Altbach/Deizisau CHP plant: Integrating early fault detection minimizes consequential damages

Reference – Diagnosis

Instrumentation, Controls & Electrical

SPPA-D3000 Plant Monitor detects faults in the Altbach/Deizisau combined heat and power plant (CHP) early, thus avoiding machine failures and high repair costs.

The Plant
The Altbach/Deizisau CHP plant ensures reliable, economical and environmentally-friendly power supply. EnBW operates several plants at the site with a total output of around 1,200 MW, including the 476 MW coal-fired block HKW 1. The district heating generated supplies a considerable proportion of the industrial enterprises in Esslingen and Stuttgart, as well as private households in the surrounding area.

The Task
In 2010, a sudden drop in shaft vibrations on the generator in HKW 1 remained undetected. When running a machine train, significant increased resonance vibrations occurred, resulting in extensive analyses over several months. Although the cause was traced to a short circuit from a lightning strike, it was not possible to explain the remaining impact in full. To avoid lengthy analyses of this type in future, a reliable system for early identification of faults should have been installed. This system identifies discrepancies in system behavior at an early stage and triggers more detailed analyses of them.

Our Solution
An SPPA-D3000 Plant Monitor is now used at HKW 1 to identify damage at an early stage. Status monitoring is fully integrated into the existing SPPA-T3000 Control System. Based on the archived data, Plant Monitor learns the normal behavior of the power plant in various operating states and automatically creates corresponding models for all system components.

In this way, regularly comparing current values with the learned normal values allows deviations to be identified early – long before absolute limit values are reached. Unlike traditional monitoring systems, the analyses do not require intensive searching of historic archive data. Plant Monitor uses real-time data and the root cause analysis is based on actual deviations in the running of the plant. Preventive maintenance measures can also be better planned, and consequential damage and resulting costs minimized.

A subsequent review showed that in the case described, SPPA-D3000 Plant Monitor would have identified the short circuit early. Through fast and effective analysis would have issued a prompt warning, thereby dispensing with the need for laborious follow-up analysis.

“Plant Monitor can be used in all operating states – even transient ones. Values which deviate from normal behavior are identified early, allowing us to make sound decisions on the basis of foresight.”

Andreas Mühlig, Head of Technology/Maintenance EnBW AG, Altbach/Deizisau Power Plant