

Program (at a glance)

	8am	Morning	12pm	2pm	Afternoon	6pm	Evening & night
Sunday 22 Oct		Tutorials	<i>lunch</i>		Tutorials		Welcome reception
Monday 23 Oct	Opening & Keynotes	Technical Plenary	Exhibition Opening & <i>lunch</i>		Parallel technical sessions		Exhibitors Reception
					Exhibition		
Tuesday 24 Oct	<i>Keynote</i>	Parallel sessions			<i>Lunch & Half-day tours</i>		
		Posters					
		Exhibition					
Wednesday 25 Oct		Parallel sessions		<i>Lunch</i>	Parallel technical sessions		Conference dinner & awards
		Posters					
					Exhibition		
Thursday 26 Oct		Parallel technical sessions	<i>Lunch</i>	Technical sessions	Closing		
					Exhibition		

This is final for Session Structure (there may be some minor changes in actual presentation times). See announcements and notices at Conference

Sunday 23 October

9.15-10:45	Tutorial I Part A	Tutorial II Part A
10:45-11:00	Break	
11:00-12:30	Tutorial I Part B	Tutorial II Part B
12:30-13:30	Lunch	
13:45-15:15	Tutorial III Part A	Tutorial IV Part A
15:15-15:30	Break	
15:30-17:00	Tutorial III Part B	Tutorial IV Part B
18:00-20:00	Welcome Reception	

Session

T1	Tutorial I 5G Opens the Door for Energy Harvesting (EH) in Telco Applications <i>Brian Zahnstecher, PowerRox, USA</i>
T2	Tutorial II Power Converters for Energy Storage Applications: <i>Analysis and Design From Theory to Practice</i> <i>Dr Petar J. Grbović, Roma TRE University, Italy</i>
T2	Tutorial III Base transceiver cooling and thermal energy storage for energy management <i>Dr Ehsan Haghghi, Northvolt AB, Sweden</i>
T4	Tutorial IV Solar & hybrid design for Communications Energy Systems (on - & off-grid) <i>Cal Lahteenmaa, Carlos Ordonez, David Wilson, Vertiv Co.</i>

Monday 23 October

8.00-10:00	Session 1 Opening Session			
10:00-10:30	Break			
10:30-11:35	Session 2 ES 1 Energy Storage 1 Plenary-Forum 1			
11:40-12:00	Exhibition opening			
12:00-1:30	Lunch			
1:30-3:15	Session 3 ES 2 Energy Storage 2 Battery Technology I	Session 4 PE 1 Power Electronics 1 Protection for 380V Systems	Session 5 PS 1 Power Systems 1 Using PV systems	
3:15-3:45	Break			
3:45-5:15	Session 6 ES 3 Energy Storage 3 Forum I	Session 7 CV 1 Converters 1 AC-DC Converters	Session 8 PS 2 Power Systems 2 Data-centre Powering	Session 9 CPE 1 Commercial Product Exposure 1
6:00	Exhibitors Reception			

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1 Opening ceremony

- 1.1 Welcome to Country
 - 1.2 Official Opening
 - 1.3 **Keynote 1**
Telcos, energy and the fabric of space-time
Ben Burge, Executive Director – Telstra Energy
 - 1.4 **Keynote 2**
Data Centres in the future
Peter Greaves, Global Electrical Leader, Aurecon.
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2 ES 1 Energy Storage 1: Plenary 1

- 2.1 **Advanced batteries – Are they ready to replace the standard VRLA in high reliability ICT Energy Systems?**
View A: The Lithium Ion battery option
View B: The Advanced Lead-acid option
-

3 ES 2 Energy Storage 2: Battery technology I

- 3.1 Special Interest Seminar I
A Review of the Suitability of Lithium Battery Technology in ICT Energy Infrastructure
Ole Vigerstol, Consultant
 - 3.2 **Demonstration Project of Power System Stabilization with the Hybrid Battery Energy Storage System**
Sano Shinichi & Ichiro Shimoura, Hitachi Chemical Co., Japan
 - 3.3 **Pure Lead Carbon Technology Development**
Shawn M. Peng, Leoch Battery Corp. USA, and Fang Yuan, Leoch International Technology, China.
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4 PE 1 Power Electronics 1: Protection for 380V Systems

- 4.1 **DC Power Distribution Systems and 400 V DC Ap** Paper withdrawn
Richard Mehl, E-T-A GmbH, Germany
 - 4.2 **Safety Considerations for the Operation of Bipolar DC-Grids**
Julian Kaiser, Kilian Gosses, Leopold Ott, Yunchao Han, Bernd Wunder & Martin März, Fraunhofer IISB, Germany, and Franz Schork, Klaus Bühler & Thomas Böhm, DEHN + SÖHNE GmbH + Co, Germany.
 - 4.3 **Droop Controlled Cognitive Power Electronics for DC Microgrids**
Bernd Wunder, Leopold Ott, Julian Kaiser, Kilian Gosses, Matthias Schulz & Fabian Fersterra, Fraunhofer IISB, Germany, and Martin März, Melanie Lavery & Yunchao Han, Friedrich-Alexander University Erlangen-Nürnberg, Germany
 - 4.4 **Development of Appliance coupler of LVDC for information communication technology (ICT) equipment with protection of both inrush current and arc discharge.**
Koichi Klryu, Tetsugaku Tanaka & Koki Sato, FUJITSU COMPONENT, and Keiichi Hirose, Tetsusi Tsumura & Naoki Hanaoka, NTT-FACILITIES, Japan
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5 PS 1 Power Systems 1: Use of PV systems

- 5.1 **How have we progressed in our photovoltaic power technologies for telecommunications energy into today's mega-solar deployment?**
Yousuke Nozaki, Keiichiro Hakuta, Oda Kazuhiko, Kensuke Murai and Yuji Kawagoe, NTT FACILITIES, Japan.

5.2		When can we afford to deploy Solar for On-Grid Solutions in Telecom? <i>David Wilson, Vertiv, Sweden</i>
5.3		Demonstration of a highly land-area-efficient solar array structure <i>Keiichiro Hakuta, Kensuke Murai, Shunsuke Ihara & Yosuke Nozaki, NTT FACILITIES, Japan</i>
5.4		Photovoltaic solar systems for smart bus shelters in the urban environment of Turin (Italy) <i>G. Mutani, A. Vodano, M. Pastorelli, Politecnico di Torino, Italy</i>
6	ES 3	Energy Storage 1: Forum I Are Li-ion batteries or advanced lead-acid batteries ready to replace the standard VRLA in high reliability ICT Energy Systems?
7	CV 1	Converters 1: AC-DC Converters
7.1		State of the Art Low Power AC-DC Single-Stage Converters <i>Yuntong Li & Gerry Moschopoulos, Western University, Canada</i>
7.2		Coupled Inductor Based Single-Phase Bridgeless PFC Boost Rectifier with Auxiliary Circuit Assisted ZVS <i>Debjani Chakraborty & Dipti Srinivasan, National University of Singapore, and Pritam Das, Binghamton University, USA</i>
7.3		Analysis and Design of AC-DC Resonant Single-Stage Converter with Reduced DC Bus Voltage Variation <i>Javad Khodabakhsh, Prashanth Prabhu, & Gerry Moschopoulos, Western University, Canada</i>
8	PS 2	Power Systems 2: Power Systems for Data Centres
8.1		Comparative analysis on different architectures of power supply system for Data center and telecom center <i>Shuguang Qi, & Yapan Wu, China Academy of Information and Communication Technology, China, and Wenbo Sun China Telecom, China.</i>
8.2		Application of Eco Mode UPS in Data Center <i>Xiyu Liu, Da Teng, Diankui Wang, Qingfeng Zhu, Zhenghai Liu, China Information Technology Designing & Consulting Institute Co., China</i>
8.3		Customer's 110kV Power Substations in the Large Data Centers <i>Yingjie Yang & Da Teng, China Information Technology Designing & Consulting Institute Co. China, and Chang Cheng, State Grid Henan Electric Power Company, China</i>
9	CPE 1	Commercial Product Exposure 1
9.1		Can we propose a 3N electrical infrastructure at a lower cost than Tier 4? - Introducing Power Fusion, a revolution in powering data centres <i>Wald Kerschot, CE+T Power, Malaysia</i>
9.2		Air Conditioner and Fan Hybrid Control for Outdoor Integrated Power Supply System <i>Huang Yuanhua, ZTE, China</i>

Tuesday 24 October

8:00-8:30	Session 10 Keynote Address 3			
8:30-10:00	Session 11 ES 4 Energy Storage 4 Battery Technology II	Session 12 CV 2 Converters 2 DC-DC Converter I	Session 13 PS 3 Power Systems 3 Power Back-up	Session 14 CPE 2 Commercial Product Exposure 2
10:00-10:30	Break			
10:30-12:00	Session 15 PE 2 Power Electronics 2 Special Interest Seminar	Session 16 PR-1 Posters 1		
12:00-6:00	Lunch & Conference tours			

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10		Keynote 3 Developments and Impacts in the ICT infrastructure space <i>David Moffatt, Executive Chairman, Ventia</i>
11	ES 4	Energy Storage 4: Battery Technology II
	11.1	Estimation of the Dynamic Leakage Current of a Supercapacitor in Energy Harvesting Powered Autonomous Wireless Sensor Nodes <i>Xicai Yue, Janice Kiely & Abdul Farooq, University of the West of England, UK, and Alan Champneys, University of Bristol, UK.</i>
	11.2	A Study on Limitation in Transient Behaviour of Redox Flow Battery in Phase Space <i>Toko Mannari & Takashi Hikiyama, Kyoto University, Japan</i>
	11.3	Adaptive Battery Steering and Management System for the Optimized Operation of Stationary Battery Energy Storage Systems in Multi-Use Applications <i>Julia Badeda, Dominik Schulte & Timo R�uwald, BatterieIngenieure GmbH, Germany, and Monika Kwiecien & Dirk Uwe Sauer, RWTH Aachen University, Germany</i>
12	CV 2	Converters 2: DC-DC Converters I
	12.1	A Comparative Study of DC-DC Flyback Converters for Telecom Applications <i>Adel Alganidi, Adel Abosnina, & Gerry Moschopoulos, University of Western Ontario, Canada</i>
	12.2	Design Optimization of a High Step-Up DC-DC Converter for Photovoltaic Microinverters <i>Lenon Schmitz, Gustavo C. Knabben, Denizar C. Martins & Roberto F. Coelho, Federal University of Santa Catarina, Brazil, and Odair J. Custodio, Inergiae Conversores Est�ticos, Brazil, and Renato Z. de Medeiros & Alexandre L. Ferreira, Empresa de Luz e For�a Santa Maria, Brazil</i>
	12.3	Three Level NPC Dual Active Bridge Capacitor Voltage Balancing Switching Modulation <i>Jun-young Lee, Hyun-jun Choi & Jee-hoon Jung, Ulsan National Institute of Science and Technology, Republic of Korea.</i>
13	PS 3	Power Systems 3: Power Back-up
	13.1	ELECTRICAL BACKUP REQUIREMENT FOR CRITICAL TELECOMMUNICATION SYSTEMS –TELEKOM MALAYSIA APPROACH <i>Fakhrulrazi bin Mahtar, Telekom Malaysia Berhad, Malaysia</i>
	13.2	Loading Rate Optimization of Hybrid Power Supply System in Self-Adaptive Dual Generator Parallel Operation <i>Wang Yun & Feng Fujian, ZTE Corporation, China</i>
	13.3	Innovative Fuel Cell Deployment in Telstra’s Network and Key Learnings from the Field <i>Louise Stroyov, Sophiya Patel, and Rafiq Ali, Telstra Corporation, Australia</i>

14	CPE 2	Commercial Product Exposure 2
14.1		An Innovative Mixed-use Technology of Battery <i>Weibo Li, Xianhong Hu, Mingming Liu, Qian Zhang, Yong Xiong & Junning Fan, ZTE, China</i>
14.2		Applying the Internet of Things (IoT) to the Telecom Power Ecosystem <i>Victor Goncalves, Bill Killion, Rahul Baliga, Frank VanHooft, Brent McDonald, Alpha Technologies, Canada</i>
14.3		The Modernization of the Traditional Site – Make it Site Smart: The VHA Case. <i>Bob Davis, Vodafone, Australia</i>
15	PE 2	Power Electronics 2
14.1		Special Interest Seminar II <i>Model-based development technology of ICT power supply and future application for intelligent energy management with IoT</i> <i>Yu Yonezawa, Hiroshi Nakaom, Fujitsu Laboratories, Japan</i>
16	PR 1	Posters 1

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Wednesday 25 October

8.00 8:45	Session 17 PS 4 Power System 4 Plenary-2			
8.45- 10:00	Session 18 PS 5 Power Systems 4 Equipment Cooling I	Session 19 ES 5 Energy Storage 5 Management & Adaptability	Session 20 PE 3 Power Electronics 3 Components & Control	Session 21 CV 3 Converters 3 Inverters
10:00- 10:30	Break			
10:30- 12:00	Session 22 PS 5 Power Systems 5 Special Interest Seminar	Session 23 PR-2 Posters 2		
12:00- 1:30	Lunch			
1:30- 3:15	Session 24 PS 6 Powers Systems 6 Equipment Cooling II	Session 25 PS 8 Power Systems 7 System Reliability & Resilience I	Session 26 PE 4 Power Electronics 4 Wireless Transfer & Battery Systems	Session 27 CPE 3 Commercial Product Exposure 3
3:15- 3:45	Break			
3:45- 5:15	Session 28 PS 9 Power Systems 9 Forum 2	Session 29 PS 10 Power Systems 10 Evaluation & Defects	Session 30 PS 11 Power Systems 11 Grounding Design & Protection	Session 31 CV 4 Converters 4 DC-DC Converters II
6:00- 11:00	Conference Dinner			

Wed

17	PS 4	Power Systems 4: Plenary-2 How to cool your ICT infrastructure
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18	PS 5	Power Systems 5: Equipment Cooling I
18.1		Displacement Free Cooling for Telecommunication Base Stations <i>Ehsan Bitaraf Haghighi, Northvolt AB, Sweden</i>
18.2		Comparison of ICT equipment air-intake temperatures between cold aisle containment and hot aisle containment in datacenters <i>Akihiro TSUDA, Yosuke MINO, Shun NISHIMURA, NTT-FACILITIES, Japan</i>
18.3		Trial and Application of Direct Evaporative Cooling at Telstra's Information and Communication Technology Centres <i>Ben de Jonge, Telstra Corporation, Australia</i>

19	ES 5	Energy Storage 5: Management & Adaptability
19.1		Improving energy self-consumption rate by using weather forecasts in renewable energy system for back-up power supply. <i>Miki UESHIMA, Kazufumi YUASA & Tadatoshi BABASAKI, NTT-FACILITIES, Japan</i>
19.2		An Innovative Hybrid Battery Management System for Telecom <i>Huang Yuanhua, ZTE Corporation, China</i>
19.3		Flow battery versatility: adapting the battery to the specific application <i>Mike Giulianini & Mio Dart, Redflow, Australia</i>

20	PE 3	Power Electronics 3: Components & Control
20.1		An Analysis of False Turn-On Phenomenon of GaN HEMT with Parasitic Components <i>Toshihiro Iwaki & Seiya Ishiwaki, Shimane University, Japan, and Takashi Sawada & Masayoshi Yamamoto, Nagoya University, Japan.</i>
20.2		Model-based Development of High-current-density Point-of-load Converter of High Performance FPGA for Telecommunication Application <i>Yu Yonezawa, Hiroshi Nakao & Yoshiyasu Nakashima, Fujitsu Laboratories, and Ananda Vithanage, Tomohiro Kanehira & Yasunori Ueno, FDK Corporation, Japan</i>
20.3		A Comparative Study of Two Current-Control Techniques Applied to a Three-Phase Three-Level Active Power Filter <i>Muhammad Kashif, M. J. Hossain, Yuba Raj Kafle & Md Shamiur Rahman, Macquarie University, Australia</i>

21	CV 3	Converters 3: Inverters
21.1		Reducing Losses in the Shoot-Through State of a Single-Phase Quasi-Z-Source Inverter <i>Carlos R. Baier, Claudio Flores & Manuel A. Diaz, Universidad de Talca, Curicó, Chile, and Miguel A. Torres, Universidad de O'Higgins, Chile, and Josep Pou, Nanyang Technological University, Singapore, and Pedro Melín, Universidad del Bio-Bio, Concepción, Chile, and Eduardo Espinosa, Universidad Católica de la Santísima Concepción, Chile.</i>
21.2		An Improved Model Predictive controller for Highly Reliable Grid connected Photovoltaic Multilevel Inverters <i>Mokhtar Aly & Masahito Shoyama, Kyushu University, Japan, Emad M. Ahmed, Aswan University, Egypt</i>

21.3		Multi-Level Topology Evaluation for Ultra-Efficient Three-Phase Inverters <i>J. Azurza Anderson, L. Schrittwieser, M. Leibl, & J. W. Kolar, ETH Zurich, Switzerland.</i>
22	PS 6	Power Systems 6
	22.1	Special Interest Seminar III Telecom Fuel Cell Power in Multi-year Off Grid application <i>Harol Koyama, H2 PowerTech LLC</i>
23	PR 2	Posters 2
24	PS 7	Powers Systems 7: Equipment Cooling II
	24.1	The Development Trend of Power System for ICT Equipment <i>Mingming Liu & Xianhong Hu, ZTE Corporation, China</i>
	24.2	Research of Power Supply and Cooling Mode for Node Room under 5G Network Architecture <i>Zhen Wang & Jianfeng Huang, China Mobile, China</i>
	24.3	Free Cooling and Indoor Humidity Level in Telecommunication Base Stations <i>Ehsan Bitaraf Haghighi, Northvolt AB, Sweden</i>
	24.4	Passive cooling and thermal management in data centers <i>Chayan NADJAH & Hasna LOUAHLIA, University of Caen, France, and Alberto CONTE, Alcatel-Lucent Bell labs, France, and Stéphane LE MASSON, Orange Labs, France</i>
25	PS 8	Power Systems 8: System Reliability & Resilience I
	25.1	Reliability Analysis and Calculation for the Most Common Modular UPS System Architectures <i>Leo Saro, Clemente Zanettin, Vinko Božič, Socomec, Italy</i>
	25.2	Generalized Integrated Framework for Modelling Communications and Electric Power Infrastructure Resilience <i>Alexis Kwasinski & Vaidyanathan Krishnamurthy, University of Pittsburgh, USA.</i>
	24.3	Robust PV System against Disasters for Green Base Station <i>M. Nakamura¹, K. Kimura¹ & K. Takeno, NTT DOCOMO, Japan.</i>
26	PE 4	Power Electronics 4: Wireless Transfer & Battery Systems
	26.1	Simple Self-Driven Synchronous Rectifier for Resonant Inductive Coupling Wireless Power Transfer <i>Takahiro Koyama, Toru Honjo, Masataka Ishihara, Kazuhiro Umetani & Eiji Hiraki, Okayama University, Japan</i>
	26.2	Implementation and Evaluation of Pre- and Post-Regulation Control with Class-E2 Wireless Power Transfer System <i>Yuta Ozawa & Hiroo Sekiya, Chiba University, Japan</i>
	26.3	Reduction in the Number of Gate Drive Power Converters for a Cell Voltage Equalizer Using an LC Series Circuit <i>Daiki SATOU, Nobukazu HOSHI, Kosuke UCHIDA & Ryosuke OTA, Tokyo University of Science, Japan</i>
	26.4	A Flyback Converter Based Partial Power Processing Structure for BESS with Voltage/Current Regulation and Battery Balancing Functionalities <i>Jian Qi, The University of Sydney, Australia, and Dylan Dah-Chuan Lu, University of Technology Sydney, Australia</i>
27	CPE 3	Commercial Product Exposure 3
	27.1	Addressing Persistent Pain Points of Hybrid Deployments <i>Murray Wyma, Enatel Energy, New Zealand</i>

	27.2	DC Energy Metering for Managing Telecommunications Network Power Usage <i>Darren Salter, Eaton Industries, Australia</i>
	27.3	A Big Data Management Diagnosis System of Batteries Based on Cloud Platform <i>Huang Shihui & Wang Rugang, Shenzhen Pluke Intelligent Test Equipment Co., China and Yang Zhongliang, Shenzhen Power Supply Co., China</i>
28	PS 9	Power Systems 9: Forum 2 How to cool your ICT infrastructure
29	PS 10	Power Systems 10: Evaluation & Defects
	29.1	Basic Evaluation for the DC Circuit Breaker Using Power Semiconductor with Fault Current Limiting Feature <i>Masaaki Komatsu, National Institute of Technology, Koshiro College, Japan</i>
	29.2	Method for detection of lot defects for maintenance of ICT power supplies and air conditioning equipment and verification results <i>Hiroki HAYASAKA, Kaisei KANETANI, Sohei NAKASHIMA, Masahiro YAMAZAKI & Tadatoshi BABASAKI, NTT-FACILITIES, INC, Japan, and Risshi KONDO & Masami AMANO, NTT DATA Corporation, Japan</i>
	29.3	Classification of causes of broken solar panels in solar power plant <i>Yuji HIGUCHI & Tadatoshi BABASAKI, NTT Facilities, Japan</i>
30	PS 11	Power Systems 11: Grounding Design & Protection
	30.1	Mesh Bonded vs Isolated Bonded Earthing Network for Indoor Grounding <i>Rohit Narayan, ERICO PENTAIR, Australia</i>
	30.2	A study on measurement method for transient current from lighting equipment with considering the dependence on test sites <i>Naomichi Nakamura, Farhan Mahmood, Ken Okamoto, Yuichiro Okugawa & Yoshiharu Akiyama, NTT Network Technology Laboratories, Japan</i>
	30.3	Key Technology Research on 5G Mobile communications Power system <i>Pengchao Wang, Mingming Liu, Zhirong Cheng, Yundong Yang & Shaomin Zhang, ZTE Corporation, China</i>
31	CV4	Converters 4 : DC-DC Converters II
	31.1	A Novel Three-Phase DC-DC PWM Isolated Boost Converter <i>Adel Ali Abosnina & Gerry Moschopoulos, University of Western Ontario, Canada</i>
	31.2	A Two-Loop PI Control of DC-DC Boost Converter with Intelligent State Observer <i>Zekiye Erdem & Mohamed Youssef, University of Ontario Institute of Technology, Canada</i>
	31.3	A Bidirectional Flyback Converter with Cross-Coupled Non-Dissipative Snubber Circuits <i>Nurhakimah M. Mukhtar, University of Sydney, Australia, and Dylan Dah-Chuan Lu, University of Technology Sydney, Australia</i>

Thursday 26 October

8:45-10:00	Session 32 PS 12 Power Systems 12 Remote-line Powering I	Session 33 ES 4 Energy Storage 4 Battery Systems	Session 34 PE 5 Power Electronics 5 Noise & disturbance	Session 35 PS 13 Power Systems 13 System Reliability & Resilience II
10:00-10:30	Break			
10:30-12:00	Session 36 PS 14 Power Systems 10 Remote Line powering II	Session 37 PS 15 Power Systems 11 380V Deployments	Session 38 CV 5 Converters 5 DC-DC Converters III	Session 39 CPE 4 Commercial Product Exposure 4
12:00-1:30	Lunch			
1:30-3:15	Session 40 PS 16 Power Systems 16 Forum 3	Session 41 PS 17 Power Systems 12 Innovative Ideas	Session 42 PS 18 Power Systems 13 Smart Buildings	
3:15-3:30	Break			
3:30-4:30	Closing Session			

32	PS 12	Power Systems 12
	32.1	Plenary 3 Remote Line Power: Is it ready for routine deployment?
	32.2	Special Interest Seminar IV A Comparison of Remote Line Power and Local Power <i>Satheesh Hariharan, Alpha Technologies</i>
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33	ES 6	Energy Storage 6: Battery Systems
	33.1	Cutting Edge Central Office Energy Storage Solutions <i>Jay Frankhouser, Enersys, USA</i>
	33.2	An Innovative Lithium-ion Battery and Lead-acid Battery Hybrid Solution for Telecom in Frequent Grid off Region <i>Huang Yuanhua, ZTE Corporation, China</i>
	33.3	Planning, building, efficiency measurement and determination of forecast data of a grid-scale hybrid 5 MW / 5 MWh battery storage system <i>Jeanette Muenderlein, Marc Steinhoff, Hendrik Axelsen & Dirk Uwe Sauer, RWTH Aachen University, Germany</i>
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34	PE 5	Power Electronics 5: Noise & Disturbance
	34.1	Research on Input Conducted Emission for Rectifier with High Efficiency and High Power Density <i>Zhirong Cheng, Mingming Liu, Penchao Wang, Shaomin Zhang & Yundong Yang, ZTE Corporation, China</i>
	34.2	Features extraction of conducted disturbance below 150 kHz from rectifier for ICT equipment <i>Farhan Mahmood, Ken Okamoto, Yuichiro Okugawa, & Yoshiharu Akiyama, NTT Network Technology Laboratories, Japan.</i>
	34.3	Conducted Noise Prediction for Zero-crossing Issue in Totem-pole Bridgeless PFC Converter <i>Baihua Zhang, Qiang Lin, Jun Imaoka, & Masahito Shoyama, Kyushu University, Japan, and Satoshi Tomioka & Eiji Takegami, TDK-Lambda Corporation, Japan</i>
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35 38	PS13	Power Systems 13: System Reliability & Resilience II
	35.1	Estimating Reliability of a Telecommunications Energy Network <i>Frank Bodi, Visionstream, Australia</i>
185	35.2	Solar Tracker Effectiveness: It's All About Availability <i>Jon G. Elerath, Consultant, USA</i>
133	35.3	Multi-node Power Supply Resiliency of Communication Networks During Extreme Events <i>Vaidyanathan Krishnamurthy and Alexis Kwasinski, University of Pittsburgh, USA</i>
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36	PS 14	Power Systems 14: Remote line powering I
	36.1	Remote Powering the Cellular Infrastructure at the RIO 2016 Olympic Games <i>Satheesh Hariharan, José Carlos Santana, Glenn Lumanog and Iain Selkirk, Alpha Technologies, Canada</i>
	36.2	Best Practices Guide for Remote Line Power <i>Kevin Borders, Grant Clark, Satheesh Hariharan, and Tony Wilson, Alpha Technologies, Canada.</i>
	36.3	Remote Line Powering Networks – Emerging Applications and Standards for RFT-V <i>Andrew J. Dickson, Victor Goncalves, Piet de Beer, Alpha Technologies, Canada</i>

41.3	Optimization-Algorithm Addressing Voltage and Power Quality in Distributed Grid Control Systems	<i>Norbert Grass & Anja Woelfel, Technische Hochschule Nuernberg, Germany</i>
41.4	Usage of telecommunication base station batteries in demand response for frequency containment disturbance reserve: Motivation, background and pilot results	<i>Ilari Alaperä, Pekka Manner, Johan Salmelin & Heli Antila, Fortum Power and Heat Oy, Finland</i>
42	PS 18 Power Systems 18: Smart Buildings	
42.1	Air Conditioning Equipment Using DC Power Supply System	<i>Kazuto Yukita, Tadashi Hosoe Shunsuke Horie, Toshiro Matsumura & Masayoshi Hamanaka, Aichi Institute of Technology, and Keichi Hirose & Masatoshi Noritake, NTT Facilities, Japan</i>
42.2	Nearly Zero Energy Buildings: analysis on monitoring energy consumptions for residential buildings in Piedmont Region (IT)	<i>G. Mutani, F. Pascali, & M. Martino (M), Politecnico di Torino, Italy, and G. Nuvoli, Regione Piemonte Torino, Italy</i>
42.3	Modeling hourly profile of space heating energy consumption for residential buildings	<i>G. Mutani, F. Giaccardi, M. Martino (M) & M. Pastorelli (M), Politecnico di Torino, Italy.</i>
42.4	Demand Response Using Air Conditioner	<i>Masayoshi Hamanaka, Kenshu Nimi, Shunsuke Horie, Kazuto Yukita, Daiki Owaki, Toshiro Matsumura & Yasuyuki Goto, Aichi Institute of Technology, Japan, and Keichi Hirose, NTT FACILITIES, Japan.</i>
43	CLS Closing Session	
43.1	Wrap-up Forum	<i>What do you think about ICT energy and the future?</i>
43.2	Paper & Poster Awards	
43.3	Good bye INTELEC 2017 & Hello INTELEC 2018	
	Close of Conference	

Posters 1 & 2 (all posters are in both sessions)

- P 1 Analysis and Implementation of an Advanced EPP-MPPT Control Technique in Solar-based Water Pump Applications**
Ahmed S. Abdelrahman, Mahmoud Eid, Ying Wang, & Mohamed Z. Youssef, University of Ontario Institute of Technology, Canada
- P2 A Novel LLC Resonant DC-DC Converter with Integrated Transformer**
Shota Kimura, Kimihiro Nanamori & Mostafa, Shimane University, Japan, and Masayoshi Yamamoto, Nagoya University, Japan
- P3 A Penny Saved is a Penny Earned - Methods of Energy Transformation to Reduce OPEX for Remote Area**
Weibo Li, Junning Fan, Yong Xiong, Qian Zhang, Mingming Liu & Xianhong Hu, ZTE Corporation, China
- P4 Research on the operating mode of the Power supply for a Telecom Base Station Based on the Peak & Valley Model of the Power Grid**
Zhang Shaomin, Wang Pengchao, Liu Mingming & Chen zhirong, ZTE Corporation, China
- P5 A study on close-loop control of manipulator by power packet density modulation**
Shiu Mochiyama & Takashi Hikiyama, Kyoto University, Japan
- P6 Analytical Investigation of Interleaved DC-DC Converter using Closed-Coupled Inductor with Phase Drive Control**
Daigoro Ebisumoto, Shota Kimura, Kimihiro Nanamori & Mostafa Noah, Shimane University, Japan, and Jun Imaoka, Kyushu University, Japan, and Masataka Ishihara, Okayama University, Japan, and Masayoshi Yamamoto, Nagoya University, Japan
- P7 Boost Full Bridge DC-DC Converter Ensuring Safe Installation of PV Energy in Data Center Power Management Systems**
Satoshi Ikeda, Panasonic Co., Japan & Fujio Kurokawa, Nagasaki Institute of Applied Science, Japan
- P8 DC-DC Converter Based on Voltage Dividing Class E Amplifier**
Katsutoshi Hirayama, Nagasaki University, Japan, and Tadashi Suetsugu, Fukuoka University, Japan, and Fujio Kurokawa, Nagasaki Institute of Applied Science, Nagasaki, Japan
- P9 A Compact & Cost Effective Solar Harvesting Modular Wireless Sensor Node with Innovative Energy Management: System: Design & Implementation**
Mohamed Z. Youssef, University of Ontario Institute of Technology, Canada
- P10 Design Consideration of Efficiency Improvement in Three phase Dual Active Bridge Converter for LVDC Application**
Hyunjun Choi, Junyoung Lee & Jee-hoon Jung, Ulsan National Institute of Science and Technology, Republic of Korea, and Young-pyo Cho, KEPCO Research Institute, Republic of Korea.
- P11 Distributed Control Scheme for a 5-Level Modular Multilevel STATCOM**
Stephan C. Adams, Mark A. H. Broadmeadow, Geoffrey R. Walker & Gerard F. Ledwich, Queensland University of Technology, Australia
- P12 Experimental Verification of Suppressing Power Fluctuation in Photovoltaic Generation System Using Water Electrolyzer**
Akiko Takahashi, Jun Imai & Shigeyuki Funabiki, Okayama University, Japan
- P13 High-Efficiency Voltage Sag Protector with Low Ground Leakage Current**
Min-Kwon Yang & Woo-Young Choi, Chonbuk National University, South Korea

- P14 Innovative Energy Management to utilize energy efficient solutions in the ICT infrastructure**
Robert Wikström, VERTIV, Sweden
- P15 Lifetime Prognostics of Hybrid Backup Power System: State-of-the-Art**
Simon Dyhr Sønderskov, Maciej Jozef Swierczynski, & Stig Munk-Nielsen, Aalborg University, Denmark
- P16 Optimal Placement of VIT Automation Switches Considering Distribution Generation (DG)**
Hamid Sharifian, Javad Mahmoodi & Alireza Saboori Keyvanlo, North Khorasan Electric Distribution Company, Iran
- P17 Oscillation Condition Analysis of a VHF Self-Oscillating Gate Driver Based on a $\Phi 2$ Resonant Inverter**
Takuya Mizushima, Naoyuki Ishibashi, Kento Goto & Akihiko Katsuki, Nagasaki University, Japan, and Masahiko Hirokawa, TDK Corporation, Japan
- P18 Proportional and Integral Gain Changeable Control DC-DC Converter for Improvement of Dynamic Performance**
Kazuhiro Kajiwara, Nobumasa Matsui & Fujio Kurokawa, Nagasaki Institute of Applied Science, Japan, and Yudai Furukawa, Nagasaki University, Japan.
- P19 A Consideration on Current Noise Measurement in Distributed Power Supply Introduction System**
Shunsuke Horie, Kazuto Yukita, Toshiro Matsumura & Yasuyuki Goto, Aichi Institute of Technology, Japan, and Keichi Hirose, NTT Facilities, Japan, and Hiroaki Miyoshi, Sanyo Denki, Japan
- P20 Study on Data Center Optimal Management by utilizing Data Center Infrastructure Management**
Kosuke SASAKURA, Takeshi AOKI & Takeshi WATANABE, NTT-FACILITIES, Japan
- P21 Transient Response Improvement of Digitally Controlled DC-DC Converter with Feedforward Compensation**
Kosuke Sato, Nagano Prefecture General Industrial Technology Center, Japan, and Toshiro Sato & Makoto Sonehara, Shinshu University, Japan
- P22 Photovoltaic Facade: Comparison of Actual Technologies**
M. Caruso, R. Miceli, P. Livreri, F.M. Raimondi, P. Romano & F. Viola, University of Palermo, Italy, and M. Martino, & M. Pastorelli, Politecnico di Torino, Italy
- P23 EV Charging Station at University Campus**
M. Caruso, P. Livreri, R. Miceli & F. Viola, University of Palermo, Palermo, Italy, and M. Martino, Politecnico di Torino, Italy
- P24 A New PWM Shoot-through Control For Voltage-Fed Quasi-Z-Source DC/DC Converters**
Yuba Raj Kafle, Saad Ul Hasan, Muhammad Kashif, Jahangir Hossain & Graham E. Town, Macquarie University, Australia
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