

## **AIR HEATING AND COOLING USING SOLAR POND TECHNOLOGY**

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### **Abstract**

This paper presents the results of experimental and theoretical analysis of employing a small scale solar pond. An insulated solar pond with a surface area of  $3.36 \text{ m}^2$  and a depth of 1.0 m to conduct performance experiments. The three salty water zones (upper convective, non-convective and heat storage) were formed by filling the pond with salty water of various densities. 16 thermocouples (type T) were used to measure the temperature profile within the pond. A stainless steel heat exchanger with  $\frac{3}{4}$  in diameter was placed in the LCZ to extract heat from the LCZ and heating a (3x3x3 m) room. The temperature profiles for the three zones are presented as can be shown in the current paper. The results obtained promote using solar ponds for heating and air conditioning purposes of small spaces because of many reasons like low cost of the system, the nature of Kuwait like low wind speed and high temperature etc.. and the availability of salt.

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**Keywords:** solar pond, heating, cooling, air-conditioning, heat transfer, heat exchanger.