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Salt Union saves £100k a year on a single fan

ABB equipment installed for just £20k is saving over £100k a year at Salt Union's plant in Runcorn, Cheshire. Replacing a single oversized fan with a smaller version equipped with speed control has cut the energy consumption on one of the plant's dryers by over 60 per cent.

Salt Union has a flowsheet capacity of producing a million tonnes of salt every year at the Runcorn site. As well as food grade pure dried vacuum salt, the plant also produces a courser granular product as well as tablets. The dryer in question processes a coarse, granular product used in applications such as dishwashers.

The previous fan sucked air through the dryer at a rate controlled by a damper in the pipeline. During normal operation, this damper was 95 per cent closed so most of the fan's energy was being used to suck the air through the narrow constriction. An energy survey by ABB Drives Alliance member Central Electrical was carried out to determine what potential savings could be achieved.

The original fan motor was rated at 337kW, but Central Electrical's calculations showed that 132kW should be enough to create the draft needed by the dryer. "That's a huge energy saving when you think we run the unit for about 8,000 hours a year," says Electrical Plant Improvement Engineer Dave Mullin. "In fact, it equates to over 1.6GWh/y."

The old fan was replaced by a smaller version from Fan Systems of Halifax, equipped with a 132kW four-pole motor coupled to an ABB industrial drive. The resulting energy savings now average a staggering £9,000 a month.

The original fan was badly oversized for historical reasons. The dryer was previously used to process vacuum salt crystals, which are much smaller than the spherical, 2-3mm diameter particles in granular salt. The fine crystals created a far bigger pressure drop across the dryer than today's coarse product.

"The fan was probably on the generous side to start with. Years ago it was common for engineers to add a safety margin," says Mr Mullin. "But once the duty changed it became grossly oversized."

It's a common problem, according to Ken Tym of Central Electrical: "Industries and processes change, but there are a lot of areas that manufacturers don't seem to consider. Sometimes it's about re-educating end users about the energy savings that are achievable."

At Salt Union, energy-saving initiatives aren't confined to the process. Even the small amount of waste heat now produced by ABB's variable speed drive is being put to work warming up the switch room in winter. "It's not a major saving but it's good to be using a waste product in this way," says Mr Mullin.

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Caption: £100,000 worth of energy is being saved per year by an ABB motor driven by an ABB industrial drive at Salt Union in Runcorn.

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