Industry: **Mining & Aggregates**
Products Used: **Drives**

Reduced energy costs at cement manufacturer

At its Hope Works, Blue Circle Industries produce cement clinker by heating shale and limestone to a temperature of 1500 C. Heat is generated by burning pulverised coal in a 4.8 metre diameter, 70 metre long rotary kiln which is fed by a grinding mill. Blue circle estimate that 40% of production costs are due to total energy consumption, and the use of a Mitsubishi Electric A140 inverter has now reduced motor power consumption by 35% on their production process.

As part of an improvement project, Blue Circle installed an additional fan on the mill's inlet and a Mitsubishi A140 inverter drive on the outlet fan. A negative pressure at the mill inlet causes cold air to be sucked in, lowering the temperature and reducing drying capacity. Positive pressure results in coal being blown out creating a potential dust hazard.

The new A140 inverter controls the 220 kW motor driving the mill's outlet fan. The drive is part of a closed control loop system that automatically responds to pressure changes in the mill. A pressure transducer measures outlet pressure and sends a 4-20 mA signal to the inverter. The inverter responds to the signal by precisely increasing or decreasing the speed of the motor, and so maintaining a constant pressure in the mill.

Mike Franklin chose Mitsubishi's A140 over other inverters due to its Coasting Motor Restart (CMR) function. This means instead of waiting for the motor to stop completely before restarting the drive (like standard inverters), the A140 can be restarted immediately. "We needed a drive that would be energy efficient and that could operate reliably in hot and dusty conditions. Mitsubishi Electric's smaller A140s had already proved themselves elsewhere on the plant, so we decided to use the larger version," comments Mike.

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>
> Mike Franklin
> Hope Works, Blue Circle

Since installing the A140, Blue Circle have seen considerable energy savings. Additionally, the drive has also reduced the wear rate of the fan components. The A140's Energy Optimisation mode contributes greatly to this by analysing the load to be driven and calculating the most economical way to drive it.

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