



MEETING THERMAL CHALLENGES THROUGH INDUCTION

 **megatherm**

Induction Mass Heating System

## the company

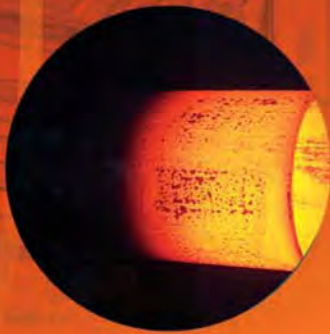
We deal in Metal Heating & Melting and possess the strength to meet Thermal Challenges through Induction.

In 1989 as we sparked-off, we banked upon our troupe of Electro Thermal Processing experts and the capital of experience that we had gathered since the 70's. We made our presence felt across Steel, Foundry, Forging and various other Metal Working Sectors, surging forward with spirits held high and the fire burning within.

Today, Megatherm is recognized and preferred by its ever-extending list of domestic and international clientele. Our installations are spread over the globe in countries, such as Brazil, Argentina, Chile, Mexico in Latin America; South Africa, Nigeria, Egypt, Kenya in Africa; Georgia, Kazakhstan, Azerbaijan, Iran in Central Asia; Indian, Pakistan, Bangladesh, Malaysia in South Asia, Kuwait, Saudi Arabia, U.A. E., Yemen in Middle East Asia; Poland, France, Germany in Europe to name a few.

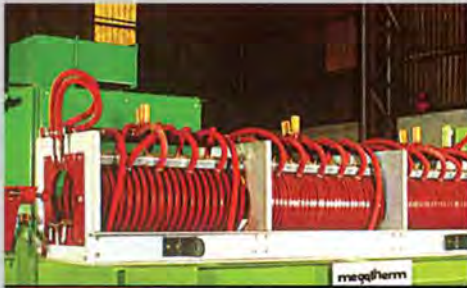
Megatherm is committed to customer delight and performance excellence. We have invested in progressive in-house R&D which in turn has yielded both profit and praise for the company. On an aggregate we have over 1500 satisfied customers of Electro Heating Equipment till date. Our systems are incorporated with the best contemporary technology that ensures optimum utility and comprehensive productivity.

Being certified as an ISO 9001-2000 Company, the name Megatherm today is synonymous to quality.



## Induction Mass Heating

Various Metal working Processes such as Forging, Extrusion, Rolling, Annealing, Curing etc. depend on Induction Mass Heating technology, which is leveraged through various applications, such as:



## Induction Billet Heater

The continuous feed Induction Billet Heaters manufactured by Megatherm are the outputs of the latest technology. These heaters come with static power supply, complete range of modular material handling mechanics, temperature measuring & monitoring system and other related accessories.

These induction heaters are suitably configured to through-heat cut billets of assorted cross sections uniformly to the forging temperature of  $1200 \pm 50^{\circ}\text{C}$  ( $1250^{\circ}\text{C}$  max). The uniquely designed induction coils assist in maintaining surface to core and nose to tail temperature within very close tolerance.

The Static frequency converters are customized in terms of power and frequency rating. The variables that determine the rating are – billet cross section, production rate and temperature profile, as specified by the customer. The procedure of continuous heating system initiates with a train of billets journeying through the closed coil box. As the hot billets are ejected one after the other through the exit end they are replaced by the cold billets that head for the coil box in turn.

Additional systems like hot billet descaler and inert gas purging systems are available on special request.





## ☛ Induction Bar End Heater

Megatherm believes in keeping its products abreast with the latest technology. The continuous Induction Bar End Heater is a package of static power supply, modular handling mechanism and peripherals, designed specifically for heating of only selective portions of a round or square bar.

These induction heaters are suitably configured to through-heat the Bar Ends to a forging temperature of  $1200 \pm 50^\circ\text{C}$  ( $1250^\circ\text{C}$  max).

The production rate, bar dia and heating count determine the power and frequency rating of the Static Frequency Converter. The coil is also devised accordingly.

The Bar-End heaters are offered in the following designs –

### ☛ Horizontal design with bar indexing and coil to-fro movement

As per this design the bar is placed onto the indexing conveyor at a certain point while the heated end is kept suspended. These hanging ends are heated by the induction coil (pigeon hole type) in a to and fro movement. The salient features of the design being –

The heated bars are conveniently detrained at a singular point.

The design is suited to incorporate non-contact infra red pyrometer and accept-reject mechanism.



#### ❖ Horizontal design with bar movement through the induction coil

This mechanism requires the bars to be hauled manually or automatically onto fixed V-guides. As the name suggests, the bars are then hustled forward by the pneumatic cylinders through the multi pigeon-hole induction coil. This operation follows a sequence as per set cycle time. Once the cycle is completed, the pneumatic cylinders shove the bars out of the induction coil only to be followed by fresh loading.



#### ❖ Inclined design

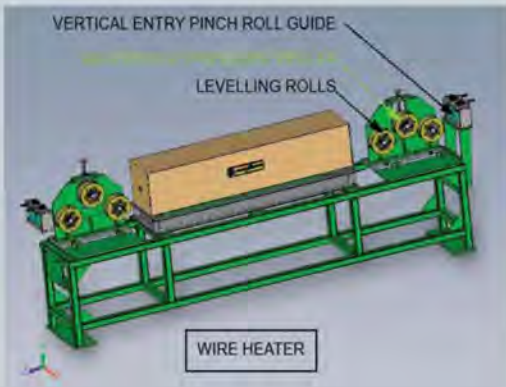
The inclined bar end heater are meant for those heated lengths which are very high compared to the total length of a bar. These heaters come with the feature of sequential heating in multi pigeon-hole coil driven through a PLC equipped operator console.



#### ❖ C-Channel coil design

The mechanism of C-Channel coil offers uninterrupted movement of the bars in regular sequence, without rotation for end heating. This device works best for smaller bars with high rate of production. Here, the roller conveyor fitted with AC Geared motor with drive carry the unheated length of bars. The bars once heated are dislodged from a particular point to facilitate hot handling and temperature monitoring.

## Induction Wire / Wire Rope / TMT Bar Heater



This category of induction heater is formulated to execute uniform heating of wire/wire ropes/TMT bars in the required degree for applications like –

- a) Annealing
- b) Coating
- c) Stress relieving etc.

The wire/bar is heated to the requisite temperature at its rated throughput. And the largest diameter of the job determine at which rate of power the Static Frequency converter would work. The system is offered for continuous in-line heating. The wire / wire rope/ bar is passed through an elongated & closed coil box with FRP liner, provisionally designed with adjustable speed. The infra red pyrometer at the exit point registers the temperature of the wire and subsequently sends out feedback in form of current signal.

The report is fed back into the PID controller for the necessary closed loop control.

## Induction Long Bar Heater



If your requirement is heating of continuous long bars, of round or square cross sections of various dimensions, then the option for you is Megatherm's Induction Long Bar heating equipments – they help the round/square metal bars to attain a uniform forging temperature. These heating equipments are suitably designed for fully / semi automated operation and are compatible with various categories of forging/hot shear machines.

The installation is complete with automatic bar loading systems and the induction coils used in the heater also come in varied specifications. Therefore the bars used in the heater section also vary characteristically in diameter and length, depending on the specifications. And this variance is controlled through a temperature monitoring system and bar reverse and discard systems. All heater functions are controlled through suitably designed PLC equipped operator consoles.

**The basic composition of the equipment includes:**

- a) Manual feed / semi automatic feed bar loader and feeder system.
- b) Heater section with pinch roll drive to drag the bar at a constant speed through the heater coils.
- c) Control desk with temperature indication through IR Pyrometer.
- d) Solid State Induction Power supply.
- e) A set of water cooled coils with protection skids. The coils are refractory cast for long life.



## Induction Pipe Heater

Induction Pipe Heaters are commissioned for the following jobs –

- a) Pipe End Heaters for hot spinning for gas cylinder manufacturing lines
- b) Pipe Surface heaters for coating lines
- c) Pipe heaters for pipe bending application

All these heaters are a complete package of mechanical handling systems, temperature monitoring systems and specially designed coils.



## Induction Power Supply Unit

When it comes to Induction Mass Heating Power Sources, Megatherm has a commendable series to offer. These power units are fitted with the much trusted "Parallel resonant current Technology" that ensures efficient & reliable heating. The capacity of these units range between 15 kW and 20 MW matched by similar gradation in operating frequency between 250 Hz to 25 KHz. The Power Semiconductor devices in the circuits are customized either with Fast Thyristors or IGBTs, depending on the power and frequency.



With the purpose of controlling the frequent downward regulation of power, D.C Choppers are utilized to maintain **constant mains power factor under all operating conditions.**

Multi-Pulse and Multi-Rectifiers options are often deployed to limit Harmonic levels when the rating is above 1000 kW.

## Matrix For Heater Selection

Frequency 25 KHz Applicable Stock sizes	10-30 mm	
Models	Average Production rate, kg/hr	Billet Sizes
60 MTIBH / 25	120	10-20
150 MTIBH / 25	300	20-30

Frequency 06 KHz Applicable Stock sizes	20-50 mm	
Models	Average Production rate, kg/hr	Billet Sizes
125 MTIBH / 06	257	20-32
250 MTIBH / 06	550	32-45
400 MTIBH / 06	880	40-50

Frequency 3 KHz Applicable Stock sizes	40-75 mm	
Models	Average Production rate, kg/hr	Billet Sizes
150 MTIBH / 3	375	40-50
350 MTIBH / 3	875	50-60
500 MTIBH / 3	1250	60-75
750 MTIBH / 3	1875	60-75

Frequency 01 KHz Applicable Stock sizes	60-125 mm	
Models	Average Production rate, kg/hr	Billet Sizes
350 MTIBH / 1	925	60-75
550 MTIBH / 1	1485	75-100
800 MTIBH / 1	2300	75-100
1250 MTIBH / 1	3250	100-125
2000 MTIBH / 1	5000	100-125

Frequency 300 KHz Applicable Stock sizes	90-160 mm	
Models	Average Production rate, kg/hr.	Billet Sizes
500 MTIBH / 0.3	2250	90-125
900 MTIBH / 0.3	4600	90-125
1800 MTIBH / 0.3	6100	125-160

## Power Source Options

<b>Input Rectifier Options</b>	6 pulse - upto 1 MW	<b>Output Inverter Options</b>	Fast Thyristor - upto 10KHz
	12 pulse - upto 10 MW		IGBT - upto 100KHz
	24 pulse - upto 20 MW		
<b>Power Control Options</b>	DC Chopper Control - upto 3MW	<b>Assembly Options</b>	Integrated Capacitor Bank, DC
	AC Phase Control - upto 20MW		Reactor & Cooling Heat Exchanger
<b>Power Sharing Options</b>	Dual - upto 2x2 MW		
	Triple - upto 3x1 MW		Standalone Units - upto 20MW

## WORLDWIDE INSTALLATIONS

 Argentina  
 Azerbaijan  
 Bolivia  
 Botswana  
 Bhutan  
 Bangladesh  
 Brazil  
 Cuba  
 Egypt  
 France  
 Georgia  
 Ghana  
 India  
 Iran  
 Kuwait



 Kenya  
 Malaysia  
 Mexico  
 Nepal  
 Nigeria  
 Pakistan  
 Poland  
 Saudi Arabia  
 South Africa  
 Sudan  
 Tanzania  
 Tunisia  
 U.A.E  
 Uganda  
 Yemen

**megatherm**

An ISO 9001:2000 company

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