



University of Pavia
PhD School of Electrical and Electronics Engineering and Computer Science
PhD School of Microelectronics

Intensive School for Advanced Graduate Studies
A Smart Grid for Energy Management: the IoT approach

7th – 10th June 2021 – online sessions

| | Monday, June 7, 2021 | Tuesday, June 8, 2021 | Wednesday, June 9, 2021 | Thursday, June 10, 2021 |
|----------------|--|---|---|--|
| 09.00 10.45 | 09.00 Paolo Di Barba University of Pavia Introduction 09.30 Dario Zaninelli Politecnico di Milano Opening lecture | Piero Malcovati University of Pavia Measurement processes in electrical power networks 1 | Slawomir Hausman Lodz University of Technology 5G and Industrial IoT 1 | Maria Evelina Mognaschi University of Pavia Environmental compatibility and human body exposure Paolo Di Barba University of Pavia Numerical models for electromagnetic compatibility |
| 11.00 12.30 | Cristian Bovo University of Pavia Power network definition and tools 1 | Piero Malcovati University of Pavia Measurement processes in electrical power networks 2 | Slawomir Hausman Lodz University of Technology 5G and Industrial IoT 2 | Francesco Gnesotto University of Padova The future of energy: smart grid and nuclear fusion |
| 14.00 15.30 | Francesco Benzi University of Pavia Power network definition and tools 2 | Antonella Ferrara University of Pavia Control and state estimation in modern power networks | Pericle Zanchetta University of Nottingham and University of Pavia Smart transformers and power electronics for the smart grid 1 | Ezio Bassi University of Pavia Active and reactive power regulation: an overview |
| 16.00 17.30 | Francesco Benzi University of Pavia Industrial IoT and smart metering | Andrea Mazzanti University of Pavia Synchronization with the Phase- Locked Loop (PLL) | Pericle Zanchetta University of Nottingham and University of Pavia Smart transformers and power electronics for the smart grid 2 | Virginia Canazza REF-E Srl, Milano Electricity market |

Abstract

Nowadays, the availability of renewable and innovative energy sources along with the standard thermal ones makes the bidirectional energy flow between the grid and distributed sources a key concept, thus requiring a smarter control (Smart Grid). In this respect, the course aims at giving a general overview of systems and devices, characterizing the smart grid, as well as an insight on models, algorithms and strategies for the optimal distribution of energy resources. This issue is of very current interest and in evolution, thanks to recent enabling technologies (IoT approach, cloud data, novel control strategies). On the other hand, however, all these topics are not yet fully considered in engineering curricula, so that the proposed Course aims at bridging the gap. The approach must include, as a primary goal, such relevant issues as a safe energy provision and environment sustainability, also asking for a systematic use of economic issues implied with the energy market. Therefore, the course covers a large spectrum of disciplines, asking for a coordinated approach and merging different skills covered in this proposal by expert speakers.

The course is mainly addressed to a broad audience including PhD students and young researcher, but also professional engineers operating in the industry area.

Organizing Committee

Francesco Benzi (Chair)
Paolo Di Barba
Roberto Galdi (Secretary)
Piero Malcovati

PhD Chairs

Paolo Di Barba
Piero Malcovati

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