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Compact ABB drive is the perfect fit for UK contract packing company

ABB variable speed drive avoids the need for a new cabinet, while built-in control improves the efficiency of a fruit juice blending process.

An ABB drive installed to get a customer out of a tight spot is bringing a host of additional benefits, including more consistent end-product quality and enhanced fault finding.

Framptons, a contract packing company, processes around 1.5 million litres of fruit juices and milk-based drinks each week at its facility in Shepton Mallett, Somerset. The VSD controls the speed of a pump which is used to feed soft water to four fruit juice blending areas.

The company was concerned about finding a drive to replace an obsolete unit from another manufacturer. The new drive needed to fit into the existing cabinet to avoid the cost and time of building a replacement cabinet.

ABB Value Provider APDS recommended installing an ABB general purpose drive, the ACS480. The drive's compact physical size and low power rating range (0.75 to 22 kW) makes it an ideal fit for the size of fans, pumps, mixers, conveyors, and compressors most commonly found in the food and beverage industry. As such it is becoming an increasingly popular option for retrofit in food and beverage production facilities.

The ABB drive is also facilitating more consistent end-product quality by applying closed loop control to the blending process. As the soft water pump feeds four blending cells, it is critical that the water pressure to any one of them remains constant, regardless of how many cells are activated.

The closed loop control is provided by a PID (Proportional-Integral-Derivative) controller. This is included in the VSD software, which is inserted within the control loop so that the loop can be tuned to ensure stable and accurate control with good response times. PID control is a mathematical algorithm that is used to control a range of parameters such as flow and pressure. The PID controller then determines the optimum speed at which the pump's motor achieves the correct water flow rate.

A pressure transducer in the water tank feeds a signal to the VSD. As the pressure of the water varies, the pump's speed is adjusted accordingly, quickly stabilising at the set point. This provides a constant flow of water into the system, ensuring the fruit juices are mixed to the right consistency every time.

The VSD's intuitive control keypad, also known as an assistance control panel, offers Framptons more intelligence on the process.

"Since the drive was installed, we haven't had to do anything with it – it has simply done exactly what it is supposed to," says Tom Dowson, site services manager at the Shepton Mallet facility. "An added benefit, however, is how much process information we are now able to get from the drive, using the keypad. As a result, fault finding is now faster and more efficient."

ABB drive's keypad allows the user to customise the display to show key parameters such as water pressure, flow rate and energy savings in money, kWh or CO₂ emissions. The keypad can hold up to 21 selected parameters, which can be displayed in various formats, such as history trend graphs, amplitude

loggers, peak load detectors and load profiles. Simple left and right buttons enable the operator to quickly scroll through the home screens to access the information they need.

“Previously, if the pump wasn’t running as expected, or if the water flow rate wasn’t as high as required, we would have to put an amp meter inline and measure the current from it. With the ABB drive, that information is displayed on the screen.”

Most of the beverages produced at the Shepton Mallet facility are destined for UK supermarkets. As a result, the site is regularly audited by its customers to ensure that it achieves stringent energy efficiency targets.

“Around 80 to 90 percent of the site’s electrical consumption is used to power pumps or move product, so it’s critical these applications are as efficient as possible. We fit drives on all equipment rated over 75 kW and are also in the process of upgrading our existing IE2 motors to ABB IE4 high efficiency motors,” says Dowson.

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Caption: The compact size and low power rating range of ABB drives makes them an ideal fit for applications such as fans, pumps, mixers, conveyors, and compressors for food and beverage producers like Framptons (Image via Shutterstock)

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