Inete Case Study:

Dragline Major Shutdown

The Project:

The Client's dragline is a Marion 8050 model, modified for UDD (Universal Dig Dump) operation, currently in use at Caval Ridge Mine. In late 2014 the dragline was walked across from the neighbouring mine site. The dragline was electrically and mechanically overhauled during a sixteen week major shutdown. The purpose of the major shutdown was to effectively reset the working life of the machine.

The works included replacing or overhauling all DC motors and brake assemblies, replacing the machine synchronous motors, replacing the GE PLC control system with an Allen Bradley PLC control system, replacing the machine CD (circumferential diaphragm), upgrading the dragline communication network, overhauling the high voltage switchboard, replacing the machine lubrication system, and other activities.

Inete was engaged directly by the client as their electrical representative on the shutdown to liaise with several different disciplines, ensuring a productive and efficient outcome for the client.

Pre Shutdown Planning and Procurement:

- Technical assistance in developing the electrical scope of works and overall plan for the shutdown.
- Design and selection of the PLC and Control network for the upgrade of the control system.
- Preparation of the cable schedule for the shutdown to allow for planning of work and ordering of equipment.
- Preparation of the Functional Description for the Control System
- Preparation of the For Construction Electrical Schematics for the shutdown.
- Supervision and witnessing of control system factory acceptance testing including all PLC and SCADA programming associated with the upgrade.

Project Overview

Project

Dragline Major Shutdown

Location

Caval Ridge Mine near Moranbah in Central Queensland.

Infrastructure

- Two (2) 4500 HP 6.6 kV Synchronous Motors and DC Generators (MG Sets);
- Four (4) 1900 HP Hoist DC Motors;
- Four (4) 1150 HP Drag DC Motors;
- Four (4) 800 HP Swing DC Motors;
- Two (2) 1045 HP Propel DC Motors.

Project Scope

Major works included:

- Installation of new Flanders MG Sets;
- Installation of new Flanders Hoist, Drag, and Swing Motors;
- Installation of new Lubrication Systems;
- Replacement of all armature cabling;
- Overhaul of HV Switchboard;
- Upgrade of PLC and SCADA control systems.

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Dragline Just After Boom Raise

Dragline View from Boom Point

Shutdown Works:

This was an onsite role for the duration of the shutdown:

- Monitoring of work being carried out to ensure it comply with the scope of works and relevant standards;
- Technical assistance with site electrical works;
- Updating of electrical schematics and cable schedule information;
- Identification of improvements and assistance with changes to the scope of works;
- Monitoring of work progress against work schedules;
- Preparation of training materials and maintenance manuals.

Project Close Out:

The final close out of the project and handover of the dragline to the production team involved:

- Preparation and monitoring of a final stage commissioning schedule;
- Gathering handover documentation from contractors involved in the shutdown;
- Preparing critical spare parts listings and recommendations of spare parts to be held on-site;
- Final updating of electrical schematics to 'As Built' status and compile the hand over documentation repository for hand over to site.

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