

Solar Heat:

Overview of existing developments and market trends

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Representing the full value chain of the Solar Thermal (ST) sector since 30 years towards EU policy makers/influencers.



[Full list available here](#)

SOLAR THERMAL – Various technologies

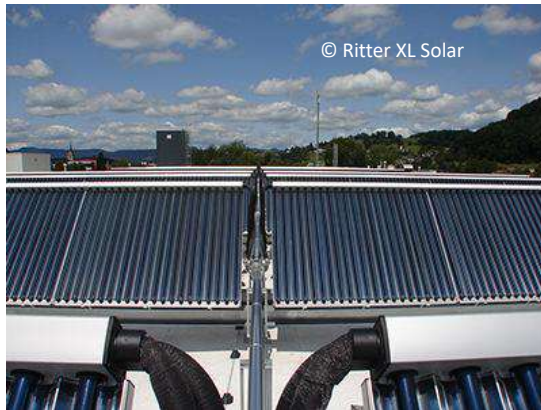
Non concentrated technologies ($T^{\circ}\text{C} < 120\text{-}180^{\circ}\text{C}$):



Flat Plate (with single-axis tracker)



High-Vacuum Flat Plate



Evacuated Tube



Hybrid / PVT (Photovoltaic-Thermal)

Concentrated technologies $T^{\circ}\text{C} < 400^{\circ}\text{C}$):



Linear fresnel (concentrated solar heat)



Parabolic (concentrated solar heat)



- Certification standards in place since 20 years
- > 1150 certificates
- CEN scheme
- Transparent and open
- +300 stakeholders

SOLAR THERMAL: Market Segments

« Small scale/
Buildings »



Residential
(houses, apartments)



Tertiary
(e.g. hotels, hospitals, leisure & shopping centers)

« Large scale »



District heating
(for cities, villages)



Source: NewHeat

Industrial
(eg. paper, food & drinks, textile, chemicals)

SOLAR THERMAL: Market Developments

- Sales growing since 2018 (except pandemic)
- Total installed capacity growing for 3 decades
- Some markets + 35% or higher (IT, FR, NL)
- Total installed capacity grew by 2,6% in 2022

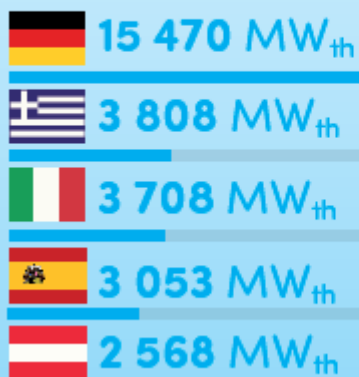
+12%
market growth
(2022 vs 2021)

More than **10 million** rooftops in Europe are equipped with solar thermal & thermal storage

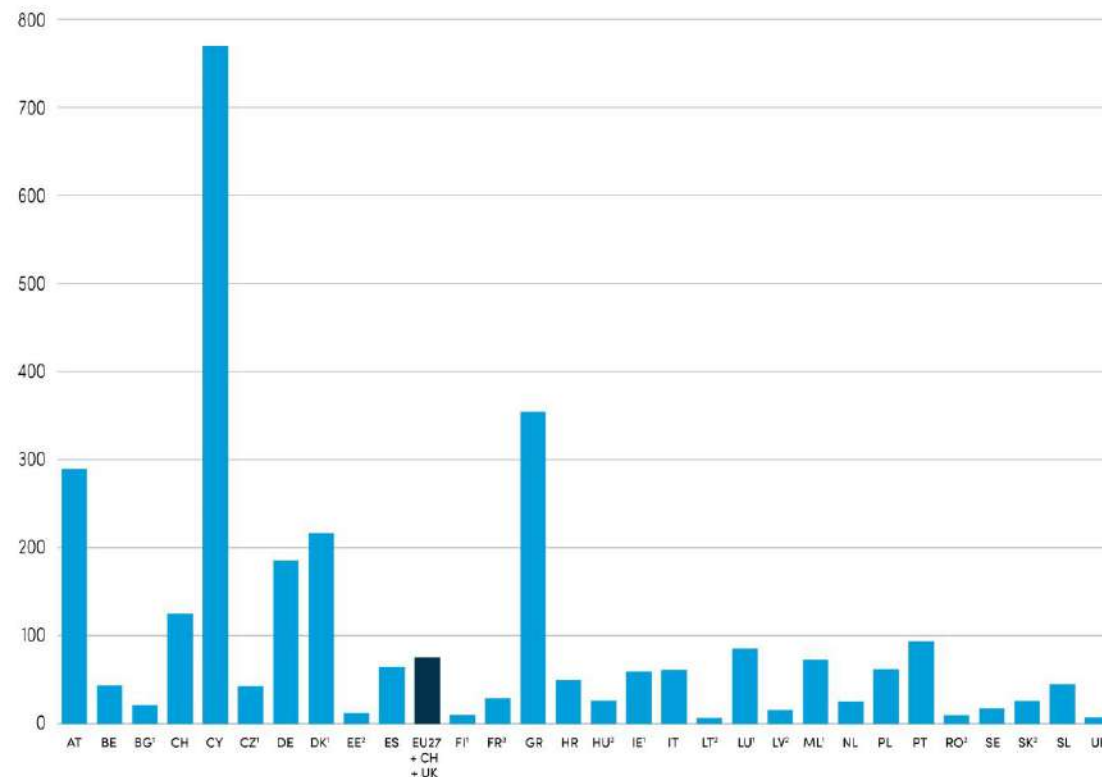
Total installed capacity in Europe (mainland): **40.5 GW_{th}**

That's 58 million m² of collectors

Countries with the largest Solar Thermal installed capacity (in operation):



 **Use of Solar thermal per capita**
in kW_{th} per 1000 capita



¹ Based on the Eurobarometer "Solar thermal and CSP Barometer" (2022).

² Solar Heat Europe estimations.

³ The figures shown here relate to Metropolitan France (mainland). As a reference, in 2021 the newly installed capacity in overseas departments is estimated to be around 60 MW_{th} (65 000 m²).

Key policy files at EU level relevant for **SOLAR HEAT**



EU Fit for 55: An opportunity for Solar Thermal

Energy Efficiency Directive	Renewable Energy Directive	Energy Performance of Building Directive
Adopted 09/2023, into force 10/10/23	Adopted 10/2023, into force 20/11/23	Adoption upcoming (Q1 2024)
11.7% reduction of energy consumption by 2030 (vs 2020) (art. 4)	42.5% target for RES in 2030 (art. 3) Binding target for RES in H&C (art. 23)	Solar Mandate (art. 10), requiring that rooftops above a certain surface be equipped with solar technologies (photovoltaic, solar thermal or PVT) by specific dates as from Dec. 26
National comprehensive assessments for efficient Heating & Cooling (H&C) (art. 25)	Indicative sub-sectoral targets for: • buildings (art. 15a): 49% RES by 2030 • for industry, • and district heating (art., 22a, 24)	Minimum energy performance standards (MEPS)
Mandatory H&C plans for cities above 45,000 inhabitants (art. 25)		Phase out financial incentives for stand-alone fossil boilers by 31/12/2024
Efficient District Heating & Cooling criteria (art. 26) for new or substantially refurbished systems	Streamlined permitting procedures for renewable acceleration areas (art. 15c); and provisions for the installation of solar energy equipment and co-located energy assets (art. 16c)	One-stop-shops for the provision of information to citizens and relevant local actors

EU Emissions Trading System (ETS) 2023 revision including Buildings

And also:

- Ecodesign/Energy Labelling
- Net Zero Industry Act (NZIA)
- Large Scale Partnership on Skills
- Electricity Market Design (storage)

SOLAR MANDATE (EPBD) – Implementation timeline

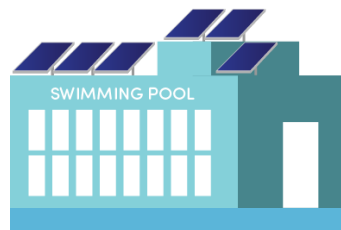
On NEW public and
non-residential
buildings >250 m²



On EXISTING
public buildings
>2000 m²
& On non-
residential
buildings
> 500 m²*



On
EXISTING
public
buildings
> 750 m²

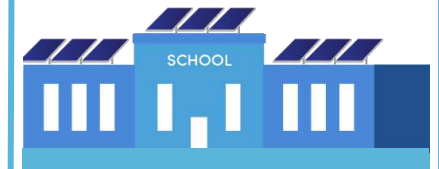


On NEW
residential
buildings

On NEW roofed
carparks
adjacent to
buildings



On public
buildings
> 250 m²



Dec 24

Dec 25

Dec 26

Dec 27

Dec 28

Dec 29

Dec 30

*in case of major renovation, action requiring a permit, works on the roof, or installation of a technical building system (i.e. heating system)

Highlights: Solar Thermal in Buildings

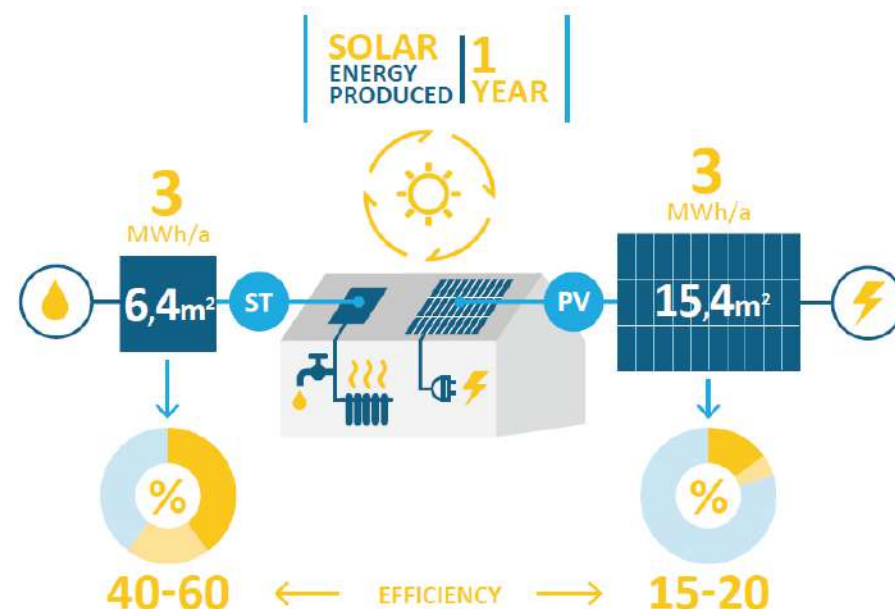


Solar Rooftops

- Solar rooftop initiative applicable to both solar thermal and solar photovoltaics
- Solar thermal and solar PV can co-exist on the same rooftop
 - Separate systems
 - Hybrid solar collectors : PV + Thermal (PVT)

Solar Efficiency

- Solar thermal is approximately **three times more efficient** than PV (“yield”)
- Both provide solutions for decentralised generation in urban areas (rooftops)
- Solar thermal provides higher energy density



Highlights: Solar Thermal in Buildings- PVT Focus



Copyright Abora- Iberostar Andalus

- A hybrid technology combining BOTH PV and thermal
- Applied for now on many tertiary buildings: hotels, restaurants, leisure centers, elderly houses etc
- Technologies: uncovered PVT water collectors, air collectors, covered PVT water collectors
- 2022 data – Highlights :
 - 950,155 m² installed in Europe (FR, DE, NL, ES, IT)
 - +9% on average globally between 2017 and 2022
 - + 414% in IT, + 126% in DE, + 52% in ES (vs 21)

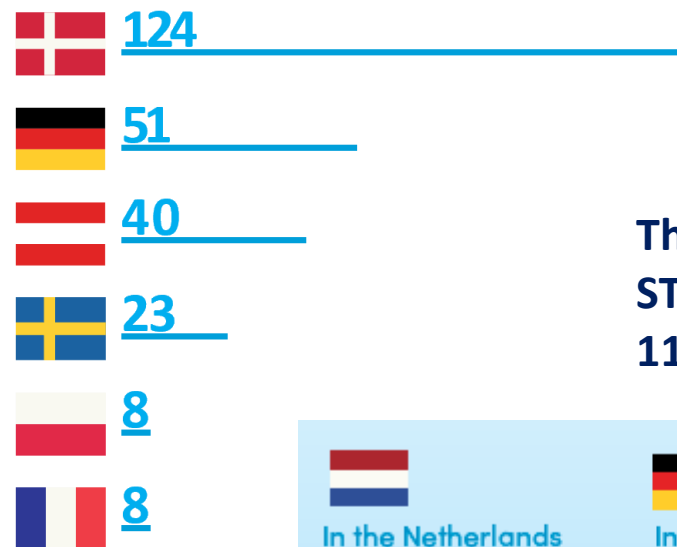
Highlights: Solar Thermal District Heating

81% of
the total Solar
District Heating
networks in the
world are in Europe

**282 towns and
cities in Europe
use solar heat,
representing over
1,3 GW_{th}**

Source: IEA SHC Solar Heat
Worldwide Report Ed. 2022 / own
research

Solar thermal district heating networks in
operation by European country:



**The biggest
ST DH (DK):
110 MW**

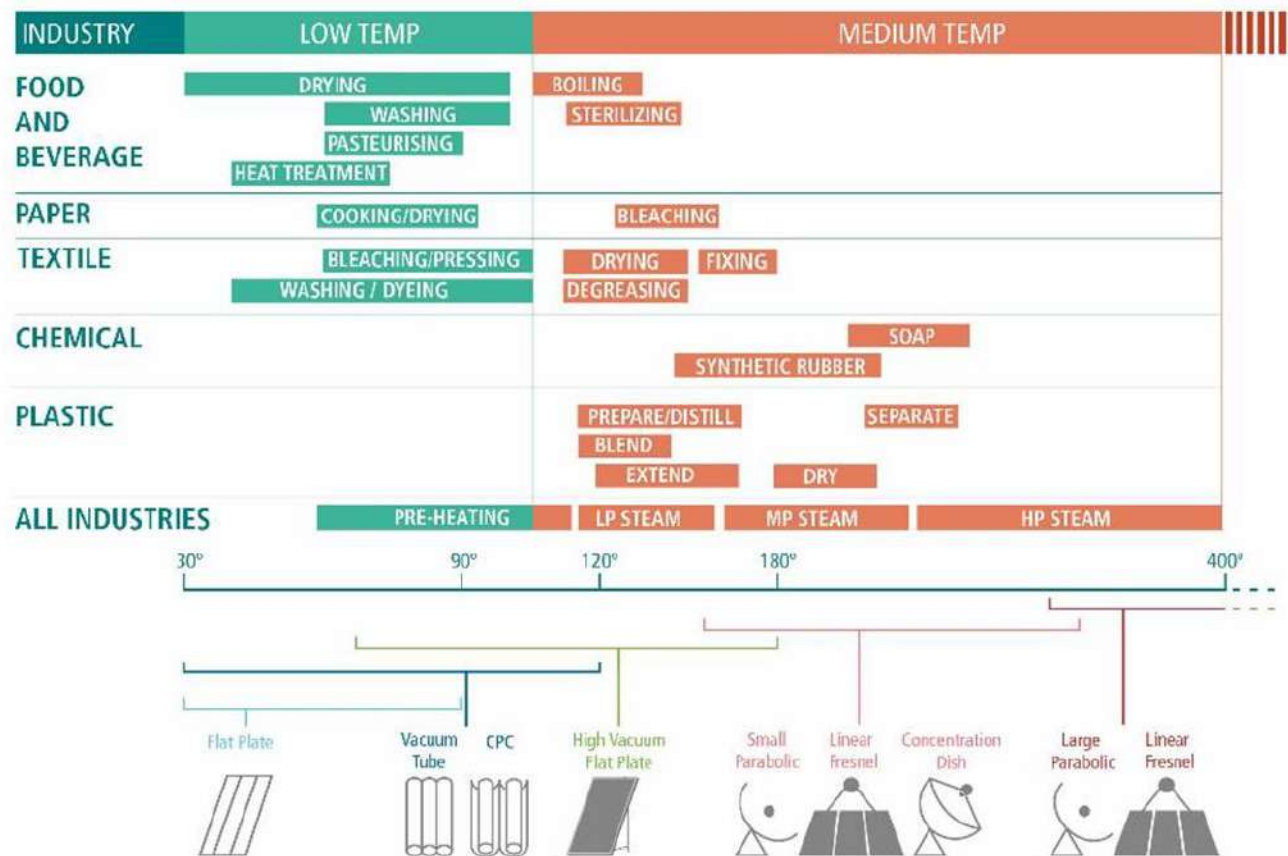


In the Netherlands
a 48,000m² project is
under construction?
This will be the fourth
biggest district heating
network supplied
by solar thermal in
the world, with a
capacity of 37 MW_{th}.



In 2022 Germany's
Solar Thermal district
heating capacity grew by
+30%
9 new systems
representing a collector
area of 28,000 m² with
a capacity of 19.6 MW_{th}.

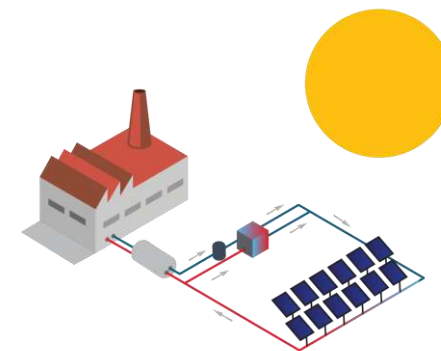
Highlights: Solar Heat for Industrial Processes (SHIP)



- 60% of energy needs for industry is HEAT
- 50% of these heat needs is below 400°C (chemicals, food & beverage, pulp & paper, textile etc)



- More than 1000 SHIP plants worldwide
- Biggest in Europe: 30MW



See case studies via our website [Solar Heat for Industrial Processes](https://www.solar-heat-europe.eu/)
 - [Solar Heat Europe](https://www.solar-heat-europe.eu/)
 (Comprehensive list of SHIP plants accessible via ship-plants.info)



BOORTMALT

Carlsberg



GRUPE LACTALIS



Current research ecosystem around Solar Thermal

At EU level:

1) Dedicated EU project since 2008
Renewable Heating and Cooling 'RHC ETIP'
European Technology and Innovation Platform

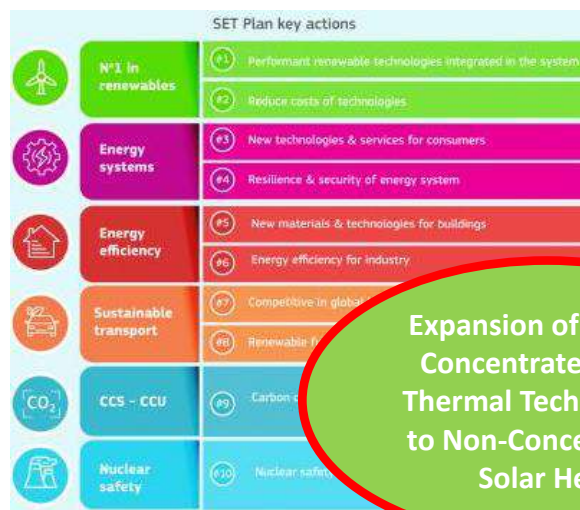


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[Solar Thermal - RHC \(rhc-platform.org\)](http://rhc-platform.org)

2) EU Strategic Energy Technology Plan (SET plan):



Expansion of IWG on Concentrated Solar Thermal Technologies to Non-Concentrated Solar Heat



3) But also EU projects (eg Horizon 2020) :

FRIENDSHIP:

[Friendship \(friendship-project.eu\)](http://friendship-project.eu)

INDHEAP: New energy solution that combines solar heat and electricity

SOLINDARITY, SOLAR HUB

At international level: Work by IEA SHC



[IEA SHC || International Energy Agency Solar Heating and Cooling Programme \(IEA SHC\) - Solar heating, Solar cooling, Solar tasks \(iea-shc.org\)](http://iea-shc.org)

Solar Thermal:

- Has its role in the heat decarbonisation agenda
- The current legislative package offers an opportunity for our sector to flourish (buildings, district heating, industry)
- Implementation is critical
- Research and innovation continue to be key
- **Fair treatment** of all technologies is key – Fair competition
- **Awareness** is key – Opportunity to work with all partners, with one-stop-shops etc
- **Enabling conditions** to support and encourage the adoption most efficient solutions to be adequately framed (finances, skills)

=> COLLABORATION IS WELCOME !!



Solar Heat is SMART...

- S**ecuring the supply of heat, our main energy need
- M**anufactured in Europe by hundreds of companies
- A**ffordable energy source, thanks to the sun's energy
- R**esilient, reliable and recyclable
- T**ripling its deployment is key

Our Policy Recommendations:

- 1** Urgently set a new Renewable Heating & Cooling strategy for Buildings & Industry
- 2** Protect, support and incentivise EU Cleantech SMEs
- 3** Prioritise the deployment of affordable renewable heat solutions
- 4** Emphasise positive externalities such as resilience and recyclability
- 5** Enable and support the tripling of the solar thermal roll out

[Download our Manifesto: Solar Heat is SMART - Solar Heat Europe](#)



Solar Heat is

S M A R T

Manifesto for the
Incoming European Legislators



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