

**TUTCO** SureHeat  
HEATING SOLUTIONS GROUP

# Electrification and Decarbonization



## The market for electric heat solutions is red hot.

Molten metal is an essential component in numerous manufacturing processes, where it is poured into molds to fabricate various products. One significant challenge faced by manufacturers is maintaining the molten metal at the optimal temperature while efficiently transporting it within the production facility. In their pursuit of an effective heat source, many companies have experimented with different solutions, such as natural gas, but with limited success. The TUTCO SureHeat Max heater was the perfect solution.

The Max electric heater boasts remarkable performance characteristics, with the capability to reach temperatures of up to 1400°F (760°C). This level of heat was precisely what our customer needed to maintain the molten metal in its liquid form during transportation. Moreover, the TUTCO SureHeat Max was engineered to accommodate the necessary voltage requirements for their specific geographic location, ensuring seamless integration into their production processes. To meet our customer's unique needs, each compact TUTCO SureHeat Max electric heater was installed into their carts, which resemble the iconic mining carts seen in movies. The strategic placement of these heaters within the carts ensured that the molten metal remained in its optimal state while being moved from one location to another. The ease of integration, combined with the heaters' efficiency, substantially improved the overall production process for our customer.

Safety is paramount when dealing with molten metal, and the TUTCO SureHeat Max electric heater excels in this aspect. By using electric heat, our customer significantly minimized the risks associated with open flame or other traditional heat sources. This not only safeguarded their personnel but also prevented any potential accidents or mishaps in the production facility. Furthermore, the adoption of the TUTCO SureHeat Max electric heater proved to be an economically viable solution. Its energy efficiency and precise temperature control allowed our customer to reduce energy consumption and operational costs while optimizing their molten metal handling processes. As a result, their entire production cycle operated more smoothly, leading to enhanced productivity and increased profitability.

***To learn more about energy transition, [click here.](#)***

# Heater leadwire failure & how to reduce its occurrence

by Ian Renwick

Heating elements are a critical component in various industrial applications, and their reliable performance is essential for smooth operations. However, one common issue that can lead to premature failure of heating elements is leadwire failure. Understanding the causes of leadwire failure and implementing preventive measures can significantly extend the lifespan of heaters and improve overall system efficiency.



**Pulling on Leadwire:** One of the primary reasons for leadwire failure is the repetitive pulling on the leadwires. To avoid this, it is crucial not to carry heaters by their leads. Additionally, in applications where repeated pulling is likely to occur, it is essential to find alternative solutions to minimize stress on the leads.

**Excessive Flexing:** Excessive flexing of the leadwires can also lead to premature failure. To reduce this occurrence, consider changing the flex point by using a few inches of shrink sleeving over the leads or incorporating a clip support. Creating loops of wire as long as possible, which will drape away from the heater and flex point, allows for movement with minimal stress on the leads.

**External Connected Leads:** For users who possess the necessary equipment and skills to repair leadwire connections themselves, it is recommended to purchase heaters with external connected leads. These leadwires connect to 1"-2" long pins, offering better flexibility and reducing the risk of leadwire failure.

**Internally Connected Leadwires:** In applications where flexing occurs at the point where the leads exit the heater, it is beneficial to use internally connected leadwires. This design allows for greater flexibility, minimizing the strain on the leadwire connection.

**Right Angle Leadwire Exit:** If space permits, utilizing a right angle leadwire exit can help optimize the leadwire arrangement and reduce the likelihood of damage during flexing.

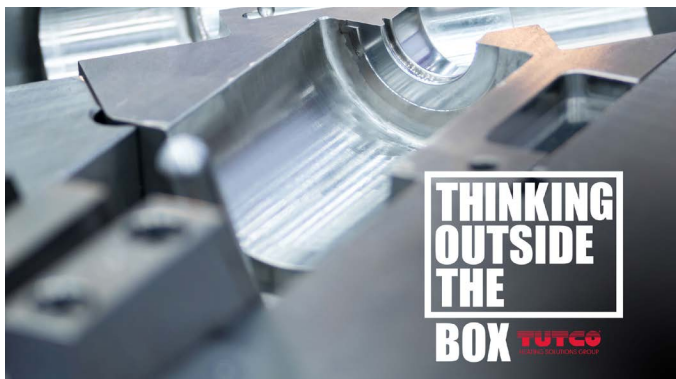
**Protection Against Abrasion:** In applications where even a small amount of abrasion is present on the leadwires, accumulated damage over time and cycles can lead to failure. To mitigate this, consider using stainless steel braid or armor for leadwire protection against abrasion. For situations involving moisture, Convuluted Armor offers water-tight protection, albeit at a slightly higher cost and reduced flexibility compared to square-lock armor.

**Flexible Armor Options:** Both Square-Lock Armor, Convuluted Armor, and Stainless Steel Braid can be effectively used with both straight leadwire exits and right angle leadwire exits, providing flexibility in designing leadwire arrangements to suit specific application requirements.

By implementing these measures and being proactive in leadwire protection, industrial operators can significantly reduce the occurrence of heater leadwire failure. This not only improves the reliability of heating elements but also enhances the overall efficiency and longevity of the systems in which they are deployed. Choosing the right heater and incorporating proper leadwire protection are essential steps in ensuring smooth and trouble-free operations in various industrial processes.

TUTCO Conductive

## Aluminum extruder softens up to TUTCO heating solution



A company near our manufacturing facility came to TUTCO needing a solution for a tubular heater used in an aluminum extruder barrel to keep the aluminum soft enough to press and extrude but not hot enough to make the aluminum a molten liquid. This was a very high-temperature application which

resulted in limitations on which terminations could be used. They had been using a custom tubular heater which was being employed in a custom machine, but they were experiencing long lead times with their current supplier.

After providing TUTCO with one of their failed heaters, we reverse engineered and developed a prototype design to try in their system. After testing a few heaters and producing the desired results, we added a few last upgrades that allowed for a long heater life. We also included some value-added design changes that made for easier preventative maintenance to minimize down time, and supplied mica insulation rings to help with assembly and operation of the entire system. We've been their regular supplier ever since.

**MORE THINKING OUTSIDE THE BOX**

TUTCO Farnam

## Cross Flow Blower Heaters

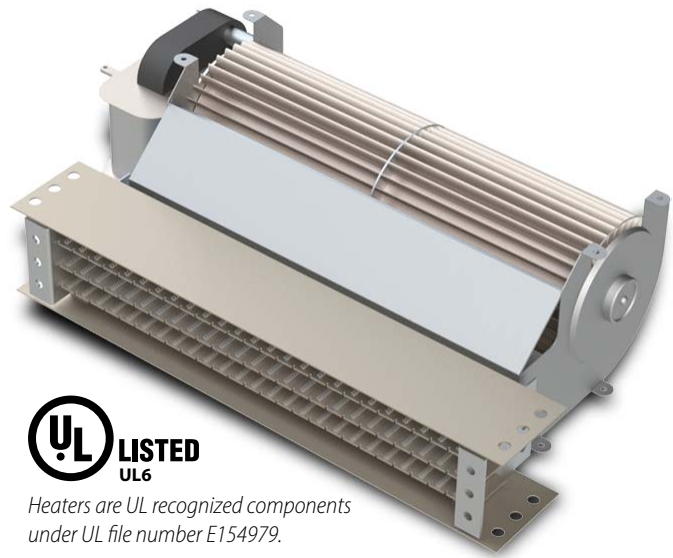
When it comes to industrial heating applications, flexibility and efficiency are key factors that drive productivity. The Crossflow Blower Heaters, part of the CB Series, have been designed with maximum design flexibility in mind. These innovative heaters offer a range of features and options that make them ideal for various heating requirements, ensuring optimal system performance.

The standout feature of the Crossflow Blower Heaters is their multi-purpose mounting brackets, which enable direct attachment to the exhaust of a crossflow blower. Unlike traditional heaters that require additional accessories for installation, these heaters streamline the process, saving valuable time and effort during setup. The incorporation of extra mounting holes also allows the heater to function as a stand-alone duct heater, adding to its versatility. The CB Series heaters come in both single and dual wattage, as well as dual voltage combinations, giving users the flexibility to choose the right configuration that suits their specific heating needs. This adaptability makes these heaters a perfect fit for a wide range of industrial applications.

Safety is paramount in any heating system, and the Crossflow Blower Heaters are equipped with integrated thermal fuses and/or hi-limit thermostats to provide essential over-temperature protection. This feature ensures that the heaters automatically shut down in case of overheating, safeguarding both the equipment and the overall process.

Feature Video

## The History of TUTCO



Heaters are UL recognized components under UL file number E154979.

What sets these heaters apart is their customizability. Manufacturers understand that each heating requirement is unique, and the Crossflow Blower Heaters are tailored to meet these specific needs. By matching the size, wattage, and voltage to individual specifications, these heaters deliver precise heating performance, maximizing efficiency and minimizing energy wastage.

The Crossflow Blower Heaters are available in various standard lengths, including 5", 7", 10", 12", and 15".

[LEARN MORE](#)

Founded in 1938, TUTCO has quickly grown into a global leader in the heating component industry. The TUTCO Heat Solutions Group is the largest supplier of electric resistance heating elements for a broad range of applications. Through Farnam and SureHeat brands, TUTCO also provides custom heating solutions for a myriad of industrial, OEM, testing, and research applications. As a division of Smiths Group, TUTCO has the most complete heating product catalog managed by the group's Specialty Engineering division of Flex-Tek. This month's feature video tells the TUTCO story.

[WATCH THE VIDEO](#)



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