

# ABB a.c. drives bring reliability to aggregate crusher



Aggregate producer Redland has installed an ABB a.c. drive from Slater Drive Systems at its Thrislington Works in County Durham to combat rising breakdowns of an existing fluid coupling drive. The a.c. drive also means less mechanical shocks and operation whilst operating at optimum energy efficiency. The application is believed to be one of the most demanding and the site one of the most arduous, in which an a.c. drive has to operate.

The ABB 45kW a.c. drive is installed on a primary crushing unit and is used to vary the speed of a motor which, via chain drives, rotates a series of eccentric rollers - known as a jar bar. These rollers transport up to 10,000 tonnes of aggregate each day towards the crusher, separating fine particles and passing larger

pieces through to the crusher.

The speed of the rollers is varied depending on the amount of aggregate being loaded, which is between 40 tonnes to 60 tonnes at any one time.

And it is this heavy loading which caused problems for the original fluid coupling drive which had been used for over 20 years. During that time production demand has increased to the point where the fluid coupling was working at twice its recommended capacity. The result was regular breakdowns as the coupling's oil overheated and thermal circuit protection regularly tripped.

Furthermore, with fluid couplings, the sudden impact of aggregate crashing onto the rollers

*Redland's Thrislington Works in County Durham: one of the most demanding sites in which an a.c. drive has to operate.*

could cause the chains to slip, thus forcing the timing of the eccentric rollers out of synchronisation. When the two eccentrics come together they jam causing the plant to shut down.

If a load of about 80 tonnes, from two lorries, had been applied it could take up to a day to clear manually before the mechanical repairs could be undertaken.

To ensure that a.c. drives would not suffer the same fate, Redland's electrical engineer at Thrislington, David Timlin asked Slater Drive Systems, an ABB Drives System Centre, to undertake a load analysis. "Our previous experience with a.c. drives was not favourable," says Timlin. "Suppliers would go through the motions of providing a drive without applying any engineering skills. However, Slater's offer of a load analysis and the subsequent results convinced us that the ABB drive was the right choice."

With an increasing production demand, Redland seized the opportunity to instal a centralised control system under SCADA control. Such a system would also be enhanced by installing an a.c. drive, the control of which could be easily integrated into the SCADA.

Because of the hostile environment, where substantial amounts of dust linger in the atmosphere, Redland required that the drive be dust protected to IP55.



*Redland has installed an a.c. drive, supplied by Slater Drive Systems, at its Thrislington aggregate plant.*

Therefore, the air circulating within the unit could not be filtered. The enclosure had to be fitted with its own heat exchanger, to ensure that only the air within the enclosure was recycled and circulated.

"Some other drives manufacturers fail to understand the hostile nature of this environment," says Timlin. "Slater instilled the confidence we needed by offering complete back-up and call out."

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