Pumping System Reliability is Critical

Pumps and pumping systems account for 25% of the energy consumed by electric motors in the United States. In pumping intensive industries, this number is over 50%. In fact, providing clean drinking water to homes and businesses alone accounts for almost 12.5% of total US pump energy consumption.

To improve the efficiency of pumping systems and reduce their energy consumption, pump users are turning to variable frequency drives (VFDs). Since most pumping systems are designed for maximum service conditions (capacity and differential head), running them at partial load can save considerable energy. So, by precisely matching motor speed to pumping requirements, VFDs can reduce energy costs by as much as 30% or more.

But VFDs Can Damage Pump Motor Bearings

VFD-induced voltages on motor shafts can discharge through motor bearings, causing pitting, frosting, fluting, and total bearing failure in as little as 3 months!

The Need for Shaft Grounding on VFD-Driven Motors

Pump motor failures can cost hundreds of thousands to millions of dollars in repairs and lost revenues and can endanger public health and safety. To ensure the reliability of VFD-driven pump motors and systems, bearing protection is needed.

Proven Long-Term Bearing Protection

By providing a very-low-impedance path from motor shaft to ground, AEGIS® Shaft Grounding Rings ensure the reliable, long-term operation of VFD-driven pumping systems. Proven in millions of installations worldwide, AEGIS® Rings provide unmatched bearing protection of the full L-10 life of the motor.

Protecting VFD-Driven Motors In:

Recreational Facility Case Study

Protecting Motor and Pump Bearings

When installed according to AEGIS® Best Practices, AEGIS® Shaft Grounding Rings protect pump motors and the pumps themselves from VFD-induced bearing damage and costly downtime.

AEGIS® Rings Prevent Fluting Damage and Bearing Failure

When a large midwestern US recreational center experienced bearing fluting damage to several pump motors, the facility's manager realized that he needed to install bearing protection on the center's VFD-driven motors. Not sure what product to use, he decided to conduct a head-to-head test on two technologies — common mode chokes and AEGIS® Shaft Grounding Rings.

One motor was completely replaced with a new 7.5 HP 213T-frame LEESON motor and common mode chokes were added. A shaft voltage test measured 11.76V — still high enough to cause EDM damage. Then an AEGIS® uKIT Shaft Grounding Ring was installed and a shaft voltage measurement was done again. The voltage was greatly reduced to less than 1 volt — too low to cause any EDM damage.

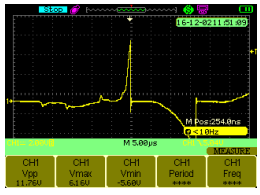
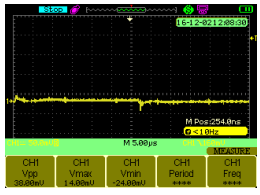
For the second motor, a 7.5 HP Baldor motor, the manager replaced the bearings and only installed an AEGIS® Ring. Again the voltage after installation was less than a volt.

As the test data shows, there is no change in the shaft voltage by applying a common mode choke, and the motor is still in danger of bearing failure. A common mode choke only lowers the common mode current, which does not have any influence on the EDM bearing current.

Based on these results, the facility's manager insisted that all new or repaired motors be equipped with AEGIS® Shaft Grounding Rings before going into service.

AEGIS® Rings are available through:

AEGIS® Rings Reduce Shaft Voltages to Non-Damaging Levels

	Without AEGIS®	With AEGIS®
Shaft Voltage Readings		
Peak Voltages	11.76 V	.038 V