



Protecting VFD-Driven Motors In: Distribution Centers

Faster Deliveries With Greater Energy Efficiency

In their efforts to minimize inventory and maximize ROI, many companies have adopted just-in-time stocking practices. The warehouses and distribution centers that serve these companies have had to become fast and flexible. But, running conveyors and brake motors at full speed uses a tremendous amount of power — power that is all-too-often wasted. To reduce or eliminate this waste of power, facilities engineers are installing variable frequency drives (VFDs) throughout these distribution centers to precisely control the speed of motors and dramatically reduce energy costs.

The Promise of VFDs

VFDs reduce energy consumption by allowing motors to run less than full speed. When used to control conveyor, brake, and HVAC motors, they can yield energy savings of 30% or more by running motors at reduced speeds to compensate for changes in load.

The Need for Shaft Grounding on VFD-Driven Motors

But, 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. To make conveyor systems sustainable as well as energy efficient, a reliable method of bearing protection is required.

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:

- Belt or steel hinged conveyors
- Incline or decline conveyors
- Line shaft conveyors
- Belt over roller conveyors
- Powered roller conveyors
- Live roller conveyors
- Brake motors
- HVAC systems and air handling units
- Refrigeration systems, condensers, and pumps
- Ventilation fans





Field Survey Testing: Major Retail Distribution Center

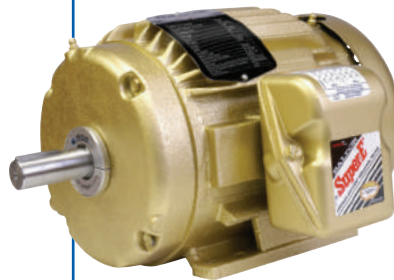
The Study

This field survey was conducted at the Wisconsin Distribution Center of a major national retailer. Using a Fluke 199C Scopemeter with an AEGIS® SVP Shaft Voltage Probe, a technician took voltage readings from the shafts of VFD-driven motors in several of the center's conveyor systems — both before and after the application of AEGIS® SGR Bearing Protection Ring technology.



The Problem

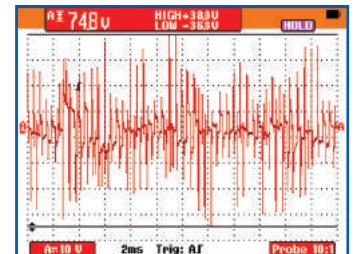
The motors studied were Baldor 15 HP VFD-driven Super-E® NEMA-Premium Motors running various conveyor lines. High peak-to-peak readings indicated that currents were building up on the shafts and discharging through motors bearings, causing EDM pitting and, over time, possible bearing race fluting.



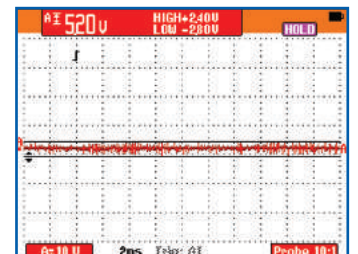
VFD-Driven Motor

Type: 254T Three Phase

HP: 15



Without AEGIS® SGR: 74.8V peak-peak



With AEGIS® SGR: 5.20V peak-peak

The Solution

After AEGIS® Shaft Grounding Rings were installed on the motors, new readings proved that the rings were effectively channeling harmful shaft currents away from the bearings to ground. Peak-to-peak voltage readings were reduced by 93% to negligible levels, far below those that could damage bearings.

AEGIS® Rings are available through: