
WARRINGTON, UK, JULY 21, 2005

ABB drives to power mile-long quarry conveyor

One of the UK's longest quarry conveyors in variable speed operation is to enter service at the Old Cliffe Hill site, owned by Midland Quarry Products, in Leicestershire.

The conveyor is over 1.5km long and transports primary granite from one of the UK's largest hard rock quarry, through a new 713 m underground tunnel, before being conveyed onto the secondary processing plant.

Prior to being conveyed, the rock is crushed via a new Fuller Traylor Gyratory Crusher powered by a 450 kW, 3.3 kV motor. "We were keen to use an ABB motor for this crusher. It is such a critical application that we needed the reliability and quality that ABB motors provide," says Ian Conway, Company Engineering Manager at Midland Quarry. "Furthermore, ABB was able to deliver the motor to meet our demanding schedule."

The conveyor system consists of six separate conveyors, each 1600mm wide and of varying lengths. Traditionally, slip ring motors or fluid couplings would be used on a conveyor of this size. "That technology is dying fast and there are few players left making slip ring motors," says Mark Hamilton, Company Electrical Engineer at Midland Quarry Products.

The high maintenance costs of slip ring motors caused by the need to replace brushes, makes the squirrel cage motor an attractive alternative. "In new installations, variable speed drives is definitely the way forward. They are less expensive than fluid couplings, they offer fantastic soft start capability and the squirrel cage induction motors are much cheaper to repair, as opposed to star-delta or slip ring," says Hamilton. "Slip ring drives are also impractical because they need to be stage started. With variable speed drives, the starting and stopping can be easier controlled and better monitored."

"Squirrel cage motors are also more robust and reliability is paramount to us. We are operating a granite process plant, with the primary section operating at 2500 tonnes per hour and being a mainline component of the process.

In this industry margins are not great so anything that reduces maintenance costs and increases reliability is important to us," adds Conway.

To control the speed of the conveyor, Midland Quarry chose ABB industrial drives, supplied by the local ABB Drives Alliance partner, Sentrledge Limited. One conveyor features two 200 kW drives; three conveyors use a single 200 kW drive; and the final conveyor is fitted with a 132 kW drive.

"On the final conveyor, the main reason we are using the drive is for soft start. Other than that, we do not really need the variable speed functionality. However if we need to repair a joint within the belt, then the drive allows us to run the two halves of the belt into position very accurately," Hamilton says.

The two drives on the first conveyor feature master-follower software which ensures that one drive dominates the control pattern and the second one follows. This avoids the motors fighting against each other, which could subsequently lead to conveyor belt damage.

Should the conveyor stop while loaded with granite, then the drives offer the ability to soft start the motors, gradually bringing the conveyor back up to speed. Without this facility, the motors would be stressed and subsequently burn out.

“The beauty of the drive is that we can tailor the conveyor discharge speed into the bunker. This means we can put the stones precisely where we want,” says Hamilton.

“A key benefit of using ABB is its channel partner network,” says Conway. “200 kW drives are serious bits of kit and you need the re-assurance of having spares and technical support on your doorstep. By standardizing on ABB, we also ensure a commonality of spares – using drives from the same company makes spares sourcing easier.

“The expertise and efficiency of Sentrledge gave us the confidence we needed to make this purchasing decision. I took a leap of faith – we had several meetings and I was impressed with the way ABB and Sentrledge conducted themselves.

“ABB and Sentrledge have given us the back up that we required. There are many pan-European suppliers out there. But what we really need is local support; we need engineers within our area; we need accessible spares within our area; and we need these 7 days a week, 24 hours a day. This is the most critical and deciding factor for us – without the ability to support us locally then we really are not interested.”

ABB (ABBN: SIX Swiss Ex) is a pioneering technology leader in power grids, electrification products, industrial automation and robotics and motion, serving customers in utilities, industry and transport & infrastructure globally. Continuing a history of innovation spanning more than 130 years, ABB today is writing the future of industrial digitalization with two clear value propositions: bringing electricity from any power plant to any plug and automating industries from natural resources to finished products. As title partner in ABB Formula E, the fully electric international FIA motorsport class, ABB is pushing the boundaries of e-mobility to contribute to a sustainable future. ABB operates in more than 100 countries with about 147,000 employees. www.abb.com



Caption: ABB drives are powering one of the UK’s longest quarry conveyors, due to enter service at the Old Cliffe Hill site owned by Midland Quarry.

—
For more information please contact:

Layla Hewitt
Marketing Communications
Phone: 01925 741517
Email: layla.hewitt@gb.abb.com

ABB Ltd.
Daresbury Park
Daresbury
Warrington WA4 4BT

Emma Jenkinson
Armitage Communications
Phone 020 8667 2218
Email: emma.jenkinson@armitage-comms.co.uk