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.
Concentrating Solar Power
Stand-alone and Hybrid Plants
Offer Flexibility and Reliability

AREVA develops, manufactures and installs solar steam generators to serve our customers’ global energy needs in a dependable, market-competitive and environmentally responsible manner. We design, manufacture and install solar steam generators to meet your large-scale energy requirements, including both stand-alone and solar-hybrid designs.

Power providers can rely on AREVA’s solar and hybrid natural gas-fired power plants to deliver clean, cost-effective electricity with the same assurance and dispatchability as traditional fossil-fired plants—not just when the sun is shining. We engineer our systems to provide firm power capacity on a year-round basis. Our solar/natural gas-fired hybrids can also serve as a hedge against rising fuel and emissions costs and can provide an additional financial benefit in upcoming carbon market scenarios.

Clean, Cost-Competitive Electricity
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 high-pressure, superheated 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 the electric grid. The result is a system that produces steam directly from the sun to generate clean, reliable power.

AREVA’s solar steam generators are simple, durable and scalable. And they use the most land-efficient renewable energy technology in operation, generating 1.5- to 2.6-times more peak energy per acre of land than competing solar technologies.

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. AREVA has also received the National Board Certificate of Authorization – the industry hallmark of acceptance and certification of fossil-fired boilers. In addition, the solar steam generators retain heat, allowing for a more seamless integration with the electric grid. The result is a system that produces steam directly from the sun to generate clean, reliable power.

AREVA’s Kimberlina facility is the first solar thermal power plant to be built and enter operation in California in nearly two decades. Kimberlina can generate up to 5 MWe to help power California’s peak power demand. AREVA is building a 44 MWe power augmentation project at CS Energy’s 750 megawatt coal-fired Kogan Creek Power Station in Queensland, Australia. The project is scheduled to commence operation in 2013, and will be the largest solar integration with a coal-fired power plant.

Proven Success
AREVA’s Kimberlina facility is the first solar thermal power plant to be built and enter operation in California in nearly two decades. Kimberlina can generate up to 5 MWe to help power California’s peak power demand, and serves as a testing and demonstration facility for AREVA’s customers.

AREVA is building a 44 MWe power augmentation project at CS Energy’s 750 megawatt coal-fired Kogan Creek Power Station in Queensland, Australia. The project is scheduled to commence operation in 2013, and will be the largest solar integration with a coal-fired power plant.

Optimized Siting
• Hybrid options in modular, standard, or customized design
• Rapid field installation (12-24 months)
• High-volume, automated production and standard materials help eliminate supply chain constraints
• Ease of permitting (no synthetic fuels or toxic materials)
• Closed loop system and dry-cooling capability to conserve water
• On-peak energy delivery
• Non-flammable, non-toxic working fluid

Cost-Effective, Emissions-Free Electricity
• Most land-efficient solar technology
• Eliminates (via stand-alone) or helps eliminate (via hybrid) fuel and emissions cost risks
• Simple design reduces costs
• Helps meet RPS requirements
• On-peak energy delivery

Reliable And Robust
• Proven technology
• Engineered for tough environmental conditions (UV, rain, high wind, hail, seismicity)
• Hybrid systems provide same dispatchability as fossil-fired power plants

Rapid Deployment And Installation
• Modular and scalable
• High-volume, automated production and standard materials help eliminate supply chain constraints

Cost-Effective, Emissions-Free Electricity
• Most land-efficient solar technology
• Eliminates (via stand-alone) or helps eliminate (via hybrid) fuel and emissions cost risks
• Simple design reduces costs
• Helps meet RPS requirements
• On-peak energy delivery

Reliable And Robust
• Proven technology
• Engineered for tough environmental conditions (UV, rain, high wind, hail, seismicity)
• Hybrid systems provide same dispatchability as fossil-fired power plants

Rapid Deployment And Installation
• Modular and scalable
• High-volume, automated production and standard materials help eliminate supply chain constraints

Optimized Siting
• Ease of permitting (no synthetic fuels or molten salt, no solar field VOC emissions, no toxic materials)
• Closed loop system and dry-cooling capability to conserve water
• No fuel infrastructure required
• Non-flammable, non-toxic working fluid
Concentrating Solar Power
Stand-alone and Hybrid Plants
Offer Flexibility and Reliability

AREVA develops, manufactures and installs solar steam generators to serve our customers’ global energy needs in a dependable, market-competitive and environmentally responsible manner. We design, manufacture and install solar steam generators to meet your largescale energy requirements, including both stand-alone and solar-hybrid designs.

Power providers can rely on AREVA’s solar and hybrid natural gas-fired power plants to deliver clean, cost-effective electricity with the same assurance and dispatchability as traditional fossil-fired plants—not just when the sun is shining. We engineer our systems to provide firm power capacity on a year-round basis. Our solar/natural gas-fired hybrids can also serve as a hedge against rising fuel and emissions costs and can provide an added financial benefit in upcoming carbon market scenarios.

Clean, Cost-Competitive Electricity
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 high-pressure, superheated 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 the electric grid. The result is a system that produces steam directly from the sun to generate clean, reliable power.

AREVA’s solar steam generators are simple, durable and scalable. And they use the most land-efficient renewable energy technology in operation, generating 1.5- to 2.6-times more peak energy per acre of land than competing solar technologies.

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. AREVA has also received the National Board Certificate of Authorization “NB” to register its solar boilers.

Proven Success
AREVA’s Kimberlina facility is the first solar thermal power plant to be built and enter operation in California in nearly two decades. Kimberlina can generate up to 5 MWe to help power California’s peak power demand, and serves as a testing and demonstration facility for AREVA’s customers.

AREVA is building a 44 MWe power augmentation project at CS Energy’s 750 megawatt coal-fired Kogan Creek Power Station in Queensland, Australia. The project is scheduled to commence operation in 2013, and will be the largest solar integration with a coal-fired power plant.

Cost-Effective, Emissions-Free Electricity
Most land-efficient solar technology
Eliminates (via stand-alone) or helps eliminate (via hybrid) fuel and emissions cost risks
Simple design reduces costs
Helps meet RPS requirements
On-peak energy delivery

Reliable and Robust
Proven technology
Engineered for toughest environmental conditions (UV, rain, high wind, hail, seismic)
Hybrid systems provide same dispatchability as fossil-fired power plants

Rapid Deployment and Installation
Modular and scalable
High-volume, automated production and standard materials help eliminate supply chain constraints
Rapid field installation (12-24 months)
Hybrid options in modular, standard, or customized design

Optimized Siting
Ease of permitting (no synthetic fuels or molten salt, no solar field VOC emissions, no toxic materials)
Closed loop system and dry-cooling capability to conserve water
No fuel infrastructure required
Non-flammable, non-toxic working fluid

Durable Solar Field
Heat Transfer Fluid: Water/steam; no oil or molten salt
Steam Generator Tubing: carbon steel, horizontal mount solid piping, no moving joints
Reflectors: Steel-backed mirrors rotate downward for protection
Tracking: Automatic computer control

SOLAR AND SOLAR-HYBRID POWER PLANT

<table>
<thead>
<tr>
<th>Nameplate Capacity</th>
<th>50 – 550 MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Power per Square MWe (250 Hectares)</td>
<td>150 – 200 MWe</td>
</tr>
</tbody>
</table>

AREVA’S SOLAR STEAM GENERATOR

<table>
<thead>
<tr>
<th>Solar Steam Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
</tr>
<tr>
<td>Pressure</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

CSP REFERENCE PLANT

AREVA

CLFR Plant

Trough ~ 1.5x

Thin Film PV ~ 2.1x

Tower ~ 2.6x

250 MWe (CLFR) • 690 Hectares • 3651 Hectares
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.areva.com