

# REM

RENEWABLE ENERGY INTEGRATION with  
MINI/MICROGRID

REM 2017: **CONFERENCE PROGRAM**

Renewable Energy integration with Mini/Microgrid  
**APPLIED ENERGY SYMPOSIUM AND FORUM**

**TIANJIN, CHINA**

18-20 OCT, 2017





# *Call For Papers*

## **Topics**

- Low carbon cities
- Urban energy systems
- Urban planning integrated with energy systems
- Energy efficiency in buildings
- BIPV & renewable energy applications in urban systems
- Smart cities and microgrid
- Smart home energy management systems
- EV and eco-traffic
- High-efficiency vehicle engines
- Energy storage
- Urban wastes to energy
- Urban emissions mitigation
- Low carbon and ecological city indicators
- Distributed energy systems
- District heating and CCHP
- Nexus of energy-water in urban system
- Climate change and cities
- Policy options targeting low-carbon energy systems
- Responses to low carbon energy transition
- Demand side management
- Distributed wireless sensors and power transfer
- Big data and visualization for energy management systems

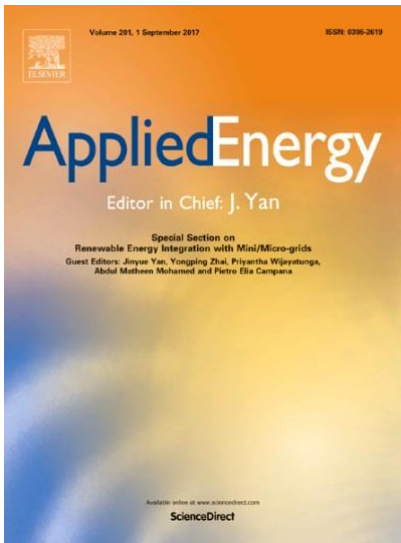
*Deadline for draft paper: Mar. 31, 2018*

*Notification of acceptance: Apr. 30, 2018*

*Deadline for final paper: May. 15, 2018*

Special Issue of selected papers from CUE2018 will be published in prestigious journals including Applied Energy (IF:7.182)

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# Applied Energy

Applied Energy provides a forum for information on innovation, research, development and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, analysis and optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems. The breadth of coverage ranges from innovative technologies and systems of both fossil and renewable energy to the economic industrial and domestic use of energy with no or minor impact on the environment. Applied Energy is also concerned with the attendant problems of modeling and forecasting, conservation strategies, and the environmental, social and economic impacts of energy policies and usage, including climate change mitigation and other environmental pollution reduction.

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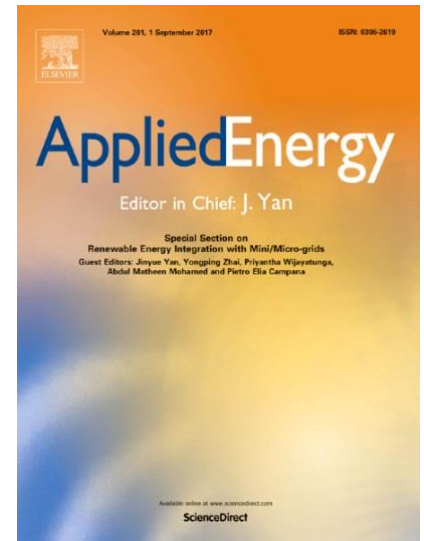
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# *Call For Papers*

*Deadline for draft paper: Jun. 30, 2018  
Notification of acceptance: Aug. 1, 2018  
Deadline for final paper: Sept. 1, 2018*

## **Topics**

- High penetration of renewable energy
- Mini/microgrid
- Technology innovation
- Implementation
- Commercialization
- Financing & policy

Special Issue of selected papers from REM2018 will be published in prestigious journals including Applied Energy (IF:7.182)



# Welcome to REM2017



**REM 2017: Renewable Energy integration with Mini/Microgrid  
APPLIED ENERGY SYMPOSIUM AND FORUM 2017**

**OCTOBER 18-20, 2017, TIANJIN, CHINA**

## **Welcome to Applied Energy Symposium and Forum, REM2017: *Renewable Energy Integration with Mini/Microgrid***

The increasing share of variable renewable energy sources, strict targets set for the reduction of greenhouse gas emissions and the requirements on improvement of system security and reliability are calling for important changes in our energy systems. Distributed renewable energy and microgrids have emerged as effective ways for improving the quality of energy service given various types of renewable integration, and other challenges to the legacy system. The integration of distributed renewable energy and microgrids is significantly increasing the coupling and interactions between sources, and between supply and end use, at various scales (from multinational, national, and community scale down to building level). The need for energy storage and flexible demand is also increasing for improving the business case for their deployment. The issues need to be addressed to solve the challenges of intermittent power generation and mismatching of energy supply and demand over a time scale. Human behaviors should also be integrated into the energy systems to interactively improve the sustainability. Its interdisciplinary and synthetic approach not only reveals the systematic overview, but also details components of renewable energy systems.

This above background defines the aim and scope of the Applied Energy Symposium and Forum, REM2017: Renewable Energy Integration with Mini/Microgrid to be held in October 18-20, 2017 in Tianjin organized by Tianjin University, Applied Energy Journal together with Applied Energy UNILAB DEM, Applied Energy Innovation Institute (AEii) and State Grid Tianjin Electric Power Co..

The REM2017, with the theme of “Distributed Energy and Microgrids for Smart Cities”, is to provide a platform focused on Distributed Energy & Microgrid (DEM). We invite all stakeholders including academia, inventors, project developers, financiers, suppliers, policy decision makers, even the public and end-users to participate in the conference. We will explore new approaches and innovative solutions to solve the challenging issues associated with new transitions of future renewable energy systems.

The event consists of keynote sessions, panel discussion, academic papers sessions, and on-site tour of renewable pilot projects.

We are looking forward to meeting you in Tianjin.

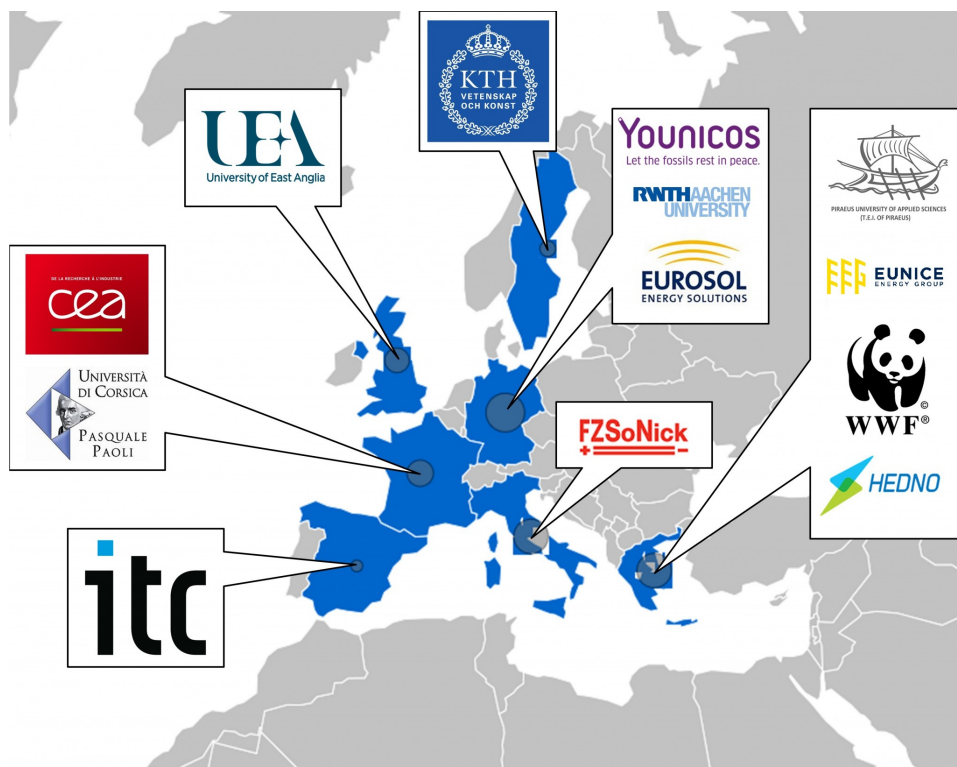
Prof. Chengshan Wang  
Dean, School of Electrical & Information  
Engineering, Tianjin University, China

Dr. Jiancheng Yu  
State Grid Tianjin Electric Power Co.  
Tianjin, China

Prof. Jinyue Yan  
Editor-in-Chief of Applied Energy



## Technology Innovation *for the* Local Scale Optimum Integration of Battery Energy Storage





# Acknowledgements



国家电网  
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国网天津市电力公司  
STATE GRID TIANJIN ELECTRIC POWER COMPANY



THE APPLIED ENERGY  
INNOVATION INSTITUTE



HOME



Technology Innovation for the Local Scale  
Optimum Integration of Battery Energy Storage

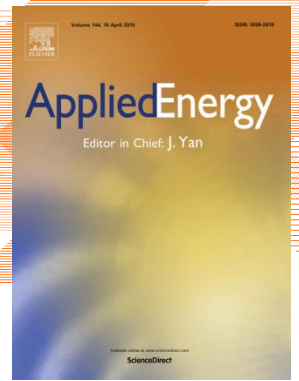


International Conference on Applied Energy



MÄLARDALEN UNIVERSITY  
SWEDEN

School of Business, Society and Engineering



# Applied Energy

## New Section: Progress in Applied Energy

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Editor-in-Chief  
**Professor J. Yan**

The internationally-renowned journal *Applied Energy* is launching a new section - *Progress in Applied Energy*, which will bridge the gap between development and implementation, focusing:

- On fast-paced, cutting-edge research from forward looking aspects of energy innovations
- On renewable energy and clean technology
- From energy efficiency to climate change mitigation

As the world strives to meet the shared targets of combating climate change and providing sustainable energy access for all, there is a critical need for timely and rapid publication of new energy solutions.

*Progress in Applied Energy* is the best platform to address these issues, at a time when there is societal pressure to come up with breakthroughs.

### What are we looking for?

- Papers must present ground-breaking insights to the field, which will have a positive impact on society, and excite and inspire readers
- Review articles will provide a comprehensive view of the latest trends, bridging scientific frontiers

### Why submit to our new section?

Submit and be part of the change in shaping the future of energy research as this new section:

- Provides a home for top scientists and engineers to publish high quality papers
- Fast-tracks papers to reach researchers as quickly as possible
- Offers benefits to authors with articles receiving extra promotion

## Conference Chairs

Prof. Chengshan Wang (Chair)

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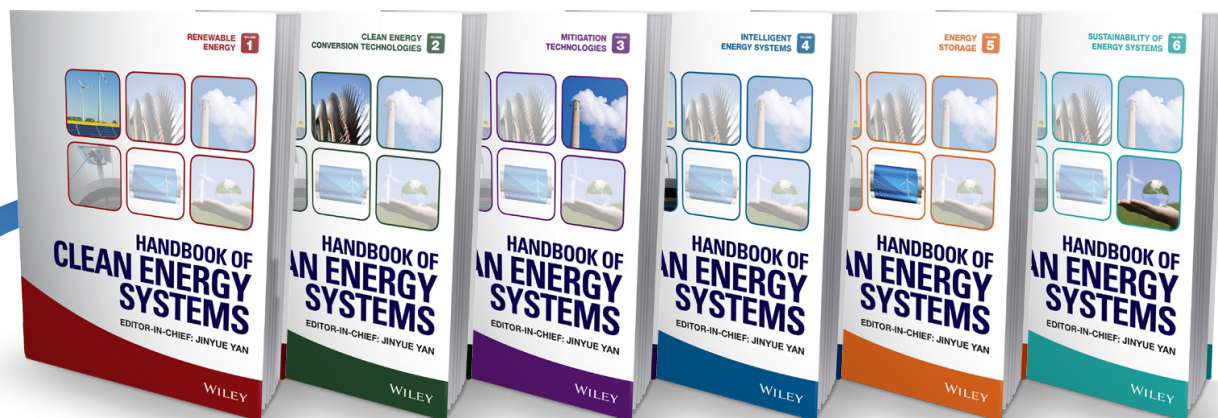
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# Are you working on the challenging issues associated with the development of our future energy systems?



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# Keynote Speakers



**Prof. Chris Marnay**  
Lawrence Berkeley  
National Laboratory,  
US

## ***Keynote: Microgrids: The Revolution is Here***

Prof. Chris Marnay is a retired Staff Scientist from the Lawrence Berkeley National Laboratory, where he worked for 29 years. He currently leads an independent consultancy, and remains an Affiliate with Berkeley Lab's China Energy Group. During the winter of 2016-17, he served as a Visiting Scholar in Residence at the Trottier Institute for Sustainability in Engineering and Design at McGill University. He has worked for 15 years in the microgrid area, and has been one of its most influential researchers, publishing a large body of research on microgrid principles, economics, and applications. In 2001, he proposed the the Distributed Energy Resources Customer Adoption Model (DER-CAM), and led its development for over a decade. He also led the Benefits Subgroup under the U.S.-China Climate Change Working Group Smart Grid collaboration, is the Convenor of CIGRÉ Working Group C6.22, and chaired the first 10 International Microgrid Symposiums.



**Prof. Qinghua Wu**  
University of  
Liverpool, UK

## ***Keynote: Large-scale Interconnected Energy Systems***

Dr. Prof. Wu obtained an MEng degree from Huazhong University of Science and Technology (HUST), majoring in Power System and Its Automation, in 1981, and a PhD in Electrical Engineering from The Queen's University Belfast in 1987. Prof. Wu was the first scholar from mainland China who has been appointed Chair Professor in the UK since the Reform and Opening of China. He has been a Chair Professor in The University of Liverpool and Director of National Instruments e-Automation Laboratory since 1995. He is now a Distinguished Professor of the Thousand Talents Plan Project, and Director of Energy Research Institute of South China University of Technology, China.

Prof. Wu has been long engaged in research on power systems and intelligence engineering. He has undertaken creative work in artificial intelligence, computational intelligence, machine learning, multi-agent system, mathematical morphology, nonlinear adaptive control, system on chip, power electronics, simulation and optimization of complex systems, and applications of the subjects mentioned above in power engineering and energy systems. He has published more than 240 journal papers including 190 SCI papers and over 250 papers of international conferences. He has also contributed over 20 book chapters and published 3 research monographs issued by Springer, and he has 15 registered international and national patents and more are under inspection.

Prof. Wu is a Fellow of IEEE, Chartered Engineer, Fellow of IET, and Fellow of InstMC. He is a Visiting Professor and Overseas Academic Expert Reviewer of Chinese Academy of Science, Expert Reviewer of China Science and Technology Award, Guangbiao Professor of Zhejiang University, Adviser of National Smart Grid Research Center of Shanghai Jiaotong University. In addition, Prof. Wu has also been appointed as Guest Professor of a number of universities and Senior Technical Adviser in several power companies, and has served as the committee member of a number of international academic conferences.



# Keynote Speakers



**Prof. Guohong Wu**  
Tohoku Gakuin  
University, Japan

***Keynote: R&D of Distributed Power Generation, Energy Storage and Microgrid Technologies in Japan***

Guohong Wu, is working as a tenured professor and director of the Advance Power Engineering Lab. and Renewable Energy and Hybrid Mirogrid Lab. at Dept. of Electrical & Electronic Engineering, Tohoku Gakuin Univ. Japan. He received his joint-supervised Ph.D. degree in Electrical Engineering from the Univ. of Tokyo, Japan and Tianjin Univ., China in 1998, and his M.S. and B.S. degree from Tianjin Univ. in 1994 and 1989, respectively. He was with the Univ. of Tokyo and Tohoku Univ., Japan from 1995 to 2005. Since 2005, he has been working with the Tohoku Gakuin Univ. From April 2014 to Mar. 2015, He was a visiting researcher at UCLA, USA. Prof. Wu's research interests include renewable power generation system, microgrid, FACTS devices, HVDC systems, power system stability analysis, superconductivity application to power systems, etc. He is also the author of 4 books, 157 technical papers and representatives or research member of more than ten research projects, as well as many academic and social committee members related electrical engineering field in Japan. He is the Senior Members of both IEEE and IEEJ



**Prof. Phil Jones**  
Cardiff University,  
UK

***Keynote: Energy Positive Buildings***

Phil Jones is Professor of Architectural Science at the Welsh School of Architecture, Cardiff University and he co-directs the Energy Systems University Research Institute (URI). Prof. Phil Jones's research area is in low energy, low carbon, and sustainable design in the built environment. He chairs the Welsh Building Regulation Advisory Committee and is Chairman of the Board of Directors of Warm Wales, a community interest company formed to install energy efficiency measures to existing fuel poor housing in Wales. He is a Distinguished Visiting Research Professor at University of Hong Kong and a Master Academic advisor at Tianjin University.



**19<sup>th</sup>, Oct. 2017**

**11:00-12:00**

**Grand Ballroom**

## **Applied Energy UNiLAB of Distributed Energy & Microgrid (DEM)**

UNiLAB of DEM is an international virtual lab of collective intelligence in Applied Energy, in order to enhance international collaboration for scientific excellence for science and engineering, and demonstrate technologies in analysis, control, operation, planning and other applications in DEM. This panel will discuss the latest development of DEM and a new initiative to establish a world-leading sustainable research ecosystem of multi-energy Microgrids. The research ecosystem will be built upon a 5-Dimensional Cloud-based platform of Campus Multi-Energy Microgrids. Research data, tools and even source code will be shared through the platform.

Chair: Prof. Hongjie Jia

Participants: Prof. Jinyue Yan (Royal Institute of Technology and Mälardalen University, Sweden); Prof. Jianzhong Wu (Cardiff University, UK); Dr. Yunfei Mu (Tianjin University, China)

# APPLIED ENERGY GLOBAL UNILAB OF MULTI-ENERGY MICROGRID



# UNILAB

**YOU ARE WARMMLY WELCOMED TO JOIN US.**

**CONTACT: PROF. JINYUE YAN (JINYUE@KTH.SE); PROF. CHENGSHAN WANG (CSWANG@TIU.EDU.CN);**

**PROF. JIANZHONG WU (WUJ5@CARDIFF.AC.UK)**

## **VISION:**

*Establish a world-leading sustainable research ecosystem of multi-energy Microgrids  
– We innovate, we collaborate, we share, and we grow up together!*

## **THE WAY FORWARD:**

- Setup and maintain a 5-Dimensional Cloud-based platform of Campus Multi-Energy Microgrids. We share data, tools and even source code from 1D through to 5D among partners.

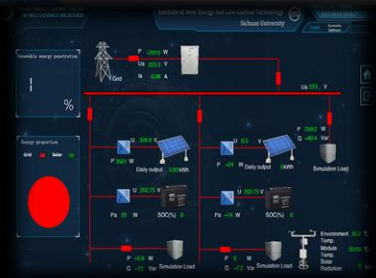
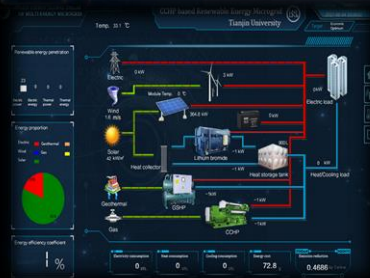
**1D:** A large amount of raw data

**2D:** Formatted case system information that are ready to use for research

**3D:** Real-time Energy Management System of Campus Multi-Energy Microgrids

**4D:** Fundamental tools for Multi-Energy Microgrids

**5D:** Advanced optimization and control tools



- Share our experience by organizing training and summer schools for early-career researchers
- Organize workshops and symposiums to facilitate effective communication and dissemination
- Develop Special Issues for Applied Energy
- Initiate joint research grant applications among partners
- Inform industry and policy-makers on the potential, key technologies and performance of multi-energy Microgrids
- Provide skilled workforce for the current global energy revolution



Applied Energy Global UNILAB of Multi-Energy Microgrid is an international virtual lab of collective intelligence, in order to enhance international collaboration for scientific excellence and demonstrate innovative technologies in Multi-Energy Microgrids. It is a joint initiative by the Applied Energy UNILAB of Distributed Energy & Microgrid (DEM) and the UNILAB of Synergies between Energy Networks (SEM).

Multi-energy Microgrids are able to make a good use of local distributed energy resources, especially renewable energy, optimize the synergies between different energy systems (e.g. electricity, gas, heating and cooling systems), enable the applications of novel techniques (e.g. Peer to Peer energy sharing or trading) and provide services to other Microgrids or to the bulk energy networks. Multi-energy Microgrids have the potential to change the paradigm of the whole energy system.

*We are targeting to connect 100 campus Multi-Energy Microgrids across the World. Welcome to join our family!*





# FUTURE ENERGY CENTER

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

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

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

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

## THREE FOCUS AREAS

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

**TRACK 1** Renewable energy

**TRACK 2** Energy efficiency and emission mitigation

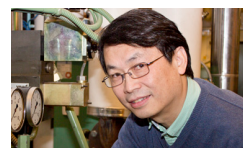
**TRACK 3** Smarter modelling/ optimisation and management

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



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## TIANJIN ECO-CITY

20<sup>th</sup>, October 2017

### About Tianjin Eco-City

The Sino-Singapore Tianjin Eco-City is the second flagship Government-to-Government project between Singapore and China after the China-Singapore Suzhou Industrial Park. The project was mooted by then-Singapore Senior Minister Goh Chok Tong and then-Chinese Premier Wen Jiabao in April 2007, against the backdrop of rapid urbanization and increasing global attention on the importance of sustainable development. On 18 November 2007, Singapore Prime Minister Lee Hsien Loong and then-Chinese Premier Wen Jiabao signed a Framework Agreement for Singapore and China to jointly develop the Sino-Singapore Tianjin Eco-city. The Sino-Singapore Tianjin Eco-city's vision is to be "A thriving city which is socially harmonious, environmentally-friendly and resource-efficient – a model for sustainable development". This vision is underpinned by the concepts of "Three Harmonies" and "Three Abilities". The Eco-city site is located 40 km from Tianjin city centre and 150 km from Beijing city centre. It is located within the Tianjin Binhai New Area – one of the fastest growing regions in China.



### Trip Schedule

- 13:00 – Departure from the conference venue
- 14:00-16:00 – Visiting Tianjin Eco-City
- 16:00 – Return to the conference venue

### Registration

Please register at the conference registration desk. Spaces are limited, please make early booking.

## About Tianjin

Tianjin, 137 kilometers southeast of Beijing, is located at 39°8' North and 117°2' East, covering area of 11,917 square kilometers, the city is bordering on the Bohai Sea in the east. It is one of three municipalities of China directly under the Central Government. The terrain in Tianjin is low and flat, with an altitude of only two to five metres above sea level. Most part of the city is on the Haihe Plain.

With a growth rate that has exceeded 10% every year since 2004, it is one of the fastest growing large cities in China and in the world. Tianjin's diversified economy comprises many sectors, including high tech, manufacturing, telecommunications, shipping and logistics, oil aerospace, tourism and agriculture. It is being developed as the next major economic zone in the North-East of China, similar to that in Shenzhen and Shanghai. While Tianjin is primarily known for its manufacturing and technological prowess, the development of Tianjin's new Binhai lays the groundwork for the municipality to become China's largest financial center.

## Getting around Tianjin

### From Tianjin Binhai International Airport (ZBTJ):

ZBTJ is located in Dongli District roughly 13 km (8 mi) away from downtown area. The airport has 59 flight routes, connecting 48 cities, including 30 domestic cities and 17 foreign cities in Japan, Korea, Singapore, Russia and Europe. Airline companies like Japan Airlines, All Nippon Airways, Korean Air, Asiana Airlines, Singapore Airlines Cargo and Martinair Holland all have flights to Tianjin Binhai International Airport.

### From Beijing-Capital International Airport (PEK) to Tianjin:

PEK is located northeast of Beijing, capital of People's Republic of China, and 25.35km from the Tiananmen Square, center of Beijing city. It is not only an aviation gateway of Beijing and a window for international communication, but also a radial center for China civil aviation network, featured in a large-scale international airport, with most important location, biggest scale, fullest facilities and busiest transportation in China.

The PEK Airport Shuttle System connects the PEK airport to Tianhuan Passenger Station in Tianjin. The route takes 150min and costs about 90RMB. The schedule is listed as follows.

From: Beijing-Capital International Airport	From: Tianjin-Tianhuan Passenger Station
6:30	4:30
7:30	5:00
8:30	6:00
9:30	7:00
10:30	7:30
11:15	8:00
12:15	9:00
13:00	10:00
13:45	10:30
14:30	11:00
15:15	12:00
16:00	13:00



16:45	13:30
17:30	14:00
18:15	15:00
19:00	16:00
20:00	17:00
21:00	17:30
22:00	18:00
23:00	18:30

## By Train

If there is no direct air route from your city to Tianjin, arriving by land from other domestic airports is an option. Following rail lines go through Tianjin:

- Jingshan Railway, from Beijing to Shanghai Pass
- Jinpu Railway, from Tianjin to Pukou District, Nanjing
- Jinji Railway, from Tianjin urban area to Ji County, Tianjin
- Jinba Railway, from Tianjin to Bazhou, Hebei

The inter-city trains between Beijing and Tianjin:

- C2001 - C2198: From Beijing South Station to Tianjin, non-stop.
- C2201 - C2268: From Beijing South Station to Tianjin, with stops at Wuqing Station or Yizhuang Station;
- C2271 - C2298: From Beijing South Station to Tanggu Station of Tianjin.

The C trains take only 30 min between Beijing and Tianjin and the ticket price is around 69 RMB for first class and 55 RMB for second class.

## By Taxi

The taxis in Tianjin are uniform, light-blue vehicles. The flag-down fare is 8 RMB, and each additional kilometer is 2-3 RMB. The following translations might be useful to show to taxi drivers.



**(Please take me to the airport.)**

请带我去天津机场

**(Please take me to the Holiday Inn Riverside Hotel.)**

请带我去天津海河假日酒店

**(Please take me to the Tianjin train station.)**

请带我去天津火车站

## Climate and Clothing

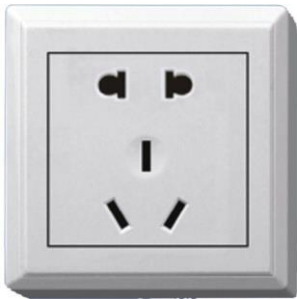
The climate of Tianjin is temperate, continental-type monsoon climate with four seasons distinct from one another. The average temperature in October is 14.1 °C.

## Currency and Banking

The Chinese Yuan (CNY) is the currency of China. ATMS and credit cards are widely accepted.

## Electricity

Power is supplied at 220 Volts. The alternating current cycle is rated at 50 Hz. Adapters are needed if you come from foreign countries. The following picture shows the sockets.



## Time Difference

UTC+8

# Venue Information

## Conference Venue

The conference will be held at Holiday Inn (Holiday Inn Tianjin Riverside). The conference badge will have to be worn at all times to access the conference venue.

**Location:** East Haihe Road, Hebei District, Tianjin ??? The map did not match the location, pls check

More information about the hotel can be found: <https://www.ihg.com/holidayinn/hotels/cn/zh/tianjin/tsncr/hoteldetail>



## Registration area

????

## Conference banquet, lunch breaks

2nd Floor, Buffet dining hall

## Presentation

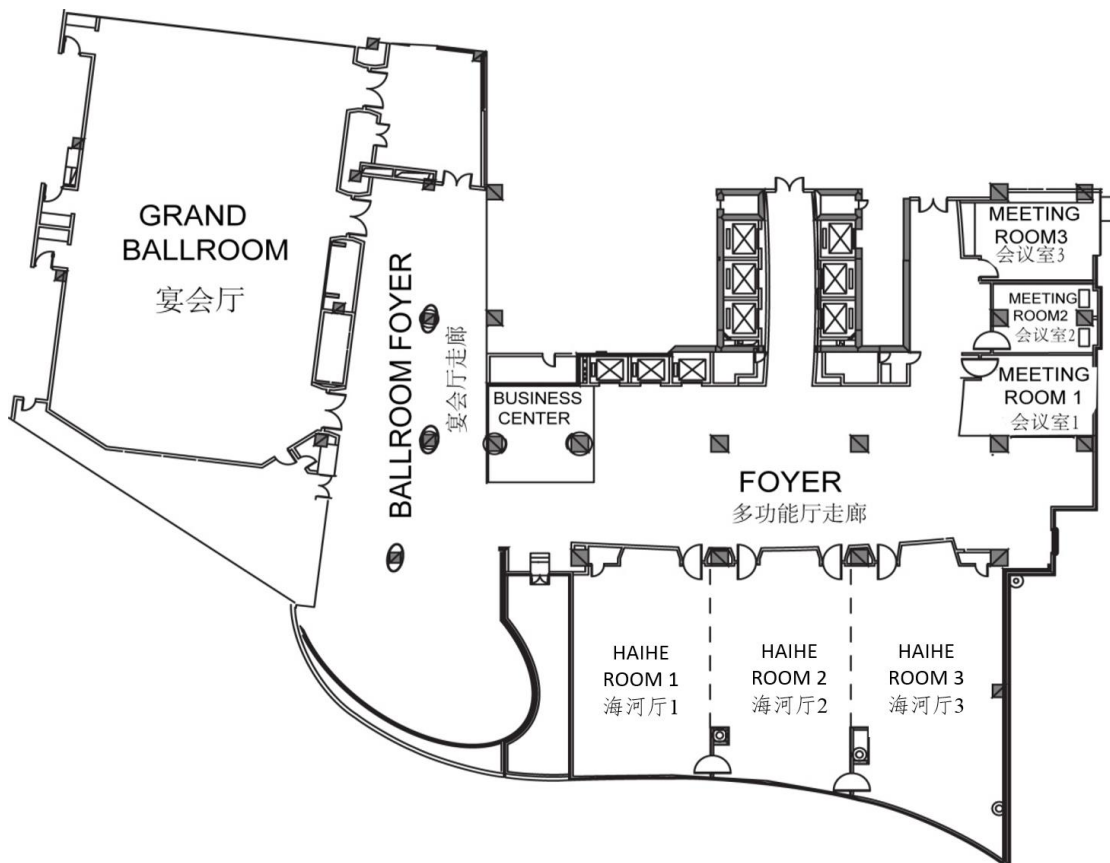
Length of presentation material should be in accordance with your allocated time. You are requested to load your presentation files before the session starts. Each oral presentation at the breakaway venues is limited to 20 minutes, which include the questions and answers. Please refer to this program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

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

## Presentation Venues

The opening ceremony, keynote speeches, and panel session will be held at the grand ballroom. The following table lists all the presentation venues with abbreviations which are used in the detailed program in the late part of this booklet.

Venue Room	Location
Session 1-A1, Session 1-A2, Session 2-A1, Session 2-A2, Session 3-A1	HAIHE ROOM 1
Session 1-B1, Session 1-B2, Session 2-B1, Session 2-B2, Session 3-B1	HAIHE ROOM 2
Session 1-B1, Session 1-B2, Session 2-B1, Session 2-B2, Session 3-B1	HAIHE ROOM 3
Session 1-D1, Session 1-D2	ROOM??



# Programme at a Glance

Registration: Oct,17th: 10:00-17:00; Oct, 18th: 08:30-15:00; Oct, 19th: 08:30-12:00

## October, 17<sup>th</sup>

10:00-17:00 Registration

## Day 1: October, 18<sup>th</sup>

08:30-09:30 Opening

09:30-10:30 Keynote Speaker 1

10:30-11:00 Coffee break

11:00-12:00 Keynote Speaker 2

12:00-13:30 Lunch

Session 1-A1:  
Microgrid reliability  
and resiliency

Session 1-B1: Demand  
side management

Session 1-C1: Optimal  
control strategy

Session 1-D1:  
Microgrid planning

13:30-13:50	2	48	14	32
13:50-14:10	7	65	35	58
14:10-14:30	8	95	46	61
14:30-14:50	41	98	54	67
14:50-15:10	62	100	71	68
15:10-15:30	63	119	107	113

15:30-16:00 Coffee break

Session 1-A2:  
Microgrid reliability  
and resiliency

Session 1-B2:  
Frequency control  
and power quality

Session 1-C2: Optimal  
control strategy

Session 1-D2:  
Photovoltaic and  
wind turbine system

16:00-16:20	80	17	18	97
16:20-16:40	92	19	24	101
16:40-17:00	99	53	55	132
17:00-17:20	108	116	66	44
17:20-17:40	109	117	88	69
17:40-18:00	51	86	121	

19:00-20:30 Conference banquet

## Day 2: October, 19<sup>th</sup>

08:30-09:30 Keynote Speaker 3

09:30-10:30 Keynote Speaker 4

10:30-11:00 Coffee break

11:00-12:00 UNiLAB DEM Panel meeting

12:00-13:30 Lunch

# Programme at a Glance

	Session 2-A1: Renewable energy utilization	Session 2-B1: Communication and information technology	Session 2-C1: Optimal control strategy
13:30-13:50	20	22	9
13:50-14:10	64	103	11
14:10-14:30	77	111	29
14:30-14:50	110	102	28
14:50-15:10	133	104	89
15:10-15:30			83
15:30-16:00	Coffee break		
	Session 2-A1: Renewable energy utilization	Session 2-B2: Energy storage and EV	Session 2-C2: Energy flexibility
16:00-16:20	50	30	82
16:20-16:40	96	36	84
16:40-17:00	105	39	112
17:00-17:20	114	57	129
17:20-17:40	131	93	120
17:40-18:00	135		122
18:30-20:00	Dinner		

Day 3: October, 20 <sup>th</sup>			
	Session 3-A1: Renewable energy utilization	Session 3-B1: Inverter and converter	Session 3-C1: Economical, environmental and policy analysis, and demonstration
08:30-08:50	34	40	26
08:50-09:10	49	85	45
09:10-09:30	94	90	59
09:30-09:50	130	124	73
09:50-10:10	134	126	125
10:10-10:30		10	136
10:30-11:00	Coffee break		
11:00-12:00	Closing		
12:00-13:00	Lunch		
13:00-18:00	Site Visit		



Room: Haihe Room 1

**Session 1-A1: Microgrid reliability and resiliency**

Session chairs: Chaoyu Dong

Time	ID	Author	Paper title
13:30-13:50	2	Zhang Xingyou, Chen Bo, Cheng Yan, Sun Shumin, Wang Shouxiang	A multi-microgrids system model considering stochastic correlations among microgrids
13:50-14:10	7	Xueming Li, Yi Tang, Zengji Liu, Xu Gao, Yingxin Ma and Sumeng Tao	Reliability analysis of the security and stability control device based on the Monte Carlo method
14:10-14:30	8	Chen Bo, Zhang Xingyou and Wang Shouxiang	Multi-microgrids system reliability assessment algorithm considering energy dispatch strategy among microgrids
14:30-14:50	41	Yong Ren, Chao Wang, Siqin Li, Long Jiao, Hongli Zhang, Fusuo Liu	Three-stage evolution mechanism of multiple stability problems and control strategies of AC/DC power system with large-scale wind turbine generators
14:50-15:10	62	Lingxue Lin, Lin Guan, Hengan Chen, Zhihui Dong, Jiantian Chen and Minghui Xiao	Fault location and isolation for distribution network with DGs based on intelligent multi-agent system
15:10-15:30	63	Lin Guan, Gang Yang, Lingxue Lin, Zhihui Dong	The influence analysis of DG on the utilization of feeder

Room: Haihe Room 2

**Session 1-B1: Demand side management**

Session chairs: Guanyu Song

Time	ID	Author	Paper title
13:30-13:50	48	Liukai Chen, Zhigang Wu	Study on the effects of ev charging to global load characteristics via charging aggregators
13:50-14:10	65	Peipei Zhang, Mei Sun, Mingzhuang Zhang, Xu Yan	The research of the real-time pricing model based on the cumulated points system in the demand response
14:10-14:30	95	Sana Noor, Miao Guo, Koen H. van Dam, Nilay Shah, Xiaonan Wang	Energy demand side management with supply constraints: game theoretic approach
14:30-14:50	98	Benjamin Chris Ampimah, Mei Sun, Xueyin Wang, Joseph Ansah, Kwabena Takyi	Solving the perennial electricity crises management of residential consumer through dDRPs in sub-saharan africa: a case study of Ghana's electricity market using incentivized credit function technique
14:50-15:10	100	Kai Yuan, Yi Song, Yinchu Shao, Chongbo Sun, Zhili Wu	An charging strategy with the price stimulus considering the queue of charging station and EV fast charging demand
15:10-15:30	119	Qu Xinyao, Hui Hongxun, Ding Yi, Luan Kaining	Optimal control of intelligent electricity consumption for residential customers considering demand response

Room: Haihe Room 3

**Session 1-C1: Optimal control strategy**

Session chairs: Jianzhong Wu

Time	ID	Author	Paper title
13:30-13:50	14	Mukalu Sandro Masaki, Lijun Zhang and Xiaohua Xia	Hierarchical power flow control of a grid-tied photovoltaic plant using a battery-supercapacitor energy storage system
13:50-14:10	35	Xiaonan Cao, Changzhi Zhang, Yingtian Zhang, Zhiyong Gan, Haoran Li, Weichen Ni, Jianjun Wang	The simulation study of the modulation method for PV grid-connected system
14:10-14:30	46	Xiaoyong Chang , Fufeng Chen, Yuping Li, Yuting Wang, Chengji Xu	Coordinated active power control of hybrid energy storage system for ac micro-grids in islanding mode
14:30-14:50	54	Zhongqing Sun, Rui Chen, Hui Fang, Yinguo Yang, Tao Chen, Fusuo Liu	Study on control strategy of hydropower asynchronous integration coupling with DC emergency power support
14:50:15:10	71	Qiyu Chen, Xiuyuan Yang, Guoqing He, Xiaoxin Zhou	Optimal scheduling system for wind farm and hydro power plant coordinating operation
15:10-15:30	107	Fulai Yao, Qingbin Gao	Efficiency optimization of a power station with different generators

Room: XXX

**Session 1-D1: Microgrid planning**

Session chairs: Jinyue Yan

Time	ID	Author	Paper title
13:30-13:50	32	Chongbo Sun, Kai Yuan, Yi Song, Xianing Jin, Guanyu Song, Yingying Yu	An adaptability evaluation for DG Integration based on hierarchical and regional frame
13:50-14:10	58	Jiancheng Yu, Chris Marnay, Ming Jin, Cheng Yao, Xu -Angela- Liu and Wei Feng	Review of microgrid development in the United States with lessons learned for China
14:10-14:30	61	Xianxian Pan, Hong Liu, Haojun Zhu, Bo Wang, Mengze Yu, Zhe Tian and Zan Yang	Comprehensive comparative analysis of different regional energy supply schemes
14:30-14:50	67	Xiaobin Guo, Peng Li, Kaiqiao Zhan, Wenxiao Wei, Qinxue Tan, Wentao Yang, Fengzhang Luo	Data flow design for power network planning software
14:50:15:10	68	Xue Wang, Qiang Sun, Guanyuan Wei, Fengzhang Luo, Wentao Yang, Ke Xu, Zhe Wang	Comparison and quantification analysis method of urban energy consumption features from perspective of urban energy interconnection
15:10-15:30	113	Bowen Hong, Weiwei Miao, Zhe Liu and Long Wang	Architecture and functions of micro-grid energy management system for the smart distribution network application

Room: Haihe Room 1

**Session 1-A2: Microgrid reliability and resiliency**

Session chairs: Guanyu Song, Jun Xu

Time	ID	Author	Paper title
16:00-16:20	80	Bei Wang, Lin Zhu and Da Chen	Mechanism research on the influence of large scale wind power integration on power system angle stability
16:20-16:40	92	Zhu Yihua, Li Wei, Guo Qi, Chang Dongxu, Luo Jianbob, Wang Yu, Li Xueming, Li Zhaowei, Li Zhukun, Li Bijun	Research on security and stability characteristics and control strategy of power grid with VSC-HVDC
16:40-17:00	99	Chaoyu Dong, Qingbin Gao, Hongjie Jia, Guohong Wu, Xiaomeng Li and Zhenyu Zhang	Stability analysis for the DC microgrid of chained communication network with cluster treatment of characteristic roots (CTCR) paradigm
17:00-17:20	108	Qingbin Gao, Chaoyu Dong, Hongjie Jia and Zhenyu Zhang	Multiple time-delay stability analysis for the DC-microgrid cluster with distributed control
17:20-17:40	109	Chenxi Wu, Hongli Zhang, Yuqiang Hou, Lu Cao, Fusuo Liu	Analysis of Binjin UHVDC restart failure and relevant suggestions on secure and stable operation of power grid
17:40-18:00	51	Lei Liang, Julong Wang, Mingying Li and Ming Chen	A correction method for HVDC transmission plan considering the correlation between sending end new energy generation and receiving end loads

Room: Haihe Room 2

**Session 1-B2: Frequency control and power quality**

Session chairs: Zhongqing Sun, Ramesh Babu N.

Time	ID	Author	Paper title
16:00-16:20	17	Ni Ming, Chen Qian, Li Manli, Wang Qi, Tang Yi	A frequency control model for cyber physical power system considering demand response strategy
16:20-16:40	19	Xueshen Zhao, Ke Peng, Qing Wan, Xi Yan, Cong Zhang, Yuehao Zhao	Research on droop control strategy of multi-terminal AC/DC hybrid distribution system
16:40-17:00	53	Pengfei Li, Weihao Hu, Rui Hu and Zhe Chen	The primary frequency control method of tidal turbine based on pitch control
17:00-17:20	116	Arun Shankar V.K., Umashankar S, Sanjeevikumar P., Viliam Fedák, Vigna K. Ramachandaramurthy, Lucian Mihet-Popa	Investigations of power quality disturbances in a variable speed parallel pumping system with grid tied solar PV
17:20-17:40	117	Arun Shankar V.K., Umashankar S., Sanjeevikumar P., Lucian Mihet-Popa, Viliam Fedák, Vigna K. Ramachandaramurthy	Power quality performance analysis of grid tied PV fed parallel pumping system under normal and vibrating condition
17:40-18:00	86	Xinjie Hao, Shuyong Song and Xiaofei Liu	Parameter optimization and experimental research about speed governor system of isolated network operation area

Room: Haihe Room 3

**Session 1-C2: Optimal control strategy**

Session chairs: Chao Wang

Time	ID	Author	Paper title
16:00-16:20	18	Yuquan Liu, Yuehao Zhao, Ke Peng, Bingyin Xu, Li Wang, Huangsheng Hua	Bilevel optimal coordinated control strategy for park-level integrated energy system
16:20-16:40	24	Dongsheng Yang, Qianqian Chong, Bo Hu, Min Ma	Optimal operation of microgrid based on user electricity anxiety
16:40-17:00	55	Jing Xu, Hong Liu, Ke Xu, Jifeng Li, Shiju Wang, Zan Yang and Bo Wang	Synergistic scheduling in integrated community energy system considering wind power accommodation
17:00-17:20	66	Sumeng Tao, Chunlai Li, Lei Zhang and Yi Tang	Operational risk assessment of grid-connected pv system considering weather variability and component availability
17:20-17:40	88	Scarlett Chen, Min-Sen Chiu and Xiaonan Wang	Local control of fuel cell systems within hybrid renewable energy generation using model predictive control
17:40-18:00	121	Chao Long, Jianzhong Wu, Yue Zhou, Nick Jenkins	Aggregated battery control for peer-to-peer energy sharing in a community microgrid with PV battery systems

Room: XXX

**Session 1-D2: Photovoltaic and wind turbine system**

Session chairs: Hongxing Yang

Time	ID	Author	Paper title
16:00-16:20	97	Zhicong Chen, Wencheng Lin, Lijun Wu, Chao Long, Peijie Lin, Shuying Cheng	A capacitor based fast I-V characteristics tester for photovoltaic arrays
16:20-16:40	101	Guodeng Chen, Peijie Lin, Yunfeng Lai, Zhicong Chen, Lijun Wu and Shuying Cheng	Location for fault string of photovoltaic array based on current time series change detection
16:40-17:00	132	Yingming Zhu, Fu Wang and Jinyue Yan	The potential of distributed energy resources in building sustainable campus: the case of sichuan university
17:00-17:20	44	Xiong Shangfeng, Jiang Dajun and Wu Jinbo	An integrated wind power control system designing
17:20-17:40	69	Haiying Sun, Hongxing Yang	Study on three wake models' effect on wind energy estimation in Hong Kong

Room: Haihe Room 1

**Session 2-A1: Renewable energy utilization**

Session chairs: Xiaonan Wang

Time	ID	Author	Paper title
13:30-13:50	20	Jean-Paul Kone, Xinyu Zhang, Yuying Yan, Guilin Hu and Goodarz Ahmadi	CFD modeling and simulation of PEM fuel cell using OpenFOAM
13:50-14:10	64	Sanli Tang, Wanjun Qu, Hui Hong, Jie Sun	A smart full-spectrum solar power system integrating photovoltaics and fuel cell
14:10-14:30	77	Qiongqiong Jiang, Hao Zhang, Qilan Kang, Hui Hong, Hongguang Jin	A hybrid solar mini smart electricity system with chemical looping reforming of methane and hydrogen storage using LaCuNi <sub>1-x</sub> O <sub>3</sub> as oxygen carriers
14:30-14:50	110	Sichang Yang, Xinyu Zhang, Jean-Paul Kone, Bo Wang, Hanzhe Huang, Zirui Zhao, Xinyuan Wang, Kaili Yu and Goodarz Ahmadi	A practical low-cost approach to build membrane electrode assemblies using decal transfer technique
14:50-15:10	133	Yuxia Lv, Longyu Xia, Jinyue Yan and Jinpeng Bi	Design of a hybrid fiber optic daylighting and PV solar lighting system

Room: Haihe Room 2

**Session 2-B1: Communication and information technology**

Session chairs: Bowen Hong

Time	ID	Author	Paper title
13:30-13:50	22	Xinyi Zhang, Limin Jiang, Kecheng Li, Congchuan Hu, Xiaoming Ma, Dongsheng Yang, Bowen Zhou	A communication delay compensation method applied to ACLs for distributed energy consumption
13:50-14:10	103	Shouzhou Liu, Yanfu Li, Zhou Yang	Modelling of cyber-attacks and defenses in local metering system
14:10-14:30	111	Oluleke Bamodu, Felix Osebor, Liang Xia, Ali Cheshmehzangi and Llewellyn Tang	Indoor environment monitoring based on humidity conditions using a low-cost sensor network
14:30-14:50	102	Weijie Hao, Qiang Yang	Data traffic characterization in intelligent electric substations using FARIMA based threshold model
14:50-15:10	104	Yongfu Li, Peijie Lin, Haifang Zhou, Zhicong Chen, Lijun Wu, Shuying Cheng and Fengping Su	On-line monitoring system based on open source platform for photovoltaic array

Room: Haihe Room 3

**Session 2-C1: Optimal control strategy**

Session chairs: Chao Long

Time	ID	Author	Paper title
13:30-13:50	9	Wenwei Wang, Junhui Shi, Zhipeng Zhang, Cheng Lin	Optimization of a dual-motor coupled powertrain energy management strategy for a battery electric bus
13:50-14:10	11	Zhang Baoqun, Gong Cheng, Jiao Ran, Ma Longfei, Ding Yifeng, Zhao Yutong, Wang Jian, Yang Shuo and Sun Qinfei	Research on the control strategy of EPS provided by parallel operation of electric vehicles
14:10-14:30	29	Xuwei Wu, Wei Pei, Wei Deng, Li Kong and Hua Ye	Collaborative optimal distribution strategy of AGC with participation of ESS and controllable load
14:30-14:50	28	Xin Ma, Hui Qu, Wei Pei and Hao Xiao	Optimal interactive operation of microgrid under demand response based on rolling optimization algorithm
14:50-15:10	89	Ramji Tiwari, Kumar. K, Ramesh Babu. N, Prabhu. K.R	Coordinated MPPT and DPC strategies for PMSG based grid connected wind energy conversion system
15:10-15:30	83	Yanhong Yang, Wei Pei, Qunhai Huo, Jianjun Sun and Feng Xu	Coordinate planning of multiple microgrids and distribution network with mixed AC/DC Interconnection method

Room: Haihe Room 1

**Session 2-A1: Renewable energy utilization**

Session chairs: Fu Wang, Hongxing Yang

Time	ID	Author	Paper title
16:00-16:20	50	Shubhra Kanti Das, Hyun Jo, Ocktaeck Lim, Youngmin Woo	Combustion characteristics of biodiesel blended gasoline fuel in engine like condition using constant volume combustion(CVCC)
16:20-16:40	96	Hyojin Kim, Hyun Jo, Sakda Tongchai, Ocktaeck Lim	A study on the particle size and velocity profile on a gasoline port injector using a phase doppler particle analyzers (PDPA)
16:40-17:00	105	Zahrul Mufrodi, Arief Budiman and Suryo Purwono	Operation conditions in synthesis of bioadditive from glycerol as by-product biodiesel : A review
17:00-17:20	114	Mochamad Syamsiro, Harwin Saptoadi, Abdul Sattar Nizami, Mohammad Rehan	Pyrolysis of compact disc (CD) case wastes to produce liquid fuel as a renewable source of electricity generation
17:20-17:40	131	Husni Firmansyah Sutrisno, Yuting Tan, Jinyue Yan	Power and methanol production from biomass combined with solar and wind energy: analysis and comparison
17:40-18:00	135	Yong Hao, Hailong Li, Pietro Elia Campana and Jinyue Yan	Integration of concentrating PVs in anaerobic digestion for biomethane production



Room: Haihe Room 2

**Session 2-B2: Energy storage and EV**

Session chairs: Chaoyu Dong

Time	ID	Author	Paper title
16:00-16:20	30	Jinpeng Tian, Rui Xiong	State-of-Health (SOH) estimation based on fractional order model for lithium ion batteries
16:20-16:40	36	Wenwei Wang, Sheng Yang, Yiding Li, Cheng Lin	Mechanical and electrical response of cylindrical Lithium-ion cells at various State of Charge
16:40-17:00	39	Dan Xu, Le Zhang, Bin Wang, Guangliang Ma	A novel equivalent-circuit model and parameter identification method for supercapacitor performance
17:00-17:20	57	Zeyu Chen, Rui Xiong, Jiahuan Lu	External short circuit fault of Lithium-ion batteries in low temperature condition: An experimental study
17:20-17:40	93	Yunfei Zhao, Jun Xu, Xiao Wang, Xuesong Mei	The adaptive fading extended kalman filter SOC estimation method for Lithium-ion batteries

Room: Haihe Room 3

**Session 2-C2: Energy flexibility**

Session chairs: Lei Liang

Time	ID	Author	Paper title
16:00-16:20	82	Qing Zeng, Jiakun Fang, Baohua Zhang, Zhe Chen	The coordinated operation of electricity, gas and district heating systems
16:20-16:40	84	Hao Li, Pengwei Su, Bo Yu, Jun Zhao, Cheng Ling, Qingsong An	Case study on optimization scheme design based on load prediction for regional heating system in industrial community
16:40-17:00	112	Bowen Hong, Qionghui Li, Weiwei Miao, Hu Yan, Jianing Liu	Energy storage application in improving distribution network's solar photovoltaic (PV) adoption capability
17:00-17:20	129	Yang Zhang, Pietro Elia Campana, Ying Yang, Anders Lundblad, Bengt Stridh, Jinyue Yan	Increasing energy flexibility through bridging electrical load and thermal load: A case study in sweden
17:20-17:40	120	Zhaoguang Pan, Jianzhong Wu, Hongbin Sun, Muditha Abeysekera	Quantification of operational flexibility from a heating network
17:40-18:00	122	Cheng Yao, Changxin Zhou, Jiancheng Yu, Ke Xu, Peng Li, Guanyu Song	A sequential optimization method for soft open point integrated with energy storage in active distribution networks

Room: Haihe Room 1

**Session 3-A1: Renewable energy utilization**

Session chairs: Zahrul Mufrodi, Rui Xiong

Time	ID	Author	Paper title
08:30-08:50	34	Bosheng Su, Wanjun Qu, Wei Han, Hongguang Jin	Performance analysis of a hybrid photovoltaic/thermal and liquid desiccant system
08:50-09:10	49	Ji-Sheng Cui, Yun-Xin Wu, Jia-Li Liang, Hong Gang, Peng Qiu	Evaluation on light sources for electric power emergency recovery system based on grille method and maximum information coefficient method
09:10-09:30	94	Jiyun Du, Zhicheng Shen and Hongxing Yang	Performance enhancement of an inline cross-flow hydro turbine for power supply to water leakage monitoring system
09:30-09:50	130	Fu Wang	Performance of solar pv micro-grid systems: A comparison study
09:50-10:10	134	Yuexia Lv, Pengfei Si, Xiangyang Rong and Jinyue Yan	An optimization method for CCHP and river water source heat pump combined system

Room: Haihe Room 2

**Session 3-B1: Inverter and converter**

Session chairs: Yu Wang

Time	ID	Author	Paper title
08:30-08:50	40	Guangliang Ma, Bin Wang, Dan Xu, Le Zhang	Switching control strategy based on non-singular terminal sliding mode for buck converter in auxiliary energy source
08:50-09:10	85	Huiping Zheng, Xinjie Hao, Yuqiang Hou, Ling Zhu	Research on sub-synchronous oscillation stability of VSC converter
09:10-09:30	90	Kumar. K, Ramji Tiwari, Ramesh Babu. N, Prabhu. K.R	Analysis of MISO super lift negative output Luo converter with MPPT for DC grid connected hybrid PV/Wind system
09:30-09:50	124	Sridhar Vavilapalli , Umashankar S., Sanjeevikumar P., Viliam Fedák, Lucian Mihet-Popa, Vigna K. Ramachandaramurthy	A buck-chopper based energy storage system for the cascaded H-Bridge inverters in PV applications
09:50-10:10	126	Sridhar V., Umashankar S. , Sanjeevikumar P., Vigna K. Ramachandaramurthy, Lucian Mihet-Popa, Viliam Fedák	Control architecture for cascaded H-Bridge inverters in large-scale PV systems
10:10-10:30	10	Longfei Ma ,Cheng Gong, Ran Jiao, Baoqun Zhang, Hui Xu, Shuo Yang, Jie Zhu, Xianglong Li, Qinfei Sun	Research on the impact on the switching characteristics of sic MOSFET

Room: Haihe Room 3

**Session 3-C1: Economical, environmental and policy analysis, and demonstration**

Session chairs: Mei Sun

Time	ID	Author	Paper title
08:30-08:50	26	Yuquan Liua, Huan Li, Ke Peng, Cong Zhang, Huangsheng Hua, Li Wang	Demonstration projects of integrated energy system in China
08:50-09:10	45	Shuang Zhang, Tao Zhao, Bai-Chen Xie	Analysis of power generation mix in China: An evaluation based on portfolio theory
09:10-09:30	59	Kyeonghun Jwa, Ocktaeck Lim	Comparative life cycle assessment of lithium-ion battery electric bus and Diesel bus from well to wheel
09:30-09:50	73	Jiuli Yin, Lishuang Bian, Mengjiao Tian, Xinghua Fan	Pursue high economic development with less pollution: implications from the Resource-Economy-Pollution dynamic system
09:50-10:10	125	Yunlong Liu, Zhiyuan Liu, Chunyan Zhang	The problem study of district energy system in Shanghai, China
10:10-10:30	136	Victor Nian, Xunpeng Shi, Hari Malamakkavu Padinjare Variam, Jun Yuan, Bin Su and Yingzhu Li	The state of developments in regional integration among Southeast Asian states and implications for the future



RENEWABLE ENERGY INTEGRATION with  
MINI/MICROGRID

Note



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# Note





RENEWABLE ENERGY INTEGRATION with  
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