Solar Process Heat Installation

Nissan, Spain

Summary description

Nissan Motors Company is an international well known automobile company from Japan which employs 224,000 people around the world, of which 12,500 jobs are in Europe. In Spain, Nissan has three industrial factories in Barcelona, Ávila and Cantabria (west, central and north Spain respectively). This example is related to the Ávila's production centre.

Background

The automobile industry has heat needs derived from the treatments carried out over bodyworks, painting works, washing and cleaning processes, etc.
In Nissan Motors Company, the solar thermal energy is used in the bodyworks pre-treatment line, where are placed the pre-treatment for the grease removal and the phosphatizing and electro coating processes.

With this installation of solar heat, the company looked for fulfil the environmental objectives contained in the Nissan Programme Green 2007-2010, which had three main indicators: increase the residues recycled percentage, decrease the $kgCO_2$/vehicle, and decrease the solvent kg/m^2 of painted surface. In this case, the aim was to improve the emissions indicator "$kgCO_2$/vehicle".

Technical data

- year of construction solar thermal system: 2007
- temperature level 45 ºC for all processes.
- heating system to support: hot water network with NG boilers.
- total NG consumption 2008: 21 MWh

Technical data solar thermal installation:

- units: 252 panels GAMESA Solar 5000 ST – 370 kWp
- surface 529,2 m²
- providing 479,990 kWh/year (calculated)
- storage tanks: 2 x 20,000 litres

Technical description

The solar heating system has almost 530 m^2 of surface and is installed in 42 batteries of 6 units. The system is mounted over the roof of the building the processes are carrying out, with an inclination of 23º respect the horizontal and 30º from the south. Before the construction a NG system provide heat to the exchangers with the aim of support the energy needs of the process. The new solar system provides, according to the calculations, 479,990 kWh/year, so saving energy generated by GAS will be 1,314,216 kWh/year with a saving of 42,823 €/year. The reduction of CO_2 emissions to the atmosphere is 217 Tons/year.

The total investment calculated is 280,000 € approx., however, the investment made by Nissan was up to 140,000 € due to the grants received for the project from regional authorities and fiscal deduction of the total investment for the first year.

Results & conclusions

This type of installation shows the capacity of the solar heat to provide support to traditional NG systems, obtaining energy and economical saves without dispense with the installed systems.

Moreover to obtain economical savings, in this type of large companies, its also important how the environmental image of the company grow, being this aspect more essential for some people nowadays. In cases like as described here, the public administration grants are very important and has a lot of importance when to take the final decision.