



Protecting VFD-Driven Motors from Bearing Damage

November 2011
Electro Static Technology

Preventive Maintenance with AEGIS™ Rings Dramatically Reduces Unscheduled Plant Downtime



[Download SVP Shaft Voltage Probe Datasheet](#)



[Download Fluke 190 Series II ScopeMeter Application Notes](#)

Anticipate and Head Off Motor Failures Through Shaft Voltage Testing

Motor failures due to electrical bearing damage account for hundreds of thousands of hours of lost production every year in the United States.

But now Electro Static Technology has developed a way for plant maintenance personnel to determine quickly and easily what motors are at risk of such damage. The AEGIS™ Shaft Voltage Test Kit consists of a special probe with a conductive microfiber tip that feeds voltage readings to a Fluke 190 Series II ScopeMeter. By touching the probe tip to a rotating motor shaft, maintenance personnel can measure shaft voltage levels.

Without an alternate path to ground, voltages on a motor shaft will discharge through the motor's bearing, causing EDM machining of the bearings. Also known as pitting or frosting, this process eventually erodes the bearings and results in bearing and motor failure. Discharges can also lead to fluting, a source of vibration and bearing noise.

Plant maintenance personnel can protect motors from this type of bearing damage and eliminate costly downtime by installing the AEGIS™ Shaft Grounding Ring. AEGIS™ Rings channel harmful currents away from bearings safely to ground. Maintenance-free, they provide proven long-term protection against VFD-induced and circulating shaft currents.

For more information on the Fluke 190 Series II ScopeMeter, [click here](#).

From now until 31 December 2011, if you purchase a Fluke 190 Series II ScopeMeter, Fluke will give you an AEGIS™ Shaft Voltage Probe FREE!



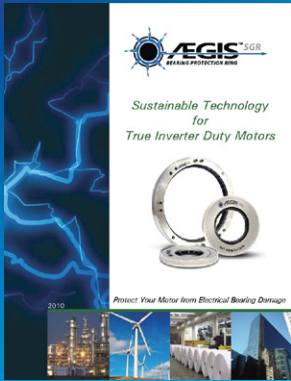
New AEGIS™ Shaft Voltage Test Kit includes a special conductive microfiber SVP probe for highly accurate measurement of motor shaft voltage levels.



For testing procedures using the AEGIS™ Shaft Voltage Test Kit, [click here](#).



For more information on Fluke's special offer of a FREE AEGIS™ SVP Probe with the purchase of a Fluke 190 Series II ScopeMeter, [click here](#).



[Download AEGIS™ Catalog](#)

250 HP Chill Water Pump: A Case Study in Preventive Maintenance

During a recent plant tour, an AEGIS™ salesperson came across several noisy 250 HP chill water pumps. Typically, this type of noise is a sign of “fluting”, a type of bearing damage in which concentrated pitting at regular intervals causes washboard-like ridges in a bearing race wall.

Using an AEGIS™ Shaft Voltage Test Kit (described above), the salesperson took several readings on one of the motors to determine: 1) if there were induced voltages on the motor shaft; and 2) the magnitude of these voltages.

Results were as follows:

Reading 1 showed both positive and negative voltage spikes and peak-to-peak voltages of 29.8V.

Reading 2 showed a waveform with slower voltage rises and sudden discharges with sharp trailing edges. This type of discharge is typical when the oil film in bearings breaks down. Peak-to-peak voltages were 18.4V.

Since both readings were above 14-15V peak-to-peak, they confirmed the presence of damaging shaft voltages. Noise from the motor’s bearing indicated “fluting” damage.

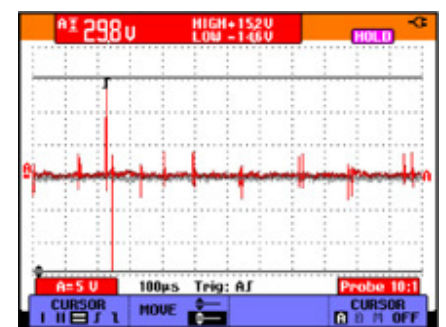
After grounding the motor shaft with an AEGIS™ Bearing Protection Ring, the salesperson took a third reading, which showed **no bearing discharges**. The AEGIS™ ring was now providing a path of least resistance, effectively channeling shaft currents away from bearings, safely to ground.

While, in this case, the shaft voltage readings were taken by an AEGIS™ salesperson, the AEGIS™ Shaft Voltage Test Kit makes it easy for any plant maintenance person to assess the potential for electrical damage to any motor in a plant.

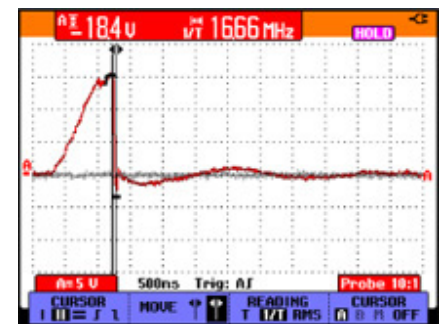
For more information, [click here](#).



Before installation of AEGIS™ ring, two readings demonstrated the presence of damaging shaft voltages.



Reading 1: 29.8V peak-to-peak.



Reading 2: 18.4V peak-to-peak.



After installation of AEGIS™ rings, Reading 3 showed no damaging voltage discharges.



Ask Bill about
Bartlett's Full Circle
Bearing Protection Program

Bartlett Bearings Named AEGIS™ Distributor of the Year

Electro Static Technology recently named Bartlett Bearings its AEGIS™ Distributor of the Year for the eastern United States.

Through Bartlett's "Full Circle Bearing Protection" Program, salespeople ask customers key questions about their motors and the applications in which they are, or will be, used. Armed with this information, salespeople recommend a complete solution aimed at mitigating shaft currents and preventing bearing damage. Solutions include AEGIS™ Shaft Grounding Rings as well as other measures including ceramic bearings, insulated sleeves, and insulated bearings.

Rather than just filling customer orders, Bartlett Bearings takes time to understand the customer's specific application and recommends a total solution.

For its willingness to expend time and effort to solve customer problems, AEGIS™ is pleased to honor Bartlett Bearings as Distributor of the Year.

For more information, [click here](#).

