

Abstract

This work focuses on the study of real performances of a collective solar water heating system using the remote monitoring technique in Algerian climatic conditions. This is to ensure proper operation of the system at any time, determine the system performance and to check to what extent solar performance guarantee can be achieved. The measurements are performed on an active indirect heating system of 12 m² flat plate collectors surface installed in Algiers and equipped with a various sensors. The sensors transmit measurements to a local station which controls the pumps, valves, electrical auxiliaries, etc. The system provides a yearly solar yield of 6277.5 kWh for an estimated annual need of 7896 kWh; the yearly average solar cover rate amounted to 79.5%. The productivity is in the order of 523.13 kWh / m²/year. Simulation results are compared to measured results and to guaranteed solar performances. Remote monitoring shows that 90% of the expected solar results can be easily guaranteed on a long period. Furthermore, the installed remote monitoring unit was able to detect some dysfunctions. It follows that remote monitoring is an important tool in energy management of some building equipment