



Women in Europe for a Common Future

SEMINAR
CONSTRUCTION OF
SOLAR COLLECTORS

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Pro licence student :

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Rural Communities Development Agency

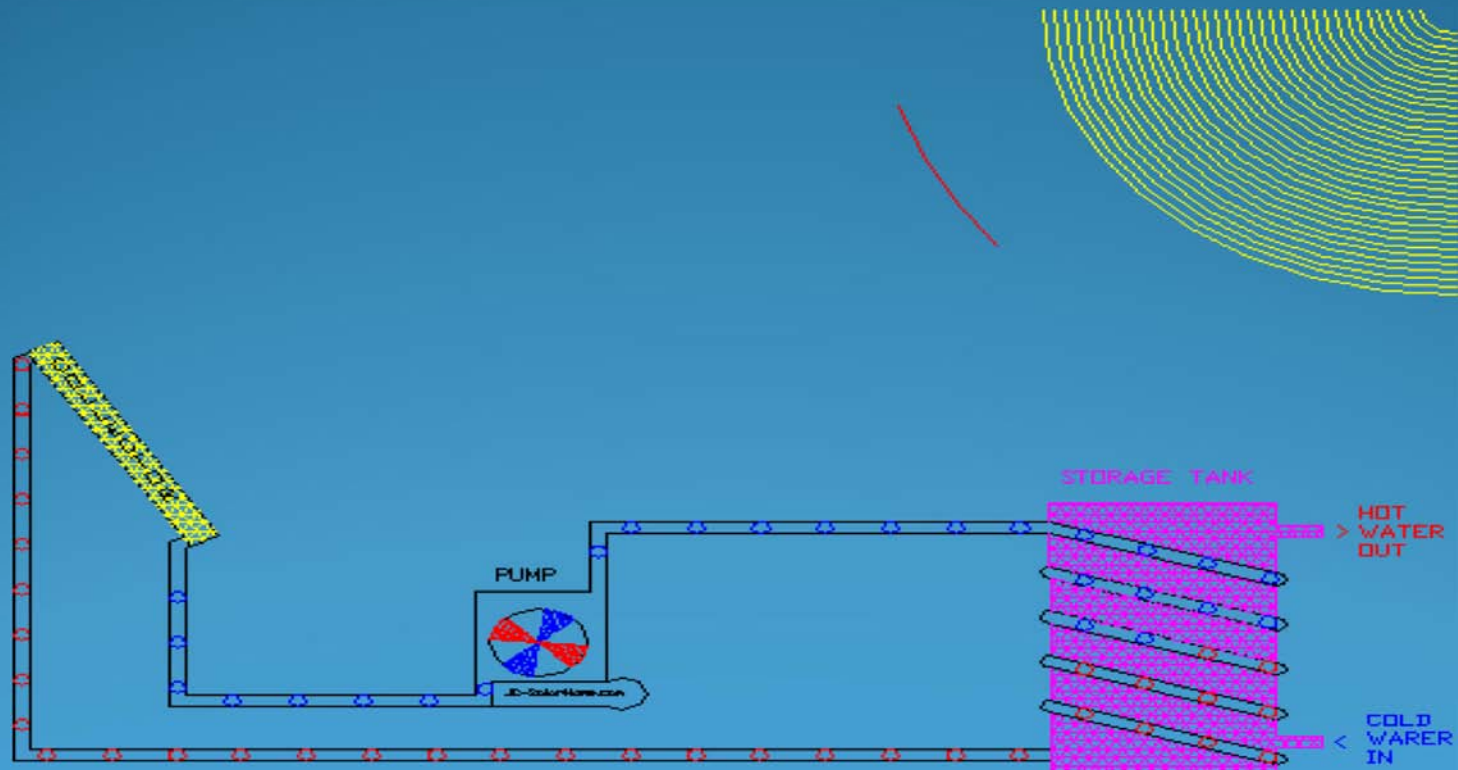


Solar collectors



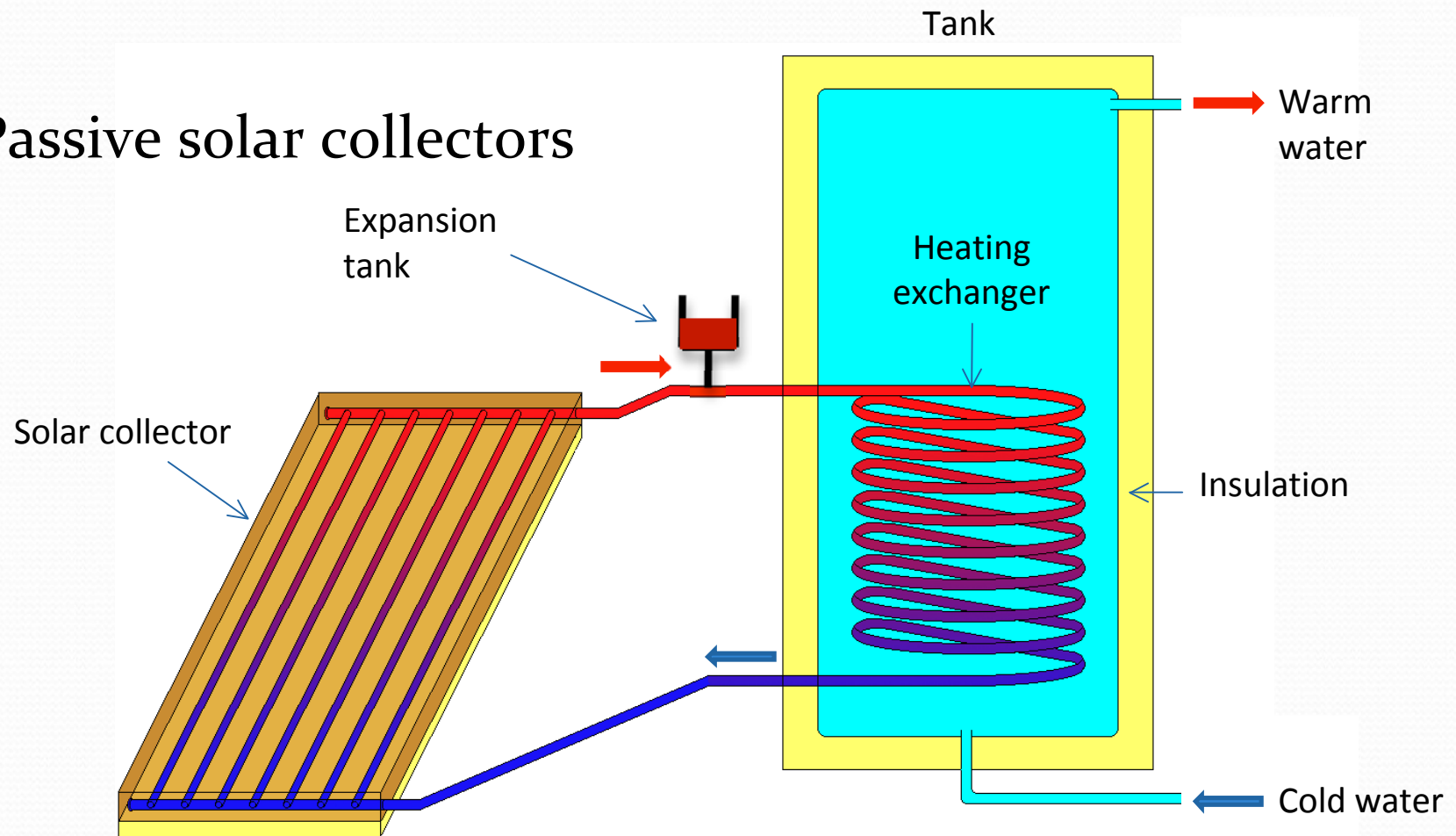
Types of solar collectors

- Active solar collectors



Types of solar collectors

- Passive solar collectors



Difference between Passive and Active solar collector

Solar Hot Water Passive system

- Easy to install and maintain
- No moving parts
- Storage tank must be installed above or close to collector
- Uses no electricity
- Will function during blackouts

Solar Hot Water Active System

- Flat plate type
- Pumps, valves & controllers assist in the prevention of freezing
- Tanks do not need to be installed above or close to collectors
- Uses electricity
- Will not function during blackouts

Location/Orientation

Azimut 0° → South

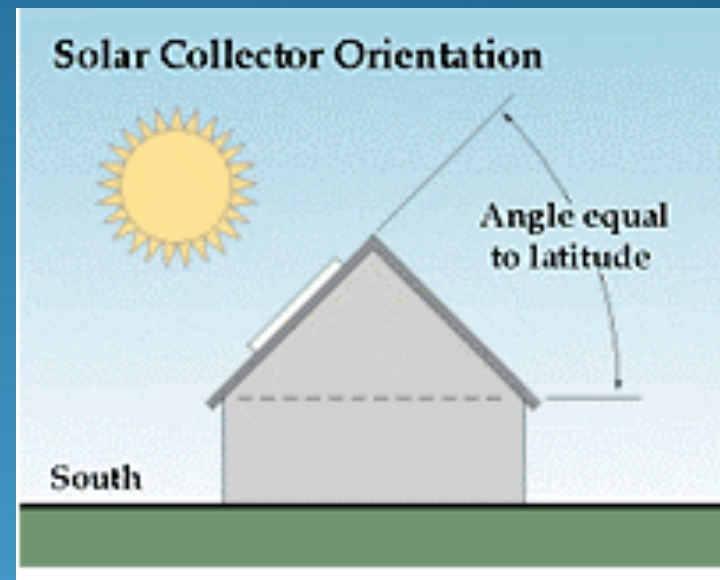
Open place → without shadow

Inclination

Winter → 60°

Summer → 30°

Year round → 45°



Dimension of collectors

Dimension of solar collector depends :

- Amount of warm water needed
- Number of household members

For each 50L of hot water 1 square meter of solar collector is needed.

Solar collector with metal pipes

Size

- 1m x 2m : 2m²

Materials

Metal pipes - 2 pipes 1m (diam. 3/4')
- 8 pipes 1m80 (diam. 1/2')

Wood frame 12cm x 5cm - 6m

Plywood 4mm - 4m²

Insulation 5cm - 2m²

Glasse 4mm - 2m²

Metal ply

Characteristics

Capacity - 100L

Temperature - 75 - 80°C

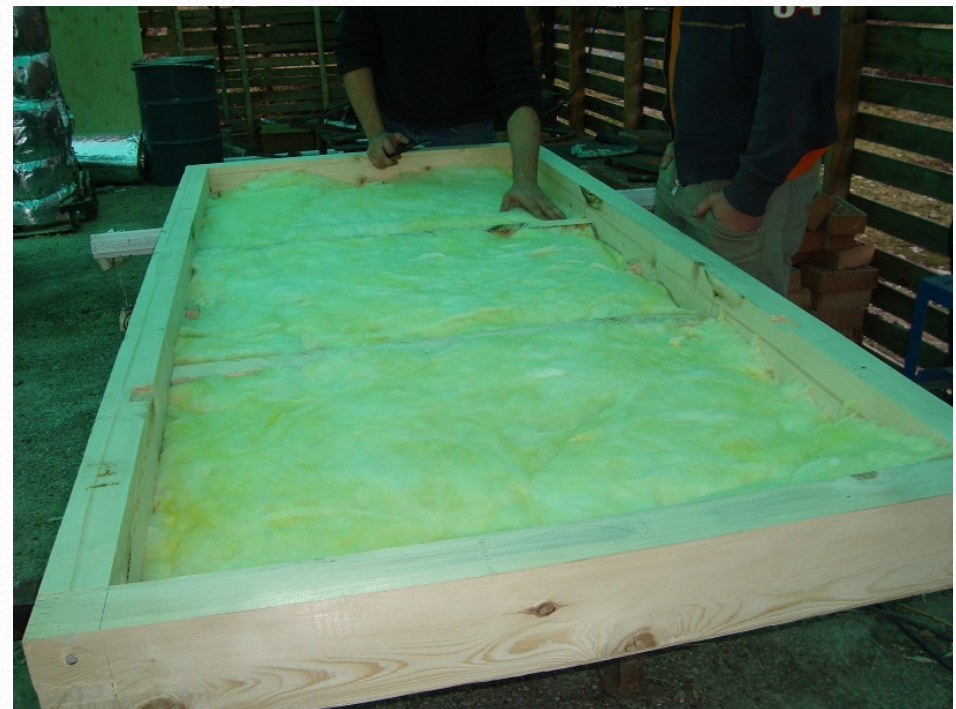
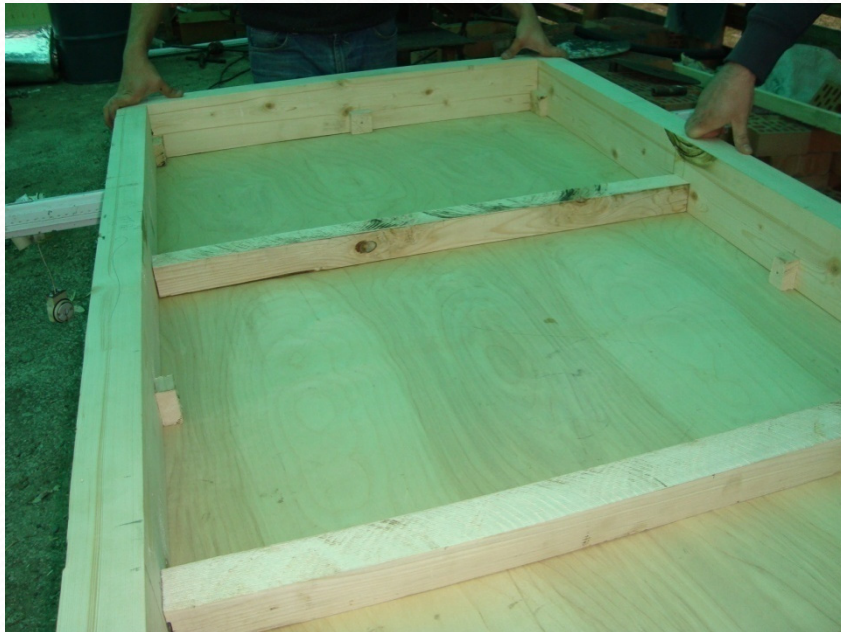
Weight - 85kg



Solar collector construction



Solar collector construction



Solar collector construction



Solar collector construction



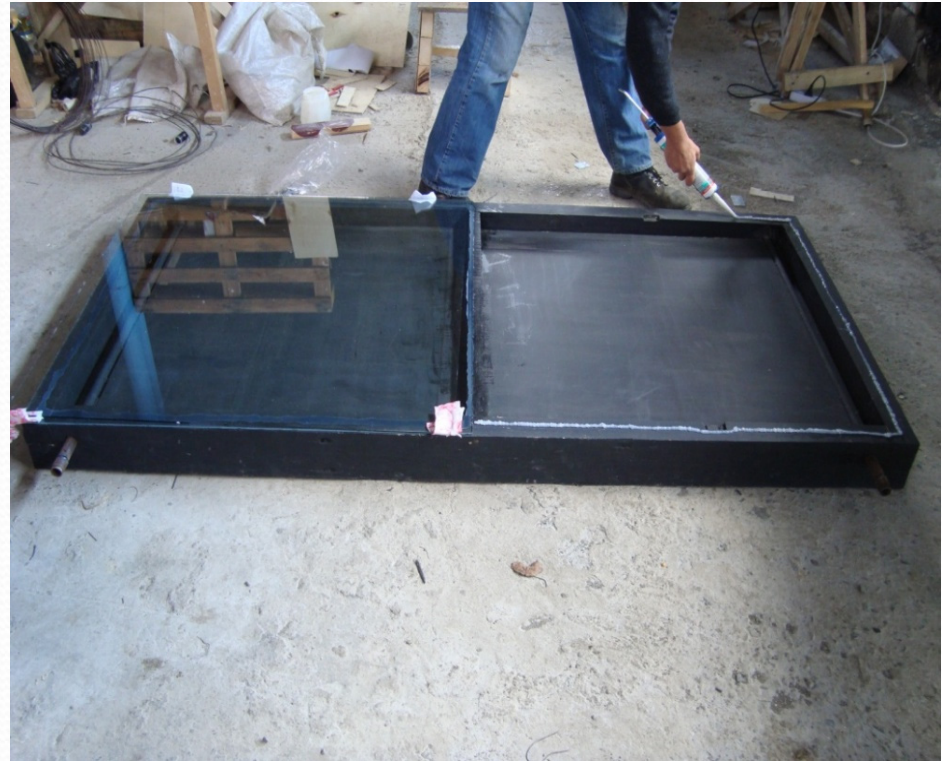
Solar collector construction



Solar collector construction



Solar collector construction



Water Tank with Exchanger

Tank : 50L \longrightarrow 1m²



Expansion tank



Exchanger : 3m \longrightarrow 1m²

Water Tank with Exchanger



Insulation

Insulation is needed:

- For the collector
- For the tank
- For the pipes

Types of insulation

- Natural (wool, straw,...)
- Sand glass



Thanks for your attention