AEGIS® SGR
BEARING PROTECTION RING

Protecting VFD-Driven Motors In:

Healthcare Facilities and Equipment

Ensuring Patient Safety...

When dealing with today's advanced medical procedures, the loss of vital equipment could mean the loss of a patient's life. So, for operating rooms, labs, and quarantine areas, the reliability of ventilation equipment is critically important in safeguarding sterility and preventing infection. In their efforts to ensure the quality of vital operating room and intensive care environments as well as 100% uptime of critical life safety and diagnostic equipment, hospitals and healthcare facilities are looking for ways to prevent motor failures by protecting bearings from VFD-induced electrical damage.

Requires Access to Electronic Medical Records

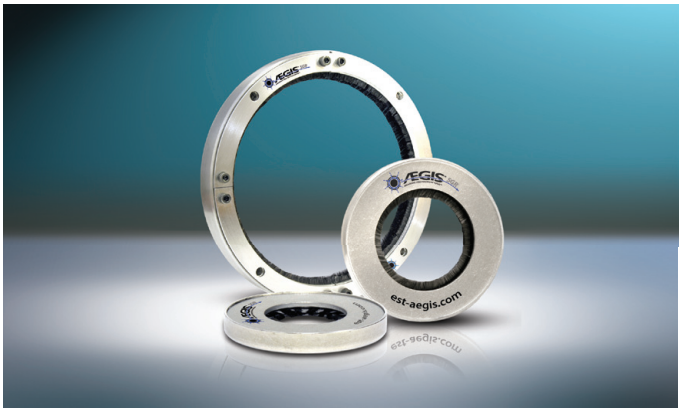
And with the adoption of electronic medical records, the loss of key data center systems could leave doctors without the vital information they need — patient histories, drug prescriptions, and allergies — to make even basic decisions on patient treatments.

The Need for Shaft Grounding on VFD-Driven Motors

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 proven, long-term bearing protection, key motors and motor-driven systems are at risk of bearing failure, jeopardizing the lives of patients and limiting the ability of doctors to effectively treat them.

Proven, Long-Term Bearing Protection

Proven in over a million installations worldwide, AEGIS® Shaft Grounding Rings ensure the reliable, long-term operation of these VFD-driven motor systems, in mission-critical healthcare facilities.



Applications:

- Rooftop HVAC systems
- Indoor or outdoor air handling units
- OR and unit ventilation fans
- Fan walls
- Chiller units
- Evaporators
- Circulating pumps
- Compressors
- Condenser units
- Water/wastewater pumps
- Sump pumps
- Trash compactors
- Data center CRAC units
- Data center rack cooling systems and fans
- Emergency power generators

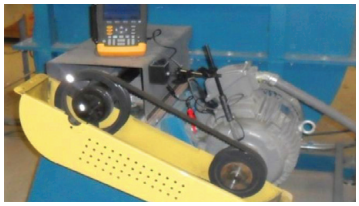
Field Survey Testing:

Northwest Community Hospital

The Study

This field survey was conducted at Northwest Community Hospital, Arlington Heights, Illinois. Voltage readings were taken from the shafts of VFD-driven motors throughout the hospital, as well as the hospital's inverter-driven operating room RF4 Air Handling Unit (AHU) motor — both before and after the application of AEGIS® SGR Bearing Protection Ring technology.

TECO 254T motor driving a RF4 AHU



Testing the motor for shaft currents

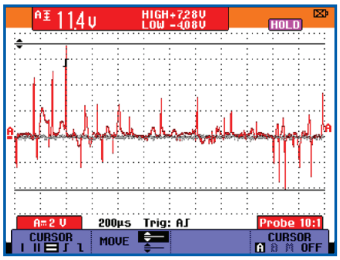
The Problem

The VFD-driven TECO 254T motor studied, powered an RF4 operating room AHU. High peak-to-peak readings from motor shaft indicated that currents were building up on the shaft and discharging through the motor's bearings, causing EDM pitting and possibility of bearing race fluting.

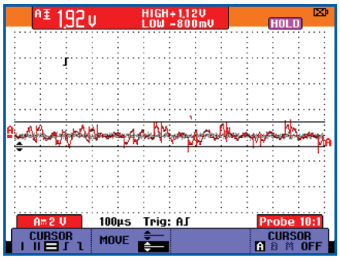
TECO Motor

Type: 3-Phase TEFC

Frame: 254T



Without AEGIS® SGR : 11.4 V peak-peak



With AEGIS® SGR: 1.92 V peak-peak

The Solution

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

Specify AEGIS® Rings

Use the following specification to protect your VFD-driven motors from electrical bearing damage with AEGIS® Shaft Grounding Rings.

Recognizing the need for proven long-term bearing protection, a growing number of motor manufacturers now offer AEGIS® Rings factory installed on their motors — internally or externally — as standard or an option. For their names, visit: **www.est-aegis.com/oems.htm**

Motors Controlled by PWM Drives (VFDs)

Electrical Bearing Damage Protection

Engineering Specification:

Construction Specification Institute Section 23 05 13: MOTORS
2.1 MOTORS / A. General Requirements:

1. All motors operated on variable frequency drives shall be equipped with a maintenance-free, conductive microfiber shaft grounding ring with a minimum of two rows of circumferential microfibers to discharge electrical shaft currents within the motor and/or its bearings.

2. Application Note: Motors up to 100HP shall be provided with a minimum of one shaft grounding ring installed on either the drive or non-drive end. Motors over 100HP shall be provided with an insulated bearing on the non-drive end and a shaft grounding ring on the drive end. Grounding rings shall be provided and installed by the motor manufacturer or contractor in accordance with the shaft grounding ring manufacturer's recommendations.

Recommended part: AEGIS® SGR Bearing Protection Ring