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PRODUCT CATALOG

INDUSTRIAL HEATERS

Process Heaters
- Duct Heater
- Tubular Heater
- Circulation Heater
- Screw Plug Heater
- Immersion Heater
- Heating Skid Systems
- Finned Tubular Heater
- Infrared Radiant Heater
- Over the Side Immersion Heater

Component Heaters
- Air Heater
- Coil Heater
- Printed Heater
- Mica Strip Heater
- Cartridge Heaters
- Ceramic Band Heater
- Silicone Rubber Heater

Furnace Heaters
- Bobbin Heaters
- Bundle Rod Heater
- Edge Wound Heater
- Open Coil and Sinusoidal Strip Heaters

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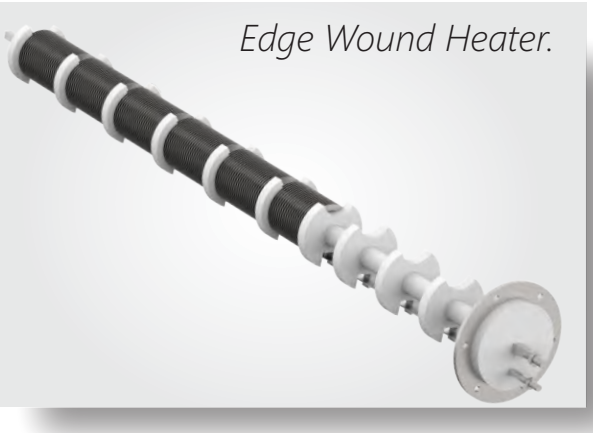
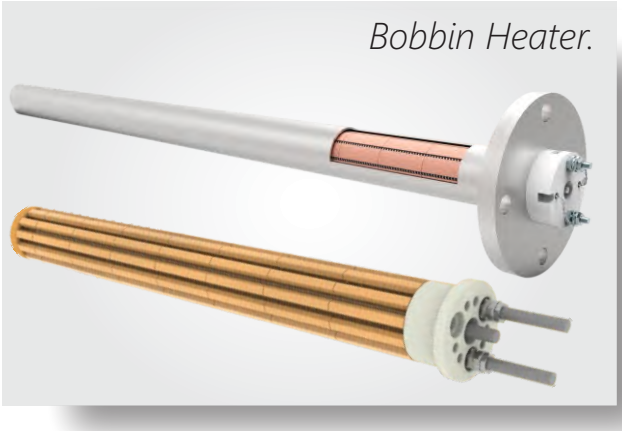
Furance Heaters.

Bundle Road Heater.

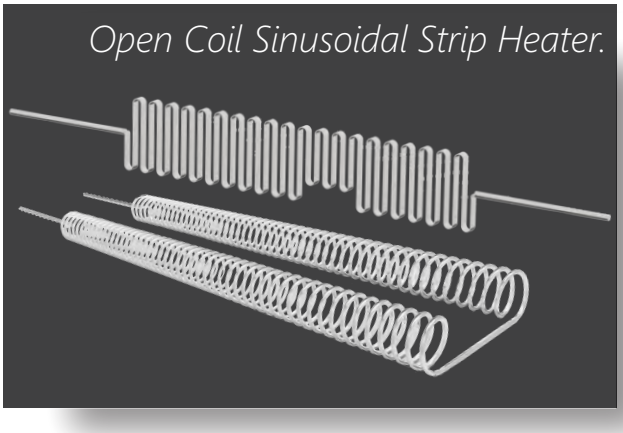
Edge Wound Heater.



Bobbin Heater.



Open Coil Sinusoidal Strip Heater.



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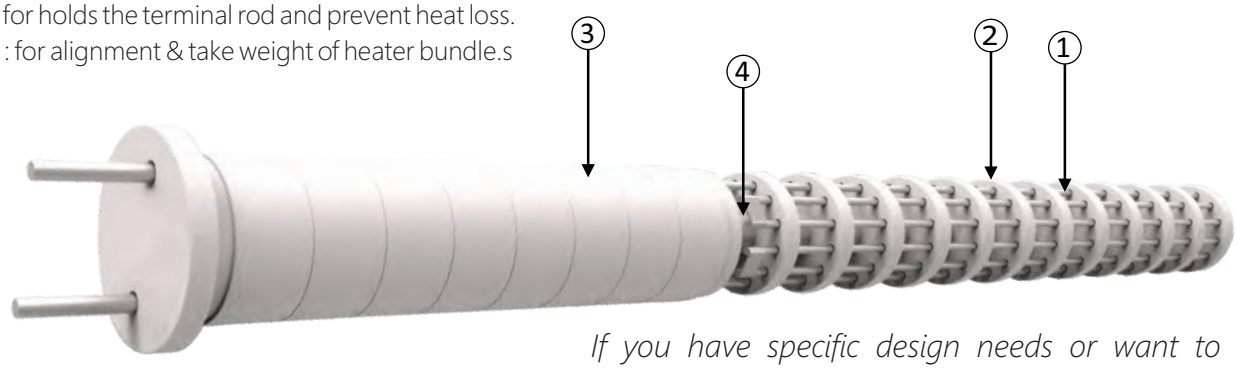
BUNDLE-ROD-Heaters

NOBLEHEAT as the name implies, a bundle rod heater is made up of a round ceramic disk that contains the heating elements. Together with the high-power radiant tubes, prevent refractory corrosion and gas impurities in process materials. These are made to last a long time and require no maintenance. Ferritic alloys up to 1250°C and NiCr alloys up to 1100°C can supply the element.

Construction

1. Direct heating element wire.
2. Ceramic Disc : for hold the heating element & insulation.
3. Fiber Disc : for holds the terminal rod and prevent heat loss.
4. Center rod : for alignment & take weight of heater bundle.s



If you have specific design needs or want to discuss a custom project, please reach out to us.

Technical Details

Power	1 kw to 75 kw
Cold Resistance Tolerance	⩽3%
Heating Element	Ferritic alloy powder metallurgical element, Mara FeCrAl, NiCr 80/20
Watt Density	1 to 10W/cm^2
Temperature	Upto 1250°C
Heater Parameter	Customized Power Rating, Voltage, Resistance, Length, Dia Any Other Dimensions
Fiber Disc	Customized
Ceramic Disc	Flower design, round type, conical type
Ceramic Size	Standard: 70, 80, 95, 110, 124, 154 other customize size available

Benefits

- reduces CO2 emissions by removing flue gases and controlled air in different heat treatment furnaces, preventing burning results or furnace gas corrosion on heating elements.
- Temperature control, assembly, and maintenance are all highly practical, and sealing can be simple.
- High efficiency and powerful heating capability.
- Refractory steel is a cost-effective material.
- either vertical or horizontal mounting.
- less influence on the environment.
- greater technical qualities and a longer operational life.
- greater resistance and surface load.
- devoid of oxide debris.
- Economical price with high output watt density.

Utilization

- primary furnace for melting and storing aluminum.
- The steel industry uses galvanizing furnaces.
- furnace for heat treatment in the automobile sector.
- furnace for annealing.
- furnace for carburizing.

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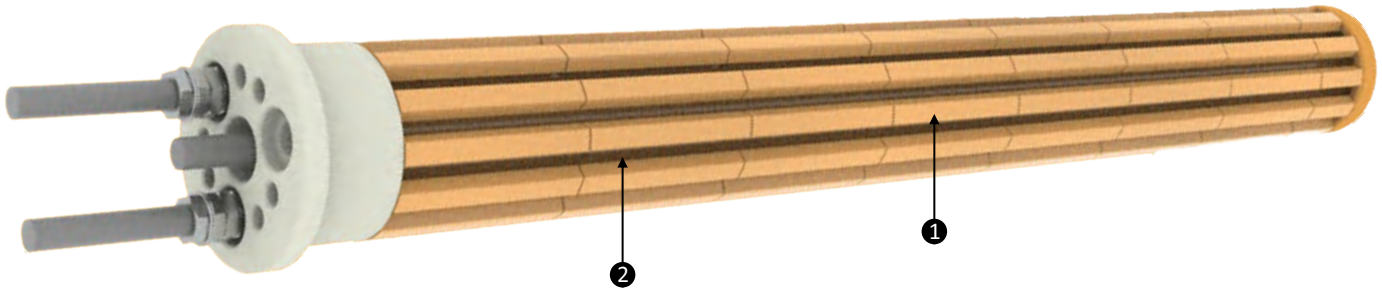
Bobbin-Heaters

NOBLEHEAT create ceramics For any voltage or wattage within manufacturing constraints, bobbin heaters are made from high temperature factory insulators in a range of diameters and lengths. Both sheathed and non-sheathed materials are used to make bobbin warmers.
Stainless steel, Inconel alloys, and mild steel plated with nickel are among the materials used for the sheath. Resistance wires are attached to a terminal block at one end and supported on refractory insulators. For precise temperature sensing, a thermowell or additional controls may be included. Although they can be expressly designed and built for vertical installation, they are typically created for horizontal placement. designed to operate at any voltage or wattage within the parameters of production. The components of these bobbin heaters are partially exposed to the air to improve heat transfer. Additionally, it provides a sizable heated area for the liquid or semi-solid to be heated when placed inside a radiant or immersion tube.

Construction

1. A few blocks of refractory ceramic were put together to reach the necessary length.
2. For optimal longevity, the Nichrome resistance wire heating element is put into the ceramic blocks and uniformly wrapped to distribute heat evenly.



Technical Details

Power	Upto 12kw
Watt density	1 to 10 W/cm^2
Temperature range	Upto 600°C
Heating element	Ferritic alloys wire mara FeCrAl and non ferritic wire NiCr 80-20,NiCr 70-30
Bobbin size	Standard: 25,30,36,42,45,57,93 other customize size available
Heater parameters	Customized – power rating, voltage, resistance, length, diameter and other dimensions
Radiant tube/immersion tube	Stainless steel SS grade,incoloy,cast alloys
Thickness of tube	1.5 to 3mm
Lenght of tube	300 to 2800mm customised
Terminal box	MS, IP 54 standard, IP 66 water proof terminal box
Control	Thermocouple, RTD, thermostat for temperature controlling

Benefits

- Chemicals, water, etc.
- Offer for materials that are semi-solid, such as bitumen, oil, fats, and wax.
- It is appropriate for indirect heating of gases and liquids and can be fixed or replaced by inserting it into a pocket or protective tube in the process tank.

Utilization

- Ideal for furnace heating at low temperatures up to 600°C.
- To satisfy the unique needs of each customer, a large variety of lengths, voltages, and powers are available.
- Easy and inexpensive to install.
- simplicity in upkeep and repair.
- Non-polluting and versatile.
- Energy-efficient because the solution contains all of the heat produced.

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Edge Wound Heaters

NOBLEHEAT heater manufacturer that has created a unique edge wound heater, also referred to as a bayonet heater. When maximum power is needed in a constrained amount of area, edge wound elements are employed. These components are used to convert gas-fired furnaces to electric heating systems and take the place of rod elements in furnaces that need additional power. These heating components are used in a variety of furnaces to suit their heating needs, including roller hearths, pits, batch furnaces, low temperature aluminum tempering furnaces, and high temperature exothermic gas generators. These heaters are based on an 80/20 or 70/20 nickel-chromium alloy. It provides high wattage in a constrained space and maximizes the element's surface area radiation.

Technical Details

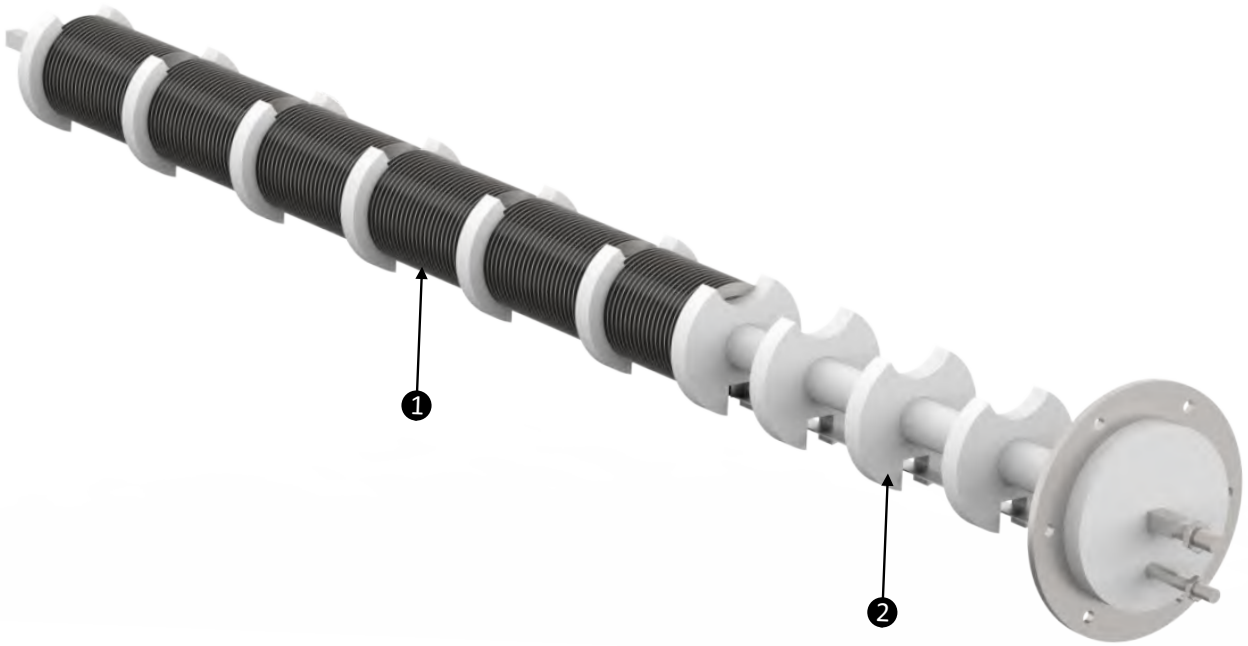
Heating Element Material	NiCr alloy (80/20 or 70/30)
Wattage	65 kW
Max. Temp.	1950°F (1050°C)
Length	Customized

Benefit

- increased density of power.
- Installing, replacing, and installing are simple.
- long lifespan in any temperature.
- either vertical or horizontal mounting.

Construction

1. Ferritic alloys such as FeCrAl and Nichrome 80:20 are heated.
1. A maximum diameter of 160 mm.
2. High resistance edge bending strip wound on high aluminum ceramic bobbins in coil shape.



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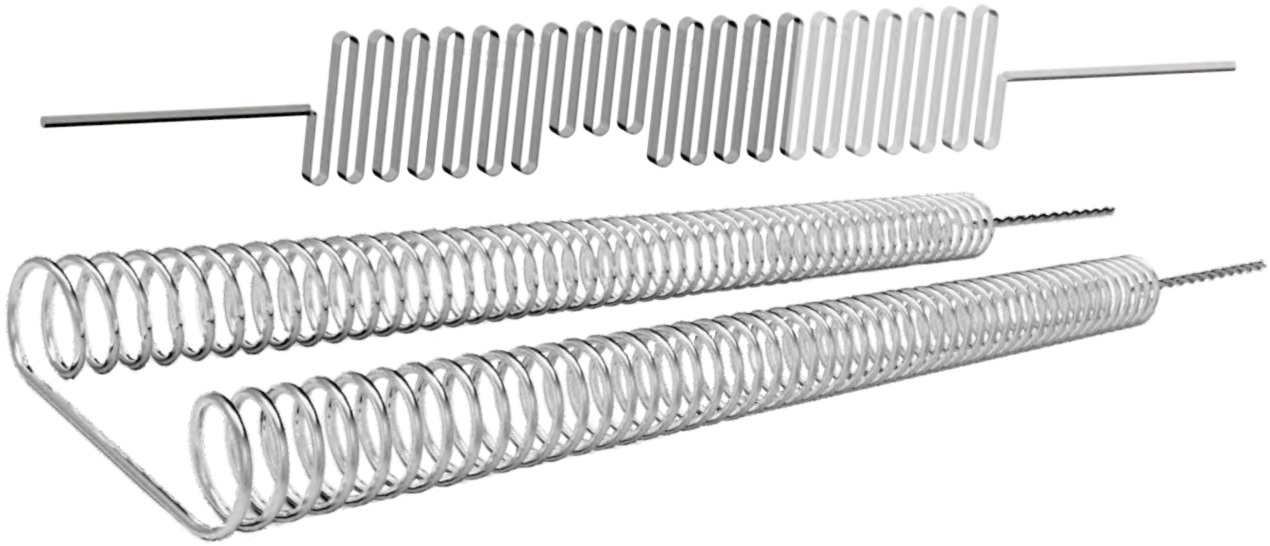
OPEN COIL & SINUSOIDAL STRIP :

Heating elements are open circuits that heat the medium directly. They are made of coiled resistance wire or strip (typically made of ferritic alloys FeCrAl or Ni-Chrome alloys) that is connected onto a supporting insulation body, such as ceramic tube, ceramic fiber board, insulation refractories, etc. These elements, which are regarded as the most effective, adaptable, and financially viable heating solution, have quick heat-up times due to direct heat transfer to objects via radiation without the need for an insulating layer. This increases productivity and is made with low-maintenance, low-cost replacement parts. The wire emits heat when an electrical current is applied to it.The wire is attached to the control panel, which fills the air handling unit's tunnel and controls how much heat the electric heater produces. It is recommended to utilize SSR or SCR switching devices due to their low bulk and quick response time. They act as a covert way to reduce the need for watt density and stop the degradation of heat-sensitive products. With the option of dispersed wattage, the heater can be shaped into a small, coiled nozzle heater that provides heat in all directions.



Technical details.

Heating Wire/Strip	Ni-chrome Alloys or Ferritic Alloys FeCrAl
Watt Density	Up to 5 W/cm²
Operating Temperature	Up to 1100°C
Length	Customize
Controls	SSR/ SCR/Relays/RTD
Terminations	Customized
Fixing	Mount on ceramic tube, ceramic fiber board or insulation refectories.

Applications.

- Direct furnace heating application
- Muffle furnaces application
- Air heating
- Heating in a vacuum environment

Benefit.

- Fast heat up time
- Low maintenance cost and easy replaceable
- Low cost because of no need extra accessories.

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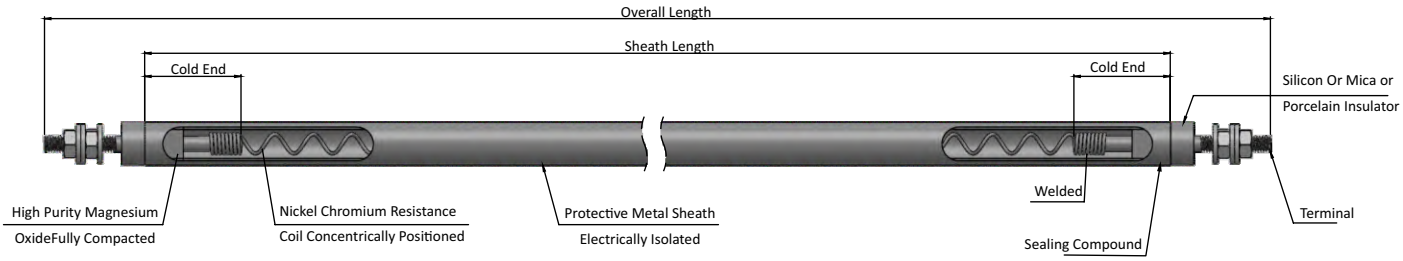
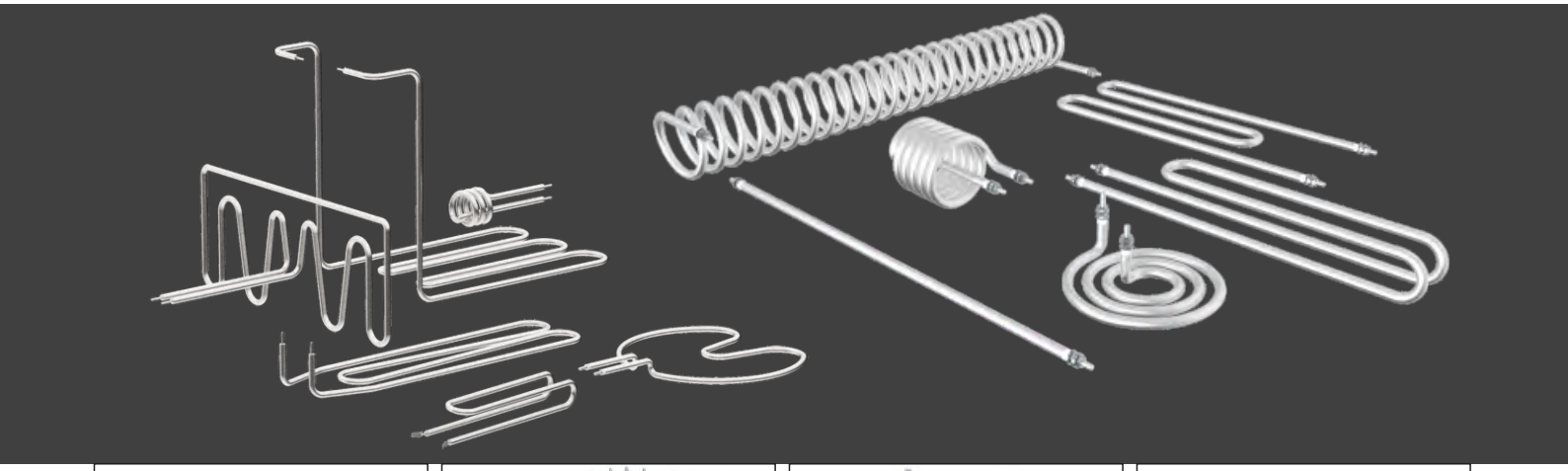
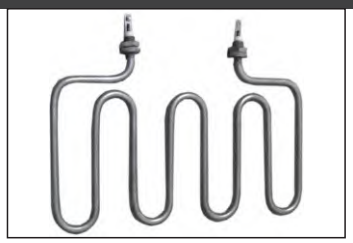
Construction



- Tubular heating element consists of a resistant nickel chromium wire type 80/20 inserted into a protective metal tube (outer sheath) filled with high purity electro-melt Magnesium oxide (MgO). The assembly will be compacted by rolling/swaging process to ensure excellent heat transfer. Each edge of the sheathed component consists of a non-heatingzone, where the electrical connection is made.
- The electric heater is custom-made with a maximum length of 10500 mm, along with different diameters (8, 11, 12.50,
- 13.50& 16 mm).
- Material of construction : Steel (ERW /seamless).
- Stainless as per ASTM Grade 304/304L/310/316/ 316L/321 Alloys 600, 625, 640, 800, 825, 840.





Technical Details

Material of outer sheath	Application
Stainless Steel	Immersion Heating's in Water, Alkaline cleaning solutions, Tars, Mild Corrosive liquids, food processing equipment, Indirect and Radiant heating Air heating/ Gas heating. Hopper & tank heatings Large process plant applications.
Alloy 800	Cleaning and degreasing solutions, Corrosive liquids / gases. High temperature / High pressure
Alloy 600 series	Plating and pickling solutions, acid
Titanium	High Corrosive liquids
Temperature	Upto 1800°F

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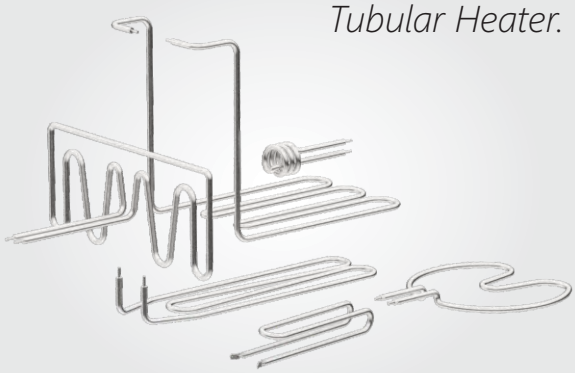
Process Heaters.

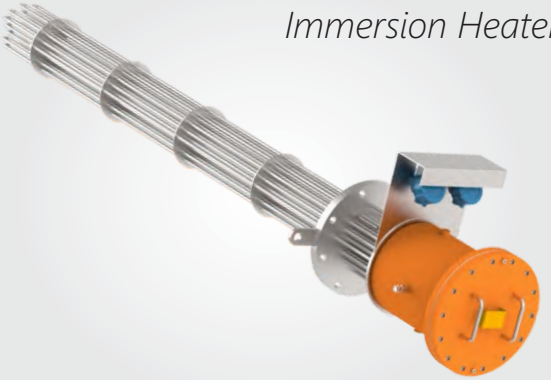
Tubular Heater.



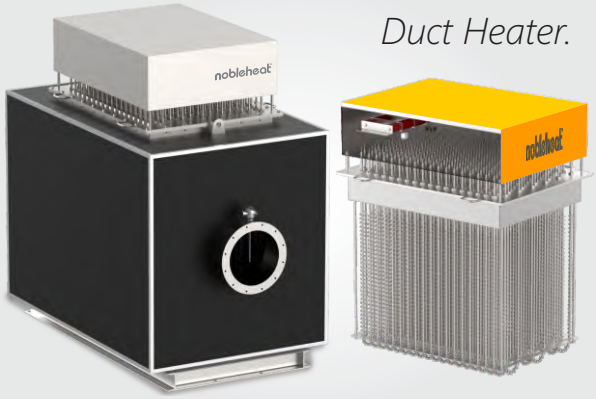
Finned Tubular Heater.

Screw Plug Heater.

Immersion Heater.



Duct Heater.



Circulation Heater.

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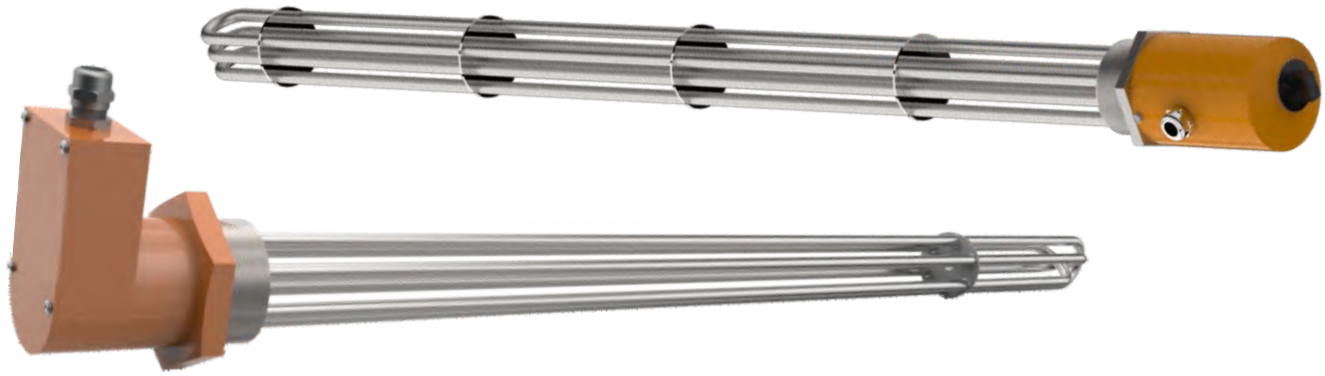
Screw Plug Heaters

Screw Plug Heaters are smaller version of Immersion Heaters in which heater flange in replaced with a Threaded Plug. A Single or multiple tubular heating elements are fitted into a thread hexagonal head which are then screwed directly through a threaded coupling in the tank wall or vessel, or installed at process line.
Screw plug heaters are an easy way to heat up solutions in smaller containers that may or may not require auto control on temperature. The Heaters can be installed either horizontally or vertically in the tank. The heater is compatible for both Single phase as well as three phase power supply.



Technical Details

Sheath Material	SS , Alloy 600 series, Alloy 800 series, Hastelloy, Titanium, copper etc
Rating	0.1kW to 50kW
Screw Plug Material	CI, Carbon steel, Brass, SS etc
Screw Plug NPT fittings	1", 1.1/4", 1.1/2",2",2.1/2", 3" (BSP/ NPT) or equivalent Metric threads
Voltage	120 to 690V AC Single phase or three phase
Terminal Enclosure	Safe / Hazardous
Control	Thermostat/RTD/Thermocouple.

Utilization

- Crude oil / HFO / Lubricant Oil Pre Heating in the tanks.
- Clean Water heating.
- Alkaline and corrosive solvent heating.
- Water & other liquid Vaporizers.
- Gas heating Systems.
- Pre Heaters.
- Anti condensation heating in the motors.
- Oil pre heating in compression units.
- Solar water baths.
- Chemical heatings.
- Storage chamber heating.
- Small ovens1

- **Sheath selection datasheet:** The different sheath materials used in these heaters have different watt densities and operating temperatures.
- **Stainless Steel:** Maximum operating temperature is 1200°F INCOLOY: Maximum operating temperature is 1600°F.

Benefits

- Efficient Heating and Reliable Design.
- Easy to insta.
- Easy to Regulate & Maintain.
- Lower Cost of Maintenance.
- Energy Efficient.

Note: Watt density depends largely on the fluid to be heated and it can vary anywhere between 0.7w/cm² to 15W/cm².

Immersion Heater

Industrial immersion heaters are used widely in all kind of industrial applications such as chemicals, liquids, gases and food processing industries. The immersion heaters are also used in special applications in petrochemical industries such as Flare KO drum heating application and other heating applications in power as well as nuclear applications.

Immersion heaters are designed and constructed in various forms based on the application and mounting requirement. Some of the common types of immersion heaters are.

Direct Immersion heater

The heater bundle will be directly mounted inside the Tanks & process fluid will be directly in contact with the process fluid.

Indirect Immersion Heater

The heating elements will be mounted inside the pockets welded to tube sheet. The heat from the elements transferred to the pocket tubes and in turn to the fluid. These kinds of heaters are used in large storage tank heaters, in which heater replacement can be done without draining the complete system.

L Shape Heater

In some critical process where the heater is required to be mounted vertically but also expected to cover maximum tank area horizontally or at bottom of the tank, the "L" shape heaters are best preferred design.

Benefits

- Versatile, Eco-friendly Heating: Efficiently heats various volumes, reduces fluid viscosity, and emits no harmful gases.
- Precise, Compact & Safe: Offers accurate temperature control, fits small spaces, and meets high safety standards.
- Reliable, Energy-Saving & Low Maintenance: Dependable, energy-efficient design with easy upkeep and convenient tankless repairs.

Utilization

- At large Storage Tanks for pre heating of thick fluids.
- Oil Heating (crude, Thermic fluids, and other Process fluids etc in storage tanks)
- Water heating applications & vaporizer System.
- For reducing the viscosity of the fluid and make it suitable for pumping out.
- Steam Boilers.
- Oil cooling systems & compression packages.
- Edible oil heating for food industries.

Industries We Cover

- Oil & gas.
- Refinery & petrochemicals.
- Crude oil, Bitumen & other oil storage facilities.
- Power plants.
- Chemical & fertilizers.
- OEM's (compressor, skids, boilers etc).
- Steel plants & auxiliary units for oil heating in storage facilities.
- Aluminum plants & Auxiliary Units.
- Food & beverages.
- Water treatment facilities.
- Nuclear & defense.
- R&D.

Air Duct Heater

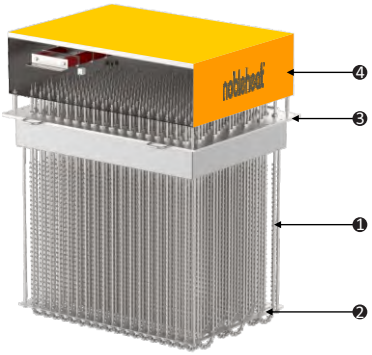
Electric tubular heating elements are commonly used to heat air in ducted systems primarily for air drying purposes in various industrial applications.

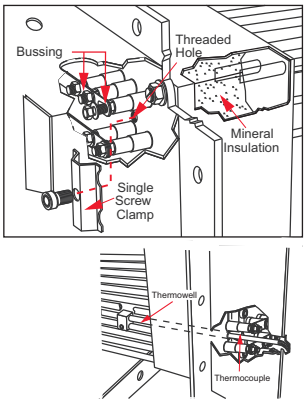
Duct or air heaters are used in heating ventilation and air-conditioning systems (HVAC) in residential and industrial complexes, as well as in hotels, airports and stadiums etc. for the purpose of maintaining

temperatures. The same system is applied in offshore environments. In industrial applications such as power plants and painting applications, the duct heaters are used for the applications which required hot air purging, or drying purpose.

Construction :

- Heating Elements:Tubular: Sheathed for protection in harsh, high-temp settings; safer.
- Finned: Tubular with added fins for better heat transfer.
- Open Coil: Exposed wire for quick, high-temp heating.
- Support Baffle: Holds elements, reduces vibration.
- Mounting Plate: Attaches elements to the duct; customizable.
- Terminal Box: Houses element wiring; safe or flameproof options.





LDH SERIES

D SERIES

Technical Details and Allowances :

- Energy-efficient.
- Secure Design.
- environmentally friendly, free of harmful smoke and the production of NOx and SOx gases.
- Resistance against oxidation and corrosion.
- Easy-to-use system Simple to use and install.
- long-lasting and simple to maintain.
- The risk of electric shock is eliminated by rugged construction.
- A reinforced frame minimizes vibration.
- little loss of heat.
- Very little footprints are necessary.
- It requires minimum access to install in any existing ducting.

Qualities and Benefitss

- Paintings, pellet drying, and drying application in process are examples of air drying operations.
- Equipment for handling air.
- Control of Humidity.
- The building's comfort air heating (HVAC).
- Drying of the Core

Typical Industries Include

- Power plants.
- Automobiles.
- Chemical.
- Onshore and offshore platform facilities.

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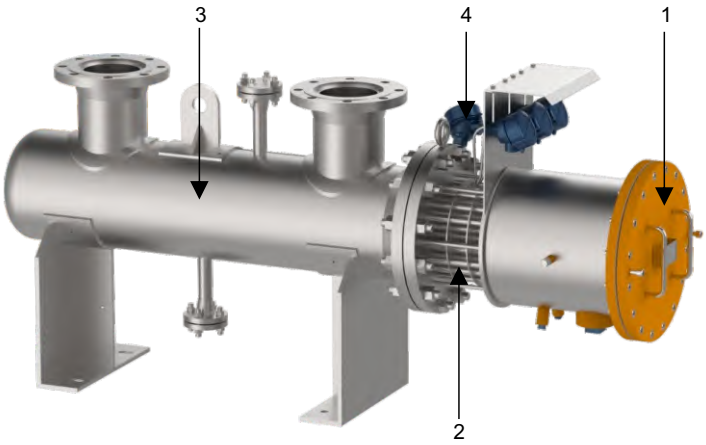
Circulation Heaters

A circulation heater is a compact electric unit where a heating element bundle sits inside a pressure vessel. It rapidly heats flowing process fluids, managing pressure and element temperature. These systems are customizable (single/multi-stage, vertical/horizontal) to fit specific process needs.

Construction

1. Terminal Enclosures: Protect electrical connections in all environments.
2. Heater Bundle: U-pin elements with supports, designed for safe temperatures and flow, secured to the flange. Heat duty can be banked for control
3. Pressure Vessel: ASME-compliant shell with nozzles, single or multi-stage, vertical or horizontal Insulation recommended.
4. Temperature Sensors: Monitor element skin and other critical temperatures (thermocouples/RTDs) PSV advised for high pressure.
5. Control Panel: Regulates heater operation (thyristor/ON/OFF), displays status, and includes safety interlocks and an emergency stop.



Utilizes

- For industrial applications, to raise the temperature of any fluid from low to high.
- These are the most widely used applications.
- Heating skids powered by natural gas or fuel gas.
- Crude oil, thermodynamic fluids, and other process fluids are all heated by oil.
- Air, nitrogen, hydrogen, argon, fuel gas, flue gas, and so forth are examples of gas heating.
- Applications for water heating and vaporizer systems.
- Boilers that use steam.
- Heating of edible oil for the food industry.

Benefits

- Eco-friendly design. There are no harmful gases, smokes, or emissions coming from the system.
- Compact design for rapid continuous flow heating.
- Both continuous and short-term operation are possible with this device.
- Accuracy temperature regulation.
- Able to fit into tiny footprints.
- Specially made to satisfy requirements.
- Highest dielectric strength and high energy efficiency.
- Compliant with industry-standard safety and plumbing requirements.
- Dependable design.
- Simple to use and low upkeep.
- Conserving energy.

Sectors We Cover

- Gas and oil.
- Petrochemicals & refineries.
- plants that process gas.
- units for air separation.
- power plants.
- fertilizers and chemicals.
- OEMs (such as boilers, skids, and compressors).
- Auxiliary units and steel plants.
- Auxiliary units and aluminum plants.
- Food and drink.

Note: Watt density depends largely on the fluid to be heated and it can vary anywhere between 0.7w/cm^2 to 15W/cm^2.

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Heating Technologies

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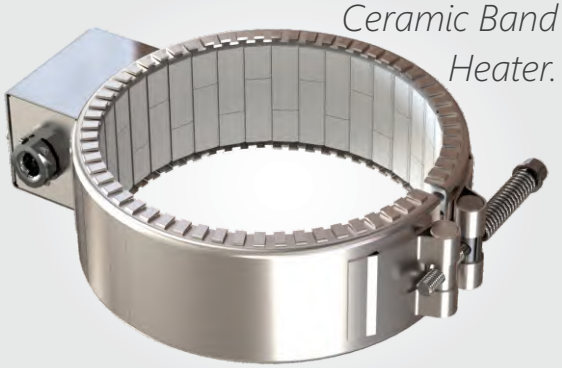
Component Heaters.

Mica Strip Heater.

Ceramic Band Heater.



Cartridge Heater.

Coil Heater.

Air Heater.

Printed & Silicone Rubber Heater

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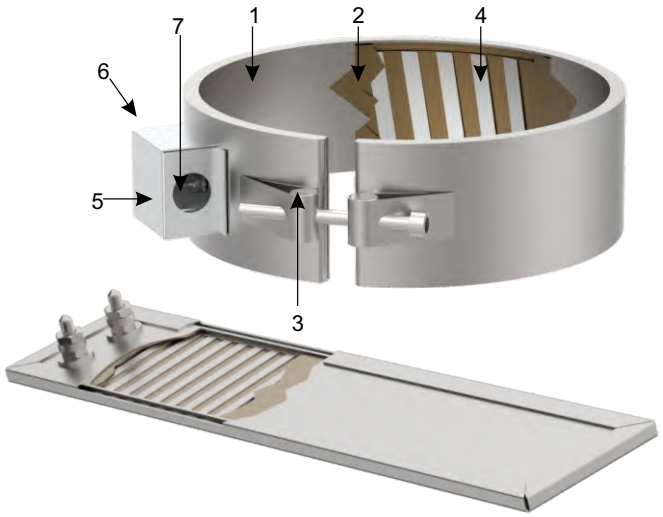
Mica Strip & Band Heaters

Mica Insulated Strip and Band heaters / Plate heaters are sheathed in rust-resistance steel or in stainless steel sheath as it provides physical strength and good thermal conductivity.

Construction

1. **Sheath (SS/Aluminized):** High-temp, corrosion-resistant, excellent thermal conductivity.
2. **Mica Insulation:** Superior electrical insulation, moisture-resistant.
3. **Clamping Band:** Ensures tight contact, no air gaps.
4. **Nickel Chromium** Resistance: Evenly coiled for consistent heat.
5. **Terminal Boxes:** Protect exposed terminals.
6. **Lead Protection:** Optional for abrasion.
7. **Stainless Steel Screw Terminals:** Strong connections, high amperage.



Technical Details

Sheath Material	Stainless Steel, Galvanized Iron
Max Sheath Temp.	425 °C
Voltage	120 V & 240 V, single phase, 2 phase and 3 phases
Watt density	up to 45w/in2
Minimum diameter	2″
Minimum width	1″
Wattage tolerance	+5%, -10%
Resistance tolerance	+10%, -5%

Features And Benefits of Mica Heater.

- Available with or without mounting tabs.
- Easy and economic to install.
- Corrosion and vibration resistant .
- Durable, versatile and easy to control.
- Uniform Heat Distribution.
- Suitable for low to medium temperatures.
- Various shape options in Good lifetime.
- Mica strip heater.
- Low cost.
- Reasonably high temp
- Less in thickness.
- Good efficiency.

Utilization

- Blow Molding.
- Rubber plate that has been heated.
- molding by compression.
- inks that are heated.
- bars for sealing.
- warming food.
- sealing and packaging.
- equipment for laboratories.
- Ovens and hot plates.
- Extrusion and Injection of Plastic.
- Moulding procedures and oil lubricating units.
- External Vessel and Tank.
- Food processing industries, chemical industries, and blown film dies.
- Heating in the Plastic Processing Industry.

Simulation of Heavy Machinery

1. Nickel Chromium Resistance Ribbon wounded for even heat distribution.
1. Mica Strip specially selected heater life.
2. Mica Insulation high grade for excellent thermal conductivity.
3. Stainless steel sheath resistance in wide variety of environment. Suitable temperatures as high as 650°C.

Special Heater Design Options

Mica Heaters can also be designed in various shapes such as Disc shaped, ring shaped or any irregular shape.

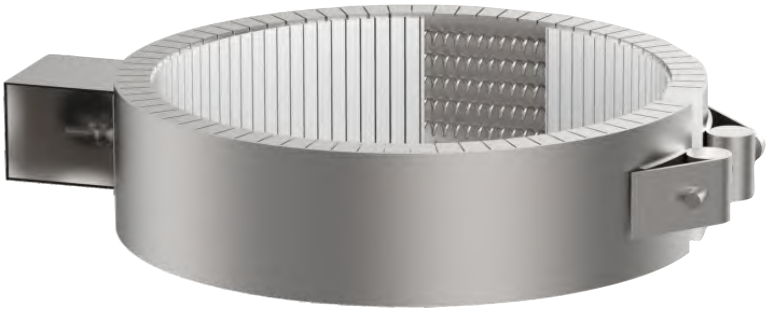
nobleheat™

Ceramic Strip & Band Heaters

Ceramic Strip and band heaters are medium-to-high temperature heaters that have 648°C as a maximum working temperature. These durable heaters can have optional in-built ceramic fiber jackets that make them energy efficient. Ceramic band heaters are. available with different terminal styles, are fully flexible, and can accommodate holes and cut-outs In a ceramic band heater, nickel-chrome wire is embedded in a flexible outer wall made of special, interlocking ceramic tiles (KNUCKLES) , which are assembled like a brick wall. A ceramic fiber insulating mat and a stainless Steel/Aluminised Steel jacket cover this assembly. This construction prevents heat loss and reduces electrical consumption by 20%.

Construction

1. **Sheath (SS/Aluminized):** Oxidation-resistant; SS 304 or aluminum-coated.
2. **Screw Terminals:** Secure, high-amperage connections.
3. **Terminal Box: Protects terminals from spills**: diverse types.
4. **Resistance Wire:** Uniformly wrapped 80/20 Ni-Cr for even heat, long life.
5. **Ceramic Fiber Insulation:** High-temp resistant.
6. **Ceramic Knuckles:** High-purity aluminum oxide for superior heat transfer, dielectric strength, and thermal conductivity in wrapping.



Utilization

- Blow Molding.
- Rubber plate that has been heated.
- molding by compression.
- inks that are heated.
- bars for sealing.
- warming food.
- sealing and packaging.
- equipment for laboratories.
- Ovens and hot plates.
- Extrusion and Injection of Plastic.
- Moulding procedures and oil lubricating units.
- External Vessel and Tank.
- Food processing industries, chemical industries, and blown film dies.
- Heating in the Plastic Processing Industry.

Features and Benefits Ceramic Heater

- Reduced expenses for operations.
- Good transfer of heat.
- Increased operating temperature.
- Adaptable and simple to install.
- Extended lifespan of the heater.
- Available with mounting tabs or without.
- Installing it is inexpensive and simple.
- Resistant to vibration and corrosion.
- Robust, adaptable, and simple to manage .
- Equal Heat Distribution.
- Ideal for warmer temperatures.

Simulation of Heavy Machinery

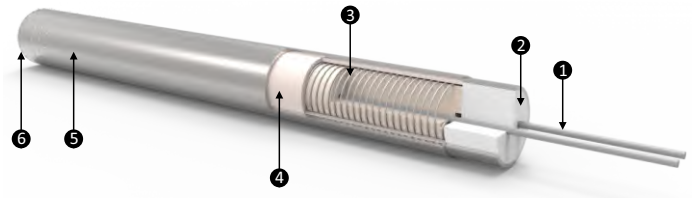
1. Nickel Chromium Resistance Ribbon wounded for even heat distribution.
1. Mica Strip specially selected heater life.
2. Mica Insulation high grade for excellent thermal conductivity.
3. Stainless steel sheath resistance in wide variety of environment. Suitable temperatures as high as 650°C.

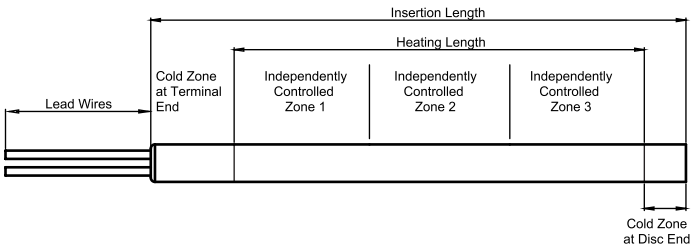
Special Heater Design Options

Ceramic Heaters can also be designed in various shapes such as Disc shaped, ring shaped or any irregular shape.

Hot Rod Cartridge Heaters :

Provide uniform, high heat transfer. Adjustable heating zones allow precise, varied temperature control. Designed with minimal internal space for lower operating temperatures and higher watt densities in smaller units.





Technical Details :

Sheath material : Stainless steel, incoloy.
Design temperatures UPTO 760°C (1400°F).
Watt densities of up to 300 W/in2.
Maximum Voltage up to 480 V.
Sheath Length tolerance is ±3%.
Wattage tolerance is +5%, -10%.
Resistance tolerance is +10%, -5%.e.

Teflon Seal.

- When an efficient seal against moisture and oil contamination is needed, Teflon seal is utilized. To create an efficient barrier, Teflon lead wire and Teflon seal are combined.

Epoxy Seal

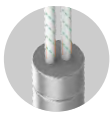
- Compared to silicon rubber, epoxy potting creates a better moisture seal with greater mechanical strength. Epoxylite is rated at 600°F (316°C), while regular epoxy is rated at 350°F (177°C).

Silicon Rubber Seal

- When used with silicon rubber lead wires, a high temperature silicon rubber seal effectively seals moisture up to 400°F (200°C). Out of all the moisture sealants, it is the most impenetrable.

Cement

- Although it is not waterproof, it offers defense against some heavier liquids and dust. Additionally, it can shatter in applications with severe vibration or impact because it is rather brittle. used at temperatures as high as 1425°C (2600°F).



Construction

1. Lead Wires: Withstand up to 550°C.
2. High Impact Ceramic Cap: Resists vibration and contamination; prevents lead fraying.
3. Ni-Cr Resistance Wire: Uniformly wrapped for even heat and longevity.
4. MgO Fill: Highly compressed for optimal heat transfer, dielectric strength, and thermal conductivity.
5. Inconel/SS Sheath: Resists corrosion and oxidation.
6. TIG-Welded End Disc: Prevents moisture and contamination.

Thermocouple

Internal thermocouples, which aid in more precise temperature control, can also be accommodated by cartridge heaters. Types of thermocouples include "J" or

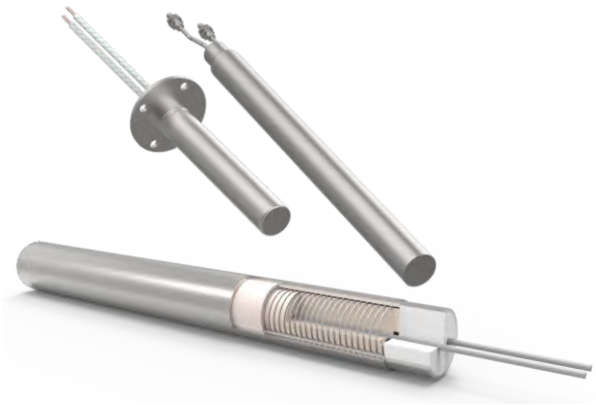
type "K," which can be connected to the heater's disc end or center, and is either grounded or ungrounded.

Unless otherwise noted, thermocouple leads are of the same length and the lead wire is 24 gauge.

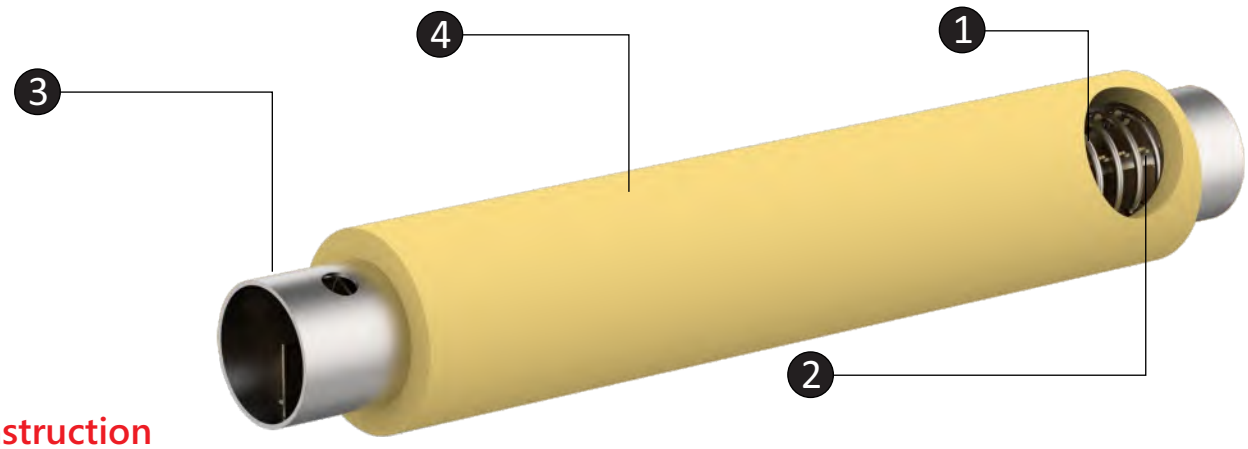
Utilization

Double Ended

- Additionally, hot rods with electrical termination are offered. heating in a semiconductor chamber.
- die bonding with semiconductor wire.
- Equipment in cold environments or applications should be freeze protected and deiced.
- regulation of humidity.
- Medical gadgets that use heating for patient comfort.
- Die casting of metal
- Equipment for packaging uses seal bars.
- equipment for glass formation at high temperatures.



An open coil of high resistance wire that is electrically isolated within a stainless steel sheath is a feature of air heaters manufactured by NobleHeat. The most cost-effective and efficient form of electric heating is one which uses an open coil. It offers a quick heat-up time and increased efficiency since it exposes the maximum heating element surface area directly to the airflow. Its design makes maintenance easier and replacement parts simple and affordable.
It is made of premium coils of nickel chromium wire. put in the middle of an SS304 sheath, evenly wound on a mica sheet, and electrically isolated by a layer of flexible mica wrapped inside the sheath. Hot air dryers frequently use these heaters.



Construction

1. **Chromium and nickel Coils**, of resistance wires for optimal heater life that are uniformly coiled for uniform heat distribution.
2. **Mica sheets**, which are dielectric, lightweight, durable, and stable at high temperatures, are used to hold coils in place.
3. **Sheath made of stainless steel**, for strength and resistance to corrosion.
4. **Low heat conductivity and excellent thermal resistance,** are achieved using glass wool insulation.
5. **Teflon-coated thermistor and control cables**, provide excellent insulation and are appropriate for high-voltage applications.
6. **Mica insulation** separates the high resistance coil from the sheath thanks to its dielectric properties.

Technical Details

Sheath Material	SS-304/SS-202
Sheath Outer Diameter	63.5 mm, 101.6 mm
Wattage	Various Wattage available ranging from 2 kW to 30 kW
Watt Density	Up to 77 W/inch2
Glass wool Insulation	Up to 1200°C
Wattage tolerance	+5%, -10%
Resistance tolerance	-5%, +10%

Benefits

- Quick heat-up time.
- Enhanced effectiveness.
- Little upkeep.
- Installation is simple.
- Simple and affordable replacement.

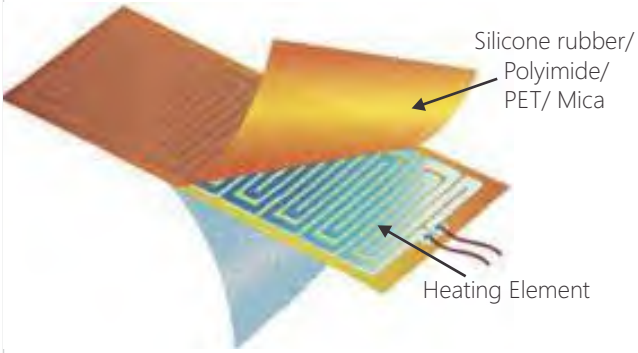
Utilization

•Hot Air Dryer

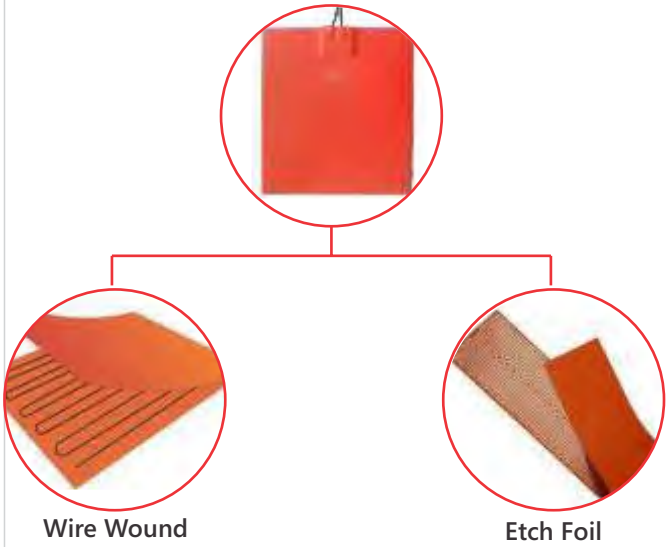
Take note :

For bespoke design needs, please get in touch with us.

Nobleheat Silicone rubber and Printed flexible heaters can be customized in various shapes and sizes. Nobleheat developed the flexible heaters through etching, laser cutting, wire wound and screen-printing techniques. The thin design and direct bonding to the application facilitates efficient and rapid heat transfer resulting in faster heating and lower wattage requirement. The PTC printed heater runs off the high voltage battery to maximize the power delivered to the heater.



Types
(As per Fabrication)



Structure Of Silicone Rubber Heaters

The silicon rubber heaters can be easily structured in any shapes, sizes, and dimensions. Manufactured with wire or etched foil heating circuits placed between two reinforced high-strength fiberglass mesh with silicone rubber. These heating solutions are available in varying watt densities, dual voltages and multiple heated zones. The thermostat/ thermocouple/ RTD is enclosed in a molded silicone rubber housing and permanently attached to the heater.

Base Material:

Silicone rubber/ Polyimide/ PET/ Mica
Heating Element: Steel, Nickel-chrome non-magnetic alloys, Copper, Constantan, Aluminum etc

Design Option

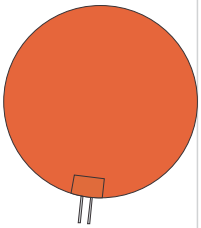
Nobleheat Heater offers several design options to meet various application requirements.

Ground Mesh

For grounding purpose a second layer of insulating material and a conductive grid can be added to the heater. The heater comes with a ground wire

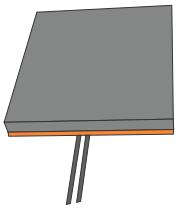
Round Heaters

Round shapes are also available. Round heaters are best attached to tooling with PSA.



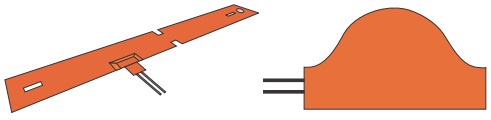
Silicone Rubber Sponge Insulation

To improve heater efficiency, 1/16", 1/8", 1/4", 3/8" or 1/2" insulation can be bonded to the outside of the heater. Closed cell silicone sponge is extremely flexible and has a Temperature range of "-75°C to 250°C".



Various Shapes for Various Applications

Odd shapes are available to fit those hard to heat devices. Holes and cutouts help fit those irregular shaped tools.



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Flexible Heaters

Design Option

Silicone Rubber Enclosure Heaters

Enclosure heaters are used to maintain temperature in any type of electrical box. Typical applications include ATM's, control boxes, traffic signals, utility boxes, cabinets and switch gear. Enclosure heaters are excellent for controlling humidity or moisture within an electrical box. Silicone rubber heaters are typically mounted to an aluminum plate and have an ambient sensing thermostat.

Other Design Options

Dual Voltage •
Three Phase •
Distributed Wattage •
Thermocouples •
Thermostats •
Temperature cut-off •
Pull tabs •

Mounting Method

Field applied adhesive

SRH may also be attached with field applied adhesive, Marathon Heater will supply the required RTV to adhere the heater to the desired surface. We offer a room temperature curing adhesive. Apply a thin film of RTV on the entire bottom of the heater. After positioning the heater on the part, use a roller to remove all air trapped between the heater and the part. The RTV should be allowed to cure for 24 hour.

Pressure Sensitive Adhesive

There are several options for installation or mounting Silicone Rubber Heaters. An easy mounting method is to peel and stick. PSA is attached directly to one side of the heater. Just peel away the protective liner and attach the heater to the desired tool. It is not recommended for curved surfaces. The heater should be installed within 6 months of manufacture.

Factory Vulcanizing

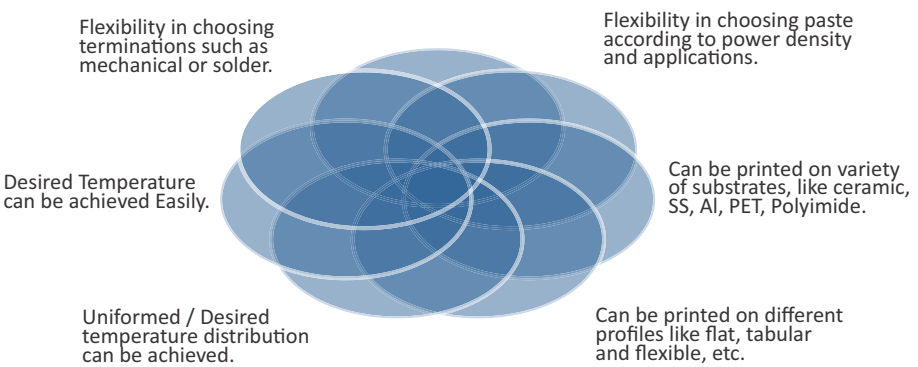
Another method of installation is to send your tool to the Marathon Heater factory. The tool is placed in a vacuum able and the SRH is vulcanized directly to the tool. This is the strongest bond available.

Specifications

	Polyimide (Kapton)	Silicone	PET
Max Operating Temp (^{0}C)	230°C	200°C	100°C
Min Operating Temp	-60°C (-76°F)	-55°C (-70°F)	-40°C
Nominal Thickness	0.15 mm	1 mm & 1.6 mm	0.15 mm
Dielectric Strength	300 V/mil	400 V/mil	1000 V/mil
Watt Density	10 W/in2 (1.55W/cm2)	10W/in2 (1.55W/cm2)	3.5W/in2 (0.55W/cm2)

Flexible Printing & Thick Film Heaters

The Printed heaters are warming elements that are screen printed on flexible materials. Their main goal is to add heat to a product. The use of precision screen printing helps to print conductive or resistive inks onto a flexible material. Printed heaters can have several benefits within the automotive and aerospace industries.



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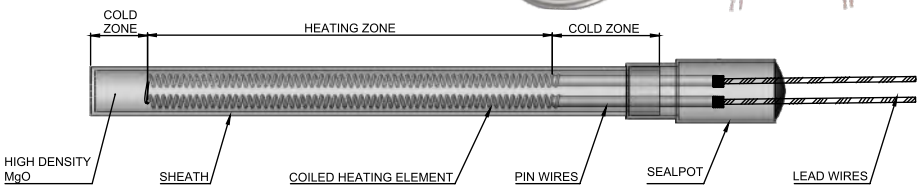
Coil Heaters

Coil heaters are an advance concept of thermal engineering, is also known as high performance tubular heaters or cable heaters. The basic construction of these heaters consist of compacted MgO, high temperature resistance wire and Chrome Nickel Steel tube. These heaters can be constructed with or without built in thermocouples.

Construction :



- For the longest longevity, use a nickel-chromium-resistant wire.
- For optimal dielectric strength and thermal conductivity, high-purity magnesium oxide fill was chosen, and it was compacted to maximize heat transfer.
- Inconel or stainless steel sheaths are resistant to corrosion and oxidation in a wide range of environments.
- Type 'J' and type 'K' thermocouples for accurate temperature control Coil heaters come with different clamping choices, exit styles, coil configurations, and termination options.

Termination of Lead Wire Protection:

- Stainless Steel Braid: This type of braid allows the leads to bend within a precise radius while offering superior abrasion protection.
- Stainless Steel Flexible Conduit: Although flexible conduit can't bend as sharply as stainless steel braid, it offers the best protection against abrasion for leads.
- Fiberglass sleeving gives lead wires greater flexibility and protects them from abrasion.

Utilization :

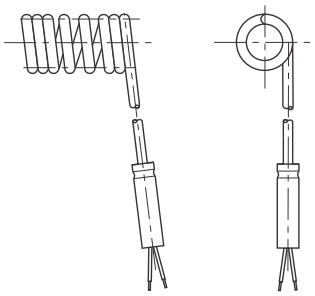
- Die Casting Machine for Zinc.
- Packaging machines with jaws and a sealing bar.
- Machine nozzles used in the die casting and plastics industries.
- Bushings, distribution plates, and nozzles make up the hot runner system.
- Extrusion of tubes.
- Forming pipes.
- heating of a small manifold.

Options for End Seals

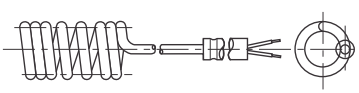
- **Teflon Seal:** When an efficient barrier against moisture and oil contamination is needed, Teflon seal is utilized. To create an efficient barrier, teflon lead wire and teflon seal are combined.
- **Silicon Rubber Seal:** Up to 400°F (200°C), a high temperature silicon rubber seal combined with silicon rubber lead wires effectively seals moisture. Out of all the moisture sealants, it is the most impenetrable.
- **Epoxy Seal:** Compared to silicon rubber, epoxy potting creates a better moisture seal with greater mechanical strength. Epoxylite is rated at 350°C, while regular epoxy is rated at 260°C.
- **Although** it is not waterproof, cement potting offers defense against some heavier liquids and dust. Additionally, it can shatter in applications with severe vibration or impact because it is rather brittle. utilized at temperatures as high as 1425°C.
- **Glass Seal:** Suitable for temperatures up to 1200°C, glass seal effectively prevents moisture and oil contamination.

Types of Termination Exits

Tangential



Axial



Benefits :

- high prominence of heating in small areas.
- Excellent performance and cost-effectiveness.
- Accurate temperature regulation.
- quick reaction time.
- A thermocouple that is integrated.
- offered in a range of exit and coiling types.

nobleheat™

AN ISO : 9001-2015 CERTIFIED CO.

NOBLE HEAT
C-12/423, Yamuna Vihar, District North East, Delhi - 110053
Hotline +91-81 91 91 91 84, 9212634030,
E-mail : info@nobleheat.com, sales@nobleheat.com

nobelheat.com