

Olga Macías Juez  
Tecnalia  
[olga.macias@tecnalia.com](mailto:olga.macias@tecnalia.com)

## Demostration site of Iurreta

### Introduction

Iurreta is located in the northern coast of Spain. The demonstration site is a Police base owned by the Department of Homeland Security of the Basque Government. The complex consists of a set of multi-rise buildings with different characteristics and destined to various uses. Heat needs in the complex are covered by means of a corporate district heating network, operative at 80/60°C, which supplies energy for space heating and domestic hot water. Generation plant consists of two gas condensing boilers, with an installed total capacity of 650 kW.

### Objectives for Iurreta site

The main aim of Iurreta site is to test the possibilities of the ultra-low temperature district heating systems in corporate building complexes. For such purpose, the intervention proposed within the framework of RELaTED project requires the conversion of current district heating network into an ultra-low temperature system, where the operation temperatures are reduced, and additional distributed renewable heat sources are introduced. Current technical barriers to achieve this conversion will be solved by means of installing innovative technologies as building integrated solar thermal systems and reversible heat pumps capable of operating at ultra-low temperatures.



### *Iurreta aerial view*

*Iurreta site is a building complex composed by 13 constructions with different architectonic designs and use profiles.*

*The complex hosts part of the emergency, rescue and fast intervention groups of the Basque Country regional Police (Ertzaintza).*

*Most of the buildings are dedicated to administrative purposes, but apart from them, there are also other buildings destined for residential use, sport facilities, warehouses, a swimming pool and an heliport.*

## New Heating and Cooling Solutions

using low grade sources of thermal energy



**Current heat production technologies.** Existing district heating network is provided by two gas condensing boilers, with a total capacity of 650 kW. These boilers produce hot water at 80°C. In addition to this central system, there are locally deployed air to water heat pumps to serve a small subset of buildings.

### Action proposal

Intervention proposal in Iurreta includes the execution of a new ultra-low temperature manifold, fed by a drain back solar field and one of the existing gas boilers, which will be adapted to produce water at 35°C. Besides, some independent air to water heat pumps will be substituted by RElLaTED reversible heat pumps and also connected to the ultra-low temperature network. The system will also allow to reuse the heat rejected from heat pumps during cooling season.



### Swimming pool connected to ultra-low temperature system

Different services including the swimming pool will be connected to the new ultra-low temperature manifold. This solution will allow to introduce renewable energies in the site by means of a solar field installed on the roof of one of the buildings, and to reuse rejected heat from cooling services.

### Expected results

The new ultra-low temperature network in Iurreta will allow to increase the efficiency of the existing heat plant by reducing water production temperature in one of the boilers. This temperature reduction will also result in lower distribution heat losses. These improvements, along with the incorporation of solar energy as energy source, and the possibility of using the reject heat from cooling equipment will reduce the energy bill and the CO<sub>2</sub> emissions in the building complex.

