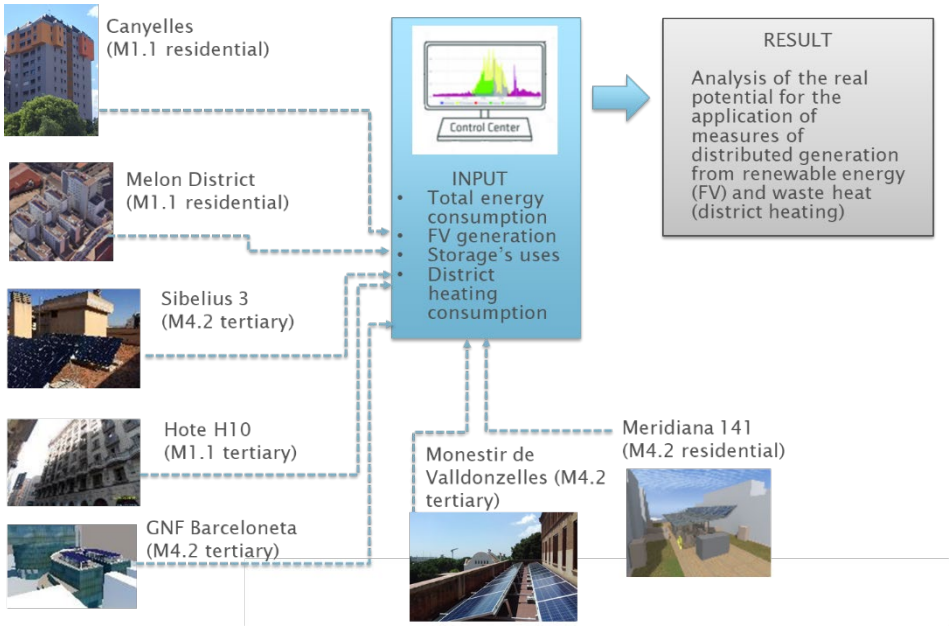
GrowSmarter
Transforming cities for a smart, sustainable Europe

FACTSHEET

District heating and cooling rings

SMART SOLUTION 6: WASTE HEAT RECOVERY



- An energetic balance between different buildings with distributed generation of renewable energy and waste heat will be carried out through a virtual analysis.
- The connection of different buildings with distributed generation facilities based on renewable energy and waste heat from District Heatings will bring energy savings and reduction of greenhouse emissions.
- The analysis will help decision-making related to the implementation and the management of the distributed generation facilities.

INTEGRATED
INFRASTRUCTURES

Barcelona

Technical partner: Naturgy, IREC

Contact: barcelona@grow-smarter.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 646456. The sole responsibility for the content of this document lies with the author and in no way reflects the views of the European Union.

What is the solution?

The solution consists of a virtual analysis of the real potential of implementing an energetic connection between buildings with distributed generation from renewable energy and waste heat (district heating) for a group of buildings with complementary consumption.

Through the data monitored, the virtual analysis is done using real profiles of energy consumption of the buildings included in the solution, real profiles of PV generation and different storage's uses and real profiles of district heating use.

Due to the use of real data, the conclusions obtained in the virtual analysis will be comparable to a real configuration.

How does it work?

The analysis will be carried out with the real data monitored of buildings which have participated in other measures of GrowSmarter project. Because of the localizations of these buildings which are located around the city of Barcelona, the analysis is done virtually.

The buildings selected are:

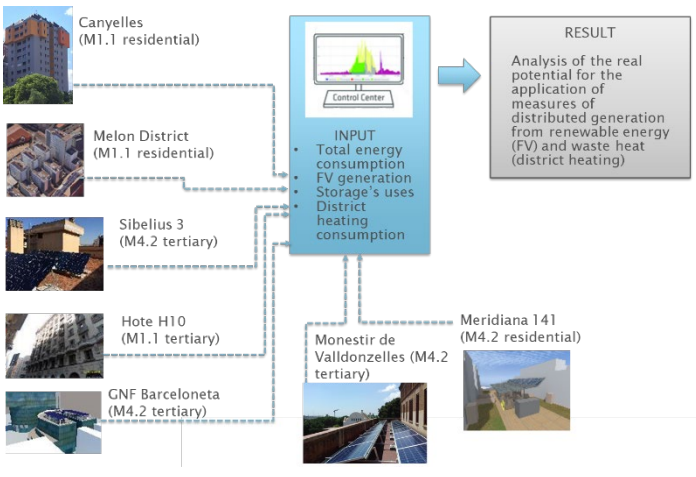
Measure 1.1 (Energy efficient refurbishment of the building)

- Melon District – A connection to a DH (Scope of GrowSmarter Project).
- Canyelles – Passive and active refurbishment (Scope of GrowSmarter Project).
- Hotel H10 – Passive and active refurbishment (Scope of GrowSmarter Project).

Measure 4.2 (Smart Energy and Self-Sufficient Block)

- All the buildings of this measure – FV installation. (Scope of GrowSmarter Project).
    - Sibelius 3
    - Monestir de Valldonzelles
    - Naturgy Barceloneta
    - Meridiana 141

Once all the implementations are finished, an analysis between production and demand profiles of the buildings will be carried out. The aim is to simulate a situation where all buildings would be located together, in order to evaluate the viability and the benefits of a hypothetical situation where different buildings with distributed generation and complementary profiles are connected in an electric and thermal ring.



Expected impact

The expected impacts that the virtual analysis of the connection of buildings with distributed generation in an electric and thermal ring will bring to the city in terms of the key GrowSmarter project are:

Improving quality of life

The analysis will give us a deep understanding of the behaviour of the distributed generation with several buildings giving the possibility to maximize the energy supplied by these technologies.

Reducing environmental impact

The analysis will give us clues to maximize the energy supplied by distributed generation facilities. As these installations are based on renewable energy, a major cover of these installations in the energetic mix of buildings will imply a direct reduction of greenhouse gases.

Promoting sustainable economic development

A better understanding of how and where to implement the distributed generation facilities in Smart Cities will promote an increase of the number of these installations in the cities.

Potential for Replication

The conclusions of the analysis will give guidelines to promote and increase the replication of these types of installations.

Organizational resources and knowledge required within the public administration:

Public administration should be conscious of the high potential of greenhouses gases reduction thanks to the interconnection between distributed generation facilities and buildings. It should propose ways to promote these types of installations and connections.

Stakeholders to be involved:

- Owner communities/buildings.
- Promoters.
- Utilities.
- Manufacturers and distributors of products of

Potential barriers:

- Lack of economic resources to implement the installations.
- Misgivings of the building's owners on the dependency of the energy supply of other buildings.