

Heat Treating



Pillar is your partner for induction heating solutions



“Do more with less” — this is the challenge you face every day. Make the most of your existing resources. Maximize your return on new technology. And do it all while keeping your line a, running and profitable. Achieving this balance is difficult. When rising to the challenge, it helps to have a partner — both a technology provider and an expert on how to implement it. When induction is the right technology for your heat treating needs, the right partner is Pillar.

A Heritage of Excellence

Pillar Induction is a leading supplier of induction heating and melting equipment. Reflecting the proud heritage of our group companies, Pillar, Westinghouse and Cycle-Dyne, our personnel and innovative traditions remain central to our strategy and future. Our high-quality standards match our reputation, as does our expertise in process engineering and modernization — all resulting in stable, long-term solutions that can last for decades.

Continuous Innovation

Not only are we one of the largest induction suppliers, we are one of the most progressive, not to mention a market leader in developing customer-valued new technology. 3D CAD simulations, state-of-the-art manufacturing capabilities, application laboratories, and on-staff metallurgists guarantee that our customers always stay ahead of the industry.

Your Process Partner

Through close collaboration and personal attention, Pillar is dedicated to sharing our customers' passion and focus on their business goals. Pillar doesn't just sell equipment, we provide the right solution. We optimize your floor plan. We streamline your energy consumption. By applying our years of experience and knowledge of best practices, our customers are empowered to compete more effectively.

Customer Service and Support

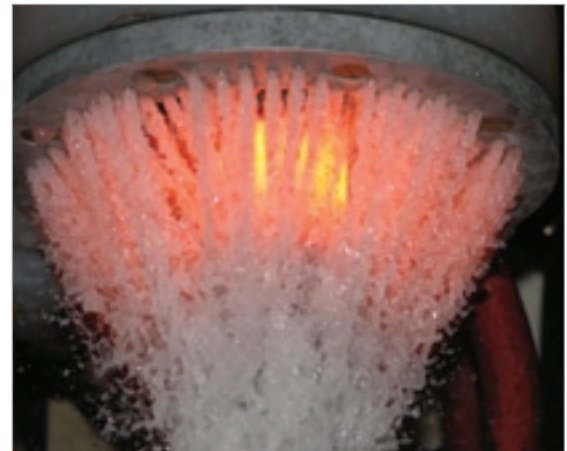
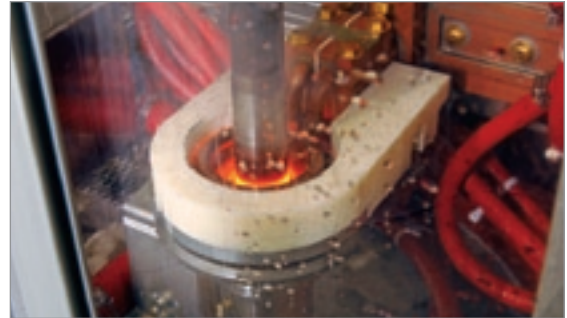
Before the contract is signed and for years beyond start-up, customers can count on Pillar. Whether creating a turnkey solution from scratch, retrofitting and updating your existing lines, or evaluating future possibilities, the level of service is the same. Our maintenance specialists are available 24 / 7 and customers can enroll in preventive maintenance contracts to keep their lines up and running. All day. Every day.

Pillar Support Network

Along with personalized service, Pillar customers can benefit from the resources of a global corporation. We provide global assistance through our network of regional service engineers in China, England, Germany, Japan, Korea, Mexico and Thailand. Wherever you are, we can help.

Solutions Designed for You

When you have unique requirements, Pillar can tailor a solution based on our extensive application experience. Through a combination of standard products and innovative engineering, Pillar can meet your most demanding production and quality needs. With a wide range of field-proven solutions, our engineering team can provide the experience and expertise to optimize your process.



Induction OEM for

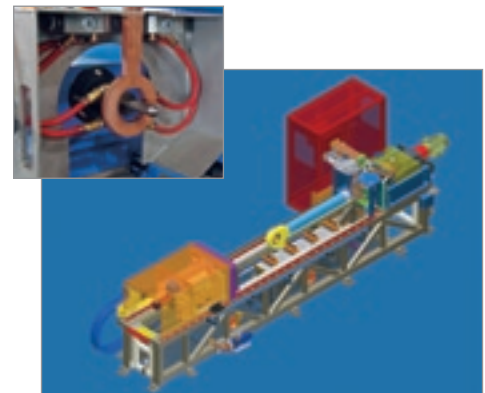


Put our design and process experience to work for you in any heat treating application

Induction heating is the most energy-efficient and controllable method for applying heat during the heat treating process. Its non-contact nature enables high production rates that meet the most demanding metallurgical requirements. The localized heating and direct coupling into the part minimizes the heat in the local environment, enhancing operator safety and comfort. As a leading supplier and innovator of induction heating solutions, Pillar Induction has the experience and product necessary to meet your critical production needs:

Horizontal Scanner

Capable of heating cylindrical parts from 17" to 132", up to a 19" diameter, these large Horizontal Scanners are used for progressive heating and are fully integrated with induction power, quench systems, rotational drives, servo motions and system controls. While the part is rotating, the induction coil (with integral quench) will travel horizontally along the length of the shaft while induction heating, and simultaneously quenching the parts. The heat station is located behind the scanning envelope.



Gear Hardening

With 3-axis servo positioning, the Pillar tooth-by-tooth gear hardener provides ID or OD case hardening of large spur and helical gears from 10" to 180" in diameter. Complete with integral quench system, water cooling system and Allen Bradley process machine control, this recipe-driven system is capable of multiple scan speeds as required by the metallurgical recipe. Pillar developed a state-of-the-art, non-contact laser measurement system which significantly decreases the amount of time necessary to set up for each part. This non-contact laser measurement system working in conjunction with low backlash servos provides consistent induction coil-to-tooth alignment to ensure the proper heating pattern. Advanced controls include a large touch screen HMI for operation and analysis, recipe storage, and Ethernet connection for external logging and remote diagnostics.

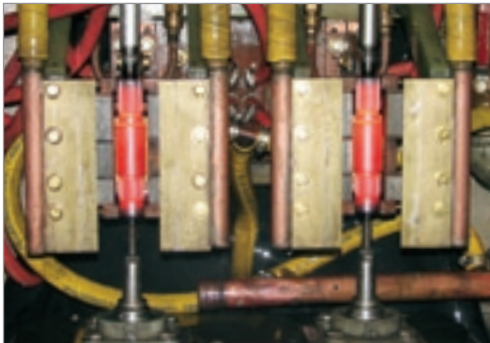
Vertical Scanner

In a vertical scanner the part is held either in a bottom nest or between vertical spindles with a continuous heat and quench occurring as it is passed through the induction coil. Scanning minimizes the power requirements of the power supply when compared to single shot processing. The part is typically rotated in the scanner.



Lift & Rotate

These machines typically use a cylinder to lift the part into the induction coil and an electric motor to rotate the part, with an adjustable hard stop used for part positioning. The part is heated and rotated during the heating and quenching operations to ensure uniformity of heating and quenching.



Single Shot Hardening

Single-shot heat treating refers to a process during which the part being heat-treated remains stationary in the induction coil during heating and quenching. The design and requirements of the component dictates that this process is best suited and each one is customized. The induction coil is at the heart of single-shot heat treating and specifically the laminated, integral quench, profile coil.



Shaft & Rod Hardening

These installations have processed bars, tubes and pipes, and they all have three sections: infeed, heating / quenching, and outfeed. The drive mechanism, controls and complexity varies, depending on the application, industry and country of destination, but Pillar quality is what our customers have always counted on.



Additional Applications

- Axle Hardening
- Bolt & Fastener Hardening
- Crane Wheel Hardening
- Crankshaft Hardening
- Cylinder Liner Scanning
- Hand Tools
- Mining bit Hardening
- Pin Hardening
- Slew Ring Hardening
- Tempering
- Shrink Fitting
- Spindle & Hub Heating

Technology & Support

Power Supplies

As the originator of the solid state power supply, Pillar Induction provides solid reliability, quality and efficiency in our market-leading product line. Pillar offers a wide range of power supplies with output frequencies of 200 Hz through 450 kHz, and power output up to 10 megawatts.

The MK-11 series, IGBT power supply offers a wide tuning range and is available in both local and remote heat station configurations which simplifies integration into new installations or retrofitting existing systems with energy-efficient, voltage-fed, parallel-tuned technology. With a new HMI-based control package offering enhanced diagnostic capability, the MK11 continues to be the benchmark heat treating power supply for Pillar.

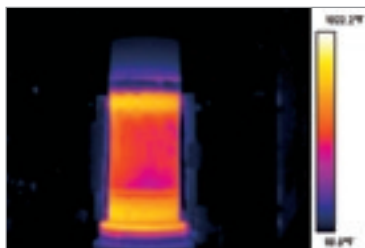
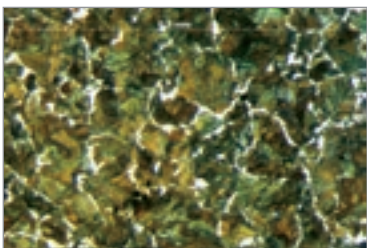
The MK-22 series, MOSFET power supply provides solutions for high-frequency heating applications following the MK-11 legacy of robust power supply design with today's needs of solid state control, remote process analysis and reliability demanded by today's global economy.



Process Development Center

The Pillar Michigan Induction Center is a valuable resource in meeting the most challenging of induction heating applications. With our experienced staff of engineers, metallurgists and technicians, we are capable of meeting virtually any processing requirement in support of our customers. Our facility provides a complete applications laboratory for developing new processes as well as prototype processing services. Our tooling design and manufacturing capabilities along with our metallurgical laboratory supports these facilities.

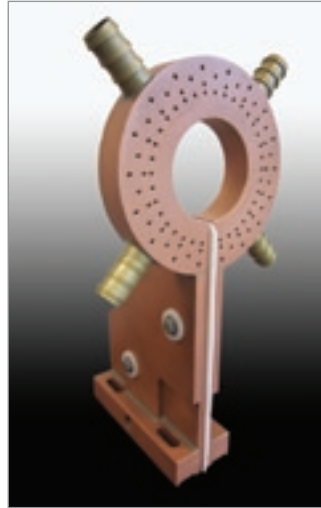
Evaluation of proposed and current applications can be made to determine the effectiveness or possible improvements of an induction heating application. The goal of our application development laboratory is to take the guesswork out of the process before implementation on the production floor.



Induction Heating Coils

The success of any induction heating application is related directly to the selection and design of the work coil (or inductor). This design is influenced by a number of factors, including the dimensions and configuration of the part to be heated, the heat treat pattern required, whether the part is single-shot heated or scanned, and the amount of power available. Most scanning applications employ inductors with one or two turns. Single turn inductors are generally machined copper structures with precise dimensions.

Pillar utilizes many innovative coil designs and manufacturing techniques to achieve proper heating of your product, based upon our staff's broad experience. Trust your application to our experts who will provide the most efficient and productive solutions. Coils are designed by our team of engineers and are manufactured in-house, to provide high-quality products at a competitive price.

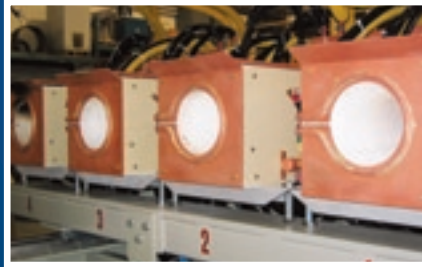


Commercial Processing

Pillar Induction can provide your organization with the answer for limited production runs or in establishing long-term processing relationships to support your production requirements. Our experienced staff located within our Sterling Heights, MI, facility prides itself in exceeding our customers' quality, consistency and delivery expectations. With the extensive worldwide support network of Pillar, our processing team can quickly respond to your processing requests to meet your delivery objectives. The extensive use of process monitoring equipment allows for precise control of all process variables to ensure that each cycle meets the established processes protocol. This monitoring coupled with complete metallurgical analysis and testing of processed samples along with an application specific control plan ensures that your product is processed in a disciplined environment ensuring the consistency of each part and lot processed.

Pillar Induction realizes that the key to our continued success is directly related to meeting our customers' objectives through building long-term relationships. We look forward to assisting you in your production processing challenges.

Support



Melting

Materials

- Ferrous
- Non-Ferrous
- Precious Metal Melting

Furnace Styles

- Coreless
- Steel Shell
- Steel Frame
- Box, Lift / Swing
- Lift Coil and Hand Furnaces

Custom Applications

- Vacuum Melting
- Crucible Melters
- Graphite Susceptor Melting

Heating

Tube & Pipe

- Heat Quench & Temper
- Upsetting
- Seam Annealing
- Normalizing
- Coating & Galvanizing
- Stress Relieving

Forging & Forming

- Billet Heating
- Bar End Heating

Heat Treatment

- Horizontal & Vertical Scanners
- Single Shot
- Lift & Rotate
- Automated Pick & Place
- Tooth-by-Tooth Gear Hardening

Specialty Heating

- Wire Heating
- Brazing & Soldering
- Shrink-Fitting
- Crystal Growing

After-Market

Induction Coils

- Repairs
- Rebuilds
- New & Retrofit

Spare & Replacement Parts

- SCR's Diodes, and IGBT's
- Capacitors
- Water Cooled Power Leads
- Bus Bars
- Control Boards

Retrofit & Refurbishments

- Controls Upgrades
- Heat Station Rebuilds
- Equipment Upgrades
- Water System Replacements

Repair Services

- Control Boards
- Water Cooled Power Leads

Field Service

- Preventative Maintenance
- Training
- Documentation
- Thermal Imaging Analysis
- 24-Hour Service Hotline

USA Headquarters

21905 Gateway Road
Brookfield, WI 53045
Phone: +1 262-317-5300
Fax: 262-317-5353

CHINA

No. 533 Yuan Zhong Road
Nanhui Industrial Zone
Shanghai, China 201300
(86) 21-68009546
(86) 21-68009542 (FAX)

ENGLAND

2 Dorset Road,
Saltley Business Park
Saltley, Birmingham B8 1 BG
(44) 121 322 8000
(44) 121 322 8080 (FAX)

GERMANY

Ersheimer Str. 87
69434 Hirschhorn, Germany
49 62 72 92 17 500
49 62 72 92 17 587(FAX)

JAPAN

1-6-35 Shinsuna
N-Building, 7th Floor
Ko To-Ku, Tokyo, 136-0075 Japan
(81) 33647 7661
(81) 33647 7662 (FAX)

KOREA, Seoul

Room #201, Dae-Ryuk Bldg,
103-9
Guro-Dong, Guro-Ku, Seoul Korea
(82) 2 837 0413
(82) 2 837 2292 (FAX)

MEXICO

Avenue Manantiales No. 11
Esq. Acueducto
Parque Industrial Bernardo
Quintana
El Marquez, Quereta R O
C P 76246 Mexico
(011) 52 442 221 5415
(011) 52 442 221 5090 (FAX)

THAILAND

Suite 4, 36th Floor
All Season Place
87/2 Wireless Road
Lumpini Phatumwan Bangkok
10330
Thailand
(66) 02 625 3111
(66) 02 625 3045



OEM for Westinghouse and Cycle-Dyne induction equipment.

www.pillar.com

