R&D PROJECT

Project Title

Building Energy Efficiency Management & Smart Grid Integration Tools

Acronym

BEEST

PROJECT CONTENT

State-of-the-art

Hotels and office buildings biggest operating cost (after salaries) is energy (19% of total expenditures for the typical office buildings and hotels). Energy costs have suffered a significant increase (+5,7%/y according Eurostat) during the period between 2005-2013 and expected min the same or higher throughout the next years to come in case of “operations as usual”, which significantly impacts the profitability of companies using these buildings

General objectives

Energy costs in Office buildings and Hotels constitute a significant percentage of the total operating expenditures of the companies running them. Proper exploitation practices optimizing both the energy consumption and the price paid by kWh would constitute an important reduction of these costs.

BEEST’s main objective is to tackle this issue developing a set of tools (the BEEST suite of apps) that will, in different ways, enable optimal operation of Office and Hotel buildings and consequently reduce energy costs. BEEST suite includes different features gathered together in six different apps:

- **Demand Forecast & Assessment** (DFA) app provides energy use awareness through the forecast of energy demand thus enabling decision making processes to reduce energy consumption.
- **Automatic Demand Side Management** (ADSM) app uses information from weather forecast and from new and/or existing sensors to optimize operation of HVAC equipment through the existing BMS in the building, thus reducing energy consumption.
- **Semi-automatic Demand Side Management** (SaDSM) app is a downgraded version of ADSM which is used when connection to existing BMS is not technically possible due to lack of compatibility.
- **Energy Procurement** (EP) app assists the user in optimizing the parameters of the energy supply contract thus allowing to reduce the final average price per kWh. It also assists in the administrative task to handle issues with energy bills.
- **Reward for Demand Response** (ReDR) app allows the customer to form part of an aggregated ‘virtual power plant’ thanks to the Smart Grid and provide flexibility services to the utility (TSO, DSO) thus receiving an economic reward which bottom line reduces average price per kWh.
- **WholeSale electric Market trading** (WSM) app allows energy retailers to bid for electricity at a lower price thanks to demand forecast information gathered from ACTS app. Customer is rewarded with a reduction on average price of kWh.

Project conclusions

- A start-up (eQualtiq) has been incorporated to own the new Intellectual Property created within the project.
- Successful connection of ACTS has been proven when they support standard protocols, such as OPC and BACNet/IP.
- Preliminary, extrapolated assessment conducted in pilots indicates that energy saving results of over 10% of the total energy cost of the building are possible through ACTS app.
- Regarding EP app, pilots have shown that optimization of contracts can give savings of up to 12,6% of the total energy costs of the building.

PROJECT PARTNERS

Leader

COMSA INDUSTRIAL

tecnalia

ENERVALIS

Energy Ville

DEXMA

DURATION

2014-2016

BUDGET

Consortium budget

2.252.927 € (KAVA)

COMSA INDUSTRIAL SLBudget

822.048 €

COMSA INDUSTRIAL SL Funding

669.217 € (Grant)

COORDINADOR

Àngel Paiz Farre

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