POST GRADUATE COURSE ON SMART GRIDS

by prof.dr.ir. Geert Deconinck
KU Leuven, Belgium

26-28 Nov 2013

Course schedule and venues: 26-27 Nov 9:15-16 in TS 128
28 Nov: 9:15-15 in TS 101
Audience: MSc and PhD students interested in smart grids
ECTS: TBA
Host of the course at the DCE: Nandana Rajatheva.

Objectives

Provide insights and understanding in smart electrical distribution systems, as a key concept for smart grids: understanding monitoring, control and applications in distribution grids.

Contents

Part 1

Towards smart distribution systems (7x45’)

• classical distribution grids o electrical networks
  o distribution system operators
  o consumers
  o performance parameters

• distribution system automation
• evolution in distribution grids
• smart grids o definitions
  o smart grid applications

• smart homes, grids, cities
• smart meters o functionality
  o energy efficiency
  o European perspective
Part 2

Information and communication technology (5x45’)

• communication architecture and SCADA
• communication for distribution automation
• standards and interoperability
• protocols for smart grids and smart meters

Part 3

Information processing in smart grids (3x45’)

• control coordination taxonomy
• coordination for appliance control
• multi-agent systems
• demand response programmes
• dependability and security for smart metering
• cybersecurity aspects

Part 4

Applications (3x45’)

• cases, SGAM

Evaluation

Based on a written assignment, to be submitted within a month after the end of the course.

Curriculum vitae

Prof.dr.ir. Geert Deconinck is full professor (gewoon hoogleraar) at the Department of Electrical Engineering (ESAT) of the KU Leuven (Belgium). He performs research on the design of dependable system architectures for industrial control in general, and for smart grids in particular. In these fields, he has authored and co-authored more than 300 publications in international journals and conference proceedings. He teaches topics related to industrial automation and electrical engineering, smart grids, lighting, and measurement techniques. He received his M.Sc. in Electrical Engineering and his Ph.D. in Engineering from the KU Leuven, Belgium in 1991 and 1996 respectively. Since 2012, he heads the research group ELECTA (Electrical Energy and Computing Architectures) which consists of 60+ PhD researchers and 5 full professors. He is an active member of EnergyVille, the European research centre on sustainable energy for smart cities. He is a fellow of the Institute of Engineering and Technology (IET) and a senior member of the IEEE and can be reached at Geert.Deconinck@esat.kuleuven.be.3Infotech Doctoral School, Oulu university prof.dr.ir. Geert Deconinck