

## OptEEemAL – Optimised Energy Efficient Design Platform for Refurbishment at District Level

**OptEEemAL**, a project funded under the European Union's Horizon 2020 research and innovation programme, will develop an **Optimised Energy Efficient Design Platform** able to provide a set of solutions that are based on different energy conservation measures to improve the energy behaviour of a district. The tool will reduce time delivery and uncertainties and result in improved solutions when compared to business-as-usual practices. Under the coordination of Fundación CARTIF, 13 partners from 8 countries are working on delivering an optimised, integrated and systemic design based on an Integrated Project Delivery approach for building and district retrofitting projects.

This **main objective** will be achieved through a mix of development and testing activities, including:

1. Developing a holistic and effective **services platform** for District Energy Efficient Retrofitting Design, which integrates interoperable modules and tools that are able to provide services for diagnosis and generate and optimise scenarios (according to stakeholders priorities) on energy | cost | environment | social evaluation for data export.
2. Reinforcing the **commitment of all involved stakeholders** through an Integrated Project Delivery approach that allows them to articulate their needs through a collaborative and value-based process to deliver high-quality outcomes.
3. Creating an integrated ontology-based **District Data Model** that will contain key information in the fields of energy, comfort, environment, economic, social wellbeing and urban morphology.
4. Cataloguing **Energy Conservation Measures** including technical, operational, maintenance and cost information providing valuable and consistent outputs to the design and district operation and maintenance stages.
5. Developing a **bio-inspired optimisation module** based on evolutionary computing with the aim of automating the decision making process to obtain the optimal design for an energy efficient retrofitting plan at district level.
6. Externally connecting the **OptEEemAL Platform** to relevant entities (i.e. existing tools enabling the calculation of indicators to generate and optimise the retrofitting scenarios), and
7. Strategic dissemination, training, exploitation and market deployment of the project's developments and results.

### Demonstration sites

In order to validate the OptEEemAL platform, two steps are required:

1. **Deployment of the platform prototype** by existing innovative EU-wide initiatives at district level. A wide spectrum of cases will be selected, ensuring performance is tested under different conditions including climate aspects, boundary conditions, uses, building typologies, levels of intervention, conservation conditions, existence of specific barriers, consideration of historical buildings, etc.

Six case studies have been pre-selected so far in four different countries with others expected to join:

- Sweden
- Turkey
- United Kingdom
- Spain (three different case studies with different uses, typologies and climatic conditions).



2. In an ambitious final stage for the **validation procedure**, OptEEmAL will carry out several demo cases. Three different stakeholders in charge of designing retrofitting projects at district level are essential to become testbeds for validation: A municipality, a private consortium of technical offices and a municipal company. Each will head the demonstration of the performance, usefulness and user-friendliness of the tool for developing Integrated District Energy Efficient Retrofitting Plans in real environments.

The final stage for the validation procedure will be carried out in several demo cases:

- San Bartolameo, Trento (Italy)
- Txomin Enea, San Sebastián (Spain)
- Polhem Area, Lund (Sweden).

The results of the demonstration will focus on the generation of intervention plans, however the real implementation and execution will not take place in the scope of the OptEEmAL project.

### About the project

Grant agreement number: 680676

Duration: 42 months (September 2015 – February 2019)

Coordinator: Fundación CARTIF

Consortium: 13 partners from 8 countries (France, Germany, Greece, Ireland, Italy, Spain, Sweden, Turkey)

OptEEmAL receives funding from the European Union's Horizon 2020 Research and Innovation programme.

Call identifier: H2020-EeB-2014-2015 / H2020-EeB-2015

Topic: EeB-05-2015 Innovative design tools for refurbishment at building and district level

### Overview of partners

Participant organisation name	Country	Organisation type
Fundación CARTIF	Spain	RTO
Fundación TECNALIA	Spain	RTO
NOBATEK	France	RTO
Fundació Privada Universitat i Tecnologia	Spain	UNI
Technical University of Crete	Greece	UNI
ACCIONA Infraestructuras	Spain	IND
United Technologies Research Centre	Ireland	IND
Expert System	Italy	SME
ARGEDOR Bilişim Teknolojileri	Turkey	SME
Distretto tecnologico trentino per l'energia e l'ambiente	Italy	SME
Fomento San Sebastián	Spain	PUBLIC
Lunds Kommun	Sweden	PUBLIC
Steinbeis-Europa-Zentrum der Steinbeis Innovation gGmbH	Germany	RTO

