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Development and Field Test of a Solar Hot Water System for Residential Application Using Polymer Absorber

Abdullah Filmban, Fajr Lodhi, Ahmed Aftab, and Anas Alhindi
Yanbu Industrial College, Kingdome of Saudi Arabia, 3502659@stu.rcyci.edu.sa, 3502685@stu.rcyci.edu.sa, 3502660@stu.rcyci.edu.sa, 3502679@stu.rcyci.edu.sa
Supervisor: Hazim Moria, Assistant Professor and Head of Mechanical Engineering Department
Yanbu Industrial College, Kingdome of Saudi Arabia, moriah@rcyci.edu.sa

Most of solar panels pipes were made from copper, and after a period of time these tubes become rusted and required a lot of maintenance and huge work. This study aimed to develop and field test of a Solar Hot Water System (SHWS) for residential application that can't get effected by corrosion. The prototype of SHWS was designed using polymer material as a thermal absorber tubes. The thermal collector box was made from Fibre Reinforced Plastic (FRP) with Foil Reinforced Kraft (FRK) and used as the insulation material. The absorber tubes were made of Polyvinyl Chloride (PVC) and have an outer diameter of 0.5 inch (1.27cm). The steel wool was inserted between collector tubes and insulation to enhance heat retention inside the collector box. Glazing was provided by tempered glass. In this particular design, the collector tubes are arranged in a rectangular spiral. The system is capable of producing hot water more than 55 °C under 700 W/m2 solar radiations.