

Automated Surface Temperature Monitoring System for Solar Panels

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Abstract. The paper discusses the areas of application of the modern element base of microelectronics and telecommunications for the creation of automated devices for monitoring the temperature and operational characteristics of power plants. An automated system for monitoring the energy efficiency of a solar collector with a concentrator and the temperature of the working surface of a solar panel is proposed. It is revealed that monitoring the energy efficiency of solar collectors with concentrators is reduced to monitoring the temperature of the focal plane of the concentrator and measuring the flow rate of water heated by it. The proposed automated system for monitoring the temperature of the working surface of solar panels makes it possible to automate the process of monitoring the operating parameters of thermal and electric power solar installations and ensures the cyclicity and reproducibility of the measurement process. The results of the measurement process are accumulated in the system database. Remote access to the database via the Internet allows their simultaneous processing by several specialists. The proposed monitoring systems also allow minimizing the number of subjective factors when assessing the energy efficiency of a solar plant.

Key words: solar collector, concentrator, solar panel, temperature, control, automated system, monitoring.

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