

CoolBLUE® Inductive Absorbers

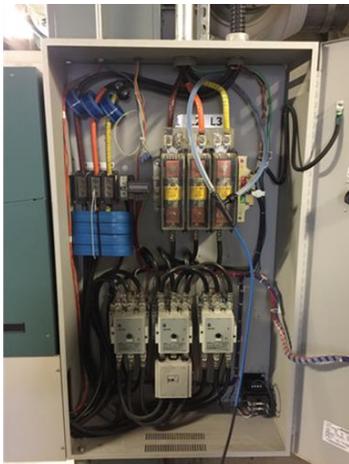
They protect whole systems, not just the bearings

by Sheila Kennedy ~ Kristie Giles

Time and experience can yield pleasant surprises. For CoolBLUE® inductive absorbers, these moments have come in waves as real-world testing over 10 years revealed the technology's benefits extend well beyond the initial bearing protection objective.

When Magnetec's CoolBLUE® was first introduced to the U.S. in 2009 by MH&W, it was groundbreaking. CoolBLUE® nanocrystalline inductive absorbers provided a novel approach to protecting motor bearings from the damaging high-frequency common mode currents produced by variable frequency drives (VFDs). They absorb or "choke" the currents generated from the VFD's insulated gate bipolar transistor (IGBT), and they reduce the shaft current potential to a level that will not damage the bearing elements.

Magnetec's NaLA® nanocrystalline line absorbers provide extra protection by further reducing noise and peak values. Both CoolBLUE® and NaLA® toroid filter cores utilize Magnetec's Nanoperm® nanocrystalline material, which allows for fewer cores due to its unique magnetic properties.



MH&W combines the solutions for maximum bearing and associated system protection:

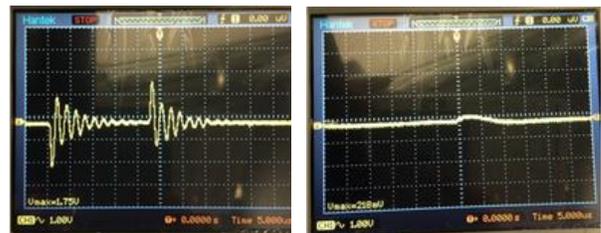
- CoolBLUE® common mode chokes around all phases
- NaLA® differential mode chokes around each individual cable

Better bearing protection

VFDs provide tremendous energy savings but inherently contribute to motor bearing wear. The IGBTs create damaging discharge currents, making the bearings susceptible to conditions such as fluting, frosting, and pitting from electrical discharge machining (EDM). The resultant friction and noise trigger premature lubrication breakdown and eventual bearing and motor breakdown, resulting in costly maintenance and downtime. Fortunately, this entire scenario can be avoided with the CoolBLUE® solution.

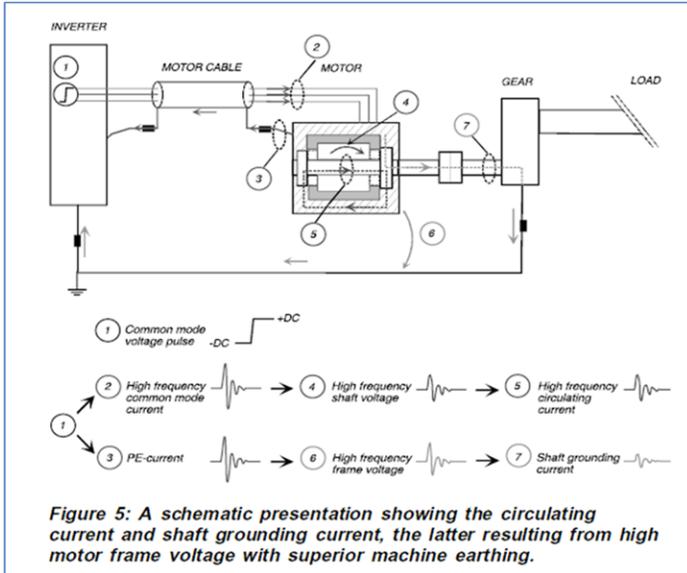
CoolBLUE® is unique because it tackles the root of the problem. It is designed to choke the current at the drive, preventing it from getting to the motor. This effectively neutralizes the damaging effects of common mode voltage on bearings because voltage requires current to produce destructive EDM.

Removing high-frequency current from the equation by absorbing it at the source makes the existence and amount of voltage irrelevant since the destructive power is reduced. Specifically, tests in-house and at MH&W customer sites have shown the CoolBLUE® solution reduces common mode current by an average of 65% – bringing it to levels that are well within safe operating parameters for the motors and will not damage the bearing elements.



In contrast, traditional bearing failure mitigation tools such as shaft grounding devices concentrate on controlling the effects of common mode voltage coming from the VFD – after it enters the motor.

Grounding devices divert shaft voltage to a ground, reducing the harmful effects on bearings so they wear at a slower pace. However, they still wear, so ongoing maintenance and replacement expenditures are required. Grease, corrosion, or dirt on the shaft will cause grounding devices to lose contact with the shaft; bearings will deteriorate and require replacement; and the devices themselves require periodic replacement. In addition, shaft grounding adds to the problem of poor system grounding by allowing stray capacitive currents to flow through other motor system devices, such as sensors, detectors, or back to the VFD. CoolBLUE® avoids the bearing issues and helps to protect the systems.



Extended system protection

Years of testing and customer feedback confirm that the CoolBLUE®/NaLA® solution protects not just bearings, but whole systems. It protects motor systems by reducing bearing and insulation damage, motor heating, and winding overheating. It prevents the current from going through the ground system and returning to the source (VFD) or other vulnerable equipment. It helps to reduce interference on gauges, sensors, and other sensitive electronic equipment such as metal detectors and computer monitors. It is known to resolve Ethernet communication issues and eliminate flickering in LED lighting affected by VFD motor control. Moreover, customers have attributed CoolBLUE® to reducing multiple system errors, random system shutdowns, and random manufacturing errors.

Make the right choice

No other bearing protection product works like CoolBLUE®. This comprehensive solution gets to the root of the problem, eliminating the need to use shaft grounding devices and ceramic or insulated bearings in many applications.



The distinction is clear: CoolBLUE® is an electrical solution to an electrical problem, and it is permanent – no maintenance is required. Shaft grounding is a mechanical solution to an electrical problem, it is not permanent, and it treats the symptom rather than solving the cause. CoolBLUE® is the answer.

Learn more by contacting 201-252-8125 or CoolBLUE@mhw-intl.com, or visiting www.coolblue-mhw.com.