THERM-X | *The Temperature Specialists*

Our Company

Established in 1983, Therm-x takes pride in delivering thermal solutions incorporating our vertical integration capabilities including; Thermal Design and Test, CNC Machining, Metal Joining, Sheet Metal Manufacturing and Integration of these disciplines with Electro Mechanical Assembly.

Therm-x has become a leader in Advanced Temperature and Process Control Systems for the Hi-Technology industries. We continue to develop advanced staffing, tools for design and analysis of customer requirements as well as sophisticated manufacturing capabilities to support design, production, test and delivery of temperature and process control systems

Markets served include Semiconductor and Electronics Equipment, Alternative Energy, Medical/Biotech, Defense/Aerospace, Petrochemical, and Food/Beverage. Cutting-edge manufacturing and advanced engineering capabilities allow us to support the evolving and unique temperature management needs of clients who envision innovative process solutions.

Engineered solutions include:
Heaters, Sensors and Control Systems.

If your application requires a custom solution, our application engineers will work with you from design to product launch to develop the right product for your application. Design support, engineering, manufacturing and testing are done at our facility in Hayward, CA. Therm-x also has inventory on the West Coast for off the shelf products such as Controllers, Thermocouples, RTDs, Thermocouple Wire, Indicators, Data Acquisition and more.

Our low cost region strategic partner Therm-x SVT, located in Vietnam can be your outsource solution for higher volume, lower cost requirements with a quality system developed here in the states.

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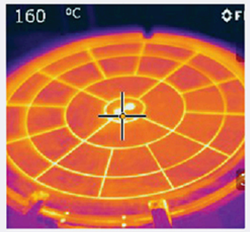


PyrAlloy

high uniformity heater plate

www.therm-x.com

Engineered Solutions



Heater Manufacturing

Therm-x combines years of experience in semiconductor vacuum thermal design with high tech manufacturing methods, advanced material knowledge. Design begins with completely understanding the application requirements in order to select the best materials and heating methods available. Starting with the wattage required to meet the heat-up requirements we select a heater that will give the necessary wattage, handle the temperature requirements specified.



Integrated Systems

Therm-x offers experienced engineering and design services with a vertically integrated manufacturing facility complete with UL 508 assembly, sheet metal and frame fabrication, CNC machining, and metal joining (includes TIG, s pot/laser welding, torch, vacuum, hydrogen brazing, and soldering). Our systems engineers have extensive product knowledge and electrical engineering background to assist in bringing your integrated system ideas to life.

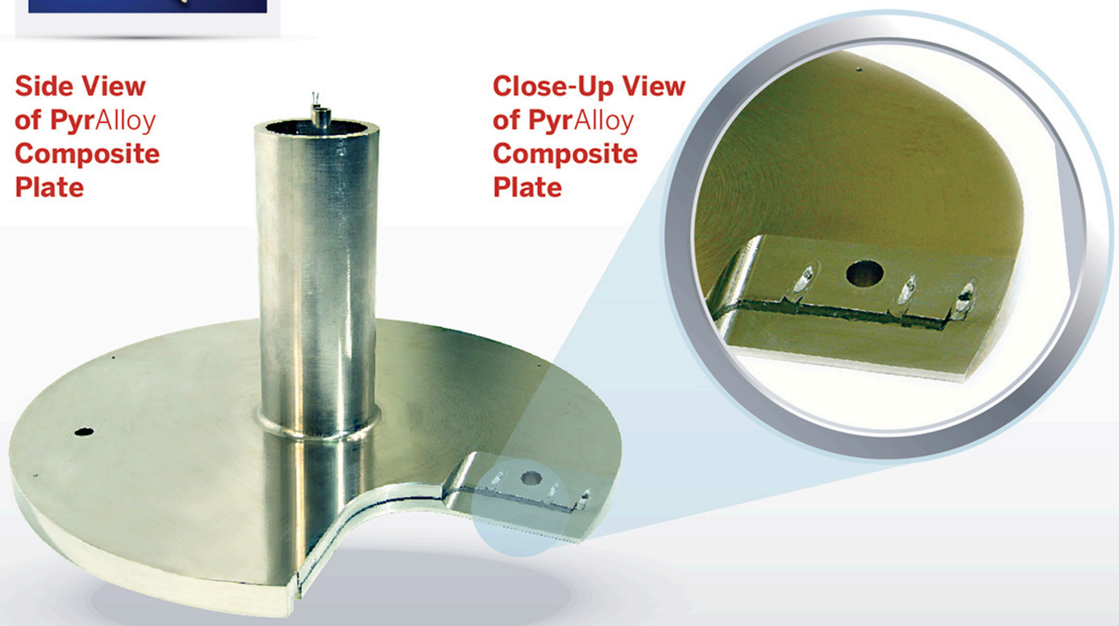


Sensor Applications

Therm-x has been developing creative ways to most effectively measure temperature in applications ranging from Chocolates to Aerospace. Our team of thermal experts will help guide you through the process of best achieving your requirements by offering the appropriate materials, mounting, sensor type, location, and shielding to optimize results.

Side View of PyrAlloy Composite Plate

Close-Up View of PyrAlloy Composite Plate



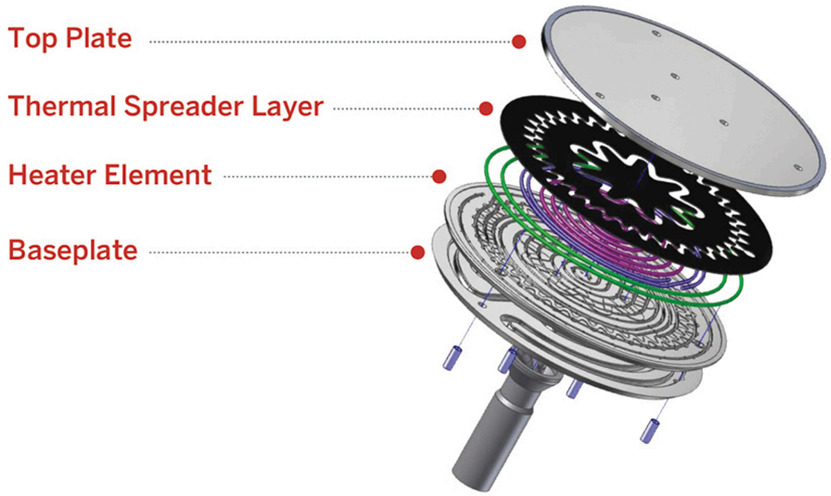
PyrAlloy

For the advanced heating application that requires temperature uniformity at higher operating temperatures than traditional heaters, PyrAlloy is a hyper conductive composite of (1500 watts/m-K) thermally annealed graphite that is fused inside of a heater plate with the heater element to produce a uniform temperature distribution on the surface of a heater plate.

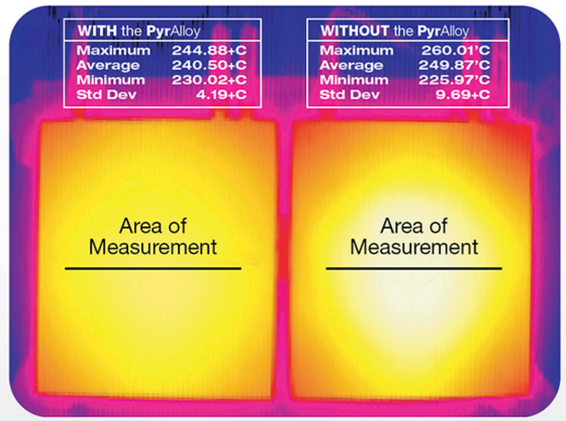
PyrAlloy is a patent composite consisting of a Thermal Pyrolytic Graphite Layer and Heating Element vacuum brazed into stainless plates to produce a heater plate. This high thermal conductivity composite efficiently distributes heat, lowering the internal dielectric temperature on the heater element. This reduces leakage current at elevated temperatures raising the maximum temperature of the heater.

PyrAlloy heater plates can produce temperature uniformity of +/- 0.5% and maximum temperature ratings up to 600C in stainless. Similar improvements can be produced in aluminum.

Exploded Model of 450 mm 3 zone Heater Plate with Cooling



Side by Side Comparison of Identical Design Heater Plates



Heater on **LEFT WITH** the **Pyr**Alloy diffusion layer.

Heater on **RIGHT WITHOUT** the **Pyr**Alloy diffusion layer.

The temperature uniformity across the plate improved from +/- 17C to +/– 7C by adding PyrAlloy diffusion layer.