

SHORT DESCRIPTION OF SOLAR INSTALLATION

Place: Town of Bansko
Site: “Zamaka” hotel

The solar installation is foreseen for domestic hot water preparation. Initial design data:

- Solar zone: 3 (meteorological conditions in the town of Bansko)
- Collector orientation O°(South)
- Hot water consumption 2000 l/day
- Hot water temperature 55°C
- Cold water temperature 12 °C
- Operational period April – October incl.

Functional scheme description:

Collector loop closed type

Includes the following main components:

- Solar collectors – total area: 16,51 sq. m. (25 pieces)
- Heat exchangers built in accumulators
- Closed expansion vessel 1 piece
- Circulation pump
- Heat meter 1 piece
- Magnet valve 2 pieces.
- Water supply pipes made of heat resistant PP (polypropylene)
- Protection and stopping auxiliaries
- Thermometers and manometers

Heat accumulators

- Accumulator type: enamel covered, vertical with built-in serpentine heat exchangers
- Number 3
- Total accumulating volume 1200 l.
- Functionally they are divided to low-temperature (two pieces) and one high-temperature
- Thermometers and manometers
- Protection and stopping auxiliaries
- Heat meter for the consumed heat by the installation

Electrical and Automation Equipment

Including:

- A standard electricity supply board with voltage 220 V 1 piece
- Automatic electrical fuses
- Differential temperature regulator (Type Solar - Danfoss) 2 pieces
- Switch for automatic and manual operation mode of the installation.

Solar collectors characteristics:

- Manufacturer " Jacques Giordano" France
- Type C2S
- Absorber type AI – tube - rib
- Tube register Copper, ϕ 16/04
- Absorbing surface 0,61 m²
- Weight 23,7 kg/ m²
- Maximum pressure 16 bar
- Water content 1,6 l/ m²
- τ/α **6,8**
- Thermal insulation Polyurethane
- Transparent insulation plain glass (Fe₂O₃ - below 0,01%)

Installation characteristics

- Percent of solar coverage (from the total energy consumed), average for the season
57,7%
- Maximum % solar coverage 69,51%
- Average seasonal efficiency of the solar collectors
54,39 %
- Installation load 16065 kWh.

Remark

- The one-week measurements performed in September 1998 showed results above the designed ones.
- The installation is designed allowing possible expansion.