

Induction

Melting, Heating, Holding & Pouring Systems

INDUCTOTHERM IS THE LEADER IN ADVANCED INDUCTION TECHNOLOGY

Inductotherm is the world leader in induction technology. We build melting, holding, heating, and pouring systems for virtually all metals including:

- Gray, ductile, and malleable iron
- Steels and nickel/cobalt-based alloys
- Copper and copper-based alloys
- Aluminum, zinc, and reactive metals
- Precious metals

Inductotherm also builds heating systems for high temperature and ultra-high temperature carbon processes.

EFFICIENT, RELIABLE, AND PRODUCTIVE

As the world's largest manufacturer of induction melting systems, only Inductotherm can offer proven, efficient, reliable, and productive systems for all your melt shop needs.

Inductotherm Corp. is ISO 9001:2015 registered and its VIP® induction power supplies are certified by ETL to UL, CSA, or CE standards.

THE INDUCTOTHERM PLEDGE

We give you the competitive edge by providing the best:

- Customer Service
- Value
- Quality & Reliability
- Design & Technology



VIP® Power Supplies

Our world-famous family of VIP® induction power supplies have the fastest melt rates from cold charge to pouring temperature and melts more pounds per kWh and kVA for lower melting costs and greater productivity. We have an extensive range available, so please contact us to find out what system will best suit your needs.

For advanced computer control assistance, VIP® power supplies are available with built-in Melt-Manager Plus® control system automation, or for connection to external Meltminder® 300™ computer control systems. VIP® units equipped with Melt-Manager Plus® control systems include a full-color LCD screen with a touch-sensitive interface.

Remote control panels are available for all units.



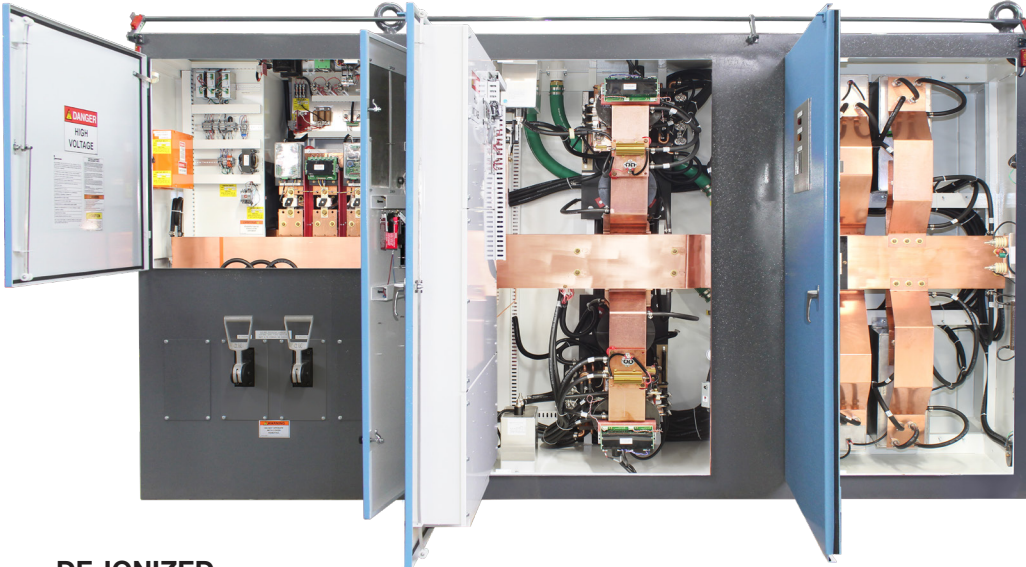
VIP-® Series Cabinet with Melt-Manager Plus® Computer Controls

DIGITAL CONTROL

A standard VIP® power supply unit includes an intelligent digital control board with fiber-optic communication for clear signal processing and a color touch-screen LCD display. All control board functions can be configured via the touch-screen.

AUTOMATIC FULL-POWER RESPONSE

Automatic full-power response from cold charge to fully molten, melts more metal per kWh and kVA for lower melting costs; and greater productivity.



DE-IONIZED WATER COOLING

Standard VIP® power supply units are configured for connection to new or existing external de-ionized (DI) water cooling systems or to available DI water cooling modules that can be attached to the ends of the units for ease of maintenance access.

DOOR-WITHIN-A-DOOR DESIGN

Door-within-a-door protects control circuitry from higher voltage areas while circulating air keeps compartment clean and cool, dramatically increasing circuit board life.



THE FASTEST MELTING SYSTEMS IN THE WORLD

Advanced rugged, semiconductors are designed with a 100% safety factor to ensure long service life.

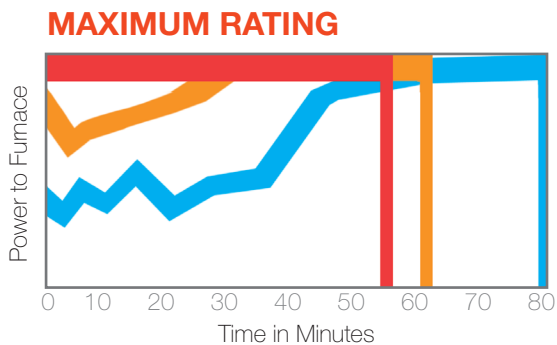
Built-in protection from damage caused by electrical shorts.

Primary or secondary furnace-isolation systems provide double protection with an isolation transformer and ground leak detector system.

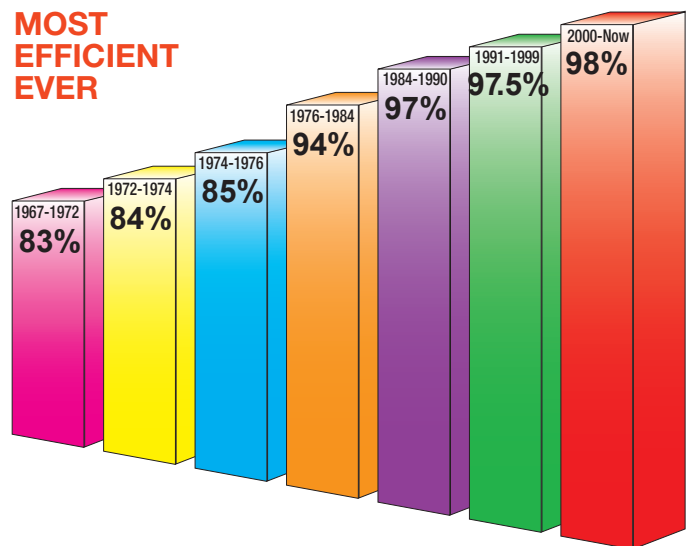
Husky copper bus bars, in lieu of water-cooled copper tubing, put power into the melt, not into the water system.

A network of capacitor protection systems eliminates costly down-time.

An ultrafast-acting AC Interrupter and an Over-Voltage Protection Circuit provide the ultimate system protection. Smaller units are protected by a current limiting reactor and high-speed circuit breaker.



- **VIP® Power-Trak® Units:**
Continuous full power for the fastest melting time
- **Earlier VIP® Units:**
Some power drop during cold charge phase
- **Other Power Supply Units:**
Lower initial power results in long melting times





Multiple-Output Power Supplies

POWER MORE FURNACES SIMULTANEOUSLY FOR GREATER PRODUCTION

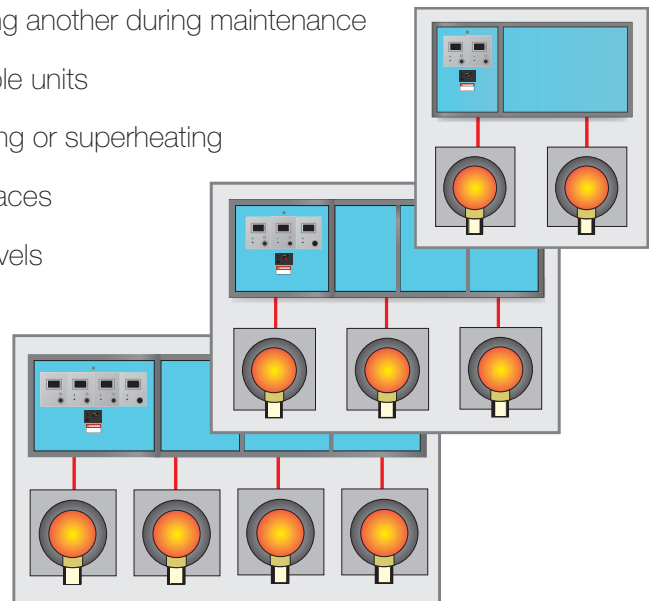
Inductotherm's VIP® Dual-Trak® and Multi-Trak® induction power supplies are able to run several furnaces simultaneously using two or more individually controlled power outputs. In a batch melting operation this can increase metal production tremendously at the same power rating compared to a single-output power unit. These systems are available from 250 to 25,000 kW.

Multiple-output units can be configured to provide the high levels of metal production previously associated with large arc furnaces, and high capacity cupola melters, while offering higher metal quality and superior operational flexibility with lower operating cost.

Dual-Melt® and Multi-Melt™ power supplies for heel melting and for holding applications are also available.

SIGNIFICANT ADVANTAGES

- One set of power and water connections needed, greatly reducing installation, operation, and maintenance costs
- Ability to direct-full rated power to one furnace while fully isolating another during maintenance
- A single power unit with the batch production capacity of multiple units
- Uninterrupted melting and precise temperature control for holding or superheating
- Simultaneously preheat, sinter, melt and/or hold in multiple furnaces
- Increase metal production without increasing power demand levels
- Increased alloy flexibility
- Equipment power utilization levels approaching 100%
- Minimum investment for each ton of metal being poured
- Separate sets of controls for each furnace
- The ability to efficiently match production to varying levels of metal demand



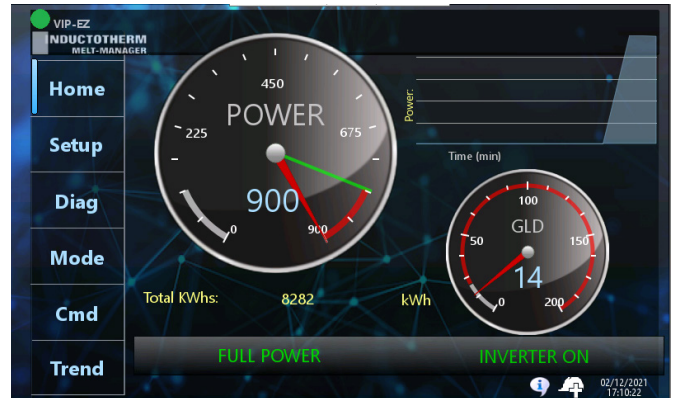
Control Systems

Take control with our automated melting control systems that monitor and control the melt, diagnose faults, optimize power usage, minimize power charges, and perform a variety of tasks to provide more control for complete melt shop control.

MELT-MANAGER® CONTROL SYSTEMS

Melt-Manager® control systems are our entry level to smart systems that utilize embedded microprocessor controls and provide the operator with melt control modes and diagnostics for analysis and support.

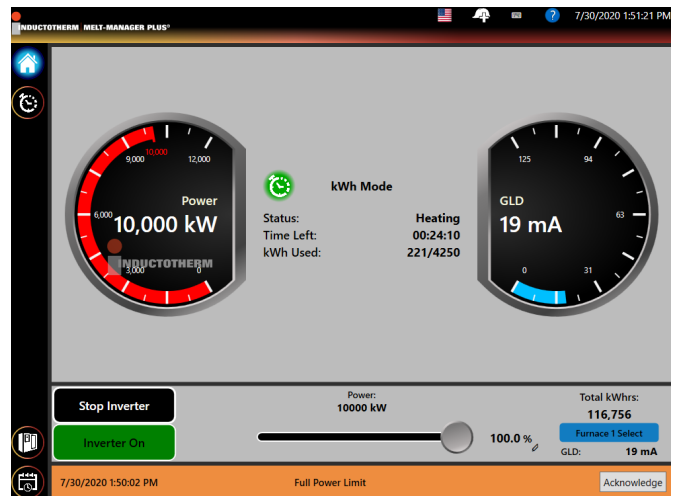
The easy-to-read screen provides key diagnostic and operational information on the power supply and furnace. If abnormal conditions trigger a systems alarm, this system alerts you to the source of the problem. It also stores the information in its memory to aid in future troubleshooting. Melt-Manager® control systems integrate a color touch-screen LCD display that provides direct access to inverter information and controls.



MELT-MANAGER PLUS® CONTROL SYSTEMS

Our Melt-Manager Plus® control system is an advanced built-in computer system that assists in performing key functions using an easy to use Windows®-based, full color, touch sensitive, flat panel screen for both display and control input that can be located on the power supply unit's control panel and/or on a separate remote.

The control system also has additional benefits such as furnace preheating, automated control of the sintering cycle, virtually unlimited alarm history, and operational data storage; automated collection of key operational data that can be displayed/exported for use in external management programs, remote data acquisition, and network support through local or standard Internet connections. This system is also available in a wide-range of languages.



MELTMINDER® 300™ CONTROL SYSTEMS

The Meltminder® 300™ melt shop control and management system takes the successes of our Melt-Manager Plus® control system a step further, providing precise, highly responsive, and fully configurable control, which is important to the safe and efficient operation of today's high powered induction melting equipment. It is designed to be flexible, compatible, and expandable for melt shops of all designs.

This control system offers custom configuration that utilizes operational settings particular to your equipment, and tools needed to monitor and control the entire melting process, from charging through melting to tapping. All key process and operational data is available in both real-time and archival form, and in your preferred language and units of measurement.



HOW IT WORKS

Inductotherm's MiPlant® Management Information Plant Analytics Platform uses state-of-the-art technology to integrate all Inductotherm equipment data with a visual representation for managers to oversee their data in real time.

Using a modern cloud-based, multi-tenant solution, the data is collected and securely displayed on your dashboards to help optimize processes, increase efficiency, and manage costs—all while maximizing your equipment's uptime by helping predict problems before they occur.

The MiPlant® IIoT platform ensures the utilization of future oriented technologies like artificial intelligence to improve upon tomorrow through a single IIoT platform which can be used to help optimize processes, to increase efficiency, and reduce costs.

The MiPlant® IIoT platform's gateway uses multiple industrial protocols to collect and send data, acting as the bridge between the plant and the dashboard. It collects data from Inductotherm equipment and devices over the Ethernet and securely sends that data to the cloud and databases.



MiPlant® IIoT Platform

The future of the foundry and metalcasting industry lies in the rapidly growing industrial internet, generating a new perspective to provide connectivity with more data and more information than ever before. Inductotherm's MiPlant® IIoT platform is bringing a new level of innovation to foundries across the globe.



DATA ACCESS ANALYTICS

Managers are able to visualize and make sense of real time data and events.



PROCESS OPTIMIZATION

Processes can be optimized to improve efficiency, reduce costs, and increase worker productivity.



PREDICTIVE MAINTENANCE

Most problems can be predicted using analytics before they occur, reducing unplanned downtime.



COST SAVINGS

The system helps save on labor and energy costs.



MiDOCS™ SITE

Easily access essential equipment information including manuals, technical drawings, and spare parts lists.

PREDICTIVE AND PREVENTIVE MAINTENANCE FEATURES HELP MAKE YOUR EQUIPMENT SAFER BY PREVENTING PROBLEMS BEFORE THEY OCCUR

ARMS® System

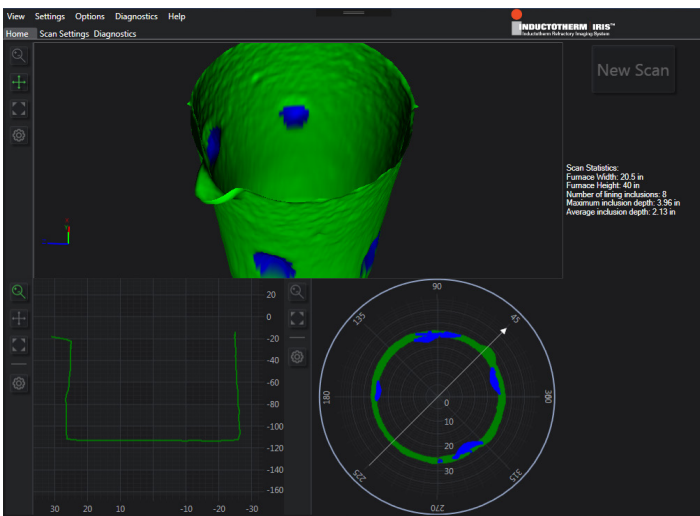


Inductotherm offers the industry an ARMS® (Automated Robotic Melt Shop) System that relocates the furnace operator away from the deck with the help of a foundry robot. This system can be configured for any size foundry.

Our innovative ARMS® (Automated Robotic Melt Shop) System relocates the furnace operator from the open melt deck to the safer melt shop control room. The operator controls integrated charging, clamshell slag removal, tool handling, and remote viewing systems. The foundry robot located on the melt deck performs the required but hazardous operations that would otherwise be handled directly by the furnace operator which include:

- Checking of the metal bath grounding
- Dipping the thermocouple lance
- Adding coagulant and slagging the furnace
- Taking metal samples for chill cup, chill wedge, and spectrometer coupon disk and pin
- Adding required trim materials

This allows the furnace operator to run the melt shop operations from the control room and away from the dangerous areas close to the furnace, significantly improving worker safety. Other benefits include reduced operating costs, improved worker recruitment, and retention results as well as the efficiencies that come from automated operations.



IRIS® System

The IRIS® (Inductotherm Refractory Image Scanning) System is an advanced, LiDAR-based furnace refractory imaging and profiling system which can be used to detect general refractory wear or build-up on a furnace.

Monitoring lining wear can help extend coil life. In theory, wear on refractory should be uniform. However, more wear often occurs at the slagging interface and where the sidewalls join the bottom. The benefits of the IRIS® System and monitoring lining wear is to enhance safety and maximize furnace utilization while minimizing the risk of using a furnace with a lining in poor condition.

Although this cannot replace visually inspecting the furnace lining after each melt for signs of lining wear and/or build-up, the IRIS® System can be used to visualize the lining wear over time.

Material Handling

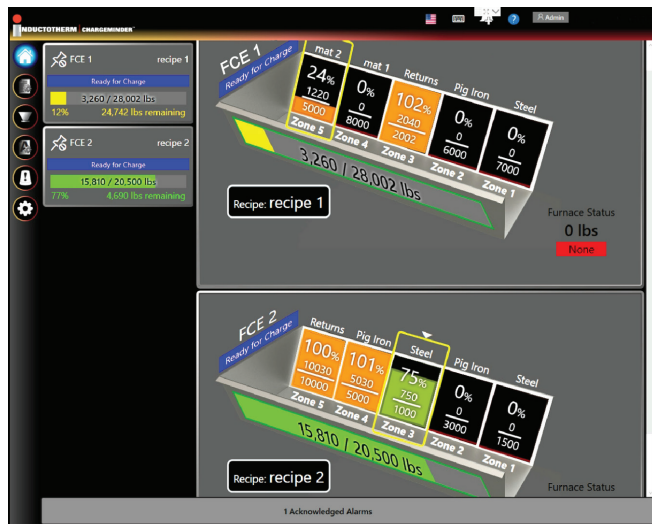
We offer material handling systems designed to enhance safety, increase energy efficiency, and achieve higher productivity to help you keep pace with the rapid melt rates of today's furnaces.

MATERIAL HANDLING AND CHARGING SYSTEMS

We manufacture a broad range of material handling and weighing systems for both ferrous and nonferrous melt shops. These systems include:

- Charge buckets
- Belt conveyors
- Vibratory conveyors (pivoting, indexing/traversing, storage)
- Preheating/drying systems
- Automated charge recipe make-up
- Automated batch make-up and delivery systems for alloying materials

Manual charging operations are slow, labor intensive, and dangerous. That is why foundries are turning to remotely controlled, mechanized material handling systems to transport charge material from storage areas into the furnaces quickly and efficiently. Inductotherm's material handling equipment also serves to enhance safety by eliminating the need for melt-deck personnel to work in close proximity to the furnace during charging operations.



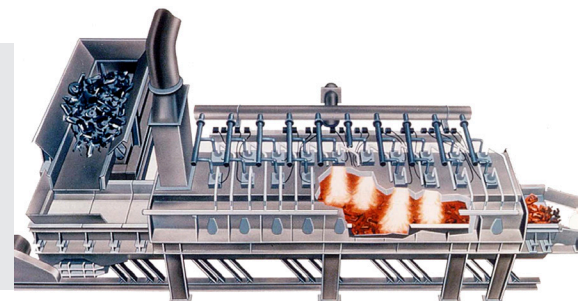
CHARGEMINDER™ CHARGE RECIPE MONITORING SYSTEM

The Chargeminder™ Charge Recipe Monitoring System can be used for creating charge recipes and can also provide crane and magnet operators with visual feedback during the charge makeup process. It helps operators deliver the correct charge to the correct furnace for a more consistent melt—each and every time. The system includes:

- Main screen control console
- Batch ingredient set-up
- Recipe creation
- Recipe loading process
- Loading history

DRYING AND PREHEATING SYSTEMS

Preheating/Drying systems improve safety by reducing surface moisture on charge materials, thereby decreasing the risk of a water/molten metal explosion in the furnace. They can also reduce energy costs by more than 10% compared to direct cold charging.



Cooling Systems

With more induction melting systems operating worldwide than any other manufacturer, Inductotherm's furnace and power supply cooling systems are proven to be suitable for virtually every climate type and temperature extreme.

WATER SYSTEMS WITH DRY AIR COOLERS

- Closed-loop water recirculating systems cut both operating and maintenance costs
- Easy to install and maintain, the system consists primarily of a pump, hydronics tank, deionizer, and an outdoor-mounted water-to-air heat exchanger
- Zero water discharge, no water usage, complete closed pressurized circuit
- To serve two or more VIP® units, a larger pump and the hydronics components are supplied as a separate unit



CLOSED-CIRCUIT WATER SYSTEMS WITH INDUSTRIAL COOLERS

- Single system can be sized to cool multiple units when necessary
- Fully assembled and tested indoor pumping module includes an expansion tank, air separator, pump(s), and instrumentation
- Works in conjunction with an outdoor, closed circuit evaporative industrial cooler
- Individual temperature flow indicators and alarms for every major water circuit ensure foolproof operation and simplify troubleshooting



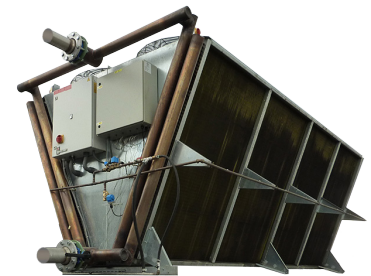
DUAL-LOOP WATER SYSTEMS

- For larger induction installations, these cooling systems have separate loops for furnaces and VIP® power supplies utilizing a variety of heat exchanger configurations



DAC λ TREME, DAC λ TREME PLUS AND ADIABATIC COOLING SYSTEMS

- DAC λ treme, DAC λ treme Plus, and Adiabatic Cooling Systems have almost all of the benefits associated with dry air cooling along with the added benefit of not being limited by the dry bulb temperature
- Water usage is often about 40 percent less than a trim cooler to achieve the same level of cooling



OPEN EVAPORATIVE COOLING SYSTEMS

- Open evaporative cooling systems are designed for simple operation and maintenance
- Water-to-water heat exchangers are typically used for heat transfer between cooling tower and furnace/power supply



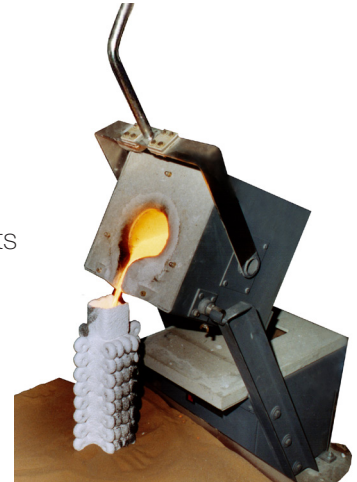


Coreless Furnaces

MINI-MELT® FURNACES — 2.5 kg to 25 kg

Mini-Melt® furnaces are ideal for use in prototype casting, small run casting, precious metal refining and casting; laboratory operations, and wherever relatively small amounts of molten metal are needed.

- Strong, durable construction for long furnace life
- Frequencies from 3,000-10,000 Hz with maximum power utilization
- Two direct-pouring styles: two-man shank and trunnion-tilt
- No need for ladles or other metal transfer devices



ROLLOVER FURNACES — 2.5 kg to 50 kg

Rollover furnaces are used in investment casting applications where precise and repeatable pours are important.

- Precision melting and pouring for high quality castings
- No ladle or hot metal transfer
- Fast mold filling
- Inert atmosphere melt covers available
- Hydraulic or servo rolover at adjustable speeds
- Mold clamp with precise pressure adjustment
- Consistent pouring—mold after mold



DURA-LINE® FURNACES — 25 kg to 3 MT

Dura-Line® furnaces offer high operational efficiencies with a wide choice of capacities in a budget-friendly package.

- High-strength, reinforced refractory top and bottom sections supported by cast alloy structures for firm coil support
- Maximum efficiency is provided by the free magnetic path within the furnace
- Easy, all-around access and free-breathing coil simplifies maintenance
- Rear or side exit leads are available
- Hoist-tilt is standard, hydraulic-tilt is available
- Stand-tilt and double trunnion-tilt is available
- Available with fume exhaust assembly



Inductotherm's coreless induction furnaces offer superior performance and outstanding durability for all your melt shop needs regardless of the size of your foundry. We offer a variety of smaller induction furnaces to meet the demanding requirements of investment casters, specialty foundries and the precious metals industry; as well as medium-sized induction furnaces designed to give foundries another choice in small-to medium-sized applications, all the way up to our heavy steel shell furnaces for the largest foundries.

SMALL CAPACITY STEEL SHELL FURNACES — 25 kg to 3 MT

Small Capacity Steel Shell furnaces are fully shunted to reduce EMF emissions and offer high operational efficiencies with a wide choice of capacities in an economical package.

- Full steel shell structure provides inherent "hoop" strength and rigidity
- Proven "free breathing" coil design using heavy section, oxygen-free high conductivity (OFHC) copper tube for maximum power efficiency
- Maximum coil support minimizes refractory stress for long lining life
- Side entry power lead connection for reduced wear on power leads



STEEL FRAME FURNACES — 4 to 60 MT

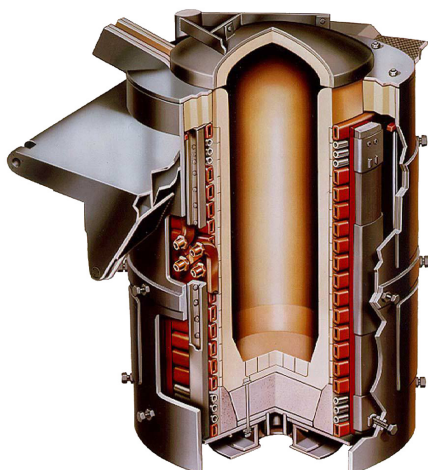
Our Steel Frame furnaces are efficient and easy to maintain. Their rugged construction minimizes distortion during tilting and pouring operations. Each Steel Frame furnace is designed with a high freeboard and provides extra space for solid charge materials, enabling its cover (optional) to be easily closed as the charge melts, greatly reducing heat losses. The elevated metal level height allows for easier slag and dross removal.

- Magnetic shunts cover our coil's circumference, which redirects the electromagnetic field into the melt and away from the surrounding environment.
- Shunts are designed to provide a positive support to the coil, and cushioned insulating pads reduce noise and vibration, adding to the shunts's overall effectiveness.



HEAVY STEEL SHELL FURNACES — Up to 100 MT

Our Heavy Steel Shell furnaces combine superior power handling capabilities with the hoop strength and rigidity imparted by the furnaces' heavy rolled steel structure.



- Heavy-wall, water-cooled, extruded copper induction coil to maximize power efficiency
- Heavy steel shell to provide maximum furnace rigidity and strength for long lining life, low furnace noise, and minimal EMF emissions
- Stainless steel cooling sections at top and bottom of the power coil to provide uniform temperature gradients that extend refractory life
- Water-cooled leads are protected from damage
- Wide-bodied furnace configurations are available to provide an expanded crucible opening and reduced furnace height
- Furnace load cells are available to provide accurate charge weight to simplify charge calculations

Integrated Systems

These furnace systems are compact and economical solutions for melting non-ferrous and precious metals. Whether you recycle, melt, alloy, refine, process, or cast— we have the induction system for you.

ACUTRAK® DIRECT ELECTRIC HEAT FURNACES

The Acutrak® furnace provides faster, cleaner, and the most efficient melting and holding for aluminum and aluminum alloys.

- Low energy losses allow furnace to be air-cooled, eliminating the need for a water-cooling system
- Holding energy cost is just pennies per hour
- High power density of 150 kW/T assures quick melting
- Clean induction technology means no fuel burners
- Metal purity is high and metal loss is low
- Metal is heated evenly and to exact temperatures with minimal overshoot
- Large diameter crucible opening makes ladling and charging easy
- Rugged construction assures high reliability and there are no fragile electrical resistance elements



HORIZONTAL INDUCTION TUNNEL FURNACES

The Heating Tunnel Furnace (HTF) allows many small cast bars to be manufactured at the same time. The procedure can also be automated.

The gold is placed in a bar mold of the required size. Several molds grouped together are then fed into an induction furnace for melting at a controlled temperature of around 2200°F/1200°C.

When the gold has melted, the molds are then pushed gradually through a cooling tunnel. Solidification and subsequent cooling occur in a protective atmosphere.

When the molds exit the tunnel, the small cast bars with shining surfaces are removed.



Crucible Furnaces

Inductotherm crucible melting furnaces are quick and efficient nonferrous melters with high frequency induction power. For greater flexibility when changing alloys, Inductotherm offers several removable crucible furnaces.

QUICK-TRAK™ SYSTEMS

Our Quick-Trak™ systems are designed for melting almost anywhere with proper ventilation. Made up of a power supply and single crucible furnace, these systems are compact, efficient and offered in 10 and 15 kW power configurations.

- Fast and economical induction melting
- Clean and virtually silent operation
- Simple and easy-to-use controls
- Alloy and metal capacity flexibility
- Reliable solid-state construction
- IGBT Technology



SINGLE/DOUBLE PUSH-OUT FURNACES

Single/Double Push-Out induction furnaces provide nonferrous and precious metal casters with clean, compact and highly productive crucible melting systems.

- Coil designed for efficient energy transfer and heats evenly to extend crucible life
- In double push-out furnaces, power is switched from coil-to-coil in seconds, enhancing productivity
- Hydraulic or water cylinders raise crucibles with minimal pressure
- Refractory overflow receptacles are designed to contain spills for added safety and ease of maintenance



LIFT-SWING FURNACES

Lift-Swing induction furnaces offer nonferrous and precious metal casters an easily installed, highly productive crucible melting system.

- Specially designed base, installed directly on the foundry floor, acts as a spill pit and is integrated into the furnace to reduce installation costs
- Induction coil assembly moves easily between crucibles
- Machined slots guide coil assembly movement to exact positions for easy, accurate transfer
- Rugged aluminum shell protects the refractory and coil





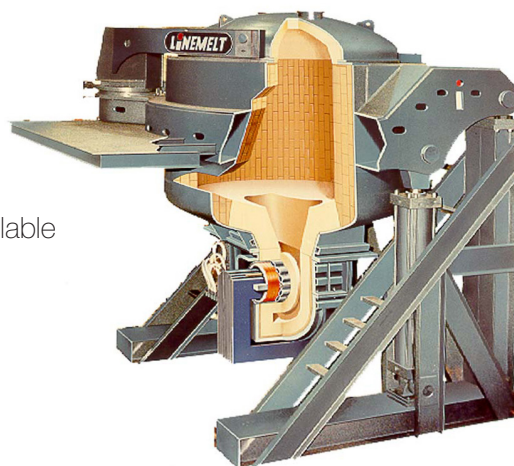
Holding Systems

Inductotherm offers two types of advanced holding systems to ensure you get the system that's right for your foundry. Both choices offer true volume flexibility for continuous and batch duplexing for all metals.

CHANNEL FURNACES — Up to 150 MT

Channel furnaces maintain a continuous supply of metal ready to pour twenty-four hours a day, seven days a week.

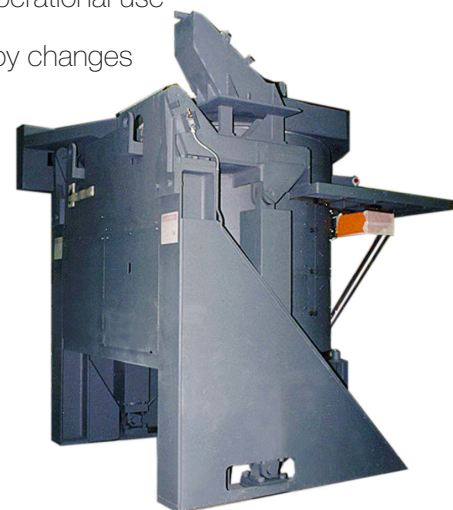
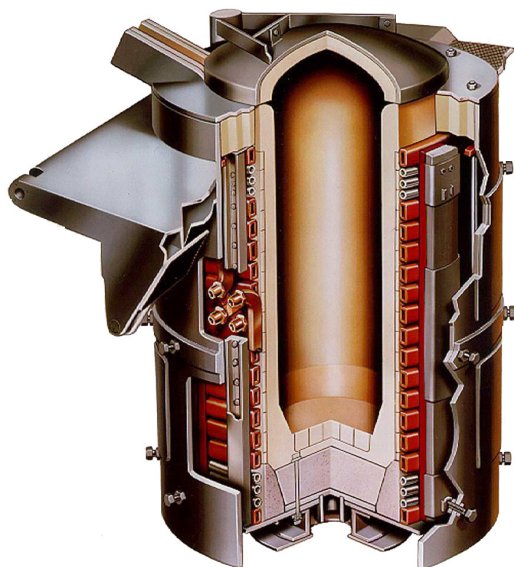
- Solid state VIP® power supply units provide electrical efficiency levels of up to 98%
- A full 80% of the vessel capacity can be used, maximizing the volume available for either continuous or batch duplexing
- Quiet, efficient water-cooled inductors
- Significant increases in productivity



MINI-HEEL® FURNACES — Up to 100 MT

Inductotherm coreless Mini-Heel® furnaces maintain a continuous supply of metal ready to pour twenty-four hours a day, seven days a week.

- The patented Mini-Heel® furnace extended coil system, combined with advanced VIP® unit inverter technology, efficiently maintain furnace holding power and precise temperature control with as little as a 10% molten heel, providing a full 90% of metal volume for operational use
- Can be emptied completely to handle alloy changes on short notice and does not require energy-wasting off-shift holding
- Allows increased throughput
- Reduces job turnaround time
- Offers rugged construction and a quality-built steel shell to withstand the most severe melt-shop environments
- Available with all the Heavy Steel Shell furnace options



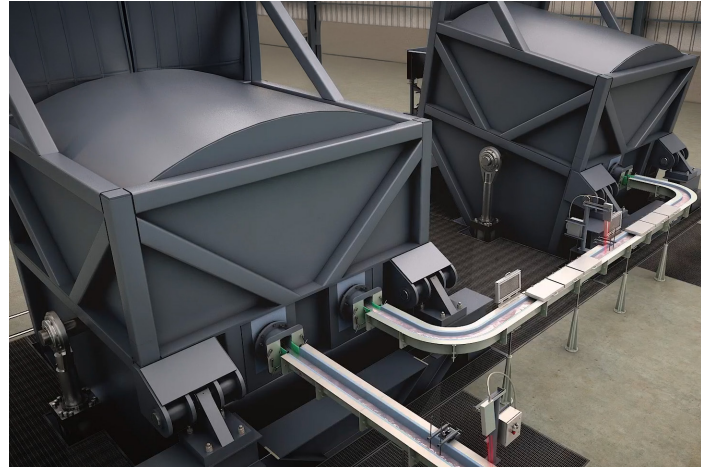
Casting Furnaces

Inductotherm offers advanced solutions for melting, holding, and casting aluminum and other nonferrous metals, all while retaining the flexibility for quick alloy changes.

ALUMILINE™ FURNACES

Inductotherm's Alumiline™ melting and holding furnaces represent a recent development in the quest for innovation.

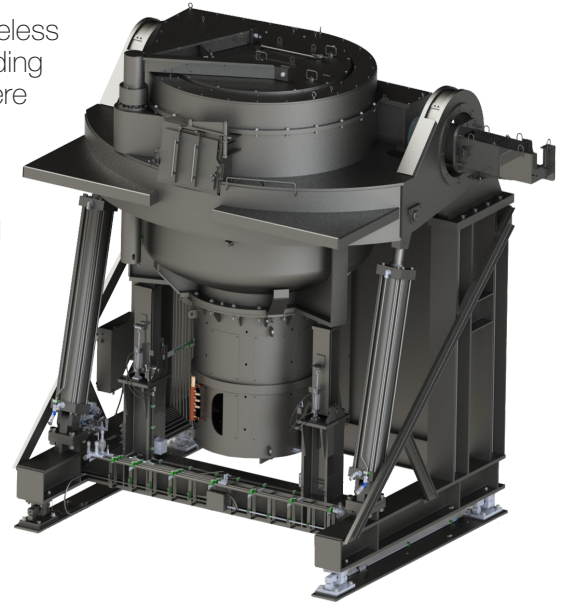
- Combine the proven advantages of coreless induction with the geometry of a reverb furnace
- Equipped with precise pouring controls, which are required for the most advanced operations
- Designed to provide flexibility in operational requirements, such as allowing quick alloy changes
- Can be used for a variety of applications including aluminum recycling, alloy manufacturing, high volume casting, and ingot production



HYBRID™ FURNACES

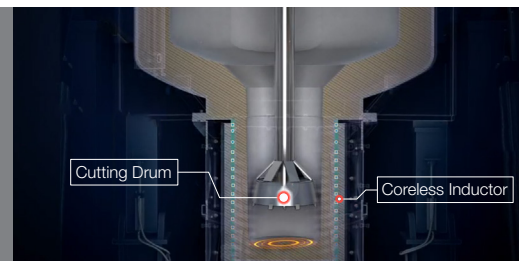
Inductotherm Hybrid™ furnaces provide the right combination of a coreless inductor and channel uppercase. This makes them ideal for melting, holding and casting large amounts of aluminum and other nonferrous metals where alloy flexibility is required.

- The coreless inductor allows for alloy flexibility
- The use of a coreless inductor allows the power supply to be designed for the most optimal frequency for the application
- Typically built with a lift and swing lid, this furnace provides access to the furnace hearth for charging of various size materials, including sows and billets
- A thick refractory lining in the uppercase assures minimum temperature loss and allows for embedded thermocouples for continuous temperature measurement
- A dross door together with a back tilting system allows for convenient dross removal from the melt surface



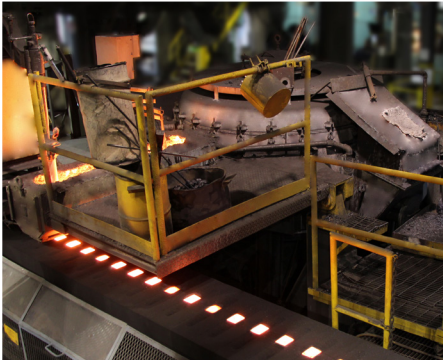
AUTOMATED DROSS SCRAPER

Preventing the accumulation of dross at the bottom of the hybrid furnace, with aluminum melting in particular, is crucial in the melting process. The need for a system to handle the dross was addressed with the development of the automated dross scraper. This automated system dips down into the furnace and the cutting drum spins to break up and collect the dross. When completed, the cutting drum comes back up and the dross scraper is removed from the furnace.



Inducto-Pour™ Systems

Our automated pouring systems are designed for maximum productivity and are able to provide the high level of pouring accuracy required to eliminate quality robbing under pours and metal wasting over pours.



PRESSURE POURING SYSTEMS – Capacities from 1.8 to 45 MT

Heated Pressure Pouring Systems are typically used for high production shops where minimal alloy changes are made. They are suitable for gray, malleable, and ductile iron and copper-based metals.

- Vessel design that delivers clean metal drawn from the bottom of the metal bath
- Inert furnace atmosphere that enhances the “clean metal” capabilities
- Metal storage provides uninterrupted pouring during lags in metal delivery
- Continuous temperature control fine tunes the pouring process



TUNDISH POURING SYSTEM – Capacities from 1 to 4.5 MT

Unheated Tundish Pouring Systems are designed for foundries with a semi-continuous supply of metal and where alloy flexibility is a must. They are suitable for gray, malleable, and ductile iron.

- Stopper rod pouring to deliver clean metal from under the slag
- Efficiency of a refractory lining system designed to reduce metal temperature loss
- Pneumatic charging cover that simplifies metal delivery and slagging practices while reducing energy loss
- Hydraulic-tilting to facilitate alloy changes and lining maintenance



TILT-POUR™ SYSTEMS – Capacities from 250 to 1,500 kg

Tilt-Pour™ Automated Pouring Systems feature a coreless induction furnace which melts a specified quantity of metal at the required temperature in close proximity to the point of pour. By pouring directly into the mold these systems offer many advantages.

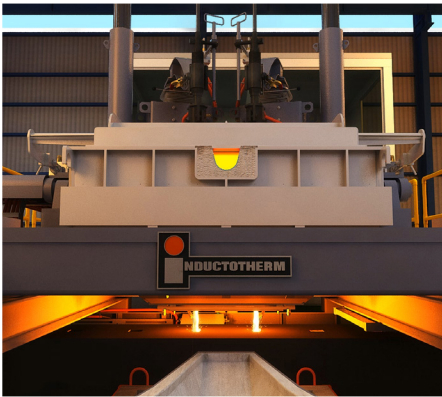
- Outfitted with clever arrangement for maintaining pour stream alignment
- Finely tuned tilting-control for accurate metal dosing
- Intelligent, adaptive software tracks to correct the tilt-angle to accommodate physical differences with the furnace lining
- Dual furnace concept provides melting and holding temperature control



FLEXI-POUR™ SYSTEMS

Our Flexi-Pour™ Lip Axis Pouring System has four axis (x, y, z and tilt) to provide a virtual pivot point for the ladle. With automated positioning, the operator can concentrate on pouring without having to adjust the ladle position. These systems offer numerous advantages including:

- Fully assembled unit for quick commissioning
- Minimum temperature drop in ladle
- Accurate positioning for accurate pouring
- Virtual pivot point pouring



MULTI-POUR™ SYSTEMS

Multi-Pour™ Automated Pouring Systems features our advanced VISIPOUR® P3® (Predictive Pour Performance) control technology. It utilizes two or more adjustable vision-based cameras and two or more adjustable stopper rod systems to effectively pour each double-indexed mold from the same vessel or from separate vessels, depending on your application.

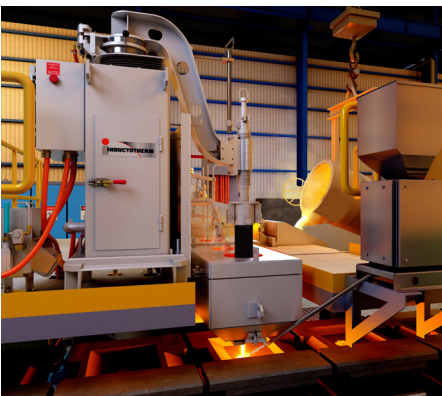
- Stopper rod pouring to deliver clean metal from under the slag
- Efficient refractory lining system designed to reduce metal temperature loss
- Pneumatic charging cover that simplifies metal delivery and slagging practices



VISIPOUR® P3® CONTROLS

VISIPOUR® P3® (Predictive Pour Performance) Control Technology provides optimum pour precision by accurately controlling the amount of metal poured, eliminating quality-robbing underpours and wasteful overpours. This also enhances safety and allows for the production of higher quality castings through repeatable and precise metal dispensing.

- PLC as the control backbone
- Simplified set up and diagnostics for ease of operation
- “Smart” cameras for process information

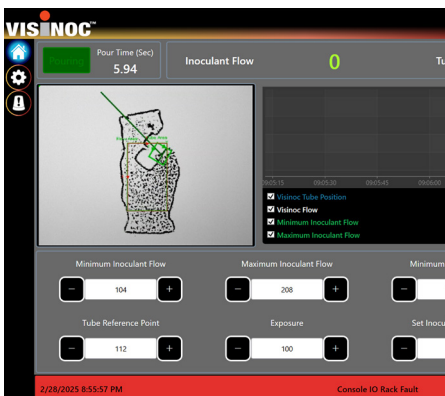


iNOC™ AND VISINOC™ SYSTEMS

The precision-based iNOC™ inoculation system delivers where you need it—directly into the pouring stream. It provides a remarkable increase in the quality of the casting and an important savings in the costs of the process.

Visinoc™ is a robust technologically advanced vision-based monitoring and verification system that can be integrated with existing and new inoculation systems. It monitors the dispensing of inoculant granules into the molten iron stream and logs inoculation data for each pour, developing rich data for analysis and process improvement while adhering to compliance standards. Visinoc™ is Industry 4.0 and IIoT ready.

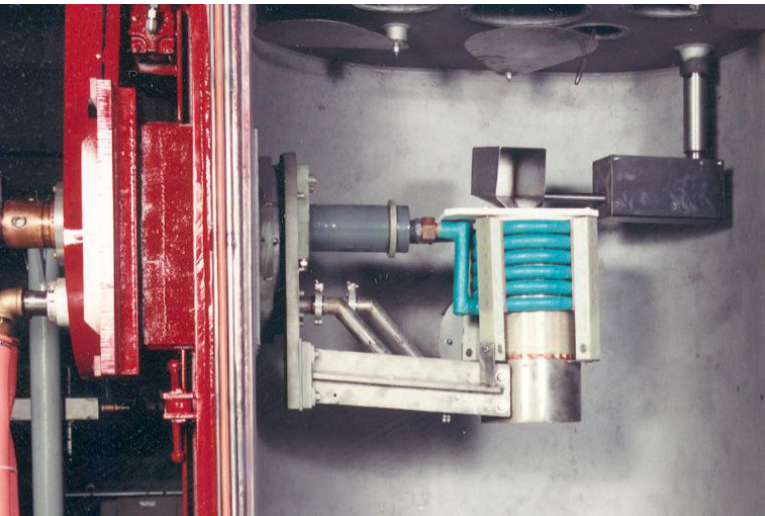
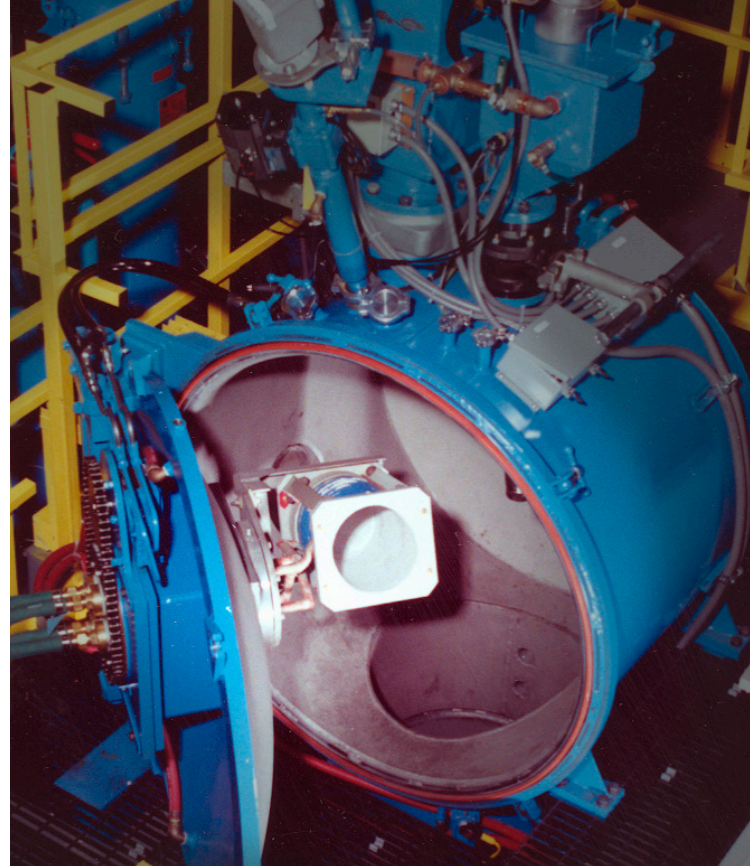
- Real-time data to provide owners and operators with the information they need to make quick, data-driven decisions
- Inoculation live images to ensure proper inoculation takes place each time
- Trends and alarms for historical accuracy
- Visinoc™ Control Technology is readily available as a standalone option for virtually any pouring system
- Visinoc™ Control Technology can be easily integrated with Visipour® P3® (Predictive Pour Performance) Control Technology



Vacuum Systems

The creation and casting of super alloys, and other advanced and reactive metals, requires sophisticated vacuum or controlled atmosphere melting and remelting systems.

MELTING SYSTEMS FOR THE WORLD'S LEADING VACUUM SYSTEM MANUFACTURERS



Inductotherm is the principal supplier of induction furnaces and power supplies for the world's leading vacuum system manufacturers and precision investment casters.

Furnaces range from small vacuum furnaces with capacities measured in grams to giant vacuum furnaces with capacities of 60 MT.

Inductotherm vacuum furnaces are designed specifically for operation in high vacuum environments and include vacuum-adapted construction methods; and the industry's most advanced coil and connector dielectric insulation technologies and procedures.

Inductotherm builds power supply units designed for induction high-resistance load melting applications for reactive alloys.

For the production of directional solidification investment castings and single crystal investment castings, Inductotherm manufactures Dual-Switch[®], Tri-Switch[®], and Multi-Switch[™] induction power supply units, and zoned power coils able to precisely control the heating applied to specific sections of the hot zone.

VIP[®] induction power supply units as large as 6,000 kW have been built specifically for vacuum melting applications. Unidirectional stirring for precise chemistry and temperature consistency are available.

Induction Heating

Inductotherm also builds most of the world's zoned induction heating coils and multiple output power supplies used in the manufacturing of ultra-high temperature advanced materials such as carbon-carbon.

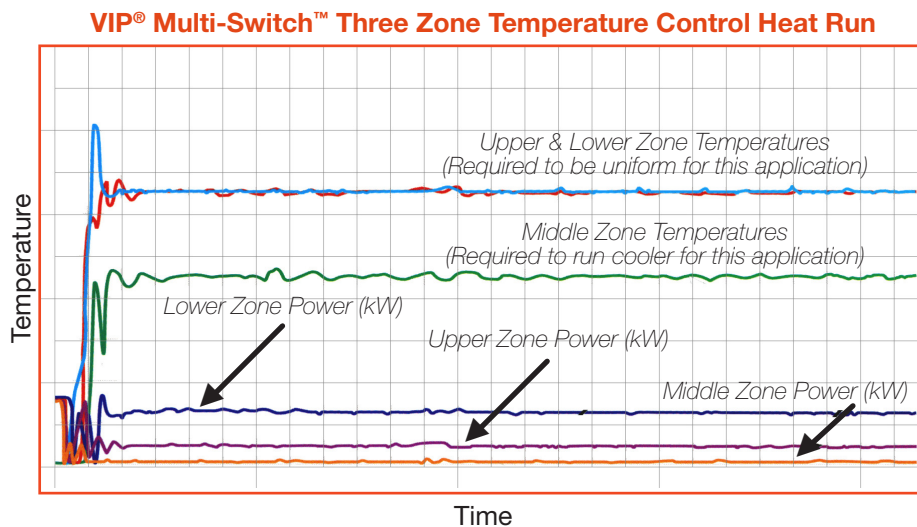
INDUCTION HEATING FOR ADVANCED MATERIALS PROCESSING FROM METAL AND CHEMICAL VAPOR DEPOSITION TO CARBON-CARBON MANUFACTURING

Inductotherm is the principal supplier of induction furnaces and power supplies for the world's leading vacuum system manufacturers and precision investment casters.

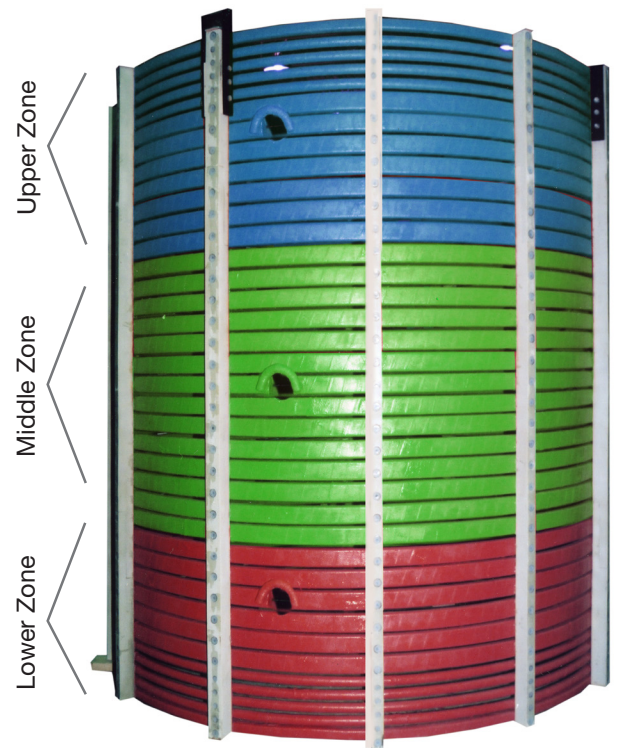
Inductotherm is not only the world leader in melting metal, we also are the leading manufacturer of induction heating systems for a variety of metal and chemical vapor deposition; and carbon-based material heating processes. Our power supplies and highly specialized heating coils are widely used for:

- Heating metals, gas pressure lines, and atomizing nozzles used in metal vapor deposition (MVD) processes
- Graphite heating processes used in chemical vapor deposition (CVD) and impregnation (CVI) in the manufacture of carbon-based composite materials
- Ultra-high temperature (up to 3000°C) for the processing of carbon carbon materials

In graphite heating, maintaining the desired temperature profile within the susceptor is absolutely critical in order to achieve maximum productivity. With our VIP® Multi-Switch™ induction system, precise power input to each zone of the susceptor is achieved by varying either or both the overall power level and the amount of time power is switched to a particular zone of the coil during each power distribution cycle of the system.



In addition to our VIP® Multi-Switch system, we also offer special multi-zone coils and unique VIP-I® Multi-Zone™ Power Supplies. These can also be used for continuous processes involving heat where the temperature distribution in the process chamber is essential. Precise coil power control for each susceptor zone is achieved by independent power supplies for a particular zone of the coil.



For example, in this particular application, a three zone system, upper and lower zone temperatures are required to be uniform while the middle zone temperature needs to run cooler than the end zones.

The heating program calls for time and power to be switched to the individual zones of the coil in proportion to the amount of heating needed to maintain the precise temperatures required in each zone of the susceptor.



Service and Support

Inductotherm sets the world standard for “Global yet Local” service and support.

Excellent customer service is a continuous process and our ongoing goal.

Our team strives to provide the industry’s best service to all of our customers.

Aftermarket and OEM Repairs

WE ARE YOUR AFTERMARKET TEAM. As your OEM, we are best equipped to keep your Inductotherm equipment in top condition whether it be for an upgrade, repair, rebuild, or preventive maintenance.

We also stock a large inventory of spare parts to ensure maximum uptime at your installation.

Service and Technical Support

WE ARE YOUR COMPETITIVE EDGE. Our customer service group provides unparalleled service 24 hours a day, 7 days a week, 365 days a year. This commitment to understanding the needs and concerns of our customers allows us to keep our finger on the pulse of the industry.



Important: Appropriate Personal Protective Equipment (PPE) must be worn by anyone in proximity to molten metal.