MESTA ELECTRONICS

AIR-COOLED INDUCTION HEATING

(RF) Power Supply

Designed Specifically for Crystal Growth and Epitaxy

Industry Leading Reliability

Efficiency Greater Than 97%

www.MESTA.com

Higher Yields, Improved Quality, Reduced Operation Costs

AIR-COOLED INDUCTION HEATING (RF) POWER SUPPLY

The Mesta Air-Cooled Induction Heating Power Supply provides an extremely precise and highly stable power output used for the most critical and demanding applications. Systems can provide power ranging from 25kW to 100+kW.

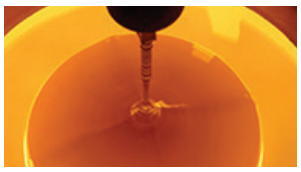
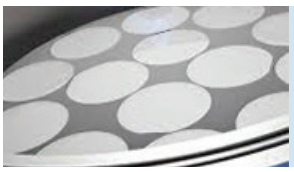
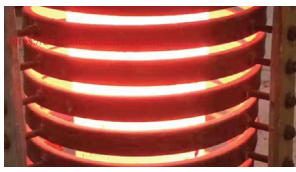
The tap changing output transformer allows for different operating parameters. Electronic short circuit and current limiting feature protects the inverter as well as the components of the furnace. The operator interface is fully programmable, using an integral 8 line by 40 character LCD display and keypad. This allows for the monitoring of operating conditions, programming of specific operating parameters, and the viewing of important diagnostics.

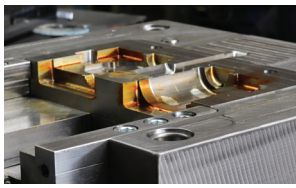
The available dual output induction heating inverter consists of two-phase locked inverters that will support multiple induction heating coils in order to produce very complex and demanding temperature profiles. Both inverters are continually phase-locked; each is independently controlled and corresponds to a separate input or command signal. For the most demanding applications, the Induction Heating Inverters can be made uninterruptible with a built-in battery back-up.

APPLICATIONS

Our air-cooled induction heating inverter is used for the most critical and demanding applications by providing an extremely precise and highly stable power output.

- Crystal Growth
- Optical Fiber
- Heat Treating
- Epitaxy (*MOCVD & CVD*)

FEATURES & BENEFITS

Implementing Mesta's energy efficient **Air-Cooled Induction Heating (RF) Power Supply** will reduce your operating costs dramatically and preserve your profitability, empowering your competitive edge.

On Demand Auto-Tuning
Improve output Power Factor and increase system efficiency.

Advanced Front Panel/LCD display
Monitor operating conditions, program specific operating parameters, and read important diagnostics.

Remote or Computer Controlled
RS-232 connections enable local and remote system communication via terminal or computer.

Modified Type 12 Enclosure
Enable inverters to operate under various industrial conditions.

State-of-the-Art Power Electronics
Transistor-based switching inverter (instead of SCR's); more rugged, economical, and efficient devices.

Tap Changing Option
Ideal for situations where conditions of furnace are unknown or are variant.

Environmentally Sound
No noise pollution; operates at <60 dB

Air-Cooled
Lower operating costs; eliminate water and maintenance costs.

Higher Productivity
More uptime and less time spent repairing leaks, tubes, or chambers associated with water cooling.

Electronic Short-Circuit and Current Limiting Protection
Automatic system protection.

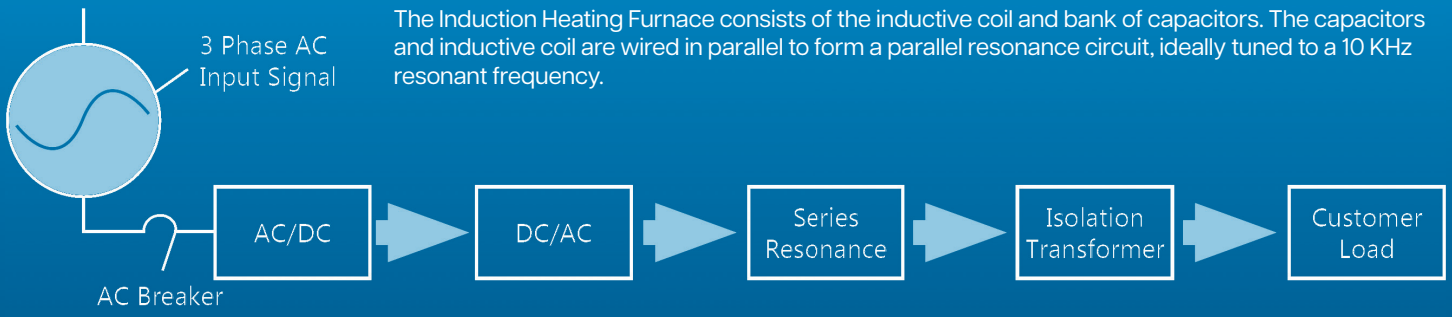
Optimal Precision and Control
Cutting-edge digital controls and micro-controller intelligence.

Mean Time Before Failure (MTBF)
All Mesta equipment is designed to operate for at least 200,000 hours.

Compact Size
Wall mountable if floor space is limited or unavailable

PRIMARY SERIES RESONANCE
& TRANSFORMER ISOLATION

The output from the inverter is fed through a series inductor, capacitor, and then the primary of the output transformer. The inductor and capacitor form a band pass filter whose center frequency is 10 KHz, the sum impedance of these elements is minimal.



The Induction Heating Furnace consists of the inductive coil and bank of capacitors. The capacitors and inductive coil are wired in parallel to form a parallel resonance circuit, ideally tuned to a 10 KHz resonant frequency.

Operational Principle

While the operating frequency of the inverter remains at a constant level (9-11 KHz) and at resonance with the load, the output voltage is varied linearly from 0-100% using P.W.M (Pulse Width Modulation).

This differs from other induction heating inverters, which control the power by varying the frequency and maintaining constant voltage. The Mesta approach yields much more precise and efficient results.

More Controllability/Optimal Precision

Both Model S (single inverter series) and Model M (multiple inverter series) will control the output voltage better than one part per 16,000 or 0.00625%.

In a typical output of 500 Volts, the system will be able to control the output voltages within +/- 0.03125 Volts. With a typical output power of 50 kW, the system will be able to control the output power within +/- 3.125 Watts. This outstanding control allows for precise control of any parameter, yielding the most accurate results.

Serial or Remote Communication

Mesta's induction heating inverter is user friendly and allows the user to continuously communicate with the system and monitor and/or program specific operating parameters.

This can be done through the advanced front panel (16 button keypad) and (40x8) character LCD Display, or serially through the computer keyboard via the RS-232 connection.

Air Cooling

Due to the high operating efficiency, the induction heating inverter uses air-cooling instead of water-cooling eliminating any associated water or maintenance costs.

Mesta incorporates the most state of the art magnetics and powerful micro controller intelligence into a water-free, cost-efficient system. The induction heating inverter will provide savings of associated water and maintenance costs.

Multi-Coil Temperature Profiles

Model M, the unique dual induction heating inverter, consists of two phase locked inverters and will support multiple induction heating coils in order to produce very complex and demanding temperature profiles.

Both inverters are continuously phaselocked; each is independently controlled and corresponds to a separate input or command signal.

Tap Changing Option

Changing the output tap voltage is optional on the induction heating inverter. The tap changing inverter produces rated power at different maximum voltages ranging from 300 - 800 Vrms.

This is ideal for applications where the voltage/current characteristics of a driven furnace are not entirely known or for applications where the driven furnace is changed from time to time.

Diagnostic and Critical Annunciations

The micro-controller of the induction heating inverter will automatically self-diagnose unusual or dangerous operating parameters and instantaneously alert the operator with its advanced alarm system. Further, it captures the time and reason of the occurrence to facilitate troubleshooting and ensure minimal downtime.

Control of the Output Voltage

An external 4-20 mA source controls the magnitude of output voltage between 0 and the rated output voltage of the unit. The output frequency (9-11 KHz) is programmable to equal the maximum resonance of the given system.

Highest Efficiency (>97%)

The Mesta approach produces low associated losses and yields high efficiency. The energy efficient Mesta inverter will dramatically reduce operating costs and preserve profitability to help your company and product maintain a competitive edge.

MESTA ELECTRONICS

ABOUT US

Mesta Electronics, Inc. specializes in the design, development, and manufacture of advanced power quality and power conversion equipment. Mesta's products range from highly advanced harmonic filters to extremely precise induction heating power supplies.

In 2021, Mesta was acquired by Hammond Power Solutions (HPS). Through this collaboration Mesta and HPS will continue to grow their presence in the power quality market. HPS is a North American leader for the design and manufacture of dry-type standard and custom engineered magnetics, including transformers, reactors, active and passive harmonic filters and dV/dT filters.

COMMITMENT TO QUALITY AND SERVICE

Mesta's cutting edge technology and products emerge from our outstanding engineering and production teams. From design to shipment, our products are extensively tested to meet and exceed our customers' expectations and industrial standards. We strive to make advanced technology, high reliability, and customer satisfaction synonymous with the Mesta name.

Air-Cooled Induction Heating Power Supplies

Active Harmonic Filters

ENGINEERING CAPABILITIES

Mesta was founded on its engineering capabilities and manufacturing of electronics, and continues to take pride when doing projects for its clients. We offer a responsive and professional team of design engineers, manufacturing technicians, and a sales and support staff that all work seamlessly together to meet the most complex demands. Mesta consistently completes projects both on time and budget, while meeting the most advanced of power electronic specifications.

Mesta provides several unique features that make it especially qualified to partner with you to create your custom product. Our team is backed by the most sophisticated computer systems, testing equipment, manufacturing processes, modern laboratory, and an adherence to strict quality and environmental standards.

Higher Yields, Improved Quality

Reduced Operation Costs

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