AMPS 2011, sponsored by the IEEE Instrumentation and Measurement Society, is the 2nd edition of the international workshop on Applied Measurements in Power Systems and has the main goal of highlighting measurement issues in modern electric power networks and encouraging discussion among experts coming from academia as well as from industry and electric utilities.

It is well known that measurement applications in power systems are continuously evolving, with new challenging aspects to be considered in monitoring, managing and controlling both the power grid and several of its components (generators, transformers, converters, etc.).

In this evolution, the development of more performing measurement systems and devices is associated to the need of defining new procedures to ensure the quality of the data.

As an example, the need for a new generation of voltage and current transducers comes along with the necessity to provide on-site verifications of the transducers installed in the power systems.

From the same point of view, despite the fact that Phasor Measurement Units (PMUs) are worldwide recognized as crucial devices for the management of modern power networks and the development of Smart Grids, several critical issues are still open about the meaning of the synchrophasors measured by these devices in some conditions and consequently their practical use in wide area monitoring systems.

Again, by considering the impact of ICT infrastructures in modern measurement systems for power grids, a measurement perspective is required to deal with critical aspects, such as synchronization, communication media, etc., so that the accuracy of the results provided by these complex measurement systems is guaranteed.

The papers collected in these Proceedings cover the above topics and many others, like power quality and diagnostics of components, by merging the methodological aspects with the concerns arising from practical applications.

We hope this workshop will represent a qualified forum for highlighting problems, proposing solutions and, more in general, providing contributions to the advancement of the knowledge on these topics.

Welcome to AMPS 2011!

**General Co-Chairs**
Prof. Lorenzo Peretto, *University of Bologna - Bologna, Italy*
Prof. Carlo Muscas, *University of Cagliari - Cagliari, Italy*

**Technical Program Chair**
Prof. Antonello Monti, *E.ON Energy Research Center RWTH Aachen University - Aachen, Germany*
AMPS 2011 Organizing Committee

General Chairs
Lorenzo Peretto, University of Bologna, Italy
Carlo Muscas, University of Cagliari, Italy

Technical Program Chair
Antonello Monti, E.ON Energy Research Center RWTH Aachen University, Germany

Steering Committee
Alessandro Ferrero, Polytechnic of Milano, Italy
Mihaela Albu, Politehnica University of Bucharest, Romania
Julio Barros, University of Cantabria, Spain
Ferdinanda Ponci, E.ON Energy Research Center RWTH Aachen University, Germany
Roberto Tinarelli, University of Bologna, Italy

Conference Management
Conference Catalysts, LLC, USA
Wednesday, September 28

8:30 AM - 9:00 AM  Registration

9:00 AM - 10:15 AM  Opening Session
Welcome Address

9:15 AM - 10:15 AM  Keynote Speech
Speaker: Martin Kahmann

Contributions of the German National Metrology Institute PTB to the development of Smart Electrical Grids in Germany

10:15 AM - 10:45 AM  Coffee Break

10:45 AM - 12:30 PM  Models and instruments for measurements of nonsinusoidal quantities
Session Chair: Carlo Muscas, University of Cagliari, Italy

Unbalance Analysis for Electrical Power Systems in the Presence of Harmonics and Interharmonics
  R. Langella, Second University of Naples, Italy
  A. Testa, Second University of Naples, Italy
  A. E. Emanuel, Worcester Polytechnic Institute, USA

A metrological comparison between different methods for harmonic pollution metering
  Alessandro M. Ferrero, Politecnico di Milano, Italy
  Marco Prioli, Politecnico di Milano, Italy
  Simona Salicone, Politecnico di Milano, Italy

Applications of wavelet transforms in electric power quality: harmonic distortion
  Julio Barros, University of Cantabria, Spain
  Ramón I. Diego, University of Cantabria, Spain
  Matilde Apráiz, University of Cantabria, Spain

12:30 PM - 2:30 PM  Lunch

2:30 PM - 4:00 PM  Synchrophasors
Session Chair: Julio Barros, University of Cantabria, Spain

Accuracy of DFT-based Synchrophasor Estimators at Off-nominal Frequencies
  David Macii, University of Trento, Italy
  Dario Petri, University of Trento, Italy
  Alessandro Zorat, University of Trento, Italy

Performance comparison of algorithms for synchrophasors measurements under dynamic conditions
  Paolo Castello, University of Cagliari, Italy
  Carlo Muscas, University of Cagliari, Italy
  Paolo Attilio Pegoraro, University of Cagliari, Italy
Transient Behavior of the Full-Cycle DFT Phasor Estimator
Dario Petri, University of Trento, Italy
Daniel Belega, University of Timisoara, Romania

4:00 PM - 4:30 PM  Coffee Break

4:30 PM - 6:30 PM

Voltage and current transducers I
Session Chair: Lorenzo Peretto, University of Bologna, Italy

Development and Use of a Medium Voltage
Gabriella Crotti, Istituto Nazionale di Ricerca Metrologia, Italy
Domenico Giordano, Istituto Nazionale di Ricerca Metrologica, Italy
Angelo Sardi, Istituto Nazionale di Ricerca Metrologica, Italy

System for High Voltage Current Transformers Onsite Verification
M. M. Costa, Eletrobras Eletronorte, Brazil
J. C. D. Carvalho, Eletrobras Eletronorte, Brazil
D. B. Dahlke, LACTEC, Brazil
P. H. M. Santos, COPEL, Brazil
Thursday, September 29

9:00 AM - 10:30 AM

**Voltage and current transducers II**
Session Chair: Alessandro M Ferrero, Politecnico di Milano, Italy

**Instrument Transformers: a Different Approach to Their Modeling**
Francesco Della Torre, Politecnico di Milano, Italy
Marco Faifer, Politecnico di Milano, Italy
Adriano Morando, Politecnico di Milano, Italy
Roberto Ottoboni, Politecnico di Milano, Italy
Claudio Cherbaucich, RSE S.p.A., Italy
Mario Gentili, RSE S.p.A., Italy
Paolo Mazza, RSE S.p.A., Italy

**A Self-Shielded Current Transducer For Power System Application**
Maria Gabriella Masi, University of Bologna, Italy
Lorenzo Peretto, University of Bologna, Italy
Roberto Tinarelli, University of Bologna, Italy

**An AC/DC sensing method based on adaptive magnetic modulation technology with double feedback properties**
Min Yingzong, Corporate Technology, Siemens China Ltd, China
Du Feng, Corporate Technology, Siemens China Ltd, China
Chen Weigang, Corporate Technology, Siemens China Ltd, China
Zhuo Yue, Corporate Technology, Siemens China Ltd, China
Michael Anheuser, Siemens AG, Germany

10:30 AM - 11:00 AM Coffee Break

11:00 AM - 12:30 PM

**State Estimation and WAMS**
Session Chair: Alfredo Testa, Second University of Naples, Italy

**Development of a flexible laboratory testing platform for assessing steady-state and transient performance of WAMS**
Alexandru Nechifor, University of Manchester, United Kingdom
Pawel Regulski, University of Manchester, United Kingdom
Deyu Cai, University of Manchester, United Kingdom
Vladimir Terzija, University of Manchester, United Kingdom

**Analysis of Distribution Grids: State Estimation using Model Uncertainties**
Mihaela Albu, Politehnica University of Bucharest, Romania
Elias Kyriakides, University of Cyprus, Cyprus
Ana Maria Dumitrescu, Politehnica University of Bucharest, Romania
Irina Florea, Politehnica University of Bucharest, Romania

**Impact of PMU Synchronization on Wide Area State Estimation**
Junjie Tang, RWTH Aachen University, Germany
Marco Lixia, University of Cagliari, Italy
Junqi Liu, RWTH Aachen University, Germany
Carlo Muscas, University of Cagliari, Italy
Antonello Monti, RWTH Aachen University, Germany
12:30 PM - 2:30 PM  Lunch

2:30 PM - 4:00 PM

Panel Session: Open issues in power system measurements
Session Chairs: Mihaela Albu, Politehnica University of Bucharest, Romania & Lorenzo Peretto, University of Bologna, Italy

4:00 PM - 4:30 PM  Coffee Break

4:30 PM - 5:30 PM

Open issues in power system measurements
Session Chairs: Mihaela Albu, Politehnica University of Bucharest, Romania & Lorenzo Peretto, University of Bologna, Italy

8:00 PM - 10:00 PM  Social Dinner
Friday, September 30

9:00 AM - 11:00 AM

Measurements on electric power plants and machines
Session Chair: Antonello Monti, RWTH Aachen University, Germany

A Measurement System for the On-Line Diagnostics of Power Transformer Bushings
Marco Faifer, Politecnico di Milano, Italy
Roberto Ottoboni, Politecnico di Milano, Italy
Sergio Toscani, Politecnico di Milano, Italy

The Measurement Layer of the Virtual Synchronous Generator Operation in the Field Test
Mihaela Albu, Politehnica University of Bucharest, Romania
Mihai Calin, Politehnica University of Bucharest, Romania
Dumitru Federenciuc, Electrica S.A., Romania
Javier Díaz, UIE GmbH, Germany

Monitoring of a PV system: the role of the panel model
Loredana Cristaldi, Politecnico di Milano, Italy
Marco Faifer, Politecnico di Milano, Italy
Marco Rossi, Politecnico di Milano, Italy
Ferdinanda Ponci, RWTH Aachen University, Germany

Control Method for Grid-Connected Converters in Systems with Non-Ideal Supply Voltage
Herbert Ginn, III, University of South Carolina, USA

11:00 AM - 11:30 AM Coffee Break

11:30 AM - 1:00 PM

ICT issues in power system measurements
Session Chair: Ferdinanda Ponci, RWTH Aachen University, Germany

ICT Architecture for an Integrated Distribution Network Monitoring
D. Della Giustina, A2A Reti Elettriche SpA, Italy
S. Repo, Tampere University of Technology, Finland
S. Zanini, A2A Reti Elettriche SpA, Italy
L. Cremaschini, A2A Reti Elettriche SpA, Italy

Simulation of a Power Line Communication System in Medium and Low Voltage Distribution Networks
Antonio Cataliotti, University of Palermo, Italy
Valentina Cosentino, Università di Palermo, Italy
Dario Di Cara, Università di Palermo, Italy
Giovanni Tinè, National Research Council, Italy

Time Synchronization Concerns in Substation Automation System
Paolo Ferrari, University of Brescia, Italy
Alessandra Flammini, University of Brescia, Italy
Stefano Rinaldi, University of Brescia, Italy
Gunnar Prytz, ABB Corporate Research, Norway

1:00 PM - 1:30 PM Closing Session