



Power Systems Automation

# InovGrid

Smart Energy Network



## Efacec participation in the InovGrid Project



In October 2007, EDP announced the InovGrid project, which main objective was to deal with the great changes foreseen in the electric power sector, still pertinent nowadays.

The project found motivation in the added value characterizing the new power generation technologies, particularly renewable and distributed, along with their implication in the distribution network. The project also took into account the remote metering needs for low voltage consumers, according to the EU Community directives.

As a result of this future vision, EDP, through EDP Distribuição, signed a protocol with Portuguese institutions, including Efacec, for creating a new interaction model between the power network and the consumers, which shall increase their interaction in a near future.

The InovGrid project is focused in the Smart Grids concept, with direct impact at the distribution network level, where the strengthening of the intelligent remote asset management will endow the network to increase the dispersed generation capacity.

The consumers role shall become strengthened as well, not only from the micro-generation perspective, to which they shall contribute with expectable benefits resulting from their investment, but also from the reformulation of their active role within the management of the respective energy consumption, namely at home.

This role fits in a DSM perspective, promoting costs reduction as a result of the implementation of a new model, aiming for a better energy efficiency.

Other consumer benefits are also foreseen, resulting from the availability of new services, new tariffs and price plans, in line with the goal to reduce the respective electric power invoice.

Advantages are also expected for other agents of the electric sector, since the InovGrid project shall promote market deregulation, considering the MIBEL (Iberian Electricity Market), as well as the

increase of the reliability and power supply quality, with direct impact on cost and loss reduction.

This initiative holds the mission to leverage new opportunities for the national industry, namely in developing or creating competence centres, with impact on the economy dynamism, expressed in new jobs, as well as in experience capable to endow the national industry, including Efacec, with capital gains and competitive capacity in export markets.

For Efacec, this strategic partnership is reflected in the Automation unit mission, which has been participating actively in the renewal of management, supervision and remote control systems for EDP's distribution networks, as well as in the renewal of the automation and control systems of some of the main Portuguese hydro power plants, together with the implementation of their national dispatch centre.




This experience was, certainly, considered by EDP, and therefore, in the automation perspective, Efacec sees itself as an excellence partner in step with the challenge and mission that EDP defined for the InovGrid project.

Besides Efacec, other companies and institutions participate in this project: EDP Inovação, INESC Porto, Janz/Contar and Logica.



Efacec, due to its area of expertise and experience, participates in three of the main vectors that characterize, technologically speaking, the InovGrid Project, supplying solutions for Home, Distribution Power Network and Control Centre areas.

In line with this project, and because since 2006 Efacec has been involved in this new industry segment, it developed a new range of specific solutions for Smart Grids, known as SmartPower.

The existing solutions implemented by Efacec, widely used by the industry, are, by their open nature, adequate to the implementation of systems according to the InovGrid Project model.

Scope and Solution	Description
<p>Home</p> 	<p><b>Power Control Switch (Remote)</b></p> <p>The <b>SmartPCS</b> module is aimed to be used at home, interacting with a smart energy metering device (called Energy Box, within the InovGrid Project) placed externally, for instance, in the common outside areas of a block of apartments, or in the outside of a cottage.</p> <p>Its function corresponds to providing or interrupting the electric power supply to the consumer, responding to controls sent by the Energy Box, either because the consumer exceeded the allowed maximum power consumption, or because he neglected the due payment of the invoices, and in the latter case, the received control, via Energy Box, comes from the central systems.</p>
<p>Distribution Power Network</p> 	<p><b>Distribution Transformer Controller</b></p> <p>The <b>SmartGate</b> is a Distribution Transformer Controller (DTC). This solution plays an important role at the electric power network management level, specifically the network supplying LV consumers, as well as the independent micro-generation players.</p> <p>Both are nowadays called “Prosumers”, the new pro-active players that can perform simultaneously the intelligent role of consumer or independent producer of electric power.</p> <p>The <b>SmartGate</b> is an intelligent module, conceived to be used in MV/LV Distribution Substations, aiming to monitor and supervise its state, as well as collecting remote metering data coming from Energy Box type metering devices, concerning downstream LV network branches belonging to the specific Distribution Substation.</p> <p>The <b>SmartGate</b> manages dynamically the communications with those metering devices, detecting their own insertion into the system, recognizing and integrating them automatically in its internal database. The inclusion of those devices, as well as the metering data arising from them, is reported to the central systems. It also implements several functions, such as Public Lighting Control, Fault Detection and Power Quality Analysis.</p> <p>In the future, it will allow the implementation of sophisticated DMS algorithms for LV network management, using software functions for topology processing, electric calculation and power flow analysis, independent production dispatch and microgrids management, in line with the functions already available.</p>
<p>Control Centre</p> 	<p><b>Distribution Network Management System</b></p> <p>The <b>SCATE X</b> is another well proven solution in industry, targeted for the implementation of <b>SCADA/DMS</b> systems for distribution network management. Within the InovGrid Project scope, besides the <b>SCADA/DMS</b> component, <b>SCATE X</b> also implements the Public Lighting agenda management and its remote control. In the future, and due to its evolving architecture, <b>SCATE X</b> will be able to include new functionalities, according to the specific evolution of Smart Grids.</p>

Other Efacec Solutions in the Scope of Smart Grids

Scope and Solution	Description
<p>Distribution Power Network</p> 	<p><b>Compact Solution for Distribution Network Automation</b></p> <p>The <b>micro TCMT</b> is a well proven solution in industry, implementing RTU functions.</p> <p>It is targeted to implement supervision and remote control features for urban and rural LV distribution networks.</p> <p>It implements several functions, with a particular highlight for the local or remote control of network switching devices (such as overhead switches or reclosers), as well as fault detection.</p>
<p>Distribution Substations</p> 	<p><b>Distributed Platform for Supervision, Control and Protection of Substations</b></p> <p>The <b>CLP 500</b> is another well proven solution in industry, implementing RTU functions or sophisticated Substation Automation Systems, according to the IEC 61850 standard.</p> <p>The <b>CLP 500</b> architecture allows the implementation of sophisticated solutions for Feeder Automation, as an incursion into the Distribution Automation component, complementarily to the Substation Automation functions.</p> <p>It is able to collect and process data coming from fault detectors strategically placed along the downstream MV segments of the substation feeders, implementing Fault Detection, Isolation and Restoration (FDIR) algorithms based on network topology processing and power application software modules.</p>

