Air-Cooled
Induction Heating Inverter

- ***mtbf of 200,000 hours***
- ***short-circuit protection***
- ***efficiency > 97%***
- ***precise temperature profiles***
- ***maximum control & precision***
- ***unique digital display & user interface***
- ***no noise pollution; operates at <60db***
- ***eliminates water cooling & its maintenance***

50kW Power Supply

Implementing the energy efficient Mesta approach will reduce your operating costs dramatically and preserve your profitability – empowering your competitive edge.

Unprecedented Features!

- **AIR COOLED** lower operating costs, no water or maintenance costs
- **STATE-OF-THE-ART POWER ELECTRONICS** transistor-based switching inverter (instead of SCR's) more rugged, economical and efficient devices
- **MORE CONTROL FLEXIBILITY** output power is controlled by varying voltage instead of frequency
- **ELECTRONIC SHORT-CIRCUIT AND CURRENT LIMITING PROTECTION** automatic system protection
- **ADVANCED FRONT PANEL/LCD DISPLAY** allows user to monitor operating conditions, program specific operating parameters and read important diagnostics
- **REMOTE OR COMPUTER CONTROLLED** RS-232 connections enable communication with the system locally or remotely via the use of a terminal
- **HIGHER PRODUCTIVITY** more uptime and less time spent repairing leaks, tubes or chambers associated with water cooling
- **ENVIRONMENTALLY SOUND** no noise pollution operates at <60db
- **OPTIMAL PRECITION AND CONTROL** cutting-edge digital controls & microcontroller intelligence
- **MTBF** (Mean Time Before Failure) all Mesta equipment are designed to operate for at least 200,000 hours
- **MODIFIED NEMA 12 ENCLOSURE** enables inverter to operate under various industrial conditions
- **TAP CHANGING OPTION** ideal for situations where conditions of furnace are unknown or are variant
- **COMPACT SIZE** wall mountable if floor space is limited or unavailable

Mesta's advanced front panel allows users to monitor operating conditions and program specific operating parameters.

More Controllability/Optimal Precision Both the Model S (single inverter series) and Model M (multiple inverter series) will control the output voltage better than one part per 16,000 or 0.00635%. 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 50kW, the system will be able to control the output power within ±3.125 Watts. This outstanding control allows the customer to precisely control any parameter, yielding the most accurate results.

Primary Series Resonance and Transformer Isolation The Output from the Inverter is fed through a series inductor and capacitor and then the primary of the output transformer. The inductor and capacitor form a band pass filter whose center frequency is 10KHz, 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 (9-11KHz) 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.

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.

Air Cooling-No H_2O Due to the high operating efficiency, the Mesta Induction Heating Inverter uses air-cooling instead of water-cooling eliminating any associated water or maintenance costs. Mesta has perfected the induction heating process incorporating the most state of the art magnetics and powerful microcontroller intelligence into a water-free, cost-efficient system. The Mesta IHI will pay itself off in the savings of associated water cost and maintenance alone.

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

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 phase-locked; 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 Mesta Induction Heating Inverter. The Tap Changing Inverter produces rated power at different maximum voltages ranging from 300-800Vrms. 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 microcontroller 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.

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.

MESTA ELECTRONICS, INC.
11020 Parker Drive, North Huntingdon, PA 15642

Tel: 412-754-3000
800-535-6798
FAX: 412-754-3016
E-mail: mesta@mesta.com
Web: www.mesta.com