8th INTERNATIONAL CONFERENCE on SMART GRID
(icSmartGrid2020)

Paris, France 17-19 June 2020
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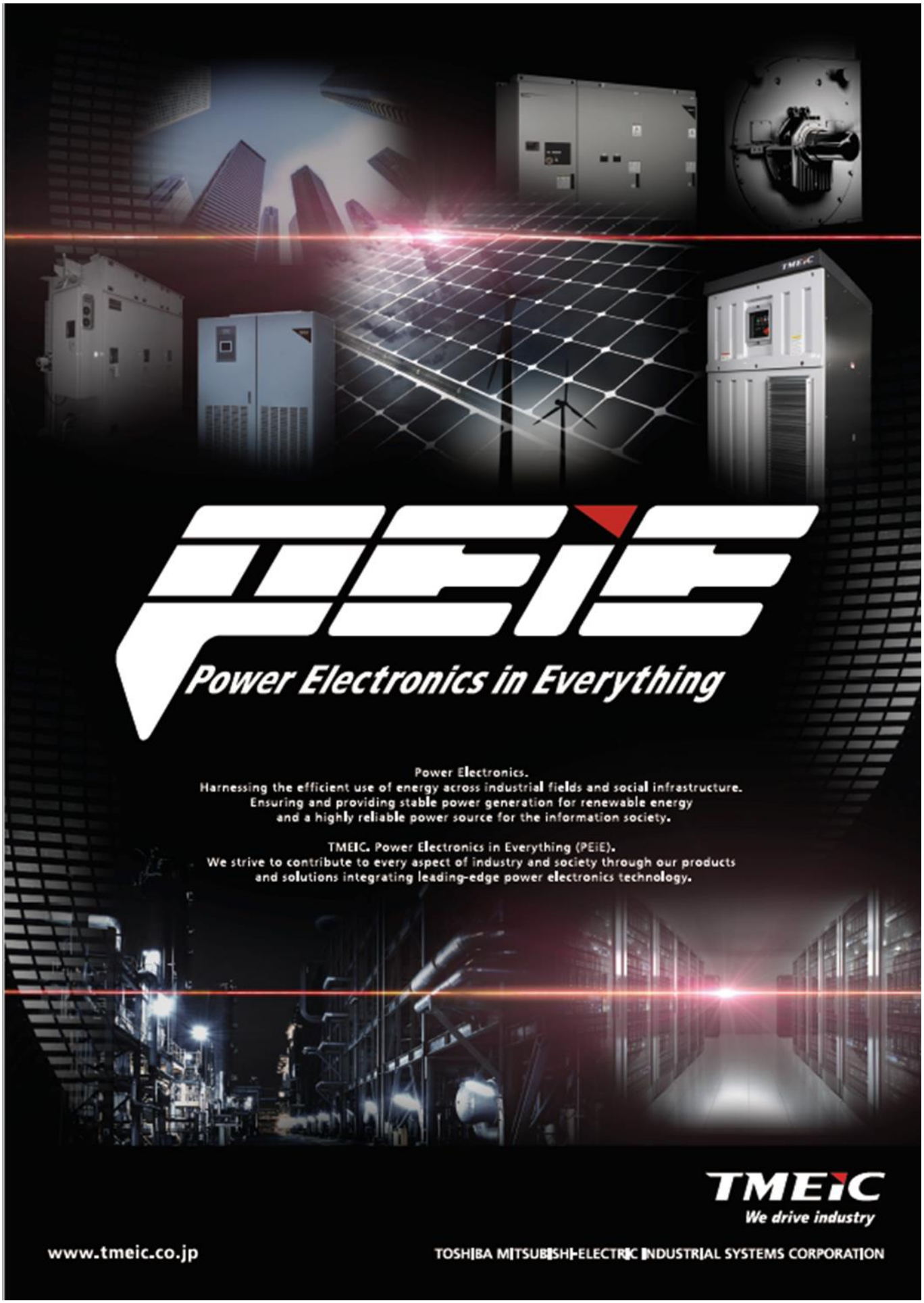

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TOPICS

The coverage of the Conference on Smart Grids includes the following areas, but not limited to:

- Distributed Power Energy Systems and Sources,
- Renewable Energy,
- Conventional Power Sources
- New Trends and Technologies for Smart Grid
- Policies and Strategies for Smart Grid
- Microgrids for transportation electrification
- Energy Transformation from Renewable Energy System to Smart Grid
- Novel Energy Conversion Studies for Smart Grid
- HVDC for Smart Grid
- Power Devices and Driving Circuits for Smart Grid
- Performance Analysis of Smart Grid
- Decision Support Systems for Smart Grid
- Control Techniques for Smart Grid
- ICT, IoT, Real-time monitoring and control
- Applications for Industries
- Smart Grid for Electrical Vehicles and Components
- Energy Management Systems, etc.
- Future Challenges and Directions for Smart Grids

LANGUAGE

The working language of the icSmartGrid2020 conference is English.

WELCOME to icSmartGrid 2020

Dear Colleagues,

The purpose of the International Conference on Smart Grid (**icSmartGrid2020**) is to bring together researchers, engineers, manufacturers, practitioners and customers from all over the world to share and discuss advances and developments in Smart Grids research and applications.

After the successes of the first and the second editions of Smart Grid Workshops on behalf of European Commission Joint Research Centre at Antalya in September 18-20, 2013 and in September 23-25 April, 2014, the third addition is at Istanbul in February 22, 2015, the fourth addition is at Istanbul in April 28, 2015, fifth addition is at Istanbul in March 21-25, 2016 with the technical co-sponsorship of IEEE IES, the sixth addition is at Nagasaki in December 4-6, 2018 with technical co-sponsorship of IEEE IES and IAS, the seventh addition at Newcastle, Australia in December 9-11, 2019 with the technical co-sponsorship of IEEE IES and IAS, we are now organizing eighth International Conference on Smart Grid (icSmartGrid) at Paris, France. **icSmartGrid2020** will continue promoting and disseminating the knowledge concerning several topics and technologies related to smart energy systems and sources with the Diamond Sponsorship of TMEIC. It is therefore aimed at assisting researchers, scientists, manufacturers, companies, communities, agencies, associations and societies to keep abreast on new developments in their specialist fields and to unite in finding alternative energy solutions to current issues such as the greenhouse effect, sustainable and clean energy issues.

However, due to spread of COVID-19 all over the World, we received the permission from IEEE to organize icSmartGrid on a digital platform. Therefore, we will organize **icSmartGrid2020** virtually.

You will find the detail information about this activity on the conference official website. Please visit http://www.icsmartgrid.org/

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KEYNOTE SPEAKERS

Keynote 1: Professor Adel Nasiri, University of Wisconsin-Milwaukee, USA

Date : June 17, 2020 10.00-11.00 AM

Dr. Nasiri is presently the Richard R. Grigg, Jr. Professor and Director of Center for Sustainable Electrical Energy Systems in the College of Engineering and Applied Sciences at the University of Wisconsin–Milwaukee (UWM). He is also a site director for the NSF I/UCRC on Grid-connected Power Electronics Systems (GRAPES). Dr. Nasiri served as Associate Dean for Research of Engineering in 2015-2018 and was the founding Director of UWM Connected Systems Institute (CSI) in 2018-2019 at UWM. His research interests are renewable energy interface, energy storage, and microgrids. He has served as the primary investigator on several federal and industry funded research projects. Dr. Nasiri has published numerous technical journal and conference papers on related topics. He is a co-author of two books, several book chapters, and holds seven patent disclosures.

Dr. Nasiri is currently chair of IEEE IAS Committee on Sustainable and Renewable Energy Conversion, an Editor of Power Components and Systems, and Associate Editor of the International Journal of Power Electronics. Previopusly he served as an Editor for IEEE Transactions on Smart Grid and Paper Review Chair for IEEE Transactions on Industry Applications. He was the general Chair of 2012 IEEE Symposium on Sensorless Electric Drives, 2014 International Conference on Renewable Energy Research and Applications (ICRERA 2014), and 2014 IEEE Power Electronics and Machines for Wind and Water Applications (PEMWA 2014).

High Power and Medium Voltage Dual Active Bridges

Summary: Dual Active Bridges (DAB) are common power electronics building blocks traditionally used in various electrically isolated converter systems. There is a renewed interest in understanding and developing DABs as core components for Solid State Transformers (SST). These transformers can add flexibility, controllability, and reliability to existing electrical distribution systems. Major elements of a DAB are two H-bridge converters and a high frequency transformer. With the advent of Wide Band Gap (WBP) devices offering higher voltage and power ratings, many initiatives have started to replace the traditional low frequency transformers with compact and controllable SSTs. In this talk, first the design and development of high frequency transformers are discussed. Then, several control methods for the DABs including phase-shift, duty ratio, and triple phase shifts are discussed to control the power flow. Methods are discussed to minimize the RMS current, reduce reactive power transfer, and minimize converter loss. Applications of DABs for several SST configurations a are also discussed.

Keynote 2: Mr. Akira Kawaguchi, Vice President of TMEIC, Japan

Date : June 17, 2020 11.10-12.10 AM

Professional Experience:
• Oct. 2003 - Present Toshiba Mitsubishi-Electric Industrial Systems Corporation
• Jun. 2018 Executive Officer Vice President of Power Electronics Systems
Division
• Apr. 2018 Vice President of Power Electronics Systems Division
• Apr. 2016 Deputy Vice President and Technology Executive of Renewable Energy & New Technology Division
• Apr. 2014 Technology Executive of Renewable Energy & New Technology Division
• Apr. 2013 Senior Manager of Photovoltaic System Center Power Electronics Systems Division
• Oct. 2010 Senior Manager of Power Electronics Department Power

Contributions to Sustainable Future through PEiE, Power Electronics in Everything

Summary: The world is now under difficulties due to COVID-19. The power electronics technology contributes to overcome the difficulties by supplying reliable electric power to the communication/information systems and to the industries. The speech includes examples of such contributions.

The speech reminds that the world also has long-term issues concerning the CO2 abatement for sustainability. The CO2 abatement policies assign great roles to the renewables and the energy efficiency, to which the power electronics can contribute very much as one of key technologies. The speech introduces recent technology trend of industrial power electronics especially on the high capacity in the range of MW. The power electronics is expected to contribute to further promotion of the renewables and the energy efficiency.

The first topic is the power electronics for the renewables and the energy storage systems, ESS. The speech introduces the key technologies for high power and high system efficiency for the industrial MW-range PV inverters. The speech also introduces the ESSs necessary for stabilizing the power grid by managing the power and energy from the renewables. Considering applications for both the renewables and the ESS, the speech introduces the latest universal inverters developed based on the modular design concept. The smart control systems are also introduced which integrates the renewables, the ESSs and the loads in the power grids.

The second topic is related to the digitalization and the factories of products essential to the daily life of these days. The demands are emerging for communication/information systems, for digital devices and for medicines due to COVID-19. The speech introduces the latest UPS, Uninterruptible Power System as one of contributions from the power electronics for fights against the virus by supplying reliable power to the data centers. The next contribution is from the MPC, Multiple Power Compensator, which feeds stable electric power for continuous production in factories of digital devices, semiconductors, medicines and so on. The MPC also contributes to reinforce power supply systems in the factories as BCP, business continuity plan against the frequent extreme weathers increasing these years.

The third topic comes back to the issue related to CO2 abatement, the energy efficiency in industries. The motors consume more than half of the electricity in the world. The motor drive by inverters is well recognized for better system efficiency in low voltage applications. The speech notes that, for expanding the inverter drive to higher voltage applications, the inverter technology for several kV and higher is required. Then, such technology is introduced with the high voltage motors.

In the summary, the speech remarks that the power electronics technology is now embedded almost in everything. Then, a concept "PEiE", Power Electronics in Everything, is proposed, in which new values will be created by linking the power electronics in things and will contribute to a sustainable future.

Keynote 3: Professor Daniel Hissel, The French National Hydrogen Research Federation (CNRS), France

Date : June 18, 2020 10.00-11.00 AM

Prof. Daniel Hissel (M'03, SM'04) obtained an electrical engineering degree from the Ecole Nationale Supérieure d'Ingénieurs Electriciens de Grenoble, France, in 1994. Then, he obtained a PhD from the Institut National Polytechnique de Toulouse, France, in 1998. Until 2000, he worked for ALSTOM Company where he was system engineer on electrical and fuel cell buses projects. From 2000 to 2006, he has been an Associate Professor at the University of Technology Belfort. Since 2006, he is a Full Professor at the University of Franche-Comté and ranked as "Exceptional Class Professor" (highest ranking in France). He was successively the Head of the "Fuel Cell Systems" Research Team of the Laboratory of Electrical Engineering and Systems (until 2008), then he joined the FEMTO-ST (CNRS) Institute and became Head of the "Energy systems modelling" research team. Since 2012, he is the Head of the "Electric Actuators, Hybrid & Fuel Cell Systems" research team in the same Institute. His main research activities are concerning fuel cell systems dedicated to automotive and stationary applications, modelling, non linear control and energy optimization of these systems and fuel cell system diagnostic/prognostic. Between 2012 and 2019, he has been the founding Director of the FCLAB Research Federation (CNRS), devoted to Fuel Cell Systems Research and Technology and gathering about 180 researchers. Since 2020, he is the Deputy Director of the French national hydrogen research federation (CNRS). He is also the Chair of the IEEE VTS French Chapter, member of the advisory board of the MEGEVH network, the French national network on EV and HEV, and member of the board of directors of the Vehicule du Futur competitiveness cluster. He has published more than 450 scientific papers in peer-reviewed international journals and/or international conferences. He has been awarded by the Blondel Medal in 2017 for his work towards industrialisation of fuel cell systems.

Hydrogen economy: myth or reality?

Summary: Continuous depletion of the crude oil and gradual increase in the oil price have emphasized the need of a suitable alternative to our century-old oil-based economy. A clean and efficient power supply device based on a renewable energy source has to be available to face this issue. Among the different technological alternatives, fuel cell power generation becomes a more and more interesting and promising solution for both automotive industry and stationary power plants. However, different technological and socio-economics hurdles have still to be overcome before seeing the development of industrial and competitive products in these fields.

Among them, different issues must be solved regarding development of specific components (e.g. air compressors, high efficient power electronics, …), new on-line energy management strategies for fuel cell hybridized systems, efficient diagnostic and state-of-health estimation methodologies, able also to operate in real-time and with limited number of additional physical sensors. Moreover, regarding the increase of the durability and of the reliability of those systems, prognostic algorithms able to estimate the remaining useful lifetime of the fuel cell system under actual operating conditions are requested. Finally, cost reduction and public acceptance are key drivers in the introduction of all new disruptive technologies. The proposed presentation will provide a state-of-art on these different items.

Keynote 4: Professor Seref Sagiroglu, Gazi University, Turkey

Date : June 18, 2020 11.10-12.10 AM

Prof. Dr. Seref Sagiroglu completed his undergraduate education in 1987 at Erciyes University, Department of Electronics Engineering. He completed his doctoral studies at the University of Wales College of Cardiff (now Cardiff University, UK) in 1994. He continues his academic career as a professor in Software Engineering at Gazi University Computer Engineering Department. Prof. Sagiroglu has an outstanding academic with h-index=32 and i10-index=82; more than 3750 citation; 60 SCI/SSCI indexed articles, 100 national and international indexed articles; 200 national and international conference and symposium articles. He has also author and/or editor of more than 20 books, owns 6 patents and has completed national and international projects on security, big data, intelligent modeling and control, biometric, electromagnetic fields, etc. Sagiroglu has organised more than 50 national and international events on 5G, Big Data, Machine Learning, Deep Learning, Information and Cyber Security, IPv6, etc. as chairman or co-chairman. Some of them are: International Conference on Information Security and Cryptology (www.iscturkey.org); IEEE International Conference on Computer Science and Engineering (www.ubmk.org); IEEE Big Data, Deep Learning and Fighting Cyber Terrorisms (www.ibigdelft.org); IEEE International Conference on Machine Learning and Applications (www.icmla-conferences.org); Big Data Analytics, Security and Privacy Workshop (www.bigdatacenter.gazi.edu.tr); National Cyber Terrorism Conference (www.siberteror.org); Turkey Open Data Conference (www.acikveriturkiye.org); IEEE 5G Summit-Istanbul (www.ieeesummit.org); National IPv6 Conference (www.ipv6.org). He has also been founding members of Information Security Association (www.bilgiguvenligi.org.tr); Turkish Science Research Foundation (www.tubav.org.tr), and The Foundation of the People Caring for the Future (www.gonder.org.tr). Sagiroglu has/had such duties as: President and Executive Committee Member of Information Security Association; President and Member of Turkish Science and Research Foundation; Director of Graduation School of Science and Technology at Gazi University; Head of Computer Engineering Department, Gazi University; Member of IEEE Biometric Task Force; President of IPv6 Council Turkey (www.ipv6forumtr.org); Editors of International Journal of Information Security Science (www.ijiss.org); International Journal of Information Security Engineering (in Turkish) (www.dergipark.gov.tr/ubgmd) and CyberMag (www.cybermag.com); General Director of FutureTech (www.futuretech.com.tr); Member of Cyber Security Group of Higher Education Council of Turkey; Supervisors to Havelsan; IT Regulatory Body of Turkey (BTK) and Personal Data Protection Regulatory Body of Turkey (KVKK). Prof. Sagiroglu has delivered as invited or keynote speakers more than 500 seminars, talks, conferences at universities, schools, sectors, TV and Radio Programs, institutions and organisations in the topics of Information Security, Big and Open Data, Cyber Security and Defense, Artificial Intelligence, Computer and Software Engineering, Privacy, Biometrics, Innovation Culture Creation, IPv6, 5G, etc.

Cyber Security and Big Data Perspective for Smart Grid Systems

Summary: Big data has potential to provide opportunities not only many fields but also power grid sectors enhancing technical, organizational, social and economic gains and contributions. The current potential of applying big data approaches for better planning, managing, designing, and securing power grid operations are very challenging tasks and needs significant efforts. This talk will cover the issues of computational complexity, data security and privacy, cost, management, planning and integration of big data into power grid systems and also focus on the key challenges of cyber security and big data issues.

Keynote 5: Professor Nouredine Hadj-Said, G2Elab Domaine Universitaire, France

Date : June 19, 2020 10.00-11.00 AM

Dr. Nouredine Hadjsaid received PhD and the "Habilitation à Diriger des Recherches" degrees from Grenoble Institute of Technology in 1992 and 1998 respectively. He is presently a full professor at Grenoble INP, engineering institute of UGA, where he conducts research at G2ELAB. His main expertise is in the area of "Smartgrids".

He has directed the common academia-industry research center between EDF, Schneider Electric and G2Elab (IDEA: Inventer la Distribution Electric de l'Avenir) on smartgrids from 2001 to 2013. He is presently the Director of the power Engineering lab G2ELAB, the Director of an ENEDIS Industrial chair of excellence on "Smartgrids", and the Chairman of Scientific Council of Think SmartGrids France. At the international level, he is presently the treasurer of IEEE Power Energy Society, and served as the vice-chair of IEEE IGETCC (Intelligent Grid and Emerging Technologies Coordination Committee) and the French representative at International Energy Agency for ISGAN-SIRFN Annex. He was the general conference chair of IEEE PowerTech'2013 held in Grenoble-France and IEEE SG4SC (SmartGrids for SmartCities) held in Paris in 2016.

Dr. Hadjsaid has published more than 250 scientific papers in international referred journals and conferences, and has authored/coauthored and directed 7 books about power grids and Smartgrids.

Smartgrids for Energy Transition: from DER integration to system flexibility

Summary: Most countries worldwide have embraced the path towards an energy transition for more sustainability, efficiency, security of supply and energy accessibility. This process is being accelerated by the climate change urgencies and the sensitivity of modern societies to ecological issues. Thus, renewable energy sources, clean mobility, energy efficiency programs and the active involvement of the end user consumer in the energy chain are on the rise at an unprecedented rate.

In this context, the power grid is a vital infrastructure for facilitating energy transition with the electric vector being enforced. Thus, Distribution grids are the most affected by this transition as they are at the interface of most grid connected renewable energy sources, Plugin Hybrid and Electric Vehicles (PHEV), and end user consumers including their flexibility. In addition, all these energy resources are distributed in nature (DER-Distributed Energy Resources), mostly not observable neither controllable with heterogeneous features and power rating. However, it has to be noted that power grids are significantly affected by the decrease of the overall inertia linked to the development of power electronic interfaced renewable energy sources, the increasing interaction with distribution grids being more active, and the changing nature of loads being more controllable including self-consumption. This issue is critical for the overall system stability.

As such, this transition requires an even smarter grid at all levels able to achieving the assigned goals without overinvesting on existing assets while considering technical, economical and regulation constraints. The key issues are clearly adaptability and flexibility at all levels of power grids and dynamics.

The extent of technologies to be developed for allowing the grid integration of large scale DER (including PHEV) in the best security/safety and economic conditions encompasses several areas that include flexible generating, load control and storage technologies, advanced forecasting tools, new monitoring and imbedded control devices, smart equipment for fault management, and related information and communication technologies for example.

The presentation will address energy transition challenges, DER development and power grid evolution, the role of flexibility and other solutions being developed in the framework of Smargrids to meet the increasing complexity of the whole electrical system. It will cover both up to date research and development in this field as well as industrial applications including some examples on large-scale pilot projects for smarter grids.

TUTORIALS

Speaker 1: Dr Grain Philip Ased, Institute of Energy and Environment, University of Strathclyde,(UK)

Date : June 17, 2020 16.50-17.50 AM

G.P. Adam (M'12) received a PhD in Power Electronics from University of Strathclyde in 2007. Since April 2008, Dr Adam is with Institute of Energy and Environment, University of Strathclyde in Glasgow, UK. Besides his academic research, Dr Adam is a leading contributor to several research and development projects on novel MVDC and HVDC converters with industry, and to major European Union research projects on energy such as TWENTIES of the Seventh Framework Programme (FP7) and PROMOTION of the Horizon 2020. His research interests include: fault tolerant voltage sourced converters for HVDC applications; modelling and control of point-to-point and multi-terminal HVDC transmission systems; voltage source converter based FACTS devices; and advanced control methods to facilitate continued operation of offshore multi-terminal HVDC grids using cost-effective partially selective protection schemes. Dr Adam has authored and co-authored three books in applications of power electronics in power systems and renewable energy, and over 100 journal and conference papers in the area of multilevel converters and HVDC systems, and grid integration of renewable power. Dr Adam is a member of IEEE and IEEE Power Electronics Society, and active contributor to scrutiny of academic literature in the areas of fundamentals and applications of power electronics for several IEEE and IET Transactions and Journals and conferences, and as an associate editor and guest editor to IEEE journal of emerging and selected topics in power electronics.

Voltage Sourced Converter Based HVDC Transmission Systems

Summary: This tutorial will discuss the latest developments in control and circuit topologies of voltage sourced converters for HVDC applications, including their broader support roles to ac power systems during normal and abnormal conditions, and power grid decarbonisation. The topics will be covered and depth of the discussions will be tailored toward an holistic approach, which targets a wide range of audiences and supports a global effort to raise new generations of academics, researchers and engineers with good knowledge of power electronics and power systems in order to able to meet the contemporary and future energy challenges.

This tutorial will cover the following aspects:

1. General overview:

2. Modular multilevel converters:

3. Customized mixed cells modular multilevel converter (MC-MMC) and its variants:

4. Enhanced modular multilevel converter and its variants:

5. Alternate arm converter (AAC) and its variants:

6. Selected simulation cases aims to illustrate the half-bridge MMC performance during:

7. Selected simulation cases aims to illustrate the full-bridge MMC performance during:

8. Selected simulation cases to illustrate the performance of MC-MMC with equal and unequal number of full and half bridge cells per arm during:

9. Selected simulation cases aims to illustrate the performance of the enhanced MMC and its variants during:

10. General discussions

All registered delegates to this tutorial will be given electronic copies of the most comprehensive reports to date on MMCs and MC-MMC and comprehensive libraries of PSCAD and RTDS models. The time needed for delivery of this tutorial is 2.5 hours.

Speaker 2: Dr. Massimo Caruso Department of Engineering University of Palermo Italy

Date : June 18, 2020 16.50-17.50 AM

Massimo Caruso received the M.S. and Ph.D. degrees in electrical engineering from the University of Palermo, Italy, in 2008 and 2012, respectively. In 2011, he joined the MEMS Sensors and Actuators Laboratory Group, University of Maryland, College Park, MD, USA, collaborating for the development of electric micromotors and drives for in vivo bacteria biofilm detection and treatment. In 2014, he joined the Sustainable Development and Energy Saving Laboratory, University of Palermo, Italy, focusing his research activities on the design, simulation and experimental development of electrical machines and drives for industrial and sustainable energy applications.

Electric Vehicles and Smart Grid Integration

Summary: It can be stated that the sustainable development of our planet is considerably related to a significant and constant reduction of environmental pollution in the next years. In this perspective, the electrification of the transportation sector represents a valuable solution to the global climate change challenge, decreasing the Greenhouse Gas (GHG) emissions from fossil fuels.

On the other hand, the Electric Vehicles (EVs) are characterized by a big potential on serving the electric grid as independent distributed energy source, delivering the energy stored in their batteries in order to provide ancillary services, such as integration of fluctuating renewable sources and peak-shaving power.

Coordinated charging and discharging of electric vehicles is receiving a considerable attention during the last years, leading to the concepts of Vehicleto-Grid (V2G) and Grid-to-Vehicle (G2V). In this context, the aim of this tutorial is to provide the audience with the actual scenario and the future perspective on the interaction between electric vehicles and smart grids.

More in detail, the tutorial is structured as follows:

The first part will be focused on the actual technological innovation of electric vehicles in terms of equipped sensors and actuators towards a more efficient data analysis and management for the smart grid integration. These innovative paradigms will also address signal processing and human-machine interaction technologies to design safety and partially autonomous vehicles.

The second part of the tutorial will examine the actual and future possibilities on the EV performance improvement regarding their electric motor and drive system. An extensive analysis on the typologies of motor-drive systems adopted in the automotive sector will be provided, focusing, then, the attention on the integrated real-time control algorithms capable of enhancing the performance of the whole drive for a more efficient V2G interaction.

Finally, the tutorial will give particular attention to the challenges in terms of both standardization and performance improvement of EV charging stations for their smart grid integration, highlighting the aspects related to smart and fast EV charging infrastructures and their optimal management.

Speaker 3: Professor Inno Davidson, Durban Univ. of Technology, Durban, South Africa

Date : June 19, 2020 11.10-12.10 AM

Innocent E Davidson, (M'92, SM'02), IEEE, USA; Fellow, Institute of Engineering and Technology, UK; Fellow, South African Institute of Electrical Engineers; Chartered Engineer, UK; registered Professional Engineer (P Eng.), Engineering Council of South Africa. He received the Bachelor of Engineering, BSc (Eng.) with Honours, Masters of Engineering, MSc (Eng.) degrees in Electrical Engineering from the University of Ilorin, Nigeria in 1984, 1987 respectively; and Doctor of Philosophy, PhD in Electrical Engineering, from the University of Cape Town, Rondebosch, South Africa, in 1998; and the Post-graduate Diploma in Business Management, from University of KwaZulu-Natal (UKZN), in 2004. He was Associate Professor of Electrical Engineering and a Research Coordinator with the University of Namibia, Namibia, from 2012 to 2014. He was Director of the Eskom Centre of Excellence in HVDC Engineering, UKZN, from 2014 to 2016. He is a Full Professor and Chair, Department of Electrical Power Engineering, Durban University of Technology, Durban, South Africa. His current research interests include grid integration of renewable energy using HVDC technologies and innovation for smart cities. He is the recipient of numerous awards and industry research grants. Prof Davidson was the recipient of the "Faculty Researcher of the Year" award at the Durban University of Technology's Annual Research & Innovation Awards in 2018, 2019 respectively based on prior year's research outputs. Dr Davidson received the Associate Certificate in Sustainable Energy Management (SEMAC), from the British Columbia Institute of Technology, Burnaby, BC, Canada, 2011.

Fault Ride-Through of Inverter Based-Microgrids

Summary: An increasing percentage of the total power generated is no longer derived from the traditional synchronous generators but from the inverter-based renewable energy system. Inverter based systems are often decentralized with a paradigm shift in the dynamic and operating features of the grid. Microgrids provide a veritable platform to aggregate multiple Distributed Energy Resource with local loads and can operate as an island or in synchronism with the grid. Microgrids and DERs are often decentralized and integrated into the medium-voltage network and, in certain instances, low-voltage networks. The integration of small scale DERs as microgrids to the grid is not really a big concern to the grid operator as large scale integration. The grid identifies small scale integrated microgrids as negative loads. However, installed large scale facilities have a significant influence on the overall grid frequency and voltage regulations through their generation. Consequently, conventional microgrids and DER systems typically do not render ancillary grid services or ensure fault-ride-through. The traditional control system of grid-connected units provides the power injection at the unity power factor with a strict requirement to disconnect promptly in the event fault or disturbances in the grid. However, with inverter-based microgrids (DERs) poised to play an influential role in the emerging power generation, there is a need to revamp their control scheme to provide fault ride-through capability and other ancillary services. This will ultimatly ensure grid stability and reliability.

CONFERENCE PROGRAM SUMMARY

Program Summary of icSmartGrid 2020, June 17-19, 2020, Paris, France

	Wednesday, 17 June 2020			Thursday, 18 June 2020			Friday, 19 June 2020		
09:40-10:00	Opening Ceremony (20 Min)								
10:00-11:00	Keynote Speech-I (60 Min)			Keynote Speech-III (60 Min)			Keynote Speech-V (60 Min)		
11:00-11:10	Break			Break			Break		
11:10-12:10	Keynote Speech-II (60 Min)			Keynote Speech-IV (60 Min)			Tutorial-II		
12:10-13:00	Break			Break			Break		
13:00-14:40	VP1 VP2 VP3 VP4 VP5	Virtual Session-1 5 PAPERS (5*20=100 Min)		V11 VP12 VP13 VP14 VP15	Virtual Session-3 5 PAPERS (5*20=100 Min)		V21 VP22 VP23 VP24 VP25	Virtual Session-5 5 PAPERS (5*20=100 Min)	
14:40-15:00	Break			Break			Break		
15:00-16:40	VP6 VP7 VP8 VP9 VP10	Virtual Session-2 5 PAPERS (5*20=100 Min)		VP16 VP17 VP18 VP19 VP20	Virtual Session-4 5 PAPERS (5*20=100 Min)		VP26 VP27 VP28 VP29 VP30	Virtual Session-6 5 PAPERS (5*20=100 Min)	
16:40-16:50	Break			Break			Break		
16:50-17:50	Tutorial-I			Tutorial-II			VP31 VP32 V33 VP34 VP35	Virtual Session-7 5 PAPERS (5*20=100 Min)	
							Closing Ceremony		

CONFERENCE PROGRAM

Date: 17 June 2020	
09:40-10:00	Opening Ceremony and Speeches: -Prof. Brayima Dakyo, General Chair, icSmartGrid 2020 -Prof. Fujio Kurokawa, General Co-Chair, icSmartGrid 2020 -Prof. Ilhami Colak, General Co-Chair, icSmartGrid 2020 **Chairs:Seref Sagiroglu; Nobumasa Matsui**
	KEYNOTE
10:00-11:00	Speaker: Professor Adel Nasiri, University of Wisconsin-Milwaukee, USA, **"High Power and Medium Voltage Dual Active Bridges"** **Chairs: Rosario Miceli; Halil Ibrahim Bulbul**
11:00-11:10	**BREAK**
	KEYNOTE
11:10-12:10	Speaker: Mr. Akira Kawaguchi, Vice President of TMEIC, Japan, **"Contributions to Sustainable Future through PEiE, Power Electronics in Everything"** **Chairs: Adel Nasiri; Jorge A. Thomas**
12:10-13:00	**BREAK**

VIRTUAL PRESENTATIONS	
Date: 17 June 2020	
VIRTUAL SESSION 1	**CHAIRS:Muhammad Ali; Masoud Dashtdar**
13:00-13:20	**ID:1 Modeling and Construction of Christmas Trees and Cribs Supplied by Wind/PV Energy Systems** Daniel Icaza (Catholic University of Cuenca, Cuenca, Ecuador)*; Fernando Mejía Nova (Universidad Nacional de San Agustín); Luz Cardenas Herrera (Universidad Nacional de San Agustin); Manuel Cardenas Herrera (Universidad Nacional de San Agustín); Santiago Pulla (Catholic University of Cuenca, Cuenca, Ecuador)
13:20-13:40	**ID:4 Prediction of Heat Demand for Building Energy Managers: An IoT and Control Perspective** Jorge A. Thomas (Fraunhofer IOSB)
13:40-14:00	**ID:10 Modelling False Data Injection Attacks Against Non-linear State Estimation in AC Power Systems** Jay Nayak (University of Regina)*; Irfan Al-Anbagi (University of Regina)
14:00-14:20	**ID 11 Optimal Participation of Aggregated Residential Customers in Flexibility Markets** Noemi González Cobos (ITE)*; Pilar Calatayud (ITE); Lucía Arcos (ITE); Adriana V. Trujillo (ITE); Marta García Pellicer (ITE); Alfredo Quijano (UPV)
14:20-14:40	**ID 13 Organic Buildings and Airplane-type Architectures in Isolated Locations Supplied with Solar Energy. Study Proposed for Medical Clinics Arequipa-Peru** Daniel Icaza (Catholic University of Cuenca, Cuenca, Ecuador)*; Luz Cardenas (Universidad Nacional de San Agustin); Fernando Mejía Nova (Universidad Nacional de San Agustín); Santiago Pulla (Catholic University of Cuenca, Cuenca, Ecuador)
14:40-15:00	**BREAK**
VIRTUAL SESSION 2	**CHAIRS: Jay Nayak; Noemi González**
15:00-15:20	**ID:16 A Novel Transfer Learning Approach to Detect the Location of Transformers in Distribution Network** Muhammad Ali* (University of New South Wales, Canberra, Australia), Carlos A. Macana (Zeppelin Bend Energy, ACT Canberra), Krishneel Prakash (University of New South Wales, Canberra, Australia), Bill Tarlinton (Zeppelin Bend Energy, ACT Canberra), Robi Islam (University of Sunshine Coast, Queensland, Australia), Hemanshu Pota (University of New South Wales, Canberra, Australia)
15:20-15:40	**ID:18 Batteryless UPS for modern data centres: A high current extension of SCALDO with distributed DC-UPS** Thilanga Ariyarathna (Waikato Institute of Technology)*; Nihal Kularatna (University of Waikato); D. Alistair Steyn-Ros (University of Waikato)
15:40-16:00	**ID:23 Size Optimization of Distributed Generation Resources in Microgrids Based on Scenario Tree** Seyed Mohammad Sadegh Hosseinimoghadam (Fars Regional Electric Company, Iran); Hamzeh Roghanian (Fars Regional Electric Company, Iran); Masoud Dashtdar* (Electrical Engineering Department, Bushehr Branch Islamic Azad University, Bushehr, Iran); Seyed Mohammad Razavi (Jundi-Shapur University of Technology Dezful)
16:00-16:20	**ID:25 Power-Sharing Control in an Islanded Microgrid using Virtual Impedance** Seyed Mohammad Sadegh Hosseinimoghadam (Fars Regional Electric Company, Iran); Hamzeh Roghanian (Fars Regional Electric Company, Iran); Masoud Dashtdar* (Electrical Engineering Department, Bushehr Branch Islamic Azad University, Bushehr, Iran); Seyed Mohammad Razavi (Jundi-Shapur University of Technology Dezful)
16:20-16:40	**ID:26 Experimental Validation of PSO and Neuro-Fuzzy Soft-Computing Methods for Power Optimization of PV installations** El hadji Mbaye EMN Ndiaye (UADB)*; Alphousseyni Ndiaye (Universite Alioune Diop de Bambey-Senegal); Faye Mactar (Universite Alioune Diop de Bambey-Senegal)
TUTORIAL	
16-50-17:50	Speaker: Dr Grain Philip Ased, Institute of Energy and Environment, University of Strathclyde,(UK), **"Voltage Sourced Converter Based HVDC Transmission Systems"**

Date: 18 June 2020	
KEYNOTE	
10:00-11:00	Speaker: Professor Daniel Hissel, The French National Hydrogen Research Federation (CNRS), France, **"Hydrogen economy: myth or reality?"** **Chairs:Seref Sagiroglu; Mahamadou Abdou Tankari**
11:00-11:10	**BREAK**
KEYNOTE	
11:10-12:10	Speaker: Professor Seref Sagiroglu, Gazi University, Turkey, **"Cyber Security and Big Data Perspective for Smart Grid Systems"** **Chairs: Daniel Hissel; Mohamed Adel Esmaeel**
12:10-13:00	**BREAK**

VIRTUAL PRESENTATIONS	
Date: 18 June 2020	
VIRTUAL SESSION 3	**CHAIRS:Hyacinthe Tchakounte; Maguette Sarr**
13:00-13:20	**ID:27 Review of Islanding Detection Parameters in Smart Grids** Ch Rami Reddy (K L University)*; B Srikanth Goud (K L University); B Nagi Reddy (Vignana Bharathi Institute of Technology, Hyd); M Pratyusha (GITAM School of Technology, Bengaluru); C.V Vijay Kumar (Vignana Bharathi Institute of Technology, Hyd); R Rekha (Anurag College of Engineering, Ghatkesar)
13:20-13:40	**ID:29 Indirect Sliding Mode Voltage Control of Buck Converter** Abdelhakim Belkaid (Bejaia University)*; Ilhami Colak (Nisantasi University); Korhan KAYISLI (Nisantasi University); Ramazan Bayindir (Gazi University)
13:40-14:00	**ID:30 Sliding Mode Control of Doubly-Fed Induction Generator in Wind Energy Conversion System** Amira Dr LAKHDARA (Department of Electrical and automatic Engineering_LGEG)*; Tahar Bahi (ACECS-2016 Chair); Moussaoui Abdelkrim (Université 8 Mai 1945 Guelma)
14:00-14:20	**ID:33 Steady State Analysis of A wind Energy Driven Self Excited Induction Generator (SEIG)** Mohamed Adel Esmaeel (Badr University in Cairo)*
14:20-14:40	**ID:36 Realistic Wireless Smart-Meter Network Optimization Using Composite RPL Metric** Amr Kassab (The American University in Cairo AUC)*; Karim Seddik (The American University in Cairo AUC); Ayman Elezabi (The American University in Cairo AUC); Ahmed Soltan (El SEWEDY)
14:40-15:00	**BREAK**
VIRTUAL SESSION 4	**CHAIRS: Ch. Rami Reddy; Mohamed Adel Esmaeel**
15:00-15:20	**ID:37 A Optimization of the Penetration Rate in Photovoltaic Power : Case of the Senegalese Electricity Network** Maguette Sarr (Ecole Supérieure Polytechnique de Dakar)*; Boubacar NIANG (Ecole Supérieure Polytechnique de Dakar); Lamine Thiaw (Ecole Supérieure Polytechnique de Dakar)
15:20-15:40	**ID:38 Effect of Smart Grid Technologies on the National Grid System** ILHAMI COLAK (Nisantasi University)*
15:40-16:00	**ID:39 Performance Comparison of an Automatic Smart Sun Tracking System Versus a Manual Sun Tracking** Hyacinthe Tchakounte (University of Ngaoundéré)*; Claude Bertin NZOUNDJA FAPI (University of Ngaoundere); Martin KAMTA (University of Ngaoundéré); Haman Djalo (University of Ngaoundéré)
16:00-16:20	**ID:40 A Blockchain-based Smart Grid Model for Rural Electrification in India** Vedika Jitendra Kulkarni (Indian Institute of Technology, Guwahati)*; Kalyani Kulkarni (PVG's College of Engineering and Technology)
16:20-16:40	**ID:41 A Novel Approach to Decaying DC offset Removal in Fault Current Signals of Digital Relays** Seyed Mohammad Sadegh Hosseinimoghadam (Fars Regional Electric Company, Iran); Hamzeh Roghanian (Fars regional electric company); Masoud Dashtdar (Electrical Engineering Department, Bushehr Branch, Islamic Azad University, Bushehr, Iran)*; Seyed Mohammad Razavi (Jundi-shapur university of technology Dezful)
TUTORIAL	
16-50-17:50	Speaker: Dr. Massimo Caruso Department of Engineering University of Palermo Italy, **"Electric Vehicles and Smart Grid Integration"**

Date: 19 June 2020	
KEYNOTE	
10:00-11:00	Speaker: Professor Nouredine Hadj-Said, G2Elab Domaine Universitaire, France, **"Smartgrids for Energy Transition: from DER integration to system flexibility"** **Chairs: Inno Davidson; Massimo Caruso**
11:00-11:10	**BREAK**
TUTORIAL	
11:10-12:10	**Speaker:** Professor Inno Davidson, Durban University of Technology, Durban, South Africa, **"Fault Ride-Through of Inverter Based-Microgrids "**
12:10-13:00	**BREAK**

VIRTUAL PRESENTATIONS	
Date: 19 June 2020	
VIRTUAL SESSION 5	**CHAIRS: Nobumasa Matsui; Daniel Icaza**
13:00-13:20	**ID:42 Modeling Implementation of an Adaptive Facade Design for Energy Efficiently Buildings Based Biomimicry** **G**amze Nalcacı (Metu)*; Gozde Nalcaci (Architecture)
13:20-13:40	**ID:43 Policy Implications for the Dissemination of Smart Grid Implementations from Energy Efficiency Perspective: A case from Turkey** Bilal Duzgun (Gazi University); Ramazan Bayindir (Gazi University)*
13:40-14:00	**ID:44 Improving PV System Performance using High Efficiency Fuzzy Logic Control** Abdelhakim Belkaid (Bejaia University)*; Ilhami Colak (Nisantasi University); Korhan Kayisli (Nisantasi University); Ramazan Bayindir (Gazi University)
14:00-14:20	**ID:45 Measurements and Analysis of the Dark I-V-T Characteristics of a Silicon Solar Cells: KX0B22-12X1F** Dominique Bonkoungou (University of Ouaga II)*; Toussaint Guingané (University of Ouaga II); Eric Korsaga (University of Joseph Ki-ZERBO); Sosthene Tassembedo (University of Joseph Ki-Zerbo); Zacharie Koalaga (University of Joseph Ki-Zerbo); Arouna Darga (Group of electrical engineering, Paris (GeePs)); Francois Zougmore (University of Joseph Ki-Zerbo)
14:20-14:40	**ID:46 Modeling and Simulation of a Photovoltaic System Connected to the Electricity Grid with MATLAB / Simulink / Simpower Software** Tilado Toussaint Guingane; Dominique Bonkoungou; Zacharie Koalaga (Ouaga II University)
14:40-15:00	**BREAK**
VIRTUAL SESSION 6	**CHAIRS: François Zougmoré; Gamze Nalcaci**
15:00-15:20	**ID:48 Design and Simulation of a Grid Connected Wind Turbine with Permanent Magnet Synchronous Generator** Seyfettin Vadi; Ramazan Bayindir, Fethi Batincan Gurbuz (Gazi University); Eklas Hossain (Oregan University)
15:20-15:40	**ID:50 Snake Hunting System Supplied with Solar Energy in the Ecuadorial Forest for Strictly Curative Purposes, Promoting Ancestral Knowledge, Natural Medicine and Indigenous Cultural Products from Rural Areas. Case Study: Peru** Daniel Icaza (Catholic University of Cuenca, Cuenca, Ecuador)*; Luz Cardenas (Universidad Nacional de San Agustin); Fernando Mejía Nova (Universidad Nacional de San Agustín)
15:40-16:00	**ID:51 Impacts of Renewable Energy Resources in Smart Grid** Faten Ayadi (ENIS)*; Ilhami Colak (Nisantasi University); ilhan Garip (Nisantasi Univ); Halil Ibrahim BULBUL (Gazi University)
16:00-16:20	**ID:53 Experimental Validation of PSO and Neuro-Fuzzy Soft-Computing Methods for Power Optimization of PV installations** Elhadji Mbaye Mbaye Ndiaye (Universite Aliou Diop de Bambey)*; Alphousseyni Ndiaye (Universite Alioune Diop de Bambey-Senegal); Faye Mactar (Universite Alioune Diop de Bambey-Senegal
16:20-16:40	**ID:54 Model Based Design of Smart Grid System Based on Automotive System** Hitoshi Arima (Arima Management Design, Ltd.)*; Yuji Mizuno (Osaka Electro-Communication University); Nobumasa Matsui (Nagasaki Institute of Applied Science); Fujio Kurokawa (Nagasaki Institute of Applied Science)
16:40-17:00	**BREAK**
VIRTUAL SESSION 7	**CHAIRS: Faye Mactar; Faten Ayadi**
17:00-17:20	**ID:55 A Hospital Grid with Renewable Energy System Applied to Virtual Power Plant** Yuji Mizuno (Osaka Electro-Communication University)*; Yoshito Tanaka (Nagasaki Institute of Applied Science); Fujio Kurokawa (Nagasaki Institute of Applied Science); Nobumasa Matsui (Nagasaki Institute of Applied Science)
17:20-17:40	**ID:56 Energy Management Concepts for the Evolution of Smart Grids** Nicola Campagna (University of Palermo); Massimo Caruso (University of Palermo)*; Vincenzo Castiglia (University of Palermo); Rosario Miceli (University of Palermo); Fabio Viola (Università di Palermo)
17:40-18:00	**ID:57 Experimental Prototyping of a Microgrid with Mechanical Point of Common Coupling** Massimo Caruso (University of Palermo); Antonino Oscar Di Tommaso (University of Palermo); Rosario Miceli (University of Palermo); Claudio Nevoloso (University of Palermo)*; Filippo Pellitteri (University of Palermo); Christian Puccio (University of Palermo - Italy); Giuseppe Schettino (University of Palermo)
18:00-18:30	**CLOSING CEREMONY**

Presentation Instruction for icSmartGrid 2020 Presenters

Virtual presentation

Presentation time is 20 minutes including 5 minutes Question/Discussion.