

### **Poland chapter - Prof. Haitham Abu-Rub visiting Gdansk University of Technology**

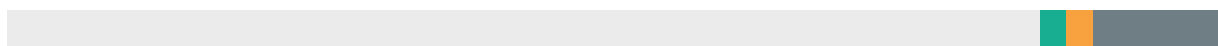
Prof. Haitham Abu-Rub, IEEE Senior Member, professor and chair of the Electrical and Computer Engineering Program Texas A&M University at Qatar (TAMUQ), the managing director of the Smart Grid Centre – Extension in Qatar, and a chief scientist with Qatar Environment and Energy Research Institute, was invited by Poland Joint Chapter IEL-013/PEL-035 to visit the Gdansk University of Technology (GUT) in Poland in June 9–11, 2015. The aim of the visit was to give a speech on the smart grid laboratory at the TAMUQ, see a new smart grid laboratory under construction at the GUT, and discuss the possible cooperation in the area of smart grids between the two universities.

The speech covered research activities performed in the smart grid lab of the TAMUQ. The lab actively performs research in various key areas of smart grids including electricity production and consumption, clean energy enabling technologies, transportation systems, information and communications services and energy-related markets. Prof. Abu-Rub gave brief descriptions of various research and investments projects of the Smart Grid Center. Most of the research projects performed in Qatar are related to the PV and wind renewable energy conversion systems, grid tie converters, microgrids, load management, electric storage, and other related aspects. During the seminar Prof. Abu-Rub presented various low power and high power renewable energy systems with various control strategies.

Prof. Abu-Rub visited the new smart grid laboratory of the GUT named Laboratory for Innovative Power Technologies and Integration of Renewable Energy Sources (LINTE<sup>2</sup> for short). The laboratory is a complex experimental installation dedicated to R&D activities in the area of electric power systems. The installation has the form of a flexibly configured reduced-scale power system equipped with state-of-the-art apparatus, power generating/converting units (collectively called functional units) and a programmable distributed control system based on Ethernet communication. The installation includes the following functional units: autonomous generating units (a photovoltaic power plant, 2 diesel gensets, a gas microturbine), emulators of generating units (4 generating units driven by electric motors and emulating the properties of turbogenerators and wind generators), circuits emulating HV and MV transmission lines, energy storage units (battery, flywheel, supercapacitors), FACTS units (SVC, STATCOM, UPFC, HVDC), multipurpose transformers with on-load power-electronic tap changers, electric vehicle charging station and consumer units (3 regenerative and 1 dissipative). A SCADA controlled 9-bus switchgear system with 420+ contactors and circuit breakers ensures unparalleled freedom in connecting the units into various power grids. LINTE<sup>2</sup> will be operational as of the beginning of 2016.

After the tour of the lab, Prof. Abu-Rub discussed with Prof. Janusz Nieznanski – the head of the lab – the possible areas and forms of cooperation between the Smart Grid Centre and LINTE<sup>2</sup>.

*Jaroslaw Guzinski, vice-chair of Poland Joint Chapter IEL-013/PEL-035*





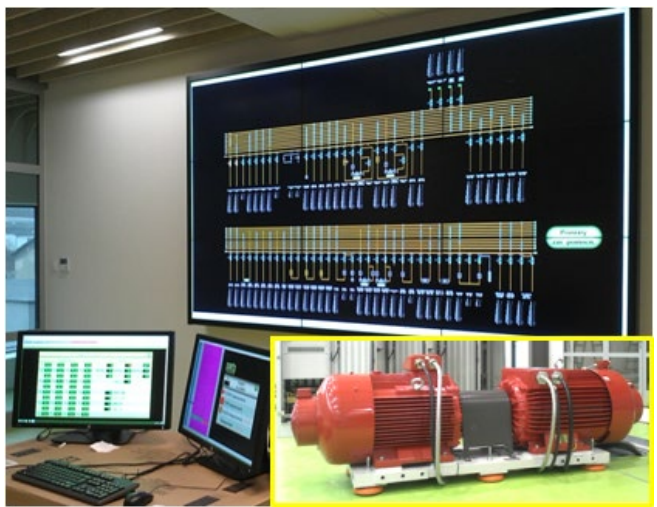
Prof. Abu-Rub giving a speech on the Smart Grid Centre



The main room of the LINTE<sup>2</sup> lab



Prof. Haitham Abu-Rub in front of a plaque listing the Deans of the Faculty of Electrical and Control Engineering, GUT



One of the control rooms in LINTE<sup>2</sup> and an emulator of a turbo generator