**WEDNESDAY 14 June**

**MAIN SESSION 2: Power quality and electromagnetic compatibility**

Room: Lomond Auditorium

<table>
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<tr>
<th>Block 1: Electric and magnetic fields, safety and interference</th>
<th>09:00 – 10:30hrs</th>
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<tr>
<td>0452 Validation of an integrated methodology for design of grounding systems through field measurements</td>
<td>C Cardoso, L Rocha, A Leiria, EDP Labelec, Portugal, P Teixeira, EDP Distribuição, Portugal</td>
</tr>
<tr>
<td>1065 Making risk based earthing design accessible and effective</td>
<td>W Carman, Bill Carman Consulting, Australia</td>
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<td>1062 New model for the calculation of harmonics in the residual earth fault current of medium voltage systems</td>
<td>K Frowein, P Schegner, TU Dresden, Germany, U Schmidt, HS Zittau/Goerlitz, Germany, G Druml, Sprecher Automation GmbH, Austria</td>
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<tr>
<td>0595 Assessment of EMF-Exposure in residential buildings caused by smart metering systems using PLC</td>
<td>A Abart, Netz OÖ GmbH, Austria, M Flohberger, EnergieAG OÖ, Telekom, Austria, R Hirtler, ESF Vienna, Austria</td>
</tr>
<tr>
<td>1285 Electromagnetic interferences in smart grid applications: a case study of PLC smart meters with PV energy generation</td>
<td>D Roggo, R Horta, L Capponi, HES-SO Valais-Wallis, Switzerland, L Eggenschwiler, HES-SO Fribourg, Switzerland, C Pellodi, P Decorvet, Services Industriels de Genève, Switzerland, F Buholzer, Landis+Gyr, Switzerland</td>
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<td>1029 High performance magnetic shielding solution for ELF sources</td>
<td>A Canova, L Giacone, Politecnico di Torino, Italy</td>
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<th>Block 2: Power quality issues of distributed generation</th>
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<td>0891 Harmonic emission assessment on a distribution network: the opportunity for the prevailing angle in harmonic phasors</td>
<td>B Peterson, J Rens, North West University, South Africa, J Desmet, Ghent University, Belgium</td>
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<td>0927 Standard passive harmonic filter for wind farm connections</td>
<td>A Kazerooni, L Koo, WSP</td>
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<tr>
<td>0457 Harmonic, interharmonic and supraharmonic characterisation of a 12-MW-wind park based on field measurements</td>
<td>A M Blanco, J Meyer, Technische Universitaet Dresden, Germany, B Heimbach, B Wartmann, M Mangani, M Oeschger, EWZ, Switzerland</td>
</tr>
<tr>
<td>0076 How to deal with electromagnetic disturbances caused by new inverter technologies connected to public network</td>
<td>X Yang, L Bertin, EDF R&amp;D, France</td>
</tr>
<tr>
<td>0997 Measurement of voltage instabilities caused by inverters in weak grids</td>
<td>M Höckel, A Gut, S Schori, BFH, Switzerland, M Arnal, BKW, Switzerland, R Schild, KWO, Switzerland, P Steinmann, ABB, Switzerland</td>
</tr>
<tr>
<td>0357 Voltage unbalance due to single-phase photovoltaic inverters</td>
<td>D Schwanz, S Rönnberg, M Bollen, Luleå University of Technology, Sweden</td>
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<th>Block 3: Power quality measurement, analysis and mitigation methods</th>
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<tr>
<td>0408 Advanced ripple control signal calculation tools for DNOs</td>
<td>S Uytterhoeven, D Empain, Laborelec, Belgium, P Vermeulen, Eandis, Belgium</td>
</tr>
<tr>
<td>0460 Harmonic resonances in residential low voltage networks caused by consumer electronics</td>
<td>J Meyer, R Steigler, P Schegner, Technische Universität Dresden, Germany, I Röder, A Belger, NRM Netzdiensle Rhein-Main GmbH, Germany</td>
</tr>
<tr>
<td>1012 The measurement of high frequency disturbances in Slovenian substations</td>
<td>U M Peterlin, T Živic, Milan Vidmar Electric Power Research Institute, Slovenia</td>
</tr>
</tbody>
</table>
1267 Resolving inconsistencies in three-phase current measurements  
A Urquhart, M Thomson, Loughborough University, United Kingdom

0747 Determination of flicker contributions based on synchronised measurements of rapid RMS changes  
V Cuk, F Ni, S Xue, TU Eindhoven, Netherlands, A Jongepier, Enduris B.V., Netherlands, H van den Brom, G Rietveld, M Acanski, VSL, Netherlands, S Cobben, Aliander, Netherlands/TU Eindhoven, Netherlands

0821 Research of process immunity time of boiler coal feeding system in thermal power plant and solution to voltage sags  
L Wang, Golden Cooperative Co., Ltd, China, X Zhu, NUAA, China, H Zhang, Y Zhao, Z Zhu, Shenzhen Power Supply Co.Ltd, China, M Fan, CEPI, China, Z Zheng, Sichuan University, China

Block 4: Power quality system monitoring, continuity of supply and regulatory issues  
16:00 – 17:30hrs

0066 Using voltage sag measurements for advanced fault location and condition based maintenance  
M Tremblay, B Fazio, D Valiquette, Hydro-Québec, Canada

0488 Unified power quality index for electrical network in Alexandria-case study  
H Karawia, M Mahmoud, AEDC, Egypt

0645 Enel global solution for power quality monitoring and analysis  
J M Romero Gordon, Endesa, Spain, C Noce, Enel SpA, Italy

0734 Regulation and classification of voltage dips  
L Weldemariam, V Cuk, S Cobben, TU/Eindhoven, Netherlands, J van Waes, Movaris Energy, Netherlands

0676 Impacts of the change in regulation in Brazil: penalty simulation for violation of collective interruption indications versus compensation for consumers  
A D S Barbosa, P L Carvalho, ANEEL, Brazil

1241 An experience in determining a cost versus quality of service characteristic in order to define optimal investment level  
I O Cryillo, M A Pelegrini, G Quiroga, Sinapsis Inovação em Energia, Brazil, C F M Almeida, C M V Tahan, M R Gouvea, University São Paulo, Brazil

MAIN SESSION 6: Challenges for DSOs in new business environments

Room: Hall 5

Block 1: New DSOs roles in a digital world  
09:00 – 10:30hrs

0147 How to shape digitalisation in the energy sector – a new approach for systematic business innovation  
B Römer, B Gemsjäger, W Fröhner, Siemens AG, Germany, G Di Lembo Enel Global Infrastructure & Networks, Italy

1181 Towards new data management platforms for a DSO as market enabler – UPGRID Portugal demo  
A Alonso, R Couto, H Pacheco, R Bessa, C Gouveia, L Seca, INESC TEC, Portugal, J Moreira, P Nunes, P G Matos, EDP Distribuição, Portugal, A Oliveira, WITHUS, Portugal

0223 Modelling metering data flows, from use cases towards implementation  
K Boukir, Enedis, France, B Traverson, EDF R&D, France, R Povse, University Ljubljana, Slovenia

0518 AMI rollout strategy and cost-benefit analysis for India  
R Pillai, R Bhatnagar, H Thukral, India Smart Grid Forum, India

0764 Experiences of using AMI system for DSO’s business operation  
M Kauppinen, J Pylvänäinen, J Karjalainen, V Sihvola, Elenia Oy, Finland

1306 Developing a framework for the customer model of the future  
M McGranaghan, O Siddiqui, K Smith, EPRI, United States

Block 2: Development of regulation  
11:00 – 12:30hrs

0064 Innovation incentives for DSOs - a must in the new energy market development  
O Günther, Stromnetz Berlin GmbH, Germany, S Politopoulou, HEDNO, Greece, D Verreth, Enexis, Netherlands
Forecast the grid oriented battery operation to enable a multi-use-approach and discussion of the regulatory framework
S Nykamp, T Rott, Westnetz GmbH, Germany, K Keller, University of Twente, Netherlands, T Knop Innogy SE, Germany

The smart grid roadmap and regulation approaches in Switzerland
M D Galus, Swiss Federal Office of Energy (SFOE), Switzerland

Analyses of the current Swedish revenue cap regulation
C J Wallnerström, E Grahn, T Johansson, Swedish Energy Markets Inspectorate (EI), Sweden

Incentives in supply continuity regulation and setting its parameters in the Czech Republic
P Skala, EGU Brno, as, Czech Republic, J Selfranek Energy Regulatory Office, Czech Republic

National platform for information on customer interruptions and outages in Denmark
P K Hansen, Danish Energy Association, Denmark, T K Asmussen, SEAS-NVE Net A/S, Denmark, K C Jensen, EniigMidt Net A/S, Denmark

Block 3: Enabling flexibility
14:00 – 15:30hrs

E-CLOUD, the open microgrid in existing network infrastructure
D Vangulick, ORES, Belgium/ Université de Liège, Belgium, B Cornelousse, Université de Liège, Belgium, T Vanherck, University of Mons, Belgium, N-SIDE, Belgium, O Devolder, S Lachi, RESA, Belgium

Testing and validation of the ACCESS system
K Jennett, F Coffele, I Abdulfadi, PNDC, United Kingdom, B Stephen University of Strathclyde, United Kingdom

Providing smart metering data services through an EU marketplace
K Boukri, Enedis, France, D Wästlund, Vattenfall, Sweden, B Traverson, EDF R&D, France, F Schwarzlaender, Sap, Germany, S Defrancisci, e-distribuzione, Italy

Creating a local energy market
B A Bemdal, Smart Innovation Østfold, Norway / University of Tromsø, Norway, P Olivella-Rosell, J Rajasekharan, I Ileiva, Smart Innovation Østfold, Norway

Behavior of active household customers on the electricity market - findings from market test Smart Grid Gotland
C Svalstedt, Vattenfall, Sweden, M Löf Vattenfall R&D, Sweden

Development of power-based tariff structure for small customers and pathway for this change
R Apponen, P Heine, J Lehtinen, Helen Electricity Network, Finland, M Lehtonen, Aalto University, Finland, K Lummi, P Jarventausta, Tampere University of Technology, Finland

Block 4: Asset and risk management
1600 – 17:30hrs

Asset risk indices: commonality, diversity and usage - the history in UK electricity distribution
M Black, G Howarth, M Nicholson, Northern Powergrid, United Kingdom

"End-to-End" strategic asset management process to support asset service on community level
A Etting, G Schatz, KWH Netz GmbH, Germany, T Dürauer, H Spitzer, entelgenio, Germany

Guidelines for modernising existing electrical switchgear in LV and MV networks
G Barbarin, D Seignier, Schneider Electric, France, A Gerstner, Schneider Electric, Germany

Determining failure probabilities with qualitative characteristics for risk estimation in the SGAM
M van Amelsvoort, OFFIS Institute for Information Technology, Germany

Assessment of electricity distribution companies risks in the Brazilian energy market framework
V L de Matos, G Matiussi, R C Machado, Plan4 Engenharia, Brazil, R L Antunes, M T Coelho, CELES, Brazil

Identifying infrastructure change in the 4th and 5th Dimensions
M Coleman, Fugro Roames, Australia, P Carberry, Fugro Inc, United States, R Hoddenbach, Fugro Geospatial, Netherlands

ROUND TABLE Session 1: Network components

ROOM: Alsh

09:00 – 10:30hrs RT 5: Reduction of technical and non-technical losses in distribution networks
The scope of the round table is to share the approach and main findings of the CIRED working group “Reduction of Technical and Non-Technical Losses in Distribution Networks” (March 2015 – June 2017). The objectives were:

1. Delivering an overview of the main challenges regarding losses assessment and reduction, considering the recent evolutions in the network,
   - from a technical point of view (more Distributed Energy Resources connected for instance)
   - from a regulatory point of view (European Directive for instance)
   It includes all kind of losses, technical and non-technical.
2. Delivering an overview of existing and emerging solutions taking into account last available technologies

Panellists
Coordinator: Yann Toravel, Enedis, France
Contributors
Andreas Beutel, ESKOM, South Africa
Nera Ruiz, Iberdrola, Spain
Bhargav Prasanna Swaminathan, G2Elab (Grenoble INP), India
Rosario Zaccaria, e-distribuzione, Italy

11:00 – 12:30hrs    RT 7: Digital solutions for network maintenance: drones and image processing, virtual and augmented reality, big data, data analytics and IoT

DSOs are facing huge challenges, in a global context of energy and digital transitions. At the same time, new digital technologies are emerging, that will support the increase of performance and the adaptation looked for by DSOs, including the field of asset management and network maintenance.

The following topics will be discussed: drones and image processing, virtual and augmented reality, data analytics and IoT.

Experiments and examples of operational implementation of innovative solutions will be presented and discussed, as well as state of the art and future prospects on these issues.

Panellists
Coordinator: Dr Ing Uwe Kaltenborn, HIGHVOLT Pruftechnik Dresden GmbH, Germany
Contributors:
Joao Nunes, EDP Distribuicao, Portugal
Olivier Gonbeau, Enedis, France
Mark McGranaghan, EPRI, USA
Krzysztof Gajdamowicz, Visimind, Sweden
Franck Bernage, SIREA, France

14:00 – 15:30 hrs    RT 9: Smart secondary substations, technology developments and distribution system benefit

The working group was organised in 5 subgroups, due to the complexity of the elements involved in secondary substations’ structure. Each subgroup is in charge of one of these main topics, to investigate the solutions that secondary substations adopted in different networks and countries.

The WG activities had three main goals:
1. Describe the most common assets, both traditional and “state-of-the-art”, MV and LV components, MV/LV transformers and protection systems, comparing them in terms of capability, reliability, performance and cost-efficiency
2. Provide an overview of future tendencies in “smart” secondary substation components, as resulting from ongoing innovation projects and CIRED acts and papers
3. Outline expected benefits.

The scope of this Round Table is to describe the results of investigation, presenting the state of the art, future tendencies and outline expected benefits of the MV and LV components, MV/LV transformers, protection and remote control systems.
Panellists
Coordinator:
Luca Giansante, e-distribuzione SpA, Italy
Contributors:
Bernd Schuepferling, Siemens, Germany
Enrico Ragaini, ABB, Italy
Yves Chollot, Schneider-Electric, France
Siirto Osmo, Helen, Finland
Jarkko Holmlund, ABB, Finland

16:00 – 17:30 hrs RIF Session 1: Network components

0138 Proven reliability beyond the standards
I Oruei Gilbert, J Larrieta, S Sebastian, Ormazabal, Spain

0539 Comparisons of transformer top oil temperature calculation models using support vector regression optimised by genetic algorithm
T Qian, W H Tang, W J Jin, South China University of Technology, China, L Gan, Y Q Liu, G J Lu, Guangzhou Power Supply Co Ltd, China

0541 Fault diagnosis of high-voltage circuit breakers using wavelet packet technique and support vector machine
W J Jin, W H Tang, T Qian, T Y Ji, South China University of Technology, China, L Gan, Y Q Liu, G J Lu, Guangzhou Power Supply Co Ltd., China

0541 Comparative study on arc extinction process under air, CO2 and SF6 gas blasting using two-dimensional electron density imaging sensor
Y Inada, Saitama University, Japan, S Yamaguchi, A Kumada, H Ikeda, K Hidaka, The University of Tokyo, Japan, T Nakano, K Murai, Y Tanaka, Kanazawa University, Japan

0604 Data analysis of battery storage systems
M Andoni, W Tang, V Robu, D Flynn, Heriot Watt University, United Kingdom

0657 High performance thermoplastic cable insulation systems
A Pye, G Stevens, Gnosys Global Ltd, United Kingdom

1100 Power hardware-in-the-loop setup for power system stability analyses
R Brandl, T Degner, Fraunhofer IWES, Germany, M Calin, DERlab eV, Germany

1102 Experimental study of dynamic thermal behaviour of an 11 kV distribution transformer
R Villarroel, Q Liu, Z Wang, University of Manchester, United Kingdom

ROUND TABLE Session 5: Planning of power distribution systems

ROOM: Boisdale

09:00 – 10:30hrs RT 6: Requirements for smart, flexible, future power system architectures (Sessions 4 & 5)

The round table will explore and debate the emerging requirement for a fundamental change to existing power system architectures to address increasingly complex operational challenges arising from increasing levels of DERs, new demands on electricity systems due to electrification of heat and transport, and displacement of centralised synchronous generation by renewable generation technologies.

The ‘Future Power System Architecture’ programme in the UK sponsored by the UK Electricity Systems Catapult and supported by The IET has already identified 35 substantially new or extended functions that will be necessary to manage the transition to a future secure, affordable and decarbonised electricity system. Many of these new functions are associated with grid-edge technologies and smart energy system. The associated reports can be found at: http://www.theiet.org/sectors/energy/resources/fpsa-project.cfm?origin=reportdocs. Phase 2 of the programme is now underway and scheduled to complete in April 2017.

An important element of the programme was an international study comparing power system architecture challenges in other parts of Europe and the USA and as well as a high level of common challenge, there are initiatives underway to address the significant architecture issues arising from renewables, DER, interconnection and other major changes.
The Round Table will have contributors from Europe, USA, and possibly other continents, to discuss and compare their evolving needs for new power system functionality; the engineering, market, and regulatory challenges they foresee; and the opportunities for new architectural frameworks to support the required transformational changes.

Panellists
Coordinator:
Graham Ault, Smarter Grid Solutions, United Kingdom
Contributors:
Konstantin Staschus, ENTSO-E / StaRGET GmbH, Germany
Lars Jendernalik, Westnetz, Germany
Mark McGranaghan, EPRI, USA
Robbie Aherne, Eirgrid, Ireland
Mike Kay, IET, United Kingdom

11:00 – 12:30hrs RT 8: Innovative grid architectures and control strategies for 2030+ power systems (Sessions 4 & 5)

The round table will represent an opportunity for grid experts to recall the future challenges and to report on the state-of-the-art of research work devoted to new architectures and concepts for the power systems of the future. In fact, power systems often evolve in a fairly incremental way to meet new challenges. The ambitious objectives for RES development in the next decades (2030-2050), together with the deployment of storage options and active demand, indicate that a more essential paradigm change may be required. This includes a move towards distributed systems with intermittent generation and bi-directional flows that increase in magnitude and complexity, with an evident trend for load-following generation to achieve similar or higher quality and security of supply.

Numerous ongoing research activities in the “smart-grids” area focus on the development of new technologies and their integration into power systems. However, in recent years a trend has emerged to consider new concepts for the architecture of power systems that analyse alternative paths to the standard incremental evolution.

One of these innovative architectures is the Web-of-Cells (WoC) concept developed in the frame of the EU project ELECTRA to anticipate the active grid that will prevail with the penetration of distributed energy resources (wind, solar, storage, etc.). The WoC assumes a novel organisation of the power system into cells, where power balancing and other functionalities are performed within specific areas. An alternative concept is being developed by the Fractal Grid project in France and some initiatives in the US. The fractal grid approach aims to exploit auto-similarities in power system structures to understand the complexity and emergent properties of power grids; to optimise spatial organisation of urban patterns and networks and to increase the flexibility and resilience of power grids. It also proposes approaches to develop new grids or extend existing ones based on fractal concepts.

Moreover, the Autonomic Power System project, developed by a number of universities in the UK, aims to move beyond current smart grid applications and approaches. The concept is based on biological autonomic systems that set high-level goals but delegate decision-making on how to achieve them to lower level intelligence. No centralised control is apparent, and behaviour emerges from low-level interactions. This allows highly complex systems to achieve real-time and just-in-time optimisation of operations. The autonomic power system is a completely integrated and distributed control philosophy that self-manages and optimises all network operational decisions in real time.

The round table will have contributors from across Europe to discuss and compare the proposed innovative grid architectures and control strategies for the 2030+ Power Systems; owing to the importance and appeal of this topic, a live discussion with the audience will be promoted.
Panellists
Coordinator:
Luciano Martini, Ricerche sul Sistema Energetic, RSE, Italy
Contributors:
Helfried Brunner, AIT, Austria
Alexander Prostejovsky, DTU, Denmark
George Kariniotakis, MINES ParisTech, France
Stephen McArthur, University of Strathclyde, United Kingdom

14:00 – 15:30 hrs  RT 15: Blockchain: which use cases in the energy industry
(Sessions 5 & 6)

After having attracted huge investment and the attention of the whole financial industry with the birth of relevant Start-ups and consortia, blockchain is becoming one of the most discussed topics in the energy industry. What, however, is the actual innovation behind the buzzword? Will we see an energy blockchain consortium arise in the future as has happened in banking? Many use cases have been proposed by start-ups which threaten incumbents of the energy sector with the spectrum of “disintermediation” like P2P energy exchange. How could the principles behind electronic cash be implemented in a framework where transactions involve physical assets? Many opinion makers see a great potential in blockchain but still its real value for the energy industry has to be proven.

In this panel we will discuss with some of the most active players in this field how to develop valuable proof of concepts and which applications of blockchain could be the most promising in the energy industry.

Panellists
Coordinator:
Diego Dal Canto, Enel, Italy
Contributors:
Carsten Stoecker, Innogy, Germany
Gerhard Gamperi, Verbund, Austria
Joseph Stanley, Centrica, United Kingdom
Axel Strang, Enedis, France
Paul Ellis, Electron, United Kingdom

RIF Session 5: Planning of power distribution systems

Block 4 : Methods and tools
Sub-block 3 : Load flow & short circuit calculations

0179   Analysis of probabilistic load flow using point estimation method to evaluate the quantiles of electrical networks state variables
G Plattner, EDF, France, H Farah Semlali, N Kong, Enedis, France

0394   On the use of the game theory to study the planning and profitability of industrial microgrids connected to the distribution network
C Stevanoni, F Vallée, Z De Grève, O Deblecker, University of Mons, Belgium

0727   A new approach to large distribution network optimization using modern implementation of benders decomposition
N D'Addio, M Forbes, Queensland University, Australia, A M A K Abeygunawardana, G Ledwich, M shafiei, Queensland University of Technology, Australia

0771   Active distribution network planning based on a hybrid genetic algorithm-nonlinear programming method
N Koutsoukis, P Georgilakis, N Hatzigiou, NTUA, Greece

0841   A comparison of convex formulations for the joint planning of microgrids
B Martin, E De Jaeger, F Glineur, UCL, Belgium

1031   Artificial intelligence potential in power distribution planning
A Van der Mei, Duinn, Netherlands, J P Doomernik, Enexis, Netherlands
**INTERACTIVE POSTERS Session 3: Operation, control and protection**

**09:00 – 17:30hrs**

### Block 1: Operation

### Sub Block 2 - Distribution Management

**0040** Enedis approach for the roll-out of technical smart grid industrial solutions  
L Karsenti, P Daguzan, Enedis, France

**0209** Loss estimation of medium voltage lines based on real and synthetic load profiles  
C Groß, W Schaffer, Salzburg Netz GmbH, Austria, M Stifter, AIT, Austria, A Einfalt, Siemens, Austria

**0325** Convex power flow models for scalable electricity market modelling  
F Geth, D Van Hertem, KULEuven/EnergyVille, Belgium, R D’hulst, EnergyVille & VITO, Belgium

**0423** Real time simulation of large distribution networks with distributed energy resources  
M Dyck, O Nizimako, RTDS Technologies Inc, Canada

**0610** Risk prediction in distribution networks based on the relation between weather and (underground) component failure  
T Gu, J Janssen, E Tazelaar, G Popma, Alliander N.V., Netherlands

**0649** Incorporating asset management into power system operations  
I Sarantakos, Newcastle University, United Kingdom/Siemens AG, United Kingdom, P Lyons, ESB Networks, Ireland/Newcastle University, United Kingdom, S R Blake, P C Taylor, Newcastle University, United Kingdom, L Tao, Siemens AG, Germany, S Celik, MIT, United States, S Rowland, Siemens AG, United Kingdom

**0712** Smart fault management scheme for electrical distribution networks  
N Sherbilla, BCED, Egypt

**0722** Evaluation of practical experience of fault indicator performance in medium voltage networks  
E K oreneva, Streamer Electric Inc, Russia

**0871** Next-generation network restoration approaches on distribution feeders  
J Duller, A Halim, UK Power Networks, United Kingdom, G Paton, B Traill, S Sparling, General Electric, United Kingdom

**0899** Standardisation to reduce lifecycle cost and lead time with improved quality, efficiency and flexibility  
F Volberda, A Geschiere, E Piga-Gehrke, Liander, Netherlands

**0965** A reference architecture for open, maintainable and secure software for the operation of energy networks  
A Goering, J Meister, S Lehnhoff, OFFIS, Germany, P Herdt, Main-Donau Netzgesellschaft, Germany, M Jung, develop-group, Germany, M Rohr, BTC, Germany

**1037** Helen Electricity Network Ltd’s process towards high level of supply reliability  
M Loukkalahti, M Hyvärinen, O Siirto, P Heine, Helen Electricity Network Ltd, Finland

**1214** IOT services for a smart LV grid management  
N Clerc, H Hoeltzel, Socomec, France, I Beyl, Electricité de Strasbourg Réseaux, France

**1330** Smart fault selection: new operational criteria and challenges for the large scale deployment in e-distribuzione’s network  
C D’Adamo, G Valtorta, L Consiglio, A Cerretti, L D’Orazio, A Malerba, F Marmeggi, e-distribuzione SpA, Italy

### Sub Block 1 - Maintenance and condition assessment

**0195** TDR measurement with utility-pole-interval resolution of real-scale distribution system  
S Oe, T Sasaoka, Kansai Electric Power Co., Inc, Japan, T Matsushima, T Hisakado, O Wada, Kyoto University, Japan

**0290** Autonomous inspection in transmission and distribution power lines - methodology for image acquisition by means of unmanned aircraft system and its treatment and storage  
R Z Homma, Celesc Distribuição, Brazil, A Cosentino, C Szymanski, INERGE, Brazil

**0426** Locating the causes of recurrent supply interruptions and flickering lights on Scottish Power’s low voltage cable network using travelling waves  
P Gale, A Wang, Kehui (UK) Ltd, United Kingdom, J Livie, Scottish Power, United Kingdom

**0711** Advancement in maintenance operation for managing various types of failure and vastly aging facilities  
T Suzuki, H Yamamoto, T Oka, Chubu Electric Power Co Inc, Japan

**0724** Field experiments in power line inspection with an unmanned aerial vehicle  
J Formiga, J Dinis, EDP Labelec, Portugal, J Fialho, F Moreira, EDP Distribuição, Portugal, J Almeida, A Dias, E Silva, INESC TEC/ISEP, Portugal, M Moreira, T Santos, INESC TEC, Portugal

**1356** Terna fleet management of power transformers: through fault current monitoring to plan proper maintenance  
M Rebolini, C A Serafino, Terna, Italy, E Savorrelli, M Tozzi, A Salsi, Camlin Power, Italy
Emergency Operational Plan (EOP) - crisis situation management  
M Pollice, Edenor SA, Argentina

Creating a mobile centric operational model in utilities  
D Macfarlane, DAM, United Kingdom, A Stamp, Yambay, Australia, G Paton, General Electric, United Kingdom

The future of flood resilience for electricity distribution infrastructure in Great Britain (GB)  
J Booth, P McFarlane, Electricity North West Ltd., United Kingdom, M Drye, S McDonald, Northern Powergrid, United Kingdom, D Whensley, Energy Networks Association, United Kingdom

Efficient coordination in major power disruption  
T Kupila, T Ihonen, T Keränen, Elenia Oy, Finland, L Anttila, Futurice Oy, Finland

Service prioritisation and crew dispatch in an electricity utility  
F Romero, P H Baumann, T Milagres Miranda, D Takahata, A Uehara Antunes, Daimon Engeneering and Systems, Brazil, A C L Alves, S L P C Valinho, L M Azevedo, CEMAR, Brazil

Dashboard and smartphone application to support operation and planning of electric distribution systems  
P D Duarte, B H Nakata, Sinapsis, Brazil, M S Hoshina, M M Martinelli, I C Pires, AES Eletropaulo, Brazil

Requirements for coordinated ancillary services covering different voltage levels  
S Übermasser, AIT, Austria, C Groß, Salzburg Netz GmbH, Austria, A Einfalt, Siemens, Austria, N Thie, M Vasconcelos, RWTH Aachen, Germany, J Helguero, HS-Kempten, Germany, H Laaksonen, P Hovila, ABB Oy, Finland

DSO TSO coordination needs induced by smart grids: the ongoing French project between RTE and Enedis  
O Arnaud, RTE, France, M Chapert, O Carré, Enedis, France

Improving actionable observability of large distribution networks for transmission operators to support improved system control, fault detection & mitigation  
C Shand, G Taylor, Brunel University London, United Kingdom, E Stewart, C Roberts, Lawrence Berkeley National Laboratory, United States, A McMorran, Open Grid Systems Ltd, United Kingdom, P Mohapatra, SP Energy Networks, United Kingdom

Multi-agent system design for automation of a cluster of microgrids  
M Khederzadeh, Shahid Beheshti University A.C, Iran

Pilot project using curtailment to increase the renewable energy share on the distribution network  
T L Vandoorn, L Degroote, P Lindeboom, D Meire, P Reyniers, Eandis, Belgium, L Vanedvelde, Ghent University, Belgium

Voltage stability monitoring methods for distribution grids using the thevenin impedance  
S Polster, H Renner, Graz University of Technology, Austria

Fast self-healing control of faults in MV networks using distributed intelligence  
T Yip, J Wang, Kehui Power Automation, China, B Xu, K Fan, Shandong University of Technology, China, T Li, State Grid Fujian Electric Power, China

Interaction of MV- and LV- automation systems for a smart distribution grid  
P Steinbusch, M Modemann, J Meese, R Uhlig, M Stötzel, M Zdrallek, University of Wuppertal, Germany, T Kumm, EWE NETZ GmbH, Germany, W Friedrich, U Schlüter, Mauell GmbH, Germany

Computation and visualisation of reachable distribution network substation voltage  
M Sankur, D Arnold, L Schcector, E Stewart, Lawrence Berkeley National Laboratory, United States

ELECTRA IRP voltage control strategy for enhancing power system stability in future grid architectures  
J Merino, J E Rodriguez-Seco, TECNALIA, Spain, I Garcia-Villalba, University of the Basque Country, Spain, A Temiz, TUBITAK MAM, Turkey, C Caerts, VITO, Belgium, R Schwaibe, T I Strasser, AIT, Austria

State forecasting in smart distribution grids: a modular approach using CARMA-algorithm  
K Korotkiewicz, M Ludwig, M Stötzel, M Zdrallek, University of Wuppertal, Germany, T Braje, SAG Gmb, Germany, U Dietzler, ENERGIEVERSORGUNG LEVERKUSEN Gmb, Germany, W Friedrich, Mauell GmbH, Germany

Real-time, centralised voltage control in 33kV and 11kV electricity distribution networks  
Y Mavrocostanti, J Berry, Western Power Distribution, United Kingdom

Operation and performance of a medium voltage DC link  
A Aithal, J Wu, Cardiff University, United Kingdom
A new approach for on-load tap-changer control based on intelligent voltage stability margin estimation by using local measurements
H Feng, K Viereck, Maschinenfabrik Reinhausen GmbH, Germany, S Breker, J Rudolph, EnergieNetz Mitte GmbH, Germany

Low power instrument transformer based MV automation: lessons learned and future applications
A Larraebiti, I Garabieta, J A Lozano, M G Zamalloa, ARTECHE, Spain, Z Ojinaga, V Macias, Iberdrola, Spain

Sub Block 4 - Communication

An innovative solution sustaining SCADA-to-Remote terminal unit G3-PLC connectivity over dynamic grid topologies
C Lavenu, EDF R&D, France, D Dufresne, X Montuelle, ENEDIS, France

Remote management in Elektrilevi OÜ
H Luus, Elektrilevi OÜ, Estonia

AIR - intelligent grid automation
F Rover, T Morais, J Aith, Elektro, Brazil

Development of PLC system with large capacity and high reliability
Y Inoue, M Uchiyama, KANSAI Electric Power Co Inc, Japan

Service quality assurance in the IP networks for Smart Grids
P Ceferin, R Djukic, I Stih, B Zupan, Smart Com, Slovenia, Z Toros, Elektro Primorska, Slovenia

Sub Block 6 - IEC 61850

R-GOOSE - what it is and its application in distribution automation
A Apostolov, OMICRON electronics, United States

Use case-driven innovation for IEC 61850 modeling
J Masurkewitz-Moeller, M. Specht, OFFIS e.V., Germany, W Friedrich, Mawell GmbH, Germany

Comparison of testing and commissioning activities in traditional and digitised substation protection and control systems
J Starck, O Rintamäki, H Niveri, ABB Oy, Finland

Realisation of a intelligent and continuous process connection in substations
C Säfke, C Haverkamp, C Wohling, A Fräbel, S Kreutz, Westnetz GmbH, Germany

IEC-61850 control system at ST Windyhill Scotland
J Boticario, J Lorenzo, S Rementeria, Arteche, Spain, J Cunningham, SP Energy Networks, United Kingdom

Block 2: Control 2

Decision support for distribution automation: data analytics for automated fault diagnosis and prognosis
X Wang, S McArthur, Strachan, University of Strathclyde, United Kingdom, B Paisley, SP Energy Networks, United Kingdom

Using synchrophasors in distribution networks for synchronised switching
M Wache, Siemens AG, Germany, D Willems, SIBELGA, Belgium, F van Cauteren, Siemens NV, Belgium

From simulation to reality - testing today a decentralised grid operation of the future
E Drayer, University of Kassel, Denmark, P Pennigotto, M Lazarus, Électricité de Strasbourg Réseaux, France, J L Garrote Molinero, Schneider Electric, United Kingdom, F Ramos, Schneider Electric, Spain, M Braun, University of Kassel, Denmark /Fraunhofer IWES, Denmark

The grid of the future and the need for a decentralised control architecture: the web-of-cells concept
L Martini, RSE, Italy, H Brunner, T Strasser, AIT, Austria, C Caerts, VITO, Belgium, E Rodriguez, TECNALIA, Spain, G M Burt, University of Strathclyde, United Kingdom

The scenario-based approach adopted in the ELECTRA project for deriving innovative control room functionality
M Marinelli, K Heussen, A Prostejovsky, H W Bindner, Technical University of Denmark, Denmark, V M Catterson, University of Strathclyde, United Kingdom, J Merino, TECNALIA, Spain, C Tomelli, RSE, Italy

Enel – Endesa SCADA/ADMS convergence assessment methodology
B J Deaver, EPRI, United States, G Di Lembo, C Noce, Enel SpA, Italy

Decentralised control through self healing grids
G Mane, S Parkhe, S Dhabale, Tata Power Company Ltd, India

Fast alarm processing without connectivity information
A C Lisboa, D A G Vieira, ENACOM, Brazil, E C Pereira, CEMIG, Brazil

Supporting control room operators in highly automated future power networks
M Chen, V Catterson, M Syed, S McArthur, G Burt, University of Strathclyde, United Kingdom, M Marinelli, A M Prostejovsky, K Heussen, Technical University of Denmark, Denmark
1169 Intelligent network assets supervision and control in Enedis
M Lagouardat, J M Wine, O Carré, Enedis, France

1363 Mitigating power system inertia reduction within a web-of-cells control framework: a preliminary analysis
M Cabiat, S Canever, A Gatti, M Rossi, RSE SpA, Italy

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0481 Online control algorithm for sub-half-hourly operation of LV-connected energy storage device owned by DNO
T Yunusov, M J Zangs, B A Potter, University of Reading, United Kingdom, W Holderbaum, Manchester Metropolitan University, United Kingdom, M Fil, Scottish and Southern Electricity Networks, United Kingdom

0490 Active management of generation in low voltage networks
S Jupe, S Hoda, S Hodgson, Nortech Management Ltd., United Kingdom, A Park, M Wright, SP Energy Networks, United Kingdom

0651 Electric vehicles and low voltage grid: impact of uncontrolled demand side response
L Hattam, D Vukadinovic Greetham, University of Reading, United Kingdom, S Haben, University of Oxford, United Kingdom, D Roberts, EA Technology, United Kingdom

0686 Implementation and validation of synthetic inertia support employing series-produced electric vehicles
M Rezkalla, S Martínez, A Zecchino, M Marinelli, Technical university of Denmark, Denmark, E Rikos, CRES, Greece

0792 UPGRID Project - the management and control of LV networks
S Noske, D Falkowski, ENERGA-OPERATOR SA, Poland, K Swat, T Boboli, Atende Software Sp zoo, Poland

0966 Enhanced LV supervision by combining data from meters, secondary substation measurements and MV SCADA
N Etherden, A K Johansson, U Ysberg, Vattenfall, Sweden, K Kvamme, Powel A/S, Norway, D Pampiega, Schneider Electric, Spain, C Dryden, General Electric, United Kingdom

1026 Coordinated voltage control in LV grid with solar PVs: development, verification and field
M M Viyathukattuva Mohamed Ali, T H Vo, P H Nguyen, Eindhoven University of Technology, Netherlands, Y Xiang, SIM-CI, Netherlands, J Marjan, Elektro Gorenjska, Netherlands, J F G Cobben, Eindhoven University of Technology, Netherlands/Alliander NV, Netherlands

1060 Experimentation of voltage regulation infrastructure on LV network using an OLTC with a PLC communication system
C Baudot, G Roupioz, O Carre, Enedis, France, J Wild, Schneider Electric, France, C Potet, WDB, France

1192 Smart building potential within heavily utilised networks
W Peat, J Whyte, SP Energy Networks, United Kingdom, C Higgins, Derryherk Ltd, United Kingdom

1220 On automated microgrid control system
T Jiang, L M Costa, N Siebert, GE, United Kingdom, P Tordjman, GE, France

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0248 Fractional-order PID controller design of frequency deviation in a hybrid renewable energy generation and storage system
K Nosrati, H R Mansouri, H Saboori, Great Tehran Electrical Distribution Co, Iran

0312 Determination of load frequency dependence in island power supply
C J Steinhart, M Finkel, Hochschule Augsburg, Germany, G Kerber, LEW Verteilnetz GmbH, Germany, R Witzmann, M Gratza, TU München, Germany

0416 Data driven approach for monitoring, protection and control of distribution system assets using micro-PMU technology
E Stewart, M Stadler, C M Roberts, D Arnold, J Y Joo, Lawrence Berkeley National Laboratory, United States, J Reilly, Reilly Associates, United States

Block 3: Protection

Sub Block 2 - Applications

0019 Open or closed ring networks?
H Grasset, Schneider Electric, France

0278 Why the operation failure of high breaking capacity fuses is so frequent?
J C Gomez, D H Tourn, S Nesci, L Sanchez, H Rovere, Río Cuarto National University, Argentina

0309 New protection coordination system according to ESS and renewable energy expansion
K S Lee, J M Kim, B H Shin, KEPCO-HQ, Korea
New settings including rate of change of frequency for interface protection relays used for generators connected to MV grid
S Emelin, Enedis, France, V Gabrion, EDF, France

New and smart multi-ended differential solution for power networks
J Jesus, S Richards, S Subramanian, H Ha, GE Grid Solutions, United Kingdom

Protection scheme for energy storage systems operating in island or grid connected modes
A Neves, B Almeida, M Loruo, R Santos, A Araujo, J Ferreira Pinto, EDP Distribuição, Portugal, J Santana, S Pinto, P Gamboa, M Chaves, INESC ID, Portugal, J Damasio, Siemens, Portugal

Impact of the cables’ shields disconnection on the thermal stress reduction in case of cross-country faults
M Delia Corte, L D’Orazio, A Malerba, F Marmeggi, e-distribuzione SpA, Italy

Designing a coordinated protection system for microgrids enabled with DERs based on unidirectional FCL
M M Khademi, Hormozgan Electric Power Distribution Company, Iran

Dynamical integration of the power system with DG in power networks for grid protection analysis
M Jäkel, H Vennegeerts, A Moser, FGH e.V. Germany, F Glinka, A Schnettler, RWTH, Aachen, Germany

Viability assessment for a centralised protection and control systems architectures in MV substations
B de Oliveira e Sousa, J Starck, J Valtari, ABB Oy, Finland

Hardware based characterisation of LV inverter fault response
I Abdulhadi, F Coffele, Power Networks Demonstration Centre, United Kingdom, A Dysko, University of Strathclyde, United Kingdom, C Foote, C Kungu, SP Energy Networks, United Kingdom, N Lee, Scottish and Southern Energy Power Distribution, United Kingdom

Protection system analysis in LV grid, with high DG penetration, in parallel and islanding operation
N L Filipe, A Leiria, EDP Labelec, Portugal, R André, EDP NEW R&D, Portugal, J Damasio, SIEMENS SA, Portugal, M Gerlich, SIEMENS AG, Germany, S Rodriguez, GPTECH, Spain

The need for zero sequence voltage protection in MV networks with high levels of distributed generation
J Mateus, M Ferreira, P Carvalho, AmberTREE, Portugal

The need for zero sequence voltage protection in MV networks with high levels of distributed generation
J Mateus, M Ferreira, P Carvalho, AmberTREE, Portugal, A Leiria, LABELEC, Portugal, M Louro, B Almeida, EDP Distribuição, Portugal

Rate of change of frequency protection: toward a viable algorithm for a protective relay
M Kleemann, V Piskarov, Sprecher Automation, Germany

Evaluation of existing DC protection solutions on an active LVDC distribution network under different fault conditions
D Wang, A Emhemed, P Norman, G Burt, University of Strathclyde, United Kingdom

Challenges and solutions for MV & LV protection in grids with large amount of distributed generation – A final report from the German research project ProFuDiS
F Glinka, T Wippenbeck, RWTH Aachen University, Germany, T Schmidt, T Wiedemann, innogy SE, Germany, C Bennauer, Schneider Electric GmbH, Germany

Fast protection against islanding and unwanted tripping of distributed generation caused by ground faults
K Pandakov, H K Haidalen, NTNU, Norway, J I Marvik, SINTEF, Norway

Reliable protection systems for locally supplied MV distribution networks
F Bignucolo, A Savio, M Coppo, R Turri, University of Padova, Italy, A Cerretti, R Calone, e-distribuzione, Italy

Estimation of short circuit currents in future LVDC microgrids
A Virdag, T Hager, Hager Group, Germany, R W De Doncker, RWTH Aachen, Germany

Impact of voltage fluctuation on Petersen-coil control and results of a tuning method with evaluation of side frequencies
M Schloemmer, T Schinerl, H Osterkorn, Trench Group, Austria

New method for high-impedance fault detection
H Laaksonen, P Hovila, ABB Oy, Finland

Reliable protection systems for locally supplied MV distribution networks
F Bignucolo, A Savio, M Coppo, R Turri, University of Padova, Italy, A Cerretti, R Calone, e-distribuzione, Italy
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<td>New solution of fault directional detection for MV fault passage indicators</td>
<td>Y Chollot, J Mecreant, D Leblond, P Cunnell, Schneider Electric, France</td>
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<td>0564</td>
<td>Why does the earth fault detection method based on 3RD harmonic work in large meshed 110-kV-networks</td>
<td>G Druml, Sprecher Automation, Austria, O Skrbinjek, Energie Steiermark, Austria, U Schmidt, University Zittau, Germany, P Schegner, TU-Dresden, Germany, L Fickert, TU-Graz, Austria</td>
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<td>An optimisation algorithm for earth fault location on MV distribution feeders</td>
<td>T D Le, M Petit, CentraleSupélec - GeePs, France</td>
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<td>Accurate localisation of ground faults in non-solidly earthed networks based on transients analysis</td>
<td>C Dziens, A Jurisch, Siemens AG, Germany</td>
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<td>Evaluation of different solutions of faulted phase earthing technique for an earth fault current limitation</td>
<td>D Topolanek, P Toman, M Ptacek, Brno University of Technology, Czech Republic, J Dvorak, E.ON, Czech Republic</td>
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<td>0862</td>
<td>Effect of core balance current transformer errors on sensitive earth-fault protection in compensated MV-networks</td>
<td>A Wahlroos, J Altonen, ABB Oy, Finland, P Vano, ABB sro, Czech Republic</td>
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<td>0967</td>
<td>Application of multi-frequency admittance-based fault passage indication in practical compensated MV-network</td>
<td>J Altonen, A Wahlroos, ABB Oy, Finland, S Vähäkuopus, Elenia Oy, Finland</td>
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<td>1153</td>
<td>Improved fault location algorithm for MV networks based on practical experience</td>
<td>T Gu, F Provoost, Alliander N.V., Netherlands</td>
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<td>1355</td>
<td>Capacitive voltage sensors for an auxiliary fault locating service with traveling waves</td>
<td>B M Keune, C Rehtanz, TU Dortmund, Germany, M Kleemann, Sprecher Automation, Germany</td>
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**NON-INTERACTIVE POSTERS Session 3: Operation, control and protection**

09:00 – 17:30hrs

**Block 1: Operation**

Sub Block 2 - Distribution Management

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<td>MVDC link in a 33 kV distribution network</td>
<td>C Long, J Wu, Cardiff University, United Kingdom, K Smith, J Yu, SP Energy Networks, United Kingdom, A Moon, EA technology, United Kingdom, R Bryans, TNEI Services, United Kingdom</td>
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<td>0298</td>
<td>A study for cause estimation of faults using statistical analysis</td>
<td>R Yamamoto, Y Ogihara, TEPCO Holdings Inc, Japan, M Watanabe, TEPCO Power Grid, Inc, Japan</td>
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<td>0304</td>
<td>A study on load current forecasting using statistical analysis</td>
<td>T Nagumo, H Ito, T Sano, TEPCO Holdings Inc, Japan</td>
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<td>0660</td>
<td>SmartIP - central management system for public lighting in Portugal</td>
<td>F Campos, A Simões, I Sousa, EFACEC, Portugal, R Almeida, P Daniel, EDP D, Portugal</td>
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Sub Block 1 - Maintenance and condition assessment

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<td>Optimisation of secondary testing with cloud based fleet analytics</td>
<td>J Valtari, T Vu, ABB Oy, Finland, H M Aalto, H Paananen, Elenia Oy, Finland</td>
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Sub Block 3 – Crisis and workforce management

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<td>De-centralised working for outage management, including auto-dispatch</td>
<td>D McMenemy, M Corr, SP EnergyNetworks, United Kingdom, G Paton, A Page, General Electric, United Kingdom</td>
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<td>A joint DSO-TSO reactive power management for a HV system considering MV systems support</td>
<td>J Morin, F Colas, X Guillaud, L2EP, France, J Y Dieulot, CRISTAL, France, S Grenard, Enedis, France</td>
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**Block 2: Control part 1**

Sub Block 1 - Medium Voltage automation

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<td>M Watanabe, M Miyata, TEPCO Power Grid Inc, Japan, N Itaya, T Takano, Mitsubishi Electric Corp, Japan</td>
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Implementation of fuzzy logic for mitigating conflicts of frequency containment
E Rikos, CRES, Greece, M Syed, G Burt, University of Strathclyde, United Kingdom, C Caerts, VITO, Belgium, M Rezkalla, M Marinelli, DTU, Denmark

Smart fault handling in medium voltage distribution grids

Towards the modernization of the SCADA systems of the Hellenic Electricity Distribution Network Operator – considerations and steps forward
N Hatziargyriou, C Katsanos, A Zafeirakis, A Tzevelekos, HEDNO, Greece, V Kleftakis, F Palaiogiannis, A Dimeas, I Vlachos, NTUA, Greece

Technology independent security requirements for successful procurement of RTUs to get acceptable risk levels at DSOs
M Hoeve, ENCS, Netherlands, C Montes Portela, Enexis, Netherlands, B Luijkx, Liander, Netherlands

Evaluating the reliability and security of power distribution wireless network
L Chen, X Dong, Z Wu, Z Liu, Electrical Power Research Institute of CSG, China, B Chen, China Southern Power Grid (CSG), China

Cyber security for modern distribution automation grids
J-L Batard, Y Chollot, P Pipet, L Lambert, A Gauci, Schneider Electric, France

Rules driven project specifications in the context of IEC 61850 basic application profiles
C Bloch, Schneider Electric, France, M Sharma, Schneider Electric, India, M Haecker, T Rudolph, Schneider Electric, Germany

Synchro-check in digital switchgear
J Starck, K Hiltelä, ABB Oy, Finland, K Majer, ABB sro, Czech Republic

Integrated distribution grid management system
R Schmaranz, R Iskra, J Pasker, T Dietrichsteiner, KNG-Kärnten Netz GmbH, Austria

Improving smart SCADA data analysis with alternative data sources
B Almeida, M Louro, M Queiroz, A Neves, H Nunes, EDP Distribuição, Portugal

Requirements for future control room and visualisation features in the Web-of-Cells framework defined in the ELECTRA project
C Tornelli, R Zuelli, RSE, Italy, M Marinelli, Technical University of Denmark, Denmark, A Z Morch, SINTEF, Norway, L Cornez, CEA LIST, France

Individual control method for hybrid voltage regulator
N Takahashi, S Uemura, Central Research Institute of Japan, Japan, S C Verma, H Ueda, Y Kunii, M Iwata, S Sasaki, Chubu Electric Power Co. Inc, Japan

ADMS4LV - advanced distribution management system for active management of LV grids
F Campos, L Marques, N Silva, EFACEC, Portugal, F Melo, EDP D, Portugal, C Gouveia, A Madureira, J Pereira, INESC TEC, Portugal

Distribution voltage monitoring and control utilising smart meters
Y Kinoshita, K Iwabuchi, Y Miyazaki, Toshiba, Japan

Islanded operation of modular grids
T Schnelle, A Schweer, Mitteldeutsche Netzgesellschaft Strom mbH, Germany, P Schegner, Technische Universität Dresden, Germany

Power management system implementation on off-shore gas platforms
I G Kulis, F Vidovic, M Peric, M Boris, Koncar-KET, Croatia
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**Sub Block 2 - Application**

0085  **Optimal reclosing time to improve transient stability in distribution system**  
A R Adly, Atomic Energy Authority, Egypt, R A El Sehiemy, Kafrelsheikh University, Egypt, A Y Abdelaziz, Ain Shams University, Egypt

0184  **Suppression of the atmospheric over-voltages in grounding neutral conductor low voltage grids**  
Z Kovačić, T Jelavić, T Rogošić, HEP, Croatia, T Garma, Technical University of Split, Croatia

0295  **Earthing systems connected via metallic screens of the 20 kV underground cables in non-urban areas**  
E Niemelä, Finnish Energy, Finland, T Lähdeaho, Elenia Oy University, Finland, A Mäkinen, P Pakonen, Tampere University of Technology, Finland

1160  **Adverse impact of distributed generation on protection of the Hellenic MV network – recommendations for protection scheme upgrade**  
V A Papaspiliotopoulos, G N Korres, NTUA, Greece, N D Hatziargyriou, HEDNO, Greece

**Sub Block 3 - Algorithms and simulations**

0793  **A new architecture of centralised protection suiting future development trend of distribution network**  
H Li, P Liu, O S Adio, M S Khalid, HUST, China, Z Bo, XUJI Group, China

**Sub Block 1 - Fault location / Earth fault**

0007  **Fault location of unbalanced power distribution feeder with distributed generation using neural networks**  
F Dehghani, F Khodnia, E Dehghanan, Lorestan Electric Power Distribution Company, Iran

0524  **New transient fault location method in non-solidly earthed system for distribution network**  
T Li, State Grid Fujian Electric Power Co, Ltd., China, C Huang, State Grid Quanzhou Power Supply Company, China

0565  **High-impedance fault detection technology based on transient information in a resonant grounding system**  
T Y Li, State grid Fujian Electric Power Company Ltd., China, Y D Xue, China University of Petroleum, China, B Y Xu, Shandong University of Technology, China

0955  **Restoration of overhead distribution networks by means of temporary fault indicators application**  
M Lasmar, E Tavares, Federal Universidade Itajubá, Brazil, G Ferraz, R Capelini, R Salustiano, HVEX, Brazil, A R de Oliveira, DEODE, Brazil, R Deladea, ENERGISA, Brazil

1205  **MV high impedance faults detection based on LV measurements**  
I Ojanguren, R Ruiz, J Garcia, Iberdrola, Spain, L Marron, C Martinez, T Arzuaga, ZIV, Spain

1250  **Resonant grounding applied in Brazil**  
C Figueiredo, G Mello, M Silveira, RGE Sul, Brazil

**Interactive Posters Session 4: Distributed energy resources and active demand integration**

09:00 – 17:30hrs

**Block 1: DER concepts, designs, studies, planning, analysis techniques & tools**

**Sub-block 1 – Demand response**

0219  **Profitability analysis of grid supporting EV charging management**  
R Uhlig, S Harnisch, M Stötzel, M Zdralke, University of Wuppertal, Germany, T Amoneit, Stadtwerke Isereifohn GmbH, Germany

0320  **Techno-economic evaluation of load activation quotas as a concept for flexible load management**  
N Thie, S Koopmann, A Schnettler, RWTH Aachen University, Germany, S Hillenbrand, A Kopp, Netze BW GmbH, Germany

0567  **Integrating demand flexibility with DG-RES at the residential household and commercial customer level in electricity grids**  
I G Kamphuis, S Galsworthy, TNO, Netherlands, M Stifter, T Esterl, S Kaser, AIT, Austria, S Widergren, PNNL, United States, M Galus, BFE, Switzerland, R Targosz, EIM, Poland, D Broden, L Nordström, KTH, Sweden, M Renting, Enexis, Netherlands, A Rijneveld, Stedin, Netherlands, S Doolla, IIT, India
1023 Business models for demand response aggregators under regulated power markets
C Fang, State Grid Shanghai Municipal Electric Power Company, China, B Fan, State Grid Shanghai Chongming Electric Power Supply Company, China, T Sun, D Feng, J Chen, Shanghai Jiao Tong University, China

1159 Integrating wet appliances with delay functionality in distribution network operation and planning
H Karimi, D Papadaskalopoulos, G Strbac, Imperial College London, United Kingdom

Sub-block 2 – Microgrids

0286 Analysis on voltage and frequency responses of isolated microgrid according to minimization of diesel generations
D Kim, K W Joung, D H Choi, J I Yoo, J Wook Park, Yonsei University, South Korea, H J Lee, KIT, South Korea, S M Baek, Kongju National University, South Korea, S H Lee, KERI, South Korea, H J Lee, J B Shim, KEPCO, South Korea

0288 A study on energy management system for stable operation of isolated microgrid
K W Joung, D Kim, D H Choi, J W Park, Yonsei University, South Korea, H J Lee, KIT, South Korea, S M Baek, Kongju National University, South Korea, S H Lee, KERI, South Korea, H J Lee, J B Shim, KEPCO, South Korea

1039 New functionalities of smart grid enabled networks
D C Stancu, D Federecuic, Electrica, Romania, N Golovanov, Universitatea Politehnica, Romania, D M Satnescu, SDEE Transilvania Sud, Romania

1188 Energy Storage Systems (ESS) and microgrids in Britanny Islands
G Lancel, B Deneuville, C Zakhour, E Radvanyi, L Lhermenault, C Ducharme, S Ruiz, EDF, France

Sub-block 3 – DER active network management

0104 SmartNet: a H2020 project analysing TSO-DSO interaction to enable ancillary services provision from distribution networks
G Migliavacca, M Rossi, RSE, Italy, D Six, Energy Ville, Belgium, M Džamarija, DTU, Denmark, S Horsmanheimo, VTT, Finland, C Madina, TECNALIA, Spain, I Kockar, University of Strathclyde, United Kingdom, J M Morales, University of Malaga, Spain

0282 Dual-decomposition-based peer-to-peer voltage control for distribution networks
H Almasalma, J Engels, G Deconinck, KU Leuven, Belgium

0404 Optimisation of low voltage distribution networks in a strong embedded microgeneration and electric vehicle penetration context
M Lagarto, J Ferreira Pinto, EDP Distribuição, Portugal, L Ferreira, Instituto Superior Técnico, Portugal

0994 Aggregation model for curtable generation and sheddable loads
H Marthinsen, A Z Mørch, SINTEF Energy Research, Norway, M Plecas, I Kockar, University of Strathclyde, United Kingdom, M Džamarija, DTU, Denmark

1116 Meeting emerging and future requirements for managing DER in highly active distribution networks
C Gaunt, F Watson, C Breadon, E Davidson, SGS, United Kingdom, C Abbey, SGS, Canada, J Miller, US DOE, United States, B Currie, SGS, United States

1234 Balancing with DSO-connected demand and generation units - case Study Austria
S Vögel, E-Control Austria, Austria, A Stimmer, Austrian Power Grid AG, Austria

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0142 Determining potential capacity gains when repurposing MV AC cables for DC power transportation
A Burstein, V Cuk, TU/e, Netherlands, E de Jong, DNV GL, Netherlands

0215 Smart Grid Vendée project: a decision-support tool for the multi-year planning of active distribution networks
H Dutriexu Baraffe, G Malarange, EDF R&D, France, A Bouorakima, M A Lafittau, G. Pelton, Enedis, France

0558 The case for coordinated energy storage in future distribution grids
N Vouls, M Warner, F M T Brazier, Delft University of Technology, Netherlands

0659 Comparison of analysis methods for generator connections
C Foote, C Kungu, SP Energy Networks, United Kingdom

0755 Integration of multivariate distributed energy resources for demand response: applications in the Indian scenarios
R Pillai, A Ahuja, India Smart Grid Forum, India, G Ghatikar, India Smart Grid Forum, India / Electric Power Research Institute, United States

0757 Seasonally variant deployment of electric battery storage systems in active distribution networks
M Z Degfah, H Saele, SINTEF Energi AS, Norway, J A Foossenaes, E Thorshaug, NTE Net, Norway

0830 Contribution of energy storage and demand-side response to security of distribution networks
I Konstantelos, P Djapic, G Strbac, Imperial College London, United Kingdom, P Papadopoulos, A Laguna, UK Power Networks, United Kingdom

0935 Utility scale domestic solar: the proactive transition of distributed network operators in Switzerland
Y Farmi, M Bolliger, BKW Energie AG, Switzerland
Real-time monitoring of distribution networks: experimental application of Italian Res. 646/2015/R/eel
M Delfanti, D Falabretti, M Merlo, Politecnico di Milano, Italy

Sub-block 5 – Smart metering and AMI

Automatic phase identification of smart meter measurement data
F Olivier, D Ernst, R Fonteneau, University of Liège, Belgium

Sub-block 6 – Photovoltaics grid integration and inverters

Impact of ENTSO-E recommendation on refitting of PV frequency relays in Czech Republic
F Kysnar, K Prochazka, J Hroudka, EGC-ČB sro, Czech Republic, S Vnoucek, ČEPS, as, Czech Republic, Z Pavlovic, ČEZ Distribuce, as, Czech Republic, P Cerny, E.ON Distribuce, as, Czech Republic, J Matous, PRE Distribuce, as, Czech Republic

Sub-block 7 - Testing

Charging electric vehicles, baking pizzas and melting a fuse in Lochem
G Hoogsteen, A Molderink, J L Hurink, G J M Smit, University of Twente, Netherlands, B Kootstra, F Schuring, Liandon, Netherlands

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O Valgaev, F Kupzog, Austrian Institute of Technology, Austria, H Schmeck, Karlsruhe Institute of Technology, Germany

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Sub-block 1 – DER forecasting, scheduling and contingency analysis

Smart meter-driven estimation of residential load flexibility
J Ponocko, J V Milanovic, University of Manchester, United Kingdom

Challenges in model and data merging for the implementation of a distribution network contingency analysis tool
N Huynghues-Beaufond, S Tindemans, G Strbac, Imperial College London, United Kingdom, A Jakeman, UK Power Networks, United Kingdom

Predictive management of low voltage grids
M Reis, A Garcia, R Bessa, L Seca, C Gouveia, INESC TEC, Portugal, J Moreira, P Nunes, P G Matos, EDP Distribuição, Portugal, F Carvalho, P Carvalho, AmberTREE, Portugal

Comparing and improving residential demand forecast by disaggregation of load and PV generation
S Kloibhofer, M Stifter, F Leimgruber, B-V Rao, AIT, Austria

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R Niehoff, F Kuipers, Eaton Netherlands B.V., Netherlands, H Stokman, Direct Current BV, Netherlands

Using measurements to increase the accuracy of hosting capacity calculations
O Lennerhag, S Ackeby, M H J Bollen, STRI AB, Sweden, G Foskolos, T Gafurov, MålarEnergi, Sweden

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Non-linear optimal control of the responses of residential small houses with new energy resources
P Koponen, R Pasonen, A Löf, VTT, Finland

Sub-block 4 – Demand response

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T R F Mendonca, M E Collins, T C Green, Imperial College London, United Kingdom, M F Pinto, Universidade Federal de Juiz de Fora, Brazil

An approach for the handling of controller conflicts within multi-functional energy storage systems
C Zanabria, F Pröstl Andrén, J Kathan, T Strasser, Austrian Institute of Technology, Austria

PMU-based power systems analysis of a MV distribution grid
N Save, M Popov, TU Delft, Netherlands, A Jongepier, Enduris, Netherlands, G Rietveld, VSL, Netherlands

Voltage regulating distribution transformers for LV network voltage control and system efficiency
M Anzola, D Walker, D Neilson, M Wright, Scottish Power Energy Networks, United Kingdom
Linky Contributions in management and fault detection
P Pelletier, M Chapert, T Bazot, P Lauzevis, S Brun, L De Luca, Enedis, France

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R Brandalik, D Waeresch, W H WelISSow, J Tu, Technical University of Kaiserslautern, Germany
1496 Field test of a linear three-phase low voltage state estimation system based on smart meter data
D Waeresch, R Brandalik, W H WelISSow, TU Kaiserslautern, Germany, J Jordan, IDS GmbH, Germany, R Bischler, N Schneider, Stadtwerke Kaiserslautern Versorgungs-AG, Germany

Block 3: Technical & commercial DER grid integration methods & solutions
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0307 Optimal approach for the interaction between DSOs and Aggregators to activate DER flexibility in the distribution grid
Z Al-Jassim, M Christoffersen, Danish Energy Association, Denmark, Q Wu, S Huang, DTU, Denmark, G D Rosario, C Corchero, IREC, Spain, M À Moreno, UC3M, Spain

0561 A software driven active customer interface for DER integration
J Ringelstein, Fraunhofer IWES, Germany, M Shalaby, DERlab e.V., Germany, M Sanduleac, Exenh, Romania, L Alacreu, ETRA I+D, Spain, J Martins, V Delgado-Gomes, CTS-Uninova, Portugal

0861 Combining energy storage and real-time thermal ratings to solve distribution network problems: benefits and challenges
D Greenwood, N Wade, P Davison, P Taylor, Newcastle University, United Kingdom, P Papadopoulos, UK Power Networks, United Kingdom

1273 Fast estimation of equivalent capability for active distribution networks
M Rossi, G Viganò, D Moneta, RSE, Italy, M T Vespucci, P Piscilla, Università degli Studi di Bergamo, Italy

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0216 The effects of the entry into force of the new electric tariff on Italian residential households equipped with a PV plant
S Maggiore, M Gallanti, RSE SpA, Italy

0411 Active demand management in MV network operational planning: an industrial method for the selection of flexibility offers to solve technical constraints
C Paris, M Hasquenoph, S Hourrig, EDF R&D, France, O Carré, Enedis, France

0982 Impact for the DSO of integrating storage systems in a low-voltage grid with distributed energy resources
J Fonseca, Ernst & Young, Germany, M I Verdelho, R Prata, EDP Distribuição, Portugal

1227 Economical distributed voltage control in low-voltage grids with high penetration of photovoltaic units
O Unigwe, D OkeKunle, A Kiprakis, University of Edinburgh, United Kingdom

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1086 Residential electrical and thermal storage optimisation in a market environment
C A Correa-Florez, A Gerossier, A Michiorri, R Girard, G Kariniotakis, MINES-ParisTech, PSL - Research University, France

1101 Methodologies and proposals to facilitate the integration of small and medium consumers in smart grids
C Alvarez, IIE-UPV, Spain, J I Moreno, G López, U. Carlos III de Madrid, Spain, C Carrillo, U Vigo, Spain, I J Ramirez, U. Zaragoza, Spain, J Matanza, IIT-ICAI, Spain, S Valero-Verdu, UMH, Spain, A Gabaldón, ETSII, Spain, M Ruiz, UPCT, Spain

1123 Managing the future network impact of the electrification of heat
S Harkin, A Turton, Delta-EE, United Kingdom

1162 Impact of a realistic communications for fast-acting demand side management
P Dambrauskas, M H Syed, S M Blair, J M Irvine, I F Abdulhadi, G M Burt, University of Strathclyde, United Kingdom, D E M Bondy, DTU, Denmark

1244 Business case in support for reactive power services from distributed energy storage
R Moreira, G Strbac, Imperial College London, United Kingdom, P Papadopoulos, A Laguna, UK Power Networks, United Kingdom
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<td>L Wautier, F Beauné, L Karsenti, Enedis, France, J Fourmel, EDF R&amp;D, France</td>
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| 0666 | Key energy storage use cases validation under real operational context. | R J Santos, A Neves, G Faria, B Almeida, EDP Distribuição, Portugal, J Santana, S Pinto, INESC ID, Portugal, José Damásio, Mario Vieira, D Isidoro, Siemens, Portugal |
| 0810 | Benefits of battery energy storage system for system, market, and distribution network - case Helsinky | H P Hellman, A Pihkala, M Hyvärinen, P Heine, Helen Electricity Network Ltd, Finland, J Karppinen, K Siilin, P Lahtinen, Helen, Finland, M Laasonen, J Mattiainen, Fingrid, Finland |
| 1110 | The benefits of large-scale Energy Storage Systems (ESS) in French Islands | J Galieg, P Gaumon, L Capely, E Radvanyi, Electricité de France, France                         |

**Sub-block 2 – System flexibility management**

| 0410 | LV state estimation and TSO-DSO cooperation tools: results of the French field tests in the evolvDSO project | M Sebastian-Viana, Enedis, France, M Caujolle, B Goncer-Maraver, EDF R&D, France, J Pereira, INESC TEC, Portugal/FEF, Portugal, J Sumaili, P Barbeiro, J Silva, R Bessa, INESC TEC, Portugal |
| 0996 | The smart grid real lab of ewz: findings from a large-scale demonstration project | V Poulios, M Mangani, E Kaffe, F Kienzle, B Loepke, ewz, Switzerland                            |
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0804 Impact of domestic frequency responsive demand on the shetland islands network frequency stability
M Edrah, O Anaya-Lara, I Kockar, G Bell, University of Strathclyde, United Kingdom, S Adams, F MacIntyre, Scottish and Southern Electricity Networks, United Kingdom

Sub-block 4 – Impact of DER on network operations

0731 Contribution of a wind park to voltage and system stability: results of a measurement campaign
B Heimbach, M Mangani, B Wartmann, M Oeschger, C Kelm, ewz, Switzerland, S Krahmer, M Kreutziger, P Schegner, Technische Universität Dresden, Germany

Sub-block 5 – Photovoltaics grid integration inverters

0180 Control of active / reactive power & LVRT for 40 kW three-phase grid-connected single stage PV system
M M Hasaneen, The Ministry of Electricity and Renewable Energy, Egypt, M A L Badr, A M Atallah, Ain Shams University, Egypt

0898 Modelling and dynamic performance of inverter based generation in power system studies: an international questionnaire survey
G Lammert, University of Kassel, Germany, K Yamashita, CRIEPI, Japan, L D Pabón Ospina, Fraunhofer IWES, Germany, H Renner, Graz University of Technology, Austria, S Martínez Villanueva, Red Eléctrica de España, Spain, P Pourbeik, PEACE-PLLC, United States, F E Ciausiu, Tractebel Engie, Romania, M Braun, University of Kassel, Germany / Fraunhofer IWES, Germany

Sub-block 7 – Control systems and active networks

0310 Future-proof islanding detection schemes in Sundom smart grid
H Laaksonen, P Hovila, ABB Oy, Finland

0420 Distribution state estimation: outcomes from a field implementation aimed at tackling MV voltage mastering in the presence of DER
D Groteau, EDF R&D, France, O Carre, Enedis, France

0648 An algorithm for soft open points to solve thermal and voltage constraints in low voltage distribution networks
N Bottrell, T Green, Imperial College London, United Kingdom, P Lang, UK Power Networks, United Kingdom

0930 Distributed generation connections under a fault level active network management scheme
N Murdoch, A Kazerooni, WSP / Parsons Brinckerhoff, United Kingdom, J Berry, Western Power Distribution, United Kingdom

Sub-block 8 – Resiliency and microgrids

1055 Distributed generation at distribution system level resilience to voltage dips - a real case
L Rosa, M Louro, B Almeida, F Gonçalves, A M Rodrigues, J Ferreira Pinto, EDP Distribuição, Portugal

NON-INTERACTIVE POSTERS Session 4: Distributed energy resources and active demand integration

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Block 1: DER concepts, designs, studies, planning, analysis techniques & tools

Sub-block 1 – Demand response

0267 Integration of a thermal energy storage as a dynamic load into the electrical grid of an urban quarter
T Plößer, D Maihöfner, J Hanson, TU Darmstadt, Germany

0447 Reduce peak-time energy use by demand bidding program in Iran
H Delavari Pour, A Khazaei, M Ghasempour, H Hooshmandi, Mashhad Electric Energy Distribution Co, Iran

0850 Designing a financial-based energy management framework in smart public parking lot
A Zare, M Fotuhi-Firuzabad, M Moeni-Aghtaie, Sharif university of Technology, Iran

0950 Electric heating as flexible demand for enhanced network operation
D Moretti, S Galloway, University of Strathclyde, United Kingdom
A blueprint for the combinatorial strategy in transactive energy based control mechanism by using energy flexibility platform and interface

Sub-block 2 – Microgrids

Reliability evaluation of distribution network considering controllable distributed generation, battery swapping station and controllable switches
J Song, J Zhou, State Grid Shanghai EPRI, China, C Li, SAIC MOTOR Corporation Ltd., China, Y Luo, Y Luo, W Yan, Chongqing University, China

Sub-block 3 – DER active network management

Feasibility analysis of the power-to-gas concept in the future Swiss distribution grid
C Park, F Bigler, V Knazkins, P Korba, ZHAW, Switzerland, F Kienzle, EWZ, Switzerland

Integration of energy storage to improve utilisation of distribution networks with active network management schemes
M Plecas, H Xu, I Kockar, University of Strathclyde, United Kingdom

Sub-block 4 – DER Integration and network planning

Optimal hybridisation and management of PV/batteries hybrid systems in residential distribution networks
H Turker, P Favre-Perrod, University of Applied Sciences of Switzerland, Switzerland

Sub-block 5 – Smart metering and AMI

Distribution loss reduction in residential and commercial pilots by using AMI system
A Khazaee, H H Safa, M Ghasempour, H Delavari, MEEDC, Iran

DG impact evaluation on LV distribution grids using AMI data: a Brazilian case study
R Maciel, M Silva, B Borba, L Fritz, V Ferreira, M Zamboti, UFF, Brazil, T Campello, UFRJ, Brazil, W Correia, ENEL, Brazil

Sub-block 6 – Photovoltaics grid integration and inverters

Influence of self-consumption on distribution network operation - the Slovenian case
B Turnsek, Elektro Primorska dd, Slovenia, I Papič, B Blažič, University of Ljubljana, Slovenia

Impact of the photovoltaic system variability on transformer tap changer operations in distribution networks
C K Gan, C Y Lau, K A Baharin, Universiti Teknikal Malaysia Melaka, Malaysia, D Pudjianto, Imperial College London, United Kingdom

Block 2: DER grid integration enablers & technologies

Sub-block 1 – DER forecasting, scheduling and contingency analysis

Evaluating the effectiveness of storage control in reducing peak demand on low voltage feeders
T Yunusov, B Potter, University of Reading, United Kingdom, S Haben, T Lee, University of Oxford, United Kingdom, F Ziel, University Duisburg-Essen, Germany, W Holderbaum, Manchester Metropolitan University, United Kingdom

Sub-block 2 – Power electronics

Charge control of second life EV batteries on the DC-link of a back-to-back converter
M Neaimeh, N Wade, S Blake, P Taylor, Newcastle University, United Kingdom

Sub-block 6 – Testing

Development of a modular CHP test stand for the analysis of the dynamic behaviour of small synchronous generators
P Erlinghagen, M Knaak, T Wippenbeck, A Schnettler, Aachen University, Germany

Evaluation of extended kalman filter and particle filter approaches for quasi-dynamic distribution system state estimation
A Brüggemann, K Görner, C Rehtanz, TU Dortmund University, Germany
Block 3: Technical & commercial DER grid integration methods & solutions

Sub-block 1 – DER flexibility aggregation

0256 Intelligent prosumer coupling by two galvanically isolated battery storage systems
T Graber, C Romeis, E Perossian, J Jaeger, FAU Erlangen, Germany

Sub-block 2 – PV integration

1083 Integrating photovoltaic and storage systems on distribution feeders
A O’Connell, A Maitra, J Smith, Electric Power Research Institute, Ireland/United States; B Jordan, C Cryer, CPS Energy, United States

Sub-block 4 – Planning and operation

0271 SMAP project or how to integrate crowdfunded DER in a rural distribution grid
M Bernier, Grenoble INP, France; A Coutarel, Atos Worldgrid, France; J Lavaury Geoffroy, Enedis, France

0726 A stochastic multi-temporal optimal power flow approach for the management of grid connected storage
E Grover-Silva, MINES ParisTech, France; A Coutarel, Atos Worldgrid, France; G Girard, G Kariniotakis, MINES ParisTech, France

0884 The impact of Q(U) and P(U) PV plants characteristics and power storage on connectable power in LV distribution networks
J Hrouda, K Prochazka, F Kysnar, F Broz, EGC CB, sro, Czech Republic

Sub-block 6 – Microgrids and VPP

0740 Preliminary regulations of ESS connected to Korean isolated island power system to minimise the capacity of ESS
J B Sim, H J Lee, Y S Lee, I K Song, J Y Ahn, KEPRI, Korea

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Sub-block 2 – System flexibility management

0211 Efficient management of a connected microgrid in Belgium
B Cornélusse, D Ernst, ULg, Belgium; L Warichet, W Legros, Nethys, Belgium

0829 Virtual power plant: managing synergies and conflicts between TSO and DSO control objectives
D Pudjianto, G Strbac, Imperial College London, United Kingdom; D Boyer, UK Power Networks, United Kingdom

1216 Decentralised distribution system operation techniques: results from the meltemi community smart grids pilot site
I Kouveliotis-Lysikatos, D Koukoula, I Vlachos, A Dimeas, NTUA, Greece; N Hatziargyriou, HEDNO, Greece; S Makrynikas, HEDNO, Greece

Sub-block 3 – Demand response

0044 The practical and theoretical potential of demand side management in SMEs to balance wind power
M van Blijderveen, D Joskin, J Garthoff, Alliander, Netherlands

Sub-block 4 – Impact of DER on network operations

1364 The challenge of retrofitting old decentralised power plants in Germany in terms of power system stability
S Brandt, F Kalverkamp, FGH GmbH, Germany; R Heßler, TransnetBW GmbH, Germany; S Weber, TenneT TSO GmbH, Germany

Sub-block 8 – Resiliency and microgrids

0786 Behaviour of PV inverters during islanding of a district
T Drizard, Enedis, France; G Diquerreau, Socomec, France; S Vilbois, EDF R&D, France