

Hidden contamination costs

To satisfy your contractual obligations and keep your bottom line strong, you need to understand how every aspect of motors can have a huge impact on production line turnover

Cleanliness is serious business in food processing. The potential for contamination by microbes, chemicals and other foreign substances is always present.

Keeping processing equipment clean does not just make good business sense it also meets consumer expectations for good-quality food.

Critical to any process are stringent levels of cleaning, disinfection and sterilisation that avoid contamination and cross-contamination. After all, particle build-up has consequences. Particles can hide in various areas in and around the motors, including under the shroud – a cover to help motors last longer.

Whereas shrouds do protect motors on equipment in washdown areas, they are difficult to clean. They create gaps and dead spaces where product ingredients or cleaning compounds can build up, allowing bacteria to breed.

“In many cases the motor is fan cooled and acts like a powerful vacuum cleaner, sucking air and airborne contaminants into the shroud, where food particles can build up,” says Tero Helpio, global product manager, IEC Food Safe and SynRM motors, ABB.

With no easy way to access the motor inside the shroud, he adds, the only way to ensure everything is completely clean is to remove the shroud – a time-consuming job.

A new level of clean

For this reason, engineers at ABB have rethought this approach and designed IEC Food Safe motors for the food and beverage industry without the shroud.

The new IEC Food Safe motors are part of ABB’s Food Safe family that includes stainless steel NEMA motors, mounted ball bearings and gearing.

The IEC Food Safe motors have smooth stainless steel enclosures that are easy to clean and sanitise. The motors have an IP69 water protection rating and an encapsulated winding enables the motors to last longer than general purpose products in tough washdown conditions.

Critically, the external surfaces of the motors are self-draining, with no crevices where particles can collect.

The markings are laser etched onto the frame, avoiding channels and ridges where contaminants could accumulate. The motors can withstand high pressure sprays and are fully compatible with CIP methods. Food Safe motors also eliminate the need for motor shrouds, which can harbour food particles and allow bacteria to breed.

According to Tero Helpio, customers in the meat and poultry industry have been rigorously testing prototypes of the new motors.

“The motors have been subjected to harsh cleaning and sanitising regimes in high hygiene environments, and the customers confirm that they meet all the requirements for food safety and reliability,” he says.

ABB IEC Food Safe motors are available in the power range 0.18-7.5 kilowatt (kW), in 2-6 pole versions for 230-690 volt at 50 or 60 hertz (Hz). They feature IE3 premium efficiency to reduce energy consumption and emissions. Flexible mounting arrangements ensure they will fit almost any application. The motors come in (IEC) frame sizes 71-132.

Selection is key

Unless food processors specify stainless steel then standard electric motors and shrouds are generally fitted as they are more affordable.

Bear in mind, the people who have to operate, maintain and clean equipment want to perform their duties with minimal or no hassle. They can recognise the limitations shrouds place on the ability to clean production equipment with caustic cleaning agents and disinfectants or when sprayed with water at high temperatures and pressures.

When production equipment is easy to



clean, it reduces the risk of contamination.

Electrical motors that

power many manufacturing processes cannot withstand strong chemicals and the blast of high-pressure washdowns for very long. Water can get inside and cause the motors to fail.

Stainless steel motors make life easier – they can withstand washdown conditions without needing protective shrouds.

A proactive approach

Stainless steel motors can be cleaned in place, help to reduce water consumption and save time. Keys for effectiveness are:

- Motors should be smooth, with self-draining housing and no cavities where particles can collect.
- Any markings should be laser etched onto the frame, avoiding channels and ridges where contaminants could accumulate. A typical stainless steel motor can last up to five times longer than a standard motor in hard washdown environments, according to Tero Helpio.
- IP69 ingress protection provides protection against powerful, high temperature water jets and is essential for effective sealing.
- For improved reliability, the motor should have encapsulated windings. This ensures a longer lifetime in humid conditions and helps to reduce the total cost of ownership.

With the high risk of bacterial growth and contamination, washdown motors save money on maintenance, lost production owing to downtime and the cost of replacing them.

Many different areas of the food industry are now benefiting from the use of washdown motors as they help to reduce downtime and increase productivity. ■