



CMI ENERGY

ATACAMA I

Chile | 110 MW

Molten Salts STE

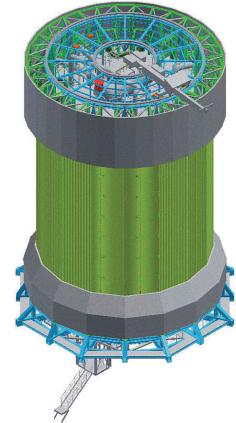




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Chile | 110 MW Molten Salts STE

First solar tower in South America, with the best storage time (17.5h)



Context of the Project

The Atacama plant, located in the remote Atacama desert in the north of Chile, has the highest level of solar radiation in the world. This region is thus quite suitable for Concentrated Solar Power Plants. This new solar thermal plant will mainly supply electricity for local mines. In addition, the Atacama I solar complex will feature a photovoltaic plant with a capacity of 100 MW.

The Contract

In July 2014, CMI Energy was awarded its first order for the design and supply of a molten salt solar receiver. It will be installed at the top of a concrete tower in the Atacama I power station

With its 110 MWe, the Atacama power plant will be the largest molten salt power plant in the world and the most powerful solar plant on the South American continent. Thanks to its ability to store enough energy for 17.5 hours of operation, it will be able to supply electricity 24 hours a day. With a height of 32.4 meters, the CMI receiver will be installed at the top of a 217 meter high tower. Made up of sixteen identical panels forming a polygon of 18.4 meters in height, it will be topped by a thermal shield which prevents the sun rays from damaging the equipment.

Although the process for this type of equipment is simpler than for a classic solar receiver (no need for an evaporator or super-heater), the solar flow is much more concentrated than for direct steam generation. The metal temperatures are much higher as a result (700°C instead of 600°C), which represents the main challenge.

It is therefore necessary to select materials which can resist high temperatures while limiting the corrosion risks linked to the use of molten salts. Another challenge for this technology is the fact that molten salts start freezing below 240°C. Therefore they have to be permanently kept at a temperature above 290°C. This requires to empty the receiver each time there is insufficient sunlight and to reheat the unit before injecting the salts and begin start-up.

CMI Energy was also awarded a contract for the design and supply of a similar thermal solar receiver that will equip the Atacama II power station in Chile.

This contract illustrates CMI Energy's strategy to go on diversifying in renewable energies.

Plant Operation

The power plant is designed for base load. The electric production has to be uninterrupted even when the sun does not shine. The use of molten salts enables a large energy storage capacity, which constitutes a major asset for electricity production.

Characteristics

/ Heat Transfer Fluid: molten salts

Equipment

MWth	t/h	Bara	°C
720	6200	In: 14.4	In: 290
		Out: 1	Out: 565

Schedule

Contract Award	July 2014
Start boiler erection	June 2015
Boiler ready for PAC	2016
Full Commercial Operation	2017

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