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TO STUDY AND ANALYSIS OF FLAT PLATE SOLAR WATER HEATER PV CELLS

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Abstract:
In this study we are obtaining the maximum temperature of solar water heater using of PV cells. The flat plate solar water heater are consisting using several parts such as collector , flat plate glass , circulating pump, PV cells , frame . The centrifugal pump is operated by PV Cells. Water temperature is measured by digital temperature meter. Hot water is storage in container. The most elements of these are a clear front cover, collector housing associated an absorbent material.

Keywords: *Solar Collector; Pipe; Flat Plate Glass; Circulating Pump.*

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1. Introduction

The collector housing are made of plastic, metal or wood, and additionally the glass front cover ought to be sealed so as that heat does not escape, and dirt, insects or wetness do not get into the collector itself. Many collectors even have controlled ventilation, so on avoid condensation inside the glass front cover. The collector housing is way insulated at the rear and sides, keeping heat losses low. there are still some collector heat losses, primarily due to the temperature difference between the absorbent material and shut air, and these are divided into convection and radiation losses .

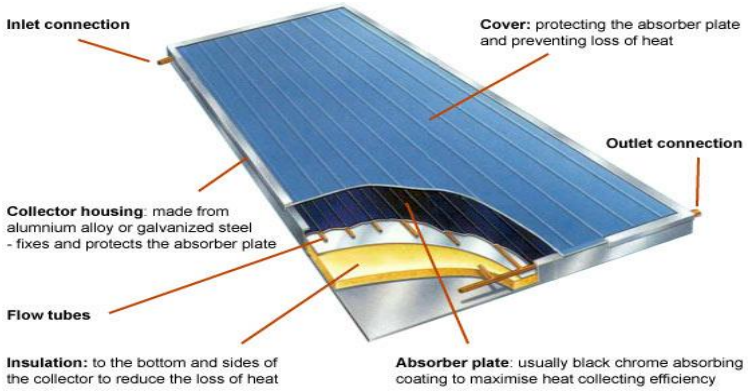

Figure 1: solar heating system

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Typical Flat Plate Collector

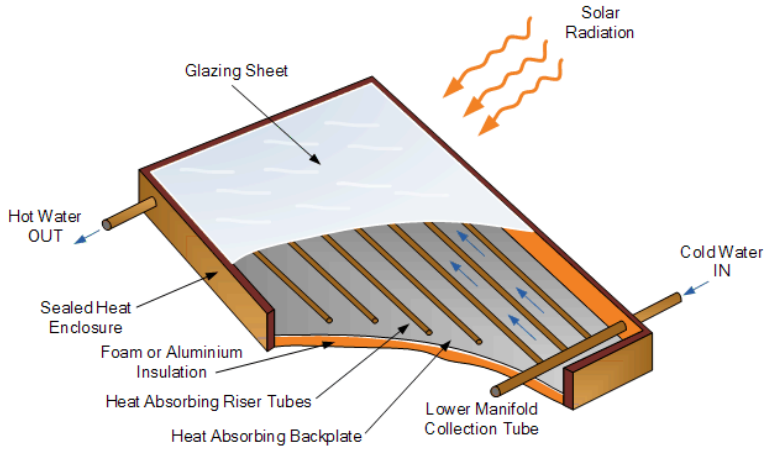

Figure 2: Flat Plate Collector

Indirect Hot Water System

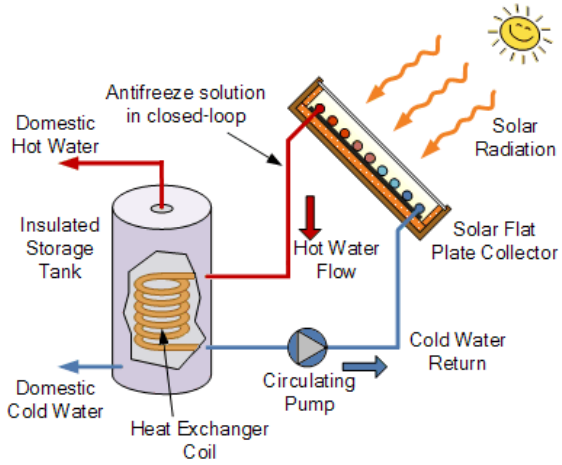

Figure 3: Indirect Hot Water System

2. Photovoltaic Cells

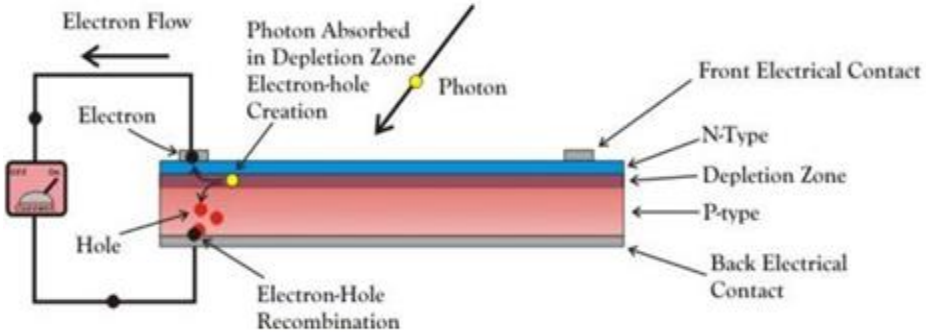

Figure 4: Solar Cell

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3. Result and Discussion

Table 1: Time and temperature with water flow rate 14 litres/ Minutes

Sr. No.	Time	Temperature in °C
1	10:00	30
2	11:00	33
3	12:00	40
4	13:00	42
5	14:00	45
6	15:00	44
7	16:00	38
8	17:00	34

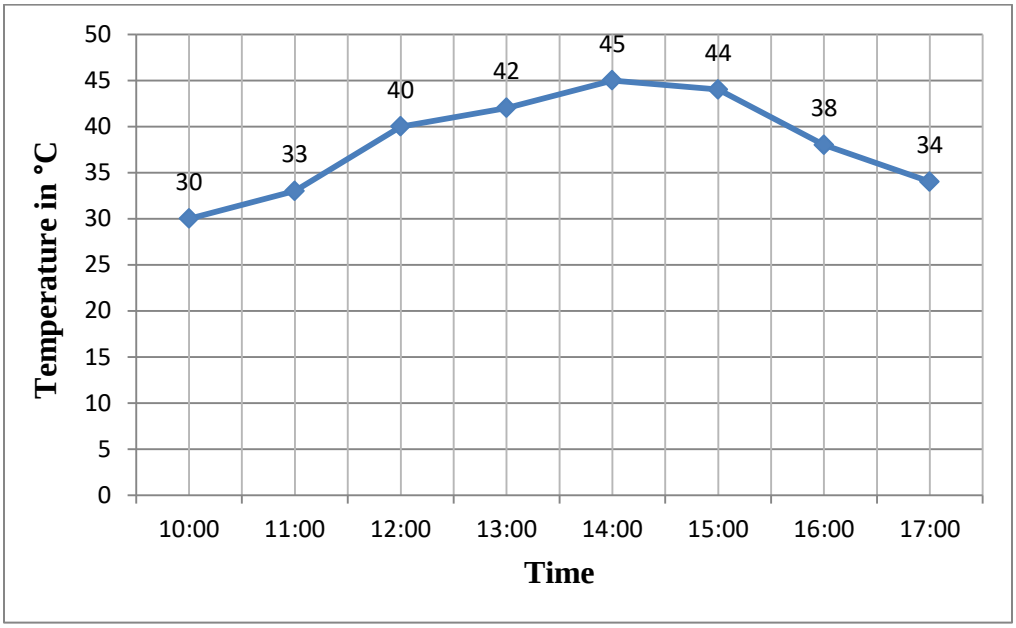

Figure 5: Time and temperature with water flow rate 14 litres/ Minutes

Table 2: Time and temperature with water flow rate 15 litres/ Minutes

Sr. No.	Time	Temperature in °C
1	10:00	30
2	11:00	35
3	12:00	42
4	13:00	45
5	14:00	48
6	15:00	45
7	16:00	40
8	17:00	36

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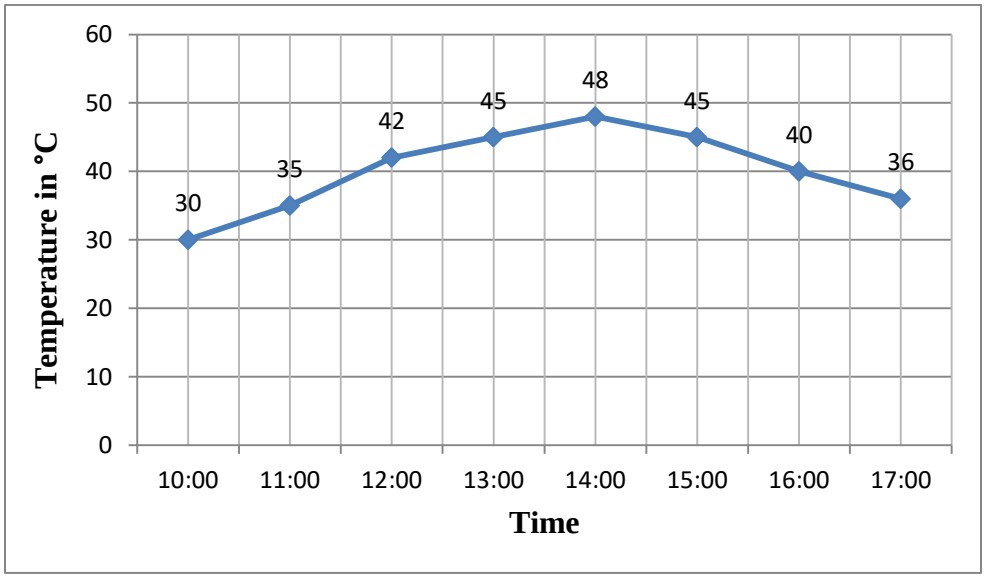

Figure 6: Time and temperature with water flow rate 15 litres/ Minutes

Table 3: Time and temperature with water flow rate 16 litres/ Minutes

Sr. No.	Time	Temperature in °C
1	10:00	30
2	11:00	38
3	12:00	43
4	13:00	48
5	14:00	50
6	15:00	48
7	16:00	44
8	17:00	37

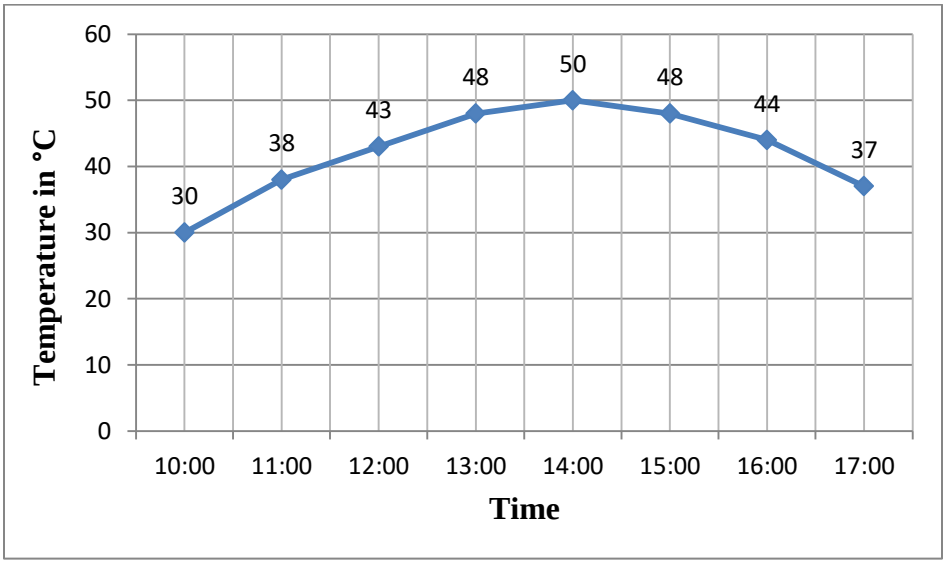

Figure.7.Time and temperature with water flow rate 16 litres/ Minutes

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Table 4: Time and temperature with water flow rate 17 litres/ Minutes

Sr. No.	Time	Temperature in °C
1	10:00	30
2	11:00	40
3	12:00	45
4	13:00	50
5	14:00	52
6	15:00	50
7	16:00	45
8	17:00	39

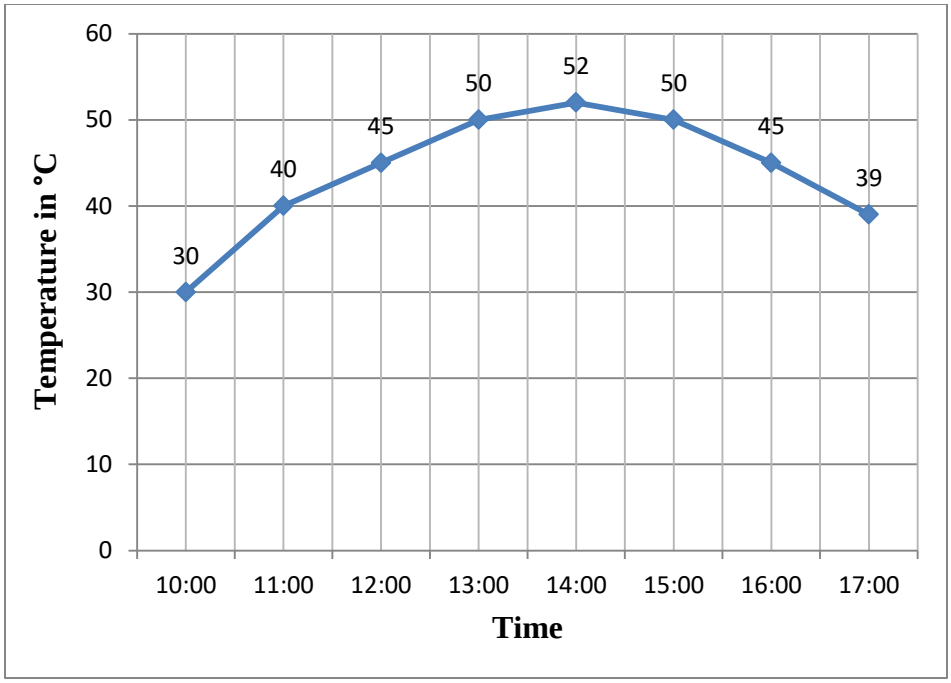

Figure 8: Time and temperature with water flow rate 17 litres/ Minutes

Table 5: Time and temperature with water flow rate 18 litres/ Minutes

Sr. No.	Time	Temperature in °C
1	10:00	30
2	11:00	42
3	12:00	48
4	13:00	55
5	14:00	57
6	15:00	52
7	16:00	50
8	17:00	46

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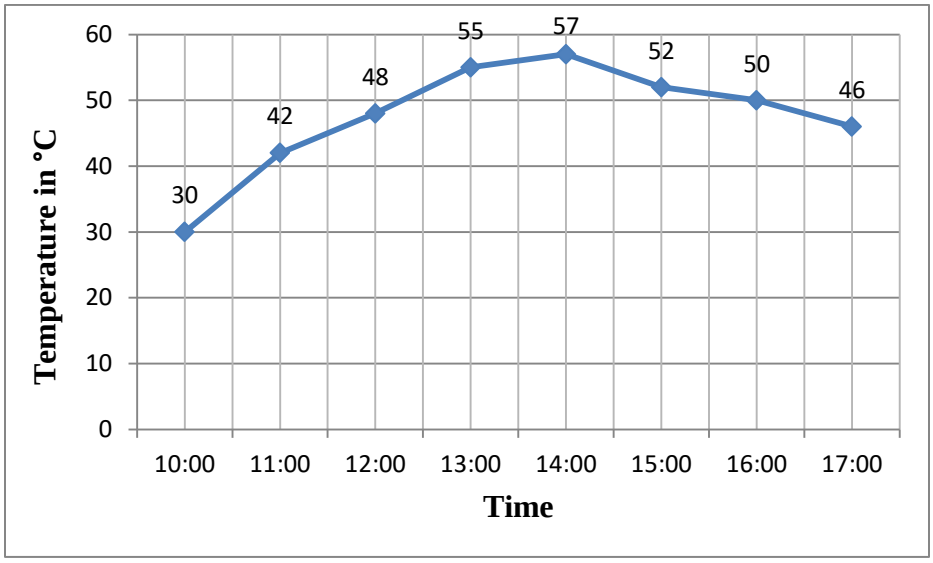

Figure 9: Time and temperature with water flow rate 18 litres/ Minutes

Table 6: Time and temperature with water flow rate 19 litres/ Minutes

Sr. No.	Time	Temperature in °C
1	10:00	30
2	11:00	40
3	12:00	46
4	13:00	52
5	14:00	54
6	15:00	49
7	16:00	47
8	17:00	44

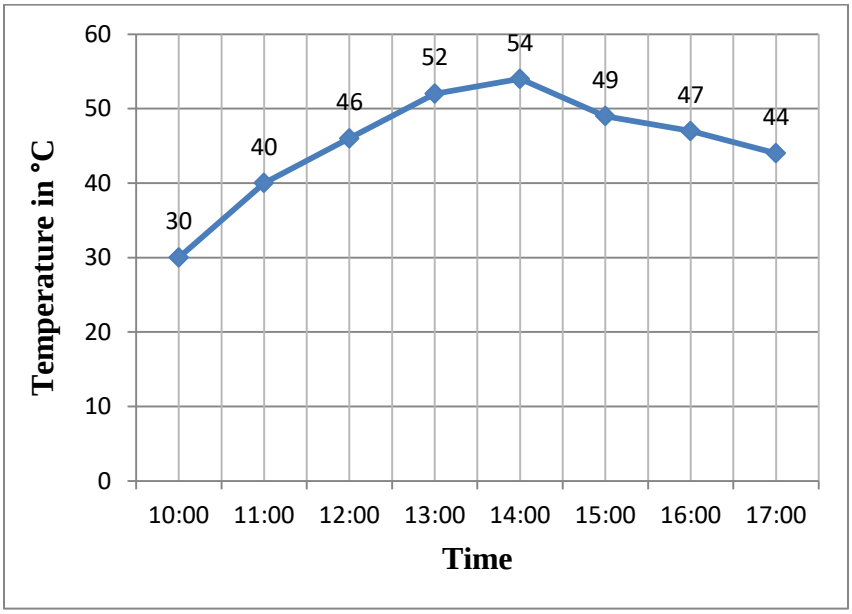

Figure 10: Time and temperature with water flow rate 19 litres/ Minutes

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4. Conclusion

We are studying about flat plate solar water heater with photovoltaic cells and we are achieving the maximum temperature as 57°C at the time 14:00 using of water flow rate 18 litres/ Minutes. The circulating pump is operated by using of PV Cells, which are very useful in domestic aria.

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