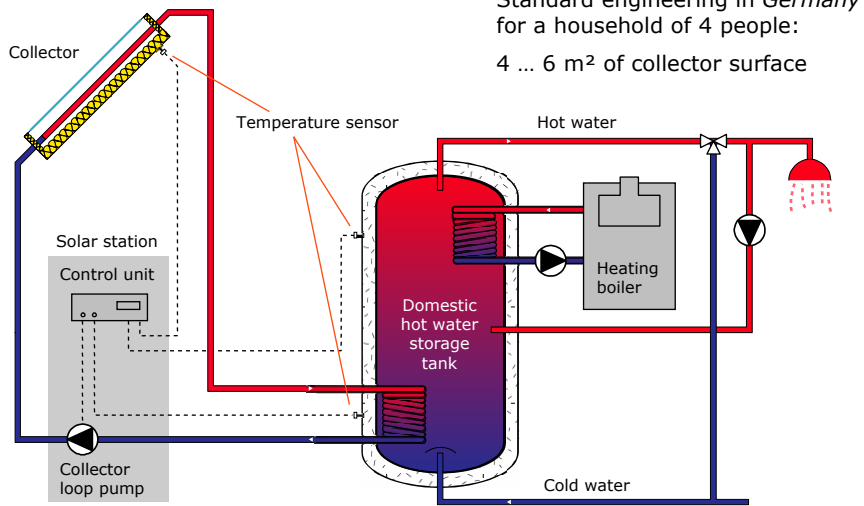


Standard solar system for domestic hot water heating

(please adapt chart according to standard systems in your country)



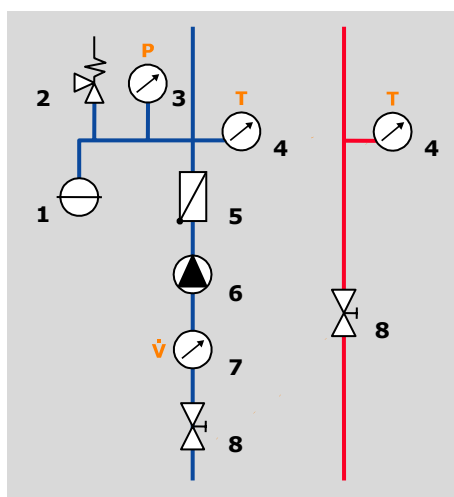
© target GmbH

II Basics of solar thermal systems

Source: target GmbH

1

Diagram of a solar station



from storage tank to storage tank

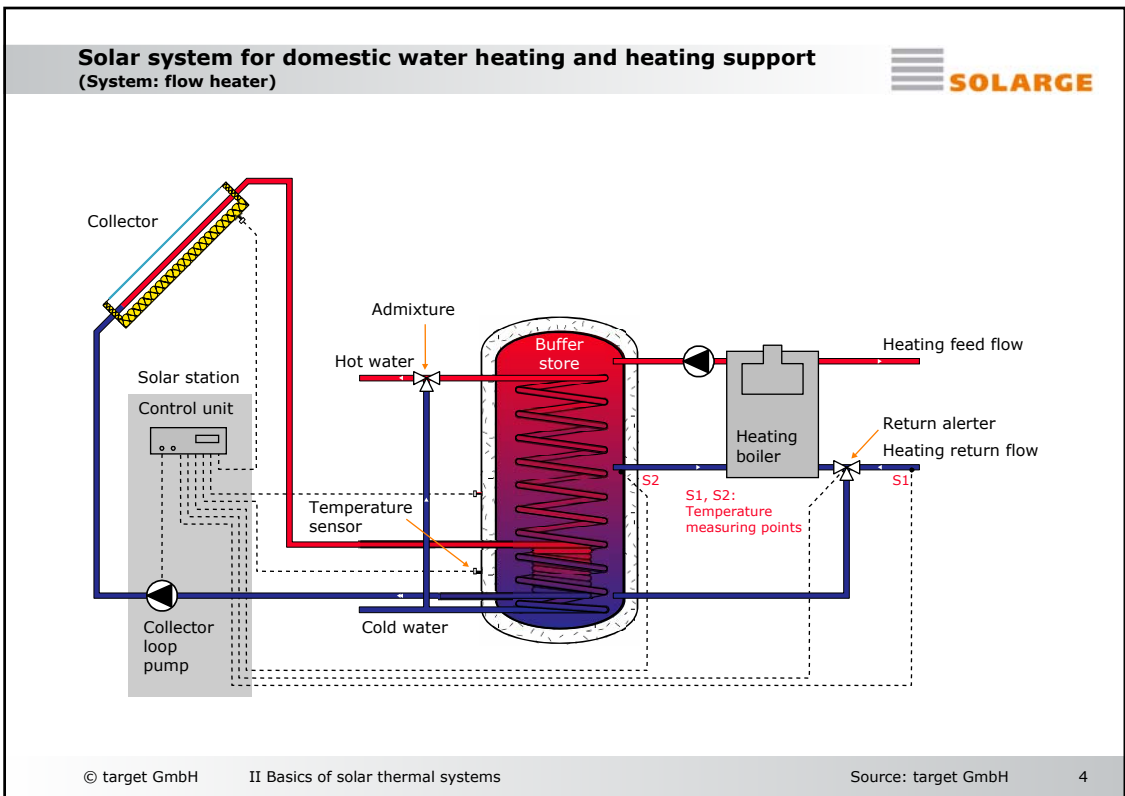
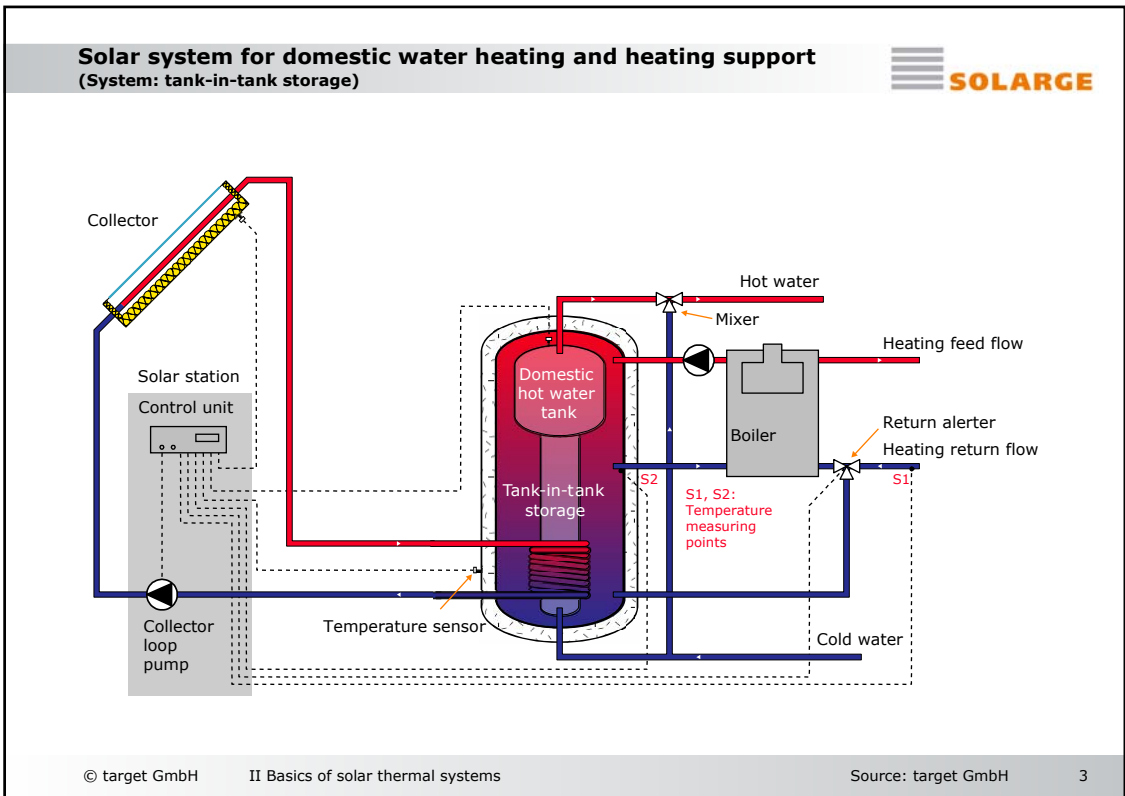
- 1 Diaphragm expansion tank
- 2 Safety valve
- 3 Pressure gauge
- 4 Thermometer
- 5 Non-return valve
- 6 Collector loop pump
- 7 Volumetric flow meter
- 8 Ball valves

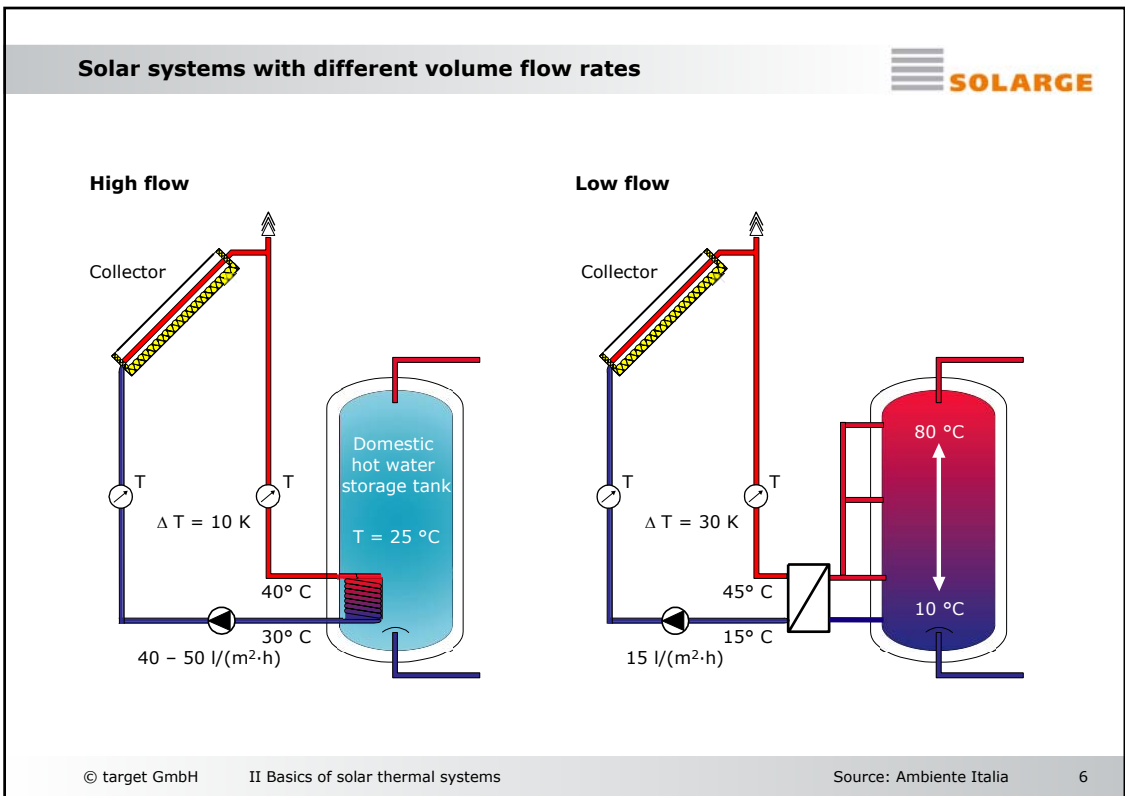
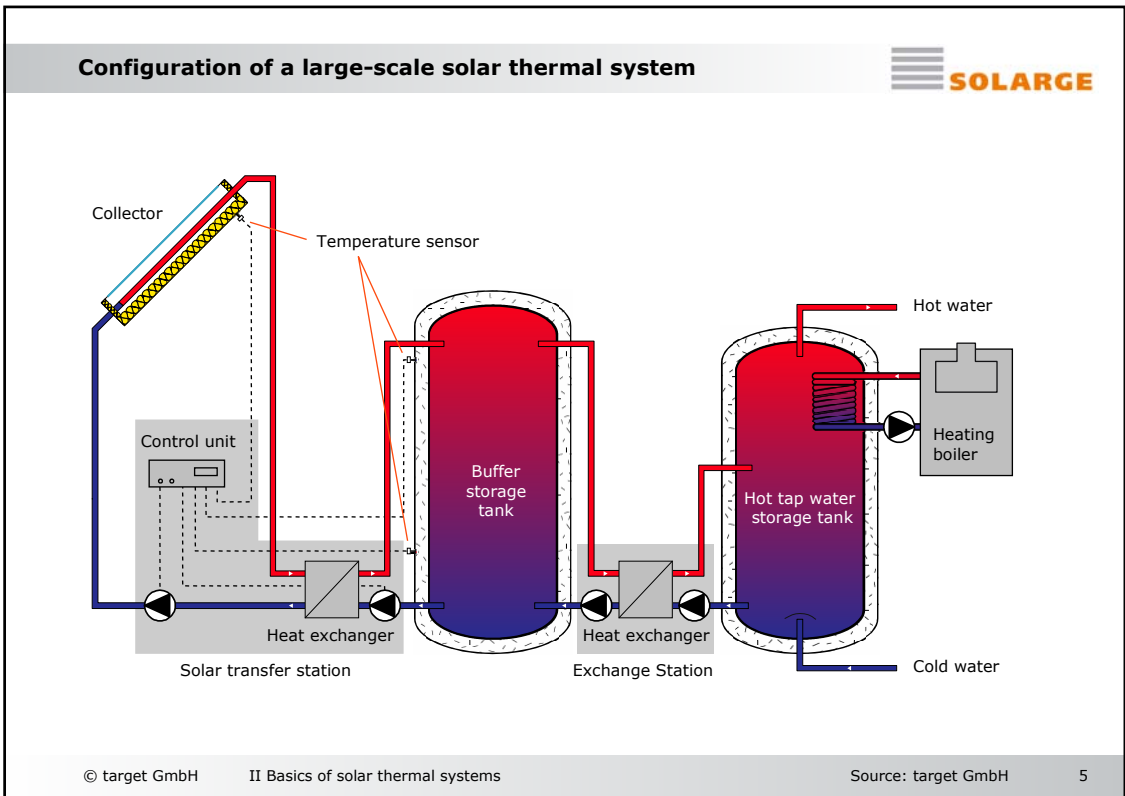
© target GmbH

II Basics of solar thermal systems

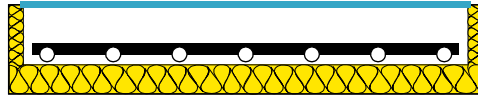
Source: target GmbH

2

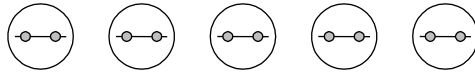




Collector types



Flat plate collector

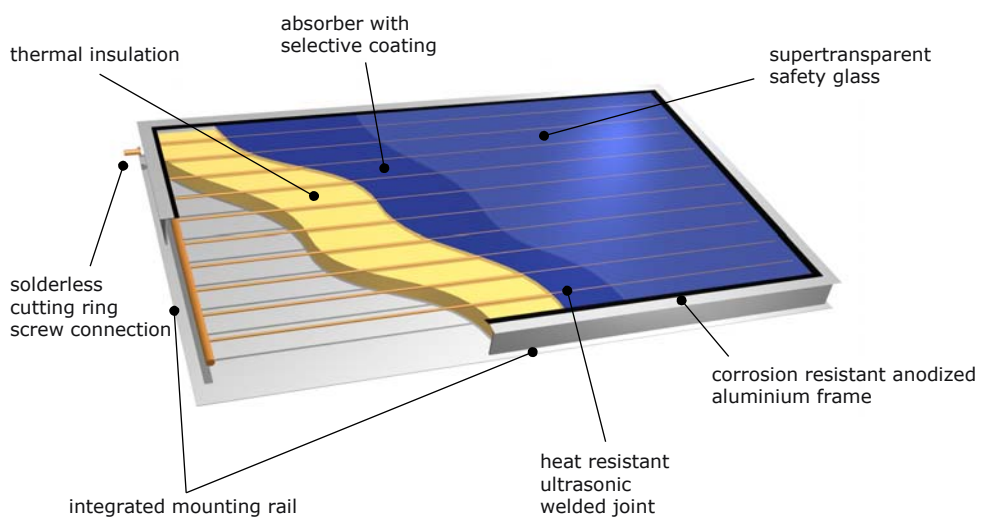


Vacuum tube collector

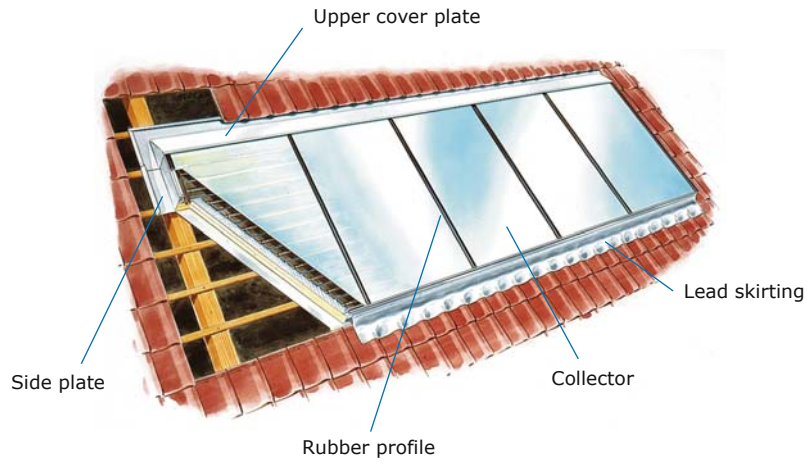


CPC vacuum tube collector

Design of a flat plate collector



Roof integration of flat plate collectors



© target GmbH

II Basics of solar thermal systems

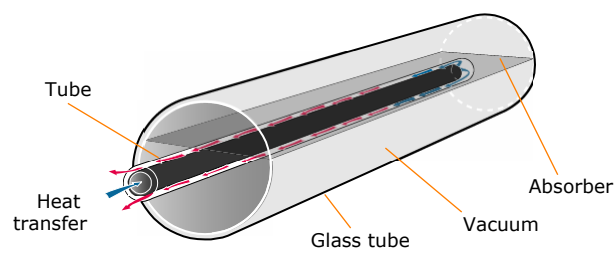
Source: SOLVIS

9

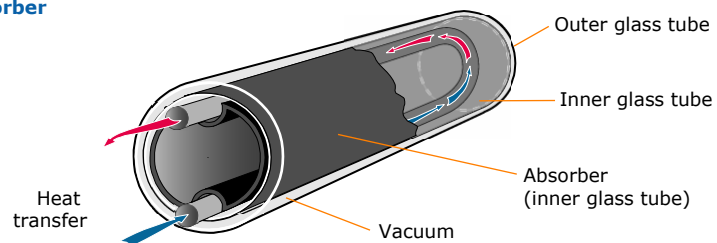
Vacuum tube collectors – direct flow through tubes



With band absorber



With cylindrical absorber



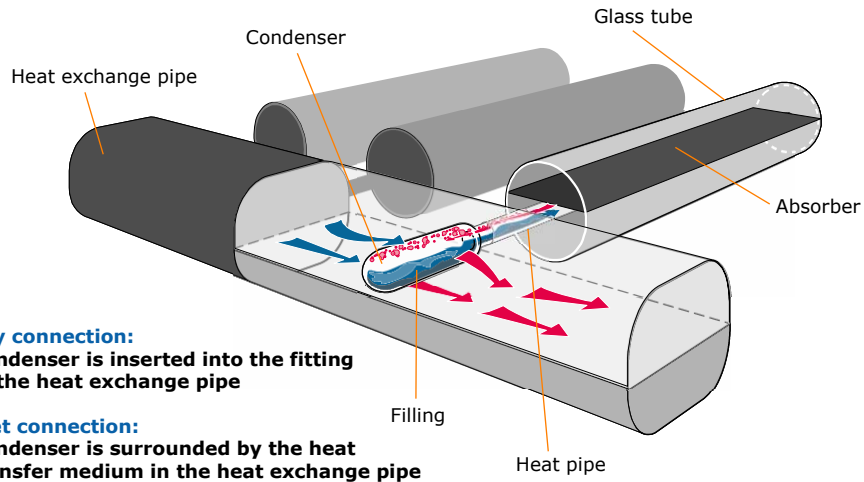
© target GmbH

II Basics of solar thermal systems

Source: target GmbH

10

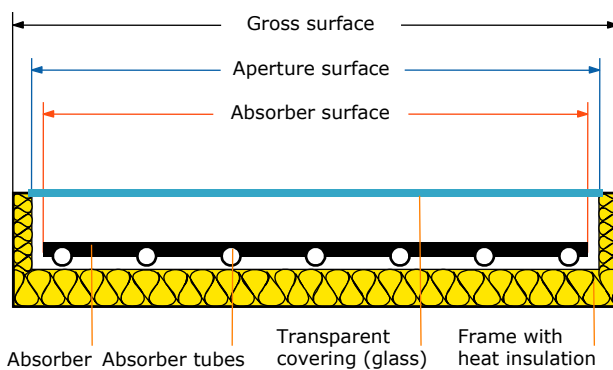
Vacuum tube collectors – heat pipe



Dry connection:
Condenser is inserted into the fitting of the heat exchange pipe

Wet connection:
Condenser is surrounded by the heat transfer medium in the heat exchange pipe

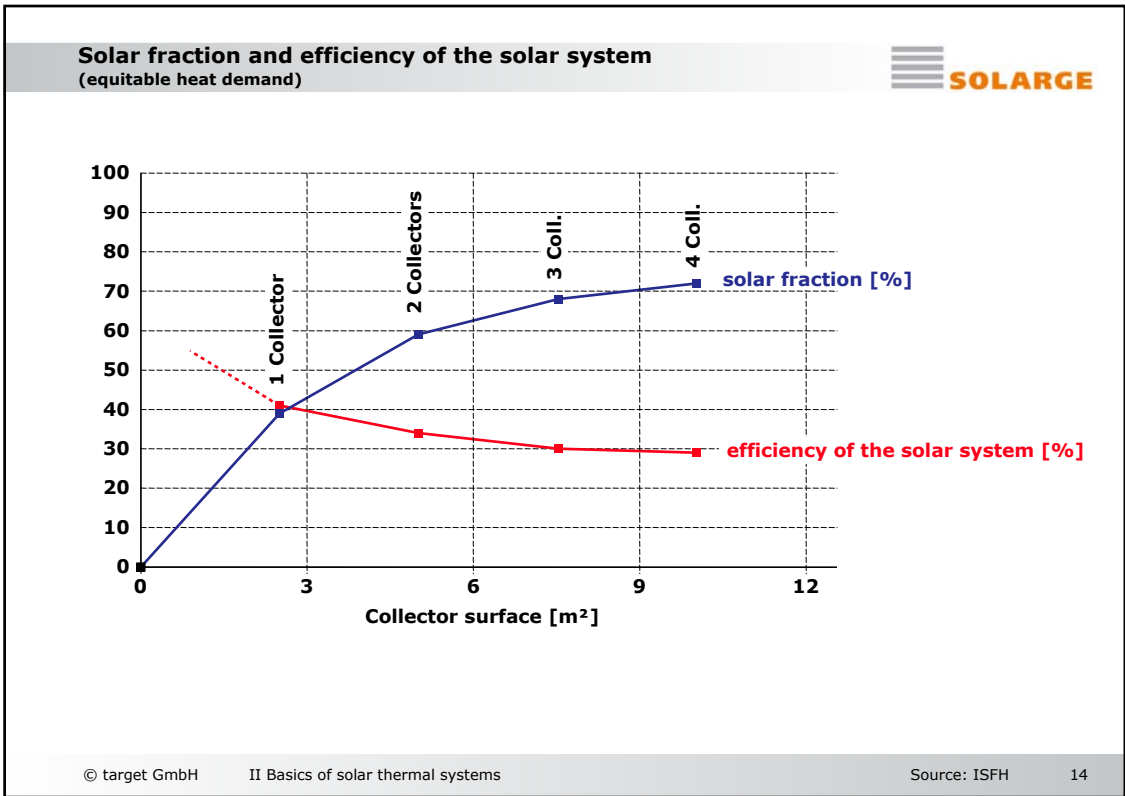
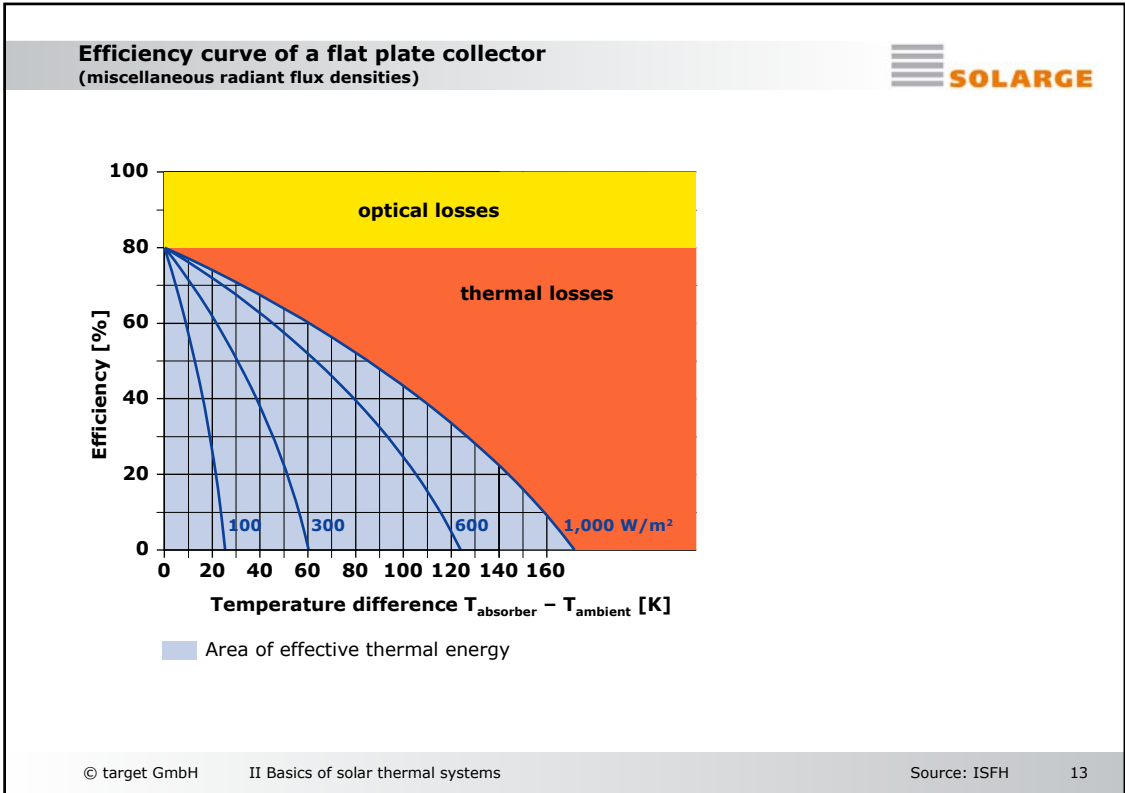
Definition of the collector surface



Gross surface: complete collector surface (outer dimensions of frame)

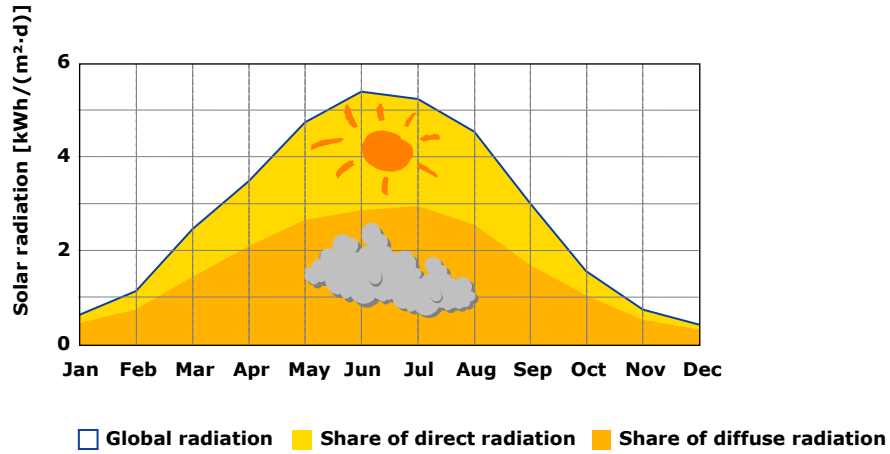
Aperture surface: translucent surface (reference surface for efficiency)

Absorber surface: energy converting surface

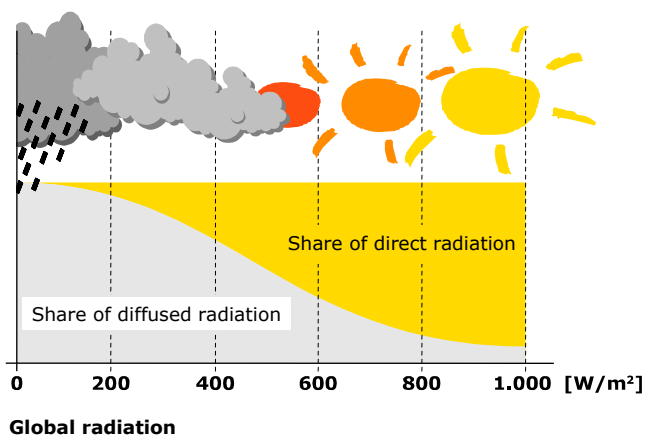


Average daily solar radiation in Germany

(please adapt chart according to solar radiation in your country)



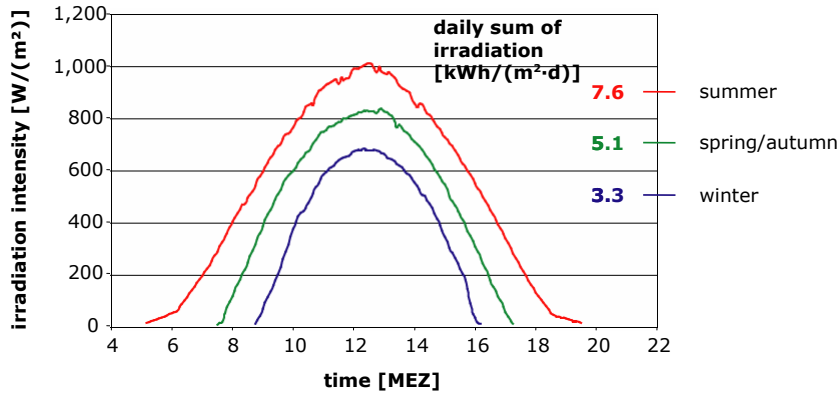
Irradiation intensity depending on the weather



Global radiation in the course of a day
(at an inclination of 45° and an orientation to the South on clear days)



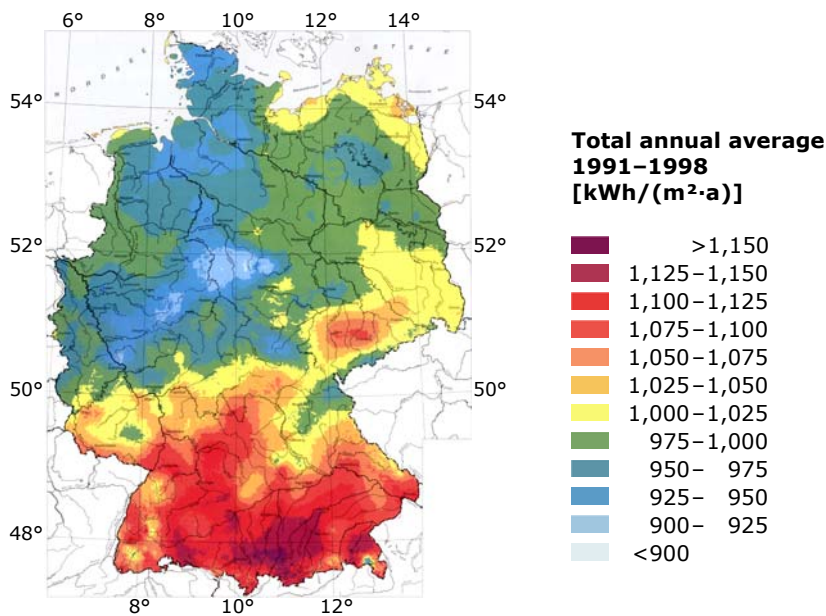
(please adapt chart & explanatory notes according to the radiation in your country)



Global radiation on the horizontal level in Germany



(please adapt chart according to the situation in your country)



Annual solar radiation
(according to inclination of the absorbing surface)

