Table of Contents

Control in Smart Homes

PAPER PRESENTATION

Chair: Adam Wolisz, TU Berlin, Germany

2012ISGTEU-205
Predictive Control of a Domestic Freezer for Real-time Demand Response Applications
Nadina Baghină (Eindhoven University of Technology, Netherlands), Ioannis Lampropoulos (Eindhoven University of Technology, Netherlands), Ballard Asare-Bediako (Eindhoven University of Technology, Netherlands), Wil L. Kling (Eindhoven University of Technology, Netherlands), Paulo F. Ribeiro (Eindhoven University of Technology, Netherlands)

2012ISGTEU-014
Model Predictive Controller for Active Demand Side Management With PV Self-consumption in an Intelligent Building
Yi Zong (Technical University of Denmark, Denmark), Lucian Mihet-Popa (Technical University of Denmark, Denmark), Daniel Kullmann (Technical University of Denmark, Denmark), Anders Thavlov (Technical University of Denmark, Denmark), Oliver Gehrke (Technical University of Denmark, Denmark), Henrik W. Bindner (Technical University of Denmark, Denmark)

2012ISGTEU-292
Residential Energy Management Using a Moving Window Algorithm
Marc Beaudin (University of Calgary, Canada), Hamidreza Zareipour (University of Calgary, Canada), Antony Schellenberg (University of Calgary, Canada)

2012ISGTEU-225
Consumer Operational Comfort Level Based Power Demand Management in the Smart Grid
Yan Chen (Huazhong University of Science and Technology, China), Ren Ping Liu (CSIRO, Australia), Chen Wang (CSIRO, Australia), Martin de Groot (CSIRO, Australia), Zhiyuan Zeng (Huazhong University of Science and Technology, China)

2012ISGTEU-022
Evaluation of Management Strategies for Thermostatic Loads in Smart Grid
Mustafa Alparslan Zehir (Istanbul Technical University, Turkey), Mustafa Bagriyanik (Istanbul Technical University, Turkey)

2012ISGTEU-274
Fuzzy and Parametric Method for Self-configuration of Home Energy Manager System
Sylvain Guillemin (CEA, France), D. Long Ha (CEA, France)
Smart Grid Modeling Techniques

PAPER PRESENTATION

Chair: Madeleine Gibescu, Delft University of Technology, Netherlands

2012ISGTEU-126
ICT Modeling for Integrated Simulation of Cyber-physical Power Systems
Alexandru Stefanov (UCD, Ireland), Chen-Ching Liu (Washington State University, USA, and UCD, Ireland)

2012ISGTEU-035
Synthetic Medium Voltage Grids for the Assessment of Smart Grid Techniques
Han Rui (TU Kaiserslautern, Germany), Maximilian Arnold (TU Kaiserslautern, Germany), Wolfram H. Welissow (TU Kaiserslautern, Germany)

2012ISGTEU-268
Complex Normalization to Perform Power Flow Analysis in Emerging Distribution Systems
Carolina C. Durce (Federal University of Paraná, Brazil), Odilon L. Tortelli (Federal University of Paraná, Brazil), Elizete M. Lourenço (Federal University of Paraná, Brazil), Tarcisio Loddi (COPEL, Brazil)

2012ISGTEU-250
Parallelization of Radial Three-Phase Distribution Power Flow Using GPU
Dino Ablakovic (Siemens, Germany), Izudin Džafic (Siemens, Germany), Serdar Kecici (evoline TR, Turkey)

2012ISGTEU-070
Multi-scale Modeling and Simulation of Synchronous Machine in Phase-domain
Hua Ye (TU Berlin, Germany), Feng Gao (IBM, China), Kai Strunz (TU Berlin, Germany), Yue Xia (TU Berlin, Germany)

2012ISGTEU-243
Xi Jia (Tsinghua University, China), Qing Xia (Tsinghua University, China), Qixin Chen (Tsinghua University, China)
Multi-objective Operation of Smart Grid

PAPER PRESENTATION

Chair: Henry Louie, Seattle University, USA

2012ISGTEU-208
Coordinated Optimal Dispatch of Distributed Energy Resources Within a Smart Energy Community Cell
Amir Fazeli (University of Nottingham, UK), Mark Sumner (University of Nottingham, UK), C. Mark Johnson (University of Nottingham, UK), Edward Christopher (University of Nottingham, UK)

2012ISGTEU-033
Distributed Control Strategy for a Grid-Connected Hybrid System With Batteries and Renewable Sources
Oana L. Onet (Technical University of Cluj-Napoca, Romania), Damien Paire (UTBM, France), Arnaud Gaillard (UTBM, France), Benjamin Blunier (UTBM, France), Radu Tironov (Technical University of Cluj-Napoca, Romania)

2012ISGTEU-046
Utilization of Battery Energy Storage System for Load Frequency Control Toward Large-Scale Renewable Energy Penetration
Hiroyuki Amano (Central Research Institute of Electric Power Industry, Japan), Yuji Ohshiro (Central Research Institute of Electric Power Industry, Japan), Tomonori Kawakami (Central Research Institute of Electric Power Industry, Japan), Toshio Inoue (Central Research Institute of Electric Power Industry, Japan)

2012ISGTEU-289
Load Frequency Control by Aggregations of Thermally Stratified Electric Water Heaters
Evangelos Vrettos (ETH Zurich, Switzerland), Stephan Koch (ETH Zurich, Switzerland), Göran Andersson (ETH Zurich, Switzerland)

2012ISGTEU-074
Capacity Management Within a Multi-agent Market-based Active Distribution Network
Joost A. W. Greunsven (Eindhoven University of Technology, Netherlands), Else Veldman (Eindhoven University of Technology, Netherlands), Phuon H. Nguyen (Eindhoven University of Technology, Netherlands), Han G. Slootweg (Eindhoven University of Technology, Netherlands), René Kamphuis (Eindhoven University of Technology, Netherlands)
Protection and Fault Analysis

PAPER PRESENTATION

Chair: Mario Paolone, EPFL, Switzerland

2012ISGTEU-180

A Neodymium Permanent Magnet Fault Current Limiter for Use in the FREEDM Project

George G. Karady (Arizona State University, USA), Jay R. Prigmore (Arizona State University, USA), Jorge A. Mendoza (Arizona State University, USA)

2012ISGTEU-119

Contribution of Negative-sequence Controlled Distributed Generation to Power System Stability Under Unbalanced Faults: A Discussion Paper

Jens C. Boemer (Delft University of Technology, Netherlands), Barry G. Rawn (Delft University of Technology, Netherlands), Madeleine Gibescu (Delft University of Technology, Netherlands), Edward Coster (Eindhoven University of Technology, Netherlands), Mart A.M.M. van der Meijden (Delft University of Technology, Netherlands), Wil L. Kling (Eindhoven University of Technology, Netherlands)

2012ISGTEU-071

Settings-free Method to Account for Shunt Admittance in Fault Location

Shantanu Padmanabhan (University of Manchester, UK), Vladimir Terzija (University of Manchester, UK)

2012ISGTEU-116

Assessing the Risk Associated With a High Penetration of System Integrity Protection Schemes

Mathaios Panteli (University of Manchester, UK), Peter A. Crossley (University of Manchester, UK)

2012ISGTEU-123

Multiple Measurements to Locate Single Phase Earth Fault in Compensated Network

Matthieu Loos (Université Libre de Bruxelles, Belgium), Stefan Werben (Siemens, Germany), Jean-Claude Maun (Université Libre de Bruxelles, Belgium)

2012ISGTEU-139

External Grid Representation for Assessing Fault Ride Through Capabilities of Distributed Generation Units

Traian N. Preda (Norwegian University of Science and Technology, Norway), Kjetil Uhlen (Norwegian University of Science and Technology, Norway), Dag E. Nordgård (SINTEF Energy Research, Norway), Trond Toftevaag (SINTEF Energy Research, Norway)
Design and Operation of Virtual Power Plants

PAPER PRESENTATION

Chair: Victoria Neimane, Vattenfall, Sweden

2012ISGTEU-131
Coordinating Independent Distributed Generators
José A. Barros (University of Porto, Portugal),
Helder Leite (University of Porto, Portugal),
Nick Jenkins (Cardiff University, UK)

2012ISGTEU-165
Coordination of Distributed Generators Through the Virtual Power Plant Concept
Lucian Toma (University “Politehnica” of Bucharest, Romania),
Bogdan Otomega (University “Politehnica” of Bucharest, Romania),
Constantin Bulac (University “Politehnica” of Bucharest, Romania),
Ion Tristiu (University “Politehnica” of Bucharest, Romania)

2012ISGTEU-215
Virtual Integration Technology of Distributed Energy Storages
Hisato Sakuma (NEC, Japan), Yuma Iwasaki (NEC, Japan),
Hitoshi Yano (NEC, Japan),
Koji Kudo (NEC, Japan)

2012ISGTEU-158
Intelligent Electric Vehicle Heuristic for Energy Resource Management Using Simulated Annealing
Tiago Sousa (Polytechnic of Porto, Portugal),
Tiago Pinto (Polytechnic of Porto, Portugal),
Hugo Morais (Polytechnic of Porto, Portugal),
Zita Vale (Polytechnic of Porto, Portugal)

2012ISGTEU-080
A Virtual Power Plant Management Model Based on Electric Vehicle Charging Infrastructure Distribution
Maura Musio (Sardegna Ricerche, Italy),
Alfonso Damiano (University of Cagliari, Italy)

2012ISGTEU-156
Energy and Reserve Provision Dispatch Considering Distributed Generation and Demand Response
Pedro Faria (Polytechnic of Porto, Portugal),
Zita Vale (Polytechnic of Porto, Portugal),
Tiago Soares (Polytechnic of Porto, Portugal),
Hugo Morais (Polytechnic of Porto, Portugal)
Data and Fault Analysis With PMU

PAPER PRESENTATION

Chair: Hendrik Neumann, Amprion, Germany

2012ISGTEU-121
Short Circuit Current Estimation Using PMU Measurements During Normal Load Variation
Suresh C. Verma (Chubu Electric Power Company, Japan), Yoshiki Nakachi (Chubu Electric Power Company, Japan), Yoshihiko Wazawa (Chubu Electric Power Company, Japan), Yoko Kosaka (Toshiba, Japan), Takenori Kobayashi (Toshiba, Japan), Kazuya Omata (Toshiba, Japan), Yoshihiko Takabayashi (Toshiba, Japan)

2012ISGTEU-108
Bad Data Detection in Two-stage State Estimation Using Phasor Measurements
Aditya Tarali (Northeastern University, USA), Ali Abur (Northeastern University, USA)

2012ISGTEU-293
Synchrophasor-based Data Mining for Power System Fault Analysis
Miftah Al Karim (KTH Stockholm, Sweden), Moustafa Chenine (KTH Stockholm, Sweden), Kun Zhu (KTH Stockholm, Sweden), Lars Nordström (KTH Stockholm, Sweden)

2012ISGTEU-263
Algorithm for Screening PMU Data for Power System Events
Alicia J. Allen (University of Texas, USA), Sang-Wook Sohn (University of Texas, USA), Surya Santoso (University of Texas, USA), W. Mack Grady (University of Texas, USA)

2012ISGTEU-204
A Decision Tree-based Method for Power System Fault Diagnosis by Synchronized Phasor Measurements
Payam Zamani Dehkordi (Sharif University of Technology, Iran), Ahmad Salehi Dobakhshari (Sharif University of Technology, Iran), Ali M. Ranjbar (Sharif University of Technology, Iran)

2012ISGTEU-015
Transmission Grid Fault Diagnosis by Wide Area Measurement System
A. Salehi Dobakhshari (Sharif University of Technology, Iran), Ali M. Ranjbar (Sharif University of Technology, Iran)
Solutions to Uncertainty of Renewable Power Generation

PAPER PRESENTATION

Chair: Wolfram H. Wellssow, TU Kaiserslautern, Germany

2012ISGTEU-190
Method of Generating Sets of PV Plant Power Time Series for Grid Simulation Purposes
Michael Schmidt (GE Global Research, Germany), Ara Panosyan (GE Global Research, Germany), Eva-Maria Bärthlein (GE Global Research, Germany), Kathleen O’Brien (GE Global Research, USA), Oliver Mayer (GE Global Research, Germany)

2012ISGTEU-220
A New Framework of Probabilistic Production Simulation of Power Systems With Wind Energy Resources
Tianyu Ding (Xi’an Jiaotong University, China), Zhaohong Bie (Xi’an Jiaotong University, China), Can Sun (Xi’an Jiaotong University, China), Xiuli Wang (Xi’an Jiaotong University, China), Xifan Wang (Xi’an Jiaotong University, China)

2012ISGTEU-273
Application of Preconditioned Generalized Radial Basis Function Network to Prediction of Photovoltaic Power Generation
Hiroyuki Mori (Meiji University, Japan), Masato Takahashi (Meiji University, Japan)

2012ISGTEU-275
Wind Turbine Generator Modeling for Power Production Estimation and Reliability Analysis
Sara A. Mohamed (German University in Cairo, Egypt), Yasser G. Hegazy (German University in Cairo, Egypt)

2012ISGTEU-114
Hedging Strategies for Renewable Resource Integration and Uncertainty Management in the Smart Grid
Balakrishnan Narayanaswamy (IBM, India), T.S. Jayram (IBM, India), Voo Nyuk Yoong (Universiti Brunei Darussalam, Brunei Darussalam)

2012ISGTEU-107
Evaluating the Impact of Wind Turbine Shadows on an Integrated Wind and Solar Farm
Sahil Shanghavi (University of Texas at Austin, USA), W. Mack Grady (University of Texas at Austin, USA), Bradley Schwarz (E.ON, USA)
Design of Information and Communication Technology (ICT) Architectures for Smart Grids

PAPER PRESENTATION

Chair: David Wallom, University of Oxford, UK

2012ISGTEU-013
Requirements for Smart Grid ICT-Architectures
Sebastian Rohjans (OFFIS, Germany), Christian Dänekas (OFFIS, Germany), Mathias Uslar (OFFIS, Germany)

2012ISGTEU-134
Future Internet for Smart Distribution Systems
Yvonne-Anne Pignolet (ABB, Switzerland), Holger Elias (Nokia Siemens Networks, Germany), Timo Kyntäjä (VTT Technical Research Centre, Finland), Ignacio Martín Díaz de Cerio (Iberdrola, Spain), Jürgen Heiles (Siemens, Germany), Didier Boëda (INP Grenoble, France), Raphael Caire (INP Grenoble, France)

2012ISGTEU-093
Adaptive Architecture Development for Smart Grids Based on Integrated Building Blocks
Jörn Trefke (OFFIS, Germany), Christian Dânekas (OFFIS, Germany), Sebastian Rohjans (OFFIS, Germany), José Manuel González Vázquez (OFFIS, Germany)

2012ISGTEU-097
ICT Infrastructure Design Considering ICT Contingencies and Reserve Requirements on Transmission Level
Erika Kämpf (Fraunhofer IWES, Germany), Michael Bauer (Fraunhofer IWES, Germany), Rainer Schwinn (Fraunhofer IWES, Germany), Martin Braun (Fraunhofer IWES, University of Stuttgart, Germany)

2012ISGTEU-258
Service Level Agreement: Coordination and Monitoring of Actors in Smart Grid
Shahid Hussain (KTH Stockholm, Sweden), Rune Gustavsson (KTH Stockholm, Sweden), Arshad Saleem (KTH Stockholm, Sweden), Lars Nordström (KTH Stockholm, Sweden)

2012ISGTEU-049
Hybrid Grids: ICT-based Integration of Electric Power and Gas Grids – A Standards Perspective
Mathias Uslar (OFFIS, Germany), Filip Andrén (AIT, Austria), Wolfgang Mahnke (ABB, Germany), Sebastian Rohjans (OFFIS, Germany), Matthias Stifter (AIT, Austria), Thomas Strasser (AIT, Austria)
International Visions for Smart Grid Realization by Country

PAPER PRESENTATION

Chair: Florian Lennert, InnoZ, Germany

2012ISGTEU-281
A National Project on Optimal Control and Demonstration of the Japanese Smart Grid for Massive Integration of Photovoltaic Systems
Akihiko Yokoyama (University of Tokyo, Japan), Hirofumi Akagi (Tokyo Institute of Technology, Japan), Yasuhiro Hayashi (Waseda University, Japan), Kazuhiko Ogimoto (University of Tokyo, Japan), Hideo Ishii (Tokyo Electric Power Company, Japan)

2012ISGTEU-222
Distributed Generation and Smart Power Grid UAE Vision for 2030
Abdul Hasib Siddique (The Petroleum Institute Abu Dhabi, United Arab Emirates), Heba K. Al Bloushi (ADCO, United Arab Emirates), Lisa Ann Lamont (The Petroleum Institute Abu Dhabi, United Arab Emirates)

2012ISGTEU-010
A Microgrid Concept for Isolated Territories of Russia
Konstantin V. Suslov (Irkutsk State Technical University, Russia)

2012ISGTEU-002
Investigation of the Power Scenario in India for the Implementation of Smart Grid
Parimal Acharjee (NIT Durgapur, India)

2012ISGTEU-285
Agent-based Integration of an Electric Car Sharing Fleet Into a Smart Distribution Feeder
Daniel Freund (TU Berlin, Germany), Andreas F. Raab (TU Berlin, Germany), Tobias Küster (TU Berlin, Germany), Sahin Albayrak (TU Berlin, Germany), Kai Strunz (TU Berlin, Germany)

2012ISGTEU-227
Effects of Large Scale EV and PV Integration on Power Supply Systems in the Context of Singapore
Matthias Huber (TUM CREATE, Singapore), Annette Trippe (TUM CREATE, Singapore), Philipp Kuhn (TU München, Germany), Thomas Hamacher (TU München, Germany)
Computer Methods for Identifying and Mitigating Grid Stability

PAPER PRESENTATION

Chair: Costas Vournas, National Technical University of Athens, Greece

2012ISGTEU-061
Enhancement of Situation Awareness in Wide Area Transmission Systems for Electricity and Visualization of the Global System State
Christoph Schneider (Amprion, Germany), Joachim Vanzetta (Amprion, Germany), Johannes F. Verstege (University of Wuppertal, Germany)

2012ISGTEU-186
Indicating and Mitigating Voltage Collapse Comparing Voltage Stability Indicators
Vegar Storvann (Norwegian University of Science and Technology, Norway), Emil Hillberg (Norwegian University of Science and Technology, Norway), Kjetil Uhlen (Norwegian University of Science and Technology, Norway)

2012ISGTEU-122
Impact of Synchrophasor Measurement Uncertainty on Detecting Voltage Stability Margin in Power Systems
Junjie Tang (RWTH Aachen, Germany), Junqi Liu (RWTH Aachen, Germany), Ferdinanda Ponci (RWTH Aachen, Germany), Antonello Monti (RWTH Aachen, Germany), Carlo Muscas (University of Cagliari, Italy), Sara Sulis (University of Cagliari, Italy)

2012ISGTEU-017
Novel Model of UPFC for Evaluating Transient Stability of a Multimachine System Including the Grid-connected Photovoltaic System
Prechanon Kumkratug (Kasetsart University, Thailand)

2012ISGTEU-271
Controlling Transient Stability Through Line Switching
Sergio Bruno (Polytechnic School of Bari, Italy), Matteo D’Aloia (Polytechnic School of Bari, Italy), Giovanni De Carne (Polytechnic School of Bari, Italy), Massimo La Scala (Polytechnic School of Bari, Italy)

2012ISGTEU-069
Transient Stability Analysis by Reachable Set Computation
Matthias Althoff (TU Ilmenau, Germany), Milos Cvetkovic (Carnegie Mellon University, USA), Marija Illic (Carnegie Mellon University, USA)
Smart Grid Experience From Field Trials

PAPER PRESENTATION

Chair: Alan Rotz, PPL Electric Utilities and IEEE PES Past President, USA

2012ISGTEU-105
Lessons Learned From the Texas Synchrophasor Network
Moses A. Kai (University of Texas at Austin, USA), W. Mack Grady (University of Texas at Austin, USA), David Costello (Schweitzer Engineering Laboratories, USA), Daniel Brooks (Electric Power Research Institute, USA), Jaime Ramos (University of Texas-Pan American, USA)

2012ISGTEU-104
LINEAR Breakthrough Project: Large-scale Implementation of Smart Grid Technologies in Distribution Grids
Benjamin Dupont (KU Leuven, Belgium), Pieter Vingerhoets (KU Leuven, Belgium), Peter Tant (KU Leuven, Belgium), Koen Vanthournout (VITO, Belgium), Wim Cardinaels (VITO, Belgium), Tom De Rybel (KU Leuven, Belgium), Eefje Peeters (VITO, Belgium), Ronnie Belmans (KU Leuven, Belgium)

2012ISGTEU-291
Ecogrid EU – A Large Scale Smart Grids Demonstration of Real Time Market-based Integration of Numerous Small DER and DR
Yi Ding (Technical University of Denmark), Preben Nyeng (Energinet.dk, Denmark), Jacob Østergaard (Technical University of Denmark), Maj Dang Trong (Energinet.dk, Denmark), Salvador Pineda (Technical University of Denmark, Denmark), Koen Kok (TNO, Netherlands), George B. Huijtema (TNO, Netherlands), Ove S. Grande (SINTEF Energy Research Norway)

2012ISGTEU-059
Technical and Economic Analysis of Future Smart Grid Applications in the E-DeMa Project
Hans-Jörg Belitz (TU Dortmund, Germany), Sabine Winter (TU Dortmund, Germany), Christian Müller (TU Dortmund, Germany), Nils Langhammer (TU Dortmund, Germany), Rüdiger Kays (TU Dortmund, Germany), Christian Wietfeld (TU Dortmund, Germany), Christian Rehtanz (TU Dortmund, Germany)

2012ISGTEU-230
DG DemoNet: Experiences From Volt/VAr Control Field Trials and Control Algorithm Advancements
Matthias Stifter (AIT, Austria), Roman Schwalbe (AIT, Austria), Werner Tremmel (AIT, Austria), Sawsan Henein (AIT, Austria), Helfried Brunner (AIT, Austria), Benoît Bletterie (AIT, Austria), Andreas Abart (Energie AG Oberösterreich Netz, Austria), Frank Herb (VKW Netz, Austria), Rudolf Pointner (Salzburg Netz, Austria)
Optimal Charging of Electric Vehicles I

PAPER PRESENTATION

Chair: Akihiko Yokoyama, University of Tokyo, Japan

2012ISGTEU-290
Incorporating Valley Filling and Peak Shaving in a Utility Function Based Management of an Electric Vehicle Aggregator
Matthias D. Galus (ETH Zurich, Switzerland), Felix Wietor (ETH Zurich, Switzerland), Göran Andersson (ETH Zurich, Switzerland)

2012ISGTEU-088
Voltage Drop Charging of Electric Vehicles in a Residential Distribution Feeder
Frederik Geth (KU Leuven, Belgium), Niels Leemput (KU Leuven, Belgium), Juan Van Roy (KU Leuven, Belgium), Jeroen Büscher (KU Leuven, Belgium), Raf Ponnette (VITO, Belgium), Johan Driesen (KU Leuven, Belgium)

2012ISGTEU-091
Demand Side Management of Electric Vehicles With Uncertainty on Arrival and Departure Times
Frederik Ruelens (KU Leuven, Belgium), Stijn Vandael (KU Leuven, Belgium), Willem Leterme (KU Leuven, Belgium), Bert J. Claessens (VITO, Belgium), Maarten Hommelberg (VITO, Belgium), Tom Holvoet (KU Leuven, Belgium), Ronnie Belmans (KU Leuven, Belgium)

2012ISGTEU-072
Controlled Charging of Electric Vehicles in Residential Distribution Networks
Alison O’Connell (UCD, Ireland), Damian Flynn (UCD, Ireland), Peter Richardson (UCD, Ireland), Andrew Keane (UCD, Ireland)

2012ISGTEU-005
Hierarchical Charging Management Strategy of Plug-in Hybrid Electric Vehicles to Provide Regulation Service
Shouxiang Wang (Tianjin University, China), Liang Han (Tianjin University, China), Dan Wang (Tianjin Electric Power Company China), Mohammad Shahidehpour (Illinois Institute of Technology, USA), Zuyi Li (Illinois Institute of Technology, USA)

2012ISGTEU-112
Charging Control Model for Electric Vehicle Supplier Aggregator
Evangelos L. Karfopoulos (National Technical University of Athens, Greece), Charalampos E. Marmaras (National Technical University of Athens, Greece), Nikos Hatziaergyriou (National Technical University of Athens, Greece)
Information and Communication Technology (ICT) for Smart Grids

PAPER FORUM

Chair: Thomas Luckenbach, Fraunhofer FOKUS, Germany
Co-Chair: Luis Ochoa, University of Manchester, UK

2012ISGTEU-087
ZigBee Wireless Area Network for Home Automation and Energy Management: Field Trials and Installation Approaches
N. C. Batista (University of Beira Interior, Portugal), R. Melício (University of Beira Interior, Portugal), J. C. O. Matias (University of Beira Interior, Portugal), J. P. S. Catalão (University of Beira Interior, Portugal)

2012ISGTEU-037
Communication-control Concept in Distribution Network With Dispersed Energy Resource
Jure Močnik (RC eNeM, Slovenia), Andrej Žemva (University of Ljubljana, Slovenia)

2012ISGTEU-147
Device-to-device Communication for Smart Grid Devices
Simon Fey (HS Offenburg University of Applied Sciences, Germany), Pascal Benoit (Fraunhofer ISE, Germany), Gregor Rohbogner (Fraunhofer ISE, Germany), Andreas H. Christ (HS Offenburg University of Applied Sciences, Germany), Christof Wittwer (Fraunhofer ISE, Germany)

2012ISGTEU-008
Dynamic Communications Control for µGrid Agents
Jeff Frolik (University of Vermont, USA), Anthony L. Lentine (Sandia National Laboratories, USA), Andrew Seier (University of Vermont, USA), Chris Palombini (University of Vermont, USA)

2012ISGTEU-026
The Power of Data: Data Analytics for M2M and Smart Grid
Zhong Fan (Toshiba, UK), Qipeng Chen (University of Bristol, UK), Georgios Kalogridis (Toshiba, UK), Siok Tan (Toshiba, UK), Dritan Kaleshi (University of Bristol, UK)

2012ISGTEU-130
Hybrid Simulation of Power Systems and ICT for Real-time Applications
Sven C. Müller (TU Dortmund, Germany), Hanno Georg (TU Dortmund, Germany), Christian Rehtanz (TU Dortmund, Germany), Christian Wietfeld (TU Dortmund, Germany)
2012ISGTEU-149
Communication interface Requirements During Critical Situations in a Smart Grid
Ines Hauer (Otto-von-Guericke University Magdeburg, Germany), André Naumann (Otto-von-Guericke University Magdeburg, Germany), Martin Stötzer (Otto-von-Guericke University Magdeburg, Germany), Zbigniew A. Styczynski (Otto-von-Guericke University Magdeburg, Germany)

2012ISGTEU-286
A Critical Comparison of Approaches to Resource Name Management Within the IEC Common Information Model
Nigel Hargreaves (Brunel University, UK), Stefan Pantea (National Grid, UK), Gareth Taylor (Brunel University, UK), Malcolm Irving (Brunel University, UK)

2012ISGTEU-210
Algorithmic Approach to Data Model Versioning
Izudin Đžafić (Siemens, Germany), Nenad Leček (Siemens, Germany)

2012ISGTEU-124
Infrastructure for Collaborating Data-researchers in a Smart Grid Pilot
Wouter Labeeuw (KU Leuven, Belgium), Sven Claessens (VITO, Belgium), Kevin Mets (Ghent University, Belgium), Chris Develder (Ghent University, Belgium), Geert Deconinck (KU Leuven, Belgium)

2012ISGTEU-012
WiMAX for Smart Grid Last-mile Communications: TOS Traffic Mapping and Performance Assessment
Felipe Gómez-Cuba (Gradiant, Spain), Rafael Asorey-Cacheda (Universidade de Vigo, Spain), Francisco J. González-Castaño (Universidade de Vigo, Spain)

2012ISGTEU-221
A Comparison of Web Service Technologies for Smart Meter Data Exchange
Markus Jung (Vienna University of Technology, Austria), Wolfgang Kastner (Vienna University of Technology, Austria), Georg Kienesberger (Vienna University of Technology, Austria), Manuel Leithner (SBA, Austria)

2012ISGTEU-247
Object Oriented Topology Tracing for Large Scale Three Phase Distribution Networks
Izudin Đžafić (Siemens, Germany), Sylwia Henselmeyer (Siemens, Germany), Nenad Leček (Siemens, Germany), Thomas Schwietzke (Siemens, Germany), Dino Ablakov (Siemens, Germany)

2012ISGTEU-228
High Performance Computing Platform for Advanced Distributed Network Operations
David Wallom (University of Oxford, UK), Stefano Salvini (University of Oxford, UK), Piotr Lopatka (University of Oxford, UK)
Demand Side Management of Distribution Networks

PAPER PRESENTATION

Chair: Christian von Hirschhausen, TU Berlin, Germany

2012ISGTEU-047
Enabling Distributed Frequency Response Using Smart Meters
Lee J. Thomas (Cardiff School of Engineering, UK), Jianzhong Wu (Cardiff School of Engineering, UK), Janaka B. Ekanayake (Cardiff School of Engineering, UK), Nick Jenkins (Cardiff School of Engineering, UK)

Ruelens (KU Leuven, Belgium), Maarten Hommelberg (VITO, Belgium)

2012ISGTEU-255
Using Flexible Energy Infrastructures for Demand Response in a Smart Grid City
Stamatis Karnouskos (SAP, Germany), Dejan Ilic (SAP, Germany), Per Goncalves Da Silva (SAP, Germany)

2012ISGTEU-254
Indirect Control for Demand Side Management – A Conceptual Introduction
Kai Heussen (Technical University of Denmark, Denmark), Shi You (Technical University of Denmark, Denmark), Benjamin Biegel (Aalborg University, Denmark), Lars H. Hansen (DONG Energy, Denmark), Katrine B. Andersen (DONG Energy, Denmark)

2012ISGTEU-095
Comparing Demand Side Management Approaches
Albert Molderink (University of Twente, Netherlands), Vincent Bakker (University of Twente, Netherlands), Johann L. Hurink (University of Twente, Netherlands), Gerard J.M. Smit (University of Twente, Netherlands)

2012ISGTEU-043
A Predictive Control Scheme for Automated Demand Response Mechanisms
Ioannis Lampropoulos (Eindhoven University of Technology, Netherlands), Paul P. J. van den Bosch (Eindhoven University of Technology, Netherlands), Wil L. Kling (Eindhoven University of Technology, Netherlands)

2012ISGTEU-113
A Modified Approach for Residential Load Scheduling Using Smart Meters
Shahab Bahrami (Sharif University of Technology, Iran), Mostafa Parniani (Sharif University of Technology, Iran), Ahmadreza Vafaeimehr (European Business School, Germany)

2012ISGTEU-075
Self-learning Demand Side Management for a Heterogeneous Cluster of Devices With Binary Control Actions
Bert J. Claessens (VITO, Belgium), Stijn Vandael (KU Leuven, Belgium), Frederik
Impact of Power Electronics Control

PAPER PRESENTATION

Chair: George G. Karady, Arizona State University, USA

2012ISGTEU-162
Fulfilling the Standard EN 50160 in Distribution Networks With a High Penetration of Renewable Energy System
Christian Röhrig (Otto-von-Guericke University Magdeburg, Germany), Krzysztof Rudion (Otto-von-Guericke University Magdeburg, Germany), Zbigniew A. Styczynski (Otto-von-Guericke University Magdeburg, Germany), Hans-Joachim Nehrkorn (E.ON, Germany)

2012ISGTEU-276
Implementation of Grid-friendly Charging Scheme to Electric Vehicle Off-board Charger for V2G
Yutaka Ota (University of Tokyo, Japan), Haruhito Taniguchi (University of Tokyo, Japan), Hirokazu Suzuki (University of Tokyo, Japan), Tatsuhito Nakajima (Tokyo Electric Power Company, Japan), Jumpei Baba (University of Tokyo, Japan), Akihiko Yokoyama (University of Tokyo, Japan)

2012ISGTEU-027
Current Harmonics and Commercial Losses in Smart Grids
Anatoly M. Lipsky (Ariel University Center of Samaria, Israel), Neda V. Miteva (Ariel University Center of Samaria, Israel), Efim S. Lokshin (Ariel University Center of Samaria, Israel)

2012ISGTEU-265
Integrated Power Converter for Multiple DC Voltage Sources
Masahide Hojo (University of Tokushima, Japan), Ippei Usuzumi (University of Tokushima, Japan)

2012ISGTEU-089
Exploring the Range of Impedance Conditioning by Virtual Inductance for Grid Connected Voltage Source Converters
Jon Are Suul (SINTEF Energy Research, Norway), Marta Molinas (Norwegian University of Science and Technology, Norway), Pedro Rodríguez (Abengoa Research, Spain)

2012ISGTEU-004
Damping Power System Oscillations Using Phase Imbalanced Series Capacitive Compensation and DFIG-based Wind Farms
Irfan Unal (University of Saskatchewan, Canada), Sherif O. Faried (University of Saskatchewan, Canada)
HVDC and Offshore Wind Park Connection

PAPER PRESENTATION

Chair: Gert Schwarzbach, 50Hertz, Germany

2012ISGTEU-042
Low Frequency High Voltage Offshore Grid for Transmission of Renewable Power
Wilfried Fischer (50Hertz, Germany), Rainer Braun (Deutsche Bahn Energie, Germany), István Erlich (University of Duisburg-Essen, Germany)

2012ISGTEU-166
Reactive Power Compensation in Hybrid AC/DC Networks for Smart Grid Applications
Ahmed Mohamed (Florida International University, USA), Vahid Salehi (Florida International University, USA), Osama Mohamed (Florida International University, USA)

2012ISGTEU-219
Experimental Implementation of a Voltage Control for a Multiterminal VSC-HVDC Offshore Transmission System
Agustí Egea-Alvarez (U. Politecnica de Catalunya, Spain), Fernando Bianchi (IREC, Spain), Adria Junyent-Ferré (U. Politecnica de Catalunya, Spain), Gabriel Gross (U. Politecnica de Catalunya, Spain), Oriol Gomis-Bellmunt (U. Politecnica de Catalunya, Spain)

2012ISGTEU-128
Improving Ranking of Electric Power System Dynamic Behavior in DSA System by Applying VSC Based HVDC Technology
Cuong Nguyen Mau (Otto-von-Guericke University Magdeburg, Ger.), Ngoc T. Trinh (Siemens, Ger.), Krzysztof Rudion (Otto-von-Guericke University Magdeburg, Ger.), Edwin Lerch (Siemens, Ger.), Zbigniew A. Styczynski (Otto-von-Guericke University Magdeburg, Ger.)

2012ISGTEU-066
VSC-HVDC Link to Support Voltage and Frequency Fluctuations for Variable Speed Wind Turbines for Grid Connection
Ronan Meere (Athlone Institute of Technology, Ireland), Mark O’Malley (UCD, Ireland), Andrew Keane (UCD, Ireland)

2012ISGTEU-199
An Analytical Method for Probabilistic Load Flow Applied to Multi-terminal HVDC Networks for Offshore Wind Farm Integration
Emanuele Ciapessoni (RSE, Italy), Diego Cirio (RSE, I.), Andrea Pitto (RSE, I.), Stefano Massucco (University of Genova, I.), Federico Silvestro (University of Genova, I.)

2012ISGTEU-099
Power Flow Participation by an Embedded HVDC Grid in an Interconnected Power System
Anne-Katrin Marten (TU Ilmenau, Germany), Dirk Westermann (TU Ilmenau, Germany)
Optimal Charging of Electric Vehicles II

PAPER PRESENTATION

Chair: Antonio C. S. Lima, Federal University of Rio de Janeiro, Brazil

2012ISGTEU-240
Coordinated Electric Vehicle Charging Strategy for Optimal Operation of Distribution Network
Kaiqiao Zhan (Tsinghua University, China), Zechun Hu (Tsinghua University, China), Yonghua Song (Tsinghua University, China), Zhuowei Luo (Tsinghua University, China), Zhiwei Xu (Tsinghua University, China), Long Jia (Tsinghua University, China)

2012ISGTEU-025
Urgency-driven, Plug-in Electric Vehicle Charging
Jeff Frolik (University of Vermont, USA), Paul D. H. Hines (University of Vermont, USA)

2012ISGTEU-118
An Optimal Local Charging Strategy for Competing Electric Vehicles on Quick Charging Facilities
Cédric Bodet (NEC Laboratories Europe, Germany), Rafal Jablonowski (NEC Laboratories Europe, Germany), Kellie Erickson (NEC Laboratories Europe, Germany), Anett Schülke (NEC Laboratories Europe, Germany)

2012ISGTEU-100
Strong Stochastic Approach to Assess Impacts of Electric Vehicles on the Distribution Network
Tuan Tran-Quoc (CEA-INES, France), Xavier Le Pivert (CEA-INES, France), Mehdi Saheli (Renault, France), Olivier Beaude (Renault, France)

2012ISGTEU-212
Validation of Voltage Regulation Method in Distribution System Utilizing Electric Vehicles
Yuki Mitsukuri (Hokkaido University, Japan), Ryoichi Hara (Hokkaido University, Japan), Hiroyuki Kita (Hokkaido University, Japan), Eiji Kamiya (Tokyo Electric Power Company, Japan), Yasuhiro Kataoka (Tokyo Electric Power Company, Japan), Shoji Taki (Tokyo Electric Power Company, Japan), Eiji Kogure (Tokyo Electric Power Company, Japan)

2012ISGTEU-287
On the Interdependence of Intelligent Charging Approaches for Plug-in Electric Vehicles in Transmission and Distribution Networks
Marina González Vayá (ETH Zurich, Switzerland), Matthias D. Galus (ETH Zurich, Switzerland), Rashid A. Waraich (ETH Zurich, Switzerland), Göran Andersson (ETH Zurich, Switzerland)
Distribution System Modeling and Analysis

PAPER FORUM

Chair: Wil L. Kling, Eindhoven University of Technology, Netherlands
Co-Chair: Emanuel Rashayi, University of Zimbabwe, Zimbabwe

2012ISGTEU-266
Integrated Reliability Modeling for Data Center Infrastructures: A Case Study
Uwe Müller (ibmu.de, Germany), Kai Strunz (TU Berlin, Germany)

2012ISGTEU-256
Analysis of Thevenin Equivalent Network of a Distribution System for Solar Integration Studies
Guangya Y. Yang (Technical University of Denmark, Denmark), Majken R. Mattesen (Østkraft, Denmark), Søren B. Kjaer (Danfoss Solar Inverter, Denmark), Radu D. Lazar (Danfoss Solar Inverter, Denmark), Adrian Constantin (Danfoss Solar Inverter, Denmark), Jacob Østergaard (Technical University of Denmark, Denmark), Carl Stephansen (EnergiMidt, Denmark)

2012ISGTEU-235
Simplified Modeling of DFIG With PWM Nonlinear Characteristics for Fast Transient Simulation
Yin Xu (Tsinghua University, China), Laijun Chen (Tsinghua University, China), Ying Chen (Tsinghua University, China), Zhenquan Sun (Shaanxi Regional Electric Power, China)

2012ISGTEU-237
Modeling the Frequency Response of Photovoltaic Inverters
Ernauli C. Aprilia (Eindhoven University of Technology, Netherlands), Vladimir Cuk (Eindhoven University of Technology, Netherlands), Sjef Cobben (Eindhoven University of Technology, Netherlands), Paulo F. Ribeiro (Eindhoven University of Technology, Netherlands), Wil L. Kling (Eindhoven University of Technology, Netherlands)

2012ISGTEU-246
Modeling of Auto-transformers for Load Flow Calculations
Hans-Theo Neisius (Siemens, Germany), Izudin Džafić (Siemens, Germany), Sylwia Henselmeyer (Siemens, Germany), Dino Ablakovic (Siemens, Germany), Nenad Leček (Siemens, Germany)

2012ISGTEU-009
Hybrid Three-phase Load Flow Method for Ungrounded Distribution Systems
Hongbo Sun (Mitsubishi Electric, USA), Daniel Nikovski (Mitsubishi Electric, USA), Tetsufumi Ohno (Mitsubishi Electric, Japan), Tomihiro Takano (Mitsubishi Electric, Japan), Yasuhiro Kojima (Mitsubishi Electric, Japan)
2012ISGTEU-245
Three Phase Current Iteration Power Flow Method Using Fortescue Transformations
Izudin Džafić (Siemens, Germany), Hans-Theo Neisius (Siemens, Germany), Sylwia Henselmeyer (Siemens, Germany)

2012ISGTEU-157
Increase of the Delivered Energy Probability in DES Using a Fuzzy Probabilistic Modeling
Bruno Canizes (Polytechnic of Porto, Portugal), João Soares (Polytechnic of Porto, Portugal), Zita Vale (Polytechnic of Porto, Portugal), Joaquim Teixeira (Polytechnic of Porto, Portugal)

2012ISGTEU-257
Representation and Self-configuration of Physical Entities in Extended Smart Grid Perimeter
Zheng Hu (Orange, France), Gilles Privat (Orange, France), Stéphane Frénot (INSA-Lyon, France), Bernard Tourancheau (IMAG, France)

2012ISGTEU-144
Controlling Smart Grid Adaptivity
Hermen A. Toersche (University of Twente, Netherlands), Stefan Nykamp (University of Twente, Netherlands), Albert Molderink (University of Twente, Netherlands), Johann L. Hurink (University of Twente, Netherlands), Gerard J. M. Smit (University of Twente, Netherlands)

2012ISGTEU-161
Parametric Interface for Battery Energy Storage Systems Providing Ancillary Services
Claudio R. Vergara (Universidade do Porto, Portugal)

2012ISGTEU-111
A Synchronous Reference Frame Intelligent Structure for Power Control of Distributed Generators in a Microgrid
Sima Seidi Khorramabadi (Queen’s University, Canada), Alireza Bakhshai (Queen’s University, Canada)

2012ISGTEU-103
Agent Based Automation for a Smarter Distribution Grid
Mariam Khattabi (MV, Germany), Andreas Kießling (MV, Germany), Patrick Selzam (Fraunhofer IWES, Germany), Jan Ringelstein (Fraunhofer IWES, Germany)

2012ISGTEU-184
Optimal Economic Operation of Smart Grid by Fuzzy Advanced Quantum Evolutionary Method
Shantanu Chakraborty (Nagoya Institute of Technology, Japan), Takayuki Ito (Nagoya Institute of Technology, Japan), Tomonobu Senju (University of the Ryukyus, Japan)

2012ISGTEU-031
Day-ahead and Online Scheduling of a Power Park in Urban Electricity Infrastructure
Ehsan Abbasi (TU Berlin, Germany), Hossein Ameli (TU Berlin, Germany), Kai Strunz (TU Berlin, Germany)
Islanding Detection and Operation

PAPER PRESENTATION

Chair: Omer Usta, Istanbul Technical University, Turkey

2012ISGTEU-142
Evaluation of Non-active Current Compensation in Smart Grids
Santiago Sanchez Acevedo (Norwegian University of Science and Technology, Norway), Marta Molinas (Norwegian University of Science and Technology, Norway)

2012ISGTEU-211
Autonomous Control of Electric Vehicles in Grid–connected and Islanded Modes
Arnaldo Arancibia (TU Berlin, Germany), Kai Strunz (TU Berlin, Germany)

2012ISGTEU-057
New Multi-criteria-based Algorithm for Islanding Detection in Smart Grids
Hannu Laaksonen (ABB, Finland)

2012ISGTEU-085
Islanding Detection in a Distributed Generation Based Hybrid System Using Intelligent Pattern Recognition Techniques
S. R. Mohanty (University of Beira Interior, Portugal), Nand Kishor (Motilal Nehru National Institute of Technology, India), P. K. Ray (Motilal Nehru National Institute of Technology, India), J. P. S. Catalão (University of Beira Interior, Portugal)

2012ISGTEU-214
Islanding Detection for PV and DFIG Using Decision Tree and AdaBoost Algorithm
Seyed S. Madani (Sharif University of Technology, Iran), Ali Abbaspour (Sharif University of Technology, Iran), Mojtaba Beiraghi (Sharif University of Technology, Iran), Payam Zamani Dehkordi (Sharif University of Technology, Iran), Ali M. Ranjbar (Sharif University of Technology, Iran)

2012ISGTEU-044
Investigation of the Virtual Synchronous Machine in the Island Mode
Yong Chen (TU Clausthal, Germany), Ralf Hesse (Ingenieurbüro IEHW, Germany), Dirk Turschner (TU Clausthal, Germany), Hans-Peter Beck (TU Clausthal, Germany)
Wide Area Transient Control and Stability Improvement With PMU

PAPER PRESENTATION

Chair: Martin Wolter, 50Hertz, Germany

2012ISGTEU-053
New Applications for Wide-area Monitoring, Protection and Control
Sven C. Müller (TU Dortmund, Germany), Andreas Kubis (TU Dortmund, Germany), Sebastian Brato (TU Dortmund, Germany), Ulf Häger (TU Dortmund, Germany), Christian Rehtanz (TU Dortmund, Germany), Jürgen Götze (TU Dortmund, Germany)

2012ISGTEU-277
Improvement of Angle and Voltage Stability by Control of Batteries Using Wide-area Measurement System in Power Systems
Kenichi Kawabe (University of Tokyo, Japan), Akihiko Yokoyama (University of Tokyo, Japan)

2012ISGTEU-148
Power Grid Transient Stability Prediction Using Wide Area Synchrophasor Measurements
Jagabondhu Hazra (IBM, India), Ravi K. Reddi (IIT Kharagpur, India), Kaushik Das (IBM, India), Deva P. Seetharam (IBM, India), Avinash K. Sinha (IIT Kharagpur, India)

2012ISGTEU-055
Synchronous Machine Inertia Constants Updating Using Wide Area Measurements
Song Guo (Durham University, UK), Janusz Bialek (Durham University, UK)

2012ISGTEU-242
A Modified Taylor-Kalman Filter for Instantaneous Dynamic Phasor Estimation
Junqi Liu (RWTH Aachen, Germany), Fei Ni (RWTH Aachen, Germany), Junjie Tang (RWTH Aachen, Germany), Ferdinanda Ponci (RWTH Aachen, Germany), Antonello Monti (RWTH Aachen, Germany)

2012ISGTEU-117
Implementation of Power System Model Identification for Locating In-phase Generators
Pavel V. Chusovitin (Ural Federal University, Russia) and Andrey V. Pazderin (Ural Federal University, Russia)
Planning of Smart Grids

PAPER PRESENTATION

Chair: Hamid Zareipour, University of Calgary, Canada

2012ISGTEU-283
On the Optimal Placement of Distributed Storage Systems for Voltage Control in Active Distribution Networks
Mostafa Nick (EPFL, Switzerland), Marc Hohmann (EPFL, Switzerland), Rachid Cherkaoui (EPFL, Switzerland), Mario Paolone (EPFL, Switzerland)

2012ISGTEU-129
Optimal Degree of Smart Transformer Substations in Distribution Networks for Reliability Improvement
Andrea Rodriguez-Calvo (Comillas Pontifical University, Spain), Pablo Frías (Comillas Pontifical University, Spain), Javier Reneses (Comillas Pontifical University, Spain), Carlos Mateo (Comillas Pontifical University, Spain)

2012ISGTEU-023
A Multi-objective Planning Framework for Optimal Integration of Distributed Generations
Keshav Pokharel (University of Central Lancashire, UK), Maizura Mokhtar (University of Central Lancashire, UK), Joe Howe (University of Central Lancashire, UK)

2012ISGTEU-110
Optimization of Supply Source Allocation in the Problem of Rational Configuration of Electricity Supply System
Olga V. Svezhentseva (Irkutsk State Technical University, Russia), Nikolay I.Voropai (Melentiev Energy Systems Institute, Russia)

2012ISGTEU-248
The Smart Super-European Grid: Balancing Demand and Supply
Catalina Spataru (University College of London, UK), Mark Barrett (University College of London, UK)

2012ISGTEU-233
Integrating Wind – Influence of Transmission Grid Extension on European Electricity Market Prices
Tobias Aigner (Norwegian University of Science and Technology, Norway), Katrin Schaber (TU München, Germany), Thomas Hamacher (TU München, Germany), Terje Gjengedal (Norwegian University of Science and Technology, Norway)
Methods for Integration of Wind Energy

PAPER PRESENTATION

Chair: Raphael Caire, INP Grenoble, France

2012ISGTEU-177
Development of Wind Power Stabilization System Using BESS and STATCOM
Duck-Su Lee (Hyundai, Korea), Soo-Nam Kim (Hyundai, Korea), Young-Chan Choi (Hyundai, Korea), Byung-San Baek (Hyundai, Korea), Jong-Sung Hur (Hyundai, Korea)

2012ISGTEU-217
Analysis of Wind Power Integration Capacity in Wind-hydro-thermal Hybrid Power System
Can Sun (Xi’an Jiaotong University, China), Zhaohong Bie (Xi’an Jiaotong University, China), Gengfeng Li (Xi’an Jiaotong University, China), Bowen Hua (Xi’an Jiaotong University, China)

2012ISGTEU-076
Probabilistic Assessment of Operational Risk Considering Different Wind Turbine Technologies
Francisco M. Gonzalez-Longatt (Coventry University, UK), José L. Rueda (University of Duisburg-Essen, Germany), Dimitar Bogdanov (Technical University of Sofia, Bulgaria)

2012ISGTEU-153
Exploring the Use of Flexibility Indices in Low Carbon Power Systems
Juan Ma (University of Manchester, UK), Vera Silva (EDF, France), Régine Belhomme (EDF, France), Daniel S. Kirschen (University of Washington, USA), Luis F. Ochoa (University of Manchester, UK)

2012ISGTEU-090
Impact of Different DFIG Wind Turbines Control Modes on Long-term Voltage Stability
Rafael R. Londero (Federal University of Pará, Brazil), Carolina M. Affonso (Federal University of Pará, Brazil), João P. Abreu Vieira (Federal University of Pará, Brazil), Ubiratan H. Bezerra (Federal University of Pará, Brazil)

2012ISGTEU-253
Dynamic Participation of Wind Farms in System Frequency Control
Mohammadreza Toulabi (Sharif University of Technology, Iran), Ali Mohammad Ranjbar (Sharif University of Technology, Iran), Houshang Karimi (Sharif University of Technology, Iran), Mojtaba Shiroie (Sharif University of Technology, Iran)
Advances to Real-time State Estimation

PAPER PRESENTATION

Chair: Saša Z. Djokić, University of Edinburgh, UK

2012ISGTEU-145
Real-time Hybrid State Estimation Incorporating SCADA and PMU Measurements
Kaushik Das (IBM, India), Jagabondhu Hazra (IBM, India), Deva P. Seetharam (IBM, India), Ravi K. Reddi (IIT Kharagpur, India), Avinash K. Sinha (IIT Kharagpur, India)

2012ISGTEU-194
Distribution System State Estimation Using Unsynchronized Phasor Measurements
Pierre Janssen (Université Libre de Bruxelles, Belgium), Tevfik Sezi (Siemens, Germany), Jean-Claude Maun (Université Libre de Bruxelles, Belgium)

2012ISGTEU-138
Synchro-Phasor Based Three Phase State Estimation Using Modal Components
Murat Göl (Northeastern University, Boston, USA), Ali Abur (Northeastern University, Boston, USA)

2012ISGTEU-183
An Optimal Hierarchical Algorithm for Factored Nonlinear Weighted Least Squares State Estimation
George M. Mathews (NICTA, Australia)

2012ISGTEU-267
State Estimation of Active Distribution Networks: Comparison Between WLS and Iterated Kalman-filter Algorithm Integrating PMUs
Stela Sarri (EPFL, Switzerland), Mario Paolone (EPFL, Switzerland), Rachid Cherkaoui (EPFL, Switzerland), Alberto Borghetti (University of Bologna, Italy), Fabio Napolitano (University of Bologna, Italy), Carlo A. Nucci (University of Bologna, Italy)

2012ISGTEU-094
A Case Study of Bad Data Detection for Distribution Feeder Voltage Measurement
Naotaka Okada (Central Research Institute of Electric Power Industry, Japan), Masahiro Takasaki (Central Research Institute of Electric Power Industry, Japan), Kazuyuki Tanaka (Central Research Institute of Electric Power Industry, Japan)
Microgrids Operation and Control

PAPER PRESENTATION

Chair: Kwang Y. Lee, Baylor University, USA

2012ISGTEU-278
Power Management Strategy for Plug and Play DC Microgrid
Xunwei Yu (North Carolina State University, USA), Alex Q. Huang (North Carolina State University, USA)

2012ISGTEU-218
Optimal Generation Scheduling of a Microgrid
Xiong Wu (Xi’an Jiaotong University, China), Xiuli Wang (Xi’an Jiaotong University, China), Zhaohong Bie (Xi’an Jiaotong University, China)

2012ISGTEU-102
Optimal Storage Capacity Within an Autonomous Micro Grid With a High Penetration of Renewable Energy Sources
Pio Lombardi (Fraunhofer IFF, Germany), Tatiana Sokolnikova (Irkutsk State Technical University, Russia), Konstantin V. Suslov (Irkutsk State Technical University, Russia), Zbigniew A. Styczynski (Otto-von-Guericke University Magdeburg, Germany)

2012ISGTEU-115
Optimized Operation, Planning, and Frequency Control of Hybrid Generation-Storage Systems in Isolated Networks
Ehsan Abbasi (TU Berlin, Germany), Hossein Ameli (TU Berlin, Germany), Kai Strunz (TU Berlin, Germany), Duc Nguyen Huu (TU Berlin, Germany)

2012ISGTEU-051
Modeling and Simulation of a Microgrid as a Stochastic Hybrid System
Martin Strelec (Honeywell, Czech Republic), Karel Macek (FNSPE CTU, Czech Republic), Alessandro Abate (TU Delft, Netherlands)

2012ISGTEU-079
The Role of Microgrids in Accelerating Energy Access
Rena Kuwahata (Ecofys, Germany), Nis Martensen (Energynautics, Germany), Thomas Ackermann (Energynautics, Germany), Sven Teske (Greenpeace, Germany)
Research Projects at National and International Level

PAPER FORUM

Chair: Carlo A. Nucci, University of Bologna, Italy
Co-Chair: Hiroyuki Mori, Meiji University, Japan

2012ISGTEU-284
3eHouses: A Smart Metering Pilot in UK Living Labs
Simon P. Le Blond (Toshiba Research Europe Limited, UK), Alan Holt (IP Performance, UK), Paul White (IP Performance, UK)

2012ISGTEU-020
LV Distribution Network Feeders in Belgium and Power Quality Issues due to Increasing PV Penetration Levels
Carlos Gonzalez (KU Leuven, Belgium), Jurgen Geuns (KU Leuven, Belgium), Sam Weckx (KU Leuven, Belgium), Thomas Wijnhoven (KU Leuven, Belgium), Pieter Vingerhoets (KU Leuven, Belgium), Tom De Rybel (KU Leuven, Belgium), Johan Driesen (KU Leuven, Belgium)

2012ISGTEU-003
Demonstrating Coordinated Voltage Control in a Real Distribution Network
Anna Kulmala (Tampere University of Technology, Finland), Antti Mutanen (Tampere University of Technology, Finland), Antti Koto (Tampere University of Technology, Finland), Sami Repo (Tampere University of Technology, Finland), Pertti Järventausta (Tampere University of Technology, Finland)

2012ISGTEU-209
Impact Investigation of Rooftop Solar PV System: A Case Study in India
Kalpesh A. Joshi (Indian Institute of Technology Gandhinagar, India), Naran M. Pindoriya (Indian Institute of Technology Gandhinagar, India)

2012ISGTEU-063
A Local Energy Management System for Solar Integration and Improved Security of Supply: The Nice Grid Project
Andrea Michiorri (MINES ParisTech, France), Robin Girard (MINES ParisTech, France), Georges Kariniotakis (MINES ParisTech, France), Christophe Lebosse (ERDF, France), Sandrine Albou (RTE, France)

2012ISGTEU-056
Electrical Power and Energy Compensation Demand With Regard to Topological Restrictions of the German Mains for an Efficient Operation of a Smart Grid
Daniel Beyer (Fraunhofer AST, Germany), Frank Karstädt (Fraunhofer AST, Germany), Benjamin Fischer (Fraunhofer AST, Germany), Michael Agsten (Fraunhofer AST, Germany), Peter Breitschneider (Fraunhofer AST, Germany)
2012ISGTEU-178
Northern Isles New Energy Solutions: Active Network Management Stability Limits
Michael J. Dolan (University of Strathclyde, UK), Graham W. Ault (University of Strathclyde, UK), Damien F. Frame (University of Strathclyde, UK), Simon Gill (University of Strathclyde, UK), Ivana Kockar (University of Strathclyde, UK), Olimpo Anaya-Lara (University of Strathclyde, UK), Stuart Galloway (University of Strathclyde, UK), Bryan O’Neill (Smarter Grid Solutions, UK), Colin Foote (Smarter Grid Solutions, UK), Andrejs Svalovs (Parsons Brinckerhoff, UK)

2012ISGTEU-140
Implementing Active Demand in the ADDRESS Project: Laboratory Tests and First Results From the Field
Regine Belhomme (EDF, France), Philippe Eyrolles (EDF, France), Roberto González Sainz-Maza (Iberdrola, Spain), Joseba Jimeno Huarte (Tecnalia, Spain), Giovanni Valtorta (ENEL, Italy), Elena Morozova (ENEL, Italy), Francesco Naso (ENEL, Italy), Dana Abi Ghanem (University of Manchester, UK), Sarah Mander (University of Manchester, UK)

2012ISGTEU-192
Evaluating Low-carbon Effects of Demand Response From Smart Distribution Grid
Tianrui Zhou (Tsinghua University, China), Chongqing Kang (Tsinghua University, China), Xinyu Chen (Tsinghua University, China), Yue Wu (Jiangxi Electric Power Research Institute, China), Jianbo Xin (Jiangxi Electric Power Research Institute, China)

2012ISGTEU-191
Integration of Surplus Wind Energy by Controlled Charging of Electric Vehicles
Stefan Mischinger (TU Berlin, Germany), Wilfried Hennings (Forschungszentrum Jülich, Germany), Kai Strunz (TU Berlin, Germany)

2012ISGTEU-200
Electric Vehicles in Low Voltage Residential Grid: A Danish Case Study
Jayakrishnan R. Pillai (Aalborg University, Denmark), Shaojun Huang (Aalborg University, Denmark), Paul Thøgersen (KK-Electronic, Denmark), Jan Møller (Nyfors, Denmark), Birgitte Bak-Jensen (Aalborg University, Denmark)
2012ISGTEU-176
A Comparison of Electric Vehicle Integration Projects
Peter Bach Andersen (Technical University of Denmark, Denmark), Rodrigo Garcia-Valle (Technical University of Denmark, Denmark), Willett Kempton (University of Delaware, USA)

2012ISGTEU-226
Using Already Existing Artificial Structures for Energy Storage in Areas With High Shares of Renewable Energies
Thomas Weiss (Helmut-Schmidt-University, Germany), Detlef Schulz (Helmut-Schmidt-University, Germany)

2012ISGTEU-179
PEGASE Pan-European Test-beds for Testing of Algorithms on Very Large Scale Power Systems
Fortunato Villella (Tractebel Engineering, Belgium), Sylvain Leclerc (RTE, France), István Erlich (University of Duisburg-Essen, Germany), Stephane Rapoport (Tractebel Engineering, Belgium)
Concepts of Smart Grid Security

PAPER PRESENTATION

Chair: Federico Silvestro, University of Genova, Italy

2012ISGTEU-016
An Application of Robust Power System Security to Power System Operation for High-penetration of PV
Yoshiharu Okumoto (Chugoku Electric Power Company, Japan), Naoto Yorino (Hiroshima University, Japan), Yoshifumi Zoka (Hiroshima University, Japan), Yutaka Sasaki (Hiroshima University, Japan), Toshihiro Yamanaka (Hiroshima University, Japan), Tomohisa Akiyoshi (Hiroshima University, Japan)

2012ISGTEU-096
Smart Integration of Distribution Automation Applications
Robert J. W. de Groot (Eindhoven University of Technology, Netherlands), Johan Morren (Eindhoven University of Technology, Netherlands), Han G. Slootweg (Eindhoven University of Technology, Netherlands)

2012ISGTEU-252
Self-healing for Smart Grids: Problem Formulation and Considerations
Youssef Oualmakran (University of Girona, Spain), Joaquim Melendez (University of Girona, Spain), Sergio Herraiz (University of Girona, Spain)

2012ISGTEU-029
Preventive and Emergency Control of Intelligent Power Systems
Nikolay I. Voropai (Melentiev Energy Systems Institute, Russia), Victor G. Kurbatsky (Melentiev Energy Systems Institute, Russia), Nikita V. Tomin (Melentiev Energy Systems Institute, Russia), Daniil A. Panasetsky (Melentiev Energy Systems Institute, Russia)

2012ISGTEU-169
Big Bang-Big Crunch Based Optimal Preventive Control Action on Power Systems
Cavit Fatih Kucuktezcan (Istanbul Technical University, Turkey), Veysel Murat Istemihan Genc (Istanbul Technical University, Turkey)

2012ISGTEU-019
A Smart Power System Restoration Based on the Merger of Two Different Strategies
Jairo Quirós Tortós (University of Manchester, UK) Vladimir Terzija (University of Manchester, UK)
Smart Grid Maintenance and Asset Management

PAPER PRESENTATION

Chair: Susanne Landt, TenneT TSO, Germany

2012ISGTEU-154
Applying Reliability Centered Maintenance to a Digital Protective Relay
Helder Tavares (University of Porto, Portugal), Helder Leite (U. of Porto, Portugal), Alberto Pinto (EDP, Portugal), Pedro Vidal (EDP, Portugal), José Santos (EDP, Portugal)

2012ISGTEU-175
Reliability Modeling of Protection System Based on Phase-type Distribution
Changzhao Wang (South China University of Technology, China), Yao Zhang (South China U. of Technology, China), Gang Wang (South China U. of Technology, China), Longjun Wang (South China U. of Technology, China)

2012ISGTEU-201
Effect of Demand Response on Transformer Lifetime Expectation
Johannes Jargstorf (KU Leuven, Belgium), Koen Vanthournout (VITO, Belgium), Tom De Rybel (KU Leuven, Belgium), Dirk Van Hertem (KU Leuven, Belgium)

2012ISGTEU-106
Implementation of Gaia Methodology for Multi-agent Based Transformer Condition Monitoring
Davoodi Samirmi (University of Liverpool, UK), Wenhu H. Tang (University of Liverpool, UK), Q. Henry Wu (University of Liverpool, UK)

2012ISGTEU-155
A Regulatory Framework for Short-term Stochastic Maintenance Outage Scheduling in Smart Grids
Mohammad Ali Fotouhi Ghazvini (Polytechnic of Porto, Portugal), Zita Vale (Polytechnic of Porto, Portugal), Hugo Morais (Polytechnic of Porto, Portugal), Bruno Canizes (Polytechnic of Porto, Portugal)

2012ISGTEU-206
Weiwei Pan (Zhejiang Electric Power Corporation, China), Guowei Wu (Zhejiang Electric Power Corporation, China), Hui Zhou (Zhejiang Electric Power Corporation, China), Chong Wang (University of Hong Kong, Hong Kong), Yunhe Hou (University of Hong Kong, Hong Kong)

2012ISGTEU-207
Life Cycle Management Method for Smart Grid Asset With Real Option Theory
Guowei Wu (Zhejiang Electric Power Corporation, China), Hui Zhou (Zhejiang Electric Power Corporation, China), Weiwei Pan (Zhejiang Electric Power Corporation, China), Yunhe Hou (University of Hong Kong, Hong Kong)
Market-based Control of Electric Vehicles

PAPER PRESENTATION

Chair: Suresh P. Chowdhury, University of Cape Town, South Africa

2012ISGTEU-151
Effects of Plug-in Electric Vehicle Charge Scheduling on the Day-ahead Electricity Market Price
Pavan Balram (Chalmers University of Technology, Sweden), Le Anh Tuan (Chalmers University of Technology, Sweden), Lina Bertling Tjernberg (Chalmers University of Technology, Sweden)

2012ISGTEU-164
Decentralized Participation of Electric Vehicles in Network-constrained Market Operation
Dimitrios Papadaskalopoulos (Imperial College London), Goran Strbac (Imperial College London)

2012ISGTEU-081
Balancing Trade-offs in Coordinated PHEV Charging With Continuous Market-based Control
Klaas De Craemer (KU Leuven, Belgium), Geert Deconinck (KU Leuven, Belgium)

2012ISGTEU-038
Price Incentives for Smart Electric Vehicle Operation – Status Quo and Perspectives
Christine Brandstätt (Bremer Energie Institut, Germany), Nele Friedrichsen (Bremer Energie Institut, Germany)

2012ISGTEU-168
A Distributed Approach to the Integration of Electric Vehicles Into Future Smart Grids
Michael Mierau (Fraunhofer ISE, Germany), Robert Kohrs (Fraunhofer ISE, Germany), Christof Wittwer (Fraunhofer ISE, Germany)

2012ISGTEU-052
A Case Study of Coordinated Electric Vehicle Charging for Peak Shaving on a Low Voltage Grid
Niels Leemput (KU Leuven, Belgium), Frederik Geth (KU Leuven, Belgium), Bert Claessens (VITO, Belgium), Juan Van Roy (KU Leuven, Belgium), Raf Ponnette (VITO, Belgium), Johan Driesen (KU Leuven, Belgium)
Design of Monitoring and Identification Systems for Smart Grids and Homes

PAPER FORUM

Chair: Stephen D. J. McArthur, University of Strathclyde, UK
Co-Chair: Prechanon Kumkratug, Kasetsart University, Thailand

2012ISGTEU-181
Noninvasive Monitoring of Residential Loads
Antonio C. S. Lima (Federal University of Rio de Janeiro, Brazil), Alexandre P. Alves da Silva (GE Global Research, Brazil), Diego Nascimento (Federal University of Rio de Janeiro, Brazil)

2012ISGTEU-084
Non-intrusive Appliance Recognition
Gerwin Hoogsteen (University of Twente, Netherlands), Jan Oene Krist (University of Twente, Netherlands), Vincent Bakker (University of Twente, Netherlands), Gerard J. M. Smit (University of Twente, Netherlands)

2012ISGTEU-028
Consumer Phase Identification in a Three Phase Unbalanced LV Distribution Network
Houman Pezeshki (Curtin University, Australia), Peter J. Wolfs (Curtin University, Australia)

2012ISGTEU-018
A Self-Calibrating Partial Discharge WSN for Condition Monitoring in the Future Smart Grid
José M. R. de Souza Neto (Universidade Federal de Campina Grande, Brazil), José S. da Rocha Neto (Universidade Federal de Campina Grande, Brazil), Long Chang (University of Strathclyde, UK), Robert Atkinson (University of Strathclyde, UK), Konstantinos Sasloglou (AGT Group, Germany), Ian A. Glover (University of Strathclyde, UK)

2012ISGTEU-172
A Calibration Method for Power Metering System With Electronic Instrument Transformers
Peng Wang (Tsinghua University, China), Dandan Tan (Beijing Tayuan Power Company, China)

2012ISGTEU-125
Implementation of the IEEE Std 1459-2010 Using Kalman Filter for Fundamental and Harmonics Detection
Newton Carlos Will (Federal University of Technology of Paraná, Brazil), Rafael Cardoso (Federal University of Technology of Paraná, Brazil)

2012ISGTEU-040
Parameter Identification of Unknown Radial Grids for Theft Detection
Sam Weckx (KU Leuven, Belgium), Carlos Gonzalez (KU Leuven, Belgium), Jeroen Tant (KU Leuven, Belgium), Tom De Rybel (KU Leuven, Belgium), Johan Driesen (KU Leuven, Belgium)
2012ISGTEU-024  
**Optimized Positioning of Measurements in Distribution Grids**  
David Echternacht (RWTH Aachen, Germany), Christian Linnemann (RWTH Aachen, Germany), Albert Moser (RWTH Aachen, Germany)

2012ISGTEU-067  
**Probabilistic Approach-based PMU Placement for Real-time Power System Vulnerability Assessment**  
Jaime C. Cepeda (National University of San Juan, Argentina), José L. Rueda (University of Duisburg-Essen, Germany), István Erlich (University of Duisburg-Essen, Germany), Delia G. Colomé (National University of San Juan, Argentina)

2012ISGTEU-101  
**Measurement Infrastructure for Observing and Controlling Smart Electrical Grids**  
Gert Rietveld (Van Swinden Laboratorium, Netherlands), Paul Clarkson (National Physical Laboratory, UK), Paul S. Wright (National Physical Laboratory, UK), U. Pogliano (Instituto Nationale di Ricerca Metrologica, Italy), Jean-Pierre Braun (METAS, Switzerland), Miha Kokalj (Slovenian Institute of Quality and Metrology, Slovenia), Rado Lapuh (Slovenian Institute of Quality and Metrology, Slovenia), Norbert Zisky (Physikalisch-Technische Bundesanstalt, Germany)

2012ISGTEU-234  
**State Identification and Automatic Control of Smart Low Voltage Grids**  
Nils Neusel-Lange (University of Wuppertal, Germany), Christian Oerter (University of Wuppertal, Germany), Markus Zdralle (University of Wuppertal, Germany)

2012ISGTEU-259  
**Sensing in Power Distribution Networks via Large Numbers of Smart Meters**  
Dejan Ilic (SAP, Germany), Stamatis Karnouskos (SAP, Germany), Per Goncalves Da Silva (SAP, Germany)

2012ISGTEU-234  
**Control of Smart Low Voltage Grids**  
Nils Neusel-Lange (University of Wuppertal, Germany), Christian Oerter (University of Wuppertal, Germany), Markus Zdralle (University of Wuppertal, Germany)

2012ISGTEU-082  
**New Information Technologies for State Estimation of Power Systems With FACTS**  
Piotr I. Bartolomey (Ural Federal University, Russia), Stanislav A. Eroshenko (Ural Federal University, Russia), Egor M. Lebedev (System Operator of the United Power System, Russia), Anton A. Suvorov (Ural Federal University, Russia)

2012ISGTEU-173  
**Family of Energy Management System for Smart Grid**  
Hongbin Sun (Tsinghua University, China), Boming Zhang (Tsinghua University, China), Wenchuan Wu (Tsinghua University, China), Qinglai Guo (Tsinghua University, China)
Voltage Control

PAPER PRESENTATION

Chair: Andreas Lugmaier, Siemens, Austria

2012ISGTEU-062
Distribution Network Voltage Control Using Energy Storage and Demand Side Response
Jialiang Yi (Durham University, UK), Pengfei Wang (Durham University, UK), Phillip C. Taylor (Durham University, UK), Peter J. Davison (Durham University, UK), Pádraig F. Lyons (Durham University, UK), Daniel Liang (Durham University, UK), Stuart Brown (Northern Powergrid, UK), David Roberts (EA Technology, UK)

2012ISGTEU-136
Optimization of the Steady Voltage Profile in Distribution Systems by Coordinating the Controls of Distributed Generations
Yujun He (Supélec, France), Marc Petit (Supélec, France), Philippe Dessante (Supélec, France)

2012ISGTEU-167
Consumer Voltage Regulation Using Coordinated Control of Distributed Static Synchronous Compensators – μSTATCOMs
Yuichiro Kabasawa (Central Research Institute of Electric Power Industry, Japan), Taku Noda (Central Research Institute of Electric Power Industry, Japan), Kentaro Fukushima (Central Research Institute of Electric Power Industry, Japan) Koshichi Nemoto (Central Research Institute of Electric Power Industry, Japan)

2012ISGTEU-223
Centralized Voltage Control Method Using Plural D-STATCOM With Controllable Dead Band in Distribution System With Renewable Energy
Naoyuki Takahashi (Waseda University, Japan), Yasuhiro Hayashi (Waseda University, Japan)

2012ISGTEU-224
Centralized Voltage Control Method of Load Ratio Control Transformer and Step Voltage Regulator for Bank Fault Restoration
Shinya Yoshizawa (Waseda University, Japan), Yasuhiro Hayashi (Waseda University, Japan), Masaki Tsuji (Tokyo Electric Power Company, Japan), Eiji Kamiya (Tokyo Electric Power Company, Japan)

2012ISGTEU-229
Regulated Distribution Transformers in Low-voltage Networks With a High Degree of Distributed Generation
Peter Esslinger (TU München, Germany), Rolf Witzmann (TU München, Germany)
Large-scale Impact of Demand Side Management

PAPER PRESENTATION

Chair: Jochen Schäfer, Siemens, Germany

2012ISGTEU-133
Optimizing the Use of Flexible Residential Demand for Balancing Wind Power
Muhajir Tadesse Mekonnen (KU Leuven, Belgium), Benjamin Dupont (KU Leuven, Belgium), Kristof De Vos (KU Leuven, Belgium), Kris Kessels (VITO, Belgium), Ronnie Belmans (KU Leuven, Belgium)

2012ISGTEU-050
Security-constrained Dispatch With Controllable Loads for Integrating Stochastic Wind Energy
Simon Kwok Kei Ng (University of Hong Kong, Hong Kong), Jin Zhong (University of Hong Kong, Hong Kong)

2012ISGTEU-174
Flexible Consumers Reserving Electricity and Offering Profitable Downward Regulation
Nicolas Höning (CWI Amsterdam, Netherlands), Han La Poutré (CWI Amsterdam, Netherlands)

2012ISGTEU-279
Reliability Performance of Smart Grids With Demand-side Management and Distributed Generation/Storage Technologies
Ignacio Hernando-Gil (University of Edinburgh, UK), Irinel-Sorin Ilie (University of Edinburgh, UK), Saša Z. Djokić (University of Edinburgh, UK)

2012ISGTEU-260
A Survey Towards Understanding Residential Prosumers in Smart Grid Neighbourhoods
Per Goncalves Da Silva (SAP, Germany), Stamatis Karnouskos (SAP, Germany), Dejan Ilic (SAP, Germany)

2012ISGTEU-150
Involvement of Flexible Loads in Transmission System Operation
Steffen Schlegel (TU Ilmenau, Germany), Robert Schwerdfeger (TU Ilmenau, Germany), Dirk Westermann (TU Ilmenau, Germany)
Tariffs and Customer Relations

PAPER PRESENTATION

Chair: Anke Weidlich, HS Offenburg University of Applied Sciences, Germany

2012ISGTEU-143
The Market Approach of Demand Management in the Power System
Vladimir S. Stepanov (Irkutsk State Technical University, Russia), Konstantin V. Suslov (Irkutsk State Technical University, Russia), Leonid M. Chebotnyagin (Irkutsk State Technical University, Russia), Natalia S. Moskalenko (Otto-von-Guericke University Magdeburg, Germany), Zbigniew A. Styczynski (Otto-von-Guericke University Magdeburg, Germany)

2012ISGTEU-202
Automated Residential Demand Response Based on Dynamic Pricing
Benjamin Dupont (KU Leuven, Belgium), Jeroen Tant (KU Leuven, Belgium), Ronnie Belmans (KU Leuven, Belgium)

2012ISGTEU-034
Influencing Domestic Customers' Market Behavior With Time Flexible Tariffs
Mike Ifland (TU Ilmenau, Germany), Nadine Exner (TU Ilmenau, Germany), Dirk Westermann (TU Ilmenau, Germany)

2012ISGTEU-241
Setting Regulatory Incentives for Continuity of Supply in Smart Distribution Grids
Rafael Cossent (Comillas Pontifical University, Spain)

2012ISGTEU-048
Assessment Method for Incentives and Their Optimization Considering Demand Response of Consumers
Thomas Holt Schneider (University of Duisburg-Essen, Germany), István Erlich (University of Duisburg-Essen, Germany)

2012ISGTEU-060
A New Customer Relation Model for Energy Utilities
Massimiliano Schillaci (MGTECH, Italy), Paola Bisaglia (DORA – STMicroelectronics Group, Italy), Andrea Giorgi (STMicroelectronics, Italy)
Energy Management of Systems With Battery Storage

PAPER PRESENTATION

Chair: Pieter Vingerhoets, KU Leuven, Belgium

2012ISGTEU-045
Robust Control Design for Integration of Energy Storage Into Frequency Regulation
Dinghuan Zhu (Carnegie Mellon University, USA), Gabriela Hug-Glanzmann (Carnegie Mellon University, USA)

2012ISGTEU-146
Operation Strategies of Hybrid Energy Storages in Low-voltage Distribution Grids With a High Degree of Decentralized Generation
Martin Lödl (TU München, Germany), Rolf Witzmann (TU München, Germany)

2012ISGTEU-160
Energy Management System With Dynamic Component Control for Efficiency Optimization
Natalia Moskalenko (Otto-von-Guericke University Magdeburg, Germany), Christoph Wenge (Fraunhofer IFF, Germany), Alexander Pelzer (Fraunhofer IFF, Germany), Przemyslaw Komarnicki (Fraunhofer IFF, Germany), Zbigniew A. Styczynski (Otto-von-Guericke University Magdeburg, Germany)

2012ISGTEU-141
Technical and Economic Assessment for Optimal Sizing of Distributed Storage
Ismael Miranda (University of Porto, Portugal), Nuno Silva (EFACEC, Portugal), Helder Leite (University of Porto, Portugal)

2012ISGTEU-159
Physical-hybrid Simulation for In-situ Evaluation of Energy Storage System
Nicholas Etherden (Luleå University of Technology, Sweden), Leopold Weingarten (STRI, Sweden), Math Bollen (Luleå University of Technology, Sweden)

2012ISGTEU-282
Load Frequency Control Using Distributed Batteries on the Demand Side With Communication Characteristics
Kohei Wada (University of Tokyo, Japan), Akihiko Yokoyama (University of Tokyo, Japan)
Real-time Modeling and Laboratories of Smart Grids

PAPER FORUM

Chair: Osama Mohammed, Florida International University, USA
Co-Chair: Olivier Beaude, Renault, France

2012ISGTEU-198
Electrical Design of an Efficiency House Plus
Jörg Dickert (TU Dresden, Germany), Tobias Heß (TU Dresden, Germany), Peter Schegner (TU Dresden, Germany), Clemens Felsmann (TU Dresden, Germany)

2012ISGTEU-054
An Experimental Study on Load-peak Shaving in Smart Homes by Means of Online Admission Control
Giuseppe Tommaso Costanzo (Technical University of Denmark, Denmark), Anna Magdalena Kosek (Technical University of Denmark, Denmark), Guchuan Zhu (Ecole Polytechnique de Montreal, Canada), Luca Ferrarini (Politecnico di Milano, Italy), Miguel F. Anjos (Ecole Polytechnique de Montreal, Canada), Gilles Savard (Ecole Polytechnique de Montreal, Canada)

2012ISGTEU-197
A Microgrid Structure Supplying a Research and Education Centre – Polish Case
Jacek Wasilewski (Warsaw University of Technology, Poland), Mirosław Parol (Warsaw University of Technology, Poland), Tomasz Wójtowicz (Warsaw University of Technology, Poland), Zbigniew Nahorski (Systems Research Institute of the Polish Academy of Science, Poland)

2012ISGTEU-036
Modeling and Validation of a Flywheel Energy Storage Lab-setup
Francisco Diaz-González (IREC, Spain), Andreas Sumper (IREC, Spain), Oriol Gomis-Bellmunt (IREC, Spain), Roberto Villafafila-Robles (Universitat Politecnica de Catalunya, Spain)

2012ISGTEU-135
Modeling and Investigation of Communication and Protection Scenarios for Smart Grid
Illia Bielchev (Otto-von-Guericke University Magdeburg, Ger.), André Naumann (Otto-von-Guericke University Magdeburg, Ger.), Alexander Visyashchev (Irkutsk State Technical University, Russia), Rainer Krebs (Siemens, Ger.), Zbigniew A. Styczynski (Otto-von-Guericke University Magdeburg, Ger.)
2012ISGTEU-232
A Virtual Laboratory for Microgrid Information and Communication Infrastructures
James Weimer (KTH Stockholm, Sweden), Yuzhe Xu (KTH Stockholm, Sweden), Carlo Fischione (KTH Stockholm, Sweden), Karl Henrik Johansson (KTH Stockholm, Sweden), Per Ljungberg (Ericsson, Sweden), Craig Donovan (Ericsson, Sweden), Ariane Sutor (Siemens, Germany), Lennart E. Fahlén (Swedish Institute of Computer Science, Sweden)

2012ISGTEU-007
A Generic Danish Distribution Grid Model for Smart Grid Technology Testing
Seung Tae Cha (Technical University of Denmark, Denmark), Qiuwei Wu (Technical University of Denmark, Denmark), Jacob Østergaard (Technical University of Denmark, Denmark)

2012ISGTEU-098
Analysis of the Italian Distribution System Evolution Through Reference Networks
Antonio Bracale (University of Napoli Parthenope, Italy), Roberto Caldon (University of Padova, Italy), Gianni Celli (University of Cagliari, Italy), Massimiliano Coppo (University of Padova, Italy), Diego Dal Canto (ENEL, Italy), Roberto Langella (University of Naples Federico II, Italy), Giacomo Petretto (ENEL, Italy), Fabrizio Pilo (University of Cagliari, Italy), Giuditta Pisano (University of Cagliari, Italy), Daniela Proto (University of Naples Federico II, Italy), Sandra Scalari (ENEL, Italy), Roberto Turri (University of Padova, Italy)

2012ISGTEU-196
Model of a Real Medium Voltage Distribution Network for Analysis of Distributed Generation Penetration in a Smart Grid Scenario
Francesco Adinolfi (University of Genova, Italy), Francesco Baccino (University of Genova, Italy), Mattia Marinelli (University of Genova, Italy), Stefano Massucco (University of Genova, Italy), Federico Silvestro (University of Genova, Italy)

2012ISGTEU-021
Comparison of Line Voltage Stability Indices Using Dynamic Real Time Simulation
Marco Cupelli (RWTH Aachen, Germany), Christine Doig Cardet (RWTH Aachen, Germany), Antonello Monti (RWTH Aachen, Germany)

2012ISGTEU-231
Investigation of the Adaptability of Transient Stability Assessment Methods to Real-time Operation
Tilman Weckesser (Technical University of Denmark, Denmark), Hjörtur Jóhannsson (Technical University of Denmark, Denmark), Stefan Sommer (Technical University of Denmark, Denmark), Jacob Østergaard (Technical University of Denmark, Denmark)

2012ISGTEU-244
Real-time Implementation of an Automatic Voltage Stabilizer for HVDC Control
Kim Weyrich (FH Frankfurt University of Applied Sciences, Germany), Rujijo Leelaruji (KTH Stockholm, Sweden), Walter Kuehn (FH Frankfurt University of Applied Sciences, Germany), Luigi Vanfretti (KTH Stockholm, Sweden)
Methods of Modeling Uncertainty and Reliability

PAPER PRESENTATION

Chair: Hongbin Sun, Tsinghua University, China

2012ISGTEU-073
Electricity Price Forecasting Considering Residual Demand
Amir Motamedi (AESO, Canada), Christian Geidel (TU Berlin, Germany), Hamidreza Zareipour (University of Calgary, Canada), William D. Rosehart (University of Calgary, Canada)

2012ISGTEU-170
Methods for Energy Price Prediction in the Smart Grid
Emanuele Crisostomi (University of Pisa, Italy), Mauro Tucci (University of Pisa, Italy), Marco Raugi (University of Pisa, Italy)

2012ISGTEU-041
Simulating the Optimized Participation of Distributed Controllable Generators at the Spot Market for Electricity Considering Prediction Errors
Raphael Hollinger (Fraunhofer ISE, Germany), Simon Hamperl (Fraunhofer ISE, Germany), Thomas Erge (Fraunhofer ISE, Germany), Bernhard Wille-Hausmann (Fraunhofer ISE, Germany), Christof Wittwer (Fraunhofer ISE, Germany)

2012ISGTEU-068
Identification of Gaussian Mixture Model Using Mean Variance Mapping Optimization: Venezuelan Case
Francisco M. Gonzalez-Longatt (Coventry University, UK), Jose L. Rueda (University of Duisburg-Essen, Germany), István Erlich (University of Duisburg-Essen, Germany), Dimitar Bogdanov (Technical University of Sofia, Bulgaria), Walter Villa (National University of San Juan, Argentina)

2012ISGTEU-171
Intelligent State Space Pruning With Local Search for Power System Reliability Evaluation
Robert C. Green II (University of Toledo, USA), Lingfeng Wang (University of Toledo, USA), Mansoor Alam (University of Toledo, USA)

2012ISGTEU-213
Statistical Analysis of Power Quality Disturbances Propagation by Means of the Method of Disturbances Interaction
Andrés Pavas (Universidad Nacional de Colombia, Colombia), Horacio Torres-Sánchez (Universidad Nacional de Colombia, Colombia), Volker Staudt (Ruhr University Bochum, Germany)
Methods for Integration of Photovoltaics

PAPER PRESENTATION

Chair: Debora Coll-Mayor, SMA, Germany

2012ISGTEU-109
Impact of High-penetration PV on Distribution Feeders
Rossen Tzartzev (University of Texas at Austin, USA), W. Mack Grady (University of Texas at Austin, USA), Jay Patel (Kansas City Power & Light, USA)

2012ISGTEU-185
Evaluating Improved Generation Efficiency: One Year Using Residential PV Voltage Control With a Clustered Residential Grid-interconnected PV
Yusuke Miyamoto (Kandenko, Japan), Yasuhiro Hayashi (Waseda University, Japan)

2012ISGTEU-188
Modeling Photovoltaic Optimized Charging of Electric Vehicles
Lena-Marie Ritte (ILF Consulting Engineers, Germany), Stefan Mischinger (TU Berlin, Germany), Kai Strunz (TU Berlin, Germany), Johannes Eckstein (E.ON, Germany)

2012ISGTEU-264
Using Photovoltaic Systems to Improve Voltage Control in Low Voltage Distribution Networks
Justino Rodrigues (INESC Porto, Portugal), Fernanda Resende (INESC Porto, Portugal)

2012ISGTEU-086
Energy Storage Options for Voltage Support in Low-voltage Grids With High Penetration of Photovoltaic
Francesco Marra (SMA, Germany), Y. Tarek Fawzy (SMA, Germany), Thorsten Bülo (SMA, Germany), Boštjan Blažič (University of Ljubljana, Slovenia)

2012ISGTEU-288
A Maximum Power Point Tracker Variable–DC–link Three–phase Inverter for Grid–connected PV Panels
Fernando Mancilla–David (University of Colorado Denver, USA), Arnaldo Arancibia (TU Berlin, Germany), F. Riganti–Fulginei (University of Roma Tre, Italy), Edward Muljadi (NREL, USA), Matteo Cerroni (University of Roma Tre, Italy)
Energy Management in Smart Homes

PAPER PRESENTATION

Chair: Matthias D. Galus, Swiss Federal Office of Energy, Switzerland

2012ISGTEU-092
Integrated Energy Optimization With Smart Home Energy Management Systems
Ballard Asare-Bediako (Eindhoven University of Technology, Netherlands) Paulo F. Ribeiro (Eindhoven University of Technology, Netherlands), Wil L. Kling (Eindhoven University of Technology, Netherlands)

2012ISGTEU-216
Distributed Energy Resources for a Zero-energy Neighborhood
Rosa Morales González (Eindhoven University of Technology, Netherlands), Ballard Asare-Bediako (Eindhoven University of Technology, Netherlands), Sjef Cobben (Eindhoven University of Technology, Netherlands), Wil L. Kling (Eindhoven University of Technology, Netherlands), Gerrit Scharrenberg (NV RENDO, Netherlands), Dirk Dijkstra (NV RENDO, Netherlands)

2012ISGTEU-006
Platform for Coordination of Energy Generation and Consumption in Residential Neighborhoods
Vladimir Bicik (Czech Technical University, Czech Republic), Ondrej Holub (Honeywell, Czech Republic), Karel Marik (Honeywell, Czech Republic), Marek Sikora (Honeywell, Czech Republic), Petr Stluka (Honeywell, Czech Republic), Reinhilde D’hulst (VITO, Belgium)

2012ISGTEU-058
Load Models for Home Energy System and Micro Grid Simulations
Christoph Molitor (RWTH Aachen, Germany), Kanali Togawa (RWTH Aachen, Germany), Sebastian Bolte (RWTH Aachen, Germany), Antonello Monti (RWTH Aachen, Germany)

2012ISGTEU-236
Energy Management Problem in Dwellings: Combining Centralized and Distributed Solving Approaches
Hussein Joumaa (INP Grenoble, France), Gregory De-Oliviera (INP Grenoble, France), Stephane Ploix (INP Grenoble, France), Mireille Jacomino (INP Grenoble, France)
Management of Electric Vehicles

PAPER PRESENTATION

Chair: Janusz Bialek, University of Durham, UK

2012ISGTEU-195
Requirements for EV Charge Stations With Photovoltaic Generation and Storage
Ignasi Cairo (IREC, Spain), Andreas Sumper (IREC, Spain)

2012ISGTEU-083
Case Study of the Load Demand of Electric Vehicle Charging and Optimal Charging Schemes in an Urban Area
Ville Tikka (Lappeenranta University of Technology, Finland), Jukka Lassila (Lappeenranta University of Technology, Finland), Henri Makkonen (Lappeenranta University of Technology, Finland), Jarmo Partanen (Lappeenranta University of Technology, Finland)

2012ISGTEU-120
Forecasting Issues for Managing a Portfolio of Electric Vehicles Under a Smart Grid Paradigm
Ricardo J. Bessa (INESC Porto, Portugal), Manuel A. Matos (INESC Porto, Portugal)

2012ISGTEU-249
Coordination Strategies for Distribution Grid Congestion Management in a Multi-actor, Multi-objective Setting
Peter Bach Andersen (Technical University of Denmark, Denmark)

2012ISGTEU-032
Economics of V2G Frequency Regulation in Consideration of the Battery Wear
Sekyung Han (AIST, Japan), Soohee Han (Konkuk University, Korea)
Energy Management of Systems With Heat Pumps and Thermal Storage

PAPER FORUM

Chair: William D. Rosehart, University of Calgary, Canada
Co-Chair: Nabeel Tawalbeh, University of Jordan, Jordan

2012ISGTEU-261
Design of Demand Management System for Householder Heating and Cooling
Suyang Zhou (University of Birmingham, UK), Xiao-Ping Zhang (University of Birmingham, UK), Xuan Yang (University of Birmingham, UK)

2012ISGTEU-030
An ARTMAP-incorporated Multi-agent System for Building Intelligent Heat Management
Maizura Mokhtar (University of Central Lancashire, UK), Xiongwei Liu (University of Central Lancashire, UK)

2012ISGTEU-078
Fine-time-granularity Fast Demand Control of Building HVAC Facilities for Future Smart Grid
Chuzo Ninagawa (Gifu University, Japan), Seiji Kondo (Mitsubishi Heavy Industries, Japan), Shinichi Isozumi (Mitsubishi Heavy Industries, Japan), Hiroki Yoshida (Gifu University, Japan)

2012ISGTEU-077
Demand Side Management of Electric Boilers
Elke Klaassen (Eindhoven University of Technology, Netherlands), Yan Zhang (ABB, Switzerland), Ioannis Lampropoulos (Eindhoven University of Technology, Netherlands), Han Slootweg (Eindhoven University of Technology, Netherlands)

2012ISGTEU-238
Shifting of Thermal and Schedulable Loads Based on Abstract Cost Profiles
Markus Damm (Vienna University of Technology, Austria), Milan Lukic (University of Novi Sad, Serbia), Stefan Mahlknecht (Vienna University of Technology, Austria), Jan Haase (Vienna University of Technology, Austria), Christoph Grimm (Vienna University of Technology, Austria), Veljko Malbasa (University of Novi Sad, Serbia)

2012ISGTEU-039
Aggregating the Flexibility Provided by Domestic Hot-water Boilers to Offer Tertiary Regulation Power in Switzerland
Olle Sundström (IBM, Switzerland), Carl Binding (IBM, Switzerland), Dieter Gantenbein (IBM, Switzerland), Daniel Berner (BKW FMB Energy, Switzerland), Wolf-Christian Rumsch (BKW FMB Energy, Switzerland)
<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012ISGTEU-001</td>
<td>Integration of Heat Pumps in Distribution Grids: Economic Motivation for Grid Control</td>
<td>Stefan Nykamp (University Twente, Netherlands), Albert Molderink (University Twente, Netherlands), Vincent Bakker (University Twente, Netherlands), Hermen A. Toersche (University Twente, Netherlands), Johann L. Huiink (University Twente, Netherlands), Gerard J. M. Smit (University Twente, Netherlands)</td>
</tr>
<tr>
<td>2012ISGTEU-272</td>
<td>Electricity Demand Impact From Increased Use of Ground Sourced Heat Pumps</td>
<td>Javier Campillo (Mälardalen University, Sweden), Fredrik Wallin (Mälardalen University, Sweden), Iana Vassileva (Mälardalen University, Sweden), Erik Dahlquast (Mälardalen University, Sweden)</td>
</tr>
<tr>
<td>2012ISGTEU-065</td>
<td>Modeling a Vendor Independent IEC 61850 Profile for Energy Management of Micro-CHP Units</td>
<td>Stefan Feuerhahn (Fraunhofer ISE, Germany), Raphael Hollinger (Fraunhofer ISE, G.), Chau Do (Fraunhofer ISE, G.), Bernhard Wille-Haussmann (Fraunhofer ISE, G.), Christof Wittwer (Fraunhofer ISE, G.)</td>
</tr>
<tr>
<td>2012ISGTEU-163</td>
<td>Combined Heat and Power and Consumption Optimization in a SCADA-based System</td>
<td>Filipe Fernandes (Polytechnic of Porto, Portugal), Hugo Morais (P. of Porto, Portugal), Pedro Faria (P. of Porto, Portugal), Zita Vale (P. of Porto, Portugal), Carlos Ramos (P. of Porto, Portugal)</td>
</tr>
<tr>
<td>2012ISGTEU-193</td>
<td>Development of a Control Strategy for Mini CHP Plants for an Active Voltage Management in Low Voltage Networks</td>
<td>Diego I. Hidalgo Rodriguez (Fraunhofer IWES, Germany), Lukas Spitalny (TU Dortmund, Germany), Johann Myrzik (TU Dortmund, Germany), Martin Braun (University of Stuttgart, Germany)</td>
</tr>
<tr>
<td>2012ISGTEU-270</td>
<td>Demand Side Management Through Heat Pumps, Thermal Storage and Battery Storage to Increase Local Self-consumption and Grid Compatibility of PV Systems</td>
<td>Christopher J. C. Williams (ZSW, Germany), Jann O. Binder (ZSW, Germany), Tobias Kelm (ZSW, Germany)</td>
</tr>
<tr>
<td>2012ISGTEU-280</td>
<td>Thermal Comfort Analysis During Power Fluctuation Compensation by Use of Air-conditioning System</td>
<td>Shunsuke Kawachi (University of Tokyo, Japan), Hiroto Hagiwara (University of Tokyo, Japan), Jumpei Baba (University of Tokyo, Japan), Eisuke Shimoda (Shimizu Corporation, Japan)</td>
</tr>
</tbody>
</table>
Modeling of Load and Battery Resources

PAPER PRESENTATION

Chair: Parimal Acharjee, NIT Durgapur, India

2012ISGTEU-064
An Improved Lithium-ion Battery Model With Temperature Prediction Considering Entropy
Xue Feng (Nanyang Technological University, Singapore), Hoay B. Gooi (Nanyang Technological University, Singapore), Shuai X. Chen (Nanyang Technological University, Singapore)

2012ISGTEU-251
A Dynamic Battery Model for Simulation of Battery-to-grid Applications
Clemens Guenther (ZSW, Germany), Joaquin Klee Barillas (ZSW, Germany), Stefan Stumpp (ZSW, Germany), Michael A. Danzer (ZSW, Germany)

2012ISGTEU-137
Processing of Load Parameters Based on Existing Load Models
Lidija M. Korunovic (University of Niš, Serbia), Stefan Sterpu (EDF, France), Saša Z. Djokić (University of Edinburgh, UK), Koji Yamashita (Central Research Institute of Electric Power Industry, Japan), Sergio Martinez Villanueva (Red Eléctrica de España, Spain), Jovica V. Milanovic (University of Manchester, UK)

2012ISGTEU-262
Multi-scale Electrical Load Modelling for Demand-side Management
Adam J. Collin (University of Edinburgh, UK), George Tsagarakis (University of Edinburgh, UK), Aristides E. Kiprakis (University of Edinburgh, UK), Stephen McLaughlin (Heriot-Watt University, UK)

2012ISGTEU-182
Passivity-based Control of Synchronous Motors
Hua Xue (Shanghai University of Electric Power, China), Yufei Wang (Shanghai University of Electric Power, China)
Optimal Power Flow Control via Dispatching, Demand Response, and Reconfiguration

PAPER PRESENTATION

Chair: Dirk Westermann, TU Ilmenau, Germany

2012ISGTEU-132
Area-level Reduction of Wheeling Loop Flows in Regional Power Networks
Sanja Cvijic (Carnegie Mellon University, USA), Marija Ilic (Carnegie Mellon University, USA)

2012ISGTEU-203
The Autonomic Power System – Network Operation and Control Beyond Smart Grids
Stephen D. J. McArthur (University of Strathclyde, UK), Philip C. Taylor (Durham University, UK), Graham W. Ault (University of Strathclyde, UK), James E. King (Parsons Brinckerhoff, UK), Dimitrios Athanasiadis (University of Strathclyde, UK), Varvara D. Alimisis (Durham University, UK), Maciej Czaplewski (University of Strathclyde, UK)

2012ISGTEU-011
Smart Grid Reconfiguration Using Simple Genetic Algorithm and NSGA-II
Parvathy Chittur Ramaswamy (KU Leuven, Belgium), Geert Deconinck (KU Leuven, Belgium)

2012ISGTEU-127
Distributed Generation Management: An Optimal Sensitivity Approach for Decentralized Power Control
Vito Calderaro (University of Salerno, Italy), Vincenzo Galdi (University of Salerno, Italy), Giovanni Massa (University of Salerno, Italy), Antonio Piccolo (University of Salerno, Italy)

2012ISGTEU-269
Integration of Optimal Reconfiguration Tools in Advanced Distribution Management System
Sergio Bruno (Polytechnic School of Bari, Italy), Silvia Lamonaca (Polytechnic School of Bari, Italy), Massimo La Scala (Polytechnic School of Bari, Italy), Ugo Stecchi (Polytechnic School of Bari, Italy)