

Sheet No: 4

Country: Austria

End User: City of Graz



General Presentation

The solar plant at the “Arnold Schwarzenegger Stadium” Graz (Austria) was put into operation in June 2002 and can be considered as the pilot project of feeding solar thermal energy directly into a district heating system. From the technical point of view, the main reason for the construction of the solar system was to develop and optimise the system for feeding solar energy into an urban district heating net. As a result, this solar plant is Europe’s premiere for solar district heating.

Technical Aspects

The solar collectors were mounted on a steel substructure on the roof of the skating hall of the Arnold Schwarzenegger Stadium in Graz. The collector area of 1407 m² is arranged in 11 rows, each with 9 collectors in series. The collectors are 14.3 m² large scale flat plate collectors of the type “Gluatmugl”. These collectors are especially designed for high temperature use, which means that they have increased insulation in order to lower heat losses below approx. 3.0 W/m²*K. The gained solar energy output reaches about 560 - 600 MWh per year (Graz has a yearly solar radiation of 1130 kWh/m²). The district heating net in Graz has a minimum consumption of 10 MW also in summertime, and this solar plant reaches a maximum output of about 800 kW. The solar energy is directly transmitted to the heating net by an external heat exchanger. Large storage tanks are not necessary due to the constant energy consumption. Concerning CO₂-emissions, this plant saves about 250 tons CO₂ per year compared with an oil fired boiler with a total efficiency of 70 %.

Contractual aspects

The plant is operated and financed via a third party financing model. This pilot project is moreover supported by the city of Graz, the Steirische Wirtschaftsförderung and the Kommunalkredit Austria. The project was developed in collaboration of the following 3 partners:

- S.O.L.I.D. Gesellschaft für Solarinstallation & Design mbH
- nahwaerme.at Energiecontracting GmbH & Co KG
- ÖkoTech Produktionsgesellschaft für Umwelttechnik mbH

S.O.L.I.D. was responsible for the design and the construction of the plant. The company nahwaerme.at took over the financing and operation of the plant by a third party financing concept. The collectors were produced and mounted by the company ÖkoTech (Graz).

As this project is based on a third party financing model, the operating company nahwaerme.at took over the total costs of construction including the integration in the district heating net. The operating costs of the solar plant (e.g. maintenance, power etc.) are also taken over by the operating company. The duration of the contract is 15 years with an option of prolongation.

Source: nahwaerme.at