

## FACTSHEET

## Re-build of an industrial site: Ca l'Alier

Part of smart solution 1: efficient and smart climate shell refurbishment



Fig. 1. Transformation of the industrial site into a centre of innovation and excellence on smart cities

### LOW ENERGY DISTRICT



- Innovative public-private partnership to promote the concept of net zero energy buildings (NZEB) and serve as a reference for building refurbishment in industrial areas of the city.
- Development of the Nearly Net Zero Energy Building concept leads to 70% primary energy self-sufficiency.
- Natural lighting through heliostats and tubular skylights.

### Barcelona

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## What is the solution?

Ca l’Alier will demonstrate the feasibility of a Zero Net Site Energy Use through photovoltaics (85 kWp), connection to district heating and cooling network, and through the installation of an energy management system capable of optimising consumption and forecasting the future building energy consumption. It will also demonstrate the compatibility of open communication protocols with Heating, Ventilating and Air Conditioning (HVAC) equipment.

Ca l’Alier integrates the features of a low energy district (e.g. low energy demand in buildings and high energy self-sufficiency thanks to integration of renewable energy resources) with advanced infrastructures related to Information and Communication Technologies and advanced control of facilities. Information management will help saving energy and reducing carbon emissions by showcasing the development and replication of smart cities’ solutions for low energy districts.

The active technologies implemented in Ca l’Alier are:

- Lighting: LEDs and occupancy sensors
- HVAC: variable speed fans, free-cooling
- On-site generation: photovoltaic panels
- Connection to local district heating and cooling (DHC) network
- Smart Energy Management System

## Business Model Used

Barcelona is using a public-private partnership model with technological multinational companies in order to rejuvenate an area and demonstrate its potential as a research and development platform for new market opportunities in the domain of smart cities.

## Integration with other smart solutions

This solution will be integrated with measure 6.3 “Smart local thermal districts” which will enable Ca l’Alier to connect to the District Heating and Cooling (DHC) network of “Districlima” utility.

The local utility Districlima has a DHC network in Barcelona with a total cooling capacity of 31 MW and heating capacity of 20 MW. The vast majority of heat and cold production is based on the use of the steam produced from the incineration of municipal solid waste (MSW) of the city in a nearby treatment plant.

Ca l’Alier will also be integrated with measure 4.2 “Resource Advisor”, which will develop a platform to visualise the monitored energy data of some of the measures applied to buildings retrofitted in the scope of GrowSmarter.

The monitoring system of Ca l’Alier will communicate with Resource Advisor platform thus the energy performance of the retrofitted building will be easily

visualized. Additionally, Ca l’Alier will be integrated with measure 8.1 “Big consolidated open data platform” and measure 8.2 “Urban models”, where an open data platform and a semantic urban model will be created, respectively.

### Expected Impact

56% of annual savings on final energy are expected compared to a standard national reference building. The 22@ district will be regenerated into a knowledge and innovation area, creating a stimulating atmosphere for R&D units for high tech companies.

### Potential for replication

This measure could be replicated in other abandoned urban industrial sites, which could be re-built or refurbished into useful spaces for citizens or devoted to R&D activities. Potential stakeholders involved go from tech companies and public administrations to citizens and neighbourhood associations committed to district regeneration. Whether or not a city chooses to participate in a public-private partnership depends on their approach to funding and finance.