

nexthermal[®]
smart heat management

Coil Heater Solutions

www.nexthermal.com



who is Nexthermal?



Nexthermal is a new name for a company that has focused passion and energy toward the creation of electric heating elements, systems and engineering services since 1986.

Nexthermal solves heating application challenges and creates dramatic process capability improvements for our customers.

Our customers' requirements, product development plans and competitive position in the marketplace drive our smart heat management innovation. Ingenuity, collaboration and a sense of urgency converts concepts to products and capabilities.

***If heat is vital to your process...
add *Nexthermal* to your team!***

Hotset Corporation established in Battle Creek, Michigan as a separate entity and strategic partner to Hotset GmbH

Initial cartridge heater produced

U.S. coil heater production launched

Pressed in Brass coil heater introduced

Production facility expanded

Heater based assemblies unveiled

1986

1991

1998

2002

2003

2004



As you engage **Nexthermal** our goal is that you conclude we are:

Approachable — Welcoming discussion, highly interested in the details of your application. Sincerely committed to helping you succeed.

Dynamic — Responding with a sense of urgency, proactively anticipating and planning for challenges, demonstrating agility that incorporates your input and experience to accelerate the best solution.

Knowledgeable — Our application experience, ability to understand your process, generating market driven solutions should lead you to clearly see that Nexthermal is your heat management expert.

International — United States roots with a global reach. With customers and strategic partners worldwide Nexthermal has the resources to generate the right solution delivering world class benefits well beyond your investment in our products and services.

Manufacturing in Bangalore, India; introduced anti-seize coating and highly moisture resistant coil heater head

Hollow circulation heater invented, targeting electric vehicle, medical and food production markets

Renamed Nexthermal to emphasize commitment to heat management solutions worldwide. Location, ownership, manufacturing facilities and staff remain the same. Introduced sheet energy efficient cartridge heaters

Selected as the exclusive Elstein marketing agent in the United States; Engineering Services Team created

Nexthermal coil heaters... your smart heat management choice.

■ Nexthermal coil heaters are designed to deliver excellent performance in demanding applications. Factors such as movement, moisture, dimensional tolerances, operating temperature, material being heated and environmental conditions will impact the design of the coil heater. When we work together with you to build the right heater for your application — we design the most cost effective process improvement solutions you can implement.

Nexthermal's committed to deliver the best heater for your application — a coil heater built specifically for your need.



Critical engineering decisions dramatically improve your heater's performance including: product quality, cycle time, response rate and durability.



**Nexthermal manufactures heaters with
better components, materials and precision...**

- Design intent to maximize thermal efficiency and heat transfer.
- Unique ceramic cores designed to precisely position resistance wire avoiding twisting commonly seen on other coil heaters.
- Our standard stainless steel sheath is SS321 for improved corrosion resistance. (Nickel 200 is also available on mini coil heaters)
- Flat surface for better contact and better improved heat conduction.
- Computer controlled resistance wire winding for tighter ohms tolerance.
- Technical support and simulation program to understand your application and design a heater with your specific use in mind.
- Nexthermal has attained and maintained ISO 9001 since 2000.

Many customers have told us that we are more responsive with quotation timing, sales order confirmation timing and shorter build to order and wind from stock coil heater lead times than any other heater manufacturer.

Nexthermal coil heaters

■ Nexthermal coil heaters are the number one choice among US Hot Runner Injection Molding OEMs. Nexthermal coil heaters and coil heater assemblies are also the heater of choice for many leading scientific measurement, diagnostic and test OEMs worldwide. To further demonstrate the coil heater's flexibility of use, emerging markets include form fill and seal packaging, top seal packaging, rubber injection molding, liquid heating, electric vehicle systems and medical equipment.



What makes a coil heater unique?

While many believe the name "coil heater" is derived from common winding patterns to heat nozzles, the name is actually related to the internally spiraled resistance wire. This coiled resistance wire greatly increases the watt density a coil heater can carry on the surface of the heater.

Customers have found the ability to concentrate heat specifically where it is required reduces cycle time, improves quality, and expands the capability and accuracy of their equipment.



Form in groove capabilities...

Highly annealed, the coil heater can be formed to hold shape or formed into a slot or groove. Coil heaters have been embedded and cast into functional components to provide protection from cold, or to apply process heat at a critical stage.

Nexothermal coil heater "profiles" ...height and width of a cross section ...are designed to provide the engineer with options to meet size limitations, better hold form, and concentrate heat in a specific area.





smart heat management

mini coil heater



Precise, flexible and moisture resistant...

As OEM engineers face continual pressure to reduce space claim, Nexthermal is responding with advancement of mini coil technology. The Nexthermal mini coil heater contains a precisely wound resistance wire to maximize watt density capability.

The mini coil is extremely flexible, reduces required installation area, and the standard transition head construction is highly moisture resistant. Staggering transition heads allows for smaller wire channel dimensions.

» While originally designed for the Hot Runner Injection Molding industry, mini coil heaters are used in a wide range of markets including, high temperature simulation, packaging, component level deicing, and medical device. Given its precision and flexibility of installation, the mini coil is a heater that can be readily used in prototyping and cost effective at production levels.

maxi coil heater



Durable, high performance...

The Nexothermal maxi coil heater is designed to provide longer service life in high temperature applications and challenging environments. The maxi coil heaters can carry higher watt density. Maxi coils are a high performance large diameter alternative to MI Band heaters, frequently replacing several heaters with one profiled heater.

• The Nexothermal maxi coil heater can be incorporated into a nozzle body assembly to create a high performance, durable solution for Zinc Pressure Diecast applications.



high cavitation mini coil heater



Hotlock coil heater

Nexthermal's next generation Hotlock maximizes high cavitation injection molding performance. Nexthermal's unique locking mechanism precisely positions the Hotlock and holds a replaceable 1mm thermocouple firmly in place.

» Nexthermal has solved common problems associated with this heater style:

- Smallest unheated section, just .250" from tip.
- Smaller net outer diameter allowing for closer drops
- Nickel-coated inside diameter for easier removal



Axial Clamp coil heater

Axial Clamp mini coil heaters positively clamp the heater against the nozzle. The application of physical theory and unique cam design ensure Nexthermal Axial Clamp heaters deliver excellent heat transfer and durability. The axial clamp heater can be tightened with one allen screw in front, compared to two on the side of a flange lock up heater. Tightening and removal is greatly simplified.

Standard Hotlock and Axial Heaters

Build-to-Order Hotlock

Diameter	Width Minimum	Width Maximum	Wattages	Voltage Max
"3/4" "(19.05mm)"	30mm	210mm	100W-450W*	240V
"7/8" "(22.22mm)"	30mm	110mm	100W-450W*	240V

*Wattage capabilities depend on size of heater, contact Nexothermal for design assistance.

Hotlock Stock List

Part Number	Diameter	Width	Watts	Volts
HL30220	"3/4" "(19.05mm)"	30mm	220W	240V
HL30268	"3/4" "(19.05mm)"	30mm	268W	240V
HL30350	"3/4" "(19.05mm)"	30mm	350W	240V
HL40220	"3/4" "(19.05mm)"	40mm	220W	240V
HL40350	"3/4" "(19.05mm)"	40mm	350W	240V
HL50220	"3/4" "(19.05mm)"	50mm	220W	240V
HL50350	"3/4" "(19.05mm)"	50mm	350W	240V
HL60220	"3/4" "(19.05mm)"	60mm	220W	240V
HL60400	"3/4" "(19.05mm)"	60mm	400W	240V
HL70220	"3/4" "(19.05mm)"	70mm	220W	240V
HL70400	"3/4" "(19.05mm)"	70mm	400W	240V
HL80220	"3/4" "(19.05mm)"	80mm	220W	240V
HL80400	"3/4" "(19.05mm)"	80mm	400W	240V
HL90220	"3/4" "(19.05mm)"	90mm	220W	240V
HL90400	"3/4" "(19.05mm)"	90mm	400W	240V
HL100220	"3/4" "(19.05mm)"	100mm	220W	240V
HL100400	"3/4" "(19.05mm)"	100mm	400W	240V
HL110220	"3/4" "(19.05mm)"	110mm	220W	240V
HL110400	"3/4" "(19.05mm)"	110mm	400W	240V
HL130220	"3/4" "(19.05mm)"	130mm	220W	240V
HL130400	"3/4" "(19.05mm)"	130mm	400W	240V
HL150220	"3/4" "(19.05mm)"	150mm	220W	240V
HL150400	"3/4" "(19.05mm)"	150mm	400W	240V
HL170220	"3/4" "(19.05mm)"	170mm	220W	240V
HL170450	"3/4" "(19.05mm)"	170mm	450W	240V
HL190220	"3/4" "(19.05mm)"	190mm	220W	240V
HL190450	"3/4" "(19.05mm)"	190mm	450W	240V
HL210220	"3/4" "(19.05mm)"	210mm	220W	240V
HL210450	"3/4" "(19.05mm)"	210mm	450W	240V

Stock Axial Lock-up Heaters

Diameter	Width	Watts	Volts
"3/4" "(19.05mm)"	"1.2" "(30mm)"	149W	240V
"3/4" "(19.05mm)"	"1.2" "(30mm)"	268W	240V
"7/8" "(22.22mm)"	"1.2" "(30mm)"	268W	240V

*All stock Axials can be re-fit with external wound thermocouple for same or next day shipment.

coil heater embedded in brass



» Utilizing the three dimensional flexibility of Nexthermal coil heaters is likely much easier than you think. We welcome the opportunity to discuss your specific application and design objectives.



Extending and refining coil heater performance...

Nexthermal has developed coil heaters and mini coil heaters embedded in brass for the hot runner injection molding, measurement, analysis, and packaging markets.

Traditionally this type of heater would be "cast in brass." The embedded in brass heater provided more precise repeatability of winding profile, and longer thermocouple life due to the elimination of molten brass temperatures during the casting process.

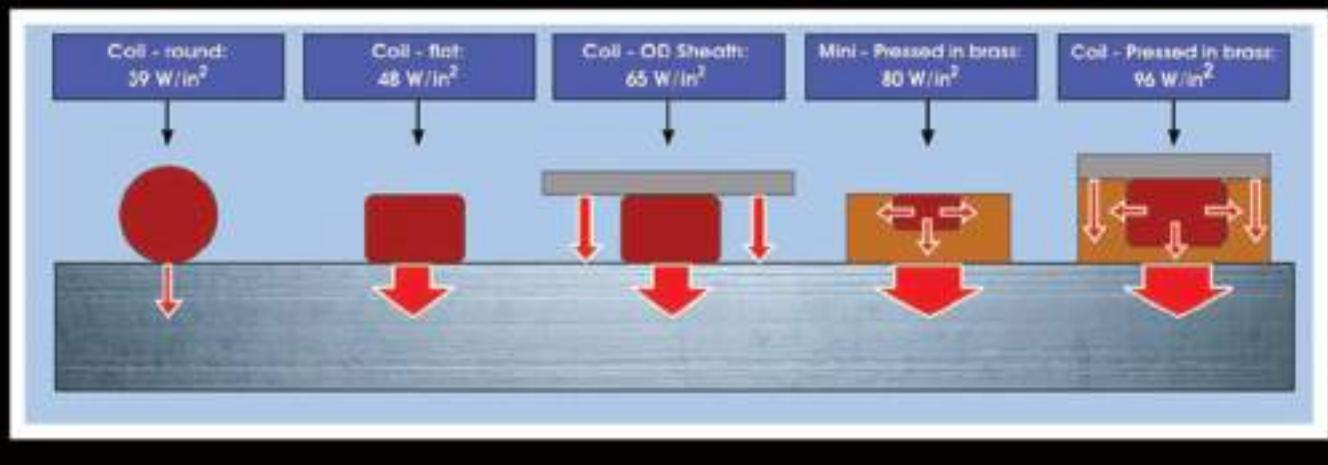
» For demanding applications, the embedded in brass design also facilitates precise thermocouple placement. Originally designed to accommodate higher temperature applications to 650C, the embedded in brass design is creating new opportunity to heat difficult three dimensional applications, small space claim, thin faced packaging jaws, and hole punch applications.

Coil Technical Data Chart

	Shape	Length Tolerance		Wattage Tolerance		Insulation Resistance		Leakage Current		Std	
		Heated	Unheated	±10%	Premium ±5%	±2%	>= 5 Mohm @ 500V DC	Special on Request	<0.5 mA @ 253V AC		
Mini Flat 1.0x1.7 & 1.3x2.3 (Only possible as wound or pressed in)	Flat	±2.5%	±5%	●	●	●	●	●	●	●	1000
Mini Round Ø1.4 and Ø1.8	Round	±2.5%	±5%	●	●		●	●	●	●	1000
Mini Axial and Standard Clamp with 19.05 and 22.22 mm ID	Flat	Clamp +0-0.5mm	Customer specified	●	●	●	●	●	●	●	1630
1.8 x 3.2mm	Rectangle	±1%	±5%	●	●		●	●	●	●	1245
2.2x4.2 mm	Rectangle	±1%	±5%	●	●		●	●	●	●	1245
Round Coil Ø2.6, Ø3.0, Ø3.18, Ø3.25 & Ø4.0 mm	Round	±2.5%	±5%	●	●		●	●	●	●	1245
2.5x3.4	Rectangle	±1%	±5%	●	●		●	●	●	●	1245
Square Coil 3x3	Square	±1%	±5%	●	●		●	●	●	●	1245
Maxi Coil Heater 4.6x8.6	Rectangle	±1%	±5%	●	●		●	●	●	●	1245

High Pot testing: Mini 800VAC @ 100mA, Coil 800VAC @ 100mA, Maxi 1250 VAC @ 100mA

Watt density limits for common coil heater installations



Nexothermal configurator



We have taken the mystery out of ordering replacement coil heaters...

1 Step One

Measure diameter, width, and lead length. Record watts and volts indicated on heater.

2 Step Two

Select your cold section exit type.

(If your heater can be built from our extensive coil from stock inventory, orders received by 11:00 a.m. ship same day)



3 Step Three

You now have the information you need to call Nexthermal or enter the information into Nexthermal's configurator.

(If you do not have access to Nexthermal Configurator please call 269-964-0271 and speak with an inside sales consultant)

4 Step Four

The Nexthermal web based configurator will price your heater as you enter the above information. Nexthermal can also respond promptly with a quote and drawing.

wind from stock coil heaters

All heaters available with and without thermocouple

2.5mm x 3.4mm (0.100" x 0.134") Flat Coil Heater
Standard 48" Teflon® and TPE Leads Ungrounded TC

HEATED LENGTH (INCH)	TOTAL LENGTH (INCH)	WATT	VOLT
10.5	14.5	215	240
12.5	16.5	250	240
16	20	325	240
19	23	390	240
22	26	470	240
26	30	520	240
30	34	610	240
36	40	630	240
38	42	700	240
42	46	800	240
45	49	850	240
75.28	78.84	1050	240
79	82.56	1150	240
86.6	90.16	1300	240

Lead Protection Options

FIBERGLASS SLEEVING

BRAIDED METAL SLEEVING

FLEXIBLE ARMOR CABLE



coil heater performance options

Pressed on sheath (with and without tab)

A pressed on sheath ensures the best heat transfer, and is 20% more efficient in most injection molding applications. Recommended for operating temperatures exceeding 600F and inside diameters greater than 1". Our tab option precisely locates and holds heater in place.



Moisture resistant transition head

Nexthermal has developed a highly moisture resistant transition head construction further improving durability in high humidity and washdown applications — reducing the need for soft starts. This head also protects against oil ingress and other contaminants.



Compact coil heater head 5.5mm

In response to emerging requirements for smaller space claim in wire channels, Nexthermal has developed a compact 5.5mm diameter coil heater head that is just 15mm long without compromising dielectric strength.



Thermocouple options

Nexthermal coil heaters can be built with an integrated Type J or Type K thermocouple. Mini coil heaters can be designed with an external thermocouple wound with no net impact to the OD of the heater. Other external TC options are available.



Unique requirements?

Engage a Nexthermal application engineer at 269.964.0271

Pressed in brass

Nexthermal's process of embedding coil heaters into machined brass components delivers strong life at high temperatures. Precise repeatable thermal profiles, 8% faster heat up and recovery times, improved TC performance and shorter lead times compared to cast in brass heaters.



Form in groove and three dimensional heating

Coil and mini coil heater's precise OD tolerance and annealing process are ideal attributes to form into a machined groove. To engineers and designers this means that a structural component could be developed into a three dimensional heater without greatly affecting space claim.



Easy to remove bore heater

Nexthermal coil heaters can be designed slightly oversized to a bore with additional cold section at the tip. With a provided tool, you can compress the OD slightly, insert into the bore and allow to expand. Excellent fit and easy to remove heater for bores over 1" in diameter.



Laboratory, development and test process

The coil heater's stainless steel construction and ability to be formed into unique shapes make it the heater of choice for many laboratory, development and testing applications.



nexthermal.

lead, lead protection and exit options

leads

Fiberglass (Standard)

Temperature Rating
450 °F | 250 °C

Teflon

Temperature Rating
500 °F | 260 °C

Teflon (High Amperage)

Temperature Rating
500 °F | 260 °C

Fiberglass (High Temp.)

Temperature Rating
600 °F | 500 °C

lead protection

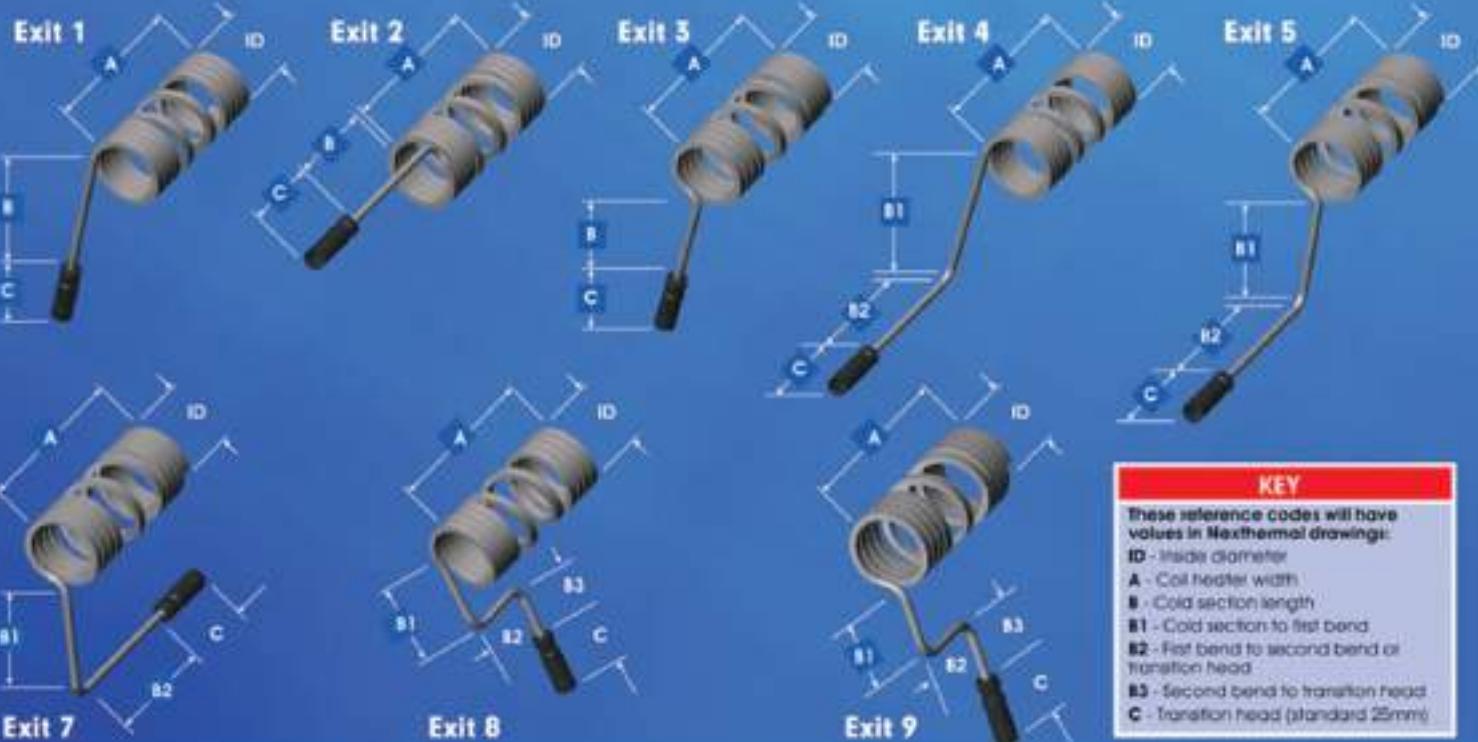
Fiberglass Sleeve

Braided Metal Sleeve

Armor Cable

Armor Cable (Gas Proof)

exit options



KEY

These reference codes will have values in Metathermal drawings:

- ID - Inside diameter
- A - Coil heater width
- B - Cold section length
- B1 - Cold section to first bend
- B2 - First bend to second bend or transition head
- B3 - Second bend to transition head
- C - Transition head (standard 25mm)

Standard Coil Heater Configuration Chart

Coil Heater Type	Profile		Minimum Inside Diameter		Voltage	Maximum Ratings			Sheath Material		
						Watt Density (per sq. inch)			Straight Heated Length		Thermocouple
	inches	mm	inches	mm		Without Pressed on Sheath	With Pressed on Sheath	Pressed in Brass	inches	mm	
Micro Mini	0.039x.067	1.0x1.7	0.236	6.00	240	38.7	52	80	112.2	2850	● ●
Mini Flat	0.051x.090	1.3x2.3	0.236	6.00	240	38.7	52	80	112.2	2850	● ●
Mini Round	ø0.055	ø1.4	0.236	6.00	240	38.7	52	80	112.2	2850	● ●
Mini Round	ø0.070	ø1.8	0.236	6.00	240	38.7	52	80	112.2	2850	● ●
Square	0.118x.118	3.0x3.0	0.472	12.00	240	38.7	52	80	86.6	2200	● ●
Flat	0.071x.126	1.8x3.2	0.472	12.00	240	38.7	52	80	86.6	2200	● ●
Flat	0.087x.165	2.2x4.2	0.472	12.00	240	38.7	52	80	86.6	2200	● ●
Flat	0.098x.134	2.5x3.4	0.472	12.00	240	38.7	52	80	86.6	2200	● ●
Round	ø0.118	ø3.0	0.472	12.00	240	38.7	52	80	86.6	2200	● ●
Round	ø0.125	ø3.18	0.472	12.00	240	38.7	52	80	86.6	2200	● ●
Round	ø0.157	ø4.0	0.472	12.00	240	38.7	52	80	86.6	2200	● ●
Maxi	0.181x.338	4.6x8.6	0.80	20.00	480	87	97	95	86.6	2200	● ●

*Externally wound thermocouples are available for all Nexthermal coil heaters.

Coil ID	Tolerance ID with Pressed on Sheath(mm)	Coil ID (mm)	Mini, Standard & Maxi ID Tolerance	
			<30mm Long	≥30mm Long
Mini	+0.05 to +0.10	6.5-12	-0.05 to -0.2	-0.1 to -0.3
Standard	+0.05 to +0.10	13-30	-0.1 to -0.3	-0.2 to -0.4
Maxi	+0.05 to +0.15	31-50	-0.2 to -0.4	-0.3 to -0.6
Clamping strap recommended above 2".			over 50mm - specified on your drawing	
Lead Options		Temp. Rating	Movement	
		°F °C	Moisture	
Teflon® (Standard)		500 260	Excellent	
High Temp. Fiberglass (Not Available on Minis)		932 500	Not Recommended	Not Recommended

Standard wattage tolerance for Nexthermal coil heaters is $\pm 10\%$. Premium wattage tolerance is $\pm 5\%$. Standardized heaters may be designed with tighter than published wattage tolerances. Consult Nexthermal Engineering. Hotlock and Axial Clamp heaters are available with $\pm 2\%$ wattage tolerance.

Additional Options		Coil Heater Assemblies			Lead Protection			
Pressed on Sheaths		ID/OD Tube		Mini Coil Heaters	All Coil Heaters	Fiberglass Sleeve	Braided Metal Sleeve	Armor Cable
With Tab	Without Tab			Hotlock	Axial Clamp	Pressed in Brass		

Teflon® is a registered trademark of the E.I. du Pont de Nemours & Company.

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Coil Heater Profiles



Mini Coil Heaters

Nexthermal offers a range of mini coil heaters, flat and round for when space is constrained. We can wind in thermocouples and support a bending radius of 3mm.

1.8 x 3.2mm Flat Coil Heater

The power of a Nexthermal coil heater in a smaller size with a bending radius of 6mm.



2.2 x 4.2mm Flat Coil Heater

Thin enough to keep net outer diameter to a minimum, wide enough to bring more power to heating surface. Supports internal TC. Bending radius 6mm.

2.5 x 3.4mm Coil Heater

Our most popular coil heater and a standard for OEMs. Internal TC option. Bending radius 6mm.



3.0mm, 3.18mm and 4.0mm Round Coil Heater

Proven coil heater product excellent for form in groove and 3D heating applications. Internal TC. Minimum bending radius 6mm.

3.0mm Square Coil Heater

Structurally sound and increases the surface area in contact with form in groove assemblies and applications.



4.6 x 8.6mm Maxi Coil Heater

Highly durable heater used in large format injection molding and diecast applications. Minimum bending radius 10mm.

Coil Heater Based Assemblies

