

Case Study

Renewables: Biomass Conversion



BACKGROUND

Lynemouth Power Station (LPL) has generated electricity from coal since 1972 with a capacity of 420MW. The plant was originally built, owned and operated by Alcan with the purpose of providing safe and secure energy for the production of aluminium at the adjacent Lynemouth Smelter.

LPL had been working to provide a technical solution to convert the power plant to run on biomass and following clearance from the European Commission for its supporting Contract for Difference from the UK government, EP UK Investments Ltd (EP UK) agreed to purchase LPL in January 2016.

THE CHALLENGE

During 2016 the biomass conversion project started by using a multicontracting strategy with overall project management provided by LPL.

The conversion project required:

- modification to the Port of Tyne material handling and storage facilities
- new biomass handling and storage facilities at the site
- biomass preparation and transport to the burners
- a new burner management system and new safety and control systems (ICSS) with full SCADA replacing the existing control desks
- an interface to the existing electrical switchgear and existing and new instruments completed the scope.

During the build phase of the project, LPL recognised that the control and safety system upgrade activity was on the project critical path.

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CORE'S INVOLVEMENT

CORE was requested to conduct an audit to assess the true status of the control and safety system upgrade, where system vendor/project interface issues existed, and any schedule or technical problems. If any problems were identified CORE were to assist in providing solutions.

As part of the audit, CORE facilitated an interactive planning session involving all of the project stakeholders. This highlighted a number of project interface issues which would impact key milestones in the schedule. As a result the schedule and reallocation of resources was reassessed to address these issues.

CORE continued to provide project, control and instrument support during the remaining phases of the project including technical assurance activities demonstrating readiness for start-up and operation:

- verifying the control and safety system matched the latest design
- improving management of change controls
- providing technical closeout of functional safety actions in line with IEC 61511 with a primary focus on SIF testing and verification.

Towards the end of the project, CORE provided a commissioning team to assist LPL in the handover of plant and equipment.

Following start-up and operation of the power station, CORE has provided alarm management services to reduce the number of configured alarms contained within the control system.

Medium system review and trial revealed improvement opportunities, allowed removal of a production bottleneck and extended the interval between Printed Circuit Heat Exchanger cleaning operations.

RESULTS



Reallocation of schedule and resources, as a result of CORE's audit, kept control and safety system upgrade activity on track



Verification of control and safety systems



Technical assurance activities demonstrated readiness for start-up and operation



Alarm management = reduced alarm count and operator workload