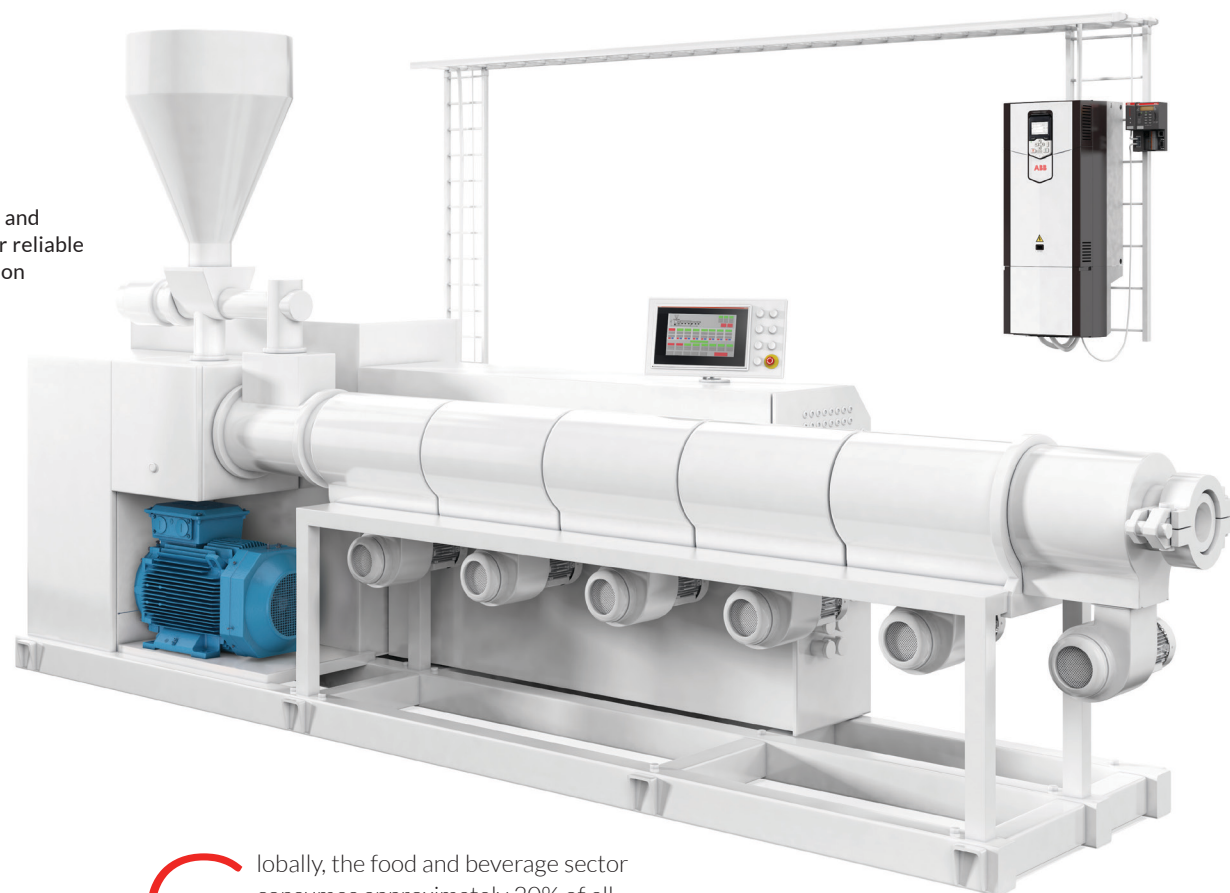




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Feeding the future: energy efficiency is the key for food and beverage businesses

Accurate torque and speed control for reliable extruder operation



Globally, the food and beverage sector consumes approximately 30% of all energy and is responsible for around 20% of all greenhouse gas emissions. It is a vital sector – we all need to eat and drink – but there is a pressing need to improve efficiency.

There are several reasons for businesses to invest in energy efficiency. For a start, making facilities more efficient is key to limiting energy use and achieving Net Zero.

Consumers are increasingly demanding food and beverages with a minimal environmental impact, as well as greater transparency in the production process. To earn their business, brands need a clear, honest sustainability angle.

Additionally, saving energy saves money. Of the over 2,000 businesses that participated in the 2022 ABB Energy Efficiency Survey, 90% believe that energy costs are a threat to their profitability. While the processes that consume the most energy in the food and beverage industry vary by segment, most rely on electric motors.

From extruders and mixers to conveyor belts, pumps, and more, electric motors are at the heart of many food and beverage processes. Although electricity is consistently one of the highest fixed costs in the industry, these electric motors also offer opportunities to save energy.

Upgrading to modern motors

IE3 efficiency class is the minimum standard allowed for new motors in Europe under current regulations. However, some facilities still use the older, less efficient IE2 and IE1 class motors. The new regulation, which comes into effect in mid 2023, will require new motors in a range of 75kW to 200kW to meet the IE4 efficiency class. Each increase in class represents a 20% decrease in losses. The most efficient motors today meet the IE5 “ultra-premium” efficiency standard.

IE5 motors use synchronous reluctance motor (SynRM) technology. This technology

is just as simple and easy to service as older motors. It is also quieter, more reliable, and generates lower temperatures.

Compared with the IE3 motors, a SynRM IE5 motor offers up to 40% lower energy losses. This results in lower total energy consumption and reduced CO₂ emissions – and these gains are even more significant when switching from earlier efficiency classes.

In addition to increased efficiency, SynRM motors offer better speed control and performance than older motors. This is important for operations such as extrusion and mixing which require precise control for consistent products.

Matching motors with VSDs

Operators can further reduce energy use by pairing motors with variable speed drives (VSDs). Without a VSD, motors run at full speed all the time, using a constant amount of electricity. They can be slowed down mechanically – like applying brakes in a car while keeping your foot on the throttle – but this does not reduce energy use.

A VSD adjusts the speed of the motor, and any time it is not running at full speed, it is using less energy. Typically using a VSD will allow energy savings of around 25% or even more in some cases. Furthermore, a SynRM motor and VSD package uses up to 10% less energy than a conventional motor paired with a drive. The energy savings mean that SynRM-VSD packages often pay for themselves in less than a year.

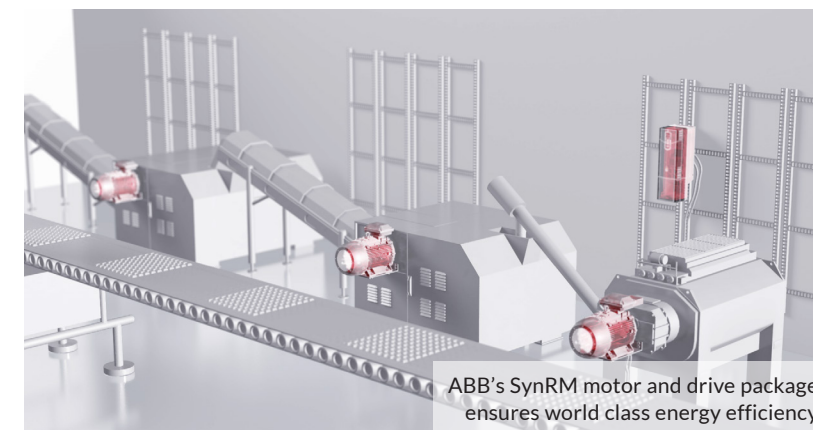
Just like upgrading to a more efficient motor, VSDs are a drop-in solution in many cases. Units come in a variety of compact, easy-to-install form factors. They are suitable for both wall-mounted and cabinet-built drives and drive modules.

Sustainable soup and sugar

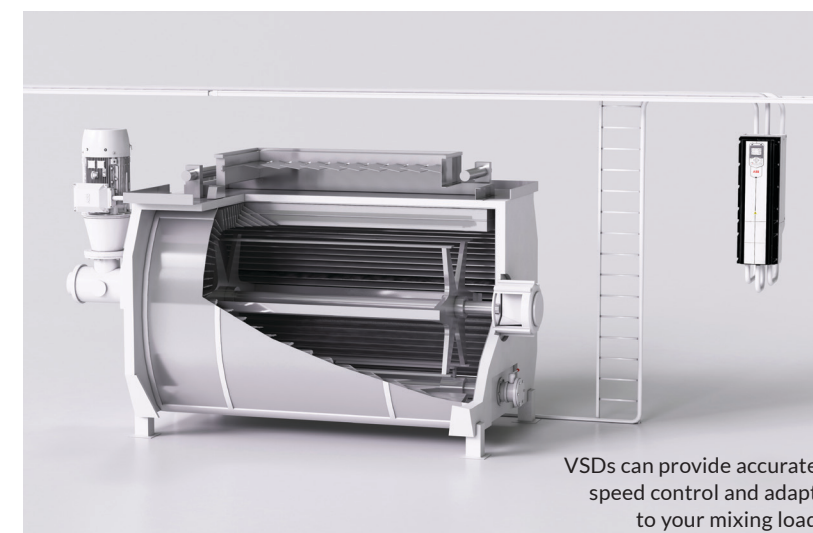
Campbell's Australia – the producer of soups, stocks and meals – has set ambitious sustainability targets. To achieve them, the company's Shepparton plant determined that it would need to cut energy consumption by 20% by 2025.

After conducting a cost-benefit analysis and carrying out a trial, the facility decided to replace the motors powering the refrigeration compressor with a 55kW ABB SynRM motor and ACS580 variable speed drive. This simple change produced annual energy savings of 14% – saving the business approximately 10,000 USD and eliminating 131 tonnes of CO₂ emissions per year.

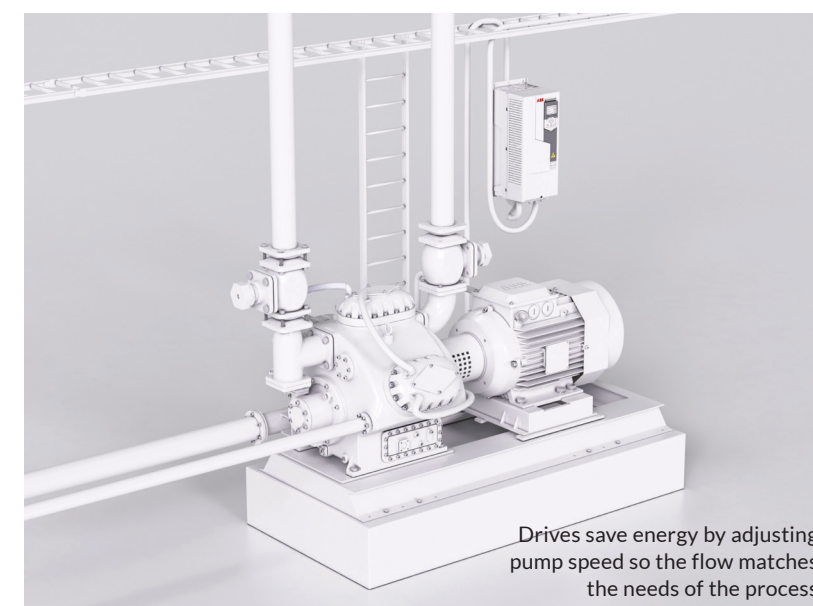
Similarly, Egypt-based Canal Sugar chose high-efficiency motors and VSDs to power its new sugar beet processing plant. The solution cut the power required to produce a tonne of product by 25% compared with traditional machines.



ABB's SynRM motor and drive package ensures world class energy efficiency



VSDs can provide accurate speed control and adapt to your mixing load



Drives save energy by adjusting pump speed so the flow matches the needs of the process

A less energy-hungry industry

Adopting modern motors and drives is a clear win for the food and beverage sector. Their high level of efficiency enables businesses to simultaneously reduce CO₂ emissions and cut costs, and the precision they offer makes facilities safer, more productive, and more reliable. 