Harmonic Inductive Gain (HIG™) Heating Technology

Recent advances in semiconductor technology have enabled a new method of induction heating that allows real-time control of power delivery, frequency and recognition of load characteristics.

WIDE FREQUENCY RANGE
EXPANDS COIL DESIGN
FLEXIBILITY

PROVEN REPLACEMENT FOR
RESISTIVE HEATING

Years of research have exposed the full spectrum of the HIG™ heating pulse. Detailed understanding of the pulse and the development of optimization algorithms have been proven in inductive and resistive applications now converted to HIG™ heating. iTherm’s HIG™ heating technology works by sending pulses of current at high frequencies through a conductor adjacent to the object to be heated. These discrete pulses induce intense changes in the magnetic field thus creating intense heating with low current allowing coil design and material selection flexibility.

Traditional Induction

Switching Period = T
Effective Frequency = 1/T
High Current, Low Resistance
High Switching Losses
Limited Information About Load

Harmonic Inductive Gain™

Switching Period = T
Effective Frequency = 5-15 X 1/T
Low Current, High Resistance
Low Switching Losses
Significant Information About Load

INDUCTION HEATING
Water Cooling
High Current
Copper Coils
Classic Design

HIG™
High Power
Reliable
Non-Contact
High Temp

RESISTIVE HEATING
Simple
Low Current
Embedded
Low Cost

Low Power
Limited Life
Close Contact
Temp Limit

Heating Technology Ranges

Power Density

Induction Heating

HIG Heating

Resistive Heating

Cost/kW

STRIP HEATING:
• Air cooled coil
• Non-contact
• 6-40” width
• High frequency
• 50ft/min

MELT TRANSFER PIPE HEATING:
• No water cooling
• Increase melt temperature
• Lower furnace temperature
• Energy savings

PRECISION INDUCTION HEATING:
• 1W accuracy
• High frequency
• Reduced heat zone
• Modular design

Other proven applications include, shrink fitting, forging, plastic processing, annealing, Litz wire coils, embedded warm coils...

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