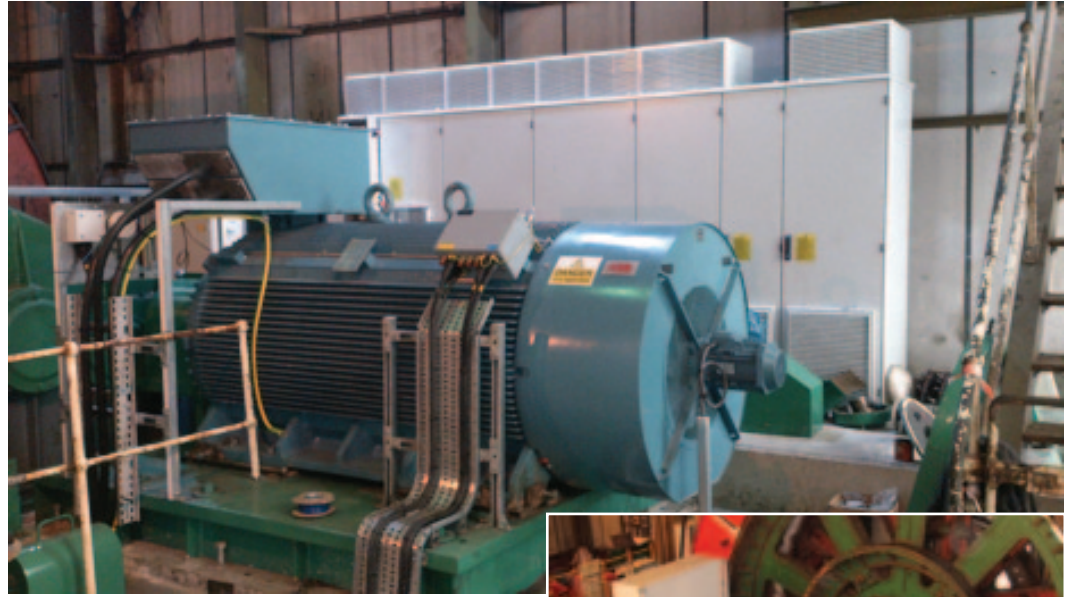


Increased Production and Reliability follow new 800kW A.C Winch Drive System Installation at a Cheshire Salt Mine



A 3.3kV to 690V LV drive conversion replaces an obsolete slip ring motor control system with a modern ABB ACS800 regenerative inverter, supply transformer and motor improving production and reliability at one of the UK's largest salt mines.

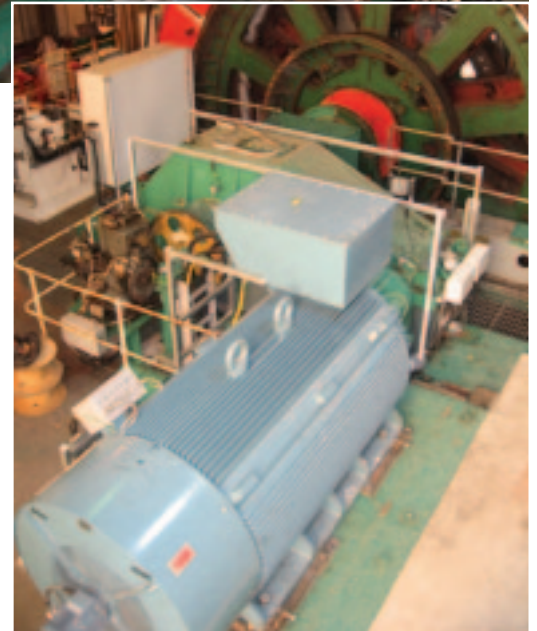
The Salt Union mine located in Winsford, Cheshire produces rock salt used for de-icing roads. As part of Compass Minerals Inc, a truly global salt company they produce and sell over 9 million tonnes of salt each year including table salt.

The engineers at Salt Union approached Qualter Hall in Barnsley to upgrade their existing winch control and safety system on their No.5 Shaft Winch shaft.

Drive and Automation, as an Added Value Provider (AVP) for ABB, were asked to provide a design solution and hardware on the project; Qualter Hall were to upgrade the safety system and winch refurbishment in-house and undertake the installation works.

The No.5 Shaft winch is key to the plants overall salt production and provides both man riding and material transport in and out of the mine. Without the winch production of the mine is drastically reduced and the unreliability of the original drive control system had caused major downtime in the past.

The original installation utilised a single Parson Peebles slip ring motor rated at 3.3kV, 780kW, nominal FLC 174A with 220% frequent overload, the system was becoming increasingly unreliable and difficult to support. The introduction of variable speed would provide smoother speed control and improved, controlled acceleration and deceleration when starting and stopping. This would enable the mine to maximising production without undue stress on the equipment stress thus improving the reliability.



It was quickly realised that to install a 3.3kV inverter on the existing motor or a step down, step up LV inverter solution were impractical both cost and lifecycle wise. Both solutions would leave the client with an obsolete motor that would still require specialist maintenance and support.

It was obvious that the most cost effective solution was to provide a new transformer, inverter and motor with an extended warranty. This would result in a maintainable, reliable and a more efficient drive system.

Technical Details

- ABB Cast Resin Supply transformer 3.3kV / 690V, 1MVA
- ABB ACS800-17 690V Regenerative AC Cabinet Inverters
- ABB HXR 690V AC motor c/w Bearing Temperature monitoring, encoder feedback



Ian Pickersgill, Sales Manager at Drives and Automation states; "The DnA / ABB drive package solution was selected as we could offer both a competitive price and, as an ABB Added Value Partner, we had the technical knowhow and support to offer our client". The package included hardware supply, spares, drive software, commissioning, documentation and training.

The existing fixed speed 3.3kV slip ring motor and rotor resistance starter panel was replaced with a 690V low voltage motor controlled by an ABB ACS800-17 low harmonic variable-speed drive.

A new cast resin supply transformer was supplied to provide the 690V supply for the inverter.

Qualter Hall undertook the refurbishment of the winch mechanics and safety control system along with the electrical and mechanical installation of the new motor and drive cabinet.

The new system is far more reliable and production has increased since the upgrade. The mine have subsequently placed another order to upgrade their No.4 winch at the same site.

Drives and Automation (DnA), based near Sheffield, provides a comprehensive system design and build or retrofit service for control systems, encompassing drives, PLC systems and complete projects working alongside machine builders or end users.

Problems Solved

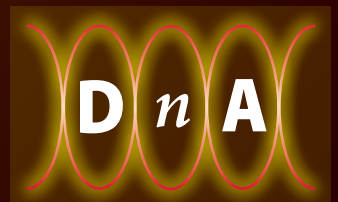
- Problematic Maintenance on existing motor
- H.V Permits to Work requirement
- Extended motor repair times
- Extensive Downtime and loss of production
- High Maintenance costs

Solution

- New Low Voltage Motor
- New Low Voltage Inverter
- Comprehensive Documentation Provided

Benefits

- Reduced Downtime
- Production Increased
- Easy To Maintain and Fault Find
- More Efficient Solution
- Easy to Support
- Reduced Maintenance Costs



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