

EDF Energy



CUSTOMER

EDF Energy

SECTOR

Industry

FOCUS

Complete controls commissioning

KEY SUCCESSSES

- BMS controls oversee three turbine halls, electrical substation, control room and water treatment plant areas
- Ventilation, extraction and air handling optimised

Project overview

EDF Energy's new 1320 MW Combined Cycle Gas Turbine (CCGT) power station at its West Burton site in Nottinghamshire has relied upon the expertise of BG Energy Solutions to install and commission the vital control equipment needed for ventilation, extraction and air handling. The huge turbine halls house no less than 36 extractor fans, 26 temperature sensors and 10 heater units (140A) to ensure operating conditions are optimised and energy use is efficient. All of the equipment is controlled using Trend building management system (BMS) technology.

Background

Procured and managed by EDF-CIT, the in-house delivery vehicle for this type of scheme, West Burton B is a three-turbine-hall facility that runs on natural gas. Sited next to the original coal-fired power station, construction started in 2008 with the intention of supplying electricity

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to circa 1.5 million homes. The main electrical contractor, SPIE Matthew Hall, in turn appointed BG Energy Solutions to install and commission the control systems at the site, which is located near Retford. Working with the customer at every stage of the process, BG Energy was also tasked with manufacturing various control panels.



Installation and commissioning

“Everything is controlled by Trend technology, including all the air handling units and fan coils,” explains Wayne Hudson, C&I Technician at EDF Energy. “This doesn’t just apply to the turbine halls, but to the electrical substation, control room and water treatment plant areas. We now have a range of diagnostics available to us.”

The turbine halls each house a 290 MW gas turbine, each with a heat recovery steam generator (HRSG) that in turn powers a 150 MW steam turbine. Demand for lower carbon, secure and efficient power generation is increasing and CCGT technology aims to meet these requirements.



CCGT systems operate by combining thermodynamic cycles to improve overall efficiency and reduce fuel costs. The turbines burn natural gas, with the hot exhaust used to power stand-alone steam turbines. CCGT plant can achieve a thermal efficiency of around 60%, in contrast to a single cycle steam power plant which is limited to efficiencies of around 35-42%.

Results and Outcome

With EDF’s investment at West Burton B CCGT being around £900 million it’s clear to see that a controlled operating environment to maximise availability is crucial to operations. And this doesn’t just relate to the turbine halls, but to areas such as the electrical substation where large transformers and drives create heat and need to operate in a well ventilated environment at a stable temperature. Needless to say, all of the controls interface with the power station’s fire alarms so that all air-based systems are switched off immediately in the event of an incident.

As for the future, there are already plans afoot to expand the control systems at West Burton B. Mr Hudson comments “While the Trend control technology is doing a great job locally, in the future we may want to consider an Ethernet-based system with a SCADA head-end unit,” explains Mr Hudson. “This will permit a holistic view of the whole system from a single location. Any alarms or failures in run time will be flagged up instantly, thus providing a more integrated site.”