protarget

Solar thermal energy contracting

Sustainable and cost-effective process heat on demand

Green Industry: Sustainable Solutions for Renewable Energy and Heat
Thessaloniki, 13th of May 2025

Who we are

We are an experienced German engineering company and manufacturer of innovative solar thermal technologies for industrial scale applications worldwide

The world of Protarget

15 Years

Protarget has 15 years of experience, decarbonizing the industry worldwide

8 Countries

Solar projects in Germany, India, Cyprus, Brazil, Spain, Marrocco, Greece, Saudi Arabia

German Quality

Qualified by German Aerospace Centre (DLR), design approved by TÜV Germany, complies with EU regulations and standards

protarget

Solar Technologies

Proprietary solar technologies for process heat & steam, engineered solutions for Energy efficiency in the Industry

Manufacturing

Own inhouse manufacturing of solar systems and power plant equipment, certified welding organisation

Powerful Team

Innovative and experienced engineering company with highly international 20-strong staff based in Cologne, Germany

Our solar solutions

Solar Hot Water Systems

- Vacuum Tube (CPC) Systems
- Hot water up to 100C°
- Short amortisation 3-6 years
- Roof or ground mounting
- Typical size 100 kW-5MWt

Solar Steam Boiler

- Parabolic Trough (PTC) Systems
- Steam or thermal oil up to 420C°
- Ground mounting
- Typical size 250kW-20MWt
- Lifetime >20yrs
- Ideally suited for harsh climate

Thermal Energy Storage

- Provides dispatchable solar thermal energy
- During the night or in periods of bad weather
- Faster ramp-up time of existing boiler systems
- Storing of any other (waste) heat sources with a company

Hydrogen System

- System to remove excess hydrogen from the heat transfer fluid (HTF) in utility scale CSP plants
- To significantly increase power-plant lifetime and system efficiency of CSP plants
- Reducing O&M cost

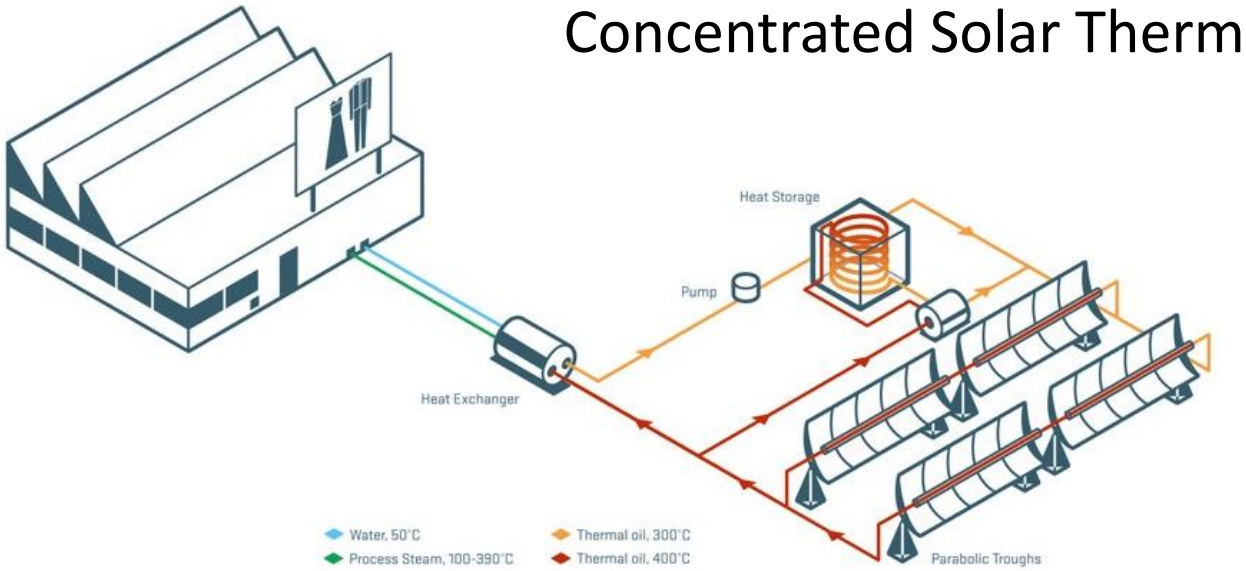
protarget

Our technology

Concentrated Solar Thermal

Sustainable and green process heat for the industry

Concentrated Solar Thermal Technology



- A CST plant consist of rows of large mirrors, called parabolic troughs, that move about one axis in order to track the sun throughout the day

- The solar energy is concentrated by the mirrors and heats a working fluid that is then used to generate steam or process heat in a conventional heat exchanger

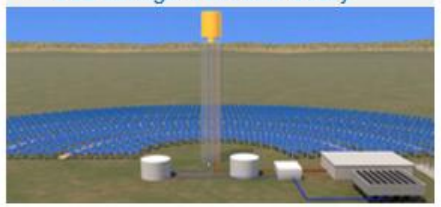
- A solar boiler is installed in parallel to the existing steam infrastructure, acting as a fuel saver for conventional steam boiler systems

protarget

Our projects & references

Helping industries to switch from fossil fuel-based process heat to sustainable solar thermal alternatives

Saudi Arabia
- Year of commissioning: 2025
- Industry: Utility Energy
- Process: Solar Desalination
- Thermal Storage Type: Molten Salt
- Capacity: 6.000 kW
- Annual yield: t.b.c. MWh/y
- Operating temperature: 220°C
- Energy savings: t.b.c. MWh/y
- CO2 savings: t.b.c. tons CO2/y



Greece
- Year of commissioning: 2025
- Industry: Beverage
- Process: Brewery
- Thermal Storage Type: Steam Accumulator: 5.750 kW
- Annual yield: 10.095 MWh/y
- Operating temperature: 280°C
- Energy savings: t.b.c MWh/y
- CO2 savings: t.b.c. tons CO2/y

Morocco
- Year commissioned: 2024
- Industry: Technology Demonstrator
- Process: Electricity & Seawater desalination
- Peak Power: 35 kW
- Annual yield: 63 MWh/y
- Operating temperature: 220°C
- Energy savings: t.b.c MWh/y
- CO2 savings: t.b.c. tons CO2/y

Spain, Tenerife
- Year commissioned: 2024
- Industry: Utility Water
- Process: Seawater desalination
- Thermal Storage: Water Storage Capacity: 450 kWh
- Annual yield: 171 MWh/y
- Operating temperature: 95°C
- Energy savings: 200 MWh/y
- CO2 savings: 60 tons CO2/y

Brazil
- Year commissioned: 2021
- Industry: Utility Energy
- Process: Utility electricity generation
- Thermal Storage: HTF Thermocline
- Capacity: 2.500 kW
- Annual yield: 5.723 MWh/y
- Operating temperature: 350°C
- Energy savings: 7.631 MWh/y
- CO2 savings: 1.431 tons CO2/y

Cyprus
- Year commissioned: 2019
- Industry: Beverage
- Process: Pasteurization
- Thermal Storage Type: Concrete Storage Capacity: 225kW
- Annual yield: 288 MWh/y
- Operating temperature: 380°C
- Energy savings: 384 MWh/y
- CO2 savings: 96 tons CO2/y

India
- Year commissioned: 2017
- Industry: Dairy
- Process: Milk powder drying
- Thermal Storage Type: HTF Storage Capacity: 250 kW
- Annual yield: 450 MWh/y
- Operating temperature: 270°C
- Energy savings: 600 MWh/y
- CO2 savings: 150 tons CO2/y

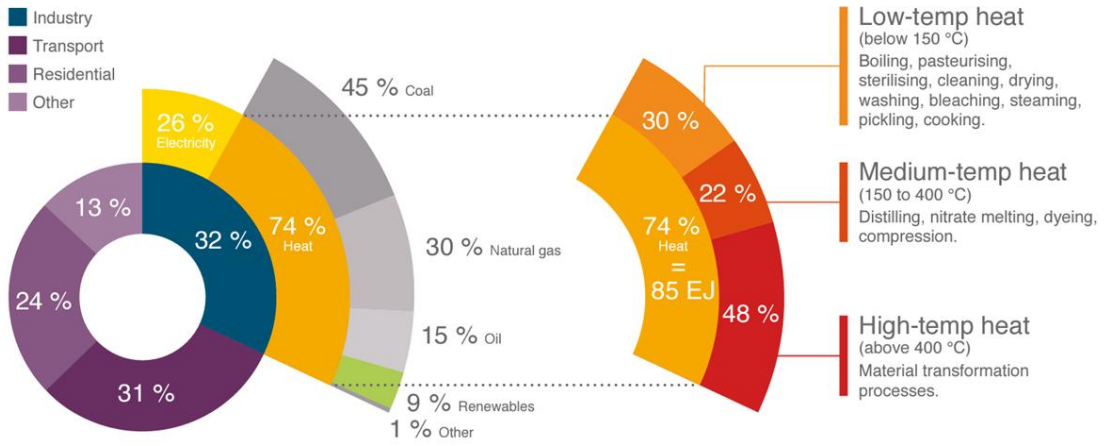
Germany
- Year commissioned: 2010
- Industry: Industrial Park
- Process: District heating
- Thermal Storage Type: HTF Storage Capacity: 250kW
- Annual yield: 576 MWh/y
- Operating temperature: 220°C
- Energy savings: 768 MWh/y
- CO2 savings: 192 tons CO2/y

protarget

We are decarbonizing industry

Fighting a global challenge, successfully and efficiently

Energy consumption of heat in the industrial sector



- Final energy consumption of heat in the industrial sector > electricity consumption

- Industry produces a third of global greenhouse gas emissions and needs to be decarbonised as countries strive for net zero (science direct, energy policy 01/2024)
  - Reducing net greenhouse gas emissions by at least 55% by 2030
  - Reducing the EU's net greenhouse gas emissions by 90% by 2040
  - The EU targets to be climate-neutral by 2050 – an economy with net-zero greenhouse gas emissions

- Transitioning to a more sustainable and carbon-neutral future, $13.5 trillion in investments will be needed by 2050, particularly in the production, energy and transport sectors (World Economic Forum, Geneva, Switzerland, 28 November 2023)

protarget

Energy on demand: Solar thermal contracting

Advantages of energy contracting

Sustainable and cost-efficient process heat on demand

Solar thermal contracting

- A contractor is responsible to design, build, finance, and operate the solar plant on the basis of a TPA (Thermal Purchase Agreement) supplying sustainable process heat to the customer
- Solar energy contracting is limiting the technical and financial risk to the customer, who has no O&M responsibilities
- Performance guarantees supplied by the contractor create plannable cost savings over a long period
- Energy contracting enables an easier and faster decision process (OPEX - management level) compared to an investment decision (CAPEX - cooperate level)
- Customer can claim to have incorporated a sustainable technology into its production process and benefit from the CO2 savings to achieve its goals to become carbon neutral
- Financial investors who invest in ESG (Environmental, Social, Governance) projects, are able to achieve a solid revenue stream over 10-20 years with an IRR of 10% and more

protarget

SUNBREWED Project

Patras, Greece

Customer:
HEINEKEN

ELPEDISON

Funded by the European Union
Emissions Trading System
Innovation Fund

Decarbonizing Industry with Solar Heat – The Innovation Fund SUNBREWED Project

PROTARGET AG: Turnkey Concentrated Solar Thermal (CST) systems for industrial use.

Awarded in 2023 through an international tender in cooperation with **HEINEKEN** for **Athenian Brewery** in Patras, Greece, in partnership with **ELPEDISON** (HELLENiQ Group) and funded through the **European Innovation Fund**.

Project Scope

- Design, build, and commission a solar steam plant with a total thermal capacity of **5.75 MW**, including Thermal Energy Storage (TES).
- Energy Supply Model: Operated under a **15-year** Thermal Purchase Agreement (**TPA**) by ELPEDISON.

System Characteristics

- 12,880 m² of Parabolic Trough Collectors.
- Peak capacity 7.5 MW, Steam at 185°C.
- Integrated thermal storage 15.5 MWh ensures flexibility and reliability.

Use Case: Solar steam replaces heavy fuel oil in brewery processes, reducing dependence on fossil fuels and ensuring **cost predictability.**

SUNBREWED Project

Patras, Greece

Customer:
HEINEKEN

ELPEDISON

Funded by the European Union
Emissions Trading System
Innovation Fund

A Benchmark Project in Renewable Industrial Heat

Triple Innovation

- Technical: Parabolic Trough Collector (PTC) technology + Thermal Energy Storage.
- Operational: Full integration into existing industrial steam infrastructure
- Financial: Heat-as-a-service model via long-term TPA.

Recognized by the EU

- **€4.4M Innovation Fund grant (60% co-financing).**
- Selected for its high scalability, modular design, and long-term GHG impact.
- Enables Energy-as-a-Service offering with minimal risk for the industrial off-taker.

Timeline

- Project starting Date: July 1st, 2024
- Construction starting Date: April 1st, 2025
- Entry into Operation: February 28th, 2026

Proven Track Record

Protarget's CST systems are already in operation in Germany, Spain, India, Cyprus, Brazil.

SUNBREWED Project

Patras, Greece

Customer:
HEINEKEN

ELPEDISON

Funded by the European Union
Emissions Trading System
Innovation Fund

Climate Benefits

GHG Reductions

- 21,482 tonnes CO_2 equivalent (emissions avoidance).
- 30% of brewery's total energy demand is covered by solar thermal.

Energy Savings

- Net usable output: 9,786 MWh/year, replacing fuel oil used for steam.

Strategic Environmental Alignment

- In line with HEINEKEN's 2030 decarbonization targets (Net Zero in operations).
- Aligned with the EU Green Deal, Fit-for-55, and REPowerEU goals.

Technology Credentials

- Safe, automated, and designed for 25+ years lifetime in industrial environments.
- Developed in partnership with top-tier institutions like DLR (German Aerospace Center).
- Proven technology under harsh climatic conditions in industrial projects worldwide

Climate Leadership

- First-of-its-kind solar steam project in the brewing sector in Europe.

SUNBREWED Project

Patras, Greece

Customer:
HEINEKEN

ELPEDISON

Funded by the European Union
Emissions Trading System
Innovation Fund

Replication & Market Potential

Scalable Model

- System is modular, scalable, and applicable to any industry requiring process steam (10–30 bar, 100–400°C).
- Modular system design enables flexible replication — from 1 MW to 50+ MW.
- Scalable contracting and financing model (Thermal Purchase Agreements) reduces adoption friction across regions.
- Designed to integrate easily into existing thermal infrastructures — no need to re-engineer entire facilities.

Replication Strategy

SUNBREWED includes a full scale-up and replication strategy, including stakeholder engagement and techno-economic feasibility studies.

- Stakeholder Living Labs and workshops, techno-economic feasibility studies, life cycle assessments.
- Identification of 15+ high-priority sectors across Southern Europe, MENA, Latin America.

SUNBREWED Project

Patras, Greece

Customer:
HEINEKEN

ELPEDISON

Funded by the European Union
Emissions Trading System
Innovation Fund

Replication & Market Potential

This is **not just** a pilot—it's a **blueprint for clean industrial energy transformation**.

Drivers of Adoption in Other Sectors

- Regulatory Pressure: EU ETS Phase IV, rising carbon prices.
- Corporate Climate Targets: Demand from RE100 companies to decarbonize heat—not just electricity. (ESG Goals)
- Volatile Fossil Fuel Prices: Industrial producers seek price stability and energy independence.
- Technology Maturity: Proven PTC + TES systems reduce risk of downtime and offer predictable output.

Replicable Sectors

- Food & Beverage (dairies, canneries, sugar refineries)
- Consumer good (soap, laundry detergent, etc.)
- Textiles (dyeing, drying)
- Chemicals & Pharmaceuticals (clean steam)
- Pulp & Paper
- Mining & Desalination
- District Heating for industrial parks or municipalities

SUNBREWED Project

Patras, Greece

Customer:
HEINEKEN

ELPEDISON

Funded by the European Union
Emissions Trading System
Innovation Fund

A Strategic Lever for Industrial Decarbonization

Aligning with European Climate Goals

- **EU Green Deal** targets for climate neutrality by 2050.
- **Fit-for-55** package by contributing to industrial emissions cuts.
- **REPowerEU** by reducing dependence on imported fossil fuels.
- **RE100 Opportunity:** Addresses growing demand among global corporations committed to 100% renewable energy (e.g., Unilever, Nestlé, PepsiCo, Mars, etc).

Commercial Rationale

- Energy-intensive industries are under pressure to reduce emissions and energy volatility.
- Renewable thermal energy offers stable prices, carbon compliance, and independence from imported fuels.

Strategic Co-Benefits

- Energy price stability for industrial users in an era of volatile fossil fuel costs.
- Regulatory preparedness as carbon pricing and green reporting intensify.
- Green branding advantage: Tangible progress toward Net Zero for corporate ESG goals (esp. RE100 members).


“We help industries to switch from
fossil fuel-based process heat
to sustainable solar thermal alternatives”
Protarget AG
www.protarget-ag.com