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## IMPROVEMENT OF THE PERFORMANCE OF THE FLAT PLATE SOLAR COLLECTORS USING NANOFLUID

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**F**lat plate solar collectors (FPSCs) are widely used for heating applications. Thermal performance of the FPSCs is greatly affected by working fluid circulating inside the system. In this experimental study, it is aimed that thermal performance of a FPSC has been improved using nanofluid as the working fluid. Influences of different nanoparticles containing nanofluids on thermal performance have also been compared in this study. Nanofluids are the new generation working fluids utilized in heat transfer processes. They are the mixture of three main components: a base fluid, the nano particles of such materials as metal oxides and ceramics, and a surface-active agent

(surfactant) material. Nanoparticles enhance the thermophysical properties of the base fluid, while a surfactant doped into the mixture prevents flocculation and sedimentations and extends the hanging time of the nanoparticles. A test rig has been set up according to ISO 9806 standard and experiments have been performed using nanofluid and deionized water, respectively. The findings, in addition, have been compared to each other. The maximum improvement in thermal performance of a FPSC has been obtained when nanofluid has been used as the working fluid inside the system.

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