TUTCONNECT

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TUTCO SUREHEAT

From 1.5" to 96": One Heater Design, Every Scale



Big ideas often need to start small. A new process might begin as a bench-top experiment, move to a pilot unit, then grow into a full-scale production facility. The heating system needs to grow with it. That's the idea behind our Specialty Flanged Inline (SFI) heater: there's an SFI size for every application and every stage of a project. From 1.5" diameter 8 kW to 96" diameter multi-100-megawatt systems, SureHeat has you covered.

The Building Block – Element Performance

Regardless of project size, the SureHeat Serpentine heating element is where our custom heaters begin. We have dozens of manufacturing variables to choose from, and our engineers tailor those choices to your application. The goal is to optimize heat transfer and electrical performance while ensuring that the element is robust. We gather the details of your process, crunch the numbers, build a custom element, and observe how it performs on the bench.

We follow the same steps from small to the largest applications. That single element is the building block for every larger SFI heater. Add elements, and you add capacity. The same design approach that serves a 5-kW pilot heater is also used for a multi-megawatt production heater.

Becoming a System - Power and Controls

A heater only performs as intended when properly powered and controlled as a "system" i.e. heater plus control panel. Even if a small, early-stage project only calls for simple, safe operation, it's critical to do it right. As heater scale grows, the need for more sophisticated power control, sequence-of-operation, and communications raises the bar for reliability and safety.

Small or large, SureHeat engineers invest an equal level of attention to designing a heater control panel. Once the build phase begins, TUTCO engineers remain involved during the in-house production and QC process. From small and simple, to large and complex, TUTCO has you covered.

Growing with You

Because we engineer heating systems to order, we can work with you from the first pilot through full-scale production. We learn about your process, operating conditions, and goals along the way, so when it's time to scale, we're ready. Have a project at any point on that spectrum? Reach out to the TUTCO SureHeat applications team. We'd love to talk about what size will work for you.

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Putting a nuclear reactor on the Moon sounds like science fiction, but NASA's Fission Surface Power program is working to make it real. Before anything leaves the launch pad, engineers have to prove on Earth that the reactor's cooling system will do its job in a place where nobody can send a technician to fix it. That means recreating real operating conditions in a test loop. For gas-cooled systems, that often means heating helium to specific temperatures, pressures, and flow rates, with almost no tolerance for leaks.



Why helium is hard

Helium is a great working fluid. It's inert, it moves heat well, and it doesn't react with anything in the loop. But it's also the smallest and sneakiest gas to contain. It finds paths through seals, welds, and fittings that other gases never notice. In a helium system, leak rate isn't a footnote on the spec sheet. It's a design driver, from the first drawing to final test.

What we build for it

We spend our days building engineered-to-order heaters, and helium work plays to a few things we do well:

- **Matched to your test conditions.** Each heater is designed around the customer's flow rate, pressure, and temperature, not squeezed out of a standard catalog model.
- **Leak-tight by design.** We can build with hermetically sealed power feedthroughs rated to 1×10^{-10} atm·cc/sec (He), and connecting flanges at 10^{-6} atm·cc/sec, so the heater doesn't become the weak link in your leak budget.
- **Built for the whole job.** Applications engineering, heater and control panel design, and project management all sit under one roof, so the people who understand your spec are the same people building to it.

Closer to home, too

Space isn't the only place this matters. Developers of small modular reactors (SMRs) are also testing helium-cooled systems here on the ground, and we've been hearing from more of them. The needs are the same: precise thermal conditions, high integrity, and a heater that behaves exactly as specified. Have a helium problem? If you're testing a cooling loop, whether it's headed for a power plant, a lab, or a lunar surface, we'd like to hear about it. Send us your flow, pressure, temperature, and leak-rate requirements, and we'll tell you what's possible.

CONTACT SUREHEAT

THINKING OUTSIDE THE BOX

A Manufacturer's Manufacturer:

A Look at TUTCO's Success in Developing Solutions for Large and Small OEM Manufacturers

For nearly three decades, I have watched TUTCO evolve while staying true to its core mission. When I first joined the company, our primary focus was supplying heating solutions to OEMs in the appliance and HVAC markets, both residential and commercial. Alongside those markets, we offered a custom duct heater product line that served both distributors and OEM customers. At the time, TUTCO proudly described itself as a "manufacturer's manufacturer."

Today, that OEM focus remains a cornerstone of our business, but our reach has expanded significantly. In recent years, TUTCO has established a much stronger presence in custom process heating and industrial applications while continuing to support OEM customers across a wide variety of industries.

Throughout our divisions, we continue to serve major OEMs in the appliance and HVAC markets while also supporting smaller manufacturers developing specialized equipment, particularly within custom HVAC applications. In the industrial and heavy commercial sectors, we excel at custom-engineered solutions while also providing production-ready products for OEM customers.

Our heating and control solutions can be found in applications such as:

- Drive-thru drawers
- Medical devices and equipment
- Dehumidification systems
- Pollution abatement equipment
- Energy storage systems
- Semiconductor and microchip manufacturing equipment
- Load banks • Plastics processing equipment
- Food service equipment
- Automotive applications

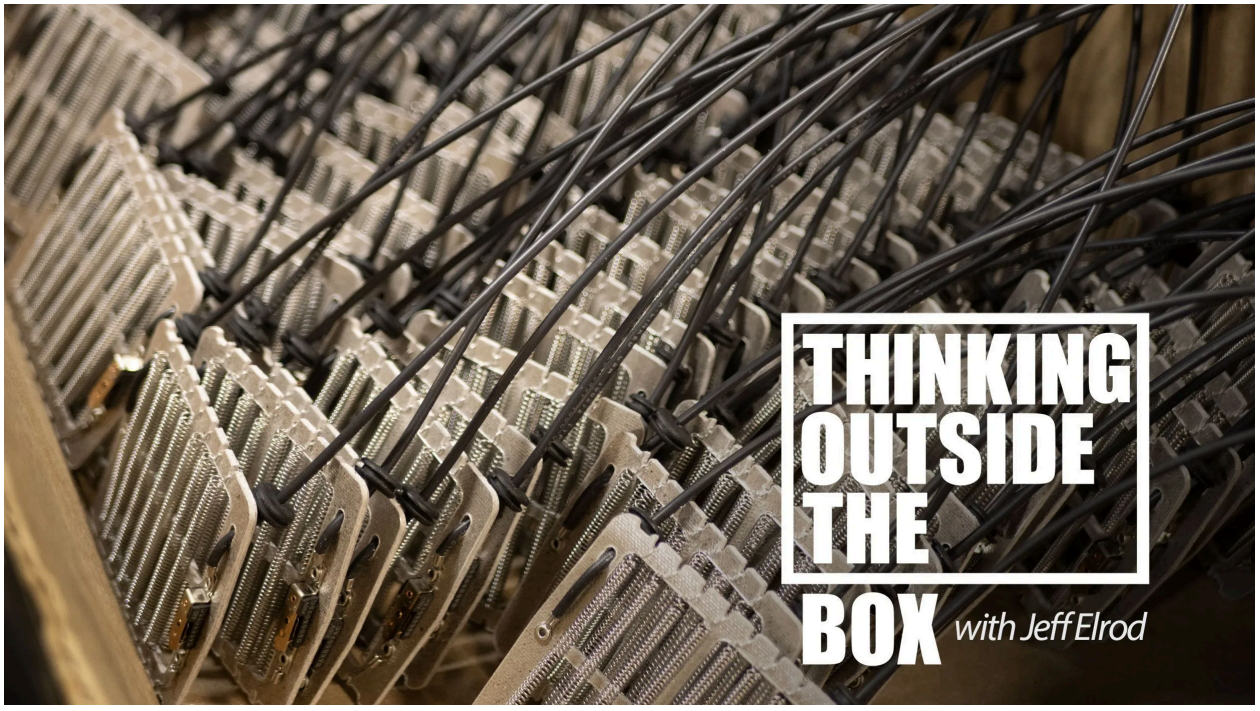
- Packaging and sealing equipment
- Aerospace systems
- Laboratory and testing equipment

TUTCO Farnam is a mix of OEM heritage and custom solutions. What sets TUTCO Farnam apart is our ability to leverage decades of engineering, design, and manufacturing experience to develop the right solution for each application. Whether you are a large OEM requiring tens of thousands of units annually, a small manufacturer needing only a handful of parts each year, or anything in between, we can help.

Our solutions range from standard catalog products and modified standard designs to fully custom-engineered systems. A project may be as straightforward as an axial fan heater, crossflow blower heater, flexible heater, mica surface heater, or mica crossbar heater. At the other end of the spectrum, it may involve a highly engineered pressure torch heating system integrated with a custom control panel.

No matter the challenge, TUTCO Farnam is prepared to become your engineering partner. Bring us your heating and control requirements, and we'll work with you to develop a reliable, cost-effective solution designed to perform for years to come.

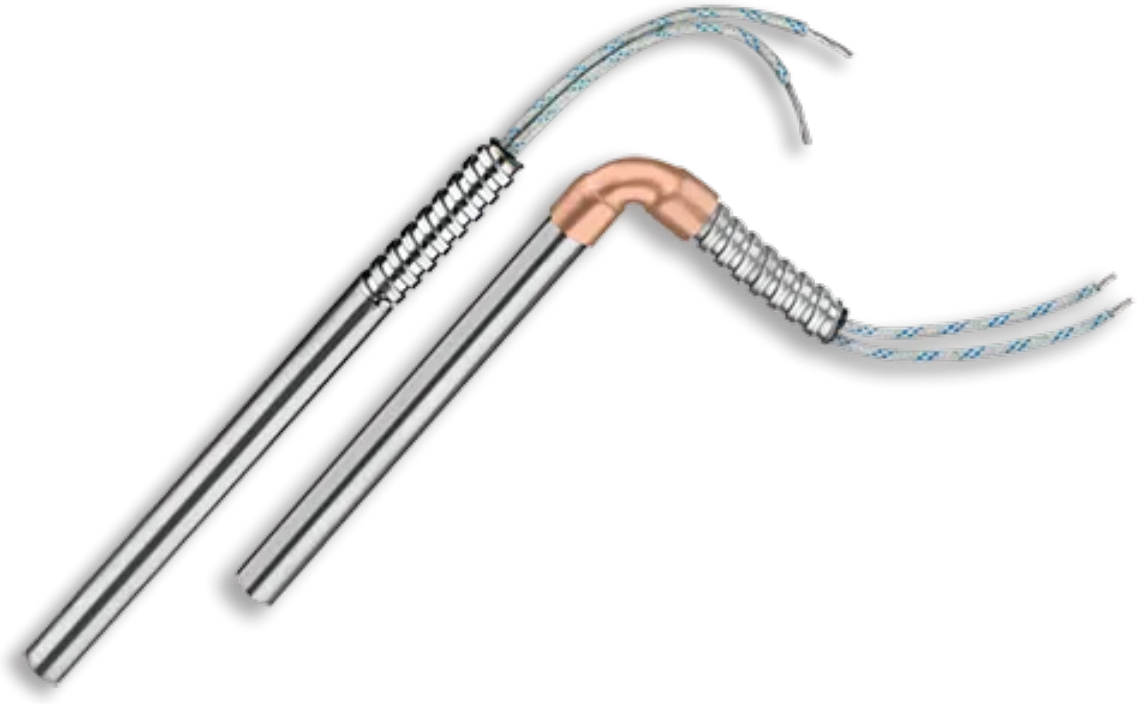
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FEATURE PRODUCT

Hi-Temp Cartridge Heaters

Engineered for Performance. Configured for Your Application.



TUTCO's Hi-Temp Cartridge Heaters can be compact heaters designed to deliver substantial heat directly into the components that need it. Installed into drilled holes, they transfer heat into the surrounding metal via conduction, making them an effective solution for applications where space is limited, and precise high temperature heating is essential. Size is only part of the story. In industrial applications, heating performance can directly affect production speed, product quality and equipment reliability. Whether it's maintaining consistent temperatures in a packaging seal bar, heating a mold in plastics processing, or bringing a metal platen up to operating temperature, the heater needs to deliver dependable results cycle after cycle. TUTCO's Hi-Temp Cartridge Heaters are built for these demands, delivering watt densities up to 100 W/in² and continuous operating temperatures up to 1200°F. Their rugged construction helps them withstand the thermal cycling, vibration, and demanding conditions common in industrial equipment.

Designed Around the Application

In industrial heating applications the heating requirements are often unique requiring a heater configured to specific needs. Equipment geometry, temperature requirements, electrical connections, and operating environments can all influence heater selection. TUTCO offers extensive customization options, allowing engineers to specify heaters that fit their equipment rather than designing equipment around a standard heater. From specialized lead configurations and integrated thermocouples to distributed wattage and custom mounting arrangements, TUTCO can tailor its Hi-Temp Cartridge Heaters to meet the specific application requirements. For OEMs and equipment manufacturers, the result is a compact heating solution that delivers the performance they need without taking up valuable space.

GET A QUOTE



FEATURE VIDEO

Safety and Quality at TUTCO Farnam

Shawn Gibbs is the Business Leader at TUTCO Farnam Custom Products in Arden, North Carolina, where safety and quality are central to daily operations. In this video, Shawn discusses how these two priorities work together to create a safer, more efficient manufacturing environment while delivering consistent, reliable products to customers. Shawn explains the importance of approaching every workday with a renewed focus on safety, regardless of past performance. That same attention to detail carries over into TUTCO Farnam's quality processes, where organized workspaces, standardized procedures, and careful evaluation of each work cell help minimize errors and maintain consistency. For customers, this commitment translates into dependable product quality, repeatable manufacturing results, and fewer production interruptions. From the first part to the hundredth, TUTCO Farnam's focus on safety and quality helps ensure that every product meets the same high standards while keeping production running efficiently and orders moving on schedule.

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