

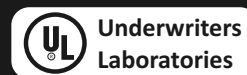


Thermal and Cable Solutions

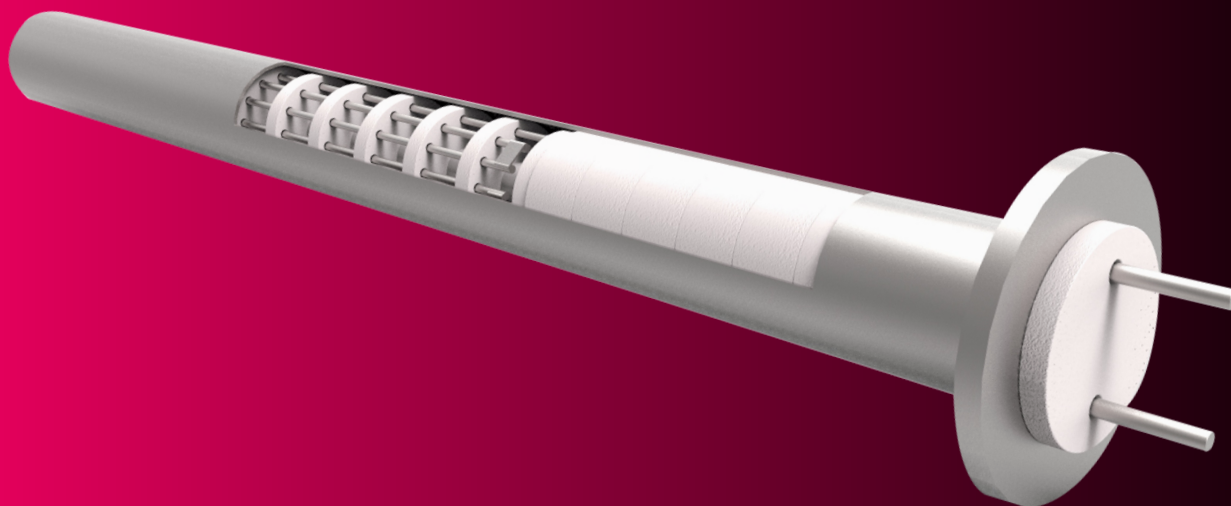
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BUNDLE ROD HEATER



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BUNDLE ROD HEATER

Marathon make Bundle rod heater as the name suggests, consists of circular ceramic disc that hold the heating elements. In combination with the radiant tubes which delivers high power, avoid refractory corrosion and avoid the

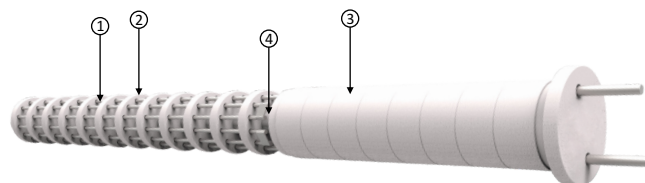
gas impurity in process materials. These design for long life and maintenance free operation. The element can be provided in ferritic alloys up to 1250° C and NiCr alloy up to 1100°C materials.

Technical Specifications

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

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



Note : For custom design requirements please contact factory

Marathon Heating Element Mara FeCrAl

Physical And Mechanical Properties Of Ferritic Alloys & Nicrome Element

Heating Element Grade		Mara FeCrAl-Super	Mara FeCrAl-60	Mara FeCrAl-55	Mara FeCrAl-48	Mara Nichrome-80/20
Standard chemical composition%	Al	6	6	5.5	4.8	Ni-80
	Cr	23	23	23	23	20
	Fe	Balance	Balance	Balance	Balance	0
Max continuous operating temperature	°C	1420	1400	1300	1200	1200
Melting point	°C	1500	1500	1500	1500	1400
Electric resistivity at 20°C	μΩ-m	1.45±5%	1.45±5%	1.40±5%	1.42±5%	1.08±5%
Density	g/cm3	7.1	7.1	7.2	7.2	8.4
Thermal expansion factor 20°C ~ 1,000°C	°C-1	14.8x10-6	13.6x10-6	13.6x10-6	14.8x10-6	17.6x10-6
Tensile strength	N/mm2	650~900	650~900	650~900	630~850	700~900
Elongation	%	15~25	15~25	15~30	10~30	20 or more
Hardness	Hv	220~240	220~240	220~240	220~240	150~190
Repeat bending frequency	F/R	≥5	≥5	≥5	≥5	
Continuous service time	Hours/°C	≥300/1300	≥300/1300	≥300/1300	≥100/1300	≥300/1200
Magnetic properties		Magnetic	Magnetic	Magnetic	Magnetic	Non-Magnetic

BUNDLE ROD HEATER

Advantages

- Reduces CO₂ emissions by eliminating flue gases and controllable aural various heat treatment furnace, to avoid the contact of burning outcome or to avoid the corrosion of furnace gas to heating element
- The control of temperature, assemble and maintenance are very convenient and can be easy to seal.
- Strong heating ability and high efficiency
- The refractory steel materials save.
- Horizontal or vertical mounting
- Minimized environmental impact
- Longer working life and better technical properties
- Higher surface load & resistivity
- Free from oxide debris
- Economic cost with High watt density output.

Special Technique by Marathon for Radiant tube Heater

- Marathon applied special Boron nitride coating on Radiant tube and Hangers for prevent impurities in the furnace atmosphere (specially aluminium /zinc holding & melting furnaces) for instance flux fumes, dust, oil, volatiles, salt, sulphur, chlorine or carbon deposits can damage/puncture the radiant tube and inside heating element.
- One of the Most important design is using Straight Element in place of U Element to protect Element shorting at High Temperature
- Special Low weight high Temperature Ceramic (Special combination of High Purity Alumina and Cordrite) which gives High Strength at High Temperature and Low weight so stress on tube is less.
- Special Technique to join Terminal Rod and Center Rod with Additional Protective rods.

Bundle Rod Heater Accessories

Bundle rod heater use with combination with the radiant tubes which delivers high power, avoid refractory corrosion and avoid the gas impurity in process materials.

Radiant Tube	Stainless steel SS grade, Incoloy, PMD, Cast alloys
Thickness of Tube	1.5 to 8mm
Length of Tube	300 to 5000mm (customize diameter & length)
Hangers	NiCr 80/20
Flange	MS, SS grade
Thermocouple Pocket	Alumina Tube(ceramic)
Control	Thermocouple, RTS's, Thermostat for temperature controlling

Application

- Primary aluminium holding and melting furnace
- Galvanizing furnace in steel industries
- Heat treatment furnace in automotive industries
- Annealing furnace
- Carburizing furnace

Accessories

