

# 9<sup>th</sup> Solar & Storage Integration Workshop

International Workshop on Integration  
of Solar Power and Storage into Power Systems

15 - 16 Oct 2019

Dublin, Ireland



## PRELIMINARY PROGRAM AS OF 13 SEPTEMBER 2019

Important: This preliminary program is subject to changes. It is strongly recommended to check back regularly.

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# TIMETABLE 9<sup>th</sup> SOLAR & STORAGE INTEGRATION WORKSHOP

TUESDAY, 15 OCTOBER 2019				WEDNESDAY, 16 OCTOBER 2019			
Solar Workshop Day 1				Solar Workshop Day 2			
08:00 – 09:00	FOYER						
	REGISTRATION						
09:00 – 09:15	REDWOOD A/B/C			REDWOOD A	REDWOOD B	REDWOOD C	
	OPENING: WELCOME AND INTRODUCTION			SESSION 5A: BEST PRACTICES FOR SOLAR AND WIND INTEGRATION FROM FRONT- RUNNER COUNTRIES	SESSION 5B: DISTRIBUTION GRID ASPECTS II	SESSION 5C: HYBRID POWER PLANTS / SYSTEMS	
09:15 – 10:50	REDWOOD A/B/C						
	SESSION 1: KEYNOTE SESSION			COFFEE BREAK (25 MIN)			
COFFEE BREAK (30 MIN) & POSTER SESSION				COFFEE BREAK (25 MIN)			
11:20 – 13:00	REDWOOD A	REDWOOD B	REDWOOD C	11:10 – 12:10	REDWOOD A/B/C		
	SESSION 2A: LONG-TERM STUDIES	SESSION 2B: BALANCING AND ANCILLARY SERVICE	SESSION 2C: MODELLING ASPECTS		SESSION 6: CLOSING SESSION – PANEL DISCUSSION		
13:00 – GROUP PHOTO 13:15 – LUNCH (45 MIN)				LUNCH (2 H)			
14:00 – 15:40	REDWOOD A	REDWOOD B	REDWOOD C	14:00	REDWOOD A/B/C		
	SESSION 3A: POWER SYSTEM STUDIES I	SESSION 3B: STORAGE ASPECTS	SESSION 3C: MARKET ASPECTS		OPENING SESSION 18 <sup>TH</sup> WIND INTEGRATION WORKSHOP		
COFFEE BREAK (30MIN)							
16:10 – 18:10	REDWOOD A	REDWOOD B	REDWOOD C				
	SESSION 4A: POWER SYSTEM STUDIES II	SESSION 4B: DISTRIBUTION GRID ASPECTS I	SESSION 4C: FORECASTING				
18:15	POSTER RECEPTION & NETWORKING						

## TUESDAY, 15 OCTOBER 2019

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**08:00 – 09:00 Registration**

**09:00 – 09:15 Welcome**

**09:15 – 10:50 SESSION 1 – KEYNOTE SESSION**

**> Session Chair Thomas Ackermann (Energynautics, Germany)**

**09:15 – 10:35 Presentations (20min. each)**

- **Presentation 1**  
TBA
- **Innovative System Services for Facilitating Integration of High Levels of Wind Generation**  
N. Delaney (EirGrid Plc., Ireland) ([Submission-ID WIW19-105](#))
- **Status of Power System Transformation: Power System Flexibility**  
TBA (IEA, France)
- **Accommodation of Solar Rooftop Photovoltaic on ESB Networks**  
S. Pukhrem, A. Walsh (ESB Networks, Ireland) ([Submission-ID SIW19-67](#))

**10:35 – 10:50 Discussions**

**10:50– 11:20 COFFEE BREAK**

**11:20 – 13:00 SESSION 2A: LONG-TERM STUDIES**

**> Session Chair TBA**

**11:20 – 12:20 Presentations (20 min. each)**

- **Modelling of 100% Renewable Energy in Australia**  
B. Lu, A. Blakers, M. Stocks, **C. Cheng**, A. Nadolny (Australian National University, Australia) ([Submission-ID SIW19-245](#))
- **Next Generation Utility Scale PV- and Storage Systems: New Steps towards a 100% Renewable Generation**  
**T. Bülo**, A. Falk, D. Premm, A. Knobloch, O. Schömann, C. Hardt (SMA Solar Technology AG, Germany) ([Submission-ID SIW19-261](#))
- **The Impact of Large-Scale PV Power Stations on Climate**  
C. Yang (Hubei Meteorological Service Center, China | Meteorological Energy Development Center of Hubei Province, China) ([Submission-ID SIW19-10](#))

**12:20– 13:00 Discussions**

**11:20 – 13:00**      **SESSION 2B: BALANCING AND ANCILLARY SERVICE**  
> Session Chair      TBA

<b>11:20 – 12:20</b>	<b>Presentations (20 min. each)</b>
	<ul style="list-style-type: none"><li>• <b>Electricity Balancing Capacity, Emissions, and Cost Comparison of Three Storage-Based Local Energy Systems for Variable Power Generation</b> S. W. Monie, A. M. Nilsson, M. Åberg (Uppsala University, Sweden) (Submission-ID SIW19-219)</li><li>• <b>Apply of Demand Response on the Heating Sector for an Optimized Integration from Photovoltaic Plants in Energy Systems of City Districts</b> A. Hobert, H. Schroeder, M. Becker, T. Müller, M. Zdrallek (Wuppertal University, Germany), L. Seeger (WSW Wuppertaler Stadtwerke, Wuppertal, Germany), D. Aschenbrenner (WSW Netz, Germany), P. Biesenbach (Aufbruch am Arrenberg e.V., Germany) (Submission-ID SIW19-156)</li><li>• <b>Integration of Flexibility into an Energy System with High Shares of Solar PV – Contributions from the Project C/sells</b> M. Hinterstocker, C. Dufter, K. Ganz, P. Dossow, S. von Roon (FFE GmbH, Germany) (Submission-ID SIW19-30)</li></ul>
<b>12:20– 13:00</b>	<b>Discussions</b>

**11:20 – 13:00**      **SESSION 2C: MODELLING ASPECTS**  
> Session Chair      TBA

<b>11:20 – 12:20</b>	<b>Presentations (20 min. each)</b>
	<ul style="list-style-type: none"><li>• <b>Shading Losses for Different Types of Residential PV Inverter Systems and its City-Wide Impact on PV Potential</b> N. Etherden, M. Aboukrat, V. Cebollada (Vattenfall R&amp;D, Sweden), D. Lingfors (Uppsala University, Sweden), B. O. Karlsson (University of Gävle, Sweden) (Submission-ID SIW19-185)</li><li>• <b>Modelling of Solar PV/ Wind/ Fuel Cell and AC Supply Fed Grid – Interactive Hybrid Power Supply Using ANN Based Power Management System with Extended Life Expectancy and Improved Power Quality</b> S. Saravanan (CK College of Engineering and Technology, Tamilnadu, India) (Submission-ID SIW19-96)</li></ul>
<b>12:20– 13:00</b>	<b>Discussions</b>

**13:00 – 13:15**      **GROUP FOTO**

**13:15 – 14:00**      **LUNCH BREAK**

<b>14:00 – 15:40</b>	<b>SESSION 3A POWER SYSTEM STUDIES I</b>
> Session Chair	TBA
<b>14:00 – 15:20</b>	<b>Presentations (20 min. each)</b>
	<ul style="list-style-type: none"> <li>• <b>Interaction Analysis of Large-Scale PV Power Plants Considering Communication Delays and Operational Points</b> J. Montero-Cassinello, M. Cheah-Mané, E. Prieto-Araujo, O. Gomis-Bellmunt (CITCEA-UPC, Spain) (Submission-ID SIW19-104)</li> <li>• <b>Solar Power Plant Harmonic Emission – Design and Commissioning Case Study</b> J. Leung, D. Chong, T. George (DlG SILENT Pacific, Australia) (Submission-ID SIW19-182)</li> <li>• <b>Evaluating Fast Frequency Control Strategies for Solar PV and Battery Storage within an Inverter-Dominated Power System</b> A. U. N. Ibn Saif, R. Li, D. Flynn (University College Dublin, Ireland) (Submission-ID SIW19-144)</li> <li>• <b>Provision of Frequency Control by Multi-Inverter Photovoltaic Power Plants based on Real-Time Estimation of Maximum Available Power</b> A. Rossé, G. Delille (Électricité de France (EDF), France), C. Shu (EDF Renewables, France), L. Arnaud (EDF Store &amp; Forecast, France) (Submission-ID SIW19-52)</li> </ul>
<b>15:20 – 15:40</b>	<b>Discussions</b>

<b>14:00 – 15:40</b>	<b>SESSION 3B: STORAGE ASPECTS</b>
> Session Chair	TBA
<b>14:00 – 15:20</b>	<b>Presentations (20 min. each)</b>
	<ul style="list-style-type: none"> <li>• <b>Upgrade of a Grid-Connected Storage Solution with Grid-Forming Function.</b> C. Cardozo, G. Denis, T. Prevost, (RTE R&amp;D, France), M. Zubiaga, J. J. Valera (Ingeteam, Spain), Y. Vernay (RTE CNER, France) (Submission-ID SIW19-205)</li> <li>• <b>Optimized Positioning for Storage Systems in an LVDC Traction Grid with Non-Receptive Power Sources and Photovoltaic Systems</b> M. Salih, D. Baumeister, M. Wazifehdust, M. Koch, P. Steinbusch, M. Zdrallek (University of Wuppertal, Germany), S. Mour (SWS Netze Solingen, Germany), C. Troullier (Stadtwerke Solingen, Germany) (Submission-ID SIW19-159)</li> <li>• <b>A Study on Sizing of Substation for PV Generators with Optimized Operation of BESS</b> Y. Yoo (Korea University, Republic of South Korea), S. Jung (National Hanbat University, Republic of South Korea), H. Moon, G. Jang (Korea University, Republic of South Korea) (Submission-ID SIW19-176)</li> <li>• <b>Enabling Rising Penetration and Added Value of Photovoltaic Generation by Implementation of Advanced Storage Systems (Erigenaia)</b> M. Florides, K. Oureilidis, V. Efthymiou, G. E. Georghiou (University of Cyprus (UCY), Cyprus), B. Kubicek, J. Kathan, S. Ubermasser (Austrian Institute of Technology (AIT), Austria), I. Ilicic (Cybrotech, United Kingdom), P. Rechberger, H. Heigel (Fronius International, Austria), A. Violaris, I. Papageorgiou (Electricity Authority of Cyprus (EAC), Cyprus), K. C. Bayindir (Ankara Yildirim Beyazit University, Turkey), A. Kilic, G. Batar, A. Bayramoglu (ADM Elektrik Dagitim, Turkey), S. Baykal, A. Terciyanlı (T4E Technology for Efficiency, Turkey) (Submission-ID SIW19-179)</li> </ul>
<b>15:20 – 15:40</b>	<b>Discussions</b>

<b>14:00 – 15:40</b>	<b>SESSION 3C: MARKET ASPECTS</b>
> Session Chair	TBA
<b>14:00 – 15:20</b>	<b>Presentations (20 min. each)</b>
	<ul style="list-style-type: none"> <li>• <b>Field Test to Demonstrate a Smart Market Platform via Smart Meter Infrastructure</b> T. Estermann, S. Köppl, A. Bruckmeier, D. Wohlschlager (Forschungsstelle für Energiewirtschaft / Research Center for Energy Economics (FfE), Germany) (Submission-ID SIW19-80)</li> <li>• <b>Solving the Challenges of Successfully Delivering BESS Projects in Competitive Electricity Markets</b> H. Mackenzie (HARD software, Australia) (Submission-ID SIW19-164)</li> <li>• <b>Rooftop PV Business Models in India and Brazil - A Comparative Analysis</b> J. Thakur (KTH Royal Institute of Technology, Sweden), H. Batista (UFMG Federal University de Minas Gerais, Brazil), S. Silveira (KTH Royal Institute of Technology, Stockholm, Sweden), W. Uturbey (UFMG Federal University de Minas Gerais, Brazil) (Submission-ID SIW19-111)</li> <li>• <b>Investment in Solar and Wind Generation in Australia – Lessons Learned</b> J. Eggleston, T. Nelson, T. Walker, G. Williams (Australian Energy Market Commission (AEMC), Australia) (Submission-ID SIW19-18)</li> </ul>
<b>15:20 – 15:40</b>	<b>Discussions</b>

## 15:40 – 16:10 COFFEE BREAK

<b>16:10 – 18:00</b>	<b>SESSION 4A: POWER SYSTEM STUDIES II</b>
> Session Chair	TBA
<b>16:10 – 17:30</b>	<b>Presentations (20 min. each)</b>
	<ul style="list-style-type: none"> <li>• <b>A Two-Layer Algorithm-Based Multi-Objective Optimization Scheme for PV Penetrated Smart Network Control</b> M. Wei, A. Kiprakis (University of Edinburgh, United Kingdom) (Submission-ID SIW19-252)</li> <li>• <b>Synchrophasor Based Logic Scheme for Blocking/De-Blocking of Distance Relay in Green Power System</b> D. Kumar, J. S. Savier, V. Hari (Powergrid Corporation of India, India) (Submission-ID SIW19-40)</li> <li>• <b>Voltage and Reactive Power Control in autonomous AC Microgrid Using Smart Inverter-Based PV Generator</b> A. Arou, T. Tsuji (Yokohama National University, Japan) (Submission-ID SIW19-134)</li> <li>• <b>The Value of a New East-West Facing Single Axis PV Tracker Setup</b> P. Nørgaard, P. Behrendorff Poulsen, N. Riedel (Technical University of Denmark, Denmark), J. Vedde (European Energy, Denmark) (Submission-ID SIW19-61)</li> </ul> <p><b>Poster Flash Talk (5 min.):</b></p> <ul style="list-style-type: none"> <li>• <b>On the Utilization of Cross-Regional Interconnector and Pumped Hydro Energy Storage for the Further Introduction of Solar PV in Japan</b> S. Ichimura (Renewable Energy Institute, Japan) (Submission-ID SIW19-230)</li> </ul>
<b>17:35 – 18:00</b>	<b>Discussions</b>

<b>16:10 – 18:10</b>	<b>SESSION 4B: DISTRIBUTION GRID ASPECTS I</b>
> Session Chair	TBA
<b>16:10 – 17:35</b>	<b>Presentations (20 min. each)</b>
•	<b>Navigating IEEE 1547: Grid Readiness for Distributed Energy Resources</b> T. Key, M. McGranaghan, J. Boemer, N. Enbar (EPRI, United States) ( <a href="#">Submission-ID SIW19-78</a> )
•	<b>Empirical Analysis of Voltage Variations in Low Voltage Distribution Grids from Photovoltaic</b> <b>M. Alhamwi</b> , N. Etherden (Vattenfall R&D, Sweden), E. Mulenga, M. H. J. Bollen (Luleå University of Technology, Sweden) ( <a href="#">Submission-ID SIW19-216</a> )
•	<b>Centralised vs Autonomous Control of Distribution Systems to Increase PV Hosting Capacity</b> <b>A. O'Connell</b> (Electric Power Research Institute, Ireland), J. Smith (Electric Power Research Institute, United States) ( <a href="#">Submission-ID SIW19-118</a> )
•	<b>Impact Assessment of High Penetration of Photovoltaic Power Generations on Residual Load Profile of Various Distribution Networks based on Statistical Data</b> <b>T. Kato</b> , M. Imanaka, M. Kurimoto, S. Sugimoto (Nagoya University, Japan) ( <a href="#">Submission-ID SIW19-150</a> )
	<b>Poster Flash Talk (5 min.):</b>
•	<b>Tapping Flexibility Potential of Decentralized Controllable Loads for Smart Markets through Aggregation</b> <b>M. Müller</b> , A. Zeiselmair, J. L. Pedraza Gómez (Forschungsstelle für Energiewirtschaft / Research Center for Energy Economics (FfE), Germany) ( <a href="#">Submission-ID SIW19-33</a> )
<b>17:35 – 18:10</b>	<b>Discussions</b>

<b>16:10 – 18:10</b>	<b>SESSION 4C: FORECASTING</b>
> Session Chair	TBA
<b>16:10 – 17:58</b>	<b>Presentations (18 min. each)</b>
•	<b>Probabilistic Semi-Dynamical “Nowcasts” of Solar Radiation Globally via Freemium Web API Distribution</b> H. Jack, N. Engerer, J. Luffman (Solcast, Australia) ( <a href="#">Submission-ID SIW19-244</a> )
•	<b>PV Power Forecast Comparison of Physical and Machine Learning Models</b> <b>K. Winter</b> , S. Vogt, R. Fritz, J. Dobschinski (Fraunhofer IEE, Germany) ( <a href="#">Submission-ID SIW19-123</a> )
•	<b>Optimized Regional Photovoltaic Forecast Model Considering Self-Consumption to Forecast Actual Feed-in</b> <b>R. Fritz</b> , G. Good, K. Winter, S. Vogt (Fraunhofer IEE, Germany) ( <a href="#">Submission-ID SIW19-243</a> )
•	<b>Cloud Index by Sky Camera applied to a Solar Power Plant to improve the Solar Forecast</b> J. Esteves, R. Pestana (REN-State Grid, Portugal) ( <a href="#">Submission-ID SIW19-213</a> )
•	<b>Short-term Power Prediction Research for Wind Farm and Solar Plant Clusters Based on Machine Learning Method</b> C. Zhenghong, C. Yang (Hubei Meteorological Service Center, China   Meteorological Energy Development Center of Hubei Province, China) ( <a href="#">Submission-ID SIW19-9</a> )
<b>17:58 – 18:10</b>	<b>Discussions</b>

## 18:15 Poster Reception and Networking

## WEDNESDAY, 16 OCTOBER 2019

### 09:00 – 10:45 SESSION 5A: BEST PRACTICES FOR SOLAR AND WIND INTEGRATION FROM FRONT-RUNNER COUNTRIES > Session Chair TBA

09:00 – 10:20 Presentations (20 min. each)

- **Presentation 1**  
TBA
- **Validation of Solar Power Plant Dynamic Model Using Commissioning Test Measurements**  
**D. Chong**, J. Leung, T. Bertes, L. Mardira (DigiSILENT Pacific, Australia) ([Submission-ID SIW19-181](#))
- **General Flexibility Model Analysis for Mass PV Deployment**  
**K. Ogimoto**, J. Gari daSilva Fonseca Junior, K. Kataoka (The University of Tokyo, Japan), H. Azuma, A. Isonaga (JP Business Service, Japan) ([Submission-ID SIW19-253](#))
- **Presentation 4**  
TBA

10:20 – 10:45 DISCUSSIONS

### 09:00 – 10:45 SESSION 5B: DISTRIBUTION GRID ASPECTS II > Session Chair TBA

09:00 – 10:25 Presentations (17 min. each)

- **Estimating the Impacts of Single Phase Electric Vehicle Charging and Photovoltaic Installations on an Unbalanced 3-Phase Distribution Grid**  
**M. Shepero**, U. Ramadhani, J. Munkhammar, J. Widén (Uppsala University, Sweden) ([Submission-ID SIW19-68](#))
- **Managing Grid Phase Loss with PV Plants**  
T. Key (EPRI, United States), C. Groeling (Xcel Energy, United States) ([Submission-ID SIW19-34](#))
- **A Methodology for the Assessment of PV Induced Flicker**  
**J. Doms** (Tractebel, Belgium), J. Wynants (Siemens, Belgium), S. Cole (Tractebel, Belgium) ([Submission-ID SIW19-215](#))
- **PV Forecasting in Distribution System Operation – Applications and Requirements**  
**M. Kraiczy**, S. Drauz, B. Mey (Fraunhofer IEE, Germany), P. Hofbauer (egrid application & consulting, Germany), S. Wende von Berg (Fraunhofer IEE, Germany | University of Kassel, Germany), R. Fritz, B. Ernst (Fraunhofer IEE, Germany), M. Braun (Fraunhofer IEE, Germany | University of Kassel, Germany), B. Rindt (egrid application & consulting, Germany) ([Submission-ID SIW19-64](#))
- **Smart Meter as a Cornerstone for Grid Integration of Renewable Energies**  
**S. Azad**, M. Ludwig, M. Zdrallek (University of Wuppertal, Germany), B. Brandherm, A. Ndiaye, M. Deru (German Research Center for Artificial Intelligence (DFKI), Germany), J. Zimpel, M. Hörhammer (Voltaris, Germany), A. Schalk (VSE AG, Germany), C. Breuer (STEAG Technischer Service, Germany), N. Neusel-Lange (SPIE SAG, Germany), ([Submission-ID SIW19-129](#))

10:25 – 10:45 Discussions



<b>09:00 – 10:45</b>	<b>SESSION 5C: HYBRID POWER PLANTS/SYSTEMS</b>
> Session Chair	TBA
<b>09:00 – 10:00</b>	<b>Presentations (20 min. each)</b>
	<ul style="list-style-type: none"> <li>• <b>Integration of PV and Wind in a Single Connection Point</b> J. Vedde, M. Pedersen (European Energy, Denmark) (<a href="#">Submission-ID SIW19-77</a>)</li> <li>• <b>Implementation of Utility Scale Hybrids - Experience in the Australian NEM</b> J. Dyson (Greenview Strategic Consulting, Australia) (<a href="#">Submission-ID SIW19-264</a>)</li> <li>• <b>Aspects of System Sizing for Complete Autonomy of Islands Grids, Discussed by Using the Example of PV-Integration into the Faroe Islands</b> H. G. Beyer (University of the Faroe Islands, Faeroe Islands) (<a href="#">Submission-ID SIW19-147</a>)</li> </ul>
<b>10:00 – 10:45</b>	<b>Discussions</b>

## 10:45 – 11:10 COFFEE BREAK

<b>11:10 – 12:10</b>	<b>SESSION 6– CLOSING SESSION –PANEL DISCUSSION</b>
> Session Chair	TBA
<b>11:10 – 12:00</b>	
	<p><b>Title TBA</b></p> <p><b>Panelists:</b></p> <ul style="list-style-type: none"> <li>- TBA</li> </ul>
<b>12:00– 12:10</b>	<b>Closure</b>

## 12:00 – 14:00 LUNCH

## POSTER PRESENTATIONS

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- **III-V Based Solar Cells: Methods, Future and Application as Energy Harvesting Device**  
P. Yadav (Delhi Technological University, India) ([Submission-ID SIW19-16](#))
- **Tapping Flexibility Potential of Decentralized Controllable Loads for Smart Markets through Aggregation**  
M. Müller, A. Zeiselmaier, J. L. Pedraza Gómez (Forschungsstelle für Energiewirtschaft / Research Center for Energy Economics (FFE), Germany) ([Submission-ID SIW19-33](#))
- **Analysis and Forecasting of Weather Conditions in Chlef, Algeria, for Solar Energy Applications**  
T. Tahri (Hassiba Benbouali University of Chlef, Algeria) ([Submission-ID SIW19-38](#))
- **Voltage Stabilization in Thermal Power Plant in Uzbekistan by integrating PV systems**  
A. Aslonov, T. Tsuji (Yokohama National University, Japan) ([Submission-ID SIW19-100](#))
- **Forecasting of Electrical Power Produced by Photovoltaic Panels Using Neural Networks with an Interface Based on Arduino Board**  
A. BenBouali, A. Lakhal, H. Benghennou, R. Taleb, F. Chabni, T. Bessaad, S. Derrouazine (Hassiba BenBouali University, Algeria) ([Submission-ID SIW19-180](#))
- **An Artificial Intelligence Approach to Spatial – Temporal Models for Optimization of Energy Delivery Coming from Multiple Sources**  
I. Smith (SM Solar, Trinidad and Tobago) ([Submission-ID SIW19-189](#))
- **Energy Comparison of MPPT Techniques for PV Systems under Different Environmental Conditions**  
H. Khezri (Student, Brazil), M. Kamali Moghadam (Sabzevar University of New Technology, Iran) ([Submission-ID SIW19-195](#))
- **Realtime Simulation Studies on Power System Stabilizing Effect of Virtual Synchronous Generator for Grid-Connected Inverter**  
J. Kato, T. Masaya, Y. Ota, T. Nakajima (Tokyo City University, Japan), Y. Mitsugi, H. Hashiguchi (Toshiba Mitsubishi-Electric Industrial Systems Corporation, Japan) ([Submission-ID SIW19-226](#))
- **Condensate Throttling- Retrofitting of Flexible Control to Improve Unit Primary Control**  
A. K. Sinha (GTG-RISE, India) ([Submission-ID SIW19-227](#))
- **On the Utilization of Cross-Regional Interconnector and Pumped Hydro Energy Storage for the Further Introduction of Solar PV in Japan**  
S. Ichimura (Renewable Energy Institute, Japan) ([Submission-ID SIW19-230](#))
- **Tertiary Based Cooperative Decentralized Control of DC Microgrid**  
H. Aboelsoud, T. Tsuji (Yokohama National University, Japan) ([Submission-ID SIW19-238](#))
- **An Artificial Intelligence Approach to Spatial – Temporal Models for Optimization of Energy Delivery Coming from Multiple Sources**  
I. Smith (SM Solar, Trinidad and Tobago) ([Submission-ID SIW19-260](#))
- **Collaborative Control Method for Distribution System Equipment and PCS for PV - Voltage Rise Suppression Function Revising Waiting Time –**  
A. Moriwaki, S. Uemura (Central Research Institute of Electric Power Industry, Japan) ([Submission-ID SIW19-268](#))