AEGIS™ SGR
BEARING PROTECTION RING

Protecting VFD-Driven Motors In:
HVAC Systems

The "Greening" of America's Buildings

The growing "green" movement has led to a flood of new standards including the US Greens Building Councils Building Performance Initiative, the Green Building Initiative, and LEED — all aimed at increasing energy efficiency and sustainability. Challenged to reduce energy consumption and to document savings, America's facilities managers are installing variable frequency drives (VFDs) in HVAC systems as one of the best ways of achieving such savings.

The Promise of VFDs

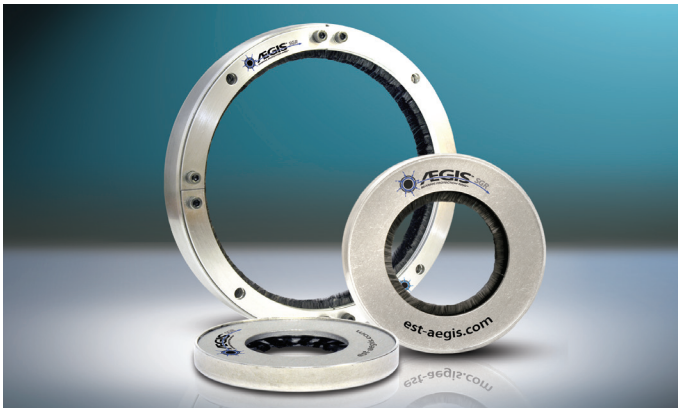
VFDs reduce energy consumption by allowing motors to run less than full speed. When used to control air conditioning, air handling, or pump motors, VFDs can yield energy savings of 20 ~ 30% or more by allowing motors to run at reduced speeds to compensate for changes in load.

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 HVAC 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:

- Rooftop systems
- Indoor or outdoor air handling units
- Ventilation fans
- Fan walls
- Air or water cooled chillers
- Chilled water pumps
- Condensing fans

AEGIS™ SGR
BEARING PROTECTION RING

Field Survey Testing:

Department Store Rooftop HVAC Units

The Study

This field survey was conducted at a large retail department store in Kalamazoo, Michigan. Using a Fluke Scope Meter with an AEGIS™ SVP Shaft Voltage Probe, a technician took voltage readings from the shafts of VFD-driven motors in several of the building's rooftop packaged HVAC units — both before and after the application of AEGIS™ SGR Bearing Protection Ring technology.

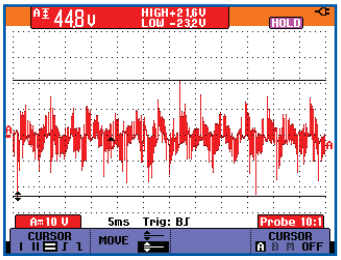
The Problem

The motors studied were 15 HP VFD-driven motors installed in packaged rooftop HVAC units. High peak-to-peak readings indicated that currents were building up on the shafts and discharging through the motors' bearings, causing EDM pitting and possibility of bearing race fluting.

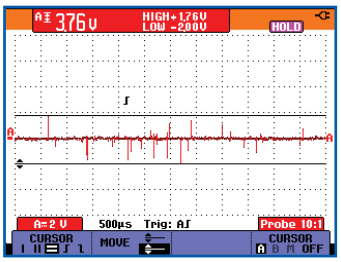
VFD-Driven Motor

Type: 460 V Three Phase Inverter-Driven

HP: 15



Without AEGIS™ SGR : 44.8 V peak-peak



With AEGIS™ SGR: 3.76 V 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 negligible, far below levels that could damage bearings.

Specify AEGIS™ Installed…

Proven in hundreds of thousands of installations, AEGIS™ SGR protects motor bearings from these damaging VFD-induced currents, dramatically reducing downtime, extending motor life, and improving the reliability of systems.

Outside…or Inside!