Design, Construction and Testing of a Low-cost Flat Plate Solar Energy Collector

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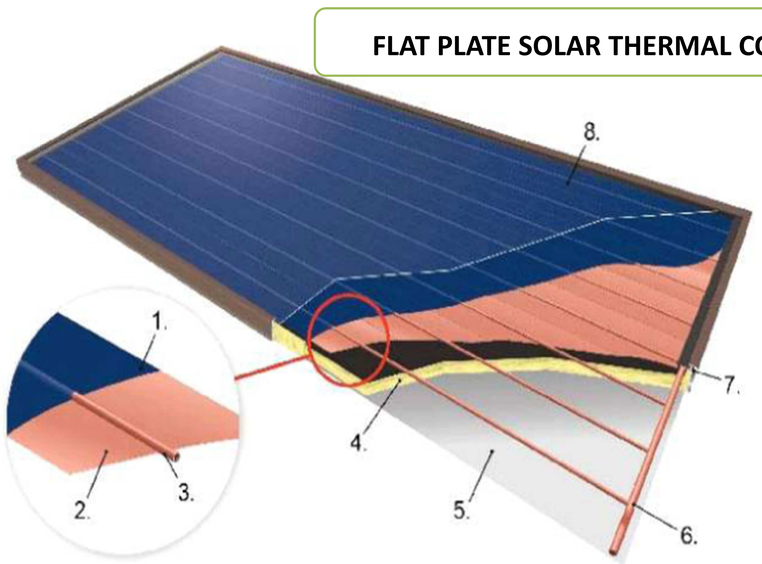
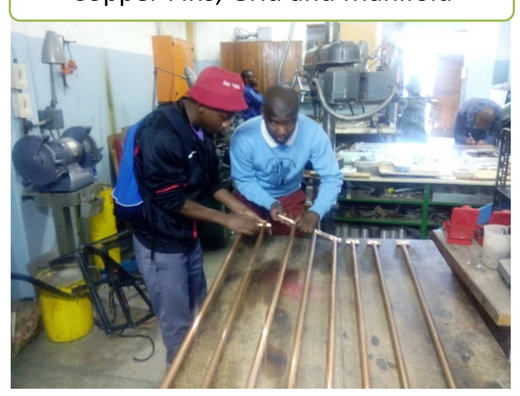
FLAT PLATE SOLAR THERMAL COLLECTOR DESIGN AND CONSTRUCTION BY ENGINEERING STUDENTS @ NUL, USING LOW-COST MATERIALS



1. Selective Coating
2. Absorber
3. Tube
4. Insulation
5. Rear panel
6. Manifold
7. Frame
8. Transparent cover

Absorber Copper Fins

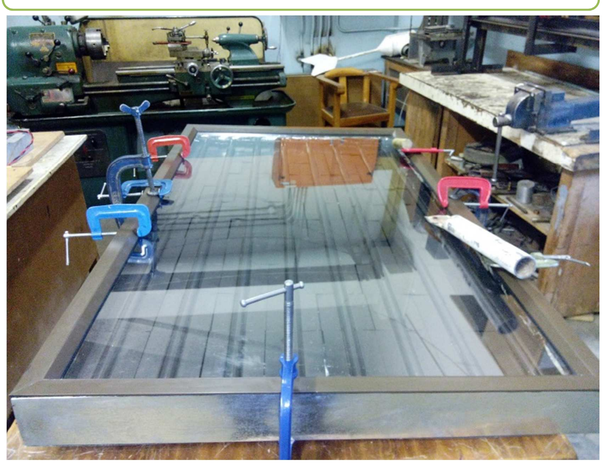
Copper Fins, Grid and Manifold



Selective Coating

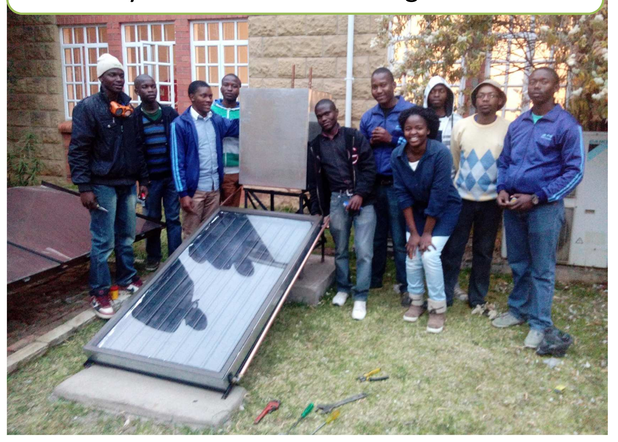
Insulating Frame (Fibre glass, Sheep wool @ ecofoam)

Glass Fitting



Completed Flat Plate Collector

Installed Collector as a Thermosyphon System with a 50L Storage Tank

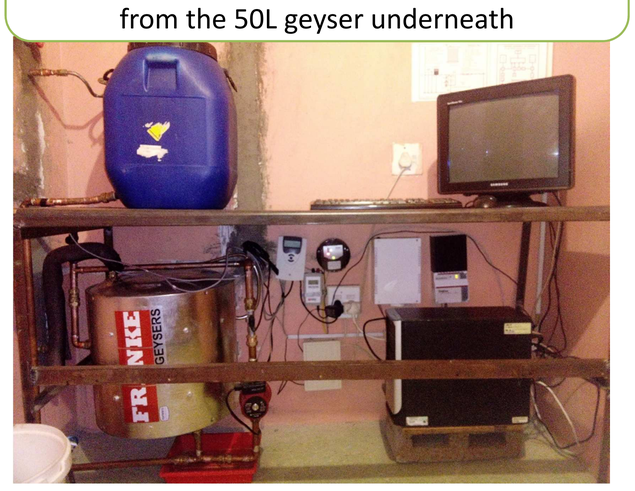


FLAT PLATE SOLAR THERMAL COLLECTOR MODELS FOR TESTING IN THE LAB AND FOR REMOTE MONITORING AT A TYPICAL RURAL HOME IN MACHACHE

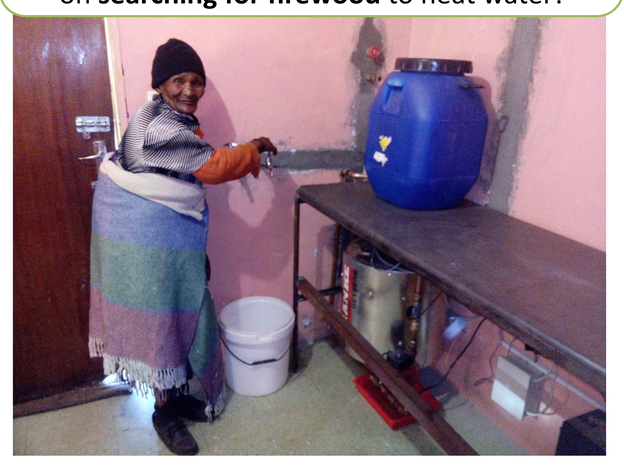
A mobile solar water heating station, using a solar-powered pump, for testing and measurements as part of **laboratory work**

A solar water heating system using a solar-powered pump, mounted on the roof of a rural household for measurements, data logging, remote monitoring and analysis

Due to lack of reticulated water, the low pressure pump system uses 50L cold-water storage tank on top to drive the hot water from the 50L geyser underneath



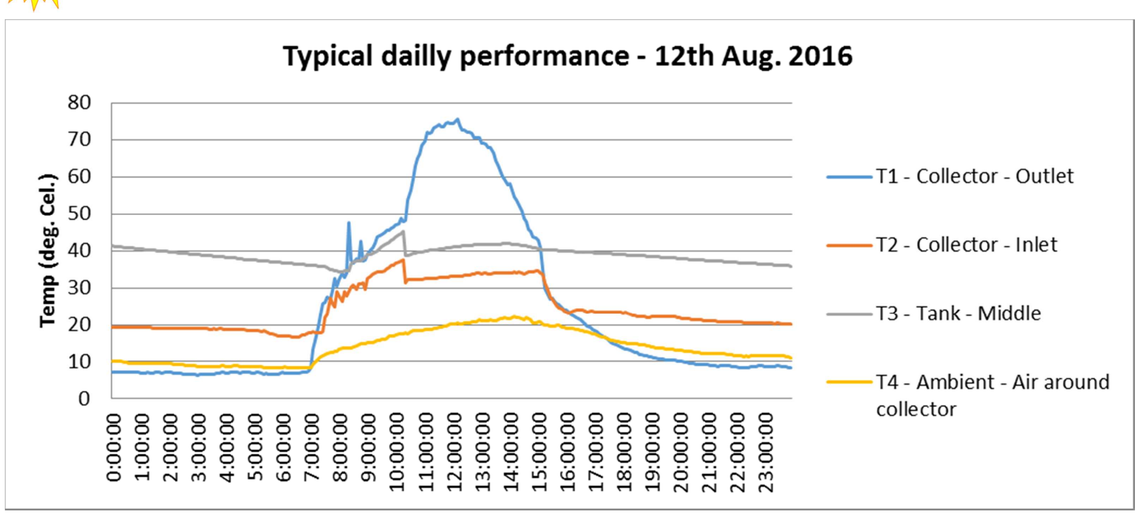
The benefiting householder / pensioner gets hot water from the tap for her domestic use, saving effort and time spent on **searching for firewood** to heat water!

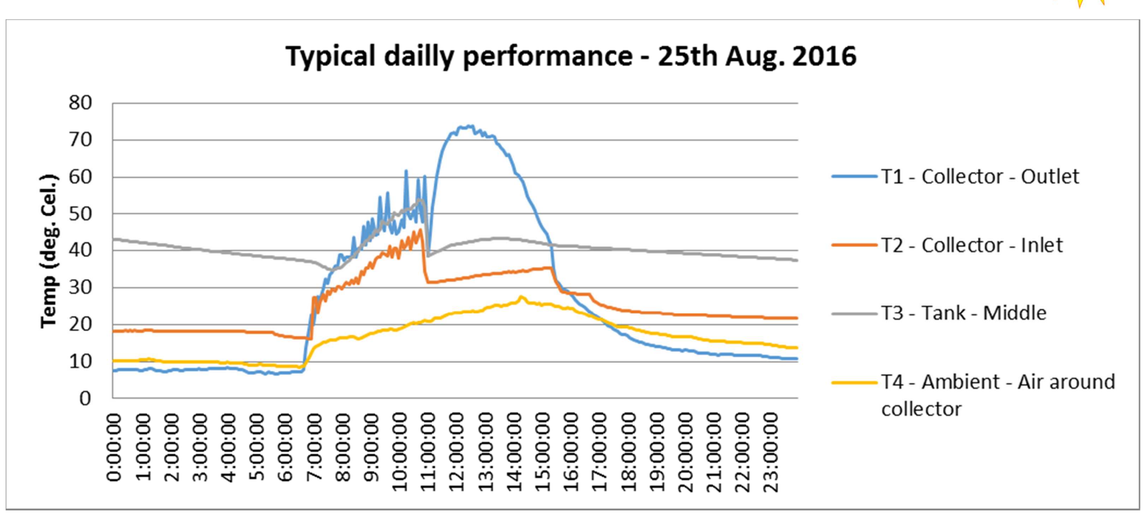


Solution 1-Green energy
Lab experiment

Solution 2- Sustainable
Hot water access

TYPICAL DAILY MEASUREMENTS AND PERFORMANCE OF THE REMOTELY-MONITORED RURAL 50L SOLAR WATER HEATING SYSTEM





TYPICAL MONTHLY MEASUREMENTS AND PERFORMANCE OF THE REMOTELY-MONITORED RURAL 50L SOLAR WATER HEATING SYSTEM