

Worleyparsons Manages Africa's First Csp Projects

WorleyParsons has become the first consulting engineering firm in sub-Saharan Africa to act as Owner's Engineer on concentrated solar power (CSP) projects in South Africa. This follows the recent award of two contracts to provide Owner's Engineer services to the continent's first CSP projects, being implemented by Abengoa Solar One in the Northern Cape.

CSP systems, which have seen rapid growth around the world in the past five years, harness the heat energy from the sun's rays. Electrical power is produced when the concentrated light is converted to heat, which is used to generate steam, which in turn drives a steam turbine connected to an electrical power generator.

Abengoa Solar One, a Spanish company in joint venture with local partner, the Industrial Development Corporation, appointed WorleyParsons as Owner's Engineer in November 2013 on the Khi 50 MW CSP plant, located about 30 km west of Upington, and the Kaxu 100 MW CSP plant about 200 km away, located 60 km outside of Pofadder.

The Khi plant incorporates tower technology with a saturated steam thermal energy storage system. The plant will use tower technology that captures solar radiation using a set of dual axis motors, or heliostats, that track the sun and concentrate the reflected sunlight onto steam generators located on top of the tower. Thermal energy will be transferred through a closed steam circuit that drives a 50 MW steam turbine. Electricity generated will be transmitted through a high voltage substation and exported to the Eskom grid. The plant will incorporate a thermal energy storage system that allows for extending the

electricity generation after sunset, the equivalent of two hours at nominal capacity.

The Kaxu 100 MW CSP plant will make use of parabolic trough collector (PTC) technology with a molten salts thermal energy storage system. PTC technology works by tracking the sun from east to west, concentrating the direct irradiance and converting it to thermal energy. This energy is transferred through a closed heat transfer fluid circuit to produce sufficient steam to drive the 100 MW steam turbine. As with the Khi plant, the Kaxu installation will transmit the electricity generated through a high voltage substation to the Eskom grid. The plant will also incorporate a thermal energy storage system that allows for extending the electricity generation after sunset, the equivalent of 3 hours at nominal capacity.

“We’re delighted to be making our debut into the renewable energy market in sub-Saharan Africa with these state-of-the-art solar power projects,” says Tim Gaskell, WorleyParsons’ Project Director. “The South African government has determined a sizeable target to be generated from renewable energy sources and its Renewable Energy Independent Power Producer Procurement (REI-PPP) programme will establish and promote a fully-fledged renewable energy industry in South Africa in the coming years. Major renewable energy projects are starting to come through as a result of this programme and WorleyParsons is ideally positioned to provide the industry with local expertise in this arena, backed by the global footprint of the greater WorleyParsons Ltd organisation.”

“This invaluable mix of local and international knowledge and experience has already attracted attention in the marketplace and we have also recently been contracted to provide Project Management services to Lake Turkana Wind Power Ltd, which is constructing the biggest wind farm of its kind in sub-Saharan Africa.

“The project aims to provide 300 MW of reliable, low cost wind power to the Kenya national grid, equivalent to approximately 20% of the current installed electricity generating capacity. In addition, we’re providing Owner’s Engineer services on a photovoltaic (PV) solar power project in a remote part of the Northern Cape for Solar Reserve, a USA-based operator with local offices.”

Drawing on its extensive experience with all types of Renewable Energy technologies, WorleyParsons offers full service support to power utilities, IPPs and project developers across a broad spectrum of Renewable Energy applications. This expertise includes technology evaluation, siting, site layout, site performance, operations and maintenance projections. WorleyParsons also provides economic analysis support to assist customers in the development of technical and financial economic models.

In addition to the CSP, PV solar and wind energy technologies, in the greater renewable energy arena WorleyParsons’ expertise includes bio-energy, geothermal and hydro power generation, as well as multiple technology and integrated fossil/renewable hybrid options, ocean energy, energy storage and other technologies still in the research and development phases.

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