

Technology factsheet: Competitiveness of clean energy technology – Solar Thermal

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Key emerging technologies and uses

Solar thermal technologies for heating and cooling and industrial use are also at an advanced technological readiness. Concentrated solar power plants (CSP) are commercially used (notably in Spain and South Africa) and use heat storage systems.

tech 1

Technological Readiness Level (TRL) 8:
Concentrated solar thermal heat for very
high temperature processes

tech 2

TRL 9: Non-concentrated (flat plate collectors,
vacuum tube collectors) for building water heat &
cooling; space heat and cooling; district heating,
heat for industrial processes; Parabolic trough or
linear Fresnel technology with linear receivers;
Concentrated solar thermal electricity systems with
solar towers for electricity generation

Key value chain figures

- **Sector turnover:** EUR 1.79 billion (2021) in Europe (EU+UK+CH)
- **Employment:** 180 400 (direct and indirect) in Europe (EU+UK+CH)



Key facts

Fact 1

The EU remains a leader in research and development in terms of scientific publications and high-value patents, although it was overtaken by China in 2020.



Fact 2

The latest generation of CSP plants targets a plant size of 100 MW with molten salts for heat transfer and storage. In Europe, no new commercial systems have been built for several years.

Fact 3

Innovation has achieved significant cost reduction in recent years. Still, R&D efforts are in progress to develop higher efficiency CSP systems using peak temperatures above 600°C and heat transfer with CO₂, liquid sodium, or other media.



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