



# **Solar Steam Generators** for Industrial Processes

**AREVA Solar**

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**AREVA**

# Reliable Solar Steam

## Lower Costs. Reduce Risks.



Simple.  
Scalable.  
Reliable.

Many industrial processes require steam, but volatile fuel prices and rapidly intensifying carbon markets can subtract from your company's profits and add to market risks.

AREVA's solar steam generators deploy quickly, reliably, and cost-effectively to provide process steam to your operations. In doing so, AREVA solar steam serves as a dependable hedge against rising fuel and emissions costs, and provides a financial benefit in upcoming carbon market scenarios.

### Experienced Team; Land-Efficient Steam

AREVA's experienced management team, leading engineers, superior technology, and volume production capacity combine to create a simple, reliable, and cost-effective way to meet your industrial steam needs.

Our solar steam generators integrate simply with conventional steam systems in both retrofit and new plant designs. And as part of an integrated sustainability strategy for fuel and carbon market risk reduction, AREVA is the most land-efficient renewable energy technology in operation, generating 1.5- to 2.6-times more peak power per acre of land than competing solar technologies.

#### Durable Structure

**Steam Generator Tubing:** Carbon steel pipe, horizontal mount solid piping, no moving joints

**Steam Generator Flow:** Once-through or recirculating

**Reflectors:** Steel backed; mirrors can rotate downward for protection

**Tracking:** Automatic computer control

#### → SOLAR STEAM GENERATORS

<b>Size</b>	>8 MWe
<b>DNI</b>	>5.5 Kwh / m <sup>2</sup> / day preferred
<b>Wind</b>	<90 miles per hour / <145 km per hour
<b>Solar Steam Supply Temperature</b>	Up to 842°F (450°C)
<b>Solar Steam Supply Pressure</b>	Up to 2,400 psia (165 bara)



## Areva Solar Steam

Our Compact Linear Fresnel Reflector (CLFR) solar steam technology boils water with concentrated sunshine. Mirrors track the sun, reflecting solar heat onto boiler tubes to generate steam without the costs, emissions and permitting complications of fossil-fired boilers. In addition, the solar steam generators retain heat, allowing for a more seamless integration with our customers' operations. The result is a system that produces steam directly from the sun using less land than any competing solar technology.

AREVA solar steam is also extremely reliable. AREVA is the first and only solar steam power boiler manufacturer to receive the American Society of Mechanical Engineers' (ASME) "S" Stamp Certificate of Authorization – the industry hallmark of acceptance and certification. The company also has received the National Board Certificate of Authorization "NB" to register its solar boilers.

## + The AREVA Advantage

### Cost-Effective, Clean Energy Steam

- Most land-efficient solar thermal technology
- Reduces fuel and maintenance costs
- Emissions-free steam generation

### Simple, Efficient, Durable Design

- Low wind profile
- Direct steam generation
- Steel-backed, flat mirrors for long life

### Reliable And Robust

- Proven technology
- Engineered for toughest environment (UV, rain, high wind, hail, seismicity)
- Suitable for sandstorms demineralized or produced water operation

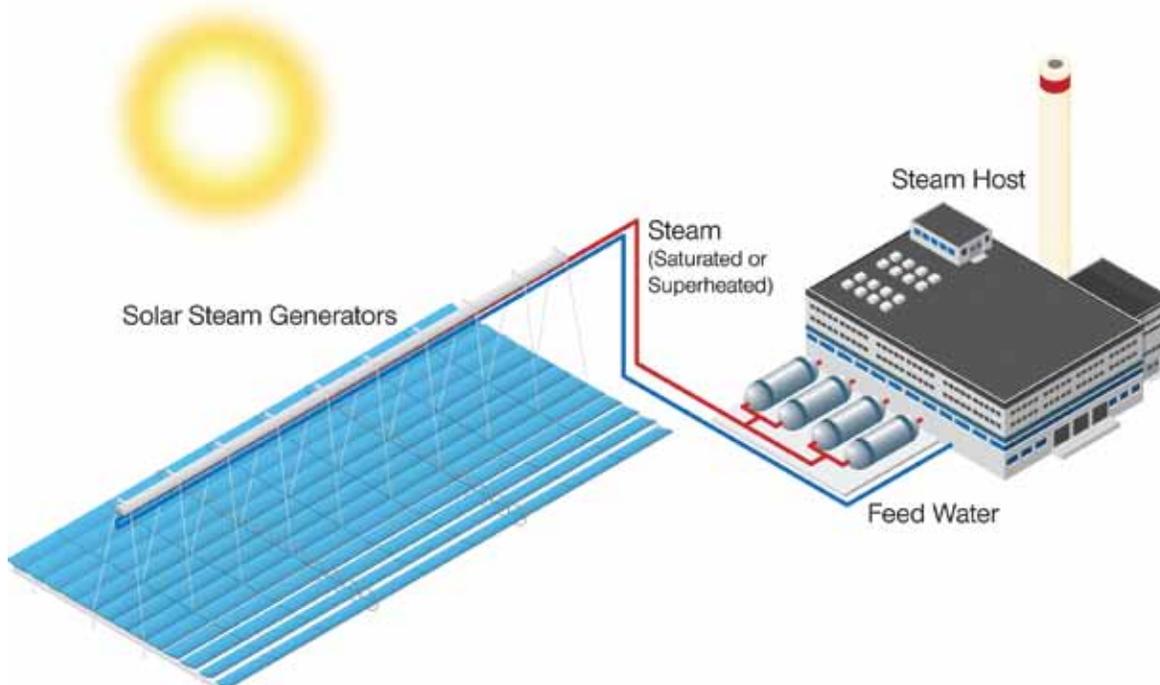
### Rapid Deployment And Installation

- High-volume, automated production and standard materials help eliminate supply chain constraints
- Rapid field installation (6 to 18 months)
- Simple integration with existing steam systems

### Application Areas

- Petrochemical refining and processing
- Enhanced oil recovery
- Desalination
- Natural gas displacement
- Food and chemical processing
- Mining

## → SOLAR STEAM FOR INDUSTRIAL PROCESSES



AREVA supplies solutions for carbon-free power generation. Its expertise and know-how in this field are setting the standard, and its responsible development is anchored in a process of continuous improvement.

As the global nuclear industry leader, AREVA's unique integrated offer to utilities covers every stage of the fuel cycle, nuclear reactor design and construction, and related services. The group is also expanding considerably in renewable energies – wind, solar, bioenergies, hydrogen and storage – to be one of the top three in this sector worldwide in 2012.

Every day, AREVA's 50,000 employees cultivate the synergies between these two major carbon-free offers, helping to supply safer, cleaner and more economical energy to the greatest number of people.

**[www.aveva.com](http://www.aveva.com)**

**AREVA SOLAR**

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