ELECTRA REX

A Researcher Exchange Programme for Smart Grids

European Liaison on Electricity Committed Towards long-term Research Activity Integrated Research Programme

FIBER OPTIC SENSORS FOR ENERGY TRANSMISSION AND DISTRIBUTION SYSTEMS CONTROL

A. M. R. Pinto*, M. Rosa*, P. Niewczas**

*INESC P&D Brasil, Rua José Caballero, Santos, São Paulo (*Brazil*).

**Institute for Energy and Environment, Department of Electronic and Electrical Engineering, University of Strathclyde, Royal College Building, 204 George Street, Glasgow (*Scotland*).

The efficiency of grids management is critically dependent on the immediacy and accuracy of the information of its status in key operation points and parameters. Improved sensor systems are therefore an important enabling technology for smart grids, since they may allow immediate information when embedded on electric components [1]. Fiber optical sensors are passive monitors with considerable advantages such as small size and weight, high temperature resistance and versatility. Also, these devices allow remote and real-time control, as well as multi-parameter monitoring, which is of great interest for this application [2, 3].

During this Rex Call exchange at the University of Strathclyde, the expertise of each institution was presented and discussed by both groups through visits, talks and meetings. Two main points of common interest were founded between both groups in the scope of the ELECTRA Program: 1. PMU's transducers and 2. Photonic Crystal Fiber's (PCF) based current and voltage sensors. On topic 1, a study and comparison of PMU transducer's technology and its real performance in Brazil and Europe will be prepared, as well as a study and possibly modeling for the development of new technology based on fiber optics. On topic 2, the study of the state of the art of photonic crystal fibers based current and voltage sensors will be done, in order to promote the background necessary for the development of FBG inscribed PCF based sensors. This Rex Exchange Call, besides providing both institutions with deeper knowledge of one another, also nurtured the nest for future international cooperation among both groups.

Figure 1 – Royal College Building, University of Strathclyde, Glasgow, Scotland, UK.

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