Student Experiments

Manual

HOT WATER

P9160-5W

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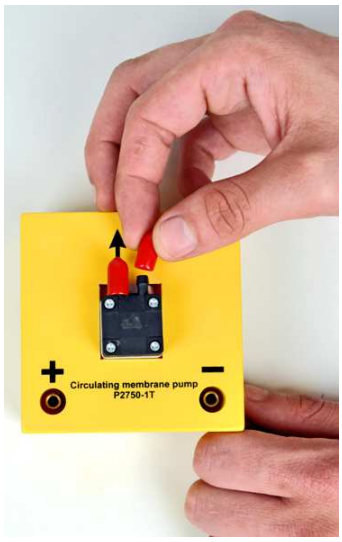
HOT WATER

WW 00

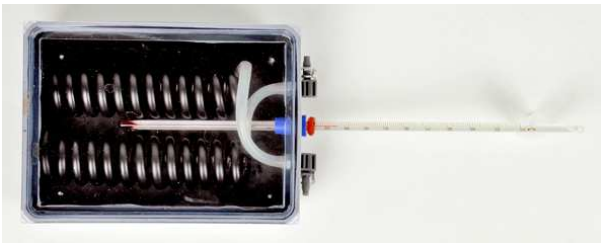
Experiment set-up:

Step 1: Remove the cover with coil from the heat exchanger.
Fill 375 ml of water into the tank and carefully put the cover back on the tank.

Step 2: Remove the red safety lids from the pump



Step 3: A thermometer is put carefully into the silicone stopper of the solar collector. The graduation should be outside of the vessel, the expansion vessel should not touch the metallic coil inside the solar collector.
The top end of the thermometer should be positioned higher (e.g. with the safety lids of the pump).

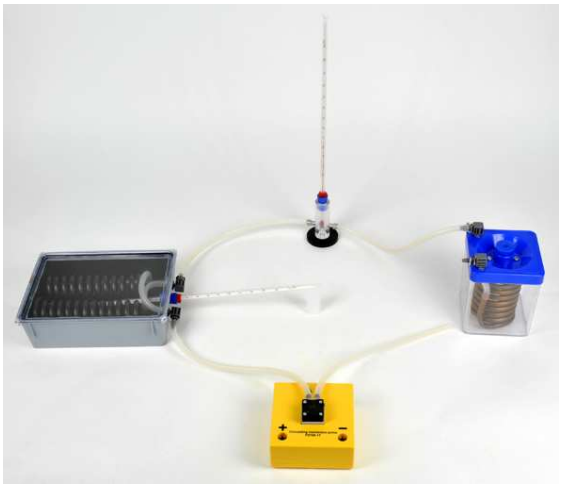


Step 4:

a.) Stick another thermometer into the temperature measuring chamber through the silicone stopper.

b) Adjust the height; the expansion vessel of the thermometer should not touch the ground.
Afterwards strongly press the stopper into the expansion vessel, so that the thermometer is fixed.

c) Fix the thermometer with the red silicone triangle to achieve a perpendiculary positioning of the thermometer



Step 5: Now, position the assembled parts as shown on the picture. Connect them with the 4 silicone tubings, the pump will not be connected to the heat exchanger yet.

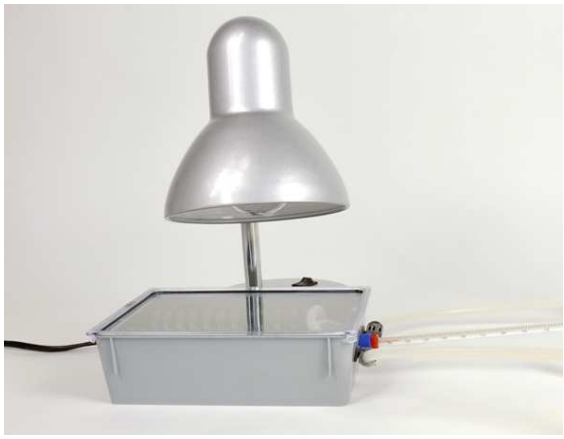
Step 6: Stick the third thermometer into the silicone stopper of the heat exchanger. The expansion vessel of the thermometer must not touch the ground or the metallic coil.

Step 7: Draw up approx. 100 ml of water with the syringe.

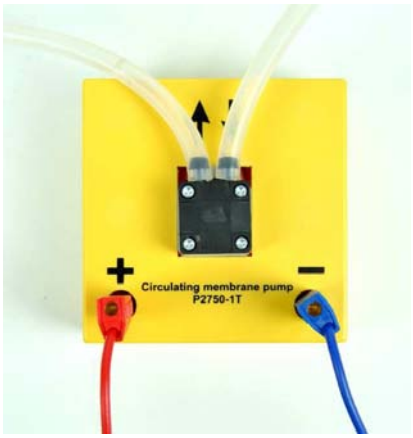
Step 8: Position the beaker under the open hose-connection of the heat exchanger. At the open hose-connection of the pump fill the circulation-flow-circuit with the help of the syringe. Smoothly press the syringe until the water streams out of the open hose-connection of the heat exchanger without bubbles.

Step 9: Pull off the hose from the syringe and stick the open end onto the heat exchanger.

Step 10: Position the table lamp over the solar collector. The distance to the glass plate of the solar collector should be at least 10 cm.



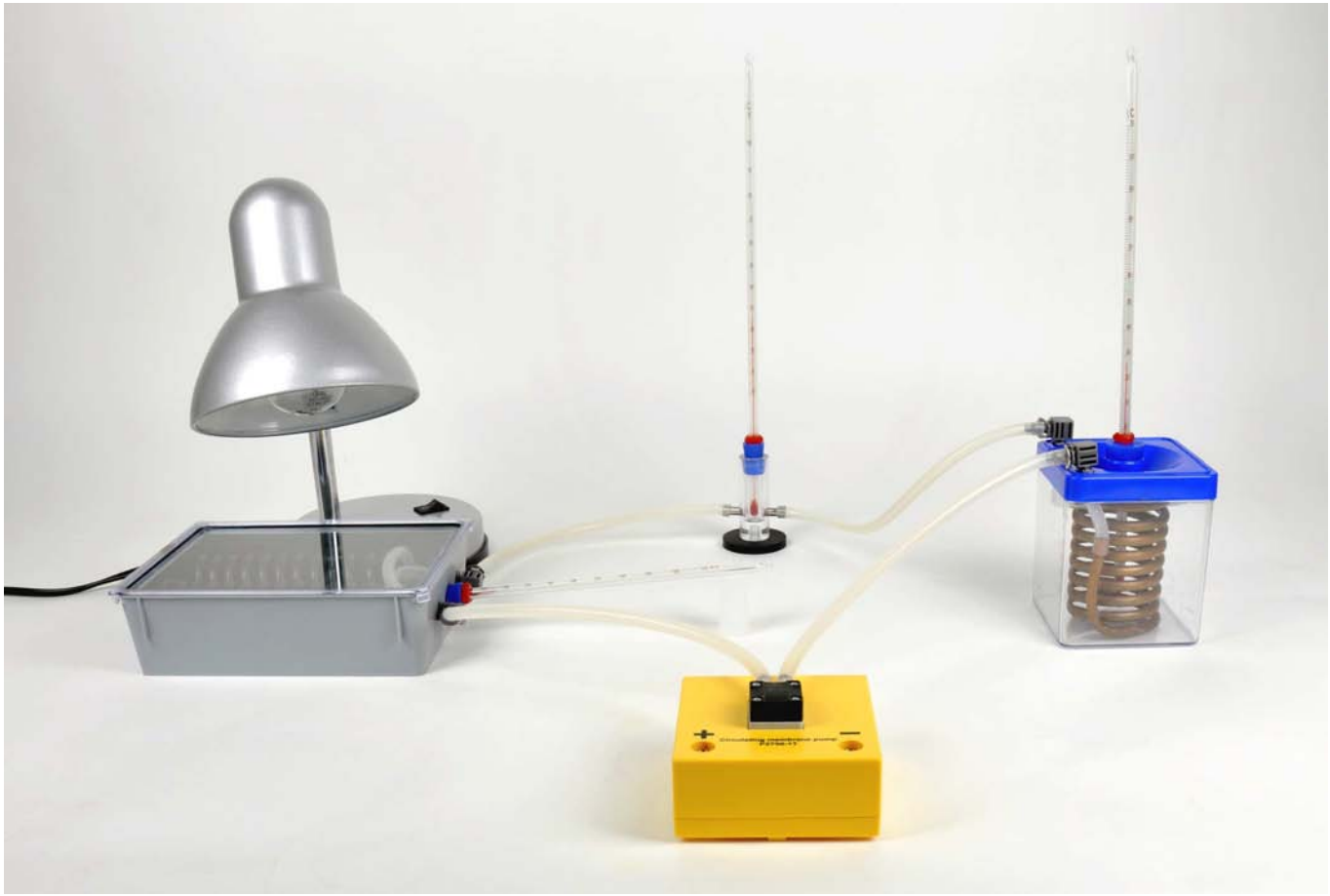
Step 11: Apply 12 V DC (direct current) to the circulation pump. Keep attention to the polarity.



Step 12: Switch on the lamp. Keep attention that the table lamp uniformly radiates the solar collector completely.

HOT WATER

WW 00



HOT WATER

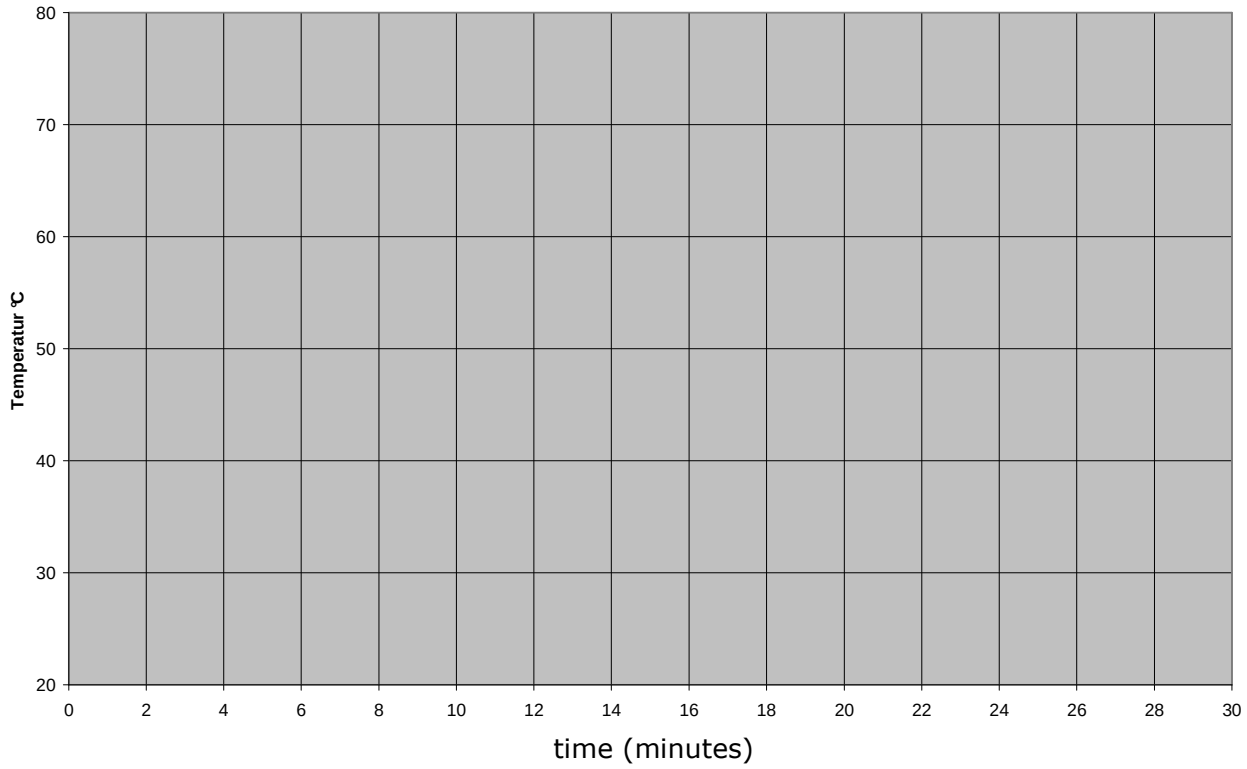
WW 01

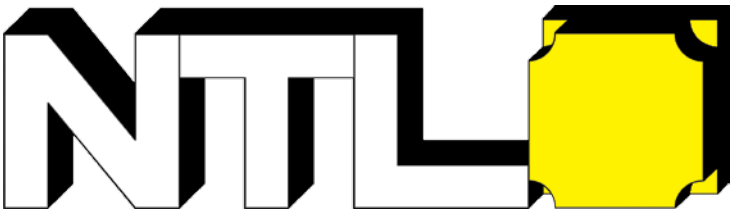
Experiment:

Read off the temperatures of the 3 thermometers every 2 minutes and put the measured values into the chart:

time (min.)	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
Solar collector (℃)																
Circulation-flow-circuit (℃)																
Heat exchanger (℃)																

Transfer the measured values into the following graph and connect the points.
Try to evaluate the graph with the help of the measured values.





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