

RAPID HEAT

RHS

SYSTEMS

RAPIDHEAT 35

WELD PREHEATING AND STRESS RELIEVING



Cable identification system knows the type of cable attached and limits output to protect cables and blankets.

Operator tutoring system provides helpful information to optimise coil arrangements for maximum performance.

Multiple output provides two insulated connectors for air-cooled blankets or liquid-cooled cables.

Multiple control thermocouple inputs are available to control on the hottest TC during heating and coolest TC during cooling for uniform heating quality.

Low consumable costs. No fuel costs and minimal insulation costs. Insulation is reusable and may be used 50 times or more, reducing cost of disposal.

Improved working environment is created during welding. Welders are not exposed to open flame, explosive gases and hot elements associated with fuel gas heating and resistance heating.

Isolation fault protection provides automatic system shut down should power source output short to ground. A sense lead provides direct feedback to the power source to initiate fault condition.

High energy-efficient systems (more than 90% efficient) transfers more energy to the part, decreasing heating times and improving power efficiency (less than 60-amp current draw).

Time-to-temperature is faster than conventional processes due to the method of applying the heat, reducing heating cycle time.

Uniform heating is maintained along and through the heat zone by using induction to heat within the material. The surface of the part is not marred by localised conducted heat at higher than specified temperatures.

Open output detection prevents system operation without a covered output receptacle (cable for protective plug).

On-board temperature control provides for manual- or temperature-based programming in a simple-to-learn operator interface.

Easy set-up is achieved using preheat blankets or flexible heating cables combined with user-friendly insulation blankets.

Easy to install through cable connection panel that does not require removal of sheet metal.

QUICK SPECS

APPLICATIONS

Pipe Fabrication Shops
Power Piping – Construction/Repair
Transmission Pipeline – Construction/Repair
Petrochemical – Construction/Repair
Shipbuilding
Mining Equipment Maintenance
Drill Pipe Manufacturing

PROCESS

Induction Heating

INPUT POWER

460-575 VAC,
3 Phase, 60 Hz
400-460 VAC,
3-Phase, 50/60 Hz

TEMPERATURE RATING

Storage: $-40^{\circ}\text{C} \pm 60^{\circ}\text{C}$
Operation: $-30^{\circ}\text{C} \pm 50^{\circ}\text{C}$

RATED OUTPUT

35kw at 100% Duty Cycle 5-30 KH

INPUT AMPERES AT RATED OUTPUT

400 V : 60 Amps
460 V : 50 Amps
575 V : 40 Amps

DIMENSIONS

H: 25 in (635mm)
W: 21-3/4 in (552mm)
D: 36-3/4 in (933mm)

WEIGHT

Net: 227lb (103Kg)
Ship: 265lb (120kg)

RAPIDHEAT 35

LIQUID-COOLED PREHEAT AND STRESS RELIEVING SYSTEMS



OVERVIEW

The Liquid-Cooled Induction Heating System is designed for preheating, hydrogen bake-out and stress relieving applications up to 1450°F (788°C). The system can be operated in the Manual Programming mode where a power output is applied to a part for a specified time or in the Temperature Based Programming mode where part temperature is used to control power output.

Liquid-cooled heating cables provide a highly versatile tool for preheating a variety of pipe diameters and even flat plate. In general, shorter cables are used for smaller diameter pipe and are easier to handle and set-up. Longer cables are used for larger diameter pipe or small pressure vessels and tanks.

TYPICAL APPLICATIONS

PIPE FABRICATION SHOPS

- Provides uniform heating around the circumference of higher strength pipe.
- Reduces set-up time and time-to-temperature in preheat applications.
- Significantly reduces consumable costs.
- Eliminates propane costs.

FIELD CONSTRUCTION OF POWER AND PROCESS PIPING

- Provides uniform heating around the circumference of higher strength pipe.
- Provides rapid time-temperature, reducing total weld cycle time.
- Easy to set up and operate in preheat applications - welder friendly.
- Reduces consumable costs.

SHIPBUILDING – PROP SHAFTS, PIPING SYSTEMS, PLATE (HIGH DUTY CYCLE/HIGH TEMP)

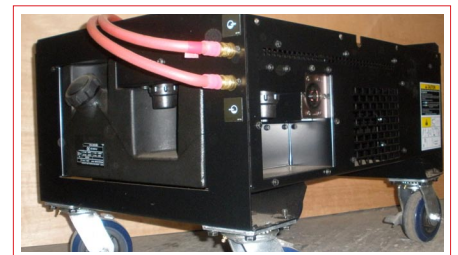
- Provides uniform rapid heating in plate and pipe applications.
- Adaptable to heavy plate applications.
- Provides a safer, friendlier work environment for welders and operators. Personnel are not exposed to open flame, explosive gases or hot heating elements.
- Power efficient compared to resistance heating.

MINING

- Provides uniform heating on high hardness material to prevent cracking.
- More flexible than air-cooled systems for complex shapes.
- Enables higher preheat temperatures than air-cooled systems.
- Eliminated propane costs.

SPECIFICATIONS

The heavy-duty induction cooler is designed with an efficient fin and tube heat exchanger, 2-1/2 gallon rustproof polyethylene tank, high-pressure pump and lower to yield a high cooling capacity.



The cooler is equipped with a flow sensor/indicator and temperature sensor to provide system reliability.

Heavy-duty induction cooler with optional running gear shown attached to bottom of RapidHeat 35.

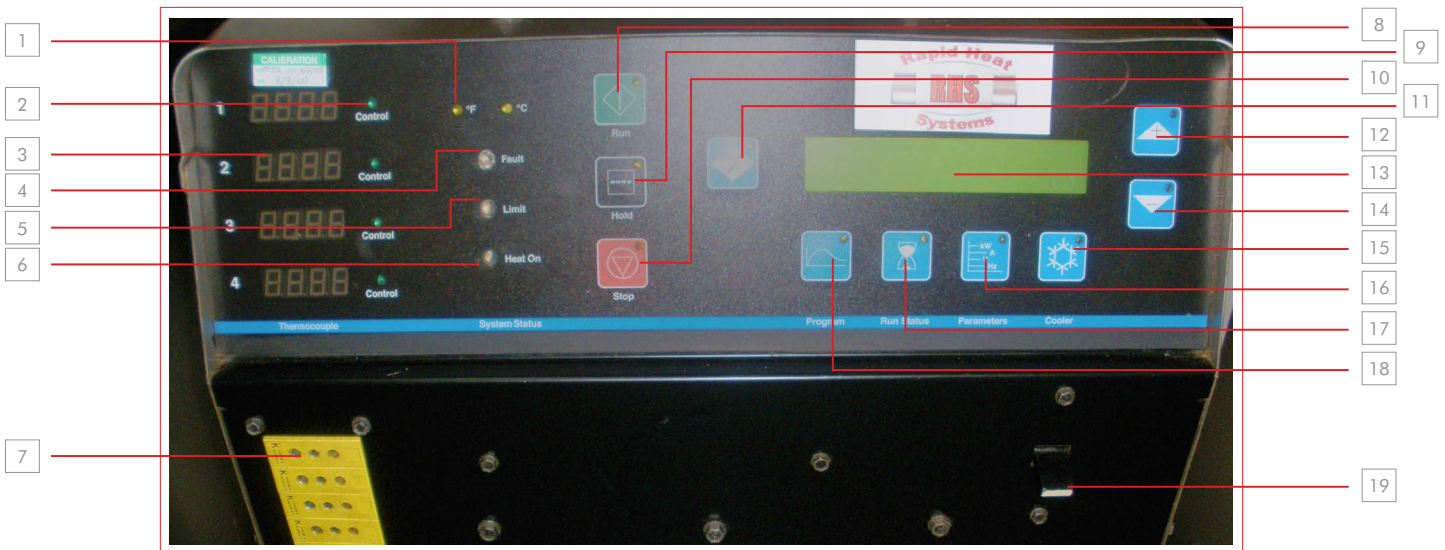
- External input and output filters are used to remove contaminants from the cooler and cable. Filters are easily accessible for cleaning.
- Cooler is attached to power source and available separately. The cooler can be added to power source at a later date to upgrade from air-cooled to liquid-cooled systems.
- Running gear can be attached to power source or cooler.

Dimensions: H: 12-3/4in (324mm)
W: 21-1/4in (540mm)
D: 30in (762mm)

Shipping Weight: 122lb (55kg)



CONTROL PANEL



When a control panel button is pushed the yellow lamp lights to indicate activation.

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|--|---|
| 1. Temperature Units LEDs (LEDs indicate units for temperature measurements (F or C)) | 11. Cursor Button (Use button to move selection cursor in the 4 x 40 LCD display (item 12)) |
| 2. Control Thermocouple LEDs (LEDs indicate which thermocouples (1-4) are used to control the heating process) | 12. Increase Button (Use button to increase values) |
| 3. TC1-4 Temperature Display (Provides temperature display of thermocouples 1 through 4) | 13. 4 x 40 LCD Display (Displays programming; run status, parameters, fault and limit conditions, and troubleshooting guide.) |
| 4. Fault LED (LED lights to indicate a system fault condition) | 14. Decrease Button (Use button to decrease values) |
| 5. Limit LED (LED lights to indicate a system limit condition) | 15. Cooler Button (Use button to turn cooler on and off) |
| 6. Heat on LED (LED lights to indicate the power source output is energised) | 16. Parameter Button (Use button to display "real time" power source operating parameters) |
| 7. Thermocouple Input Receptacles (Use receptacles for type K thermocouple inputs) | 17. Run Status Button (Use button to display "real time" operating status) |
| 8. Run Button (Use button to run a heating process) | 18. Program Button (Use button to program the process control) |
| 9. Hold Button (Use button to hold a heating process) | 19. Power Switch (Use switch to turn power source on and off) |
| 10. Stop Button (Use button to stop a heating process) | |

RAPIDHEAT 35

INDUCTION POWER SOURCE

BUILT-IN TEMPERATURE CONTROLLER

The RapidHeat 35 Induction Power Source is equipped with a built-in temperature controller. The controller provides for Manual Programming or Temperature Based Programming. Manual programming provides for setting a power level and a time duration. This is beneficial in preheat applications where a part is heated to temperature and the heating device removed. Temperature Based Programming provides the ability to develop procedures for preheat, hydrogen bake-out or stress relieve.

Four control thermocouple inputs and two monitoring thermocouple inputs are provided for heating. The control thermocouples are read by the controller which regulate the heat rise based on the hottest thermocouple and cooling based on the coolest thermocouple. This capability helps to insure the heating and cooling rates are not violated during the procedure. The controller is designed to be easily understood and programmed.



ON-BOARD DIAGNOSTICS

The RapidHeat 35 Induction Power Source is designed with on-board diagnostics with operator tutoring. Operating parameters are available at the touch of a button. Induction parameters are highly dependent on how the heating system (Blanket or cable) is placed on the part to be heated.

The RapidHeat provides for Limit Conditions where a parameter will continue to deliver power, notify the operator and then provide helpful information to increase the output. The RapidHeat will also identify Fault Conditions and provide information. The purpose of these capabilities is to provide continuing education of the operator on the use of induction heating equipment and protect the system.

SPECIFICATIONS

Input Power	Output Frequency	Rated Output	Input Amperes at Rated Output	KVA/KW at Rated Output	Dimensions	Weight
460 - 575 V 3-Phase, 60 Hz	5 - 30 kHz	35 kW at 100% Duty Cycle	50 A, 460 V 40 A, 575 V	39 / 37	H: 29 in (736mm) W: 212/1 - in (546mm) D: 364/3 - in (933mm)	Net: 227 lb. (103 kg)
400 - 460 V 3-Phase, 5060/ Hz, CE			60 A, 400 V 50 A, 460 V			Ship: 265 lb. (120 kg)

SYSTEM CONFIGURATIONS

The RapidHeat 35 Induction Power Source is designed with two output connectors for either air-cooled blankets or liquid-cooled cables. This capability requires the use of same size air-cooled blankets or in the case of liquid-cooled systems, the applications must be the same (same size pipe, same program and same coil).

The Cable Identification is able to detect which type of cables are attached and configures the maximum output for the power source. This helps to protect cables and blankets from exceeding the rated duty cycle. The outputs are protected through insulated connectors or when not in use, a protective output cap. The system will not operate with an exposed output connector.



OUTPUT EXTENSION CABLES

The **output extension cables** are available to remote the power source up to 50 feet from the work. Insulated quick-connects are used to easily remove and attach the coolant lines. The power source connector securely locks the cable to the power source and insulates the output connector. The Cable Identification System built into the connector identifies the liquid-cooled systems and permits full power. The cables are flexible for ease of use.



LIQUID-COOLED HEATING CABLE AND PREHEAT CABLE COVERS

The **liquid-cooled heating cable** couples the power to the part to be heated. The silicone hose encloses a special copper conductor specifically designed for carrying high-frequency current to maximize efficiency. The hose also carries the coolant, which cools the conducting wire. The hose is reinforced for strength and durability.

Preheat cable covers are available to protect the heating cable from slag and molten metal created during welding. The preheat covers are easy to install and can withstand temperatures up to 650°F (343°C).



TC EXTENSION CABLES

The **thermocouple extension cable** is a simple means of provided thermocouple inputs from the heated part to the power source. The durable 50ft cable eliminates the cluttered stringing of individual wires to the work. The terminal connection enables six thermocouples to be used with the system.



DIGITAL RECORDER WITH PROTECTIVE ENCLOSURE

The digital recorder is commonly used in stress relieving and critical preheat applications. The recorder stores temperature data based on time. It is not required to perform successful heating applications.

- The recorder is attached to power source top panel or can be removed for office downloads, storage or protection when not in use.
- The recorder power cord plugs into the 110 V auxiliary receptacle on the rear of the RapidHeat and the TC cable plugs into the TC receptacle on the rear of the RapidHeat.
- Six or eighteen temperature (0-10 V) inputs provide temperature data on the heating cycle.
- The recorder is equipped with a touch screen for simple programming and use. The colour display permits clear monitoring of the heating process in outdoor environment (direct sunlight).
- Data can be transferred from internal memory to USB memory stick or directly to a PC via a network cable for printing, storage or further analysis. Files are encrypted for quality assurance.
- Simplified software prints recorded information onto 8-1/2 x 11 in size paper for convenient handling.
- The recorder does not require pens, paper or fragile mechanical devices to document the heating cycle.



DIMENSION

H: 14in (356mm)
W: 12in (305mm)
D: 18in (457mm)

SHIPPING WEIGHT

22 lb. (10 kg)

OUR OFFICES

Rapid Heat Systems head office is located in the United Kingdom.

Rapid Heat Systems has representation in: the United Kingdom, The Netherlands, Hungary, Malaysia, Singapore, Saudi Arabia, Bahrain, Kuwait and Qatar.

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