R&D PROJECT

DRIvE
Unlocking DR Potential

BUSINESS AREAS

Área Infraestructuras
COMSA, S.A.U

DURATION
2017-2020

BUDGET
3,955,258.75 Euros

KEYWORDS
Demand response, Energy management, Smart distribution grids, VRES, ICT

COORDINATOR
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Title of the Project

Demand Response Integration Technologies: Unlocking Demand Response Potential in the Distribution Network

Acronym

DRIVE

State-of-the-art

It is widely recognised that increasing flexibility is key for the reliable operation of future power systems with very high penetration levels of Variable Renewable Energy Sources (VRES). The most significant source of flexibility in a future scenario with high penetration of VRES is Demand Response (DR). DR provides an opportunity for consumers to play a significant role in the operation of the electric grid by reducing or shifting their electricity usage in response to time-based rated or other forms or financial incentives. DR programs are being used by some electric system planners and operators, using mainly the flexibility provided by industrial buildings connected to HV grid, as a resource options for balancing supply and demand.

General objectives

DRIVE project aims to unlock the potential of residential and tertiary buildings in the distribution grid through a full-fledged platform bridging seamlessly the value chain from planning and design of assets/buildings towards optimal operations in the next generation Smart Grids, paving the way to a fully deployed DR market in the distribution network.
DRIVE will develop a fully-integrated ICT infrastructure consisting of interoperable DR-enabling Energy Management solutions for residential and tertiary buildings and a platform for effective and secure management of flexibility at the level of the distribution grid. This platform will be validated at COMSA's head office.

Project tasks

I. Project Management
II. Specification, requirements and ICT infrastructure design
III. DRIVE DR-enabling technologies for residential and tertiary buildings
IV. ICT platform for demand response district management
V. Development of data security mechanisms for Smart Grids
VI. System Integration
VII. Demonstration and Validation

Project conclusions

The tested solution is paving the way for future buildings and infrastructures where energy management systems will be connected upstream through a cloud energy-service provider which will take over of the flexible assets of the building, such as HVAC system or battery storing systems, PV installation, etc.. to be able to aggregate demand flexibility from a number of consumers with the aim to get an economical compensation by means of trading with that flexibility in electric markets, such as demand response market, balancing markets or ancillary service Markets. The more penetration of DER's to the local electrical systems the better Smart Grids will need to interact with demand-site management to balance the electrical system and flexibility itself will play an important role in the very next energy transition which involves new market rules and engages everyone: consumers, producers, as well as so-called "prosumers".