Kogan Creek Solar Boost Project

Overview

CS Energy has partnered with solar thermal technology provider AREVA Solar on a 44 megawatt solar thermal addition to the existing 750 megawatt Kogan Creek Power Station in South West Queensland.

How it will work

The project will augment Kogan Creek Power Station's feedwater system to increase the station's electrical output and fuel efficiency. It will do this by using solar technology to heat feedwater entering the boiler, supplementing the conventional coal-fired feedwater heating process. This means that steam that was previously diverted from the turbine to the feedwater system can instead be used to generate extra electricity.

Benefits

The solar addition will enable Kogan Creek Power Station, already one of Australia's most efficient coal-fired power stations, to produce more electricity with the same amount of coal. This will make the plant more fuel efficient and further reduce its greenhouse intensity.

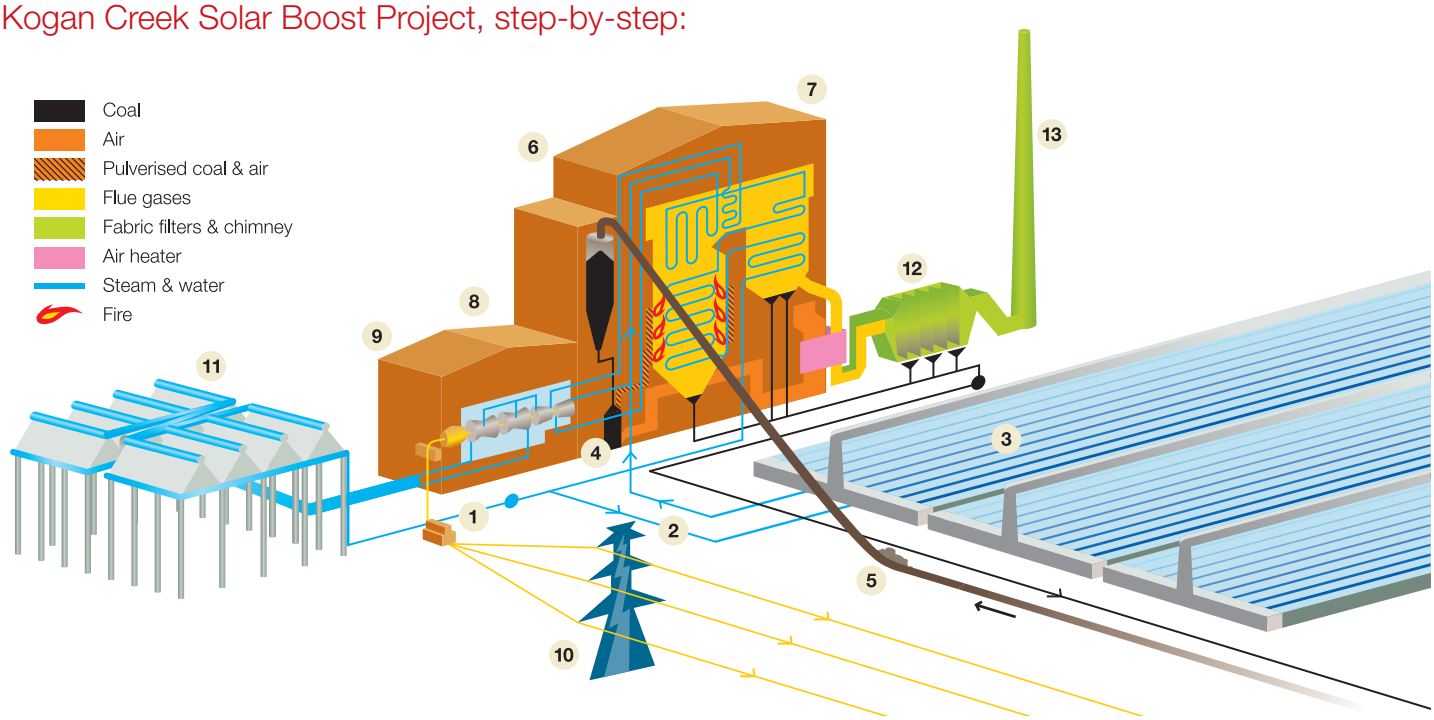
Size

The project will be the largest deployment of AREVA Solar's solar thermal technology anywhere in the world and the largest solar project of any kind in the Southern Hemisphere.

Key facts

What	Solar addition to the existing 750 megawatt Kogan Creek Power Station, one of the most efficient coal-fired power stations in the Australian electricity market.
Who	Queensland Government owned electricity generator, CS Energy and AREVA Solar, the only Compact Linear Fresnel Reflector (CLFR) provider to supply superheated steam which has specific application to the power generation market. The Australian Government and the Queensland Government have provided support for the project.
Capacity	The proposed solar thermal system will produce up to 44 megawatts of additional electricity during peak solar conditions. This will equate to 44 gigawatt hours of electricity per year.
Number of extra homes powered	5,000 annually.
Greenhouse gas emissions avoided	35,600 tCO_2, equivalent to taking 11,000 cars off the road annually.
Technology	AREVA Solar's CLFR technology.
Land area	Approximately 500m x 600m area (30 hectares).
Jobs created	Peak construction workforce of 120.
Capital cost	$104.7 million.
Timeframe	Operational by 2013.

Kogan Creek Solar Boost Project, step-by-step:



Solar energy will be used to boost the conventional coal-fired electricity generation process at Kogan Creek Power Station. The steps below outline how the two technologies will be combined.

1. Cold water from the air-cooled condenser is piped to the boiler feedpump.
2. Water is diverted to the solar field.
3. The water is heated using solar energy and converted to steam.
4. Steam from the solar field is further heated and used to power the intermediate pressure turbine to generate electricity.
5. Coal from the stockpile is fed to the power station.
6. Pulverised coal is blown and ignited in the boiler.
7. Water is heated in the boiler to produce steam.
8. Steam drives the turbine. The addition of the solar field reduces the amount of steam bled back to the feedwater heater, meaning more steam is available for the electricity generation process.
9. The turbine spins the generator. A powerful electromagnet is mounted on the generator shaft and when it rotates, produces electricity in the surrounding generator windings.
10. Electricity is transported to customers via high voltage transmission lines. At peak solar conditions, the solar field will enable Kogan Creek to generate an extra 44 megawatts of electricity.
11. Steam is condensed into water in the air-cooled condenser and then pumped back to the boiler feedwater pump for reuse.
12. A filter system cleans fly ash from the boiler exhaust gases before they are discharged up the chimney.
13. Ash is used in rehabilitation of the Kogan Mine site.

An aerial impression of where the Solar Boost Project will be constructed at Kogan Creek Power Station.

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For further information, **visit www.kogansolarboost.com.au**