Success story

ABB: reliable partner for system migration and service at the Heilbronn thermal power station

Operations started at Unit 7 in Heilbronn over 35 years ago. At the time, it was one of the largest conventional power station units of the energy group EnBW. Since then, and particularly in the last three years, ABB has been a reliable partner for the power station, undertaking the progressive migration of control technology for turbine and boiler protection in the station's three active units – Units 5, 6 and 7.

Constructed in the 1950s, Units 1 and 2 of the Heilbronn power station were decommissioned in 1988, followed many years ago by the decommissioning of Unit 3 and 4, which had an output of 200 megawatts (MW) each.

Now, a walk through the control centre for Units 1 and 2 is like taking a trip through the history of power station technology. The former control rooms are like a museum. This space has now become the temporary office for the ABB service engineers and project management team during the horizontal migration period.

In comparison, the control centre for Units 5 and 6, each with an output of 125 MW, is ten years younger and recognizably more modern, and Unit 7, which generates over 800 MW, also has a more contemporary, digitalized control centre.

The ABB project manager leads a team of ten employees who have whipped the control technology of the identically constructed Units 5 and 6 into shape in only five weeks: boiler protection, turbine protection, turbine regulation. Both of these units are operated as back-up power stations – only used if the wind is too weak, if there is insufficient sunshine or when fluctuations in the electricity network threaten to be excessive for other reasons. Both units are considered 'system-relevant' and are routinely started up on a monthly basis to ensure their availability.

Time is money

The 30-year-old control system of Units 5 and 6 was outdated. The ABB service team's task was to refit it to the tried and tested, modular construction, migration-based ABB control system, Procontrol P14.

The entire migration including the commissioning has been completed within only three months. Today, considerably shorter timeframes are being expected by the plant operators as part of their regular plant shutdowns. This was the biggest challenge. In order to reduce the downtimes of the plant, and in the interest of the customer, the ABB service team worked over many weekends and bank holidays.

The ABB service concept for power generation customers is not only based on extensive process and application know-how, but predominantly also on the longstanding customer relationships and continuity in customer advice and care by the plant managers.

In the middle of 2015, the ageing external systems of Units 5 and 6 were migrated to the pre-tested control technology P14, which, it is envisaged, will be in service until 2030. It has been almost seamless since then, with the gradual modernization of power station control technology in Unit 7. The unit was completely equipped with the electrical system by ABB at the start of the 1980s: turbines, generators, Procontrol P14 control technology and everything related to this system. However, over the years, the measurement accuracy has gradually decreased. That is why EnBW, with ABB, has gradually been replacing all switching cabinets since 2012 – ABB has refitted approximately one-fifth of the cabinets in this time. With the harmonization and modernization of Units 5, 6 and 7, EnBW is simultaneously obtaining a joint operating and observation system for all three units. At the start of this year, the draught regulation for both units was also migrated.

Like the back of their hand

This was a fundamental criterion for the energy group in finally awarding the contract. ABB were not necessarily the 'preferred supplier', despite the longstanding customer relationship.

The phased control technology modernization works are ongoing, and the respective inspection times of the turbines set the pace. In order to continue to be on the safe side in future, EnBW has extended its existing service contract across all three units.

"But we have already had a very good experience with ABB over the years," explains Walter Heidrich, joint control technology manager at the Heilbronn power station. "ABB colleagues have known our power station like the back of their hand for over 30 years. In all this time, few disruptions have occurred – and this is why we trust ABB. Our ultimate objective is for the plant to run reliably."

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