عنوان مقاله:

Heat transfer of Nano-fluids as working fluids of swimming pool heat exchangers

محل انتشار:

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خلاصه مقاله:

The present experimental study reports on enhancement of heat transfer by addition of nanoparticles to the working fluid of commercial swimming pool heat exchangers under laminar flow condition. Three different concentrations of Titanium dioxide nanoparticles were added to the water as working fluid of a typical forced convective heat exchanger used to transfer heat to public swimming pools. The experimental setup is capable of measuring velocity, heat transfer rate, and temperature at different points. TiO۲ nanoparticles with mean diameter of ۲۰ nm were used. The effects of concentration of suspended nanoparticles and that of Reynolds number on forced convective heat transfer were investigated. It is observed that at ۰.۱%, ۰.۵% and ۱% weight concentration of suspended TiO۲ nanoparticles, the average convective heat transfer coefficient improved by ۱.۱%, ۱۵.۹% and ۳۱.۶% respectively. The coefficient is further increased at higher Reynolds numbers. The efficiency of heat exchanger is evaluated for different scenarios.

کلمات کلیدی: