang, Ya-Ling He, Yi-Peng Zhou, Tao Xie	Study on lattice thermal conductivity of silicon thin film with aligned nano-porous
P1-87	601	Yueh-Heng Li, Chih-Yu Lin, Jing Ru Hong	Development of micro-thermophotovoltaic platinum tubular reactor
P1-88	703	Dan Sui	Investigation of thermophysical properties of nanofluids for application in geothermal energy
P1-89	216	Binbin Bao, Zhiyuan Wang, Hong Xu, Jinglei Liu	Anti-coking effect of mncr2o4 spinel coating during light naphtha thermal cracking
P1-90	360	Beibei Lu, Yinfeng Wang, Yuezhao Zhu, Hong Liu, Xin Yan	Silicon gradients-containing films for mid- high temperature non-vacuum solar absorber coatings
P1-91	32	Baiman Chen	Numerical analysis of acoustic field in a 2-stage traveling wave thermoacoustic engine based on deltaac
P1-92	89	Zhitong Ma, Huashan Li, Xi Liu, Xianlong Wang, Hanzhi Wang	Off-design analysis of hydrocarbon-based ejector-expansion refrigeration cycle
P1-93	113	Hongsheng Dong, Yongchen Song, Jiafei Zhao, Zhen Fan, Bin Wang, Shuang Xue	Hydrate-based reduction of heavy metal ion from aqueous solution
P1-94	117	Yongchen Song, Hongsheng Dong, Bin Wang, Jiafei Zhao, Zhen Fan	Gas production from methane hydrate deposits induced by depressurization in conjunction with thermal stimulation



# Session II

# Poster Presentations

## Poster session II

October 10, 13:00-13:40

Poster ID	Paper ID	Author	Paper title
P2-1	82	Hanjie xiao, Yize Li, Mingyu Zhang, Hua Wang, Shibo Wang	Study of the stochastic kinetic model of hydrolysis reaction of rapeseed oil in subcritical fluid
P2-2	235	Hanifrahmawan Sudiby, Yano Surya Pradana, Thoriq Teja Samudra, Arief Budiman, Indarto, Eko Agus Suyono	Study of cultivation under different colors of light and growth kinetic study of <i>Chlorella zofingiensis</i> Dönn for biofuel production
P2-3	237	Yano Surya Pradana, Hanifrahmawan Sudiby, Eko Agus Suyono, Indarto, Arief Budiman	Oil algae extraction of selected microalgae species grown in monoculture and mixed cultures for biodiesel production
P2-4	473	Jinxing Long, Xiong Zhang, Cheng Lv, Sijie Liu, Changhua Song, Xuehui Li	Selective synthesis of biogasoline precursor from renewable platform molecules at ambient temperature
P2-5	504	Marcin Dębowski	Concept of a technological system for microalgae biomass production with the use of effluents from fermentation tanks
P2-6	473	Jinxing Long, Xiong Zhang, Cheng Lv, Sijie Liu, Changhua Song, Xuehui Li	Selective synthesis of biogasoline precursor from renewable platform molecules at ambient temperature
P2-7	130	Junling Tu, Mingyue Ding, Tiejun Wang, Longlong Ma, Yongjun Xu, Shimin Kang, Gang Zhang	Direct conversion of bio-syngas to gasoline fuels over a $\text{Fe}_3\text{O}_4$ @C Fischer-Tropsch synthesis catalyst
P2-8	495	Xiao-Sen Li, Zhi-Ming Xia, Zhaoyang Chen, Jing Cai	Hydrate-based capture of acidic gases for clean fuels with new synergic additive
P2-9	509	Marcin Zieliński	Hydrothermal depolymerization of Virginia fanpetals ( <i>Sida hermaphrodita</i> ) biomass with the use of microwave radiation as a potential method for substrate pre-treatment before the process of methane fermentation
P2-10	725	Senqing Fan, Zeyi Xiao, Minghai Li, Sizhong Li	Ethanol fermentation coupled with pervaporation by energy efficient mechanical vapor compression
P2-11	716	Haozhong Huang, Qingsheng Liu, Qingxin Wang	The potentials for improving combustion performance and emissions in diesel engines by fueling n-butanol/diesel/PODE3-4 blends
P2-12	259	Kunio Yoshikawa, Arif Darmawan, Koji Tokimatsu, Muhammad Aziz, Flabianus Hardi	Enhanced process Integration of hydrothermal liquefaction, gasification and combined cycle: modeling and simulation using Aspen Plus
P2-13	462	Zhu Jinjiao, Haijun Chen, Yuezhao Zhu, Yang Li, Wan Long	Pilot test of co-pyrolysis characteristics of wet sewage sludge and sawdust in an external heating moving bed
P2-14	463	Chen Zeqing, Wan Long, Haijun Chen, Yuezhao Zhu, Cui Qun, Cheng Ruijia	Experimental performance of Tar Removal by a Quench coupled with adsorption technology
P2-15	541	Sung Pil Yoon, Mariagiovanna Minutillo, Alessandra Perna, Elio Jannelli, Viviana Cogolotti, Suk Woo Nam, Byeong Wan Kwon	Coupling of biomass gasification and SOFC – Gas Turbine Hybrid System for small scale cogeneration applications
P2-16	787	Hao Cheng	Effect of Copper Oxide on fast pyrolysis of enzymatic/mild acidolysis lignin
P2-17	868	Ming Lei, Shubin Wu, Chao Liu, Jiajin Liang	Revealing the pyrolysis chemistry of Biphenyl-type lignin model

P2-18	890	Li Guo, Ming Zhai	Numerical simulation on steam gasification of a single biomass char particle
P2-19	929	Shuzhong Wang	Experimental and numerical investigations on gasification of biomass briquette in a sectional heating gasifier
P2-20	663	Jiuchun Jiang, Zhisong Lin, Zeyu Ma, Zhanguo Wang, Qun Ju, Caihui Zheng	Electrochemical impedance spectra for lithium-ion battery ageing considering the rate of discharge ability
P2-21	228	Dan Sui	Geothermal energy extraction from abandoned wells
P2-22	285	Yuexia Pang, Yongxiu he, Han Shu	The synergy mechanism of promoting renewable energy consumption in China
P2-23	393	Liew Hui Fang, Syed Idris Syed Hassan, Rosemizi Abd Rahim, Muzamir Isa	Exploring piezoelectric for sound wave as energy harvester
P2-24	436	Shu Yu Yang	Optimization of power management strategy for parallel air-fuel hybrid system
P2-25	583	Jiahong Liu, Weiwei Shao	Mutual adaptability of renewable energy and water-supply systems in islands
P2-26	661	Zsuzsanna Czegeny, Liang Wang, Eszter Barta-Rajnai, Øyvind Skreiberg, Morten Grønli, Emma Jakab	Biomass charcoal properties changes during storage
P2-27	662	Liew Hui Fang, Syed Idris Syed Hassan, Rosemizi Abd Rahim, Muzamir Isa	Characterization of different dimension piezoelectric transducer for sound wave energy harvesting
P2-28	735	Pietro Elia Campana, Yang Zhang, Jinyue Yan, Anders Lundblad, Hailong Li	An open-source platform for simulation and optimization of clean energy technologies
P2-29	743	Fabrizio Leonforte, Niccolò Aste, Claudio Del Pero	Water PVT collectors performance comparison
P2-30	910	Hao Huang, Hao Jutao, Zhao Bo, Zhao Xinhua, Li Meng, Jiahong Liu, Weiwei Shao	Application of epoxy mortar in anti-erosive protection of the spillway on the Xin'anjiang hydropower station plant
P2-31	917	Hao Huang, Jutao Hao, Bo Zhao, Xinhua Zhao, Meng Li, Jingwei Li, Jiahong Liu	Experimental study on low temperature tensile properties of epoxy mortar in hydropower project
P2-32	957	Guodong Cui, Liang Zhang, Shaoran Ren	Combined effects of geochemical reactions and salt precipitation on geothermal exploitation in the CPG system
P2-33	146	Tang Ruoli, Fang Yanjun, Zhou Wu	Topological structure of large-scale photovoltaic array and its MPPT controlling method
P2-34	384	Bibin Huang, Qionghui Li, Fei Gao	Optimal planning of high penetration distributed photovoltaic with considering grid reinforcement
P2-35	833	Zhicong chen, Yue Wu, Lijun Wu, Peijie Lin, Shuying Cheng, Peimin Lu	An intelligent fault diagnosis approach for PV array based on SA-RBF kernel extreme learning machine
P2-36	960	Peishi Wu, Xiaoming Ma, Junping Ji, Yunrong Ma	Review on life cycle assessment of greenhouse gas emission profit of solar photovoltaic systems
P2-37	196	Ning Wang, Guoying Xu	Thermal properties and solar collection characteristics of oil-based nanofluids with low graphene concentration
P2-38	767	Canming He	Thermal performances of two stage molten salt steam generator
P2-39	29	Trevor Kwan, Xiaofeng Wu	TEG maximum power point tracking using an adaptive duty cycle scaling algorithm
P2-40	59	Yu-Fong Huang	Microwave torrefaction of leucaena to produce biochar with high fuel ratio and energy return on investment
P2-41	234	Hanifrahmawan Sudibyo, Akmal Irfan Majid, Yano Surya Pradana, Wiratni Budhijanto, Deendarlianto, Arief Budiman	Technological evaluation of municipal solid waste management system in Indonesia

P2-42	464	Ren Tianqi, Wu Kai, Haijun Chen, Yuezhao Zhu	The experimental research on the mixed burning of whole tires and biomass in the reverse burning fixed-bed gasifier
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# FUTURE ENERGY



# FUTURE ENERGY CENTER

**THE CHALLENGES** due to energy related emissions, increased energy demand and the fragile state of the global economy calls for rethinking global energy systems. Therefore, the research within the Future Energy Center focuses on renewable energy, energy efficiency and emission mitigation, as well as smarter modelling, optimization and management.

The Future Energy Center is one of Sweden's strongest research environments in process optimization targeting the process industry and the energy sector. We develop innovative solutions and tools within the areas of energy, building and environmental engineering.

The Future Energy Center has good relationships with both companies and recognized national and international centers, including several

Chinese universities. The profile comprises nine professors, a further fifteen senior researchers and more than forty graduate students.

## THREE FOCUS AREAS

The research at Future Energy Center is focused on three areas:

**TRACK 1** Renewable energy

**TRACK 2** Energy efficiency and emission mitigation

**TRACK 3** Smarter modelling/ optimisation and management

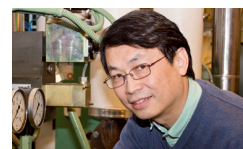
The Future Energy Center also offers studies at post-graduate level in Energy and Environmental engineering. We are also part of the research school Reesbe (Resource-Efficient Energy Systems in the Built Environment).



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Combination technology of pulverized coal fast pyrolysis and power generation with both energy saving and denitration



Novel technology of MSW、biomass and organic solid wastes recycling to oil、gas and solid carbon



Rotary hearth furnace clean smelting technology to ferrous and non-ferrous metal ores



Lump coal mild pyrolysis upgrading technology



Coal to acetylene and chemical engineering technology



Two-beds regenerative gasification technology to pulverized brown coal



Hydrogen reduction shaft furnace technology

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