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# Tile maker cuts energy costs by 30 percent with ABB drive

Variable-speed drive cuts energy costs, reduces the risk of breakdown and improves worker safety.

£4,800 per year is cut from a tile manufacturer's energy bill following the replacement of a fluid coupling with a variable-speed drive (VSD) on one of its glaze mills.

The fluid-coupling at British Ceramic Tile (BCT)'s production facility in Devon connected a motor to a gearbox, and regulated the speed of the drum which grinds the frit used in the glazing of tiles. However, the fluid coupling was proving unreliable, suffering random failures resulting in oil leakage from temperature hot spots. The leaking, hot hydraulic oil was, in turn, a potential health and safety hazard to shop floor employees.

The temperature rise occurred when the load on the mill was too high. With a high load the belts slip, generating friction that causes a heat transfer to the coupling. As the oil in the coupling heats up, a soldered plug tended to melt, allowing hot oil to escape. Furthermore, the two halves of the coupling are joined by plastic coated coupling pins, which needed regular replacement, adding to further downtime and increased maintenance costs.

Meanwhile, BCT had purchased a new mill, on which the grinder's speed was regulated using a VSD rather than a fluid coupling. The company noticed that the new drive solution consumed considerably less energy.

Encouraged by its findings, BCT invited ABB's authorised value provider, APDS, to investigate replacing the fluid coupling with a VSD. However, before an energy assessment could be made, the fluid-coupling suffered a catastrophic failure. With a replacement coupling costing some £4,000, BCT took the decision to replace it immediately with a 45 kW ABB general purpose drive.

Following installation of the drive, measurements by APDS revealed an energy saving of 30 percent over the fluid coupling. This is attributed, in part, to the reduced starting torque, which draws 100A for the first minute compared to the same current being drawn for over an hour with the fluid coupling.

The ABB drive provides far better speed regulation than the fluid coupling. This means that the mill turns for the precise time needed to complete a batch. For instance, the mill runs for 12 hours at 13 rpm and as such the drive is programmed with a countdown equal to the number of revolutions performed during this time. When the count hits zero, the drive ramps down, initiating air brakes to hold the vessel in position once it has come to a complete stop.

The drive is protected to IP54, allowing it to resist water sprays when the mixer is being cleaned. Under BCT's existing contract with APDS, the drive will be serviced twice a year. APDS also carry a spare unit in stock, allowing quick replacement of the installed unit in the unlikely event of a breakdown

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**Caption:** British Ceramic Tile has cut £4,800 per year from its energy bill following the replacement of a fluid coupling with a variable-speed drive on one of its glaze mills (pictured).

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