

Mel+Care

Presented by:
EMSCO
An Inductotherm Group Company

A Technical Review of Common Induction Furnace Maintenance Issues

An Overheating Furnace & Water-Cooled Power Leads

The primary goal for any metalcaster who has had a power supply trip and melt system shut down is to get to the root of the problem and get the system back online as quickly as possible. One common cause of a system shutdown is the failure of the water-cooled power leads.



A Failing Power Lead Impedes Flow

An inferior lead, or one that has begun to deteriorate from age, may develop “bird’s nesting” in the copper wires near the terminal. As these wires become tangled and bunched, they begin to act as a water filter, reducing the amount of cooling the water is able to provide to the power lead. Broken wires may also begin to arc, ultimately tripping your power supply and shutting down your system. Failing power leads may also cause your other consumables to age and deteriorate prematurely.

An Ounce of Prevention is Worth a Pound of Cure

It is good practice to replace your water-cooled power leads every time you install a new or rebuilt coil in a furnace. It is critical to start your furnace with components you know to be in good working condition to ensure proper cooling, and to help protect your furnace and consumables.

A Tip From The Melting Industry’s First Responder:

In addition to changing your leads with every coil replacement, you should maintain a schedule for replacing your power leads and ordering spares. Consult your supplier if you are unsure when you should replace your leads.

Not all Water-Cooled Leads are Created Equal

Over 90 percent of induction melt system problems involve water, and many of the problems boil down to a coil overheating due to restricted water flow in the power leads. Make sure the leads you purchase yield high electrical efficiency and are manufactured with copper rated at 101 percent electrical conductivity by the IACS. Leads in which the terminals have been soldered to the copper provide optimum contact and conductivity.

Leads manufactured using heavy gauge copper provide rugged flexibility and resist breaking, “bird’s nesting,” kinking, and collapse. Purchase leads housed in abrasion-resistant hoses that can withstand long term exposure to temperatures of 200°F or greater.



Consider Upgrades to Your Water-Cooled Power Leads

Beyond the basic quality standards we’ve outlined in this bulletin, there are additional ways to enhance the performance, durability, and safety of water-cooled power leads. Many manufacturers offer coatings and coverings to provide the hose additional protection from molten metal, abrasion, and high temperatures. EMSCO brand Firesleeve is a non-asbestos power lead covering that withstands short term exposure to 3,000°F molten metal and long term exposure to temperatures up to 500°F.

Options are also available to ensure proper flow for furnaces that require flexible connection points. EMSCO’s Bernoulli Ring water-cooled power leads apply the principle of eighteenth century physicist Daniel Bernoulli to maintain the water’s speed without decreasing the water’s pressure.

For more information, or to schedule a consultation and service, call us today at 877.77.EMSCO.