Energy efficient refurbishment of private tertiary buildings in Barcelona

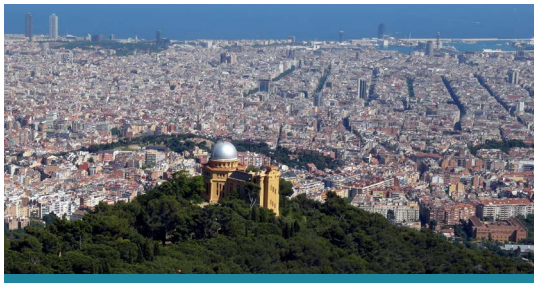
Smart solution 1
Energy retrofitting of buildings

Measured impacts

6%
of electricity covered by PV in educative centre

51%
heating energy savings in sports centre

58%
heating savings in the hotel



Barcelona

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What is it?

Energy retrofitting of tertiary buildings through a Business-to-Business (B2B) refurbishment contract offered by a private Energy Services Company (ESCo). The aim of the contract is to implement active and passive solutions to lower the energy demand of the buildings and guarantee that the targets are achieved through Measurement and Verification (M&V) plans.

What did GrowSmarter do?

The Spanish energy company Naturgy implemented retrofitting actions in order to lower the energy consumption of over 10,500 m2 of tertiary floor in Barcelona. Three buildings with very different uses were retrofitted: the hotel H10 Catedral, the educative centre Escola Sert and the sports centre CEM Claror Cartagena with a swimming pool included in its premises.

A wide range of measures were deployed including façade and roof

insulation, replacement of windows, insulation of the pool and installation of dehumidifier in the sports centre, boiler replacement, new LED-lighting, a Smart Building Energy Management System, aerothermal heat pumps and adding photovoltaics into the building façades.

Lessons learnt

In order to guarantee potential energy savings of retrofitting projects, it is recommended that minimum quality levels and performance penalties are included within the ESCo contract.

> It is important to establish in the contract with the installers minimum quality levels

The indicators to assess energy performance should be carefully reviewed by the ESCo and facility managers in order to understand all the variables behind the M&V plan. The monitoring equipment needed for the Measurement and Verification should be thoroughly designed in order not to add extra costs.

The installation of a Buildings Energy Management System can help the building operator to optimize the energy consumption and also make users (in this case students, hotel guests) aware of the positive approach they are taking towards consumption and production e.g. where photovoltaics were used.

Upscaling & replication potential

One aspect that impacts on tertiary refurbishment is the landlord-tenant split incentive issue (a circumstance in which the flow of investments and benefits are not properly rationed among the two parties). The company operating the facility may not invest on energy efficiency measures due to a too short concession period to recover the upfront costs. Possible solutions are public concessions that consider energy efficiency investments or green leases versus a regular lease by the Private sector.

How did the measure work?

Technical feasibility

The main technical obstacle is related to the definition of the baseline because of the lack of energy performance data.

Economic feasibility

Energy savings obtained by the implementation of active solutions has proven to have short payback periods attractive for private owners. Passive measures need longer paybacks, which can be shortened by combining the passive with active solutions

Replication potential

Private tertiary buildings are very good candidates for the replicability of energy retrofitting by an ESCo. For buildings with public concessions, the sometimes incompatible contract duration should be addressed by the public administration..

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