

# BEST PRACTICE IN ITALY – ENERGY EFFICIENT CITIES

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## BASIC INFORMATION

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### **Title of the Best Practice**

Refurbishment and insulation of San Benedetto del Tronto hospital

### **Energy efficiency measures implemented in the building:**

- Perimeter walls insulation with external coat (20 cm).
- Roof insulation with 20 cm of thermal insulation.
- Replacement of windows and shutter boxes insulation (where present).
- Replacement of heat generators with condensing boilers, complete refurbishment of the thermal power station and water sub-station.
- Zone temperature regulation system with climatic compensation.
- Installation of solar panels for hot water production.
- Installation of PV panels for electricity production.

### **Location:**

**City:** San Benedetto del Tronto

**Region:** Marche

**Country:** Italy

### **Coordinates:**

<https://www.google.si/maps/place/Madonna+del+Soccorso+Hospital/@42.9479044,13.8759722,17.62z/data=!4m5!3m4!1s0x13321fd6e7305a55:0xc90f4abe9ea39319!8m2!3d42.9479699!4d13.8768889>

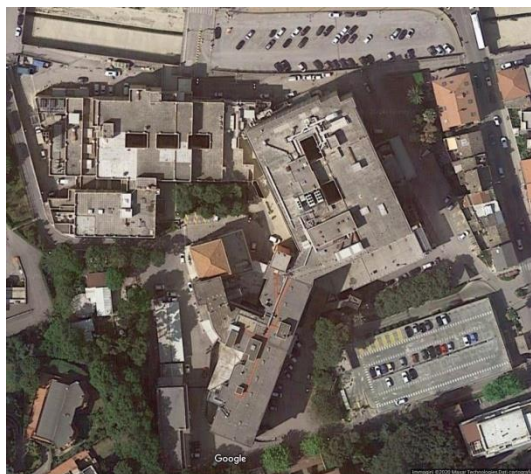
### **Partners involved:**

- AESS – Energy and Sustainable Development Agency, via Caruso 3 - 41122 Modena, Web: <https://www.aess-modena.it>, advisor
- Marche Region, via Gentile da Fabriano, 9 - 60125 Ancona, web: <http://www.regione.marche.it/>, public body
- Università politecnica delle Marche, Piazza Roma, 22, 60121 Ancona, Web: [www.univpm.it](http://www.univpm.it), university

**Implementation year:** 2017÷ongoing

**Photo** - sources: Marte report finale ([http://www.marteproject.eu/Portals/1/Public%20reports/FinalReport/MARTE%20Final%20Report\\_EN\\_web.pdf](http://www.marteproject.eu/Portals/1/Public%20reports/FinalReport/MARTE%20Final%20Report_EN_web.pdf)); Google street view (almost only pictures of the state of the art, works are proceeding slowly and just begun)

- **of ex ante state**



- of the first works on the building (the two floored one on the right):



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## SYSTEM CHARACTERISTICS

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### **Brief Description:**

The various buildings of the complex were built in different periods, starting with an Art Nouveau villa which was, following a donation, the first nucleus from which, over time, the entire hospital complex evolved, from the blocks of the 60s to the more recent ones dating back to the 80s and 90s. The same buildings, over time, have also undergone partial renovations and changes in volume and distribution of internal spaces, as well as their intended use. The thermal power plant is unique for the whole building complex and the heat generation is carried out with three boilers, one of which is intended for the production of steam not related to air conditioning processes. In addition, there is a co-generator for the combined production of heat and electricity, operating mainly during the winter period, with methane gas supply.

The improvement scenarios concern the envelope of the entire volume, except for the outer walls of art nouveau villa; in it in the which the outer thermal coat does not appear to be a choice practicable due to law restrictions.

The works have been assigned through EPC contract, with the Energy Plus service system.

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## FINANCIAL SOURCES AND FINANCING DETAILS

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**Total investment value:** 4.433.788,00 €

**Sources of financing:**

design and tender phases: Horizon 2020 PDA EU fund;

realization of the intervention phase: Regione Marche funds, Energy and Mobility regional fund, Por Fesr Marche 2014-2020

**Energy savings:** 77% - 771 MWh/y

**Cost savings:** 340.000,00 €/y

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## PROJECT IMPLEMENTATION BENEFITS

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The intervention on the envelope allows a strong reduction in energy primary need for the Hospital, able to reach 77% including the replacement of the obsolete boilers with a new, centralised one. The refurbishment of all the complex allows to reach a unity difficult to be seen before.

The payback period is quite long due to the application of EPC contract, where the ESCo needs to return back of the investment made. This application has the advantage to allow the intervention with an initial investment close to zero. The refurbishment is still ongoing, due to bureaucracy and need to keep the building working.

The training aspect allowed to broaden the interest in replicability. Three seminars have been organized in the Marche Region for technicians to replicate the procedure also in future refurbishments.

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## ADDITIONAL INFORMATION

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This intervention is part of a series of 5 interventions for 5 hospitals in Marche Region, in the field of Marte Project

([http://www.marteproject.eu/Portals/1/Public%20reports/FinalReport/MARTE%20Final%20Report\\_EN\\_web.pdf](http://www.marteproject.eu/Portals/1/Public%20reports/FinalReport/MARTE%20Final%20Report_EN_web.pdf)).