

PRESS RELEASE

‘New EU smart grid project launched’

To meet the European 20-20-20 targets, the share of renewable energy needs to be 20% of the final energy demand in 2020. This ambitious objective can only be met if the number of distributed renewable energy sources (DRES) at the low voltage (LV) electric distribution grid will significantly increase and large wind or solar plant farms will be installed at the medium voltage (MV) level. The significant rise in distributed renewable energy sources is placing an enormous burden on the secure operation of the electrical grid, impacting both the transmission system operators (TSOs) and distribution system operators (DSOs).

Five scientific and eight industrial partners are participating in a new ambitious research project named INCREASE (“Increasing the penetration of renewable energy sources in the distribution grid by developing control strategies and using ancillary services”) which aims to solve these problems with innovative three-phase grid-connected inverters and new operational and control strategies in order to maintain the ability of the system to provide the consumers with reliable supply of electricity at an acceptable power quality level.

The team, co-ordinated by Ghent University, Belgium, will develop control strategies, based on ICT innovations and exploiting innovative forecasting methodologies (i.e. with finer resolution at both time and geographical scales, at the DSO level). These (distributed) control strategies, combining local fast control with slower control using communications will be tested not only in lab-scale environments, but also in three field trials. Furthermore, the project will assess options to provide ancillary services from the LV network (towards DSOs, but also TSOs), in particular voltage control and the provision of reserve.

The 4.3 Million Euro INCREASE project jointly funded by the European 7th Framework programme and national organisations had its inaugural meeting from 22nd-24th September in Oostende, Belgium. In addition a kick-off conference will be organized early December to get feedback on the planned research from other related projects and external partners.

Background:

The strong increase of the intermittent DRES in low and medium networks has led to a bidirectional power flow which raises the urgent need for new operational and control strategies in order to maintain the ability of the system to provide the consumers with reliable supply of electricity at an acceptable power quality level. Consequently, distribution system operators face the challenge to connect and integrate an ever increasing amount of renewable energy sources, still guaranteeing the high level of power quality to their customers. Grid operators today already face problems to dispatch the distribution grid with the currently installed DRES.

INCREASE will develop advanced control strategies, based on ICT innovations exploiting innovative forecasting methodologies (i.e., with finer resolution at both time and geographical scales, at the DSO level). These (distributed) control strategies, combining local fast control with slower control using communications, will be tested in lab-scale environments (at Ghent University and at Technische Universiteit Eindhoven), as well in the real-life operational distribution network of Stromnetz Steiermark in Austria, of Elektro Gorenjska in Slovenia and of Liander in the Netherlands. As a consequence the project will enable DRES and loads to go beyond just exchanging power with

the grid which will enable the DSO to take over the role from the current congestion manager to a capacity manager. This will result in a more efficient exploitation of the current grid capacity, thus facilitating higher DRES penetration at reduced costs. Furthermore the project will assess options to provide ancillary services from the LV network (towards DSO, but also TSOs) in particular voltage control and the provision of reserve. INCREASE will investigate the regulatory framework, grid code structure and ancillary market mechanisms, and propose adjustments to facilitate successful provisioning of ancillary services that are necessary for the operation of the electricity grid, including flexible market products.

Key words: electric distribution networks, distributed renewable energy sources, three-phase grid-connected inverters, control strategies, ancillary services

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Liander	the Netherlands
Stromnetz Steiermark GmbH	Austria
Aristotle University of Thessaloniki	Greece
JOANNEUM RESEARCH Forschungsgesellschaft mbH	Austria
Technische Universiteit Eindhoven	the Netherlands
University of Ljubljana	Slovenia
Alenco NV	Belgium
Korona d.d. (Korona Inzeniring DD)	Slovenia
Mastervolt International B.V.	the Netherlands