

Procontrol P14 upgrade breathes new life into the old control system of the Jhanor-Gandhar power plant in India



An ABB control upgrade at the 648-megawatt (MW) Jhanor-Gandhar combined cycle gas turbine (CCGT) power plant in India extends the life of the existing Procontrol P14 plant automation system, and replaces multiple systems and interface problems with a common, problem-free control system. The upgrade saves the customer time, money and delivers efficient, reliable control that can be easily upgraded in the future.

The base-load Jhanor CCGT power plant is owned by the state-run National Thermal Power Corporation (NTPC), and operates in the state of Gujarat near the city of Baruch, on India's northeastern coast. It is supplied with natural gas from the Gandhar gas field, and water from the Narmada River. Commissioned in 1994/95, ABB's turbine control system upgrade started in 2013; the last unit was finalized in April 2015.

Upgrade delivers numerous customer benefits

A major benefit of ABB's solution is NTPC's own team could perform the mechanical and installation work, since there are well-trained technicians on site, which meant only one supervisor was required. In addition, replaced cards were reusable as spare parts for the main DCS. The schedule provided by ABB meant upgrade expenses could be stretched over a longer time period and tuned to the customer's budget. The customer also benefits from ABB's obligation to provide suitable solutions for upgrading Procontrol P14 installations step by step, either with P14 successor modules, or suitable alternative ABB solutions, beyond 2030.

The Jhanor plant transmits power at 220-kilovolts (kV) and 400 kV to India's western regional grid using three gas turbines (GT13 units originally supplied by ABB) that are controlled with a first generation Procontrol P14 plant automation system, installed in 1994.

All three P14 turbine control system modules were replaced with new modules unit by unit during an outage period using the KISS engineering tool, which ABB has specially developed to upgrade Procontrol P14 systems.

Engineering simplified with a KISS

KISS is an acronym for “configuration, information and service system,” which reads the logic from old modules and recovers it in a new form suitable for new modules. The KISS tool improves and simplifies engineering, commissioning and maintenance efficiency.

Part of the scope of delivery included replacing three old PDDs (Programming, Diagnosis and Display Systems) with the newest version based on Windows 7. All of the new cabinets are compatible with FDDI (Fiber Distributed Data Interface) bus technology, in preparation for future improvements.

ABB’s upgrade ensured there is still one common engineering tool and operator system, and enables easy upgrading and transfer of control logic to new modules.

All three upgrades were performed without delays, to the satisfaction of NTPC, and maintain the high reliability of the existing P14 control system. The work was completed without requiring modifications to the main distributed control system (DCS), and finalized in a short time frame, solidifying the long and trustworthy relationship NTPC and ABB have developed over 25 years. The order is including five training days for the new modules in use at the ABB training center in Mannheim.

NTPC is the largest power generating company in India with a total installed capacity of 39,174 MW from 29 power generating stations spread across the country. With over 16,000 MW capacity under construction, NTPC plans to become a 128 GW company with a welldiversified fuel mix by the year 2032.

Project name	Jhanor-Gandhar combined cycle gas turbine (CCGT)
Location	Baruch, state of Gujarat, India
Customer	National Thermal Power Corporation (NTPC)
Completion	April 2015

ABB solution

- Extends the life of the existing Procontrol P14 plant automation system.
- Replaces multiple systems and interfaces with a common, problem-free control system.

System benefits

- The KISS tool improves and simplifies engineering, commissioning and maintenance efficiency (see left column for detailed explanation).
- Saves the customer time, money and delivers efficient, reliable control that can be easily upgraded in the future.

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