



Longwall Boost Pump Station

Customer: Anglo American – Australia

Location: Moranbah North Coal Mine – Moranbah, QLD

Case Study ID: CS-61

Date: July 2013

Overview

Anglo American's Moranbah North Coal Mine engaged Dowdens Pumping & Water Treatment's Mackay branch to design, engineer and build a boost pump station to supply raw water to the longwall area.

The Moranbah North coal mine began operation in 1998 as an underground longwall mine and currently supplies 4.5 m tonne annually of high fluidity premium hard coking coal mainly for export to iron and steel manufacturers in Japan, Korea and Taiwan.

All design, fabrication, installation and commissioning of the longwall Boost Pump Station was undertaken by Dowdens Mackay's in-house Engineering, Fabrication and Workshop Departments with the electrical components of the longwall Boost Pump Station being supplied, installed and commissioned by Major Electrical.

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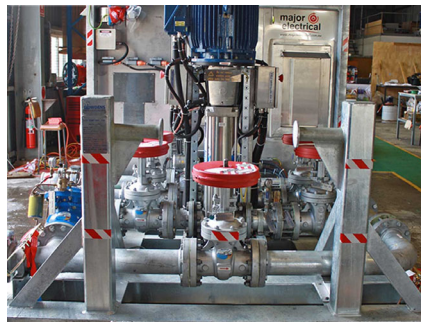
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The Problem

Anglo American – Moranbah North Coal Mine required design, engineering, and fabrication capabilities to build a Boost Pump Station to supply raw water to the longwall area. The Boost Pump Station required the ability to cater for varying duties as the underground workings progressed further away from the station. The pump station boosts the water pressure to the longwall, currently some 6,000m away.



Our Solution

Comprehensive testing was completed before the station was transported to the site, with all parameters being set during this time. Dowdens internal teams of specialised engineers, CAD draftsman and tradespeople, we're able to design and build the station on time and to a tight budget, with Anglo American extremely happy with the work undertaken and product supplied.

Dowdens designed and constructed the longwall boost pump station utilising dual variable speed pumps to enable the station to cater for varying duties as the underground mining progressed further away from the station.

With a history of successful installations over the past 20 years throughout the Queensland Mining Sector, Dowdens Pumping & Water Treatment can expertly design/manufacture/install and commission specialised pumping and water treatment solutions that are built primarily in-house & onsite to our client's specific unique requirements.

Local Contractors

Dowdens hired Mackay local electrical contractors Major Electrical to assist with the electrical work needed for the long wall.

Key Components

- KROHNE flow meter

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- The pump station utilises four pressure transducers to feed real-time pumping data to the computer control.
- Two vertical stage pumps directly coupled to two 45kW motors
- As the booster pump station dealt with high pressures, all piping and flanges have a 3,000kPa rating.
- Pump station fitted with QDS (Quick Detachment System) lift points – allowing the station to be transferable via the underground Line Eimco.
- Touch screen interface enables underground miners access to real-time amperage, bearing temperature and flow rate data.
- The unit operates via a PLC (Programmable Logic Controller) and SCADA (Supervisory Control and Data Acquisition) system, which can be remotely operated from the mine control room on the surface or underground via the unit's electronic controls.

Project Design Philosophy

Dowdens Pumping & Water Treatment design philosophy for this project was:

- Cost-Effectiveness
- Current Best Practice
- Ease of Installation
- Simple & Effective Plant Operation
- Plant Reliability
- Reduced Ongoing Maintenance

Customer Review

Anglo American Australia Representative Moranbah North Coal Mine

"The longwall booster pump station was taken underground into immediate service after only a couple of days. There is normally a one or two month delay with above ground commissioning for all new units. Since the pump powered up after the first run, it has not stopped running and is sitting at only 10% duty. The longwall has cut 128,000 tonnes so far, which is exceptional. Any future boost pump orders from Dowdens Pumping & Water Treatment will not require any changes to the design or manufacture, saving us both time & money."

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Brands used in this project



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