

RAPID HEAT RHS SYSTEMS



SALES AND RENTAL OF HEAT TREATMENT EQUIPMENT

Induction Pipe Heating, Coatings Removal, Rotational Pre-Heat, Pipe Cutting, Bolt Heating, De-magnetisation & Shrink Fitting Services for On-shore and Off-shore Projects

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ABOUT US

The company disciplines are centred on Heat Treatment Services using innovative new Induction Heating Technology, Pipe Cutting and Pipe Preparation, predominately to the oil, gas, petrochemical, fabrication and mining industries around the world.

Our main operations include:

- HEAT TREATMENT SERVICES
- PIPELINE INDUCTION HEATING
- PIPE CUTTING AND END PREPARATION SERVICES
- BOLT HEATING AND SHRINK FITTING SERVICES
- DE-MAGNETISATION OF PIPE AND PLATE
- COATINGS REMOVAL
- PRE-HEATING OF VESSELS (ROTATIONAL)

RHS provides specialist site services consisting of equipment hire, or alternatively offering a service package, operated by our trained technicians. All our rental equipment is checked and serviced before being dispatched for hire.

RHS continues to work in close partnership with our customers to enhance operational efficiencies, improve reliability and minimise costs.

RHS has the experience and the resources to handle projects of virtually any magnitude. We are proud to deliver these services with the highest ethical standards and commitment to safety, quality and innovation.

Internal Project Management is carried out by comprehensively trained personnel who are technically aware with the skills accent appropriate to the task at hand.

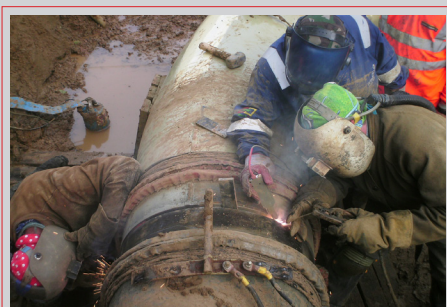
RAPID ON SITE MACHINING HIRE AND SERVICES

Site machines for pipe heating, pipe cutting/bevelling, flange facing, drilling and grinding, bolt heating, de-magnetisation, coatings removal, rotational pre-heating and shrink fitting are available for hire or with trained technicians to operate at the customer's job site.

DE-MAGNETISATION SERVICES

In conjunction with Diverse Technologies, RHS can offer demagnetisation services.

The Diverse Zeromag machine can be used to neutralize magnetic fields in many pipe to pipe, pipe to stub and linear seam weld scenarios. Zeromag is a well proven machine that eliminates arc blow and arc wander caused by magnetic fields in the components.



DE-MAGNETISING PROBE USED WHILST WELDING

RHS INDUCTION 35 MACHINE & RECORDER

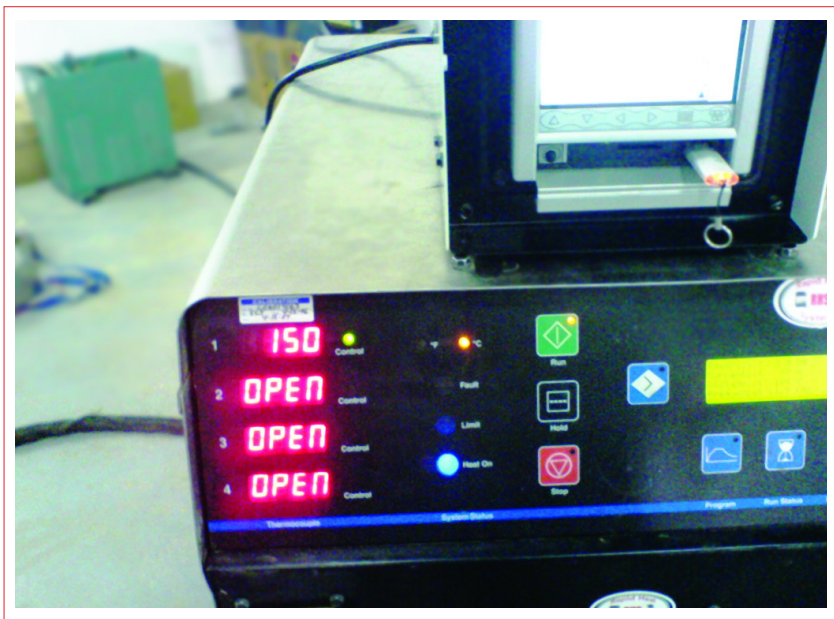


INDUCTION HEATING

WHAT IS INDUCTION HEATING?

Induction heating is a non-contact method of electrically heating conductive materials. Utilising high frequency, alternating currents in coils creates a rapidly alternating magnetic field. This magnetic field crosses the work-piece creating a current flow (eddy currents) within the part; heat is then generated due to the resistance to eddy current flow within the material (I^2R losses).

TC RECORDER 3 WITH FLASH MEMORY:



RHS use a non-contact heating method, inducing heat electro-magnetically rather than using a heating element in contact with a part to conduct heat, which is the traditional method.

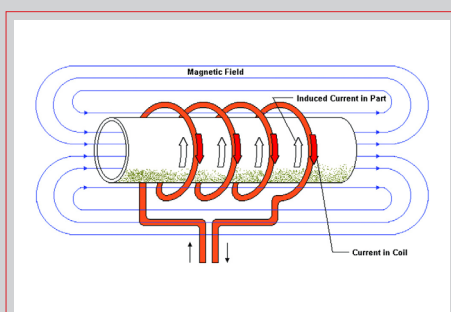
This service provides equipment and technicians to carry out, at site, all our customers heating requirements. Almost any type of steel component can be heated up to 1,450 degrees F (788°C) using our induction heating system.

Some of the more common applications are: pre and post weld heat treatment, hydrogen bake out, stress relieving for pipe lines of all sizes, structural steel, flat plates and vessels. It is also ideal for shrink fitting shafts, bearings and couplings. Due to the flexibility of the induction heating coils, various shaped components can be easily wrapped for heating.

Key safety benefits are: minimal reflected heat, operators can touch the water cooled heating cables whilst the heating process takes place, allowing for reduction in welding times. RHS eliminates the use of propane, which creates an uneven temperature transfer; in addition to this, every kilo of gas burned creates three kilos of water, which can be a problem when welding. Time saving: a digital recorder allows for the storage of all documents for downloading later onto a computer; this saves time in retrieval and managing documents.

RAPID HEAT SYSTEMS

Rapid Heat System (RHS) is a patented induction heating technology that has many applications and benefits over conventional resistance heating methods or propane.



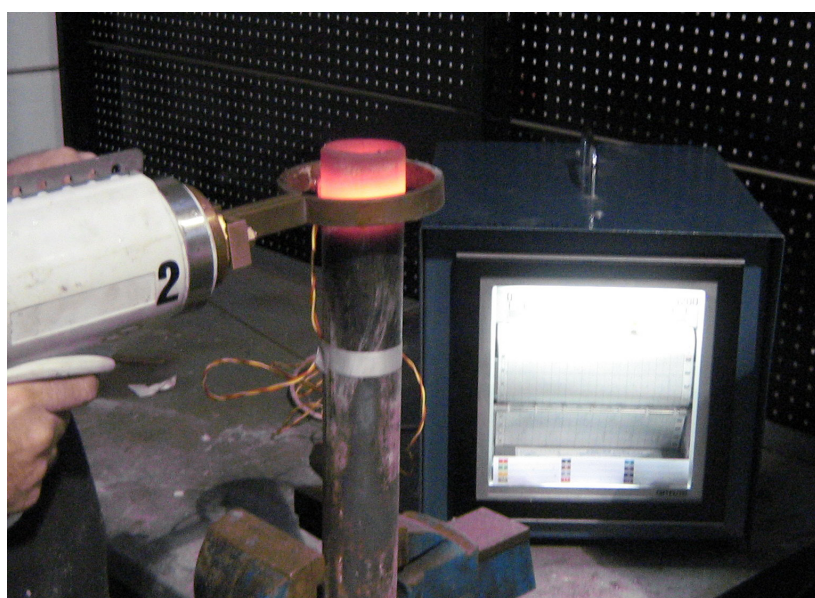
THE FUTURE OF
PIPE WELDING

INDUCTION COILS
PREHEATING 150°C



BOLT HEATING

Our patented Bolt Heating System utilises specifically designed induction tools to thermally “elongate” bolts in a fraction of the time of conventional methods. Allowing all heated bolts to be removed or tightened within one shift or less. This proven method reduces outage time by days, saving money as a result. Plus, the process alleviates safety concerns associated with the forceful removal of nuts by sledgehammers and spanners. Nuts can easily be removed using simple hand tools, reducing possible injury and lost man-hours.



AMBIENT TO 800°C IN 17 SECONDS

COATINGS REMOVAL

Our Induction powered Coatings Remover provides a fast, clean method of removing paint and Intumescent coating from metal surfaces. The key benefits of this are:

- The surface of the metal is heated, not the surface of the coating
- The heat does not need to conduct through the thickness of the coating so the time required is shorter
- The coating is heated to a lower temperature so fewer fumes are produced, with less chance of igniting them
- The surface coating can be very thick without degrading the stripping efficiency or increasing the time required
- Intumescent coatings can be removed without expanding them

SHRINK FITTING

BEARING REMOVAL

Using our Rapid Heat Induction System we can quickly heat the bearing up to its target temperature and enable the bearing to be removed. As no excessive heat and no damage is caused to the bearing it can be reused.



SHAFT REPLACEMENT

By applying heat to the outside diameter of the drive wheel we can increase the internal diameter hole to accept the new replacement shaft.

Care is taken to ensure all heat treated areas are not damaged and also that the internal hole is kept cold to stop heat transfer onto the replacement shaft when it is inserted.



BOLT HEATING MACHINE

SHRINK FIT APPLICATION
– GEAR WHEEL



PIPE CUTTING & PIPE FACING

Rapid Pipe Cuttings Services' machines provide fast, clean and accurate cuts to tight tolerances, in preparation for fitting pipe ranging from 1/2" – 177" OD.

The machines can be used in any environment making them perfect for use in nuclear, underwater and other hazardous environments. Labour costs are reduced with our portable, easy to set up machines.

Severing, bevelling, I.D. boring and O.D. turning are just a few of the tasks that these remarkable machines can undertake

PIPE CUTTING MACHINE – COUNTER BORE



RANGE OF MACHINES

MACHINE	APPLICATION
Mini-Clamshell (MC)	1/2"–2 1/2" O.D. Pipe
Narrow Body (NB)	3"–43" O.D. Pipe
Mid-Size (MS)	10"–42" O.D. Pipe
Heavy Duty (HD)	28"–110" O.D. Pipe
Giant	114"–177" O.D. Pipe

Rapid Pipe Cutting Services are able to provide on site machining services in the United Kingdom and Internationally.

Our machines are manufactured and maintained to the highest standards, which ensure that they will perform to the highest tolerances under virtually all conditions.

The company provides its services to the following major industry sectors.

- n PETROCHEMICAL
- n PAPERMAKING
- n POWER GENERATION
- n SHIPBUILDING
- n OFFSHORE OIL & GAS
- n SUBSEA
- n GENERAL ENGINEERING AND FABRICATION



COLD CUTTING PIPE
IN SERVICE

MACHINING HEAVY
WELD PREP ON PIPE



OUR PEOPLE

RHS is committed to a corporate culture of diversity and welcomes individuals who add to our unique makeup. We seek out hard working, enthusiastic and skilled individuals interested in achieving future leadership roles within the company. Supported by the latest technology, process, and management tools, our staff are challenged to maximize their potential. Our dedication to excellence and our commitment to people allows us to exceed expectations and set a higher industry standard.

RHS is a modern, innovative and performance-oriented employer, creating a work environment that will continue to be characterised by cooperation, solidarity and collegiality. At RHS we recognise that it is the people who drive the company and not vice-versa. Our team carries with them the knowledge and expertise to deliver our specialised technical services to our clients.

TRAINING

RHS's quality policy is to achieve sustained growth by providing our customers with products and services that will meet or exceed their requirements, while providing the best overall value. To meet this objective, RHS has implemented a quality management system and its supporting processes, to facilitate the continuous improvement of our people, processes, and products. We are committed to provide the leadership and resources necessary for this endeavour, and empower all personnel with the responsibility and authority needed to ensure the successful implementation and maintenance of this system.

Throughout our organisation, we are dedicated to applying our knowledge and resources to understand and meet customer needs every day. By taking what we learn from our clients and adding our experience and passion for meeting their requirements, we improve the performance, quality and value of every product and solution we deliver.

SAFETY

Rapid Heat Systems Ltd conforms to all guidelines and guarantees the safety of our products. Our products are designed to protect against industrial hazards, offering superior products, outstanding value and practical solutions for our clients' industrial safety concerns. Regular training is carried out and standards are constantly monitored. Our strict safety policy ensures the health and safety of our employees, customers, contractors and third parties.

QUALITY

Rapid Heat Systems strive for customer satisfaction by continually improving processes, products and services to ensure we consistently meet or exceed customer requirements. This is evident by our ISO 9001:2008 registration and continuous improvement programmes.

In addition to this, we are a member of the FPAL offshore programme which works to identify, qualify, evaluate and monitor suppliers on behalf of purchasers.



UK HEAD OFFICE

APPLICATION SPECIFIC TRAINING



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

HEATING RANGE OF MACHINE

Ambient to 788°C (1450°F)

MACHINE OPERATING TEMPERATURE RANGE

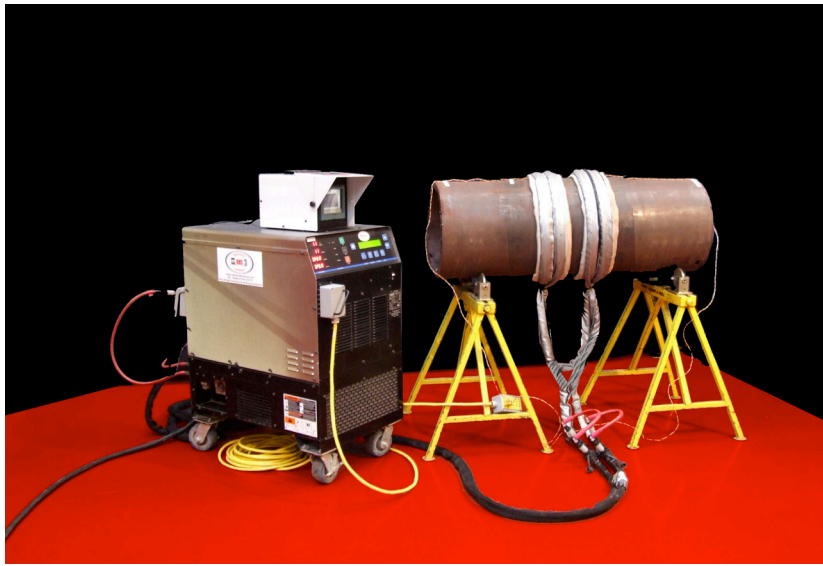
From -30°C to 50°C

RATED OUTPUT

35kw at 100% Duty Cycle 5 - 30 KHz

INPUT AMPERERES AT RAPID OUTPUT

400 V: 60 Amps, 460 V: 50 Amps,
Dimensions: H: 25" (635 mm),
W: 213/4" (552 mm), D: 363/4"
(933 mm)
Weight: Net: 227 lb (103 kg),
Ship: 265 lb (120 kg)



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.

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

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.

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

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

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

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.

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

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).

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.



RAPID HEAT 35 - LIQUID-COOLED PREHEAT AND STRESS RELIEVING SYSTEMS

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.



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: Shipping Weight H: 12-3/4in (324mm) 122lb (55kg), W: 21-1/4in (540mm), D: 30in (762mm)

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-to-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.



RAPID RECORDER

The digital recorder is commonly used in stress relieving and critical preheat applications. The recorder stores temperature data based on time.

18 POINT PAPERLESS GRAPHIC RECORDER

The Rapid Recorder offers unrivalled input accuracy with a 125ms total sample rate for 18 channels. The input channels are configurable to suit the process requirements.

The recorder has a touch screen display for simple programming and use. The colour display enables operators to clearly monitor the heating process in outdoor environment (direct sunlight).

They all have onboard Flash data storage capability, Ethernet communication and Compact Flash. Data is stored in tamper resistance binary format that can be used for secure, long term records of the process.

TOUCH SCREEN DISPLAY

The rapid recorder is easy and intuitive to use ensuring faster productivity and minimal learning requirements. It also incorporates a 'Pop Up' full 'QWERTY' keyboard to facilitate easy data or message entry.

There are no complicated button presses.

DATA MANAGEMENT

- Data can be transferred from internal memory to USB stick or directly to a PC via a network cable for printing, storage or further analysis using Review/Quickchart Lite Software
- Files are encrypted for quality assurance
- Simplified software prints recorded information onto A4 paper for convenient handling
- The recorder does not require pens, paper or fragile mechanical devices to document the heating cycle

BUILT-IN DATA PROTECTION AND TRACEABILITY

Your most valuable asset is the data collected for process and legislation purposes. Protection includes Audit Trail for 21CFR Part 11 and Nadcap applications, with recorded login, use of unique usernames and passwords.

QUICK SPECS

- Secure data recording
- Full colour, high resolution, touch screen display
- Up to 18 input channels
- Multi language selection
- Batch functionality
- Remote viewing and configuration
- Full audit trail
- USB "Plug & Play"
- Local printing

CONNECTION VOLTAGE

110 v

Power cord plugs into rear of Rapid Heat Systems

DISPLAY

5.5" 1/4 VGA

DIMENSIONS

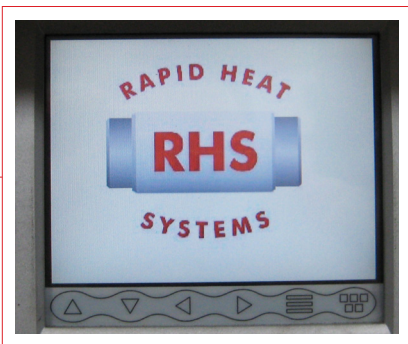
H: 225 mm

W: 208 mm

L: 380 mm

WEIGHT

9.0kg



OUTPUT EXTENSION CABLES RHS 35

The output extension cables are available to remote the power source up to 75 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.

- 10 ft = 3 m
- 25 ft = 7.6 m
- 50 ft = 15.2 m
- 75 ft = 22.8 m



LIQUID-COOLED HEATING CABLE AND PREHEAT CABLE COVERS RHS 35

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.

- 30ft = 9.1 m
- 50 ft = 15.2 m
- 80 ft = 24.4 m
- 140 ft = 42.7 m

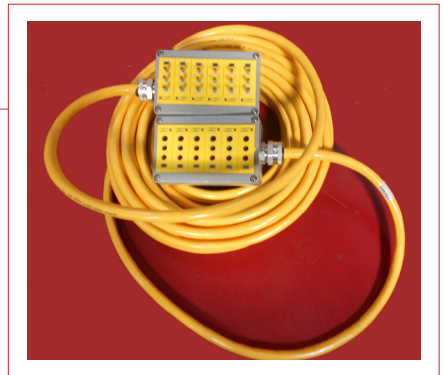


Preheat cable covers are available to protect the heating cable from slag and molten metal created during welding. The preheat covers are easy to install and can withstand temperatures up to 650°F (343°C).



TC EXTENSION CABLES

The thermocouple extension cable is a simple means of providing 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.



POST WELD HEAT TREATMENT BLANKETS RHS 35

Our PWHT Blankets are available in the following sizes:

DIAMETER		LENGTH		WIDTH	
inches	mm	inches	mm	inches	mm
2.5	63.5	15	381	12	304.8
4	101.6	21	533.4	12	304.8
5	127	26	660.4	12	304.8
6	152.4	30	762	12	304.8
7	177.8	34	863.6	18	457.2
8	203.2	38	965.2	18	457.2
10	254	43	1092.2	18	457.2
12	304.8	49	1244.6	18	457.2
14	355.6	54	1371.6	18	457.2
16	406.4	58	1473.2	18	457.2
18	457.2	67	1701.8	24	609.6
20	508	73	1854.2	24	609.6
21	533.4	76	1930.4	24	609.6
22	558.8	79	2006.6	24	609.6
24	609.6	85	2159	24	609.6
26	660.4	91	2311.4	24	609.6
28	711.2	98	2489.2	24	609.6
30	762	105	2667	24	609.6
32	812.8	112	2844.8	24	609.6
36	914.4	126	3200.4	24	609.6
40	1016	140	3556	24	609.6

DATA

INSULATION STYLE

Inside - silica needled mat
 Outside - 3.8mm thick silica mat

TEMPERATURE RESISTANCE

1800°F | 982°C

MELTING TEMPERATURE

3100°F | 1704°C

STANDARD COLOUR

White

CONTENT

98% SiO₂ (silica)

CONFIGURATION

Inside - needled mat
 Outside - multi-layer twill

OTHER

Material should be tested for suitability in every application considered

Post Weld Heat Treatment insulation blankets are sized and stenciled for the pipe size to be treated. The insulation is sewn into a silica blanket, which provides high durability. Fifty thermal cycles or more can be achieved with one blanket. The sewn blanket insulation does not create the dust and dust particles associated with insulation. This creates a friendlier environment for the heat treatment personnel during set up and strip down operations.



RHS LIQUID-COOLED ROTATIONAL HEATING CLAMP

Rapid Heat Systems have designed and manufactured a Patent Protected Rotational Heating Clamp to be used with our Rapid Heat 35kw Liquid Cooled Unit.

Rotational Clamps available to suit:

- RCH1 Clamp (250mm to 750mm)
- RCH4 Clamp (2m to 5m)
- RCH6 Clamp (5m to 9m)

Features/Benefits

- Spring positioned on the back of the heating clamp mounting is designed to allow the clamp to move in the vertical position to allow for any ovality in the pipe.
- Fitted with 4 thermocouples that are designed to the contour of the pipe to control pre-heat temperature.
- Faster set up time.
- Takes only a third of the time to temperature than gas flame.
- Fully controllable and uniform heating.
- Can be digitally recorded if required.
- No hydrogen created.
- Lower running costs.
- Fast return on your investment.

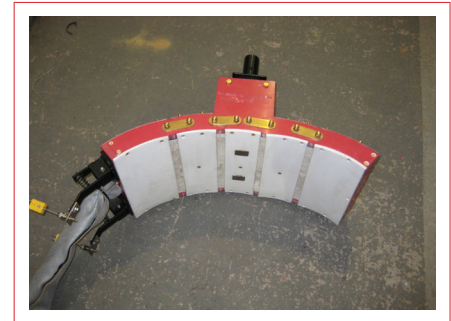
APPLICATION

As the pipe rotates round to the start point, the thermocouples will start to pick up the temperature readings and alter the Rapid Heat the 35 output kws to suit the target temperature that has been set.

This application is ideally suited for large diameter rotation when using Submerged Arc or Manual Metal Arc but is also suited to small diameters.

All clamps are customer built and can be fixed or adjustable.

Optional Extra - fully adjustable self supporting stand to mount clamp on to.



ROTATIONAL CLAMP -
IN USE

GAS VS ROTATIONAL CLAMP



HEAT TREATMENT ACCESSORIES RHS 35

RAPID SITE BOX

Our Induction site box provides full protection of our Rapid Heat 35 System for transport and on-site usage.

SPECIFICATIONS

Weight:

Empty: 186 kg

Full (inc.Rapid 35 system): 400kg to 500kg

Dimensions:

Height: 128cm Depth: 80cm Length: 185cm

The strongest deadbolt style locking mechanism for ultimate security.

16 gauge steel body with fully arc welded seams provides extra strength and weather protection

Additional reinforcement between the lock and the side housing

92mm high caster ready skids making it easier and faster to transport.

Hinges and ball stud bracket - added strength reduces the potential for breakage and improves durability



RAPID PROTECTIVE COVERS

Purpose built protective covers have been designed for use with the Rapid Heat 35 and Rapid Digital Recorder.

The covers are made from tough waterproof fabric that protects the units from general weather conditions and fabrication environments e.g. Dust, Grit, Etc. The covers are designed to protect the units whilst in storage as well as when in use, due to the specifically designed cable access points.

By using the protective covers with your Rapid Heat 35 and Digital Recorder you will protect them from the elements and prevent unnecessary breakdowns due to water, dust and grit contamination.



RAPID HEAT 3.5 (30A) WELD PREHEATING AND STRESS RELIEVING



SEMI-AUTOMATIC UNIT

The Rapid Heat 3.5 (30A) is an inverter-based semi-automatic preheating unit especially for tubes with maximum size of Ø265 mm.

Depending on the size of the pipe, one or two units are used. Induction coils or resistors are placed on both sides of the welding seam and when using only one heating unit they are connected to the series with a jumper cable.

INDUCTION V RESISTANCE

The (30A) can be used for either Induction or Resistance Heating.

INDUCTION HEATING

Heats only the tube material, so radiant heat loss is very small. The maximum temperature with the induction method is around 700°C. Induction coils are fast to install and can be used in tight heating places.

RESISTANCE HEATING

If a higher temperature than 700°C is required, resistance heating is required. The power source is an inverter, enabling the use of even the smallest special resistors and the heating of very small workpieces.

INDUCTION COILS

Induction coils are in ready-to-use lengths (1m, 1.5m, 2m, 2.5m, 3m, 3.5m, 4m, 4.5m, 5m). When using an induction coil in preheating, it is wrapped around the pipe without any insulation. The coil can be protected against welding spatter with insulation cloth. When doing post-weld heat treatment, the pipe is first insulated with 20 mm-thick ceramic blanket after which the coil is wrapped around the pipe. The coil is heat resistant up to 400°C.

HEATING ELEMENTS

Induction coil(s) with maximum length of 5,0m or resistance heating mat(s) with maximum power of 3,45kW can be connected.

CONTROL SYSTEM

Processor controller with digital display. Able to program heating/cooling rate and target temperature.

TEMPERATURE MEASUREMENT

Can be carried out with or without a thermocouple. If needed, the temperature can be recorded using a separate power for the unit, which means that short cables can be used.

PROCESSOR REGULATOR

The (30A) has one processor regulator, which is used for adjusting heat treatment parameters. When using a thermocouple, the regulator shows the temperature and the following parameters can be adjusted

- Heating rate (°C/h)
- Holding temperature (°C)

If a thermocouple is not in use, the so-called percentage system is applied, whereby the heating power is regulated in percentage ration and the temperature is measure with an external measuring device.

HANDLING AND TRANSPORT

The unit is small and light in weight, which makes it easy to handle and transport. Because the (30A) stands next to the workpiece, adjustments are easy to make.

PRODUCTS/ACCESSORIES

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
Resistance Heating

CONTROL SYSTEM

Processor controller with digital display.

TEMPERATURE RANGE

Induction: 20°C - 700°C
Resistance: 20°C - 1050°C

HEATING POWER

3.5kw

CONNECTION VOLTAGE

220 ... 240 V
1-phase/50Hz

DIMENSIONS

H: 380 mm
W: 150 mm
L: 375 mm

WEIGHT

11Kg



COATINGS REMOVER

Our Induction powered Coatings Remover provides a fast, clean method of removing paint and Intumescent coating from metal surfaces.

APPLICATION

This Coatings Remover is powered by a 15kw Rapid Heat Inverter and will remove a band of coating 220 mm wide.

The inverter is connected to the Coatings Remover via flexible electrical cable and cooling water hoses, which can be up to 30 m in length.

An off/on switch and heat on light are situated on the top of the heating coil enclosure.

The equipment is operated by sliding it across the surface to be stripped.

A spacer situated on the bottom of the Coatings Remover can be varied to accommodate different thicknesses of coating to be removed.

The maximum coating thickness that can be removed, when the minimum thickness space is fitted, is 10 mm.

BENEFITS

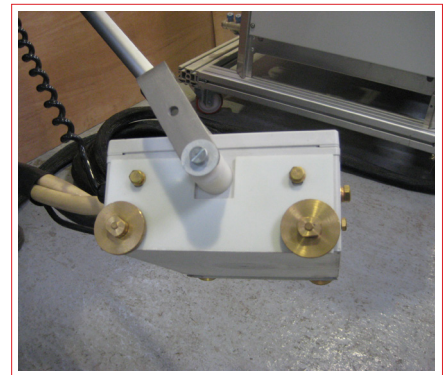
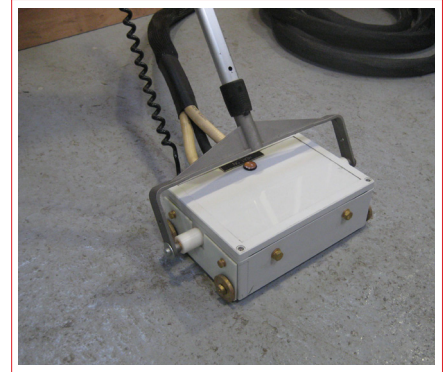
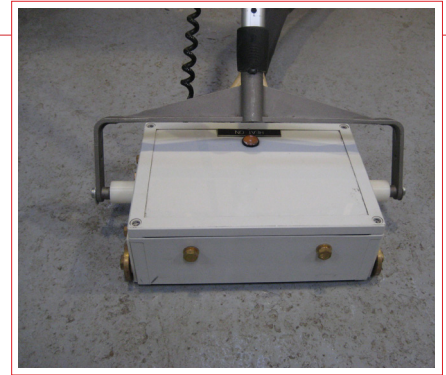
The surface of the metal is heated, not the surface of the coating.

The heat does not need to conduct through the thickness of the coating so the time required is shorter.

The coating is heated to a lower temperature so fewer fumes are produced, with less chance of igniting them.

The surface coating can be very thick without degrading the stripping efficiency or increasing the time required.

Intumescent coatings can be removed without expanding them.



RAPID WELDER UNIT (TW163/V)

DESCRIPTION

Used to weld a wire to a steel body, the magnet is used to make a return contact.

The thermocouple wire is stripped back and the pliers are used to grip this wire about 25mm from the cut end.

The 'charge' button is pushed and released. After a short time the LEDs change from 'charging' to 'ready'.

The thermocouple wire is held firmly against the steel surface and the 'weld' button is pushed. This welds the wire to the steel body (Auto Mode: Weld is made automatically 1.5 seconds after contact).

The energy setting knob is used to set the required energy for different wire diameters.

FEATURES

Main LED Shows when battery is on charge.

Low Battery LED Shows when the battery needs re-charging.

Tool storage is built into the case.

Very low battery inhibits operation.

Supplied with tools and mains charging lead.

Manual or Auto (Hands-Free) Operation.



QUICK SPECS

DISCHARGE ENERGY
18 to 40 Joules Output

BATTERY RE-CHARGE TIME
6-8 Hours

SUPPLY VOLTAGE
100-300 VAC or 200-260 VAC

DIMENSIONS

H: 190mm

W: 300mm

L: 100mm

WEIGHT

4.5KG

RAPID WELDER UNIT (SW12V)

DESCRIPTION

The SW12V is a battery and mains powered capacitance-discharge welding unit with up to 250 Joules energy output. This makes possible the welding of pins, thick wires and TC wires 'on site' without mains power supply.

Unit will work from the mains while recharging the battery.

FEATURES

Hands free operation with audible count-in to Auto-weld.

Two energy ranges selectable via front panel switch; i. 30 to 60 Joules ii. 125 to 250 Joules

Battery + mains working IEC inlet with 2m lead.

Rugged cased floor standing unit with hard rubber feet.

'Dinse' style output connections

Two metre welding leads with large pot magnet and interchangeable pliers: i. Long-nose pliers for low range fine wire welding, ii. Larger pliers for thick wire/pin welding.

Auto switch-off to conserve battery

Low battery indication and very low battery protection.



QUICK SPECS

DISCHARGE ENERGY
30 to 250 Joules Output

SUPPLY VOLTAGE
110 VAC or 230 VAC

DIMENSIONS

H: 215mm

W: 255mm

L: 235mm

WEIGHT

6.5KG



INDUCTION HEATING WITH CUSTOM-MADE COILS

Rapid Heat Systems designs and constructs COILS of various sizes on request. These can either be openable, shell-type coils; fastened from the inside or fastened from the outside. The version selected is strictly connected with the specific application. All coils have a manual probe for temperature surveying.



WELD PRE-HEATING

These coils are generally used for weld pre-heating. They are made of fibreglass reinforced plastic and heat resistant materials. They are fastened onto the pipe by special setting knobs.



PRE-HEATING DURING COATING PHASE

Coils are generally used for pre-heating pipes during the coating phase. The Coil structure is made of aluminium and equipped with a convenient closing lever driven by a hydraulic piston (which operates using the same circuit as the hoisting crane).



RAPID HEAT 35 COMPATIBLE COILS

Rapid Heat have also developed a range of coils that can be used with the RapidHeat 35 kw Machine.



DELTA 50 WITH PRE-HEATING COIL



RAPID HEAT 35 WITH COMPATIBLE COILS



RAPID HEAT 10

Our Rapid Heat 10 is a powerful, portable source for resistance heating.

It is designed as a small, light-weight, and efficient three-phase digital source for industrial use.



ADVANTAGES

Integrated digital regulator with continuous regulation of heating power.
 Small dimensions and low weight.
 High efficiency in comparison with standard sources.
 Ideal for fast service applications or in places with difficult access.

USE

Controlled preheating and cooling of welded materials.
 Thermal annealing and tempering and other material thermal processing.
 Applicable in production, maintenance and repair activities.

MODEL

Output voltage / current, Load, Supply voltage/current, Feed protection, Thermal sensor, Measuring/regulation range, Alarm Failure detection, Multizonal regulation, Operating temperature/protection, Dimensions and weight, Certification

QUICK SPECS

OUTPUT VOLTAGE/CURRENT

0 - 65 V/160A, 0 - 65 V/180A, continuously regulated, CV/CC

LOAD

Resistance heating elements
 24-65 V (30/60 V type)

SUPPLY VOLTAGE

3 ~ 400 V, 50/60 Hz, 23 A

FEED PROTECTION

25A

THERMAL SENSOR

K-type thermocouple, galvanically insulated output

MEASURING/REGULATIONS RANGE

-40°C to 1,350°C / +25°C to 1,200°C

ALARM

2 settable (deviation SV/PV, reaching temperature, etc)

FAILURE DETECTION

Thermocouple disconnection, overheating, short-circuit on output, etc.

MULTIZONAL REGULATION

Yes, master/slave type, max. 9 units

OPERATING TEMPERATURE/ PROTECTION

-20°C to 40°C (with limited output up to 50°C)

DIMENSIONS & WEIGHT

170 x 370 x 405 mm, 17 kg

CERTIFICATION

CE

SPECIFICATION

High output with small dims and low weight – 10 kW at 17kg
 Connection of resistance elements from 24 to 65 V, 10.8 kW
 Simple handling and easy-to-read display.
 Continuous regulation of input power (voltage)
 Programmable temperature regulator -25 °C to 1,200 °C
 Saving up to 20 thermocouple profiles with max. 180 segments.
 Control according to a set thermal profile or manually to required temperature or output.
 Integrated recorder of temperature and output with up to 64hr of recording.
 Connection to external recorder.
 (Option - Rapid Heat 18 Channel Digital Recorder)



RAPID HEAT RESISTANCE

TRANSFORMERS

Rapid Heat systems' transformer type heating units are designed especially for on-site use. the heating units are compact and light for easy transportation. Models with a controller enable fast and easy documentation of the work. transformers are dimensioned for primary connection of 63 A, with a common power supply on site. output power of standard models are thyristor controlled but by the order can be delivered with contactors.

MODELS

RES403 Semi-automatic

- three-channel heat treatment unit with processor controls

RES406 Fully-automatic

- three-channel heat treatment unit with computerised control system

RES406 Fully-automatic

- six-channel heat treatment unit with computerised control system

CONTROL SYSTEM

Easy management of heat treatment process is on RapidHeat controllers and windows based software. the control system and equipment are developed in team work with users. using RapidHeat equipment we can offer reliable and accurate results and clear documentation.

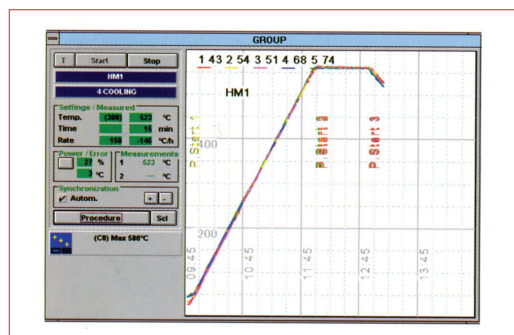
LONG DISTANCE CONTROL

Rapid Heat control system offers possibility for alarms by gsm-phone and long distance monitoring. the system enables continuous control of the heat treatment process. you can select units with radio modems to enable wireless contact.

HEATING RESISTORS

The resistance wire used in heating mats is nicr 80/20, which is the most suitable for the job. the wire material used in the tails is nickel which does not heat up during the heating process. the tail wire and the resistance wire are welded together to form a reliable joint. Beads in heating elements are high-quality aluminium oxide (Al₂O₃ ; 95 %) ceramic. the material is according to iEc 672 group c-700.

Heating elements in which there is a risk of tail breakage are equipped with tail supports. this construction ensures a longer product life.



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

Resistance Heating

CONTROL SYSTEM

Semi Auto: 3 processor controllers
Fully Auto: Controller with PC software

TEMPERATURE RANGE

RES403: 20°C - 1050°C
RES406: 20°C - 1200°C

MEASURING POINTS

RES403: 6 points
RES406: 12 points

HEATING POWER

40kw

CONNECTION VOLTAGE

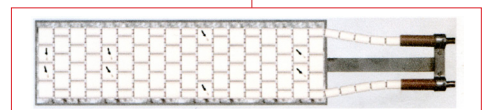
400 v; 3 phase

DIMENSIONS

H: 1020 mm
W: 600 mm
L: 600 mm

WEIGHT

150kg



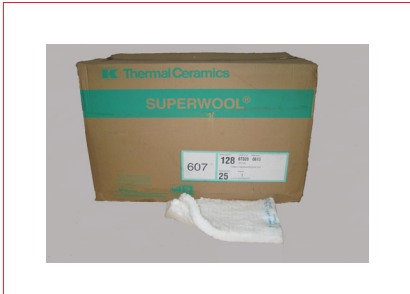
RAPID HEAT CONSUMABLES



Preheat Cable Covers (Kevlar)
To protect the heating cable from slag and molten metal created during welding. Easy to install. Available in lengths 30ft, 50ft, 80ft & 140ft



Silicon Woven Insulation
For pipe wrapping, jointing and seals. For continuous use up to 550°C Available in widths 100 or 200mm x 30m lengths



Superwool Blanket
For PWHT and Hydrogen Bake Out to maintain heat and protect heating cables. For continuous use up to 1000°C



Fire Blanket
To protect superwool from tearing. Treated with a non flammable vinyl acetate solution. Cloth will withstand 500°C but at 200°C weavelock will disperse. Available in rolls 1m x 50m



Post Weld Heat Treatment Blanket RHS 35
For PWHT and Hydrogen Bake Out to maintain heat and protect heating cables. Available to suit pipes 2.5" to 32". Larger sizes available on request



Air Cooled Induction Blanket Sleeve
To protect the air cooled induction blanket from slag and molten metal created during welding. Available in sizes to fit Induction Blankets



Thermocouple Wire
Comes in 100m reels. Used for temperature measurement



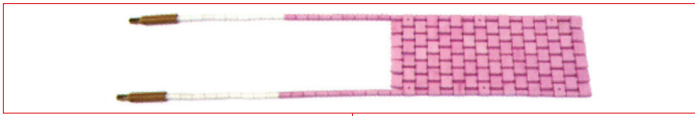
Thermocouple Plugs
To connect thermocouple wire to extensions and Rapidheat machines



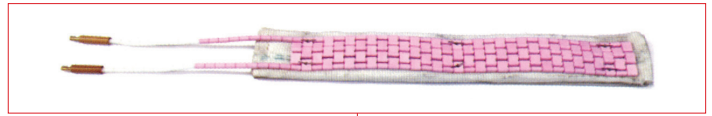
High Temperature Tape
To secure all insulation, thermocouple material and heating accessories. Will withstand temperatures up to 155°C



RAPID HEAT ACCESSORIES



Ceramic Pad Heating Elements



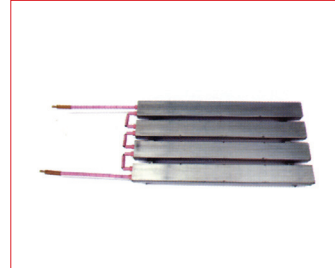
Flexible Pre-insulation Preheating Elements



Insulation Materials



Insulation Meshed Mats



4-Bank Channel Heater



Magnetic Preheat Fixing



Insulation Mesh



Heater Core Wire



Cold Tail Wire



Ceramic Beads



Power Splitter Cables



Power Cables



Camlok Connector



Power Connector



Thermocouple Plug



Thermocouple Wire



Thermocouple Attachment Unit



Temperature Controller



PREHEAT VESSEL WITH RAPID HEAT ROTATIONAL CLAMP

Customer: Elimetal, Belgium

Job Description: To pre-heat vessel to 122°C on the inside within 90 minutes.

Pipe Dimensions: 2300mm
Pipe Thickness: 180mm

Job Location: Elimetal, Belgium

Job Date: September 2012

Equipment: 2 x 35kw RHS Induction Heating Machine
2 x Rotational Clamps with RHS adjustable stands

Results: Heating commenced. After 60 minutes, the temperature was 80°C. After 90 minutes, the temperature was at 122°C. Rotational speed was set at 40cm per minute. Pre-heat was a great success.

Comments: The client was very happy. This method saved many hours with regards to time to temperature, compared with the old methods used which was by gas heating and incidental to this, it was a much safer method.



PREHEAT, VESSEL

Customer: **Advantica Technologies (Transco)**

Job Description: To pre-heat a 52" diameter x 1" thick test vessel.
Pre-heat temperature target 120°C

Job Location: Transco
(Pipe Maintenance Centre)
Ambergate
Derbyshire

Job Date: 25.05.04

Equipment: 2 x 20kw RHS Induction Heating Machines
2 x 80ft Induction Heating Cables
2 x 50ft Induction Heating Extension Cables

Results: We set up a 3-coil configuration each side of the joint that was to be welded. The target temperature was reached within 12 minutes of power up.

Comments: Welders
Mr Ron Harris (Rayden Engineering)
"It was very good, it did the job it was supposed to do which was heat up the pipe and not the welders, no rock wool flying about when brushing and grinding and saved us a lot of sweating, wish we had it years ago."

Mr Mark Kew (Rayden Engineering)
"Welder friendly equipment and did the job as well. Very good."

Welding Inspector
Mr Roger Elliott (Oceaneering Inspection)
"0-120°C in 12 minutes. No dirt, no dust, no problem!"



PREHEAT OFFSHORE FABRICATIONS

Customer: Stolt Offshore, Aberdeen.
LB200 Pipe Lay Barge

Client: Dales Fabrications
Peterhead
Scotland

Job Description: Preheat and post weld heat treatment of deck plates and LB200 jacking rails for main stinger pipe laying unit.

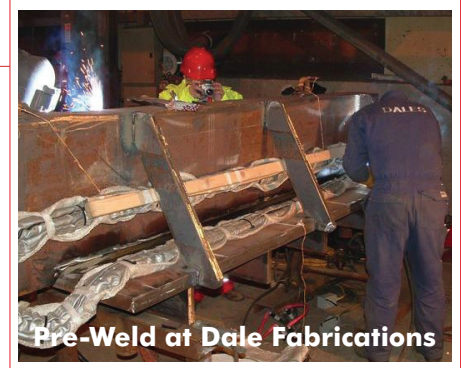
Material
Deck Plate - 50mm ST52-3N
Section of Rails - 150mm wide SQ690 QL

Job Location: Bergen
Norway

Job Date: 06 January 2006 to 29 January 2006

Equipment: 5 x 20kw RHS Induction Heating Machines
5 x 80ft Induction Heating Cables

Results: We set up first four systems to preheat the jacking rails to 170°C so that butting layers could be welded with flux cored wire prior to new segments being welded in place.



Pre-Weld at Dale Fabrications



Actual Stinger Rail before removal



**Stinger Rail after removal
Pre-heat base 170 °C**



LB 2006 Refit



Stinger Arm



PREHEAT - VESSEL REPAIR NUCLEAR POWER PLANT

Customer: Doosan Babcocks

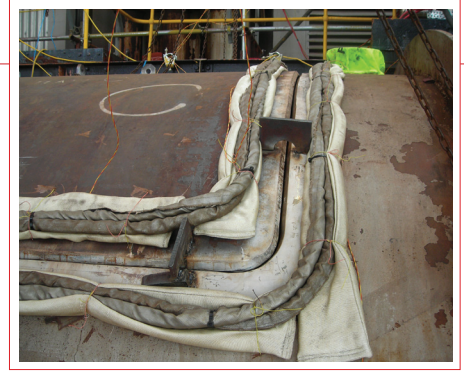
Job Description: Our remit was to pre-heat the repair on the D/A Vessel. The required pre-heat temperature was 200°C. Due to the high temperatures and difficult working conditions we were awarded the contract on grounds of safety and speed. Each weld had to be monitored during welding.

Job Location: Heysham Power Station
Nr. Morecambe
Lancashire
Unit 1 Outage

Job Date: 11th June 07
15th July 07

Equipment: 5 x 35kw RHS Induction Heating Machines
5 x 80ft Induction Heating Cables
5 x 50ft Induction Heating Extension Cables

Results: The project proved to be a great success. The welds were completed and we suffered no burns to welders or fires to scaffold boards, which were concerns from previous projects.



PREHEAT TRANSMISSION PIPELINES

Customer: NACAP

Client: Gasunie

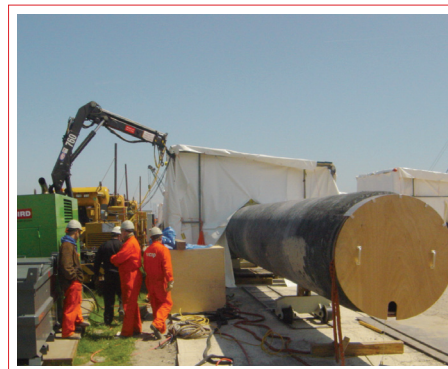
Job Description: To pre-heat 48", 17 to 21mm wall, gas pipeline on a moving production line at nine different location. At the three front end locations the pre-heat temperature was 150°C minimum and at the six other locations 100°C minimum was required. The pipeline was fabricated in 500m strings and floated out onto the water of the IJsselmeer for further connection. In total 28km of pipeline was laid consisting of in excess of 2300 welds.

Job Location: Side of IJsselmeer
Nr. Wingerwerth
North West Holland

Job Date: 14.05.06 to 31.10.06

Equipment: 7 x 35kw RHS Induction Heating Machines
14 x 80ft Induction Heating Cables
14 x 50ft Induction Heating Extension Cables

Results: At the front end we set up a 2-coil configuration of 2 x 30ft hose at 150°C covering either side of weld. Temperature was achieved in 4 1/2 minutes. At the other locations we set up a 2-coil configuration of 2 x 30ft hose at 100°C covering either side of weld. Temperature was achieved in 4 minutes.



PREHEAT TRANSMISSION PIPELINES

Customer: Jones Construction

Job Description: To pre-heat a 48" diameter pipe 22mm wall thickness x 80 material to 100 °C. Total 160 kilometers of pipe welded over a two year period.

Job Location: Pembroke South Wales

Job Date: 22.01.08

Equipment: 11 x 35kw RHS Induction Heating Machines Complete with 40 KVA Generators 48" Air Cooled Blankets 50ft Induction Heating Extension Cables Quick Hitch Clamp & Weather Canopy

Results: We designed a complete rig in conjunction with our client to achieve the fastest time to temperature, as speed was paramount. From the fixing of the heating band and switch on machine temperature was achieved in 8 minutes through heat. We had determined a preset time so that all the operator had to do was hit a button and the machine would switch off when it came to temperature and if he needed to re-apply he would just hit the button on the pendant again.



POST WELD HEAT TREATMENT PIPE AND VESSEL

Customer: Hayward Tyler

Job Location: Hayward Tyler Premises Luton

Equipment: 2 x Rapid Heat 35 Liquid Coolec
2 x 25ft Extension Cable
2 x 80ft Heating Cable
2 x 6 Way Thermocouple Extension

Job Description: *Job 1*
To carry out Post Weld Heat Treatment to the repaired areas on a cast high pressure pump casing and its outlets

Pipe Dimensions: 65mm wall thickness
cast casing and outlets

Target Temperature: 595 - 620°C

Control Rate: 88°C per hour

Job Date: 21 June 2011

Results: PWHT carried out



Job Description: *Job 2*
To carry out Post Weld Heat Treatment to suction and outlet pipes on a cast high pressure pump casing, prior to pressure and temperature testing being carried out.

Pipe Dimensions: 65mm wall thickness
12" diameter

Target Temperature: 595 - 620°C

Control Rate: 88°C per hour

Job Date: 19 and 20 July 2011

Results: PWHT carried out

Testimonial

"Never has a sub-contract process here at HT generated so much attention, just a thank you to say a job well done, professional and dedicated to the task. This got us out of a difficult situation, thank you for your help and support. We found your engineer to be top notch". - Mark Drayton, Operations Manager, Hayward Tyler.



POST WELD HEAT TREATMENT DRILL RIG AND PREHEAT

Customer:	Hastings
Client:	Rio Tinto, Hail Creek Coal Mine
Job Description:	Pre-heat and stress relief on a drill rig mast pivot shaft.
Job Location:	Hail Creek Coal Mine, Australia
Job Date:	June 2012
Equipment:	1 x Rapid Heat 35kw Induction Heating Machine 1 x 80ft Induction Heating Cable

Results:

Boilmakers removed the old shaft and prepared the shaft stands before positioning the new shaft which was approximately 10ft in diameter and 2 metres in length.

RHS technicians then wrapped the shaft with kevlar insulation and an 80ft heating cable. They then ramped the temperature up 50°C per hour so the shaft reached a pre-heat temperature of 200°C. The boilermakers then welded the new shaft into position. Once welding and blending was complete the technicians ramped up the temperature to 50°C per hour until reaching 593°C and thereafter soaked for 1 hour for the stress relieving process.

Then they ramped down 50°C per hour until reaching 200°C. Leaving the shaft wrapped in insulation they turned the heating machine off, therefore letting the shaft cool by itself.

RHS Technicians kept track of the heat during the repair with the data recorder, which enabled them to pass the information on to the client for Q/A documentation purposes.

This is the second shaft we have done for Hastings and Hail Creek. The first was in Sharps workshop in Mackay, Australia.



POST WELD HEAT TREATMENT FAB SHOP APPLICATIONS AND PREHEAT

Customer: Amec Group

Job Description: To carry out various pre-heat and PWHT in Amec Fabrication Shop

- Pre-heat and PWHT of pipe 6" to 16" Diameter
- Wall Thickness 28mm to 59mm
- Pre-heat and PWHT of ½" to 2" Weldolets
- Material: P22 and Carbon Steel

Job Location: Canalside Workshops, Ellesmere Port, UK

Job Date: 17 August 2010 to 30 September 2010

Equipment: 4 x 35kw RHS Induction Heating Machines
2 x Resistance Heating Machines
1 x Furnace

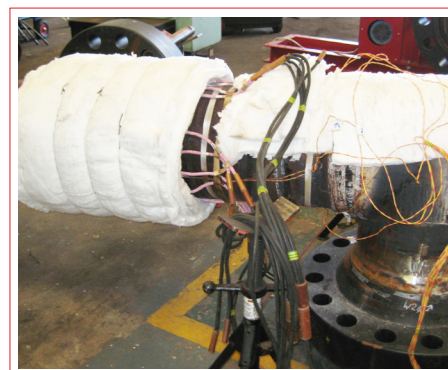
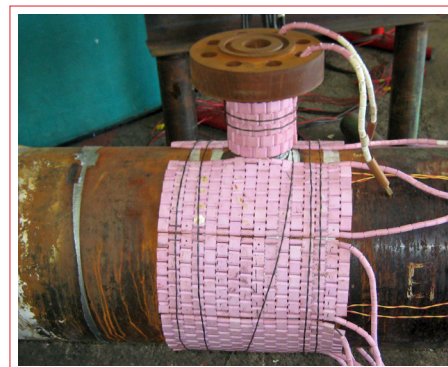
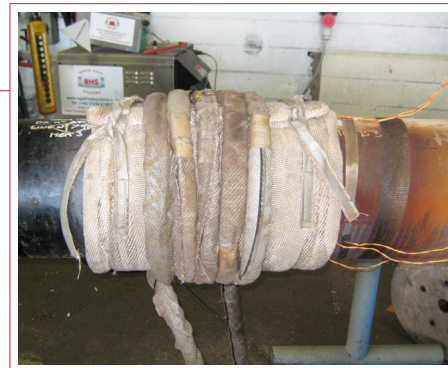
Test Piece: RHS carried out a test piece to the welding procedure given:

16" Pipe, 59mm Thickness
Pre-Heat Temp 200°C minimum using Induction
PWHT Temp 710°C, soak for 4 hours in small furnace

Results: Using both Induction and Resistance methods we successfully carried out all heat treatment requirements for 78 completed welds.

Pre-Heat Temperature:	200°C min
Hydrogen Bake-Out Temperature:	350°C
PWHT Temperature (Straight Butts & Elbows):	735°C
PWHT Temperature (Reducers & T-Pieces):	710°C

Comments: Due to the success of the work carried out in the fabrication shop, RHS secured the site tie in works at Growhow UK, Ince Cheshire, UK



POST WELD HEAT TREATMENT POWER STATION PIPEWORK

Customer: Siemens

Client: Severn Power, CCGT Project

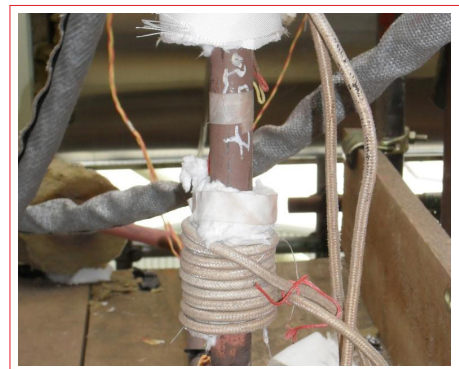
Job Description: To carry out PWHT on site
 Pipe Dimensions: 3/4" to 2" - P91 (9" Chrome)
 Target Temperature: 740 to 750°C

Job Location: Newport, South Wales

Job Date: June 2012 to August 2012

Equipment: 5 x 35kw RHS Induction Heating Machines
 10 x 3.5kw RHS Induction Heating Machines

Results: We set up the 3.5kw machines around the PWHT area and then set up the 35kw machine to apply background heat to stop the heat 'draw off' into the large diameter headers etc.



POST WELD HEAT TREATMENT AND PREHEAT SLUG CATCHER

Customer:	SICIM (Italy)
Job Description:	To pre-heat and stress 118 welds, consisting of 6x42", 96x24" and 16x12"
	Pipe Dimensions: 42", 24" and 12" Target Temperature: 100°C min Interpass Temperature: 170°C Soak Temperature: 610°C ± 10°C Pressure: N/A Product Temp: N/A
Job Location:	Shell Corrib Gas Terminal (Ireland)
Job Date:	Aug 2008 to Feb 2009
Equipment:	4 x 35kw RHS Induction Heating Machines 4 x 80ft Induction Heating Cables 4 x 50ft Induction Heating Extension Cables 4 x 140ft induction Heating Cables
Pre-heat Results:	We set up a three-coil configuration on each side of the weld using either a 140ft or 80ft-heating cable depending on pipe diameter size, and set a target temperature of 120°C, temperature was reached in 12 minutes.
Stress Results:	We set up a four-coil configuration over the weld area to be stressed, and set a soak temperature of 610°C, stress cycle takes seven hours.



POST WELD HEAT TREATMENT DRILL RISERS

Customer: Aker Solutions

Job Description: To carry out Post Weld Heat Treatment to drilling risers.

Material Specifications: Riser connections: 6" OD 2" ID
7" OD 6" ID
Pipe: AISI 4130
Connector: AISI 4130

Job Location: Port Kland, Kuala Lumpur, Malaysia

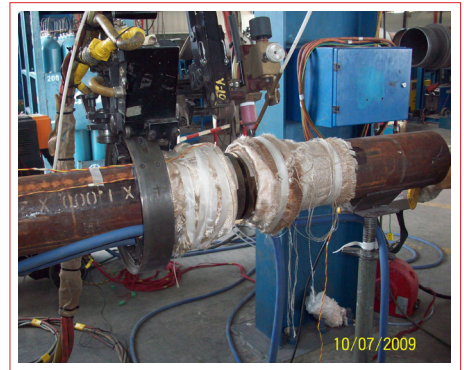
Job Date: February 2009 to January 2012

Equipment: 4 x 35kw Rapid Heat Induction Units

Results: We set up 6 to 7 turns of heating cable on the drill riser welds for PWHT.

Soak time was set for 3 hours for booster connections and 4 hours for chock and kill connections.

The trials were a complete success and we secured a further 11 months heat treatment work at Aker Solutions.



PREHEAT OFFSHORE

Customer:	NACAP
Client:	Gasunie
Job Description:	To apply heat for a repair on the 48" gas pipeline in a diving bell 7 metres under the surface of the IJsselmeer. Temperature required 50°C.
Job Location:	Gasunie Near Medemblik The Netherlands
Job Date:	15.11.06
Equipment:	1 x 35kw RHS Induction Heating Machine 1 x 50ft Induction Heating Extension Cable 1 x 140ft Induction Heating Cable
Results:	The job was a great success and we also used the induction to remove the plastic coating.



POST WELD HEAT TREATMENT - OFF SHORE

Customer:	Centrica
Job Description:	Our remit was to PWHT the welds and provide induction heating for Flange Bolt removal as and when needed, during the 2007 shutdown.
Job Location:	Centrica Rough B Offshore Platform North Sea Just off the Humber side Coast
Job Date:	11.09.07 to 14.09.07
Equipment:	1 x RHS 35kw Induction Heating Machine 1 x RHS Bolt Heating Machine
Results:	The PWHT proved to be a great success the welds were soaked at 620°C for 1 hour and positive comments were made about the safety and speed of the systems.



HOT TAP SPLIT TEE 14" GAS LINE APPLICATIONS

Customer: Wood Group Engineering Ltd (North Sea)

Client: Shell UK

Job Description: To pre-heat a 14" split tee and the 14" pipe that it sits on (simultaneously) requiring two longitudinal welds and two circumferential welds.

Pipe Dimensions: 355.6mm x 9.5mm w/thk
 Pre-heat
 Target Temp: 250°C for welding fillet joints
 150°C for minimum interpass

Product: Gasoline
 Flow Rate: 3,500 gallons per day
 Pressure: 14 bar max
 Product Temp: 32°C

Job Location: Shell Fife NLG Plant Mossmorran
 Kingdom of Fife

Job Date: 06.03.04 to 12.03.04

Equipment: 2 x 20kw RHS Induction Heating Machines
 2 x 80ft Induction Heating Cables
 2 x 50ft Induction Heating Extension Cables

Results: During the longitudinal welds, i.e. along the split part of the tee, we achieved the 250°C target pre-heat temperature but during the circumferential welds we were unable to raise the temperature above 95°C due to the pipe wall thickness and the product flow rate. The welding inspector monitored the temperature and was happy that the temperature that was reached was well within the parameters needed for welding.

Comments: Welders could not believe that they could rest their hands on cables whilst welding. The original plan was to have had comfort breaks for them on a regular basis if they had used propane. This eliminated the need for breaks and, as a result, they continued to weld out to completion once started, far quicker, which meant less time exposed in a high-risk area of the plant by personnel. The client was happy with the safety aspect and also less time and exposure to personnel on site and with the added benefit of control over temperatures giving improved quality.



Setting up for longitudinal welds



Welding longitudinal welds



The circumferential seam



Finished job after inspection



HOT TAP SPLIT TEE 24" MAIN GAS LINE

Customer:**GAZ DE FRANCE****Job Description:**

To pre-heat a 24" split tee and the 24" pipe that it sits on (Simultaneously) requiring two circumferential welds.

Pipe Dimensions: 600mm x 8mm w/thk
 Target Temperature: 100°C min
 Product: Natural gas
 Flow Rate: 5.6m/s
 Pressure: Not given
 Product Temp: Not given

Job Location:

Courthezon, Orange, France

Job Date:

11.06.08 to 12.06.08

Equipment:

2 x 35kw RHS Induction Heating Machines
 2 x 80ft Induction Heating Cables
 2 x 50ft Induction Heating Extension Cables
 1 x Rapid Heat 75 Booster
 2 x Rapid Heat 75 Booster Wands
 (for 600mm o/d pipe)

Results:

We set up a three coil configuration on each side of the weld area using the two 35kw machines and set target temperatures of 150°C, this was to create a "damming" effect and to minimise heat loss through the cold pipe during "booster" heating.

We then applied 25 seconds of heating with the two boosters wands (simultaneously) from both sides of the pipe, this gave us 1.2 minutes worth of welding time (enough time to weld a full welding rod) after the first welding run was complete, Booster heating application time was reduced and welding time was increased, and this was due to the joining of the split tee to the pipe and the transfer of heat from the 35kw machines through the weld joint.

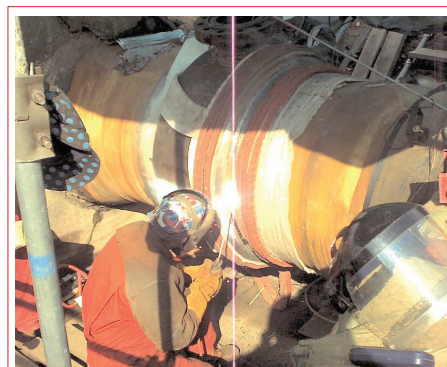
The job was a complete success and completed in the allocated time.

This was the first time that the process of using the above equipment has been carried out on a "Live Line" and Rapid Heat Systems have now applied for patent on this process.
 UK Pat App 0817312.2



HOT TAP SPLIT TEE 36" MAIN GAS LINE

Customer:	Transco
Job Description:	To pre-heat a 36" 'LIVE' gas main ready for welding a 6" diameter piece of pipe (as protection) around a 3/4" screwed valve on the main and then to pre-heat the gas main again ready for the welding of a 'Split Tee' lowered onto the gas main around the 3/4" valve. Pre-heat Target Temp: 150°C Product: Natural Gas Flow Rate: (No flow given) Pressure: 57 Bar Product Temp: Ambient
Job Location:	Transco West Walton, Wisbech, Cambridgeshire
Job Date:	31.08.04 to 04.09.04
Equipment:	2 x 20kw RHS Induction Heating Machines 2 x 50ft Induction Heating Cables 2 x Induction Heating Extension Cables
Value Protection:	We arranged a 3-coil configuration, which was then laid over the pipe around the valve. The target temperature under the coils was set to 240°C allowing for gas flow and a safe distance away from the 3/4" valve. This gave us the 150°C we required at the weld face. Time to temperature at the weld face from switch on took 20 minutes.
Longitudinal Welds:	We arranged a 3-coil configuration, which was then strapped to a wooden frame, which in turn was strapped to each side of the split tee. Target temperature under the coils was set to 240°C and time to temperature at the weld face was approx 20 minutes to reach the 150°C required. (See pictures 1 & 2)
Circumferential Welds:	We arranged a 3-coil configuration on the pipe and then a 3-coil configuration on the "tee" piece. Target temperature on the pipe was set to 340°C. This would allow for heat drawn out of the product as the wall thickness of the pipe is only 16mm. Target temperature on the "tee" piece was set to 155°C as the "tee" piece is 70mm thick this will hold the temperature very well. Time to temperature at the weld face, from switch on took 30 minutes to reach the 150°C required. (See pictures 3 & 4)



VALVE PRESSURE TESTING

Customer:	Technical Valve Services Ltd
Client:	Various clients
Job Description:	To heat up various sizes of valves to 170°C for pressure testing.
Job Location:	Technical Valve Test Facilities, Leicestershire
Job Date:	14 September 2010 and ongoing
Equipment:	1 x 35kw RHS Induction Heating Machine 1 x 25ft Extension Cable 1 x 30ft Heating Cable
Results:	Thermocouples were attached to the valve body for external temperature control and an internal thermocouple fitted for temperature monitoring to 170°C during the valve test.

The valve body was wrapped with insulation and our induction heating cable. The induction unit controlled the temperature rise to the allowed external temperature. When the required internal temperature of 170°C was achieved, pressure testing of the valve was carried out.

During the process, the external temperature was adjusted to keep the internal temperature within the test parameters. Internal temperatures fluctuated due to increase in pressure and filling with test medium. 4 valves of various sizes had pressure testes carried out on them.

The heating and testing process was carried out without any damage or markings being made to the valves. Technical Valve Services Ltd were very satisfied with the results and have continued to use RHS for their testing process. The end user and the valve manufacturer were in attendance to witness the testing.

Testimonial:	<p>“We were very pleased with the service Rapid Heat Systems provided for us. They performed exactly what we required and in an efficient and effective manner. We were especially impressed with the set up time and time to temperature. They were particularly good at controlling the temperature accurately and were able to fine tune the temperature”. - Ray Lewis, Technical Valve Services Ltd.</p>
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SHRINK FIT APPLICATIONS

Customer: Corus

Client: Spartan UK Ltd (Gateshead, Tyne & Wear)

Job Description 1: To apply heat to the outside of a 10ft diameter drive gear to enable the 2.5ft diameter shaft centre hole to increase in size by 0.040" to accept the new replacement shaft.
 Precautions - Care to be taken as drive teeth have been heat treated and shaft hole needs to be kept cold to stop heat transfer to the shaft when the shaft is inserted.
 Pre-heat Target Temp: (None given)

Job Description 2: To apply heat to a bearing for removal.
 Precautions - Care to be taken when heating the bearing as the bearing is to be reused.

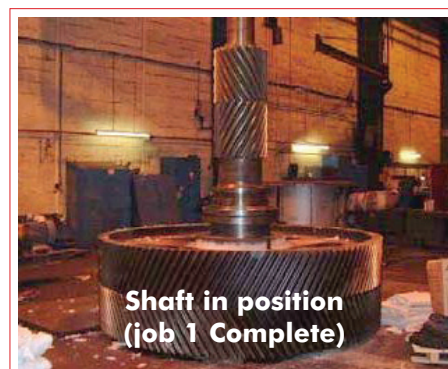
Job Location: Corus (Northern Engineering Services)
 Scunthorpe, Lincolnshire

Job Date: 29.10.04

Equipment: 2 x 20kw RHS Induction Heating Machines
 2 x 80ft Induction Heating Cables
 2 x 50ft Induction Heating Extension Cables

Results Job 1: We set up a 2-coil configuration top and bottom of the gear and set a target temperature of 300°C. Switch on time was 1410 hours and by 1900 hours the outside temperature at the gear teeth was 75°C and in 4hours 50minutes the inside diameter of the shaft hold had increased by 0.040". A target diameter for shaft fitment had been reached and the shaft centre hole remained at the ambient temperature of 19°C.

Results Job 2: We set up a 2-coil configuration due to size of bearing and set a target temperature of 100°C. Time to temperature was 15 minutes. Bearing was removed with no excessive heat and no damaged caused to bearing - enabled bearing to be used again.



SHRINK FIT APPLICATIONS

Customer: G&S Engineering

Client: Ensham Coal Mine, Australia

Job Description: RHS Australia were engaged by G&S Engineering to shrink remove/fit 6 intermediate gear shafts for Ensham coal mine's 9020 dragline gear box rebuilds.

Job Location: Mackay, Australia

Job Date: 18 May 2012

Equipment: 1 x Rapid Heat 35kw Induction Heating Machine
1 x 30ft Induction Heating Cable

Results: RHS technicians wrapped the heating cable around the gears which are approximately 2 metres in diameter and the shaft is approximately 50cm in diameter.

The gear was then heated to 90°C for the removal of the old shafts. The new gears were then wrapped with cable and heated to 120°C to install the old shafts.



SHRINK FIT APPLICATIONS

Customer:	KNPC
Job Description:	Our task was to help remove two tube bundles from two heat exchangers. Due to the imbalance of pressure during process in the heat exchanger the internal tube bundles had become damaged and stuck and needed removing for repair. Our task was to apply heat to expand the outer shell, facilitate the removing of the tube plates and attached tube bundles.
Job Location:	Shuaibah Refinery Kuwait
Job Date:	9th to 11th July 2008
Equipment:	1 x 35kw RHS Induction Heating Machine 1 x 50ft Induction Heating Extension Cable 1 x 80ft Liquid Cooled Heating Cable 1 x 140ft Liquid Cooled Heating Cable
Results Vessel 1:	We set up a four coils configuration positioned directly on the outer shell adjacent to the internal tube plate and heated as instructed by KNPC Engineers. Heating range: from ambient to 700F. KNPC used various methods, including tube pulley and a 60ton crane to pull the tube plate and extract the tube bundle from the heat exchanger. The bundle was removed approximately 30 hours after first heating.
Results Vessel 2:	This vessel proved to be more stuck than the first. After many hours of trying unsuccessfully to pull the tube plate out using the same methods as the first vessel, we were allowed to apply our method of extraction. We first attached the tube extraction plate via four extended rods to the tube plate between the outershell and the tube plate. Between the outershell and the tube extraction plate we fitted 4 off 30ton hydraulic jacks. These jacks were then pressurised to lock in position. We cooled the tube plate to approx 108F by spraying with soda water. Next we attached air conditioning to the tube plate to help keep it cool again. Via four coils positioned directly on the outershell adjacent to the internal tube plate we heated the outershell to 450F. Whilst still heating we instructed the jacks to be pressurised more. As the heat increased the tube plate popped out. Time taken approx 4 hours.



SHRINK FIT APPLICATIONS

Customer: RMB Engineering

Job Description: Our remit was to remove the outer ring which had become stuck during application.

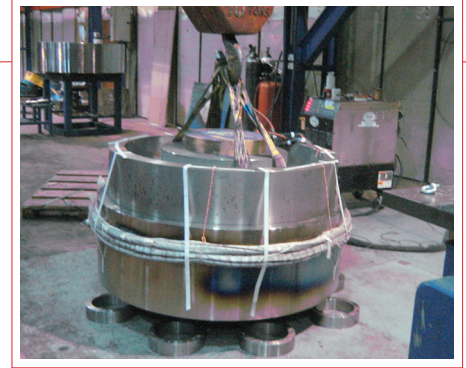
The outer ring was unfortunately put on a slight angle and with such very small room for error 'Thousandths of an Inch' when it expanded it became well and truly stuck, once cool. The client had spent several days trying to remove the outer ring with gas torches.

Job Location: RMB Engineering
Union Street
West Bromwich

Job Date: 31.01.07

Equipment: 1 x 35kw RHS Induction Heating Machines
1 x 80ft Induction Heating Cables

Results: The project proved to be a great success. We arrived on site at 1300 hours and left 5 hours later at 1800 hours. This time would have been reduced if the client could have supplied a higher rated electrical supply. We were restricted to 20kw.



SHRINK FIT APPLICATIONS

Customer: UMC International / Seatec Engineering

Client: Ministry of Defence H.M.S ILLUSTRIOUS

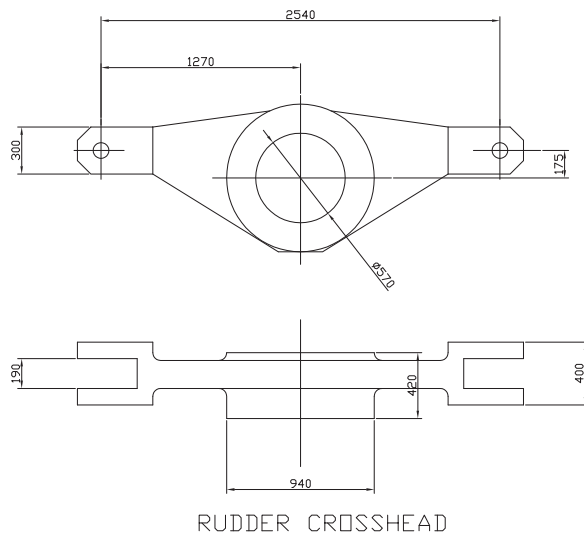
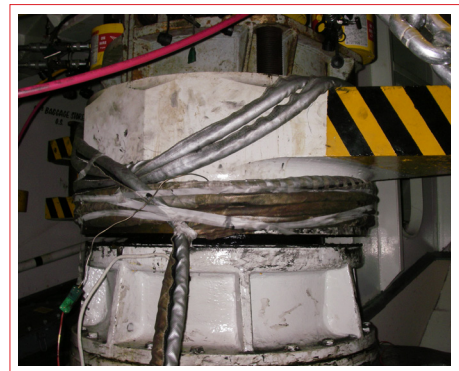
Job Description: To heat up a Tiller Assembly to enable removal from the rudder stock to which it is attached, The removal of the Tiller Assembly is to enable engineers to asses the wear and carry out any repairs, the Tiller Assembly is on a 1:15 taper with two locating keys and is installed using a pilgrim nut. The Tiller Assembly has not been removed for a good many years.

Job Location: Portsmouth Dockyard

Job Date: 29.07.08

Equipment: 1 x 35kw RHS Induction Heating Machine
1 x 140ft Induction Heating Cable
1 x 50ft Induction Heating Extension Cable

Results: We wound six turns of a 140ft induction heating cable around the tiller assembly, and applied 35kw of heat at 12.00 noon, it took only 50 minutes for the outside temperature of the tiller assembly to reach 120 this was enough heat to allow the tiller assembly to expand enabling the engineers to jack the tiller assembly off the rudder stock shaft seating, the job was a complete success and the customer was very impressed with the set-up of the induction heating application and the total time required from set-up to strip-down.

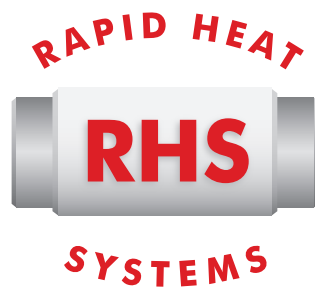


PIPE CUTTING APPLICATIONS

Customer: Laing O'Rourke
Client: National Grid
Job Description: A landslide had caused both the 24" and 30" main gas to London pipeline to move out of alignment, in excess of 4 metres. The resulting strain on the pipeline was of great concern because of possible fracture risk. New lengths of pipe, approximately 100m, were installed.
Job Location: Slough England
Job Date: 12.10.06
Equipment: 2 x 20kw RHS Induction Heating Machines
 2 x 80ft Induction Heating Cables
 2 x 50ft Induction Heating Extension Cables
 1 x 30" Rapid Pipe Cutting Machine
 1 x 24" Rapid Pipe Cutting Machine
RHS Job 1: Cut out the old pipe. (See top two pictures)
RHS Job 2: Pre-heat the new welds. (See bottom two pictures)







Rapid Heat Systems head office is located in the United Kingdom. Rapid Heat Systems has representation in: the United Kingdom, Europe, Malaysia, Indonesia, Singapore, Spain, Saudi Arabia, Bahrain, Kuwait, Qatar, Japan, Nigeria, India and Australia.

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