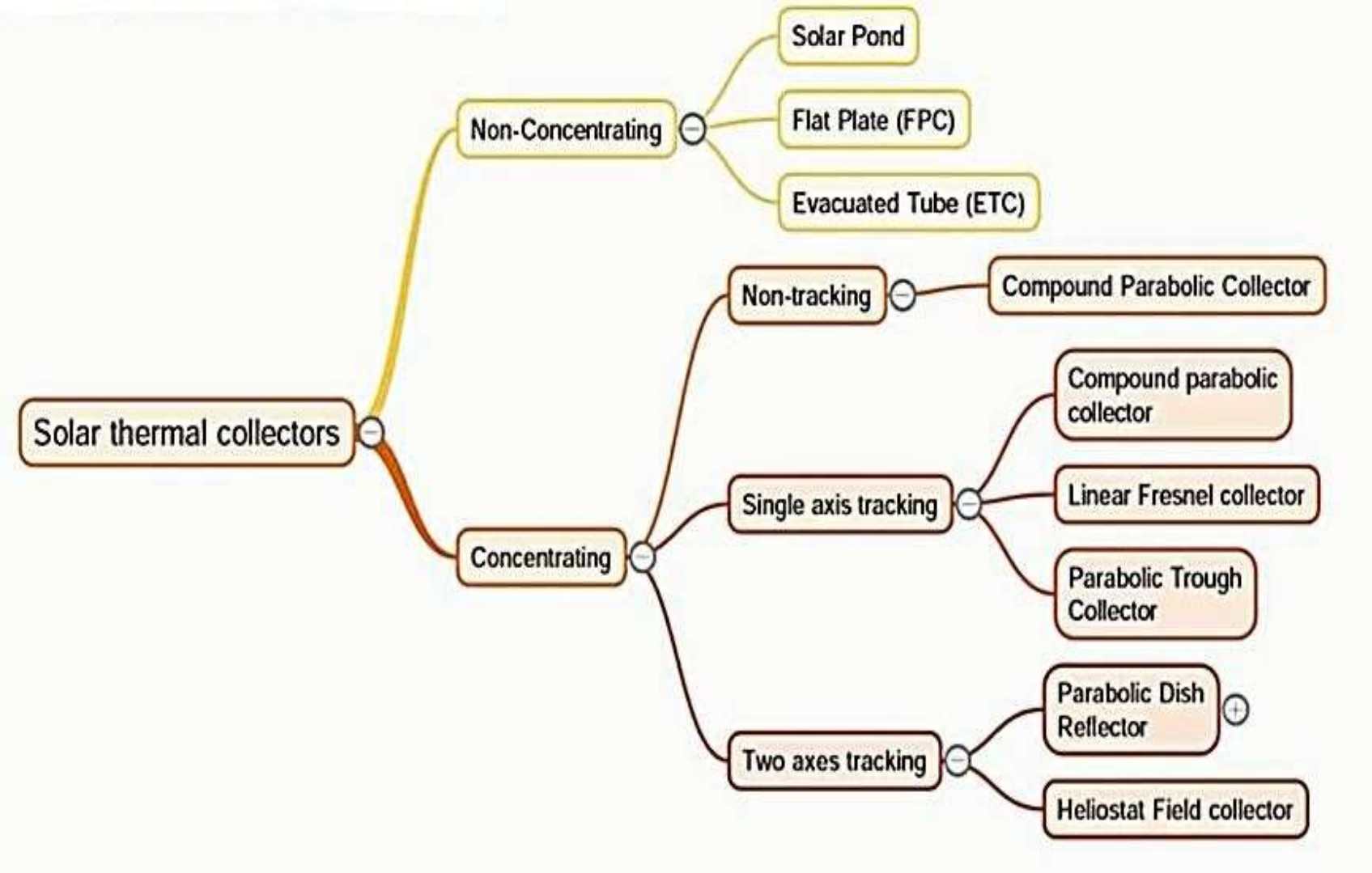
Unit 2:- Solar Energy

Lecture 5

- Solar Thermal Power
- Comparative Study
- Solar Thermal Water Heater
- Solar Hot Water System
- Evacuated Type Collector
- Box Type Solar Cooker / Parabolic Solar Cooker
- Scheffler Cooker
- Evacuated Tube Solar Cooker
- Solar Distillation Plant /Solar Dryer
- Concentrated Solar Power

Solar Thermal Power



Solar Water Heater Comparative Study

- The approximate savings per day for 125 LPD solar hot water system are given below:

  - Electricity: 6 units
  - Diesel: 2 liters
  - Kerosene: 3 liters
  - LPG: 0.44 kg. 5
  - Firewood: kg.

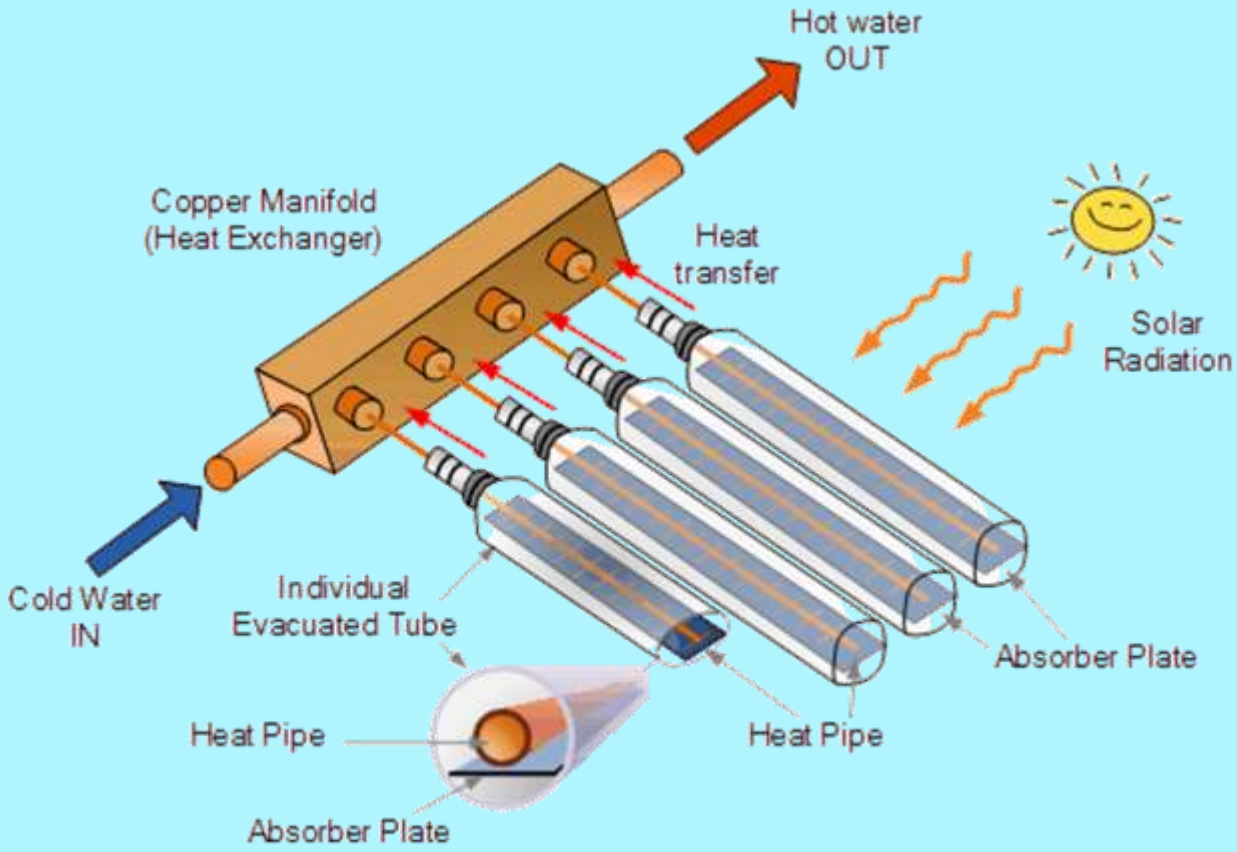
Solar Thermal Water Heater

- It consists of a solar collector and an overhead tank
- Water circulates naturally by thermo-syphon effect.
- 125 ltrs per day system will be sufficient for 3-4 persons.
- Heats water up-to 70°C
- The storage tank and piping of the system are well insulated.
- Electrical heater backup can be provided for cloudy days.

Solar Hot Water System

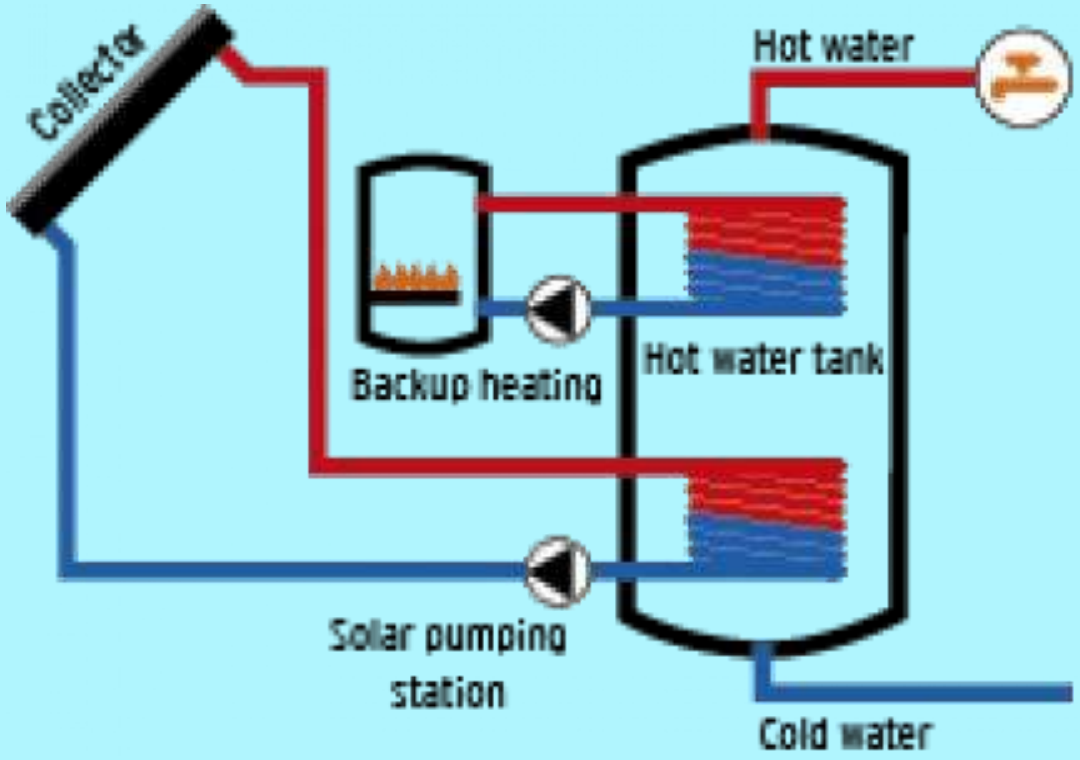
Flat plate, cu tube , pressurized solar water heater

Evacuated Type Collector

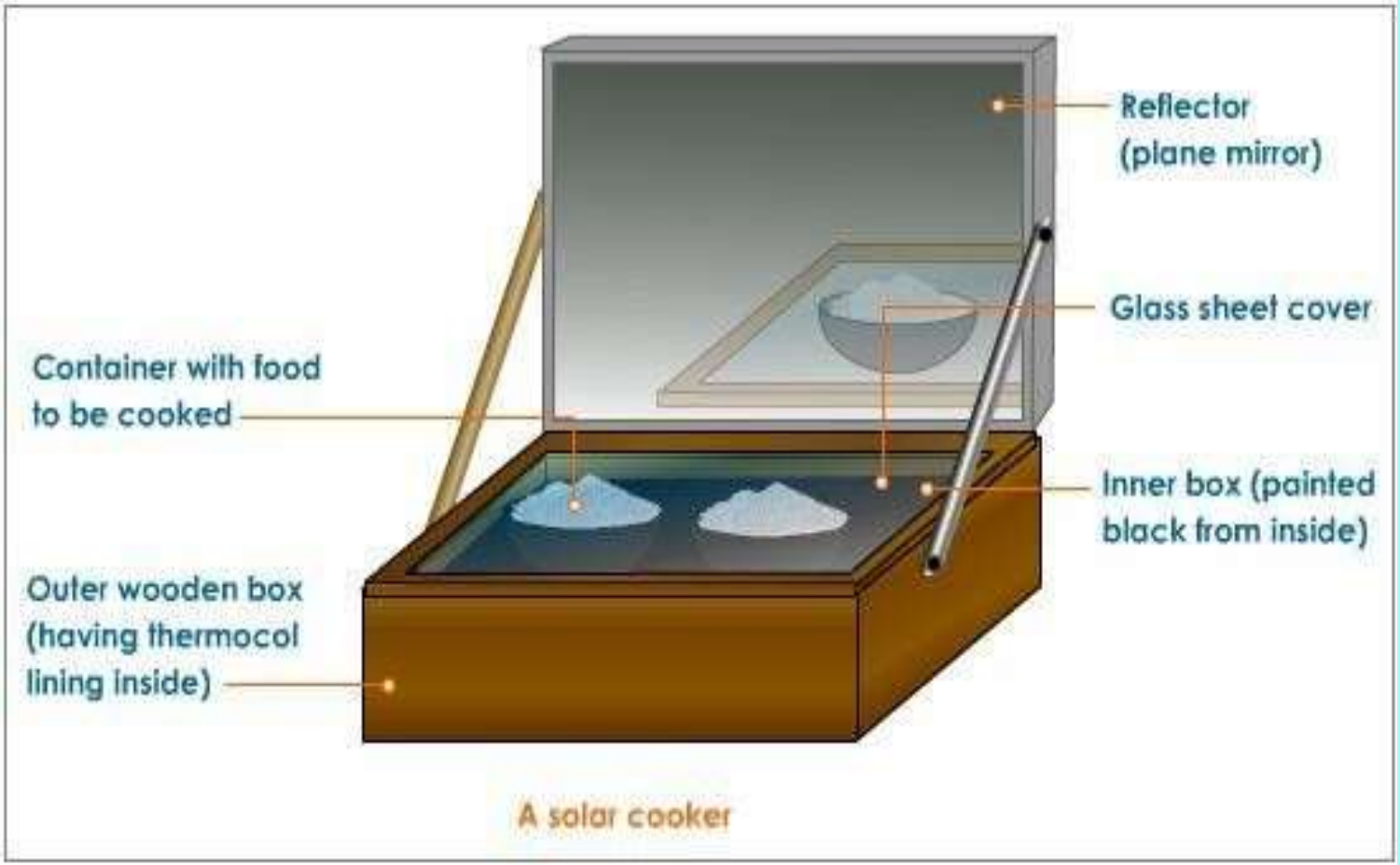


- Evacuated tube collectors are the most efficient collectors available. Each evacuated tube is similar to a thermos in principle.
- A glass or metal tube containing the water or heat transfer fluid is surrounded by a larger glass tube.
- The space between them is a vacuum, so very little heat is lost from the fluid.

Solar Water Heater for Low Radiation

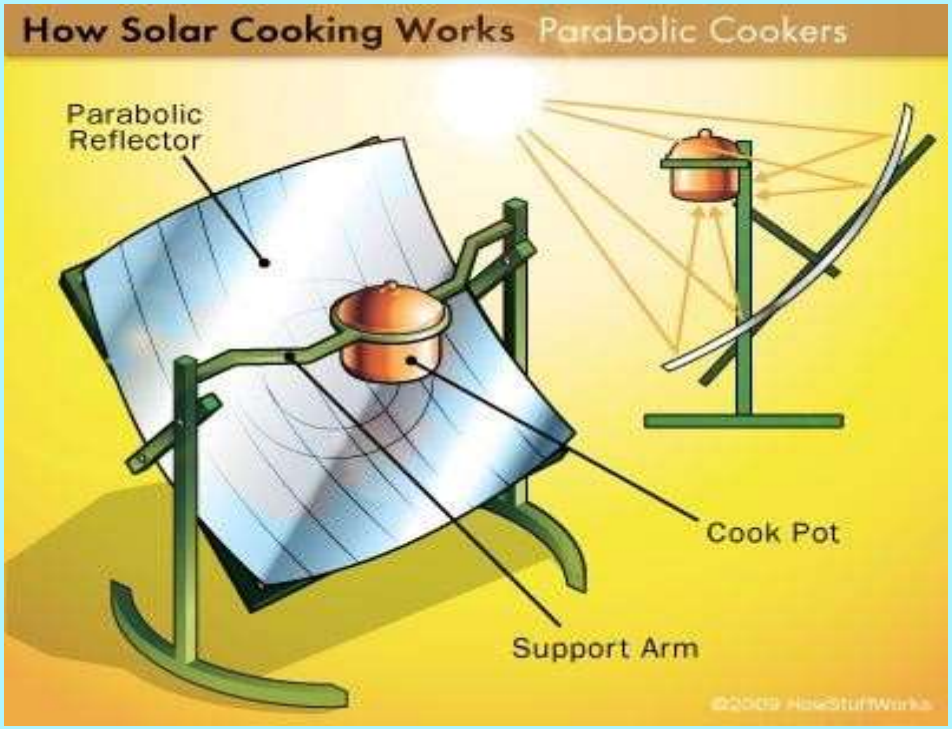


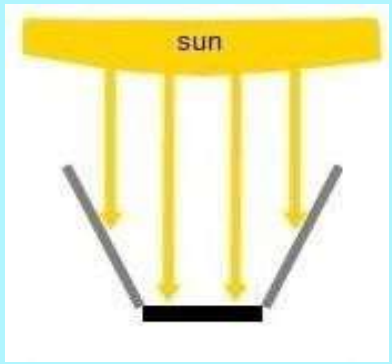
Box Type Solar Cooker

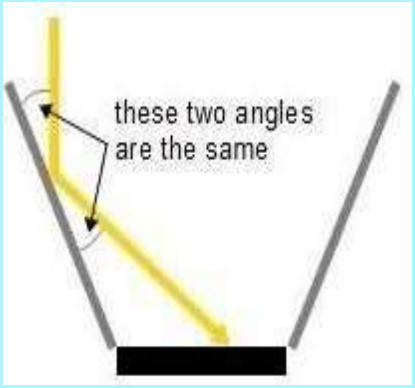


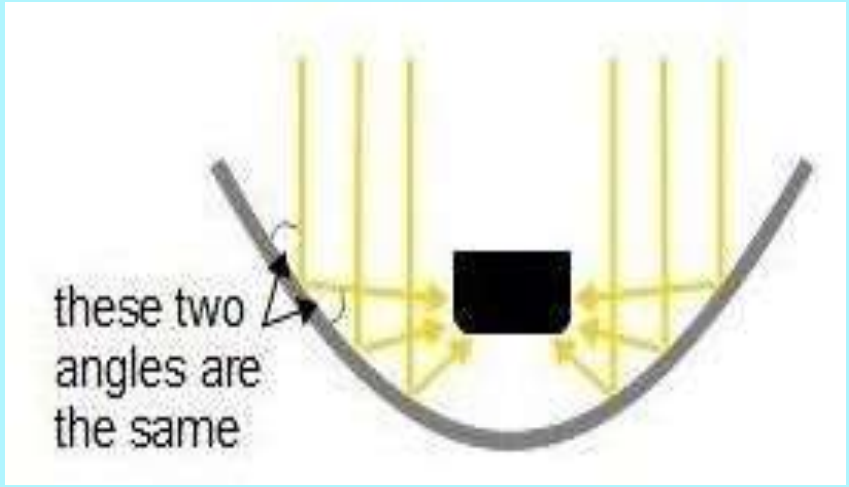
A solar cooker

Parabolic Solar Cooker



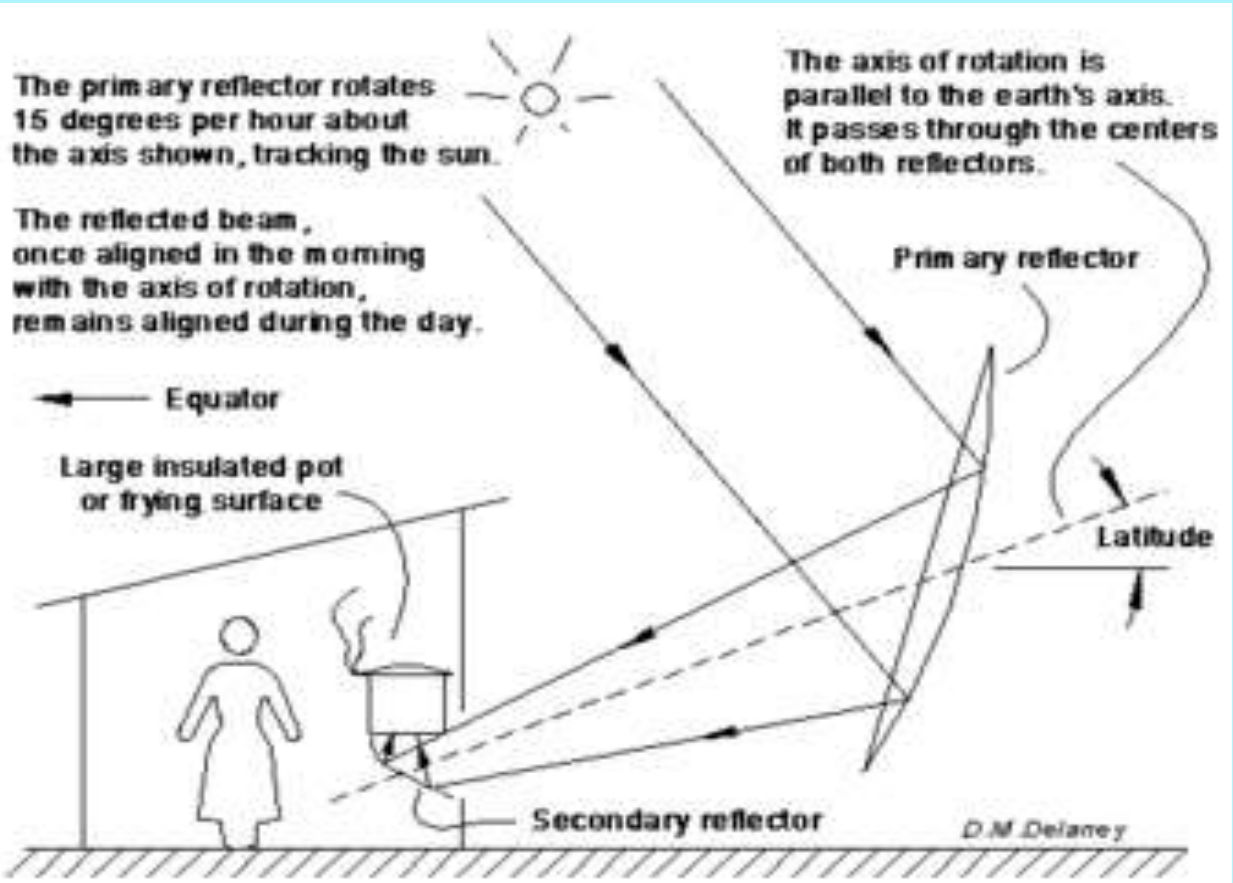






Parabolic Solar Cooker

Scheffler Cooker



How a Scheffler reflector used for cooking keeps its focus on the cooking place as the sun moves.

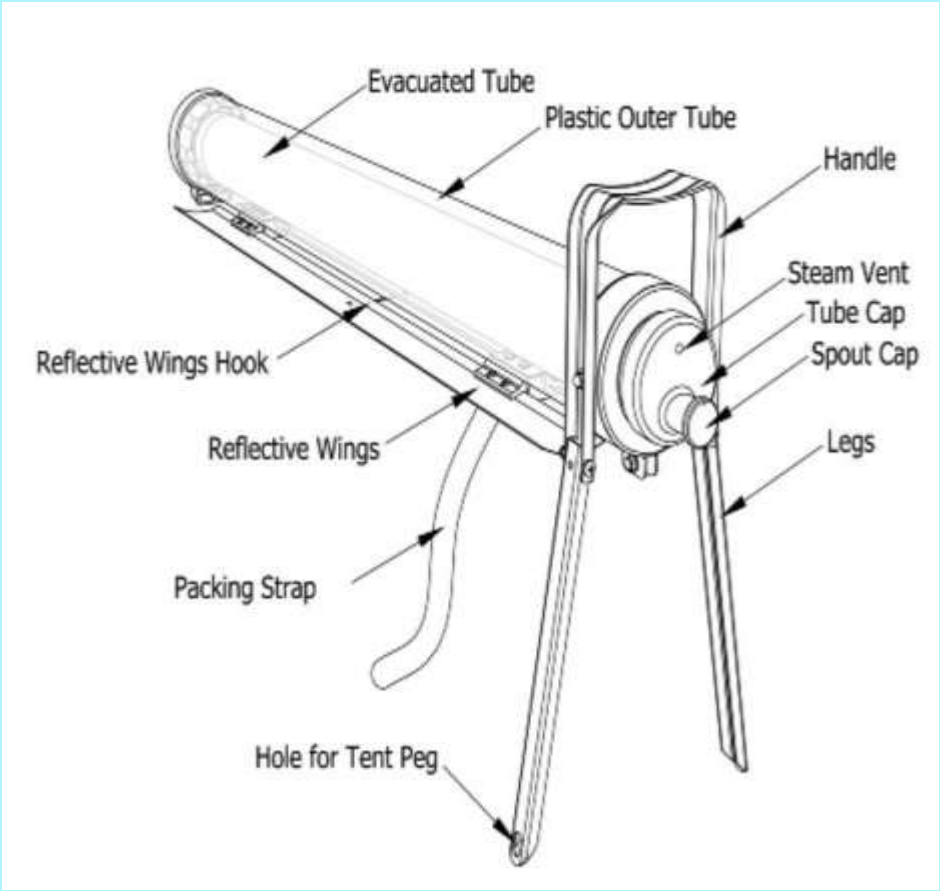
Scheffler Cooker

Primary Reflector (Motorized)

Receiver

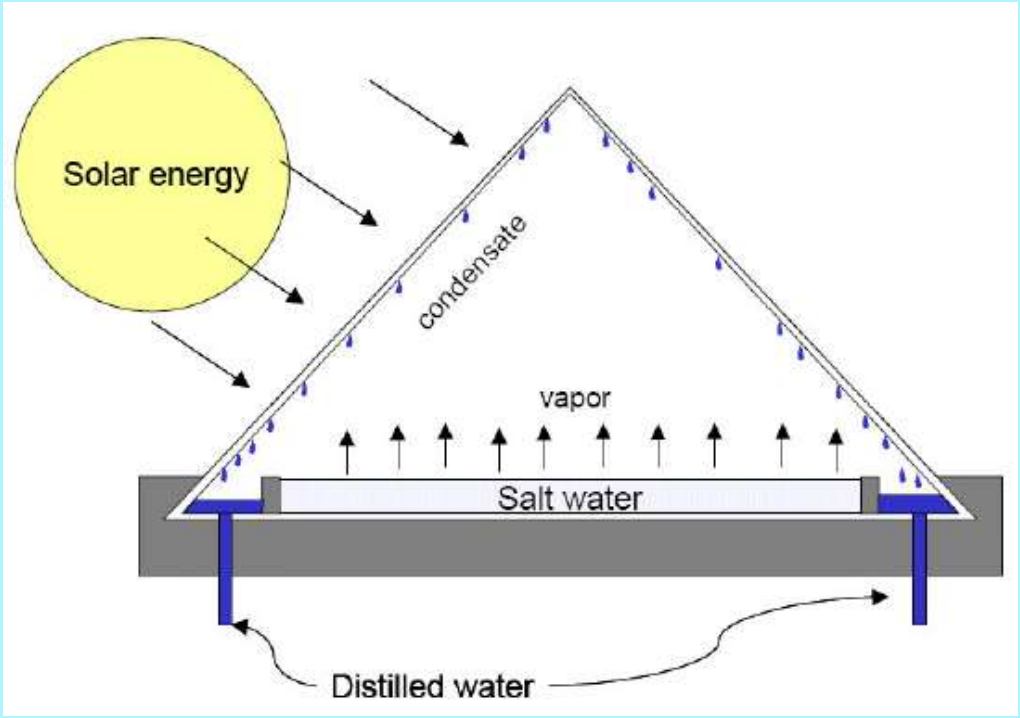
- Fixed and out side the rotating reflector

Evacuated Tube Solar Cooker



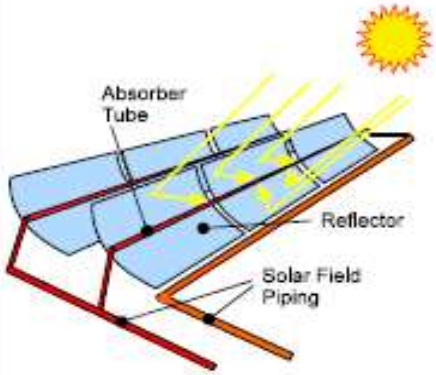
Community Solar

Solar Distillation Plant

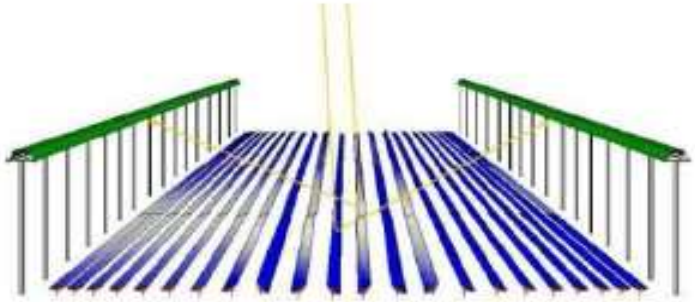


Solar Dryer

Concentrated Solar Power

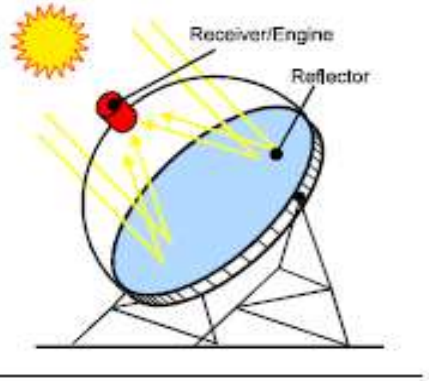


Parabolic troughs



Linear Fresnel Reflectors

Central Receiver / Heliostats



Parabolic dishes

Thank You