

Gemasolar solar thermal power plant supplies power for 24 hours straight

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Gemasolar is located near Seville, Spain, on 185 hectares (about 0.7 square miles) of land. Image credit: Torresol Energy

(PhysOrg.com) -- Last week, the Gemasolar power plant near Seville, Spain, became the first commercial solar thermal power plant to supply uninterrupted power for a full 24 hours, according to builders Torresol Energy. In contrast to photovoltaic solar cells, which use the sun's light to generate electricity, solar thermal plants use the sun's heat to run

steam turbines and generate electricity. One of the biggest advantages of using heat is that it can be stored more easily than light, allowing for electricity production to continue even after the sun sets.

The Gemasolar 19.9-MW Concentrated Solar Power system is a “power tower” plant, consisting of an array of 2,650 heliostats (mirrors) that aim solar radiation at the top of a 140-m (450-ft) central tower. The radiation heats molten salts that circulate inside the tower to temperatures of more than 500 °C (932 °F). The hot molten salts are then stored in tanks that are specially designed to maintain the high temperatures. This cutting-edge heat storage system enables the power plant to run steam turbines and generate electricity for up to 15 hours without any incoming solar radiation.

Gemasolar’s ability to generate 24 hours of electricity marks an important step toward demonstrating the reliability of solar technology, which is one of the industry’s biggest challenges. In addition to providing continuous power on cloudy days and at night, Gemasolar’s storage capacity makes it possible to manage the supply of electricity sent to the network and respond to spikes in demand. As noted in a press release from Torresol Energy, “The reliability of solar energy becomes comparable to that of conventional fossil-fuel [power plants](#), which is decisive as the demand for renewable energy increases.”

As the company explained, Gemasolar had only been operating commercially for one month prior to its 24-hour run.

“Gemasolar achieved optimal performance in its systems in the last week of June,” said Diego Ramírez, Director of Production at Torresol Energy. “The high performance of the installations coincided with several days of excellent solar radiation which made it possible for the hot-salt storage tank to reach full capacity. We’re hoping that in the next few days our supply to the network will reach an average of 20 hours a

day."

The power generated by Gemasolar is sent to a nearby power substation, where it is injected into the grid. Torresol Energy estimates that Gemasolar will generate 110 GWh of electricity per year, enough to [power](#) about 25,000 homes, as well as reduce carbon dioxide emissions by more than 30,000 tons per year.

Torresol Energy is a joint venture between Abu Dhabi's future [energy](#) and clean technology company Masdar and the leading Spanish engineering and construction company SENER.

More information: [Torresol Energy news](#)
via: [Gizmag](#)

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