VFD-Driven Motors Can Fail From Destructive Bearing Currents - Costing Downtime and Lost Production

Motors operated by variable frequency drives (VFD) are vulnerable to premature bearing failure from VFD induced shaft voltages and bearing currents – sometimes within only weeks or months – and the result is costly down time and production interruptions.

VFDs induce destructive shaft voltages and high frequency currents which will cause electrical discharge machining (EDM) pitting, fusion craters, and fluting damage to the motor's bearings and deteriorate the bearing lubrication by allowing electrical arcing to burn the grease.
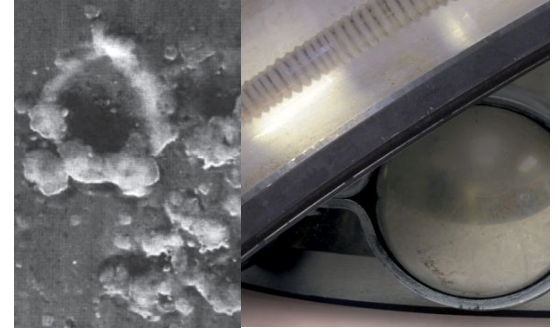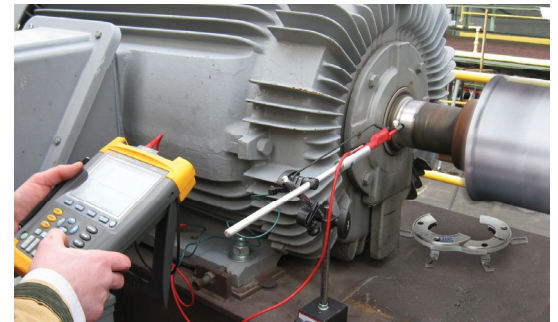

EDM Pitting and Fluting

Cost Avoidance - Follow Best Practices to Ensure Uptime and Reliability

Motor repair best practices will provide bearing protection from these destructive bearing currents by adding AEGIS® Shaft Grounding Ring Technology and when needed insulating a bearing to prevent high frequency circulating currents.

- Motors up to 100 HP - Add AEGIS® Shaft Grounding Ring to discharge shaft voltages to ground.
- Motors over 100 HP - Add AEGIS® Rings by one bearing and insulate the opposite bearing.

Detailed recommendations are contained in the AEGIS® Shaft Grounding Ring Motor Repair Handbook - an essential reference available upon request at www.est-aegis.com/bearing

AEGIS® Shaft Voltage Testing

Motor Bearings are the Most Vulnerable Parts- Cost of a Failed Motor Adds Up Quickly

6% 1% 0.5%

93%

- Downtime cost
- Motor Repair Cost
- Rigging and Transportation
- Overhead

Solution: AEGIS® Bearing Protection Rings
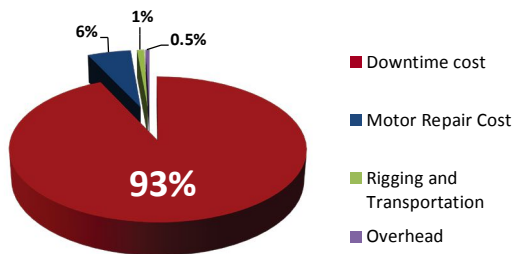
The return on investment in repairing motors and following the AEGIS® Shaft Grounding Ring Motor Repair Handbook's best practices recommendations will pay dividends day after day and ensure the most reliable repair to the motor.
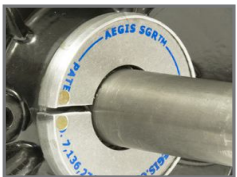

AEGIS® uKIT

Mounting Options

uKIT - SGR with Universal Mounting Brackets
Sized for NEMA and IEC Frame motors
Solid and Split Ring
Install with screws or conductive epoxy
4 different bracket sizes

Conductive Epoxy Mounting (-0AW, -0A4W)
Shaft diameters: 0.311" to 6.02"
Solid and Split Ring
Conductive Epoxy Included

Standard Mounting Brackets (-1)
Shaft diameters: 0.311" to 6.02"
Mounting clips, 6-32 x 1/4" cap screws and washers

Split Ring (-1A4)
Shaft diameter: 0.311" to 6.02"
4 to 6 mounting brackets, 6-32 x 1/4" cap screws and washers
Installs without decoupling motor

Bolt Through Mounting (-3FH)
Shaft diameters: 0.311" to 6.02"
6-32 x 1/2" flat head screws
2 mounting holes up to shaft size 3.395"
4 mounting holes for larger sizes

Press Fit Mounting
Shaft diameters: 0.311" to 6.02"
Clean dry 0.004" press fit
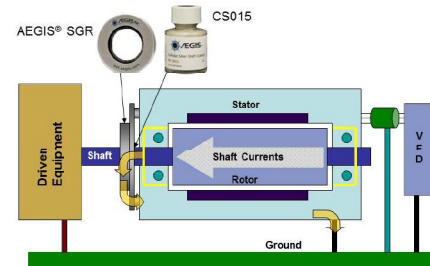Press into motor end bracket or bearing cap

Large SGR, iPRO, WTG
Large Rings over 6.02"
iPRO for Medium Voltage Motors
WTG for Wind Turbine Generators

Accessories
SVP - AEGIS® Shaft Voltage Probe
CS015 - AEGIS® Colloidal Silver Shaft Coating
EP2400 - AEGIS® Conductive Epoxy

Motors up to and including 100 HP (75 kW) Low Voltage

- Install one AEGIS® SGR Bearing Protection Ring on either the drive end or the non-drive end of the motor.
- AEGIS® SGR may be installed either internally or externally.
- Use AEGIS® Colloidal Silver Shaft Coating (PN# CS015) on motor shaft where fibers touch.

Product recommendation: **AEGIS® SGR**

Motors Greater than 100 HP (75 kW)

Install AEGIS® Ring on opposite end of insulation
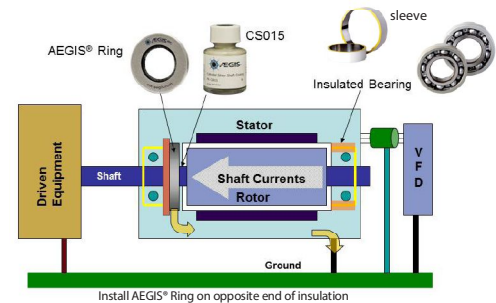
- Non-Drive end: Bearing housing must be isolated with insulated sleeve or coating or use insulated ceramic or hybrid bearing to disrupt circulating currents.
- Drive end: Install one AEGIS® Bearing Protection Ring.
- AEGIS® Ring can be installed internally on the back of the bearing cap or externally on the motor end bracket.
- Use AEGIS® Colloidal Silver Shaft Coating (PN# CS015) on motor shaft where fibers touch.

Product recommendation:
- **Low Voltage Motors up to 500HP: AEGIS® SGR**
- **Low Voltage Motors over 500HP: AEGIS®iPRO**
- **Medium Voltage Motors: AEGIS® iPRO**

For more recommendations, download the AEGIS® Handbook from our website.
www.est-aegis.com/bearing