



Science

EXPERIMENTAL STUDY AND ANALYSIS OF SOLAR AIR HEATER USING OF VARIOUS INLET TEMPERATURES

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Abstract

In this paper, we are make the experimental setup and assembled the various components such as, flats plate glass, wood, collector, inlet port and outlet port. The collector are generated the hot air with the help solar radiation. The collector are aching the air from inlet port and finally hot air are out through outlet port. We are measured the maximum outlet hot air Temperature in °C.

Keywords: Flats Plate Glass; Wood; Collector.

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1. Introduction

By solar air heater, we are obtaining the hot air. The upper portion of solar air heater are covered with the help of glass, inlet air are heated by solar radiation which are interring with the help of glass.

2. Experimental Setup

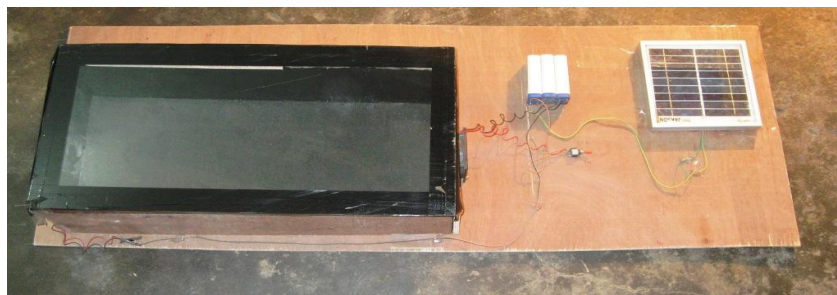


Figure 1: Experimental setup



Figure 2: solar collector

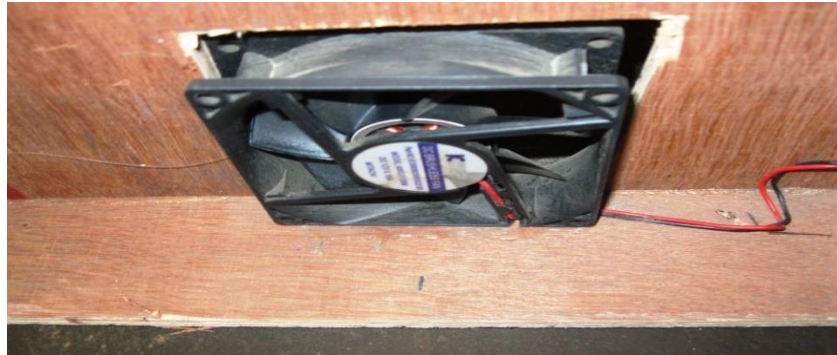


Figure 3: D.C. fan

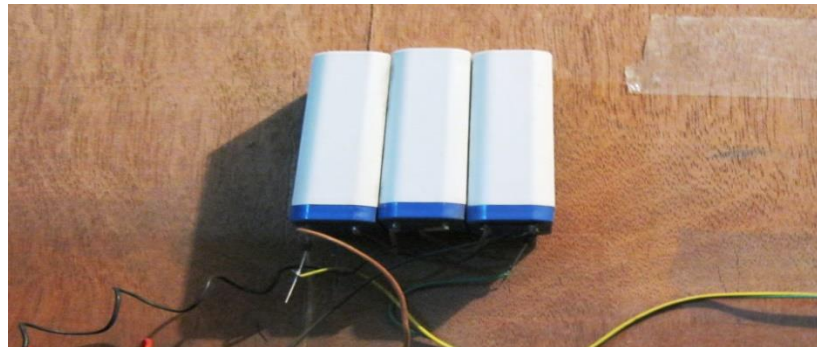


Figure 4: battery



Figure 5: photovoltaic cells

3. Results and Discussion

Table 1: Mass air flow rate at 0.30 kg / sec using of simple absorber trays forced convection

Sr.No.	Time In hours	Temperature in °C at inlet	Temperature in °C at outlet
1	10:00	30	41
2	11:00	31	44
3	12:00	32	52
4	13:00	40	55
5	14:00	41	48
6	15:00	36	49
7	16:00	32	45

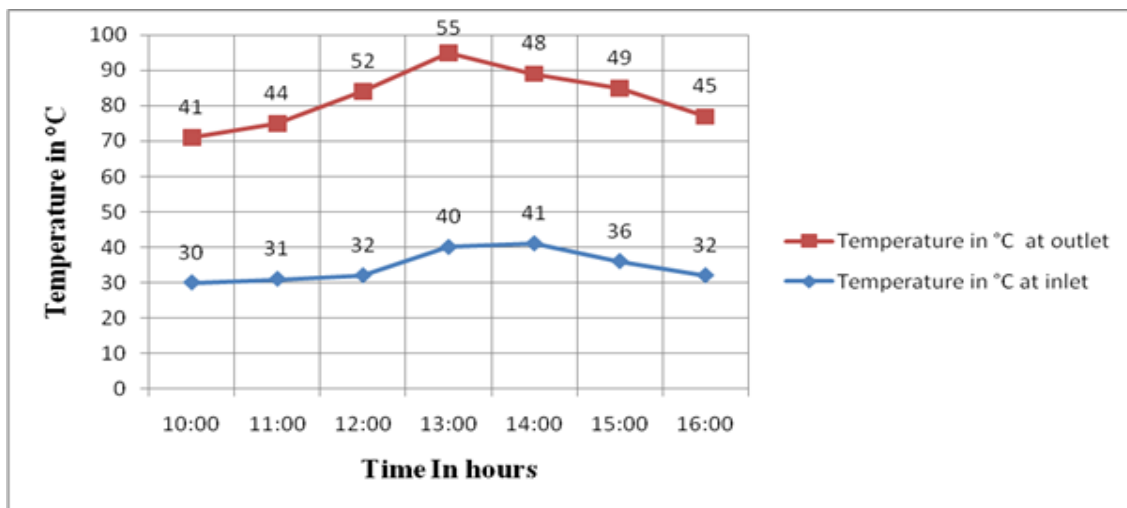


Figure 6: Mass air flow rate at 0.30 kg / sec using of simple absorber trays forced convection

Table 2: Mass air flow rate at 0.40 kg / sec using of simple absorber trays forced convection

Sr.No.	Time In hours	Temperature in °C at inlet	Temperature in °C at outlet
1	10:00	29	44
2	11:00	30	47
3	12:00	31	55
4	13:00	42	57
5	14:00	41	49
6	15:00	37	48
7	16:00	32	44

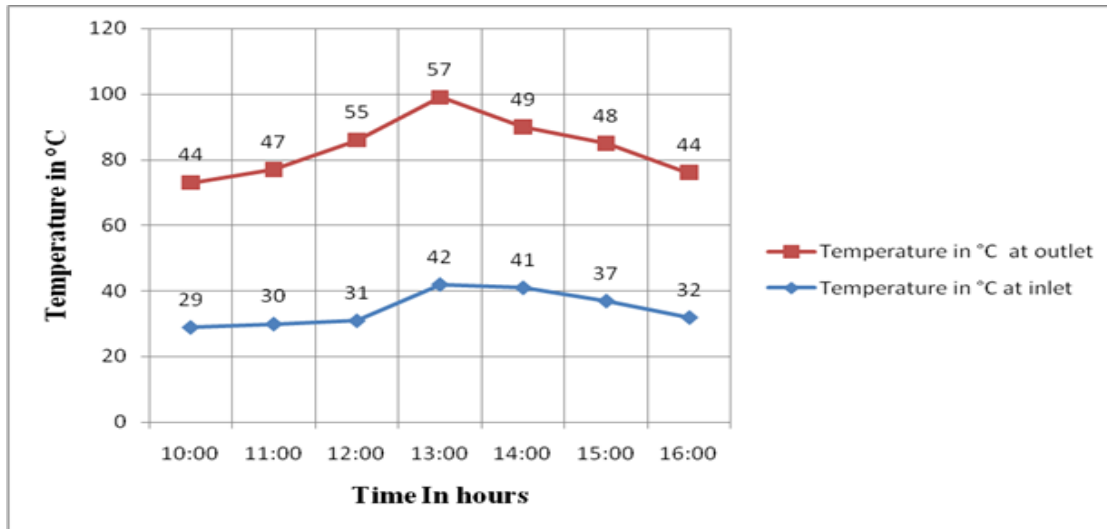


Figure 7: Mass air flow rate at 0.40 kg / sec using of simple absorber trays forced convection

Table 3: Mass air flow rate at 0.50 kg / sec using of simple absorber trays forced convection

Sr.No.	Time In hours	Temperature in °C at inlet	Temperature in °C at outlet
1	10:00	30	48
2	11:00	32	50
3	12:00	33	57
4	13:00	43	62
5	14:00	41	56
6	15:00	36	52
7	16:00	32	49

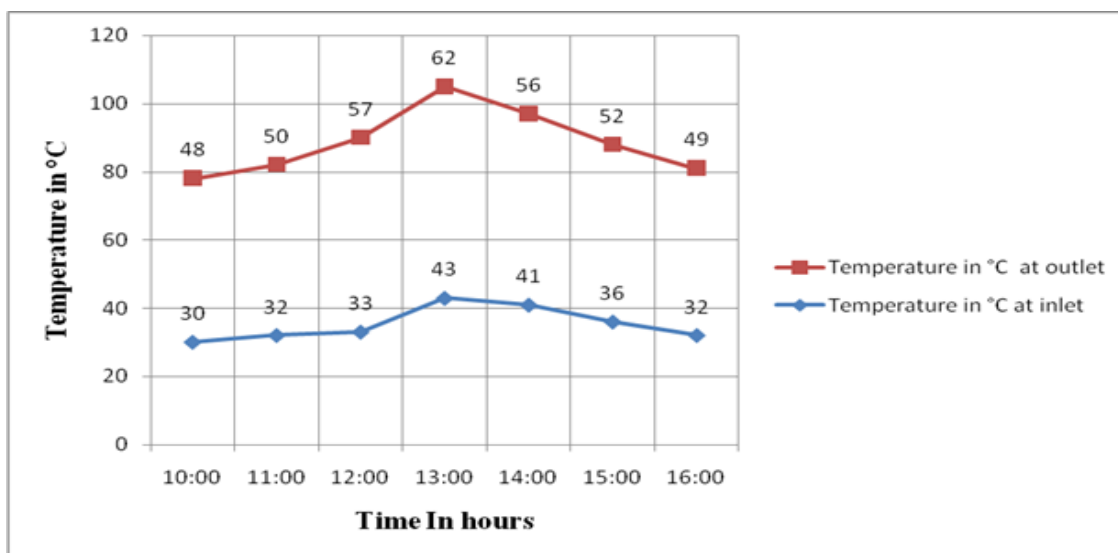


Figure 8: Mass air flow rate at 0.50 kg / sec using of simple absorber trays forced convection

4. Conclusion

In this paper, we are measured the various temperatures using of digital temperature measurement devices. We are finding out the maximum 62 °C Temperature at outlet and times are 13:00, .the Mass air flow rate are 0.50 kg / sec using of simple absorber trays forced convection, which are shown in table .3.

References

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