



Protecting VFD-Driven Motors In: Airports

The Push to Make Airports “Green”

Spurred on by the promise of energy savings and reduced operating costs, America’s airports are taking a hard look at their equipment and procedures in an effort to become more “green”.

The Promise of VFDs

One of the most promising opportunities for reducing energy consumption in HVAC systems 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 baggage handling and delivery systems not only saves energy, but by precisely controlling the motor’s speed, it ensures smooth conveyor operation and improves the baggage handling process.

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:

- Baggage conveyors
- Baggage carousels
- People movers
- HVAC ventilation fans
- HVAC air handlers
- Chilled water pumps
- Water/wastewater pumps
- Fuel pumps
- Food service lifts
- Trash compactors





Field Survey Testing: Mitchell Field Airport

The Study

This field survey was conducted at Mitchell Field Airport, Milwaukee, Wisconsin. Voltage readings were taken from the shafts of several VFD-driven motors in the airport's TC1 Console baggage handling conveyor system — both before and after the application of AEGIS® SGR Bearing Protection Ring technology.



Carousel Motor: 5 HP 184T



Conveyor Motor: 1 HP 143T

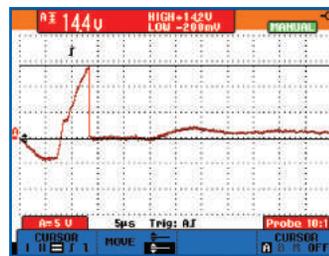
The Problem

Motors studied were carousel and conveyor NEMA Premium® “inverter ready” motors — a 5 HP 184T and a 1 HP 143T. High peak-to-peak readings from both motor shafts indicated that currents were building up on the shaft and discharging through the motor bearings, causing EDM pitting and possibility of bearing race fluting.

The Solution

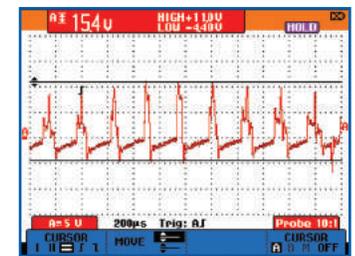
After AEGIS® Shaft Grounding Ring technology was applied to the motor shaft, new readings demonstrated that the rings were effectively channeling harmful shaft currents away from the bearings to ground. Peak-to-peak voltage readings were negligible, far below levels that damage bearings.

Motor: 5 HP 184T

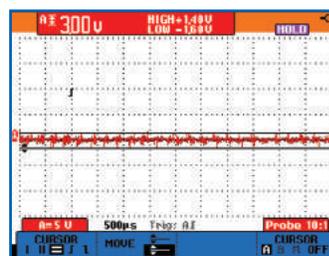


Without AEGIS® SGR: 14.4 V peak-peak

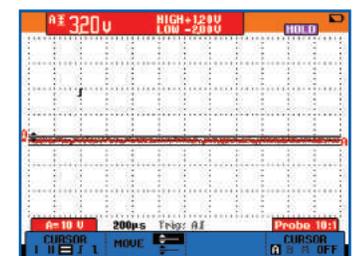
Motor: 1 HP 143T



Without AEGIS® SGR: 15.4 V peak-peak



With AEGIS® SGR: 3.0V peak-peak



With AEGIS® SGR: 3.2V peak-peak

AEGIS® Rings are available through: