A review on Comparative study of solar air heater performance with different shapes on absorber plate surface

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Abstract

This review paper based on the study of solar air heater with different shapes on absorber plate surface. The investigation is carried on solar air heater with two different absorber plates, one is the absorber plate with conical surface is investigated and compared with flat plate.The solar air heater has a low thermal efficiency because of the low thermal conductivity between absorber plate surface and air. To increase the thermal efficiency of solar air heater by increasing its surface area. The experiment is carried out for three mass flow rates of 0.004, 0.08 and 0.10 kg/s in outdoor conditions.

The efficiency of the solar air heater is determined under similar operating conditions. It has been observed that the thermal efficiency and also the average exergy efficiency of absorber plate with conical surface are higher than the flat absorber plate because of the smooth air flow above the surface, increased surface area and decreasing the dead surface in the duct.

The study has been covered to increase the efficiency of solar air heater. It depends on the mass flow rates, solar radiation and also surface area of absorber plate surface.

Keywords: Solar air heater, conical surface, thermal efficiency, exergy.