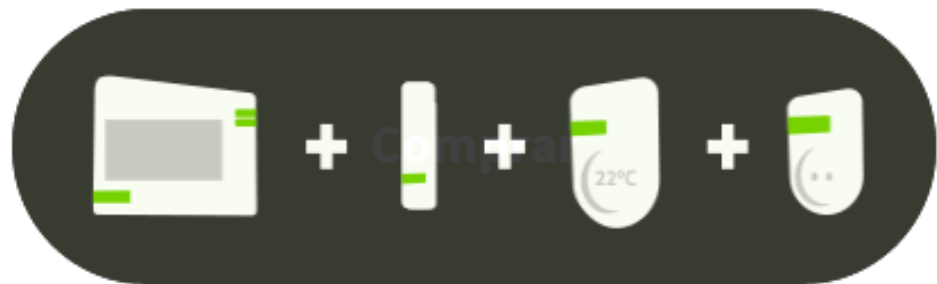




FACTSHEET

Home Energy Management System

PART OF SMART SOLUTION 3: SMART ENERGY-SAVING TENANTS



- Helps to achieve the European union's aim of continuously improving energy management within the tertiary sector
- It is estimated that using an energy management system to monitor and control the consumption of a tertiary building can lead to an almost 10% reduction in the energy consumption of the building.
- Providing a graphic view of residents' own electric and fossil fuels consumption helps build awareness and empowers them to reduce their energy footprint

LOW
ENERGY
DISTRICT



Barcelona

Technical partner: Gas Natural Fenosa

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City partner

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What is the solution?

Home management energy systems will be installed in all the selected residential buildings to be refurbished within the GrowSmarter solution “Efficient and smart climate shell and equipment refurbishment of residential buildings”.

The Home Energy Management System (HEMS) will also be offered in special conditions to residential buildings taking part in other GrowSmarter solutions such as the Smart Energy & Self-Sufficient Block.

This solution aims to help tenants optimise their behaviour to achieve maximum energy efficiency and reduce their energy bills. The collection and provision of individuals’ energy data is fundamental to this solution.

For the refurbished buildings, the monitoring of the consumption will be carried out before and after the refurbishment for a period of two years starting from the end of the works.

Taking into account the limitations imposed by the Organic Law on Data Protection, information on aggregate consumption per building will be available on the platform of the City of Barcelona. Within GrowSmarter, dissemination of results will be done at the national and international level with the aim of achieving replicability in buildings with similar characteristics.

The final objective is to value the energy savings obtained through the refurbishment, to use the installed HEMS as a pilot to develop a more complete version of the software, and to help owners to know how their behavior affects consumption.



How does it work?

The functions offered by the Home Energy Management System to be installed are:

- Real time gas consumption calculation through monitoring of temperature
- Boiler control for energy efficiency improvements
- Real-time electricity consumption thanks to current clamp installation
- Gas and electricity consumption monitoring, energy efficiency indexes, advices and gamification
- Electricity hourly prices for invoice optimisation
- Smart plugs
- Boiler maintenance optimisation



The interacting hardware components for gas and electric monitoring and control are:

- **Gate:** smart home energy visualisation application, instant feedback on tablet or smartphone
- **Thermic:** Smart thermostat
- **Pod:** Smart Plug, which allows the user to control the electricity outlets remotely
- **Bat:** Energy monitor

Sensors and actuators for monitoring gas consumption through low-range RF technologies.

The technology applied for monitoring gas consumption has low energy consumption and high service life, allows long-distance

transmission, can serve multiple users and has a low implantation cost.

Business models used

As a collection of participants' energy behaviour data is needed within the GrowSmarter project, the HEMS is distributed to participants free of charge. We are also defining a business model for the commercial solution. We defined an initial price for the HW (including, transport and installation) and a monthly price for maintenance cost.

Integration with other smart solutions

This solution is integrated with the smart solution "Efficient and smart climate shell and equipment refurbishment of residential buildings", which includes passive and active energy refurbishment of almost 10.500 m² of residential buildings in Barcelona.

Expected Impacts

The following positive impacts are expected in terms of the key GrowSmarter objectives:

Improving quality of life:

Remote control of the monitored systems of the dwelling will allow users to adapt conditions to their proper standard of comfort

Reducing environmental impact

The use of HEMS will allow the identification of problems in the monitored systems, giving the opportunity to stop unnecessary consumption

Promoting sustainable economic development

Raised awareness among owners of the different typology of consumption of their dwelling, and better knowledge of solutions and new technologies which can reduce consumption and costs.

Replication potential

Pre-conditions of replication in other European cities:

The low cost of installation of a HEMS system in a dwelling and of the service of visualisation and optimisation of consumptions offered by retailers such as Gas Natural Fenosa, do not require specific pre-conditions for replication. It is clear that this action must be accompanied by an awareness campaign for users in order to promote a diffusion on a grander scale.

Organisational resources and knowledge required within the public administration:

Awareness campaigns by public administration on the high potential for reduction of consumption and emissions thanks to the use of energy management systems.

Stakeholders to be involved:

- Owner communities
- Public administration
- Utilities
- Manufacturers and distributors of hardware and software for HEMS

Potential barriers:

Lack of awareness and/or mistrust of the importance of monitoring and management of consumption