Crescent Dunes will become the world’s largest concentrated solar power station using molten salt technology.

In September 2011, Alstom signed a contract with Cobra Thermosolar Plants Inc to supply a 125 MW MT steam turbine / generator to the Crescent Dunes project, located near Tonopah in Nevada, USA.

The 1,600 acre plant, which is around 310 kilometers from Las Vegas, will have an overall capacity of 125 MW which could power 75,000 homes in peak operation periods.

CUSTOMER PROFILE

The project is being financed by SolarReserve, the Spanish engineering & construction company ACS Cobra and the Spanish banking firm Santander. The constructor ACS Cobra was the player who chose Alstom as a supplier and Solar Reserve is the end customer. The plant provides large-scale renewable energy solutions using storage technology in order to provide firm supply “on-demand” to meet peak energy requirements, day or night.

PROJECT DESCRIPTION

- Solar radiation reflected by 10,300 heliostat mirrors
- Electricity generated through a steam turbine
- Separate thermal storage tanks for liquid heat transfer fluid in hot and cold states
- Hybrid cooling system with air-cooled condensor

PROJECT HIGHLIGHTS

- The facility will supply approximately 500,000 megawatt hours annually, enough to power **75,000 homes** during peak electricity periods.
ALSTOM'S SOLUTION

Alstom is responsible for the supply of the MT steam turbine, generator, auxiliary systems and the turbine controller. Our highly comprehensive and tailored supply, that has been specifically set to face the unique challenges posed by the power plant construction, combines the following benefits:

- Improved value / cost ratio thanks to modular concept
- Superior efficiency with high inlet steam parameters, reheat feature, modern blading profiles and multiple extractions to achieve high component and cycle efficiency
- Higher plant availability due to fast startup and short cool down option of the turbine
- High reliability from integrated standard modules

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated power output</td>
<td>125 MW (60Hz)</td>
</tr>
<tr>
<td>Turbine speed</td>
<td>3,600 rpm</td>
</tr>
<tr>
<td>Inlet pressure</td>
<td>116 bar</td>
</tr>
<tr>
<td>Inlet temperature</td>
<td>540°C</td>
</tr>
<tr>
<td>HP internal extraction pressure</td>
<td>39 bar</td>
</tr>
<tr>
<td>LP internal extraction pressure</td>
<td>1.5 bar &amp; 0.4 bar</td>
</tr>
<tr>
<td>Exhaust condensing</td>
<td>130 mbar</td>
</tr>
</tbody>
</table>

WHY CHOOSE ALSTOM?

- Supplier of over 20% of the world’s installed steam turbine capacity
- More than 100 years of rich and diverse experience
- Presence in more than 100 countries
- Solutions adapted to any type of fuel or industry
- Over 1,000 small steam turbines delivered (< 100 MW) totaling 17 GW

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