



## Protecting VFD-Driven Motors In: Healthcare Facilities

### Saving Energy is Important...

Many hospitals are looking for ways to reduce energy consumption. One of the most promising involves the use of variable frequency drives (VFDs) to control the speed of HVAC motors. In fact, in such applications, VFDs have been shown to reduce energy consumption by 20 to 30%. But, while energy savings are important, they must never jeopardize patient safety.

### Protecting Patient Safety is Paramount

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 an effort to ensure the quality of vital operating room and intensive care environments and 100% uptime of critical equipment, hospitals and healthcare facilities are looking for ways to prevent motor failures by protecting their bearings from VFD-induced electrical damage.

### 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 bearing protection, any savings from the use of VFDs can be quickly wiped out by the cost of replacing motors and by system downtime. More importantly, such bearing failures in healthcare facilities can put patients at risk.

### 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 HVAC systems
- Indoor or outdoor air handling units
- OR and unit ventilation fans
- Fan walls
- Air or water cooled chillers
- Chilled water pumps
- Condensing fans
- Compressors
- Water/wastewater pumps
- Sump pumps
- Trash compactors





## 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.

### The Solution

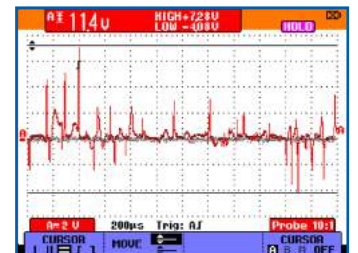
After AEGIS® Shaft Grounding Ring technology was applied to the motor shaft, new readings demonstrated that the ring was effectively channeling harmful shaft currents away from the bearings to ground. Peak-to-peak voltage readings were negligible, far below levels that damage bearings.



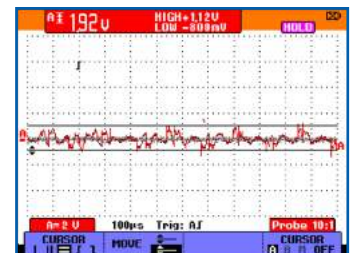
#### TECO Motor

Type: 3-Phase TEFC

Frame: 254T



Without AEGIS® SGR: 11.4 V peak-peak



With AEGIS® SGR: 1.92 V peak-peak

**AEGIS® Rings are available through:**