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# Quality, safety and efficiency on the rise for oven manufacturer with ABB drives

Improvement in the operation of its ovens is enabling manufacturer Acrivarn to attract new customers.

The performance and safety of a range of industrial ovens is improved with the installation of an ABB variable speed drive on the motor controlling the ovens' turntable function.

Acrivarn's plant in Leeds produces a range of equipment for food manufacturers including rotating racking ovens in eight sizes, which are used by food manufacturers to supply bakery and confectionery items for UK supermarkets. The turntable is built into the oven floor and is used to rotate racks around the oven during the baking process.

Previously, the motor controlling the turntable was connected direct-on-line (DOL). However, the rapid acceleration of the motor each time the turntable was revolved made the racks of food in the oven jolt, causing liquid products such as quiches and custards splash up the side of their tin foil containers. This resulted in an unsightly finished product that did not meet the supermarkets' exacting standards. The spilled products also created a mess inside the ovens which then had to be cleaned.

The solution was provided by ABB authorised value provider, Halcyon Drives, which recommended installing a 0.55 kW ABB general machinery drive on the motor controlling the turntable. The drive's soft start function slows the acceleration of the motor, providing a smooth turntable start and eliminating the jolt when the racks rotate. End product quality was immediately improved with no spillages and cleaning time was reduced to a minimum.

The drive's safe torque-off (STO) function has also improved the safety of the ovens, enabling Acrivarn to achieve EN ISO13849 accreditation for the range.

To ensure safe operation during loading and unloading, the ovens are designed so that the turntable cannot be moved when the door is open. To rotate the turntable, previously the operator had to close the door and press a button located on the left-hand side of the oven. Although the button could not be reached when the door was open, there was a concern that should a small metal flag that makes up part of the hinge pin come loose and strike the button as it fell, it could cause the turntable to move while the oven door was open, putting the operator at risk of injury.

The drive's STO function means the oven automatically powers down whenever the door is open and can only be overridden by the operator pressing and holding down a 'hold to run' button located on the oven's control panel. As soon as the button is released the drive immediately powers down again. "This ensures the system is much safer, and also speeds up the loading and unloading process," explains Lindsay Owen, sales director at Acrivarn.

Looking to identify further improvements within the ovens Halcyon Drives suggested installing a second ABB general machinery drive, to control the recirculating fans. When connected DOL, the fans operated at a single fixed speed of 50 Hz, which was too powerful for delicate foods such as choux pastry and meringue. Halcyon Drives suggested that slowing the fan, and thereby reducing the power of the blast,

would enable Acrivarn's customers to increase the range of delicate products that could be baked in the ovens.

A hire drive was temporarily installed to enable trials to be carried out. The variable speed control enables bakers to select the optimal fan speed for each product, or even to select two different fan speeds during the same bake program, with a low air speed used at the beginning of the bake to "set" the product and a higher speed used to give the product colour. This has proved so successful that the drives are now supplied as standard in the five largest ovens in the Acrivarn range (rated at 4 kW and 7.5 kW depending on the size of the oven).

The VSDs on the ovens' recirculating fans also reduce energy consumption. When the ovens are between baking cycles, they are kept up to temperature ready for the next bake. The addition of variable speed control means that during these idle periods the speed of the recirculating fans can be reduced to the minimum setting, saving energy and reducing carbon emissions.

Owen comments: "Drives provide better control for our clients and make our ovens more flexible. This has increased the number of products that can be successfully baked in this type of oven and allowed us to attract more customers. The added energy saving is the icing on the cake."

Acrivarn has worked with Halcyon Drives for more 20 years. "Halcyon Drives manufactures all of our control panels, but it also stocks a huge range of ABB products, so it's like having a very big stock cupboard. We do keep ABB spares on site but Halcyon has a far bigger stock cupboard than us!" says Owen.

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**Caption:** ABB variable speed drives are helping Acrivarn to achieve smoother and more efficient operation of its industrial rotating rack ovens.

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