

Applied Energy Symposium:

LOW CARBON CITIES & URBAN ENERGY SYSTEMS

SEP 2-7, 2023 MATSUE & TOKYO, JAPAN



i^oca e

International Conference on Applied Energy

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Applied Energy Symposium:

**LOW CARBON CITIES
& URBAN ENERGY SYSTEMS**

SEPT 2-7, 2023 in MATSUE & TOKYO, JAPAN

www.applied-energy.org/cue2023**Welcome to CUE2023-The 9th Applied Energy Symposium and Forum:
Low carbon cities and urban energy systems.**

Cities are rapidly getting on top of the agendas of various initiatives worldwide aimed at decreasing the cost and carbon footprint of energy products, services and activities. The demands and pressure on energy infrastructure and resources obliges city infrastructure and consumers to adapt intelligently to ensure efficient, affordable and sustainable solutions.

Developing intelligent energy solutions for resilient urban systems is a global and complex challenge which involves interdisciplinary fields. With this as theme of the conference, same as the previous serious symposiums, the CUE2023 aims to provide a premier international forum for all stakeholders including academia, industry and policy decision makers to present and share latest findings in all aspects across this domain, discussing how smart technologies and services can integrate the production and use of energy to support a more sustainable and resilient urban system.

CUE2023 is organized by the international journal, Applied Energy, Advances in Applied Energy, Applied Energy Innovation Institute (AEii) and Mälardalen University, Sweden. The event consists of four-day symposium in Matsue (SEP 2-5) and one-day lab/site tours in Tokyo(SEP 6) for sharing the most recent progress of research R&Ds in urban energy systems and one-day forum in Tokyo(SEP 7) to engage all stakeholders in discussing how future urban energy systems can be implemented. All participants are free to choose whether to attend the tours and forum of the last two days. Please note that main event will be held in Matsue, and attendance at the last two days' tours and forum is optional and not a requirement for participation in the main event in Matsue.

For more detailed and updated information, please visit conference website at: www.applied-energy.org/cue2023. If you have questions regarding this conference, submission and visa invitation letter, please feel free to contact at: cue2023@applied-energy.org.

Committees

CONFERENCE CHAIRS

Prof. J. Yan (Co-Chair)

Prof. K. Tanaka (Co-Chair)

ORGANIZING COMMITTEE

Prof. H. Li (Co-Chair)

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Dr. F. Wallin (Track chair)

Dr. X. Wang (Track chair)

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Dr. Y. Du

Dr. Y. Tan

Dr. X. Shi

Dr. M. Jiang

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Dr. Z. Guo

Dr. W. Zhang

Dr. Z. Chen

Dr. L. Qi

SECRETARY

Dr. X. Shi

Dr. Y. Du

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Prof. J. Wu (Co-Chair), Editor, Applied Energy

Prof. Z.A. Vale (Co-Chair), Editor, Applied Energy

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Prof. Y. Yang (Co-Chair), Editor, Applied Energy

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B. Stigson, Switzerland

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D. Chiaramonti, Italy

Y.C. Leung, Hong Kong

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E. Dahlquist, Sweden

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S. Deng, Hong Kong

X.G. Li, Canada

N. Duic, Croatia

N. Zhou, USA

N. Fromer, USA

P. Linga, Singapore

S.V. Garimella, USA

Z. Luo, China

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H. Lund, Denmark

T.Z. Hong, USA

P. Lund, Finland

G. Hammond, UK

R. Madlener, Germany

Y. He, China

C. Marnay, USA

N. Hedin, Sweden

A.F. Massardo, Italy

J. Hetland, Norway

M. Obersteiner, Austria

T. Hong, South Korea

S. Pincetl, USA

K. Hubacek, Netherlands

C. Rakopoulos, Greece

N. Jenkins, UK

A.P. Roskilly, UK

H.G. Jin, China

J. Schoonman, Netherlands

T.B. Johansson, Sweden

T. Shamim, USA

S.A. Kalogirou, Cyprus

M. Sorrentino, Italy

L. Kazmerski, USA

R. Span, Germany

M. Kraft, UK

B. Chen, China

CUE2023, Sep 2 - Sep 7, 2023

Program at Glance

Tokyo Time	Day 0: Sep 1	
15:00 – 17:30	Registration and Reception* (Venue: Small Hall)	
Tokyo Time	Day 1: Sep 2	
8:00 - 9:00	Registration (Venue: Small Hall)	
9:00 - 9:30	Opening and Welcome Speech (Venue: Multipurpose Hall)	
9:30 - 10:15	Keynote 1 Prof. Yingru Zhao (Venue: Multipurpose Hall)	
10:15 - 10:45	TEA/COFFEE BREAK (Venue: Multipurpose Hall)	
10:45 - 11:30	Keynote 2 Dr. Bo Shen (Venue: Multipurpose Hall)	
11:30 -12:00	Group Photo Session	
12:00 - 13:30	LUNCH BREAK (Venue: Small Hall)	
Session Room	303/304	305/306
Session Code	Session D1A1	Session D1A3
Session Chair	Dr.Yuntian Chen/Dr.Zhiling Guo	Prof. Hongxing Yang/Asso Prof. Bin Xu
13:30-13:45	82	68
13:45-14:00	161	187
14:00-14:15	83	208
14:15-14:30	199	214
14:30-14:45	200	215
14:45-15:00	87	217
15:00-15:15	94	12
15:15-15:30	55	13
15:30-15:45	TEA/COFFEE BREAK	
Session Code	Session D1A2	Session D1A4
Session Chair	Prof. Yingru Zhao/Dr. Xuan Kou	Prof. Xi Jiang/Asso Prof. Bin Xu
15:45-16:00	135	18
16:00 – 16:15	146	25
16:15 – 16:30	148	99
16:30 - 16:45	154	180

16:45 - 17:00	15	121
17:00 - 17:15	19	77
17:30-18:15	Keynote 3 Prof. Erik Dahlquist (Venue: Multipurpose Hall) (remote lecture)	
18:30 -	BANQUET	

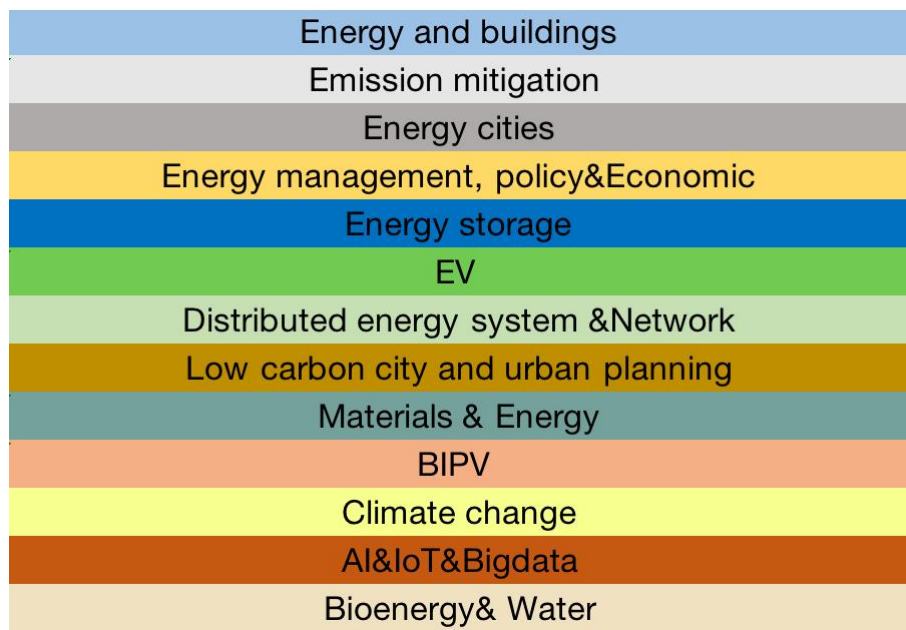
Tokyo Time	Day 2: Sep 3				
Session Room	303/304	301	305/306	Small Hall	
Session Code	Session D2M1	Session D2M3	Session D2M5		
Session Chair	Prof. Hongxing Yang/Dr. Minda Ma	Dr. Zhang Bai/Dr. Jingkui Zhang	Dr. Ying Wang/Dr.Ying Du		
9:00 – 9:15	24	35	118	Panel: Dr. Haoran Zhang	
9:15 – 9:30	27	80	127		
9:30 – 9:45	28	37	112		
9:45 – 10:00	29	52	138		
10:00-10:15	30	105	140		
10:15-10:30	2	73	149		
10:30-10:45	TEA/COFFEE BREAK				
Session Code	Session D2M2	Session D2M4	Session D2M6		
Session Chair	Asso Prof.Xiaolong Jin/Dr. Yutong Tan	Dr.Xuan Kou/Dr. Minda Ma	Asso Prof. Rui Jing/Asso Prof. Hao Yu		
10:45 – 11:00	67	22	7		
11:00 – 11:15	69	26	46		
11:15 - 11:30	70	45	66		
11:30 - 11:45	194	206	79		
11:45 - 12:00		209	157		
12:00 - 12:15		155	10		
12:15-13:30	LUNCH BREAK (Venue: Small Hall)				
Session Room	303/304	301	305/306	Small Hall	
Session Code	Session D2A1	Session D2A3	Session D2A5		
Session Chair	Prof. Kenji Tanaka/Asso Prof.Xiaolong Jin	Dr. Yuntian Chen/Dr.Xiaodan Shi	Dr. Kai Hou/Dr. Ying Du		
13:30-13:45	141	85	131	Panel Prof. Yanli Liu	
13:45-14:00	116	3	143		
14:00-14:15	61	218	144		
14:15-14:30	62	21	156		
14:30-14:45	64	111	59		
14:45-15:00	81	113	168		
15:00-15:15	102	129	166		
15:15-15:30	230	17	132		
15:30-15:45	TEA/COFFEE BREAK				
Session Code	Session D2A2	Session D2A4	Session D2A6		
Session Chair	Dr. Juan C. Gonzalez Palencia/Dr. Benny Susanto	Dr. Haoran Zhang/Dr.Ayyoob Sharifi	Dr.Jingkui Zhang/Dr. Zhenjia Lin		
15:45-16:00	203	1	201		

16:00 – 16:15	106	34	76
16:15 – 16:30	58	197	101
16:30 - 16:45	71	122	93
16:45 - 17:00	133	147	177
17:00 - 17:15	152	171	
17:15 -17:30	53	117	

Tokyo Time	Day 3: Sep 4				
Session Room	Small Hall	301	302		
Session Code	Session D3M1	Session D3M3	Session D3M5		
Session Chair	Asso Prof. Hao Yu/Dr. Zhiling Guo	Prof.Xi Jiang/Dr. Xiaodan Shi	Dr. Bo Shen/Dr. Dina		
9:00 – 9:15	97	5	6		
9:15 – 9:30	189	23	11		
9:30 – 9:45	84	57	20		
9:45 – 10:00	86	75	32		
10:00-10:15	115	98	205		
10:15-10:30		74			
10:30-10:45	TEA/COFFEE BREAK				
Session Code	Session D3M2	Session D3M4	Session D3M6		
Session Chair	Asso Prof. Rui Jing/Dr. Zhenjia Lin	Dr. Ran Tu/Dr. Qing Yu	Prof. Wenying Chen/Dr. Dan Yu		
10:45 – 11:00	120	103	216		
11:00 – 11:15	124	108	110		
11:15 - 11:30	130	137	49		
11:30 - 11:45	145	95	126		
11:45 - 12:00	175	63	134		
12:00 - 12:15	186				
	LUNCH BREAK (Venue: Small Hall)				
Session Room	Small Hall	301	302		
Session Code		Session D3A1	Session D3A2		
Session Chair		Dr. Ria ANIZA/Dr. Juan C. Gonzalez Palencia	Prof.Wenying Chen/Dr.Xinyi Li		
13:30-13:45		188	223		
13:45-14:00		51	220		
14:00-14:15	Panel Asian Development Bank Institute (ADB)	54	227	Visit the ADACHI MUSEUM OF ART in Matsue	
14:15-14:30		142	228		
14:30-14:45		172	225		
14:45-15:00		198	226		
15:00-15:15		207	224		
15:15-15:30		210	221		
15:30-15:45			96		
15:45-16:00					
16:00 – 16:15					
16:15 – 16:30					

16:30 - 16:45			
16:45 - 17:00			
Tokyo Time	Day 4: Sep 5		
	Travel From Matsue to Tokyo		
Tokyo Time	Day 5: Sep 6		
14:00-17:00	Site Visit: The University of Tokyo (Hongo)		
Tokyo Time	Day 6: Sep 7		
10:00-12:00	Site Visit: Bureau of Sewerage-Ochiai Water Reclamation Center		

The conference event consists of four-day symposium in Matsue (SEP 2-5) and one-day lab/site tours in Tokyo University(SEP 6) and one-day forum in Bureau of Sewerage-Ochiai Water Reclamation Center of Tokyo(SEP 7). All participants are free to choose whether to attend the tours and forum of the last two days. Please note that main event will be held in Matsue, and attendance at the last two days' tours and forum is optional and not a requirement for participation in the main event in Matsue. We use different color to represent different tracks of CUE 2023 as follows.



Energy and buildings
Emission mitigation
Energy cities
Energy management, policy&Economic
Energy storage
EV
Distributed energy system &Network
Low carbon city and urban planning
Materials & Energy
BIPV
Climate change
AI&IoT&Bigdata
Bioenergy& Water

General Information

Organized by

Applied Energy Innovation Institute (AEii)

Co-organized by

Mälardalen University Sweden

Supported by the international journals

Applied Energy

Advances in Applied Energy

Date

September 2-7, 2023

Time Difference

GMT +9 hours

Time Zone Converter

City Location & Time Zone	Time				
Bochum, Conf. Time	9:00	10:00	11:00	12:00	13:00
London	8:00	9:00	10:00	11:00	12:00
Johannesburg	9:00	10:00	11:00	12:00	13:00
New Delhi	12:30	13:30	14:30	15:30	16:30
Beijing	15:00	16:00	17:00	18:00	19:00
Tokyo	16:00	17:00	18:00	19:00	20:00
San Paulo	4:00	5:00	6:00	7:00	8:00
New York, Toronto	3:00	4:00	5:00	6:00	7:00
San Francisco	00:00	1:00	2:00	3:00	4:00

General Information

Venue

Shimane Prefectural Convention Center

1-2-1 Gakuen Minami Matsue City, Shimane, JAPAN

Convention Center

Kunibiki Messe

(Shimane Prefectural Convention Center)

The biggest convention center in Shimane prefecture, Kunibiki Messe, is located in the center of Matsue City. There are Exhibition hall (4,018 sqm), Multipurpose hall (686 sqm), International conference hall (510 sheets), and 19 meeting rooms.

Free Wi-Fi is available in building.



It takes only 7 minutes on foot from JR Matsue Station to Kunibiki Messe



KUNIBIKI MESSE

Address: 1-2-1 Gakuen Minami Matsue City,
Shimane, JAPAN 690-0826

TEL +81+852-24-1111 FAX: +81+852-22-9219

E-mail: kunibiki@kunibikimesse.jp

Keynote Speakers



Prof. Yingru Zhao
College of Energy
Xiamen University

Moderator:
Dr. Yuntian Chen
Eastern Institute For
Advanced Study

Exploring the Frontier of Smart Integrated Energy: Technologies, Applications, and Challenges

Abstract

Smart integrated energy represents a state-of-the-art solution that combines new technological, modeling, and business paradigms aligned with the carbon neutrality goals. It is also a crucial driver for developing a modernized energy framework. Integrated energy offers vital features such as high renewable energy penetration and multi-energy flow coupling. However, due to the significant fluctuations in renewable energy output and load demand, the system displays complex dynamic stochastic patterns and uncertainties. The stable, efficient, and economical performance of an integrated energy system depends on system-level optimal design and performance regulation. This strategy calls for a scientific approach to system planning and design while considering temporal and complementary characteristics between loads, capacity, and energy storage devices under various geographical and climatic conditions. Moreover, the integrated energy system relies on a variety of intelligent techniques to coordinate different supply and conversion technologies and align their application with the demand side. In managing complex participant problems, trade-offs between multiple competing objectives must be taken into account. This dynamic and spatially distributed optimization design and performance regulation based on smart integrated energy presents an innovative approach to energy management. This talk aims to introduce the research status, development and application cases, and challenges confronting smart integrated energy. It will focus on key technologies such as load forecasting, system design, and optimization decision-making, among others.

Bio

Professor Yingru Zhao received her Ph.D. from the Department of Physics at Xiamen University in 2008 and worked as a Research Associate at Imperial College London from 2008 to 2011. She was selected for Lindau Project by the Sino-German Center in 2008, and was selected by the "New Century Excellent Talents Support Plan" of the Ministry of Education and the "High-level Overseas Talents Program of Xiamen City" in 2011. In 2021, she won the "Fujian Provincial Outstanding Youth Fund". Her interdisciplinary research background includes physics, chemical engineering, and energy, with a focus on modeling, simulation, optimization and decision-making of energy and power systems. She has published over 100 journal articles. She serves as Associate Editor of journal Applied Energy and the review journal Renewable and Sustainable Energy Transitions, as well as editorial board member of journals such as Progress in Energy, Smart Energy, etc., and as Special Editor-in-Chief of the journal Global Energy Interconnection. She also serves as Vice Chairman of the Fujian Electric Power Engineering Society. She has won national-level and provincial-level awards such as the "Applied Energy Outstanding Paper Award".

Keynote Speakers



Dr. Bo Shen
Energy/Environmental
Policy Scientist at the
Energy Technology Area of
the Lawrence Berkeley
National Laboratory (LBNL)

Moderator:
Prof. Peng Li
Tianjin University

Accelerating Power Grid Decarbonization through Distributed Energy Resources: Insights from the United States

Abstract

Decarbonizing power grids is an essential pillar of global efforts to mitigate climate change impacts. Renewable energy generation is expected to play an important role in electricity decarbonization, although its variability and uncertainty are creating new flexibility challenges for electric grid operators that must match supply with constantly changing demand. Distributed energy resources (DERs)—including distributed generation, demand response, and distributed energy storage—can play an important role in providing the flexibility needed to integrate high penetrations of renewable energy. This talk examines federal and state enabling policies and regulations for DER, market strategies and business models that have facilitated DER expansion, and key emerging challenges for DER in the United States. Based on a review of the US experience, the talk offers lessons for other countries, focusing on the role and limits of policy, the facilitative role of utility regulatory reform, the need to balance different interests in tariff design, the benefits of DER participation in wholesale markets, and the importance of proactive interconnection policies.

Bio

Dr. Shen has over 25 years of experience in the clean energy field. He is currently an Energy & Environmental Policy Scientist at the US Department of Energy's Lawrence Berkeley National Laboratory. His research encompasses a wide range of areas, including clean energy transition, power sector decarbonization, energy efficiency policy and governance, techno-economic analysis of clean energy solutions, green financing, and emissions trading. Additionally, Dr. Shen has served as a team lead and international consultant for several technical assistance projects by the World Bank and the Asian Development Bank.

Keynote Speakers



Prof. Erik Dahlquist
School of Business Society
and Engineering.
Division of Sustainable
Energy Systems
Malardalen University

Moderator:
Prof. Xi Jiang
Queen Mary University of
London

How an European city to achieve zero carbon target?

Abstract

The keynote will talk about Vasteras but also the SE-3 region in Sweden briefly to show how wind and solar power is integrated in the regional work to become fossil free, even though varying power production. It will then also include power balancing with hydro-power, CHP and batteries, and H₂+FC briefly. And it will talk about waste sorting and new generation of CHP including pyrolysis and production of bioliquids, to replace fossil oil. Also industrial move away in steel manufacturing and how this can be integrated with electrification of transports.

Bio

Started work at ASEA/ABB Research Sept 1975 in Nuclear power. Technical PM for development of Cross Flow Membrane filter and ABBs Black Liquor Gasification project. 1992- 1995 Department manager at ABB Corporate Research. 1996-2002 General Manger for the Product Responsible Unit "Advanced Control, Diagnostics, Optimization, Process Simulation in Pulp and paper" globally within ABB. Adjunct professor KTH. Chair professor at Malardalen University since 2000. Have built the research profile Future Energy with focus on process development and energy efficiency improvements including AI technology. Dean of faculty 2004- 2007. Member of editorial board for Journal of Applied Energy since 2007. Member of Swedish Royal Academy of Engineering (IVA), since 2011. Chairman IVA department Electrical Engineering 2023- . Coordinator EU Horizon 2020 project FUDIPO on learning systems for process industries. Strong focus on battery modelling and development and second life of batteries last 10 years. 20+ patents and 300+ Scientific publications.

Panel Sessions

Panel 1 AI in Energy

Date: 3 September 2023 9:00-10:30

Venue: Small Hall

This panel is held both online and on-site. The zoom link is:

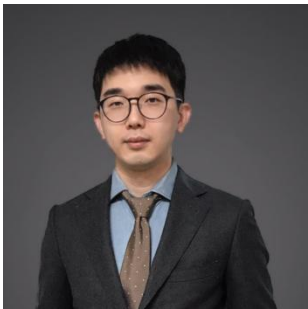
<https://mdu-se.zoom.us/j/63256941531?pwd=SUJkdTVYaWs1MkplQIZoS2hSL3dpZz09>

Zoom ID: 632 5694 1531 Password: 864184

Summary

In an era where sustainable and efficient practices are of utmost importance, the role of artificial intelligence in influencing the way we produce, distribute, and consume energy becomes increasingly relevant. This panel convenes thought leaders, industry pioneers, and distinguished scholars to decipher the implications of AI in the landscape of energy. Our panelists will shed light on these key areas, illustrating the current role of AI in the energy sector, the opportunities it presents for the future, and the hurdles we must overcome.

Session Chair



Dr. Haoran Zhang

School of Urban
Planning and Design
Peking University
(shenzhen)

Short Bio:

Haoran Zhang is an Assistant Professor at the School of Urban Planning and Design, Peking University. His research includes urban data mining, smart supply chain, and urban energy system. He is the author of numerous journal articles and Editorial Board Member of several international academic journals, such as *Advances in Applied Energy* and *Engineering Reports*. He has PhDs in both Engineering and Sociocultural Environment and was awarded Excellent Young Researcher by Japan's Ministry of Education, Culture, Sports, Science and Technology.

Speaker 1: Dr. Yuntian Chen



Dr. Yuntian Chen

Eastern Institute For
Advanced Study

Short Bio:

Yuntian Chen is an assistant professor (Ph.D. Supervisor) at EIAS. His research field includes scientific machine learning and intelligent energy system. He is interested in the integration of domain knowledge and data-driven models. He graduated from the Department of Energy and Power Engineering of Tsinghua University with a dual bachelor's degree in economics from Peking University. He obtained Ph.D. degree from Peking University with merit. He was the co-founder of RealAI. He is a member of the Young Editorial Board of *Advances in Applied Energy*. He has published more than 20 papers, obtained 15 authorized patents, and presided over 9 projects with a total funding of 14.9 million CNY. His research has been selected as the cover article of *Advanced Science*. He received the *Advances in Applied Energy* 2021 Highly Cited Research Paper Award and was selected for the Yongjiang Talent Project.

Panel Sessions

Speaker 2: Asso Prof. Xiaolong Jin



**Asso Prof. Xiaolong
Jin**
Tianjin University

Short Bio:

Xiaolong Jin is an associate professor with the Key Laboratory of Smart Grid of Ministry of Education, Department of Electrical Engineering, Tianjin University. His research interests include energy management of multi-energy buildings and their integrations with integrated energy systems, and the energy & flexibility markets solutions. From 2019 to 2022, he was a postdoc researcher with the Centre of Electric Power and Energy, Technical University of Denmark, Denmark. From 2017 to 2019, he was a joint Ph.D. student with the School of Engineering, Cardiff University, UK. He has published more than 60 papers with over 2000 citations, including 2 ESI top 1% highly cited papers, and led several projects such as the projects of National Natural Science Foundation of China. He received the Applied Energy 2020 Highly Cited Review Paper Award.

Speaker 3: Asso Prof. Hao Yu

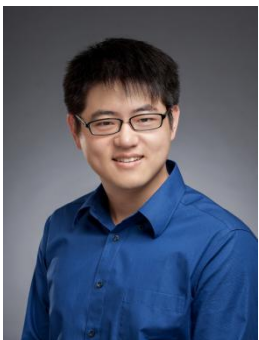


Asso Prof. Hao Yu
Tianjin University

Short Bio:

Dr. Hao Yu is an Associate Professor at School of Electrical and Information Engineering, Tianjin University, Tianjin, China. He received his B.S. and Ph.D. degrees in electrical engineering from Tianjin University in 2010 and 2015, respectively. His research interests include the operation analysis and optimization of active distribution networks and integrated energy systems. He is an assistant editor of Sustainable Energy Technologies and Assessment, and IET Energy Systems Integration. He is also a Young Editorial Board Member of Applied Energy, and a Youth Expert Group Member of the Journals Center of China Electric Research Institute.

Speaker 4: Asso Prof. Rui Jing



Asso Prof. Rui Jing
Tianjin University

Short Bio:

Dr. Rui Jing is Associate Professor in College of Energy, Xiamen University. His research focuses on smart energy, multi-energy integration, and demand-side management. He is a member of Young Editor Board for Advances in Applied Energy, Applied Energy and Carbon Neutrality. He is involved in research projects funded by NSFC, CAS, State Grid. He has co-authored more than 50 peer-reviewed publications in international journals and book chapters.

Panel Sessions

Speaker 5: Dr. Zhiling Guo



Dr. Zhiling Guo
The Hong Kong
Polytechnic University

Short Bio:

Zhiling Guo obtained his B.E. degree from Chongqing University in 2014, followed by his M.E. and Ph.D. degrees from the University of Tokyo in 2017 and 2020, respectively. With a specialization in data science, he gained valuable industry experience as a data scientist at LocationMind Inc. in Japan. Since 2023, He has been working as a postdoctoral researcher at the Hong Kong Polytechnic University. He has also been awarded the prestigious Grant-in-Aid for Young Scientists by the Japan Society for the Promotion of Science (JSPS) and is currently a guest researcher at the Center for Spatial Information Science (CSIS), the University of Tokyo. His research interests revolve around renewable energy, computer vision, and geographic information science.

Speaker 6: Dr. Zhenjia Lin



Dr. Zhiling Guo
The Hong Kong
Polytechnic University

Short Bio:

Zhenjia Lin received the B.Eng. degree in electrical engineering from South China University of Technology, Guangzhou, China, in 2015, and the Ph.D. degree from the same institute in 2021. From Dec. 2019 to Dec. 2020, he was a research assistant with the Centre of Electric Power and Energy, Technical University of Denmark, Denmark. He is currently a Postdoctoral Fellow with the Department of Building Environment and Energy Engineering, The Hong Kong Polytechnic University, Hong Kong. His research interests include uncertainty optimization, data-analysis for power system applications.

Panel Sessions

Panel 2 UNiLAB-Big Data Analytics for Smart Energy Systems

Date: 3 September 2023 13:30-16:00 Venue: Small Hall

This panel is held online, and the zoom link is: <https://mdu-se.zoom.us/j/63596996691?pwd=R0YwWWcxNlgxVUcwaXpNdFNLWVJlZz09>

Zoom ID: 635 9699 6691

Password: 144520

Summary

The comprehensive digitization, informatization, and intelligence of the energy system have made the amount of relevant data increase exponentially, and it has the remarkable characteristics of massive, multi-source, heterogeneous, and so on. By combining massive data with collected information from different links of the energy system, various entities, such as power utilities, customers, energy investment, society, etc., can use big data analytics technology to deepen the understanding of the energy system and its relevant links and create new value. So, a new UNiLAB focus on Big Data Analytics for Smart Energy Systems was launched and this panel will discuss frontier research in this area, publish the 1st competition winners and their work.

Session Chair



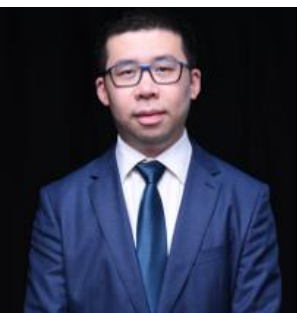
Professor. Yanli Liu

Tianjin University

Short Bio:

Yanli liu, Professor of the school of electrical and information engineering, Vice Dean of the school of future technology, and Executive deputy director of integrated energy power system intellectual center in Tianjin University.

Her research area includes power system situational awareness, cyber physical power system, and data-driven method applications in Smart Grid. She is now the "Smart Grid and Energy Internet" Subject Executive EiC of the journal Engineering (published by Chinese Academy of Engineering) and Associate Editor of the journal International Journal of Electrical Power & Energy Systems. She is chair of the UNiLab BDA, vice-chair of the IEEE Task Force "Application of Big Data Analytic on Transmission System Dynamic Security Assessment" and secretary of the IEEE Task Force "Cyber-Physical Interdependence for Power System Operation and Control". She won more than 50 awards including IEEE PES China Outstanding Women Engineer Award.



Professor. Junhua Zhao

Chinese University of Hong Kong(shenzhen)

Short Bio:

Professor Zhao is a National Youth Expert at the Chinese University of Hong Kong, Shenzhen. The director of the Energy Market and Finance Lab, the Shenzhen Finance Institute, and an invited energy industry expert at China Merchants Bank. He has long been engaged in research on smart grid, energy economy, low-carbon transition, and artificial intelligence. In 2020, he was named "Top 2% Scientists in the World" by Stanford University and Mendeley Data. In 2017, he was awarded the Young Scientist of the Future by the ADC Forum in Australia. In 2017, he won the "China's 100 Most Influential Chinese Sci-tech Journal Papers" award from the Ministry of Science and Technology. He won the Hunan Science and Technology Progress Award twice, and the Zhejiang Natural Science Award once. His research have had important impacts in the industry. Has participated in the rule design for multiple domestic power markets.

Panel Sessions

Panel 3 ADBI Session on Energy Transition

Date: 4 September 2023 14:00-17:00 Venue: Small Hall

Session chair: Research Fellow Dina Azhgaliyeva

Session chair affiliation: ADBI(Asian Development Bank Institute)

Summary

Energy transition is critical to realizing accessible and sustainable energy for all by 2030, as called for by Sustainable Development Goal 7, to implement Nationally Determined Contributions, and promote net zero carbon emissions to fight climate change. Yet, achieving these climate objectives is highly challenging for developing Asia. This hybrid ADBI session will explore energy transition, to take place as a part of the Applied Energy Symposium on Low Carbon Cities & Urban Energy Systems.

Objectives

- Examine the effectiveness of carbon pricing policies implemented in developing Asia
- Highlight innovative policy and financial measures for promoting energy transition

Target Participants

- Policy makers and experts from think tanks, universities, and international organizations, as well as post-graduate students and interested members of the public

Output

- Greater understanding of energy transition needs and challenges in developing Asian countries
- Identification of policies for promoting energy transition
- Greater impetus for dialogue, research and collaboration to promote energy transition to low-carbon

Agenda

Paper presentation – 20 minutes per paper; Q&A – 10 minutes per paper. More information about

Applied Energy Symposium can be found here: <https://www.adb.org/news/events/adbi-session-on-energy-transition-applied-energy-symposium-on-low-carbon-cities-urban-energy-systems>

Moderator: Dina Azhgaliyeva, ADBI	
14:00 - 14:20	Energy Pricing Design and Energy Poverty, Including Vulnerable Groups (the case of the Kyrgyz Republic) Presenter: Anna Arkhangelskaya , Candidate of Economic Sciences, Senior Researcher in the Institute of Energy under the Kyrgyz State Technical University, Kyrgyz Republic
14:20 - 14:30	Q&A
14:30 - 14:50	Energy Poverty in Kazakhstan Presenter: Dina Azhgaliyeva , Senior Research Fellow, Asian Development Bank Institute (ADBI)
14:50 - 15:00	Q&A
15:00 - 15:20	Carbon Pricing and Firms' GHG Emissions: Firm-Level Empirical Evidence from EAST ASIA Presenter: Hai Le Vu , Research Associate, ADBI

Panel Sessions

15:20 - 15:30	Q&A
15:30 - 15:50	The Impact of Emission Trading Scheme on Corporate Capital Structure: Evidence from a Quasi-Natural Experiment from the PRC Presenter: Hiep Ngoc Luu , Lecturer, VNU University of Business and Economics, Vietnam National University, Hanoi, Vietnam
15:50 - 16:00	Q&A
16:00 - 16:20	Dynamic Linkages among Major Energy and Metal Commodities in Stressed Periods Presenter: Nikolaos Kyriazis , Lecturer, University of Thessaly, Greece
16:20 - 16:30	Q&A
16:30 - 16:50	Transition Risk Uncertainty and Robust Optimal Monetary Policy Presenter: Anh H. Le , Ph.D. student, Goethe University Frankfurt, Germany
16:50 - 17:00	Q&A

Speakers



Dr. Dina Azhgaliyeva

Senior Research Fellow
of Asian Development
Bank Institute (ADBI)

Short Bio:

Dr. Dina Azhgaliyeva is a Senior Research Fellow at the Asian Development Bank Institute (ADBI). Before joining ADBI in July 2019, she worked as a Research Fellow in the energy economics division of the Energy Studies Institute, National University of Singapore. She was also a Research Fellow at the Henley Business School, University of Reading (UK) where she worked on a project ‘Kazakh-British Centre for Competitiveness’. She also worked as a leading and chief specialist for the Tax Committee at the Ministry of Finance of Kazakhstan. Her research focuses on energy policy, particularly renewable energy, energy efficiency, and energy storage. Dina has published articles on these topics in journals such as Technological Forecasting and Social Change, Australasian Journal of Environmental Management, Journal of Environmental Management, Energy Policy and Journal of Sustainable Finance & Investment. She is currently a guest editor for the Applied Energy’s special issue “Integration of Renewable Energy in Energy Systems, Perspectives on Investment, Technology, and Policy”. She earned her PhD and MSc in economics from the University of Essex (UK). She also holds an internationally recognized teaching qualification from the Fellow of Higher Education Academy and a qualification in research career management from the Staff Educational and Development Association. More information is available here: <https://www.adb.org/adbi/about/staff-profiles/dina-azhgaliyeva>



**Dr. Anna
Arkhangelskaya**

Energy Economist /

Short Bio:

Dr. Anna Arkhangelskaya is an experienced Energy Economist / Researcher with 14 years’ experience, including 12 years in national and regional power sector projects and research activities and 9 years in governmental sector of the Kyrgyz Republic working in Ministry of Energy, Ministry of Economy and State Committee of Energy, Industry and subsoil use.

Anna’s core expertise is in assessing energy resources, forecasting of energy demand and supply, energy transition and energy efficiency studies, economic advisory assignments, assessment of market and administrative regulations, analysis and development of sectoral strategies and programs in the fuel and energy complex, analyzing the prospects for the development of the electricity and power markets both from national and regional perspective.

Panel Sessions

Researcher

Anna has more than 20 research publications on the above issues in local and regional peer-reviewed journals “Reform”, “Eurasian Economic Integration”, “Society and Security Insights” , etc., as well as co-authored two monographies and CAREC Institute Governance Atlas.

Anna is a PhD holder in Energy Economics from Kyrgyz-Russian Slavic University, 2013; and a diploma in Economics and Management of power companies (MSc equivalent) from Kyrgyz-Russian Slavic University, Kyrgyz Republic, 2009. She is fluent in Russian, Kyrgyz, English.



Dr. Nikolaos A. Kyriazis

Lecturer at the Department of Economics, University of Thessaly

Short Bio:

Dr. Nikolaos A. Kyriazis is an economist that holds a Bachelor’ s degree in Economics from the University of Thessaly, Volos, Greece, and a Master’ s in Economic Theory from the Athens University of Economics and Business, Athens, Greece. His doctoral thesis is about unconventional monetary policy and has the title: ‘ Central Bank Policies’ and his post-doctoral thesis is about modern financial investments and has the title: ‘Determinants of the market value of a portfolio consisting of cryptocurrencies’, both at the Department of Economics, University of Thessaly, Volos, Greece. He is currently a lecturer at the Department of Economics, University of Thessaly, Greece. His academic interests are about monetary policy, currency values, cryptocurrencies, financial investments, and financial crises. His academic work has 980 citations. He has published papers in high-quality academic journals such as: Energy Economics, International Review of Financial Analysis, Journal of Economic Studies, Quarterly Review of Economics, North American Journal of Economics and Finance, Research in International Business and Finance, International Economics and Economic Policy, and Defence and Peace Economics.

<https://scholar.google.com/citations?user=VCctlg4AAAAJ&hl=en>



Dr. Le Vu Hai

Research associate of Asian Development Bank Institute (ADBI)

Short Bio:

Dr. Le Vu Hai is currently working at Asian Development Bank Institute (ADBI) as a research associate. Prior to joining ADBI, he worked as a lecturer at the Banking Academy in Hanoi, Vietnam, for more than 2 years.

He received both his doctorate and master's degrees in economics from Kyoto University's Graduate School of Economics, where he also worked as a teaching and research assistant.

His main research interests lie in the areas of monetary economics, Bayesian econometrics, and applied economics, with an emphasis on emerging economies. Additionally, he has a strong interest in energy economics and environmental economics.

Panel Sessions



Dr. Anh H. Le

PhD candidate at
Goethe University
Frankfurt

Short Bio:

Anh H. Le is a PhD candidate at the Graduate School of Economics, Finance and Management (GSEFM) at Goethe University Frankfurt. Currently, he works at the Institute for Monetary and Financial Stability (IMFS). His main work includes developing a framework for pandemic model comparisons for the Epidemic Macro Model Database (EPI-MMB) project. Currently, his research focuses on macroeconomics, general equilibrium models, monetary and fiscal policy as well as environmental macroeconomics. He especially focuses on digital money implications and environmental policy to deal with transition and physical risk. He earned his MSc in quantitative economics from the Goethe University Frankfurt. More information is available here:

<https://www.imfs-frankfurt.de/professuren/prof-volker-wieland/mitarbeiter/ha-anh-le.html>



Dr. Hiep Ngoc Luu

Vietnam National
University

Short Bio:

Hiep Ngoc Luu is the Vice Dean of the Faculty of Finance and Banking at the University of Economics and Business - Vietnam National University. His research focuses on financial regulation, monetary policy, climate finance, and public policy and governance. He has a substantial publication record, with over 40 publications in reputable outlets, including: Journal of Financial Stability, European Journal of Finance, International Review of Financial Analysis, Journal of Financial Services Research, and the Review of Quantitative Finance and Accounting. Hiep is a frequent speaker at international conferences and meetings organized by central banks, governments, and international organizations, such as the Asian Development Bank, the State Bank of Vietnam, and the National Financial Supervisory Commission of Vietnam.

Online participation

If you are interested in the ADBI session at CUE2023: The 9th Applied Energy Symposium: Low carbon cities and urban energy systems, you can register in this website: https://us06web.zoom.us/webinar/register/WN_QfuYqtijTHuLGFx1W8heTw#/registration Or Use the Zoom link: <https://us06web.zoom.us/j/83423143593>

Day 1: Sep. 2

8:00 - 9:00	Registration Venue: Small Hall		
9:00 - 9:30	Opening and Welcome Speech Venue: Multipurpose Hall		
9:30- 10:15	Keynote 1 Prof.Yingru Zhao Venue: Multipurpose Hall		
10:15 - 10:45	TEA/COFFEE BREAK Venue: Multipurpose Hall		
10:45 - 11:30	Keynote 2 Dr. Bo Shen Venue: Multipurpose Hall		
11:30 - 12:00	Group Photo Session		
12:00 - 13:30	LUNCH BREAK Venue: Small Hall		
Room 303/304 Zoom 1-A Session Name: Energy Storage Session Code:SessionD1A1 Session Chair: Dr. Yuntian Chen/Dr. Zhiling Guo			
Time	Paper ID	Author	Paper Title
13:30-13:45	82	Yilun Zhang, Yao Zhang Junwei Liu, Zhan Liu and Xiaohu Yang	Performance of a carnot battery system with seawater as cold reservoir
13:45-14:00	161	Longfei Liu, Xiandong Xu, Jing Liu, Xiaodan Yu and Hongjie Jia	Optimal configuration of energy storage for supporting the integration of wind power to islanded offshore oil and gas platforms
14:00-14:15	83	Yao Zhang, Junwei Liu, Yilun Zhang, Chuanqi Su, Zhan Liu and Xiaohu Yang	Performance of an above-ground compressed air energy storage
14:15-14:30	199	Yiwen Zhao, Zhenpo W ang, Peng Liu, Zhenyu Sun, Qiushi Wang and Ni Lin	An Early Multi- and Micro-Fault Diagnosis Scheme for Series-Connected Battery Systems
14:30-14:45	200	Qiushi Wang, Zhenpo Wang, Peng Liu, Yiwen Zhao and Ni Lin	Enabling unlabelled field data for battery health diagnosis by decoupling experiment
14:45-15:00	87	Junwei Liu, Yilun Zhang, Yao Zhang, Xiaoling Luo, Zhan Liu and Xiaohu Yang	Influence of the component efficiency on the performance of a compressed CO2 energy storage
15:00-15:15	94	Dan Yu, Xiaohan Zhou and Fanyue Qian	Quantitative Research on Virtual Energy Storage Performance of Building Air Conditioning System: A study in Shanghai
15:15-15:30	55	Xinyi Li, Yifei Wang, Qibin Yuan, Haibo Yang and Qiuwang Wang	Thermal management for solar cell based on latent energy storage: A pore-scale study
15:30-15:45	TEA/COFFEE BREAK		
Room 303/304 Zoom 1-A Session Name: Energy Storage Session Code: Session D1A2 Session Chair: Prof. Yingru Zhao/Dr. Xuan Kou			
15:45-16:00	135	Jongyun Jung, Taebeen Kim, Hee-sun Shin, Seu nghun Oh, Siwoong Kim and Sanggyu Kang	Parametric Analysis and Design of Solid Oxide Electrolysis Cell and Haber-Bosch Process Hybrid System for High Efficiency
16:00 - 16:15	146	Tianle Dai, Cheng Xu, Yongjian Liu and Tuantuan Xin	Thermodynamic analysis and comparison of liquid CO2 storage system (LCES) and trans-critical CO2 Rankine cycle-based pumped heat electricity storage system (TCR-PHES)
16:15 - 16:30	148	Masoume Shabani, Fredrik Wallin and Jinyue Yan	Efficient battery operation scheduling for price arbitrage in day-ahead electricity market: key factors and insights to decision-makers
16:30 - 16:45	154	Fan Sun, Xueli Xing, Yu Xin and Hui Hong	Solar-driven CO2 Methanation Over Nickel-based Catalysts for Solar Fuel Production: An Experimental and Mechanism Study
16:45 - 17:00	15	Junfei Guo, Ze Li and Xiaohu Yang	Optimization on variable speed control of rotated thermal energy storage device in solar photovoltaic/thermal system
17:00 - 17:15	19	Xinyu Huang, Xiaohu Yang and Jinyue Yan	Influence of different rotational speeds of inner and outer tubes on phase change heat storage
Room 305/306 Zoom1-B Session Name:Emission Mitigation Session Code: Session D1A3 Session Chair: Prof. Hongxing Yang/Asso Prof. Bin Xu			
Time	Paper ID	Author	Paper Title
13:30-13:45	68	Yan Xie, Chaoqun Zhang, Xin Liu, Wenzhen Zhang, Jun Li and Heyang Wang	Experimental study on the effects of ammonia cofiring ratio and injection mode on the NOx emission characteristics of ammonia-coal cofiring

Day 1: Sep. 2

13:45-14:00	187	Lili Zhang, Tong Xu, Chengliang Zhang and Boguang Wang	Photochemical loss with consequential underestimation of active VOCs and corresponding secondary formation in petrochemical refinery
14:00-14:15	208	Hui Yue, Ernst Worrell, Wina Crijns-Graus, Shaohui Zhang, Jing Hu and Fabian Wagner	Air quality and health implications of coal power retirements attributed to industrial electricity savings in China
14:15-14:30	214	Xin Cao, Mingxuan Wu and Chang Liu	Industry Symbiosis System Construction and Co-benefit Assessment Based on Complex System Optimization in industrial clusters
14:30-14:45	215	Xin Cao, Zechen Zhang, Chang Liu and Xichao Liang	Path identification and environmental benefit evaluation of multi-source solid waste symbiosis in southeast characteristic industrial agglomeration area
14:45-15:00	217	Dongtai Yang, Song He and Sheng Li	A Novel Hydrogen Production System for Coal-Staged Gasification Based on Carbon Component Enrichment during Pyrolysis Process
15:00-15:15	12	Zihan Zhu and Bin Xu	Flue gas NOx removal using wastewater sludge through absorption and anaerobic digestion
15:15-15:30	13	Zhang Chaoqun, Zhang Wenzhen, Liu Xin, Niu Tao and Heyang Wang	Industrial-scale experimental investigation of ammonia-coal cofiring in coal-fired boiler
15:30-15:45	TEA/COFFEE BREAK		
Room 305/306 Zoom1-B Session Name: Emission Mitigation Session Code: Session D1A4 Session Chair: Prof. Xi Jiang/Asso Prof. Bin Xu			
15:45-16:00	18	Xiaoyi Liu, Zhongnan Ye and Shu-Chien Hsu	Mapping the anthropogenic resources and embodied carbon emissions induced by building stocks of public rental housing (PRH)
16:00 - 16:15	25	Yi-Song Yu and Xiao-Sen Li	Kinetics and Structure of Hydrate Formation in the Presence of CP+IGCC syngas system under Different Reaction Model
16:15 - 16:30	99	Zhihao Xing and Xi Jiang	A reactive molecular dynamics study on the mechanism of pollutant reduction of co-firing ammonia and biomass
16:30 - 16:45	180	Kaisheng Wu, Yuan Zeng and Dong Wang	Assessing the Impact and Cost-Effectiveness of Electric Vehicles on Urban Greenhouse Gas Reduction: A Scenario Analysis and Case Study from Shenzhen City
16:45 - 17:00	121	Tao Cao and Masahiro Sugiyama	Prospects of industrial decarbonization through regional supply chain relocation: a case study of iron & steel sector
17:00 - 17:15	77	Binbin Yu, Yingjing Zhang, Hongsheng Ouyang, Junye Shi and Jiangping Chen	Quantifying the Net Transportation Emissions Reduction from Electric Vehicles Heat Pumps for China Cities over time
17:30 - 18:15	Keynote 3 Prof. Erik Dahlquist Venue: Multipurpose Hall (remote lecture)		
18:30 -	BANQUET		

Day 2: Sep. 3

Room 303/304 Zoom 2-A Session Name: Energy&Building Session Code: Session D2M1 Session Chair: Prof. Hong Xing Yang/Dr. Minda Ma			
Time	Paper ID	Author	Paper Title
9:00-9:15	24	Wenxuan Zhao and Shengwei Wang	Optimal design of semiconductor cleanroom air-conditioning systems considering load uncertainty and equipment degradation
9:15 – 9:30	27	Ruifan Zheng, Jun Zhao and Rendong Shen	Short-term prediction of building thermal parameters based on JANET
9:30 – 9:45	28	Rendong Shen, Jun Zhao and Ligai Kang	An improved control method of district heating system based on waste heat utilization in data center
9:45 – 10:00	29	Xiwang Xiang, Nan Zhou and Minda Ma	Decarbonization of global residential building end-uses in the 21st century
10:00-10:15	30	Ran Yan, Nan Zhou, Minda Ma and Chao Mao	Investigate the heterogeneity of carbon Kuznets curve for global residential building operations
10:15-10:30	2	Akshay Ajagekar and Fengqi You	Investigate the heterogeneity of carbon Kuznets curve for global residential building operations
10:30-10:45	TEA/COFFEE BREAK		
Room 303/304 Zoom 2-A Session Name: Energy&Building Session Code: Session D2M2 Session Chair: Asso Prof.Xiaolong Jin/Dr. Zhiling Guo			
10:45 – 11:00	67	Chengzhi Luan and Xiaofeng Li	Analysis of the energy savings from year-round operation of evaporative condensing direct expansion units for metro stations
11:00 – 11:15	69	Jiaqi Yuan, Wenjie Gan, Fu Xiao and Ying Zhang	Demand Response Strategy for Temperature and Humidity Regulation in Air Conditioning Systems based on Machine Learning
11:15 - 11:30	70	Chuyao Wang and Hongxing Yang	Investigation on energy-saving and human comfort performance of a multi-functional PV/T window
11:30 - 11:45	194	Weidong Chen, Kexin Yu, Mengzhen Liu, Thuan Duc Bui, Md Raisul Islam, Dan Zhao and Kian Jon Chua	Investigation of combined effects of condensation and sorption on desiccant coated heat exchanger performance
Room 301 Zoom 2-B Session Name: BIPV Session Code: Session D2M3 Session Chair: Dr. Zhang Bai/Dr. Jingkui Zhang			
Time	Paper ID	Author	Paper Title
9:00-9:15	35	Shuoshuo Wang, Zhang Bai, Yucheng Gu and Yunyi Han	Thermodynamic and economic analysis of a novel integrated hydrogen energy system based on solar-biomass gasification
9:15 – 9:30	80	Rei-Yu Chein and Keng-Tung Wu	Thermodynamic Analysis of Pollutant Emissions from Oxy-Solid Recovered Fuel (SRF) Combustion
9:30 – 9:45	37	Fan Xu, Man Sing Wong and Xuan Liao	Constructing Method of Large-Scale 3D Urban Façade Materials Databases Based on Street View Image
9:45 – 10:00	52	Yijie Zhang, Tao Ma and Hongxing Yang	Building-vehicle-building distributed energy system design and operation improvement with PV forecast and different installation types
10:00-10:15	105	Yutong Tan, Jinqing Peng and Meng Wang	Smart PV windows for improving building energy conservation and flexibility
10:15-10:30	73	Hongjun Tan, Zhiling Guo, Yuntian Chen, Haoran Zhang and Jinyue Yan	Urban PV Panel Segmentation from Satellite Imagery with Constraint Refinement Modules
10:30-10:45	TEA/COFFEE BREAK		
Room 301 Zoom 2-B Session Name: Energy Storage Session Code: Session D2M4 Session Chair: Dr.Xuan Kou/Dr. Minda Ma			
Time	Paper ID	Author	Paper Title
10:45 – 11:00	22	Tamiru Deressa Morka and Masaki Ujihara	Binder Free Synthesis of WO ₃ -SnO ₂ Nanocomposite Electrode as an Active Material For Symmetric Supercapacitor System.
11:00 – 11:15	26	Jingkui Zhang, Wen Yan, Zhongzhu Qiu, Puyan Zheng, Yi Fan and Jiakai Zhang	Research on power generation performance and waste heat utilization of gas-CO ₂ combined cycle system
11:15 - 11:30	45	Tian Xiao, Xiaohu Yang and Tian Jian Lu	Pore-scale simulation on the melting of phase change materials inside metal foams with/without natural convection

Day 2: Sep. 3

11:30 - 11:45	206	Xuan Kou, Yi Wang and Xiao-Sen Li	Sustainable Energy Storage and Development by Clathrate Hydrate
11:45 - 12:00	209	Yong Jin Jo and Byeong Wan Kwon	Evaluation of Aqueous Redox Flow Battery using Tiron and Tungstosilicic Acid Hydrate Polyoxometalate as Redox Couple
12:00 - 12:15	155	Yifan Zhou, Xinyue Hao, Guangming Chen and Neng Gao	Application of a Novel Ejector in a Liquid Air Energy Storage System using Ejecting Linde-Hampson Cycle
Room305/306 Zoom 2-C Session Name: Distributed energy system&Network Session Code: Session D2M5 Session Chair: Dr.Ying Du/Dr. Ying Wang			
Time	Paper ID	Author	Paper Title
9:00 – 9:15	118	Shi Lijun, Pengfei Si, Ya Feng and Ke Xu	Experimental Studies on a Novel Flexible Energy System Based on PV for remote districts
9:15 – 9:30	127	Sen Yu, Yi Fan, Jingkui Zhang, Zhengrong Shi, Jiakai Zhang and Tao Zhang	The feasibility analysis of the PEMFC-ASHP-CHP Diversion System in distributed buildings
9:30 – 9:45	112	Ang Xuan and Xinwei Shen	Carbon Footprint and Economic Analysis of Typical Coal-to-Hydrogen Retrofit Planning with CCUS
9:45 – 10:00	138	Seunghun Oh, Siwoong Kim, Jongyun Jung, Tabeen Kim and Sanggyu Kang	Optimization of Ammonia-fed Solid Oxide Fuel cell system integrating with Organic Rankine Cycle to maximize electrical efficiency
10:00-10:15	140	Yimin Li, Dongjiang Han and Jun Sui	Techno-economic analysis of solid fuel cell-internal combustion engine system based on alternative fuels
10:15-10:30	149	Shuo Liang, Xiaolong Jin, Hongjie Jia, Yunfei Mu, Wei Wei, Xiaodan Yu and Zening Li	Optimal energy management of a group of air source heat pumps in a low-carbon industrial park considering its cold island effect
10:30-10:45	TEA/COFFEE BREAK		
Room305/306 Zoom 2-C Session Name: Distributed energy system&Network Session Code: Session D2M6 Session Chair: Asso Prof. Rui Jing/Asso Prof. Hao Yu			
10:45 – 11:00	7	Ze Hu, Ka Wing Chan, Siqi Bu, Ziqing Zhu and Xiang Wei	Deep Reinforcement Learning-Based Optimal Pricing Strategy in Regional Integrated Energy Market
11:00 -11:15	46	Liao Wei and Xiao Fu	Comparative study of a novel demand response Peer-to-peer trading strategy and rule-based operation strategies for grid-connected PV-battery systems of diversified building communities
11:15 - 11:30	66	Ziqi Zhang, Jinli Zha, Haoran Ji, Jie Jian, Tianyu Chen and Chenhai Li	Coordinated Voltage Control of Active Distribution Networks with Voltage Sensitivity Function
11:30 - 11:45	79	Xu Tingting	Collaborative optimization of regional distributed energy systems considering load timing characteristics
11:45 - 12:00	157	Ke Wang, Yixun Xue, Xinyue Chang, Jia Su, Zening Li, Yingnan Liu and Hongbin Sun	Coordinated Service Restoration Considering Network Reconfiguration with Soft-Open-Point in Integrated Electric and Heating Systems
12:00 -12:15	10	Xiang Wei, Ka Wing Chan, Ziqing Zhu and Ze Hu	Resilience Enhancement for Power and Transportation System in Ice Storms Based on Deep Reinforcement Learning
Room Small Hall Panel: AI in energy			
Time	Session Chair	Speakers	Summary
9:00 – 10:30	Dr. Haoran Zhang	Dr. Yuntian Chen Asso Prof. Hao Yu Asso Prof. Xiaolong Jin Asso Prof. Rui Jing Dr. Zhiling Guo Dr. Zhenjia Lin	In an era where sustainable and efficient practices are of utmost importance, the role of artificial intelligence in influencing the way we produce, distribute, and consume energy becomes increasingly relevant. This panel convenes thought leaders, industry pioneers, and distinguished scholars to decipher the implications of AI in the landscape of energy. Our panelists will shed light on these key areas, illustrating the current role of AI in the energy sector, the opportunities it presents for the future, and the hurdles we must overcome.
Room 303/304 Zoom 2-A			

Day 2: Sep. 3

Session Name: Energy&Buildings Session Code: Session D2A1 Session Chair: Prof. Kenji Tanaka/Asso Prof.Xiaolong Jin			
Time	Paper ID	Author	Paper Title
13:30-13:45	141	Xueyuan Zhao, Xiaoyu Ying, Tingting Xu and Yang Tan	Research on Optimization Method of Short Term Load Forecasting Model Based on LSTM-CNN and AM
13:45-14:00	116	Wang-Je Lee, Haneul Kim, Jongkyu Kim and Min-Hwi Kim	Retrofit of PVT Assisted Heat Pump System for Low Carbon Community
14:00-14:15	61	Weike Peng, Yuntian Chen and Shengwei Wang	Toward Carbon-Neutral Electric Power Systems in Hong Kong: a Spatiotemporal Analysis at Hourly Resolution After Local Grids Deeply Integrating with the Power system in Mainland China
14:15-14:30	62	Seung Jin Oh, Jongwoo Kim, Yeonmin Kim, Young Jin Yang and Sung Hyun Park	Study on an Advanced Borehole Heat Exchanger for Ground Source Heat Pump Operating in Volcanic Island: Case Study of Jeju Island, South Korea
14:30-14:45	64	Yuntao Bu, Hao Yu, Guanyu Song, Man Lin, Jiacheng Fang and Peng Li	Data-Driven Heating Power Control in Integrated Energy Systems Considering Room Temperature Variations
14:45-15:00	81	Jiawei Tan, Jingzhi Huang, Fuzheng Zhang, Meina Xie, Rui Jing and Yingru Zhao	Risk Assessment and Optimization of Lithium-ion Battery Energy Storage Systems in Integrated Energy System
15:00-15:15	102	Saman Taheri, Alireza Jafarian Amiri and Ali Razban	Effects of occupancy detection/prediction on predictive control models for commercial buildings
15:15-15:30	230	Peijun Zheng, Jiang Liu and Yosuke Nakanishi	Accurate Multi-step Forecasting of Short-term PV Generation in Building using Interpretable Model
15:30-15:45	TEA/COFFEE BREAK		
Room 303/304 Zoom 2-A Session Name: Bio energy&Water&Climate change Session Code: Session D2A2 Session Chair: Dr. Juan C. Gonzalez Palencia/Dr. Benny Susanto			
Time	Paper ID	Author	Paper Title
15:45-16:00	203	Ria Aniza, Anelie Petrisans, Mathieu Petrisans, Rafael Quirino, Christian Herrera, Baptiste Colin and Wei-Hsin Chen	Bioenergy and bioexergy analyses with artificial intelligence aided by direct combustion of recycled hardwood and softwood wastes via TGA
16:00 – 16:15	106	Shengnan Li, Nan Xiang, Chang Shu and Feng Xu	DYNAMIC SIMULATION OF INDUSTRIAL SYNERGY OPTIMISATION PATHWAYS IN BEIJING-TIANJIN-HEBEI REGION BASED ON ENERGY-WATER NEXUS
16:15 – 16:30	58	Yiyi Ju, Nur Firdaus, Kiyoshi Fujikawa and Tao Cao	Soft-Linking Energy System Models with a Macro-economic Framework: Long-term Energy Service Demand in Response to Decarbonization Transition
16:30 - 16:45	71	Gang Li, Xiao-Sen Li and Qiunan Lv	Numerical simulation on CO2 storage in gas hydrate form in porous medium
16:45 - 17:00	133	Hiroyoshi Iwata and Kenji Tanaka	How startups enable energy Innovation: a case study of Nuclear Fusion
17:00 - 17:15	152	Jie Du, Ruilai Xin, Lewei Zhu, Zeyu Liu, Kai Hou, Bingchen Zhang, Shusheng Wang and Jiawei Qu	Regional integrated energy system resilience assessment considering human tolerance
17:15 - 17:30	53	Zhangyuan He, Pengjun Zhao, Zhaoxiang Li and Gabriel Icarte Ahumada	CO2 Emission Analysis at Urban Toll Station Area via Big Data Analysis: A case of Shenzhen, China
Room 301 Zoom 2-B Session Name: EAI&IoT&Bigdata & Low carbon city and urban planning Session Code: Session D2A3 Session Chair: Dr. Yuntian Chen/Dr.Xiaodan Shi			
13:30-13:45	85	Xuan Liao, Man Sing Wong and Fan Xu	Application of Temporal Fusion Transformer for estimating hourly land surface solar irradiation in Australia
13:45-14:00	3	Tianqi Xiao and Fengqi You	Physically Consistent Deep Learning-based modeling for indoor thermal dynamics and waste heat of data center-integrated community
14:00-14:15	218	Kanae Matsui and Katsuma Takagi	Information recommendation system for improving productivity in teleworking
14:15-14:30	21	Yiyu Liu, Zhizhuo Kou Jia Li, Lei Chen and Xiaowen Chu	Incorporating Monitoring, Reporting and Verification (MRV) with Financial Incentives in Blockchain-Enabled Framework
14:30-14:45	111	Ning Li, Honghui Gao Hanshi Qin and Youmin Hou	Carbon accessibility analysis of urban public transport - Wuhan as an example

Day 2: Sep. 3

14:45-15:00	113	Sheng Li, Yunfeng Liang, Fei Jiang and Takeshi Tsuji	Multi-scale simulation of Water/Oil Displacement with Dissolved CO ₂ for Developing CO ₂ Storage Technologies
15:00-15:15	129	Xiaocong Sun and Minglei Bao	An efficient model for calculating carbon emission obligation of consumers in power systems
15:15-15:30	17	Zhongnan Ye, Xiaoyi Liu and Shu-Chien Hsu	A Data-Driven Component Storage and Distribution System for Demountable Steel Structures towards Circular Construction
15:30-15:45	TEA/COFFEE BREAK		
Room 301 Zoom 2-B Session Name: Energy&cities Session Code: Session D2A4 Session Chair: Dr. Haoran Zhang/Dr.Ayyoob Sharifi			
Time	Paper ID	Author	Paper Title
15:45-16:00	1	Guoqing Hu and Fengqi You	AI-Driven Control for Energy Optimization and Sustainable Food Production in a Plant Factory
16:00 -16:15	34	Yingying Zheng, Ye Yang and Daoliang Li	Energy-saving Techniques in Urban Aquaponics Farms by Optimized Equipment Operating Scheme
16:15 – 16:30	197	Markus Hofmeister, Shin Zert Phua, George Brown bridge, Michael Hillman, Sebastian Mosbach, Jethro Akroyd and Markus Kraft	Fostering Severe Weather Resilience in Smart Cities using Dynamic Knowledge Graphs
16:30 - 16:45	122	Zhe Zhang and Ayyoob Sharifi	Analysis of Decoupling Between CO ₂ Emissions and Economic Development Based on Tapio Model: A Study of China's Provincial Capitals
16:45 - 17:00	147	Nurkhat Zhakiyev, Aidos Satan, Aliya Nugumanova, Bekzhan Mukatov and Daniel Friedrich	Studying the typical consumption profiles of the regions of Kazakhstan based on the analysis of feature-based Machine Learning
17:00 - 17:15	171	Hongjun Li, Yingyue Li and Yi Zhang	Assessing the Economic Viability and Urban Distribution Patterns of Rooftop Photovoltaic: A Case Study of Haidian District, Beijing
Room 305/306 Zoom 2-C Session Name: Distributed energy system &Network Session Code: Session D2A5 Session Chair: Dr. Kai Hou/Dr. Ying Du			
Time	Paper ID	Author	Paper Title
13:30-13:45	131	Qiyi Yu and Yi Tang	Analysis of Abnormal Load Power Oscillation Phenomenon in the Disharmonious Three-Terminal Power Network with Three Voltage-Source-Controlled Units Integrated
13:45-14:00	143	Nianyuan Wu, Jian Lin, Shan Xie, Rui Jing and Yingru Zhao	Research on multi-objective optimization, evaluation, and decision-making method of ship energy system
14:00-14:15	144	Xueqing Wang and Lin Gao	Challenges for power plant adopting CO ₂ capture in a carbon neutral power system
14:15-14:30	156	Qianzhi Zhang and Wenying Chen	The impact of hydrogen trade on the low-carbon transition of energy systems
14:30-14:45	59	Kexin Sun, Rui Fan, Bin Zheng, Ting Bu and Yibing Zhou	Parameter Sensitivity Analysis of Energy Bus System for Office Buildings
14:45-15:00	168	Lipei Zhang, Xiandong Xu, Wei Wei and Jing Liu	Economic Comparison of Long-distance Transmission Strategy of Offshore Wind Power
15:00-15:15	166	Qiang Zhang, Qianzhi Zhang and Wenying Chen	China's provincial low carbon transition and interprovincial electricity transmission under the carbon neutrality goals
15:15-15:30	132	Junhong Hao, Chenzhi Ju, Yunxi Yang and Feng Hong	Overall modeling and exergy analysis of advanced solar-based distributed combined heat and power system
15:30-15:45	TEA/COFFEE BREAK		
Room 305/306 Zoom 2-C Session Name: Distributed energy system &Network Session Code: Session D2A6 Session Chair: Dr.Jingkui Zhang/Dr. Zhenjia Lin			
15:45-16:00	201	Ying Du, Yuntian Chen, Haoran Zhang, Haoran Ji, Chengshan Wang and Jinyue Yan	The evaluation of V2G's impact in post-disaster distribution systems based on Travel simulation of EVs
16:00 – 16:15	76	Qi Li, Zhang Bai, Yunbin Han, Shuoshuo Wang and Yunyi Han	Day-ahead Scheduling Strategy and Capacity Configuration Optimization of Wind-solar Hydrogen Production Based on Rotation Mode of Electrolyzer
16:15 - 16:30	101	Wei Zhao, Qi Liao and Yongtu Liang	A bilevel optimization model to decide the optimal capacity allocation of natural gas network

Day 2: Sep. 3

16:30 - 16:45	93	Zhengyi Luo and Jinqing Peng	Many-objective optimal dispatch of residential PV-battery-flexible load systems considering the benefits of different stakeholders
16:45 - 17:00	177	Ecike Ewanga Diieudonné and Damien Ernst	Decision making and risk aversion under uncertainty in energy renewable and operational of flexibility of distribution system network
Room Small Hall Panel: UNILAB-Big Data Analytics for Smart Energy Systems			
Time	Session Chair	Speakers	Summary
9:00 – 10:30	Prof. Yanli Liu Prof. Junhua Zhao		The comprehensive digitization, informatization, and intelligence of the energy system have made the amount of relevant data increase exponentially, and it has the remarkable characteristics of massive, multi-source, heterogeneous, and so on. By combining massive data with collected information from different links of the energy system, various entities, such as power utilities, customers, energy investment, society, etc., can use big data analytics technology to deepen the understanding of the energy system and its relevant links and create new value. So, a new UNILAB focus on Big Data Analytics for Smart Energy Systems was launched and this panel will discuss frontier research in this area, publish the 1st competition winners and their work.

Day 3: Sep. 4

Room Small Hall Zoom 3-A Session Name: BIPV Session Code: Session D3M1 Session Chair: Asso Prof. Hao Yu/Dr. Zhiling Guo			
Time	Paper ID	Author	Paper Title
9:00-9:15	97	Zhengyuan Lin, Zhiling Guo, Hongjun Tan, Xiaoya Song, Haoran Zhang and Jinyue Yan	INVESTIGATING THE POTENTIAL OF GENERATIVE AI ON PHOTOVOLTAIC PANEL SEGMENTATION
9:15 – 9:30	189	Benny Susanto, Muhammad Agung Bramantya, Hifni Mukhtar Ariyadi, Indarto Indarto, Agusssalim Syamsuddin and Eko H ariyostanto	Design and Numerical Study of Low-Speed Propeller Wind Turbine for Frontier Regions in Indonesia
9:30 – 9:45	84	Yu Gong, Zhiling Guo, Xinyu Li, Zhenjia Lin, Haoran Zhang and Jinyue Yan	A Deep Learning Approach to Assessing Solar Power Production Potential through Solar Forecasting and Photovoltaic Panel Segmentation
9:45 – 10:00	86	Somchart Chantasiriwan	Integration of Parabolic Trough Collectors and Blowdown Heat Recovery System with Biomass Power Plant: A Solution for Solar Energy Intermittency
10:00-10:15	115	Guiyuan Xiao, Xinyuan Li, Haoran Zhang, Qi Chen and Zhiling Guo	Detecting building integrated PV from remote sensing images with transformers
10:15-10:30			
10:30-10:45	TEA/COFFEE BREAK		
Room Small Hall Zoom 3-A Session Name: BIPV Session Code: Session D3M2 Session Chair: Asso Prof. Rui Jing/Dr. Zhenjia Lin			
10:45 – 11:00	120	Bo Wang, Mengmeng Wang, Xiaodan Shi, Qi Chen, Jian Yang and Zhengjia Zhang	Identification and localization of Photovoltaic Defect from UAV Thermal Infrared Data Based on Photogrammetry and Deep Learning
11:00 – 11:15	124	Xiaofan Feng, Zhiling Guo and Zhengjia Zhang	Assessment of PV potential in mountain areas using four Muti-Criteria Decision Methods
11:15 - 11:30	130	Hongru Wang, Yujian Ye and Yi Tang	Risk security region for distribution network based on active deep learning
11:30 - 11:45	145	Coco Yin Tung Kwok and Man Sing Wong	Citywide Solar Irradiation Map for Building Rooftops in Hong Kong
11:45 - 12:00	175	Hongsheng Wang, Tong Liu and Hui Kong	Solar CO2 splitting coupling with PV, photon-enhanced thermionic emission cell and SOEC for efficient full-spectrum utilization in a wide temperature range
12:00 - 12:15	186	Zhiguang Qian, Qiang Wang, Like Yue, Shuo Wang, Yu Zhu and Shixue Wang	Effect of PPS and PTFE mixed hydrophobic agent on the performance of micro-porous layer of proton exchange membrane fuel cell
Room 301 Zoom 3-B Session Name: EV Session Code: Session D3M3 Session Chair: Prof.Xi Jiang/Dr. Xiaodan Shi			
Time	Paper ID	Author	Paper Title
9:00-9:15	5	Qing Yu, Zhen Wang, Yancun Song, Xinwei Shen and Haoran Zhang	Exploration of Vehicle-to-Grid Potential for Electric Taxi Fleets Based on High-Resolution Spatio-Temporal Trajectory Data
9:15 – 9:30	23	Shan Xue and Ran Tu	Re-assessing the Eco-Driving Algorithm Considering the Heterogeneity of Human Drivers
9:30 – 9:45	57	Lingyi Yang, Bin Su and Tsan Sheng Ng	Integrating Electric Vehicles and Power Sector for China's Decarbonization Strategies through Input-Output Modeling
9:45 – 10:00	75	Xinming Li, Wei Sun, Yongchun Wang, Haibo Li, Jianru Qin and Xinmei Yuan	Stochastic optimal scheduling for vehicle-grid-integration considering uncertainty in photovoltaic power output
10:00-10:15	98	Yingyue Li, Hongjun Li and Yi Zhang	Design of Solar-Powered Off-Grid Shared Electric Micromobility Hub
10:15-10:30	74	Yifan Ma, Wei Sun, Zhoujun Zhao, Leqi Gu, Hui Zhang, Yucheng Jin and Xinmei Yuan	A physically-interpretable data augmentation method for estimating the energy consumption of electric vehicles
10:30-10:45	TEA/COFFEE BREAK		

Day 3: Sep. 4

Room 301 Zoom 3-B Session Name: EV Session Code: Session D3M4 Session Chair: Dr. Ran Tu/Dr. Qing Yu			
10:45 – 11:00	103	Yuan Wang and Ning Mao	Thermal performance of a hybrid battery thermal management systems with PCM and microchannel liquid cooling
11:00 – 11:15	108	Haiyue Yu, Lei Wang and Chengjin Ye	Volt/var regulation exploited from EV charging facilities in urban power distribution systems considering dynamic traffic flow
11:15 - 11:30	137	Yonghyun Kim and Sanggyu Kang	Modeling and simulation of Polymer Electrolyte Membrane Fuel Cell(PEMFC) – Battery Hybrid Propulsion System for Drones
11:30 - 11:45	95	Liang Chang and Baodi Zhang	Online multi-objective optimization of powertrain control parameters for fuel cell vehicles in a networked scenarios
11:45 - 12:00	63	Zixuan Kang, Zhongnan Ye, Xinyu Yan and Shu-Chien Hsu	Greener or more stable? Balancing CO2 emission mitigation and grid stabilization in electric vehicle charging coordination on a distribution grid
Room 302 Zoom 3-C Session Name: Energy management, policy&Economic Session Code: Session D3M5 Session Chair: Dr. Bo Shen/Dr. Dina			
Time	Paper ID	Author	Paper Title
9:00-9:15	6	Liang Zhuang and Zhu Lei	Is It Consistent with Carbon Neutrality Transition? A Subsequent Impacts Analysis of Coal to Electricity in “2+26” Cities
9:15 – 9:30	11	Lei Zhu, Yuan Xu, Junqi Liu and Qin Li	A Theory of Optimal Subsidy: Willingness to Adopt and the Development of Carbon-Mitigation Technologies in China
9:30 – 9:45	20	Tongyao Zhang, Ling Jin and Jia Li	Technology Selection for Industrial Carbon Capture Projects: An Analytical Hierarchy Process -Based Evaluation
9:45 – 10:00	32	Dina Azhgaliyeva, Hai Le, Resi Olivares and Shu Tian	Renewable Energy Investments and Feed-In Tariffs: Firm-Level Evidence from Southeast Asia
10:00-10:15	205	Juan C. Gonzalez Palencia, Masamichi Sekine and Mikiya Araki	Optimum Design of a Hydrogen Production System Under Different Constraints for CO2 Emissions
10:15-10:30			
10:30-10:45	TEA/COFFEE BREAK		
Room 302 Zoom 3-C Session Name: Energy management, policy&Economic Session Code: Session D3M6 Session Chair: Prof. Wenying Chen/Dr. Dan Yu			
10:45 – 11:00	216	Xin Cao, Zechen Zhang, Yuan Qian, Xiaomin Cui , Chenyu Zhou and Zongguo Wen	The Spatial Pattern, Driving Factors and Evolutionary Trend of Energy Cooperation and Consumption in the “Belt and Road Initiative” countries
11:00 – 11:15	110	Chang Shu, Feng Xu, Shengnan Li and Nan Xiang	Dynamic simulation of carbon peak pathways in Shandong province of China driven by energy system optimization
11:15 - 11:30	49	Himanshu Dehra	MODELLING NOISE BEHAVIOUR TAXES AND MITIGATING CLIMATE CHANGE IN SUSTAINABLE ECO-CITIES OF MONARCHY OF CONCORDIA
11:30 - 11:45	126	Danni Lu, Nianyuan Wu, Jian Lin, Shan Xie, Rui Jing and Yingru Zhao	Research and design of carbon inclusion mechanism involving integrated energy service providers in the view of CPSS
11:45 - 12:00	134	Chuyi Luo and Liang Xia	Comparative Analysis of Renewable Energy incentive policies strategic: Case Studies and Policy Recommendations for China Sustainable Development
Small Hall Panel ADBI Session on Energy Transition			
Time	Session Chair	Speakers	Summary
14:00-17:00	Research Fellow Dina Azhgaliyeva	Dr. Dina Azhgaliyeva Dr. Anna Arkhangelskaya Dr. Nikolaos A. Kyriazis Dr. Le Vu Hai Dr. Anh H. Le	Energy transition is critical to realizing accessible and sustainable energy for all by 2030, as called for by Sustainable Development Goal 7, to implement Nationally Determined Contributions, and promote net zero carbon emissions to fight climate change. Yet, achieving these climate objectives is highly challenging for developing Asia. This hybrid ADBI session will explore energy transition, to take place as a part of the Applied Energy Symposium on Low Carbon Cities & Urban Energy Systems.

Day 3: Sep. 4

Room 301 Zoom 3-B
Session Name: Materials & Energy
Session Code: Session D3A1
Session Chair: Dr. Ria ANIZA/Dr. Juan C. Gonzalez Palencia

Time	Paper ID	Author	Paper Title
13:30-13:45	188	Yang Li, Mingkai Liu, Jinrui Zhang, Tianlong Yang, Qiong Rao, Zhongrui Gai and Ying Pan	Iron-based oxygen carrier particles with high performance for mid-temperature methane based chemical looping reforming
13:45-14:00	51	Xing Shi, Guangcai Gong, Xi Fang, Yuxin Wang and Yuting Huang	Experimental and a dual-scale correlation method of the moisture buffering capacity of humidity control materials
14:00-14:15	54	Lulu Wang, Mengbin Li and Xiaogang Yang	Effect of shear rate and soft-templating approach on activated carbon microspheres synthesized by hydrothermal carbonization
14:15-14:30	142	Wei-Hao Huang, Chih-Chang Chang and Ruey-Jen Yang	Experimental Investigation of Osmotic Power Generation Utilizing High Ion-Selectivity MoS ₂ Nanochannel Membranes
14:30-14:45	172	Jinrui Zhang, Tianlong Yang, Qiong Rao, Yang Li, Zhongrui Gai and Ying Pan	Photo-enhanced Catalytic DRM on Ni@SiO ₂ with High Resistance to Carbon Deposition
14:45-15:00	198	Juhuang Song, Yuan Wang, Lingfei Qi, Jinyue Yan, Daning Hao and Jiaoyi Wu	An electromagnetic air hybrid regenerative shock absorber for extended range of space exploration vehicles
15:00-15:15	207	Benny Susanto, Yohanis Tangke Tosuli, Rudi Hermawan, Cahyadi Cahyadi and Adi Surjosatyo	Material And Energy: Design and Experiment Sago Bark Gasification Process in Sentani Lake, Papua Island, Indonesia
15:15-15:30	210	Junhee Jeong, Seojin Lee and Byeong Wan Kwon	The study of low concentrated Ru-Doped LaFeO _{3-δ} perovskite catalyst for ammonia cracking

Room 302 Zoom 3-C
Session Name: Emission mitigation&Climate Change
Session Code: Session D3A2
Session Chair: Prof. Wenying Chen/Dr.Xinyi Li

13:30-13:45	223	Hui Zhang, Jing-Chun Feng, Yongming Shen, Bin Wang, Yan Xie, Yue Zhang and Li Tang	Thickening Characteristics of methane hydrate film in Gas-liquid Interface
13:45-14:00	220	Li Tang, Jing-Chun Feng, Hui Zhang, Canrong Li and Si Zhang	Investigation of methane seepage and geochemical indicators in porewater in "Haima" cold seep, South China Sea
14:00-14:15	227	Jianzhen Liang, Jing-Chun Feng, Si Zhang and Cun Li	Anaerobic oxidation of methane with conditions of increased temperature and extra sulfate supply
14:15-14:30	228	Cun Li, Jing-Chun Feng, Si Zhang and Jianzhen Liang	Methane Anaerobic Oxidation on Carbonate in Cold Seep Environments with High-Pressure Enrichment Cultivation
14:30-14:45	225	Cai Chaofeng, Feng Jing-Chun, Zhang Xiaochun and Zhang Si	Carbon Sequestration Capacity of Cold Seep Bivalves in the South China Sea
14:45-15:00	226	Zhou Yufan, Feng Jing-Chun, Zeng Xinyang, Pan Hua and Cai Chaofeng	A deep learning model for recognizing macrofauna community in cold seep area at Site F, South China Sea
15:00-15:15	224	Song Zhong, Jingchun Feng, Yongji Huang and Si Zhang	Growth and species coexistence modes of Anaerobic Methane-Oxidizing Archaea in a high-pressure incubation bioreactor
15:15-15:30	221	Yongji Huang, Jingchun Feng, Si Zhang and Song Zhong	Microplastics affect anaerobic oxidation of methane and sedimentary prokaryotic communities in cold seep areas
15:30-15:45	96	Mengzhen Zhao, Chi Zhang and Wenjia Cai	Adaptations to heat: the benefits of avoiding labor productivity loss and carbon concerns

Presentation Guide

Presentation

CUE2023 will be hold both on-line and on-site. All accepted papers will be oral presentations.

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

If you take part in on-line conference, it is recommended to download the app of Zoom (<https://zoom.us/>) and connect to the Zoom meeting room 15mins before your session starts. Please fill in your online presentation paper information in following website: https://docs.google.com/spreadsheets/d/1UgJoV0NmhoYWb5er52kYMTm42_cCYaz_tmhu9uYzq94/edit?usp=sharing

Please change your user name to your full name and your paper ID; Prepare a short bio, around 50 words, and share it in chat of Zoom. Your presentation should be in accordance with your allocated time.

It is 15mins for each paper, including a 12mins presentation and a 3mins Q&A.

Please always refer to the latest conference program, which can be downloaded from the conference website: www.applied-energy.org/cue2023, for actual presentation time.

The links of Zoom will be sent before the opening of the conference. If you need any help, please do not hesitate to contact us via cue2023@applied-energy.org.

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

Presentation Venues

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

Session Room	Zoom Link	Zoom ID	Password
1-A	https://mdu-se.zoom.us/j/69562474511?pwd=NjdOamxXZXpLWVo1MkR4eHBZdHY5Zz09	695 6247 4511	195792
1-B	https://mdu-se.zoom.us/j/62753235114?pwd=Z01sejFyME50V2puU2tXc0lmcklsQT09	627 5323 5114	147263
2-A	https://mdu-se.zoom.us/j/66941394976?pwd=NnhyTEowb20ybzl3bkFLdUt0aUVUdz09	669 4139 4976	730129
2-B	https://mdu-se.zoom.us/j/68345724533?pwd=SWZCN2pnTzFQRjkrY245MHB5TDE1QT09	683 4572 4533	531194
2-C	https://mdu-se.zoom.us/j/68903441931?pwd=TTJ4MHkrVIJINUwvNmNvTmlyR3Z2UT09	689 0344 1931	986147
3-A	https://mdu-se.zoom.us/j/66832044011?pwd=RSstvMkZzcz0M1E3L0NPUlg0SGplUT09	668 3204 4011	286036
3-B	https://mdu-se.zoom.us/j/67861349948?pwd=bjlORy9lb0tPUW1wTHI0cTh0QWhtQT09	678 6134 9948	946803
3-C	https://mdu-se.zoom.us/j/69792742099?pwd=UmNka3hoRzNDbFRidVREc3UybHZ5Zz09	697 9274 2099	224031

Useful Information

Registration

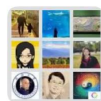
Official Registration Time

Date	Registration Venue	Tokyo Time
Sep 1, 2023 (Friday)	Small Hall	15:00pm - 17:30 pm
Sep 2, 2023 (Saturday)	Small Hall	8:00am - 9:00 am

*Note that the registration is always open during the conference. The above is the official centralized registration time. Please contact WeChat (doing_do)/Email (cue2023@applied-energy.org) for registration outside of the official registration time.

Wechat Group

Please scan and join our CUE2023 group chat for latest updates and announcements.



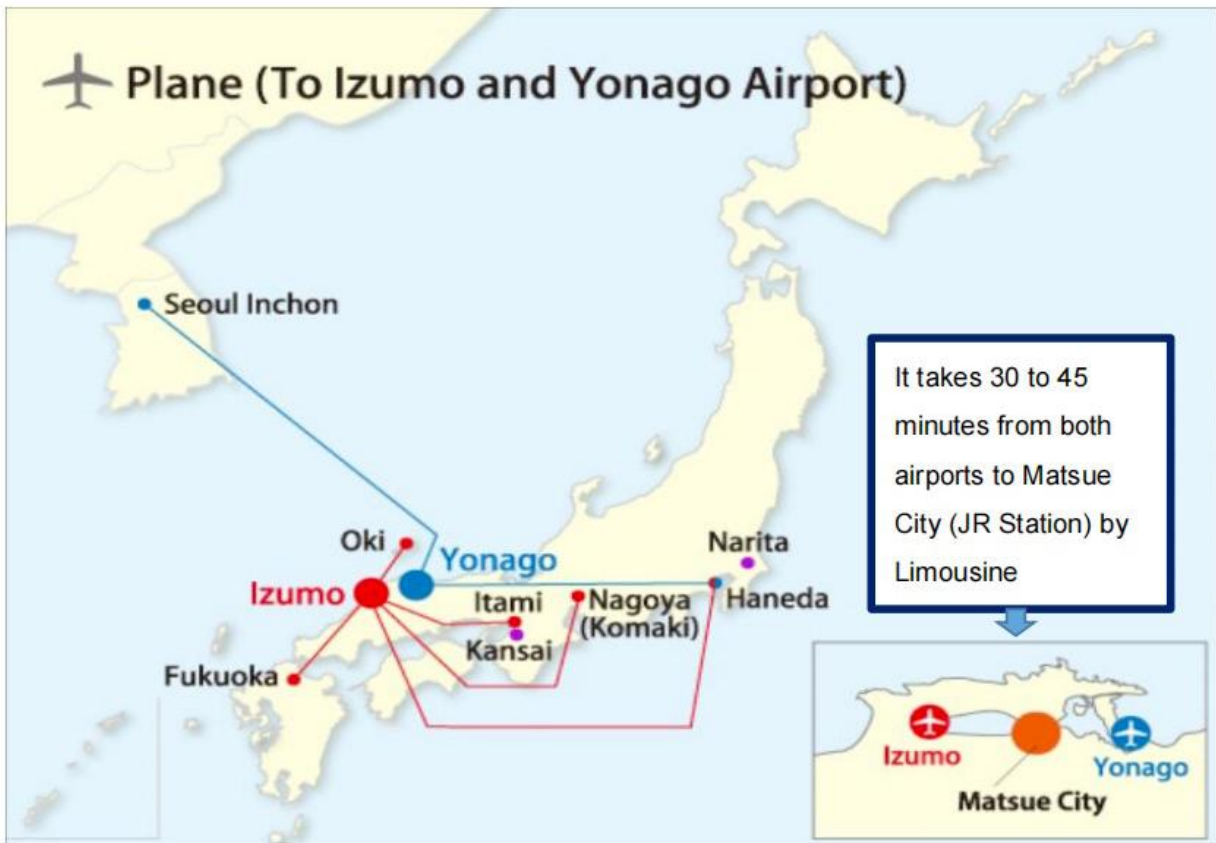
群聊: CUE2023
Participants



该二维码7天内(8月30日前)有效, 重新进入将更新

Useful Information

ACCESS to Matsue City



Six round trip flights a week (except Monday) from Incheon Airport to Yonago Airport, easy to access to Matsue.

Izumo Airport	Flight time(min)	Flights	Airline
Haneda(Tokyo)	80	5 round trip flights/day	JAL
Itami(Osaka)	60	4 round trip flights/day	JAL
Sendai	90	1 round trip flights/day	FDA
Shizuoka	80	1 round trip flights/day	FDA
Komaki(Nagoya)	60	2 round trip flights/day	FDA
Fukuoka	75	2 round trip flights/day	JAL

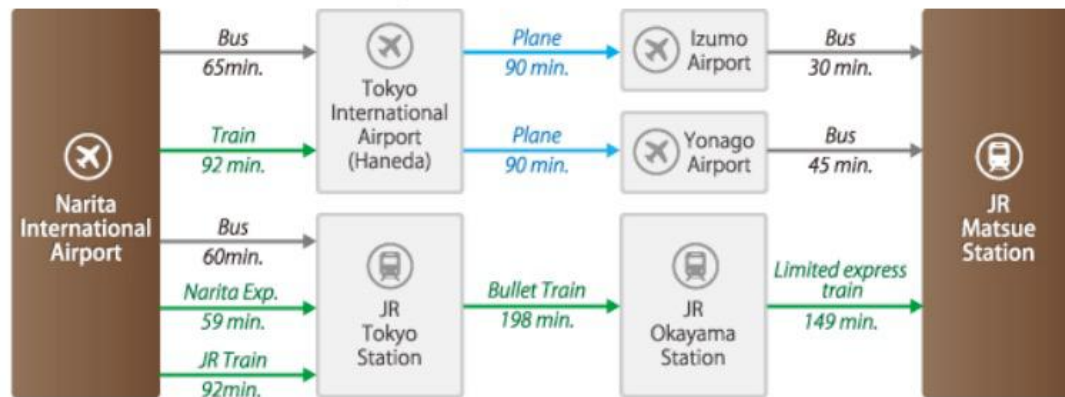
Yonago Airport	Flight time(min)	Flights	Airline
Haneda(Tokyo)	75	6 round trip flights/day	ANA
Seoul	90	6 round trip flights/week	AAR
Hong Kong	185	3 round trip flights/week	CRK

Useful Information

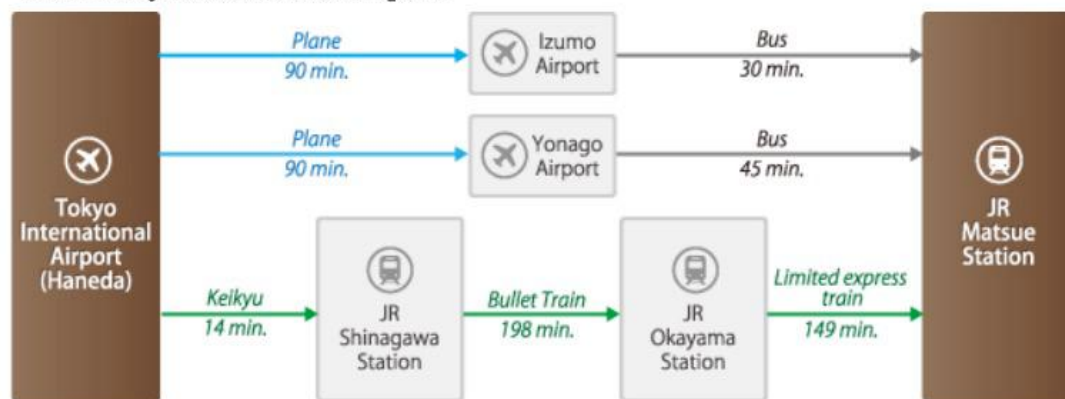
Access From International Airports to Matsue

 → Train  → Bus  → Plane

< From Narita International Airport >



< From Tokyo International Airport >



< From Kansai International Airport >



< From Incheon Airport, South Korea >



Useful Information

Accommodations

Matsue City offers many options in terms of accommodation ranging from affordable priced hotels to high quality hotels. Many of the City's hotels are concentrated around the Matsue JR Station and the area around the Matsue Shinjiko Onsen Station. In total, there are roughly 3,000 guest rooms available in these areas. In addition, the transportation from the hotels to each convention facilities is convenient.

Hotel 3,233rooms (4,527 people)

Ryokan* 1,153 rooms (5,370 people)

*Japanese style hotel with hot spring



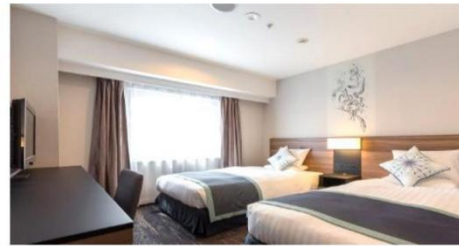
*Matsue Shinjiko Onsen Station: 2.2km from Kunibiki Messe

*JR Matsue Station: 900m from Kunibiki Messe

Useful Information

~Hotels in Matsue City~

① Matsue Excel Hotel Tokyu



This hotel is located in front of JR Matsue Station, and it takes only 3 minutes from the station to the hotel on foot, also, it takes only 6 minutes from the hotel to KUNIBIKI MESSE (Convention center). The building has renovated on April. 2015.

Capacity of accommodation: 265 people (163 rooms)

Charge: 10,000 yen (about 93 US\$) (single room, one night, include breakfast and tax)

Free Internet is available in all rooms

Address: 590 Asahimachi Matsue City, Shimane Prefecture, 690-0003

Tel: +81-852-27-0109 fax: +81-852-25-1327 E-mail: matsue-e.ro@tokyuhotels.co.jp

URL: http://www.tokyuhotelsjapan.com/en/hotel/TE/TE_MATUE/index.html

Useful Information

②Hotel Ichibata



This hotel is located in front of Lake Shinji. The large banquet hall is up to 1,000 people catered in a buffet style. This hall and most of the rooms in the hotel offer a magnificent view of Lake Shinji.

Capacity of accommodation: 380 (142 rooms)

Charge: 10,860 yen (about 119 US \$) (single room, one night, include breakfast and tax)

Free Internet is available in all rooms

Address: 30 Chidori-cho Matsue City Shimane Prefecture, 690-0852

Tel: +81-852-22-0188 fax: +81-852-22-0230 E-mail: hotel@ichibata.co.jp

URL: <http://www.ichibata.co.jp/hotel>

Useful Information

③ Business Hotel in Matsue

	ホテル名	料金(※1) シングル (円/泊・人)	料金(※1) T・Bの1名利用 (円/泊・人)	部屋数					英語対応 (※2)	WiFi	くにびきメッセ からの距離
				シングル	ツイン	ダブル	その他	合計			
③	ドリーミンEXPRESS松江 https://www.hotespa.net/hotels/matsue/	7,000~	10,000~	61	9	59	8	137	◎	○	1.1km(徒歩15分)
④	松江ユニバーサルホテル本館 http://www.universal-group.co.jp/page008.html	4,900~	7,980~	154	87	11	56	308	×	○	1.0km(徒歩13分) ロビーとレストランのみ○、客室は×
⑤	ホテル白鳥 https://www.hotel-hakucho.jp/	8,532~	10,800~	36	21	0	3	60	○	○	1.9km(徒歩25分)
⑥	グリーンリッチホテル松江駅前 http://www.gr-matsue.com/	6,200~	12,400~	128	32	0	0	160	◎	○	990m(徒歩14分)
⑦	ホテルルートイン松江 https://route-inn.co.jp/hotel_list/shimane/index_hotel_id_79/	6,400~	7,300~	100	39	13	5	157	◎	○	790m(徒歩12分)
⑧	東横イン松江駅前 https://www.toyoko-inn.com/search/detail/00098/	6,200~	8,200~	168	6	14	1	189	○	○	990m(徒歩14分)
⑨	ホテルアルファワン松江 http://www.alpha-1.co.jp/matsue/	5,700~	7,000~	180	9	8	0	197	○	×	1.1km(徒歩13分) (無線ルーターの貸出あり)
⑩	ホテルアルファワン第2松江 http://www.alpha-1.co.jp/matsue_2/	5,500~	6,500~	142	9	9	0	160	×	○	770m(徒歩11分)
⑪	スーパーホテル鳥根・松江駅前 https://www.superhotel.co.jp/s_hotels/matsue/	6,600~	6,600~	94	0	0	0	94	◎	○	900m(徒歩11分)
⑫	松江駅前ユニバーサルホテル http://www.universal-group.co.jp/page011.html	4,490~	7,980~	625	0	125	0	750	×	×	930m(徒歩11分)
⑬	松江ニューアーバンホテル http://new.matsue-urban.co.jp/	5,500~	10,000~	120	21	10	18	169	○	○	1.5km(徒歩20分)
⑭	松江アーバンホテル http://station.matsue-urban.co.jp/	4,500~	8,000~	94	8	11	0	113	◎	○	650m(徒歩9分)
⑮	松江プラザホテル http://www.m-plazahotel.jp/	4,200~	8,000~	129	10	9	0	148	○	○	880m(徒歩13分)

(※1) 利用時期、曜日、その他条件等により変動しますので、あくまで参考としてお考えください。

(※2) 英語対応について：「◎」会話対応可能、「○」簡単な会話なら可能、「×」対応不可

Useful Information

Meal, Banquet and Visit

Meals arrangement

	Sep 2	Sep 3	Sep 4
Tea Break	Multipurpose hall/3rd floor	Small Hall/3 rd Floor	Small Hall/3 rd Floor
Lunch	Small Hall	Small Hall	Small Hall
Dinner	Yuushien	N/A	N/A

Banquet ~Yuushien~

~Yuushien~

Yuushien is a traditional Japanese-style garden which resplendent year-round with a variety of seasonal blooms. Especially, peonies kept in a greenhouse, where their blossoms viewed all year round. There are restaurants in the garden. The participants enjoyed fine cuisine utilizing local ingredients with a beautiful garden scenery.

(Capacity: 200 people)

Fee : Please refer to Page18 for more information.

URL : <http://www.yuushien.com/yuushien/>

出雲の國の箱庭
ぼたんと雲州人蔘の里

由志園

Unique Venue for Banquet



Useful Information

How to Yuushien

The conference committee will organize the participants from the conference hall to Yuushien. Please wait at the main entrance of the conference hall.

Visit

Date	Activity
Sep 4 14:00-15:30	Visit the ADACHI MUSEUM OF ART
Sep 6 14:00-17:00	Visit the University of Tokyo(Hongo)
Sep 7 10:00-12:00	Visit Bureau of Sewerage-Ochiai Water Reclamation Center

ADACHI MUSEUM OF ART



| Great Gardens and Yokoyama Taikan Collection

The first question visitors to the Adachi Museum of Art ask, indeed the one they most often ask, is why there are so many works by Yokoyama Taikan. Visitors also seem puzzled by the Japanese-style garden, as though it is a mystery for such a magnificent garden to be located here in such a rural setting.

The answer to both puzzles lies with Adachi Zenko, the museum's founder. Adachi felt a strong resonance between the sublime sensibility of the Japanese-style garden and the paintings of Yokoyama Taikan which he wished visitors to experience. Adachi constructed his Japanese garden with the hope that through its seasonal expression of natural beauty visitors would be inspired to view Taikan's paintings with a renewed sense of appreciation. This new appreciation would then lead to increased interest in the works of other Japanese painters, fulfilling Adachi's hope that visitors would be "moved by beauty."



The Dry Landscape Garden

Useful Information

| History of The Museum



Adachi Zenko at the age of 14, when he was already in business (behind the center)

Adachi Zenko was born on February 8, 1899, in Iinashi Village in what is now 320 Furukawa-cho, Yasugi City, Shimane Prefecture, the site of the museum. Immediately after primary school, he went to work on his family's farm, but seeing that his parents' hard work was to no avail, he resolved to become a merchant.

At age 14, he took a job hauling charcoal by handcart from the countryside, near where the museum stands today, to the port of Yasugi 15 kilometers away. One day it occurred to him that he could probably sell charcoal to the people living along his route, so he ordered extra, which indeed he was able to sell. When Adachi discovered that he could double his income this way, he became interested in business. Throughout his life, this interest in business was expressed in many ways. He became a textile wholesaler in Osaka after World War II, and also dabbled in real estate. At the same time, he began collecting works by Japanese painters, something he had loved since his youth, and eventually became known as an art collector.

Designing gardens, something he had loved above all else since his youth, became a passion. Finally, in 1970, at the age of 71, as a way of showing gratitude to his hometown and to enhance the cultural development of Shimane Prefecture, Adachi established the Adachi Museum of Art.

Adachi's passion for collecting art was well known, but perhaps his greatest accomplishment was his 1979 combined purchase of several Taikan works from the Kitazawa Collection, including *Autumn Leaves*, *Mountain after a shower*, and *Summer*.

| Story of Collecting Paintings

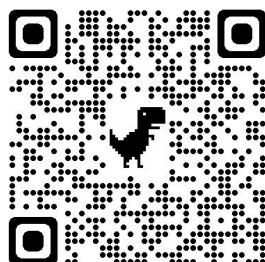
When he first saw *Autumn Leaves*, a pair of six-panel folding screens, at the Exhibition of Yokoyama Taikan in Nagoya in 1978, its beauty took his breath away. Seeking to learn more about this work, he discovered that it was a part of the elusive Kitazawa Collection, known as the "phantom collection" because few of the artworks had ever been exhibited. The administrator of the collection at the time was also in possession of nearly 20 other Taikan's works, most of which had been entered by the artist in various competitions and were therefore relatively well known.

Even more surprising was that the collection contained *Mountain after a shower*, a work that Adachi had long fascinated over, framing a reproduction he had cut out of a book. After two years of tough negotiating for these works, the collection's administrative committee declared at the last minute that they wanted to remove *Mountain after a shower* and *Summer* from the works on sale. For Adachi, this was tantamount to heartbreak, and he made an impassioned plea to the committee. In his autobiography he described the moment thus: "It was as if I had fallen in love with a *geisha* at first sight, and then, after seeing her regularly for two years, all the while negotiating the price for her release, watching her run away clutching her pillow on the night of the nuptial rites." He eventually convinced the committee to sell him the



Yokoyama Taikan "Autumn Leaves"

The detailed introduction of ADACHI MUSEUM OF ART can be seen in this website: <https://www.adachi-museum.or.jp/en/>. If you are interested in the visit of ADACHI MUSEUM OF ART, Please scan the following QR code to sign up.



Useful Information

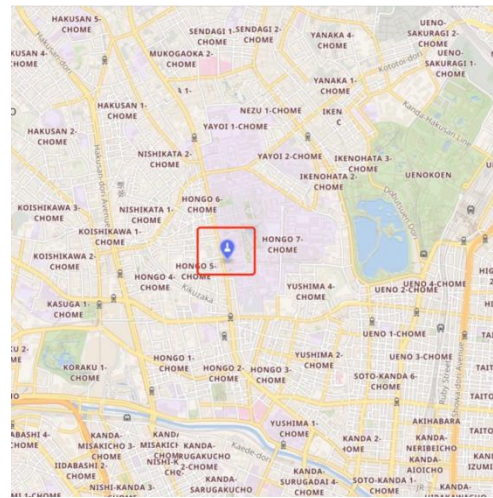
The University of Tokyo(Hongo)

The University of Tokyo aims to be a world-class platform for research and education, contributing to human knowledge in partnership with other leading global universities. The University of Tokyo aims to nurture global leaders with a strong sense of public responsibility and a pioneering spirit, possessing both deep specialism and broad knowledge. The University of Tokyo aims to expand the boundaries of human knowledge in partnership with society.

A tour visit to the campus of the University of Tokyo at **2: 00 p. M. on September 6** will be organized by the conference committee. Please interested participants gather in front of **Akamon Gate** (on the campus side) 10 minutes before the tour.



Akamon Gate of The University of Tokyo



Bureau of Sewerage-Ochiai Water Reclamation Center



Useful Information

Water environment cultivated by the district Ochiai Water Reclamation Center

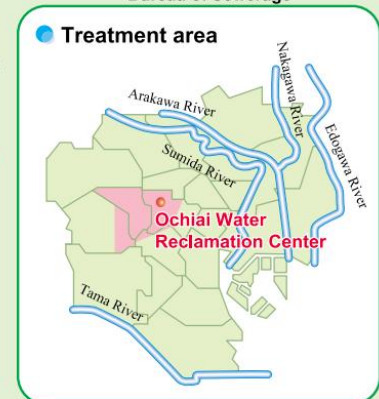
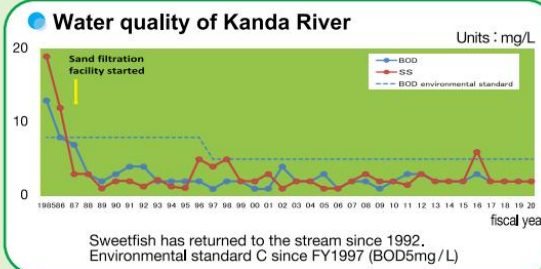


Earth-kun, the mascot of
Bureau of Sewerage

Located very close to the subcenter of the Shinjuku area, Ochiai Water Reclamation Center is environment-friendly and thoroughly controlled as a water reclamation center surrounded by residential districts. The treatment area is in the Ochiai Treatment District (3,506 ha). It comprises Nakano Ward, and parts of Shinjuku, Setagaya, Shibuya, Suginami, Toshima and Nerima Ward.

The treated water is discharged to Kanda River, with some part used effectively for toilet water in buildings of Nishi-shinjuku and Nakano-sakaue districts and for restoration of streams in three rivers which nearly dried up in the southern downtown area of Tokyo.

The generated sludge is pumped through pressure pipelines to Tobu sludge plant for treatment.



(As of April 2023)

- Operation started: March 1964
- Site area: 85,143m²
- Treatment capacity: 450,000 m³/day
- Wastewater treatment facilities
 - Grit chamber: 8
 - Primary sedimentation tank: 10
 - Reaction tank: 10
 - Secondary sedimentation tank: 12
 - High-rate filtration system: 1
 - Sand filtration tank: 33
- Storage tank in wet weather: 13,000m³

Average quality of influent and final effluent

The final effluent from the water reclamation center complies completely with the water quality standards of the Tokyo Metropolitan Environmental Security Ordinance and is sufficiently clean for fish to live in.

(Units: mg/L)

Item	Influent		Final effluent	Regional water quality standards
	Extra-low stage	High stage	High stage	
B O D	250	140	2	25 or below
C O D _{Mn}	120	100	7	—
Total nitrogen	37.8	33.6	13.1	30 or below
Total phosphorus	4.8	3.5	2.1	3 or below

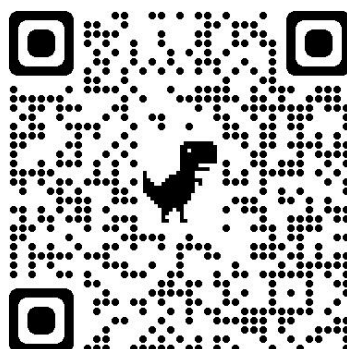
Average values of 24-hour test conducted in FY2021

※The higher values of BOD and COD indicate the higher levels of water contamination. BOD describes the amount of oxygen required by microorganisms to eat organic material in water, and COD describes the amount of oxygen required by oxidizer to decompose organic material in water. The quality levels of discharged water are specified in terms of BOD for rivers and COD for seas. Total nitrogen and total phosphorus are closely related to the generation of red tides.

BUREAU OF SEWERAGE
TOKYO METROPOLITAN GOVERNMENT

More detail about **Sewerage-Ochiai Water Reclamation Center** can be seen in this website: <https://www.gesui.metro.tokyo.lg.jp/business/b4/guide/sise-list/03-09/>.

If you are interested in the visit of **Sewerage-Ochiai Water Reclamation Center**, Please scan the following QR code to sign up.



Acknowledgements



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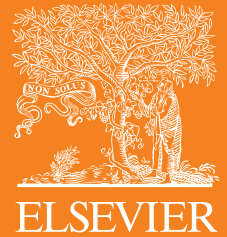
<http://www.energy-proceedings.org/>



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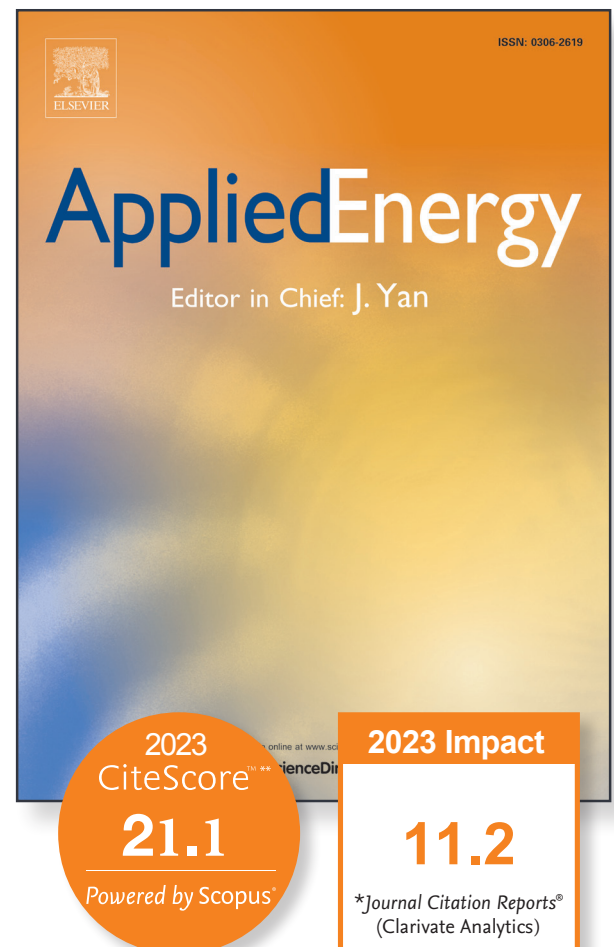
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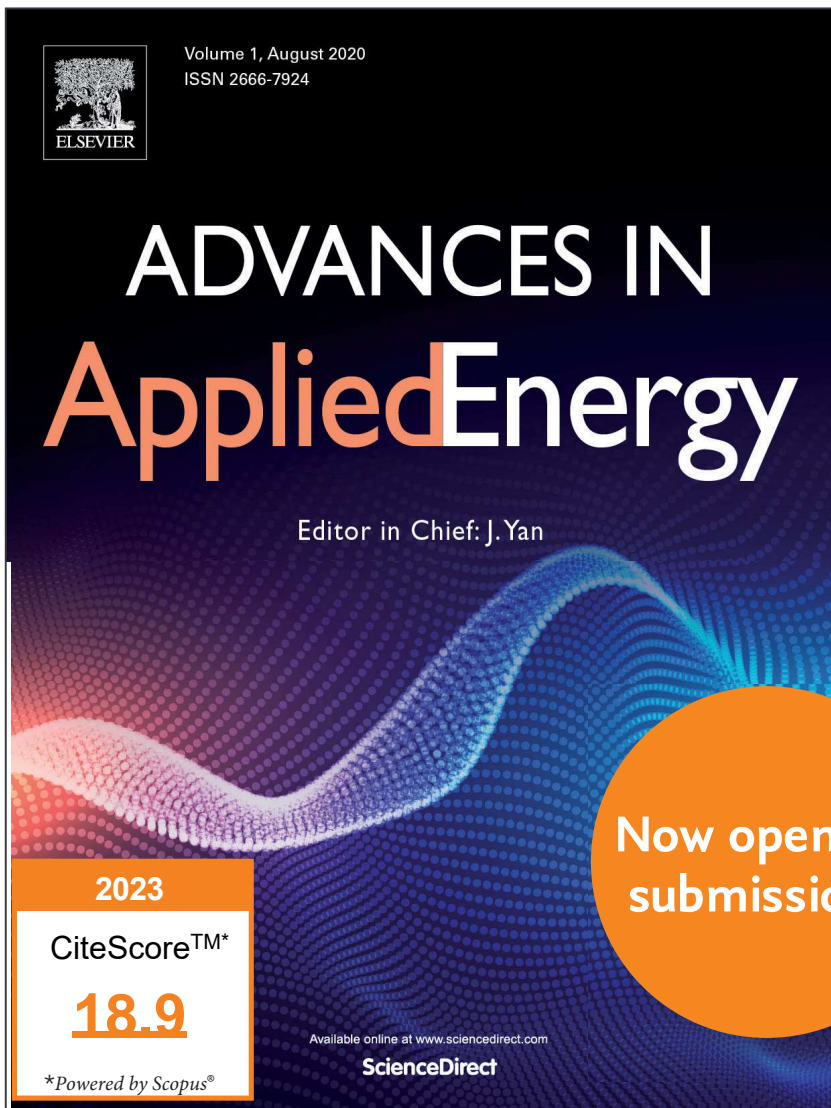
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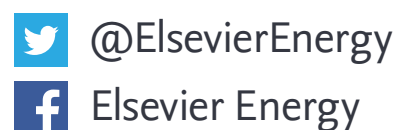
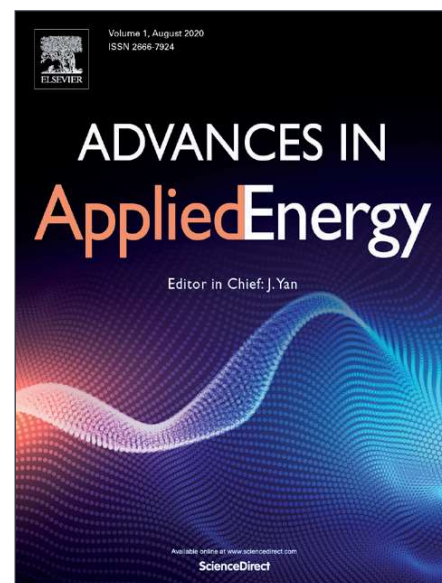
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Energy Transitions towards Carbon Neutrality

15th International Conference on Applied Energy

Dec. 3-7, 2023

www.applied-energy.org/icae2023



Welcome to ICAE2023, the 15th International Conference on Applied Energy!

After three years of worldwide travel restriction due to Covid-19, the entire world is finally opening up and returning to normal. As a result, after holding online/hybrid International Conference of Applied Energy in the past three years, ICAE 2023, the 15th International Conference on Applied Energy, is now planned as an onsite* event from December 3 to 7, 2023 at Qatar University, Doha, the host city of FIFA World Cup 2022, in the State of Qatar. We are looking forward to seeing as many of you as possible face to face once again. The theme of ICAE2023 is **Energy Transitions towards Carbon Neutrality**. ICAE2023 will include keynotes and invited speeches, plenary sessions, dedicated workshops, oral and poster presentations, and exhibitions. The conference intends to represent the interdisciplinary character of the challenges, which are related to the ultimate goal of Sustainable Future. The list of addressed topics includes (but is not limited to):

- Clean Energy Conversion Technologies
- Renewable Energy including hydrogen energy
- Mitigation Technologies
- Intelligent Energy Systems
- Energy Storage
- Energy Sciences
- Energy Management & Firm Sustainability
- Policy, Ethics, Energy Economics & Regulations

Key Dates:

- Submission open: May 1, 2023
- Deadline for draft short papers/abstracts: Sep. 15, 2023
- Paper update due: Oct 15, 2023
- Final program online: Nov. 15, 2023

- Registration open: Jun 15, 2023
- End of early bird registration: Oct. 1, 2023
- Final to change mode of participation: Oct. 20, 2023
- Closure of online registration: Nov. 10, 2023
- Conference: Dec. 3-7, 2023

As a special topic of ICAE 2023, **Hydrogen Energy** will be highlighted.

For more information, please visit www.applied-energy.org, or contact: icae2023@applied-energy.org
Please contact us if you would like to propose and organize a session, a panel, a workshop, or a special forum at the conference.

All papers will be peer-reviewed, and accepted papers are required to be presented orally or as poster at the conference. Selected papers from ICAE2023 will be recommended by the Session Chairs and Scientific Committee for further consideration of publication in prestigious journals including Applied Energy, Advances in Applied Energy and other journals.

We look forward to meeting you at ICAE2023 in Doha, Qatar!



Prof. Saud Ghani, Chair of ICAE2023
Head of Mechanical and Industrial Engineering Dept.
College of Engineering, Qatar University

Prof. J. Yan, Co-Chair of ICAE2023 and
Editor in Chief of Advances in Applied Energy

Call for Papers
Deadline for abstract
Sept. 15, 2023

About Matsue

Matsue, Shimane Prefecture ~off the beaten path~



Matsue is the capital of Shimane Prefecture, which is located in the south west of Japan's largest island. Matsue is located between Sea of Japan and two lakes, so it well known as a city of water: Surrounded by beautiful nature, Matsue built as a castle town. Since 1611, Matsue castle where ddesignated as a national treasure in 2015 has been the symbol of our city.

In addition, Matsue is the birthplace of Japanese culture and origin of conventions in Japanese Mythology. Today, you can still visit the entrance to the underworld and the shrine that all Japanese gods gather to hold meeting once a year.

France's travel guide "Michelin Green Guide Japan" introduces it with two stars in the tourist area, shows the city leave "Old Japan image". More,it is also introduced with three stars (must see) in "Guide Bleu Japon"

Sincerely hope the all attendees of 「 Applied Energy Symposium and Forum: Low Carbon Cities and Urban Energy (CUE2023) Jcould enjoy the mythology and old Japan feeling in Matsue.

www.applied-energy.org/cue2023

