Protecting VFD-Driven Motors In:

Food Processing

The Need to Eliminate Unplanned Downtime

Food and beverage producers face staggering losses due to spoilage if their equipment goes down. In an effort to eliminate unplanned downtime, many producers are looking for ways to prevent motor failures by protecting bearings from VFD-induced electrical damage.

The Promise of VFDs

One of the most promising opportunities for improving reliability, avoiding unplanned downtime costs, and reducing energy consumption involves the use of variable frequency drives (VFDs) to control the speed of motors. In fact, in such applications VFDs have been shown to reduce energy consumption by 20 to 30%. The use of VFDs on food processing systems and equipment such as conveyors, pumps, mixers, compressors, and other equipment not only saves energy, but by precisely controlling motor speed, it enables the fine tuning and precise control of food preparation, transfer, and packaging processes.

The Need for Shaft Grounding on VFD-Driven Motors

Regardless of the application, VFDs can damage the motors they control. They induce currents on motor shafts that discharge through the bearings, causing pitting, fluting, and catastrophic motor failure. Without bearing protection, any savings from the use of VFDs can be quickly wiped out by the cost of replacing motors and by system downtime.

Proven, Long-Term Bearing Protection

By diverting bearing currents safely to ground, AEGIS® SGR Shaft Grounding Rings ensure the reliable, long-term operation of VFD-driven motor systems, locking in energy savings and making these systems truly sustainable and truly green!

Applications:

- Conveyors
- Form, fill, and seal systems
- Tray depositors
- Filling/capping carousels
- Sealing systems
- Packaging lines
- Labeling systems
- Compressors
- HVAC ventilation fans
- HVAC air handlers
- Chilled water pumps
- Water/wastewater pumps
- Trash compactors

Field Survey Testing:

Commercial Bakery

The Study

This field survey was conducted at a large commercial bakery which produces bread and rolls for retail sale. Voltage readings were taken from the shafts of VFD-driven motors throughout the commercial bakery to illustrate the presence of harmful shaft currents. Readings were also taken after installing AEGIS® SGR Bearing Protection Rings on a number of motors to demonstrate the ring's effectiveness in channeling damaging shaft currents away from bearings and safely to ground.

The Problem

The motors studied were 1HP 56C frame motors that power the oven exhaust fans and muffin packaging machines throughout the plant. High peak-to-peak readings from motor shafts indicated that currents were building up on the shafts and discharging through the motor bearings, causing EDM pitting and possibility of bearing race fluting.

The Solution

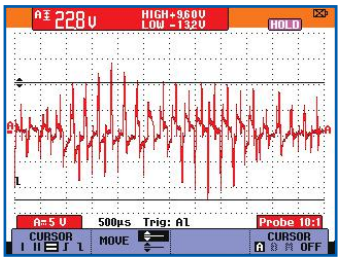
After AEGIS® Shaft Grounding Ring technology was applied to the motor shaft, additional readings demonstrated that the rings were effectively channeling harmful shaft currents away from the bearings to ground. The AEGIS® Rings reduced peak-to-peak voltage readings by 82% to negligible levels, far below those that damage bearings.

Baldor Motor

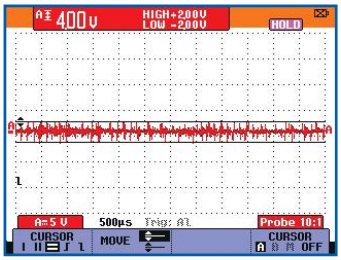
Type: 3-Phase Industrial

HP: 1

Frame: 56C



Without AEGIS® SGR : 22.8 V peak-peak



With AEGIS® SGR: 4.0 V peak-peak

AEGIS® Rings are available through: