

Essential P13 control system upgrade for the Egyptian Petrochemicals Company

ABB has completed another successful Procontrol P13 upgrade, this time for the Egyptian Petrochemicals Company (EPC) at their 107 MW combined cycle power plant at El Ameriya.



The power plant was originally constructed in two phases – Phase A was manufactured and commissioned by Brown Boveri (BBC) in 1984–86; Phase B by ABB in 1998–2000. The power plant consumes electricity and low pressure steam on site and exports both generated electricity and high pressure steam to neighbouring companies, with any surplus power exported to the national grid.

However, as equipment life cycles have continually expired, and with technical support no longer viable, product obsolescence and outdated engineering tools were beginning to cause the site operators a major problem. EPC decided therefore that it was time to upgrade its DCS applications and engineering tools to the latest generation – in the most efficient and effective way.

Based on the excellent service and support they had received during the plant's operation, EPC decided that ABB as manufacturer of the existing control system was the best choice for the project. With ABB also being the pioneers in the field of automatic control systems and having a strong focus on both quality and production, EPC recognised that ABB could offer the smart solutions that they required.

The existing combined cycle power plant comprised:

Phase A (Train 1):

- Alstom 27 MW GT9 gas turbine controlled by a TR76 (BBC Decontic system) and Sulzer 70 ton/hour HRSG1 steam waste heat boiler controlled by ABB Procontrol P13/42; this feeds
- Alstom 36 MW steam turbine controlled by ABB Procontrol P13/42.

The switchgear yard was also ABB Procontrol P13/42 in 5 intra-plant bus with programmable controllers (PR02, PR03) and drive modules (ASxx).

The system was operated from the central control room (CCR) by MMI (was Mosaic disk); the monitoring system was Praut 80 and the engineering tool was SK03.

Phase B (Train 2):

- Alstom 44 MW GT8C gas turbine controlled by ABB Procontrol P13/42 and CMI 70 ton/hour HRSG2 steam waste heat boiler controlled by ABB Procontrol P13, which feeds the steam turbine, with additional intra-plant bus and programmable controller (PR05).



The new operating control system at EPC

The system was operated from the CCR by an HMI workstation, plant power monitoring system (PMS) under open vessel management system (VMS) and the engineering tool was EDS-P3 under the UNIX standard.

The logical response to obsolescence

The new project upgrade work included:

- Replacement of PR02, PR03, ASxx with new 70PR05b and partly new P13 I/O modules.
- Removal of the existing operating desk and 70WB and 70WA modules, and the implementation of a new 'state-of-the-art' computerized 800xA operating system.
- Upgrade of the existing EDS-P3 and Progress 2 engineering tools to a Windows/Linux-based operating system with PC hardware.
- 1:1 upload of existing P13 databases and source codes for the new operator system.

There were technical challenges, as expected when replacing older, obsolete systems. Replacement of the old technology with the new system resulted in a significant workload for the EPC engineers, under ABB's supervision, as they were required to manually input a large amount of data.

The changeover from the existing operator desks and 70WA/70WB modules to the new 800xA operating system was a critical point in the process, requiring a high level of concentration and heavy workload to carefully ensure that each process signal was successfully transferred across to the new DCS application and thoroughly checked for functionality.

EPC see the long-term benefits

The technology upgrade was certainly the right decision. EPC now have the latest technology in the plant's automatic control systems and applications (800xA and PGIM). The updated engineering tools enable EPC to effectively configure the DCS system controllers and importantly monitor and respond to the whole control system. They now have additional signals to control process equipment that had previously only been possible by the local attendance of plant maintenance personnel.

EPC have an operating control system with full technical support from ABB specialists and accessibility to the spare parts they need – and essentially without the concerns they previously had over future equipment obsolescence.

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