

Extending the life of the world's largest CSP plant



ABB has upgraded with state-of-the-art features the 22-year-old turbine control systems at the Harper Lake solar thermal power plant in the Mojave Desert, California.

ABB began work on upgrading the four units in 2010 and executed the project in stages over the course of two years during scheduled outages and without additional downtime. In line with ABB's control system strategy of protecting as much of the customer's investment in hardware and software as possible, ABB retained the existing cabinets and I/Os to avoid new wiring and commissioning.

Built in 1989 and 1990 respectively, the two 80 MW units that make up the 160 MW Harper Lake solar thermal power plant have been the largest solar thermal generating units in the world for well over two decades.

Along with five 30 MW units at Kramer Junction, and a 14 MW and 30 MW unit at Degget, Harper Lake is part of the vast 354 MW Solar Electric Generating Systems (SEGS) solar power facility, which was built between 1984 and 1990 and is the biggest and oldest solar thermal complex in the world.

ABB supplied the original Procontrol P13 turbine control systems for the two Harper Lake units and for two of the 30 MW solar thermal units at Kramer Junction, all of which are equipped with ABB steam turbines and generators from the same period. Although the original turbine control systems were still in perfect working order, they were no longer at the cutting edge. Plant owner, NextEra Energy, the largest generator of solar and wind power in the United States, required a cost-effective state-of-the-art upgrade with minimal disruption that would improve plant operations and reliability.

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The result is a cutting-edge turbine control system that provides NextEra Energy with faster fault finding, better diagnostic capability, safer and more reliable operation, up-to-date documentation, fewer spare part requirements, and a built-in capability for the future addition of a redundant processor. «The Procontrol P13 platform is now in its fourth decade of providing safe and reliable power plant operation. ABB continues to actively maintain Procontrol P13 to safe-guard the previous investments of its customers in the platform, ensuring seamless evolution to Symphony Plus.»

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