

**Sheet No: 2****Country: Italy****End User: Melegnano municipality**

*View of collectors filed at the municipal swimming pool of Melegnano (MI)*



*Collectors on the roof during the installation phase*

## **General Presentation**

The solar plant of the Melegnano (MI) municipal swimming sporting center has been installed in March 2000. The center is active all the year and has about 90'000 visitors per year; its thermal energy need is characterized by a low temperature level and a continuous demand during the whole year.

The design of the plant has been carried out through a cooperation among the research institute Ambiente Italia S.r.l. and a planning office, Sergio Colombo & c. S.a.s. In the first operation phase it has been monitored by the researchers of the Energy studies department of Politecnico di Milano.

## **Technical aspects**

The collector field accounts 200 m<sup>2</sup> of flat plate collectors and provides domestic hot water to the showers and heat to the two swimming pools (indoor and open air) operating alternatively during the year. The plant has been designed according to the principles of the "Large scale" plants. The collectors are grouped in modules of 12,5 m<sup>2</sup> each and a low flow strategy has been implemented ( 10-14 l/m<sup>2</sup> h ). Thanks to these applications, the hydraulic circuit results simplified and the times of installation was very short (3 hours for the collectors, 1 day for the complete plant). The plant includes two storage tanks (for sanitary hot water) of 5 m<sup>3</sup> each, two external heat exchangers (separate, for DHW and swimming pools heating). Originally along with the plant a (sophisticated) system for remote control has been installed. A gas boiler is used as back-up. The plant thermal energy production is about 125 MWh/year, which cover about 80% of DHW and 100% of the swimming pools heating demand.

## **Contractual aspects**

The plant has been realized by the Melegnano Municipality, which holds the property. The total cost has been of about 220 million of Lire (about 115'000 €), that correspond to a unitary cost of 575 €/m<sup>2</sup>. A contribution of 40% on the plant's total cost has been obtained by the European Commission through the SAVE program. The energy yield of the plant has been guaranteed through a "guarantee of the solar result" contract. The company which installed the plant would have not obtained the complete payment if the plant thermal energy production had not exceeded the foreseen limit of 500 kWh/m<sup>2</sup> for year, in the first operation phase.

At present the plant is managed by MEA (Melegnano Energia Ambiente, ex municipal service company) which sells the heat to the Municipality in the framework of the general "Energy service" contract.

**Source: Personal communication with the CO of MEA**