A FASTER, SAFER
INDUSTRIAL HEATING
SOLUTION

The Heating
Revolution

A FASTER, SAFER
INDUSTRIAL HEATING
SOLUTION
Global Credentials

We work with our global partners and offer a track record of success stories right across the globe, including some of the most challenging engineering, mining and pipeline projects in North America, Canada, Russia, Europe and the Middle East.

We have a strong global support team accredited to offer advice and packaged solutions.

Our partnership with the Miller and Hobart brands allow us to offer high efficiency welding and heating solutions for a variety of industry sectors. Talk to us for advice on the right welding, heating systems and welding consumables.

WE PARTNER WITH THE WORLD’S LEADING WELDING BRANDS, INCLUDING MILLER FOR EQUIPMENT & HOBART FOR FILLER METALS.

As part of the ITW (Illinois Tool Works) global manufacturing group, we are driven by innovation, customer needs and technical expertise. We have been supporting and advising Australian industry for over 50 years.
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We understand the challenges faced by companies to remain competitive. Our goal is to deliver solutions to increase productivity, improve safety and reduce consumable costs.

PRE-HEATING AND MAINTAINING INTER-PASS TEMPERATURE ON HEAVY WALL GAS PIPE

POST WELD HEAT TREATMENT ON P92 500MM DIAMETER X 90MM WALL

PRE AND POST WELD HEAT TREATMENT ON DRILL RODS

We Work With Industry

- Transmission Pipeline Construction & Repair
- Pipe Fabrication
- Heavy Engineering
- Petrochemical Construction & Repair
- Shipbuilding
- Mining Equipment Manufacture & Repair
- Coating Removal
- Shrink Fit
Induction Heating Explained

INDUCTION HEATING INDUCES HEAT ELECTROMAGNETICALLY INSTEAD OF USING CONVENTIONAL HEATING ELEMENTS.

Heat is induced in the part by subjecting it to a high frequency magnetic field, creating eddy currents, activating the part’s molecules and generating heat.

While resistance heating heats the surface of the part, the induction heating process heats within the part. The depth of heating depends on the frequency used. High frequency heats closer to the surface, while a lower frequency penetrates deeper into the part - allowing efficient heating of thicker parts.

Benefits of Induction Heating

1. BOOSTS PRODUCTIVITY
   Induction heating offers a much faster time to temperature. The part reaches the desired temperature in a significantly shorter time compared to traditional flame and resistance heating processes, allowing the job to get done faster.

2. IMPROVED SAFETY
   Induction heating is a much safer heating process as there is no exposure to open flames or electrical resistance wires and less exposure to fumes compared to flame heating.

3. REDUCE COSTS
   The faster heating time reduces costs due to less labour time, plus there is no fuel costs or expensive ongoing inspection or audit costs associated with the induction heating process.

4. UNIFORM HEATING
   Heating is maintained along and through the heat zone by using induction to heat within the material.

5. EASY TO SET UP
   Compared to resistance heating, induction heating is easy to set up and pull down, making it versatile to go from job to job. Plus, it offers the flexibility to fit a variety of pipe diameters and plate lengths. Various induction cable configurations can be adapted to suit your specific application.

6. ON-BOARD DIAGNOSTICS
   In-built diagnostics enables operating parameters to be available at the touch of a button and offers operator tutoring. On-board temperature control provides for manual or temperature based programming in a simple-to-learn operator interface.

REDUCE PRE-HEATING TIME BY UP TO 400%

With the Miller Pro-Heat™, a part can be brought to temperature in a fraction of the time, compared to traditional flame and resistance heating processes. It also holds the part at the specified temperature. It can be programmed to hold and soak for a specified period of time.

Pre-heat time can be reduced by up to 400%. To put this in perspective, companies using the Pro-Heat™ have reduced pre-heating time from over two hours to just 30 minutes.
Induction heating is a very safe, cost effective & fast heating process.

**INDUCTION HEATING DELIVERS UNIFORM HEATING FOR:**
- Pre and Post Weld Heat Treatment
- Welding Fabrication and Construction
- Coating Removal
- Shrink Fit Applications
Applications typically requiring hours to heat can be done in minutes with induction heating.

**THE PRO-HEAT™ 35 CAN BE USED IN THE FOLLOWING INDUSTRIES**
- Ship Building
- Pipeline Construction
- Mining
- Manufacturing
- Power Generation
- Petrochemical

**THIS FREE INTERACTIVE CD PROVIDES A DETAILED EXPLANATION OF INDUCTION HEATING.**
The presentation is beneficial for determining when to apply induction heating to industrial applications and is a valuable training tool for supervisors and operators.

**REQUEST YOUR COPY AT WELDING.COM.AU**

**Pro-Heat™ 35**
IDEAL FOR APPLYING HEAT PRIOR TO WELDING AND MAINTAINING INTER-PASS TEMPERATURE FOR A VARIETY OF APPLICATIONS.

Benefits include:
- Faster time-to-time temperature
- Drives and keeps moisture out of the weld zone
- Heats uniformly
- Greatly improves safety
- Reduces re-work due to hydrogen cracking
Pro-Heat™ 35

PRE-HEATING, MAINTAINING HEAT, STRESS RELIEVING, SHRINK FIT AND COATING REMOVAL.

MULTIPLE CONTROL THERMOCOUPLE INPUTS
Control on the hottest TC during heating and coolest TC during cooling for uniform heating and quality.

EASY SET-UP
Achieved using preheat blankets or flexible heating cables combined with user-friendly insulation blankets. Easy to install primary power through panel that does not require removal of sheet metal.

IMPROVED AND SAFER WORKING ENVIRONMENT
Welders are not exposed to open flame, explosive gases and hot elements associated with fuel gas heating and resistance heating.

ON-BOARD TEMPERATURE CONTROL
Provides for manual or temperature-based programming in a simple-to-learn operator interface.

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 and replacement.

OPEN OUTPUT DETECTION
Prevents system operation without a covered output receptacle (cable or protective plug).

CABLE IDENTIFICATION SYSTEM
Knows the type of cable attached and limits output to protect cables and blankets.

1 YEAR WARRANTY
For details, refer to Miller’s True Blue warranty statement.

APPLICATIONS
Transmission Pipeline – Construction/Repair
Pipe Fabrication Shops
Power Piping – Construction/Repair
 Petrochemical – Construction/Repair
Shipbuilding
Mining Equipment Maintenance
Drill Pipe Manufacturing
Shrink Fit
Coating Removal

LIQUID COOLED PRODUCT OPTION
The Pro-Heat™ 35 Liquid-Cooled Induction Heating System provides a highly versatile tool for preheating, stress relieving, hydrogen bake out, and post weld heat treat in 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.

Great for pre-heat application on geometrics that prevent use of air-cooled blankets.

AIR COOLED PRODUCT OPTION
The Pro-Heat™ 35 Air-Cooled Induction Heating System is specifically designed for preheating applications up to 400°F (204°C).

Air-cooled blankets are available for pipe diameters from 8-60 inches (20-152 cm) or in the case of plate, the lengths are 41-205 (1-5.2 m).

The blankets easily conform to circular and flat parts and install in a matter of seconds.

Manufactured from durable high-temperature materials, flexible induction blankets are designed to withstand the tough conditions in both industrial and construction applications.

**INPUT POWER**
- 400 - 460 V, 3 Phase 50/60 Hz CE

**OUTPUT FREQUENCY**
- 5 - 30 kHz

**RATED OUTPUT**
- 35 kW at 100% Duty Cycle

**INPUT AMPS AT RATED OUTPUT**
- 60 A, 400 V

**KVA/KW AT RATED OUTPUT**
- 39/37

**DIMENSIONS (MM)**
- H: 669 W: 552 D: 933

**WEIGHT**
- 103 kg
The Rolling Inductor

COUPLED WITH THE PRO-HEAT™ 35 POWER SOURCE, THE ROLLING INDUCTOR ALLOWS FOR ROTATING PARTS TO BE HEATED SAFELY, QUICKLY AND EFFICIENTLY ELIMINATING DANGEROUS OPEN FLAME PROPANE BURNERS.

TOGETHER THE PRO-HEAT™ 35 AND THE ROLLING INDUCTOR CAN SOLVE MANY PRE-HEATING PROBLEMS RELATED TO HEATING MOVING PARTS AND DELIVERS FAST, CONSISTENT HEAT.

The Rolling Inductor

OPTIMAL CONSISTENCY AND QUALITY
Designed to evenly distribute heat into the work piece, eliminating inconsistencies and quality issues associated with open-flame-torch heating methods. Travel Detect system (optional) helps to ensure proper heating by folding back or shutting off output if limited or no movement is detected.

IMPROVED SAFETY
Eliminates open flames reducing burn and explosive gas hazards. Direct heat transfer results in a cooler shop environment that reduces operator fatigue and improves work conditions.

Pro-Heat™ 35 liquid-cooled system shown with complete Rolling Inductor setup. (Positioner and pipe stands sold separately).
The Rolling Inductor  
P/N - MR301117

Includes 9.1m liquid cooled output cable, thermocouple extension and cable cover (not shown)
Rolling Inductor shown includes option Mounting Arm P/N MR301119 and Travel Detect System P/N MR301183

DESIGNED FOR HEATING MOVING PARTS.

EASY TO USE
Simple to set up and operate. Flexible and portable to fit a wide range of heating applications on pipe, plate and other moving parts.

APPLICATIONS
Process Piping  Refinery  Petrochemical  Power Piping  Pressure Vessels

MAXIMUM PRODUCTIVITY
Easy setup, quick time to temperature, and continuous heating increases productivity while reducing consumable costs and labor expenses.

1 YEAR WARRANTY
For details, refer to Miller’s True Blue warranty statement.

RATED OUTPUT  AMBIENT TEMPERATURE RANGE  MAX PART PREHEAT TEMPERATURE  REQUIRED COOLER  DIMENSIONS (MM)  WEIGHT

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<td>STORAGE</td>
<td>USAGE</td>
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<tr>
<td>300 Amps at 100% Duty Cycle</td>
<td>-40°C to 82°C</td>
<td>0°C to 60°C</td>
<td>315°C</td>
<td>Required Cooler (#MR195406)</td>
<td>H: 133 W: 168 (260 with wheel) D: 203</td>
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<td></td>
<td>18.1kg</td>
<td>19.7kg with Travel Detect System</td>
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NOTE: A dual rolling inductor setup may require additional cooling capacity. Consult with WA for application specific details.

*NOTICE: Part temperatures above 600°F (315°C) may damage the Rolling Inductor and/or shorten its life.

THE IMPORTANCE OF HEAT (PRE-WELD, POST-WELD AND INTERPASS)

Hydrogen optimally diffuses from the steels used in transmission pipeline construction at temperatures at or above 120 Degrees Celsius. The rapid heating and cooling of the base metal which takes place during welding puts stresses into the part and can spur the creation of hard, strong grain structures that are susceptible to hydrogen embrittlement.

Rapid cooling provides less opportunity for hydrogen to diffuse out of the weld and HAZ, and can lead to cracking. Maintaining required pre-heat and inter-pass temperatures is critical, for producing a softer, less crack-susceptible microstructure, and for allowing hydrogen to diffuse out of the weld metal and heat-affected zone.

In some cases, it may be necessary to apply a post-weld soak (typically 24 to 48 hours at 100-200 Degree Celsius) to further reduce the amount of hydrogen that is trapped in the weld. Stress relieving through post-weld heat treatment (PWHT) may be recommended for some types of steel.

Many pipeline welding applications rely on old-fashioned oxy-fuel or propane torches to bring the weld joint to temperature. This equipment can pose a problem in that most fuel gases are hydrocarbons and the process of igniting the torch and applying the flame to the pipe actually introduces hydrogen into the weld joint. Heating with a torch also does not ensure uniform heating throughout the joint and HAZ, leading to cold areas that can heat and cool at uncontrolled rates.

Similarly, if the joint is allowed to fall below the minimum inter-pass temperature welding must be stopped and the joint must be reheated by applying the torch to the joint. Temperature measurement is usually a manual method that is left up to the welder.

Induction heating is recommended for optimal hydrogen diffusion and uniform heating throughout the part. It is also safer than heating with an open flame (the induction heating coils do not actually get hot) and it provides a faster time-to-temperature than other heating methods.

Heat is induced in the part by placing it in an alternating magnetic field created by liquid or air-cooled induction heating cables. The induction cables are wrapped around the part and create eddy currents inside the part to generate heat. Automated recording devices can be integrated into the system, which creates a permanent record showing that proper heating/cooling sequences were accomplished.

The key factor here is control. The operator controls the ramp-up speed, inter-pass temperature and post-weld soaking or stress relieving to exact parameters. This controls cooling, and ensures that the HAZ and the weld retain the desired mechanical properties, and at the same time aids in the removal of diffusible hydrogen. This control is particularly important when welding with cellulosic stick electrodes that introduce higher levels of hydrogen into the weld, and on thicker, high-strength steels that are generally less ductile and are less likely to yield, causing stresses to build up, making the steel even more susceptible to hydrogen-assisted cracking.
A heavy equipment manufacturer often welds adapter teeth onto its loader bucket edges. Previously, the tack welded assembly was heated using the LPG Process, requiring the welding operator to wait while the part was re-heated repeatedly.

The manufacturer opted to try induction heating to pre-heat the assembly to increase productivity in his workshop. The material is 100mm thick with a high required pre-heat temperature due to alloy content.

WIA worked with the customer to develop customised induction blankets to meet the application requirements. The insulation and coil design provided the added benefit of shielding the welder from the part’s radiant heat.

Overall, operations were considerably more efficient, reducing welding time and maintaining temperature throughout the welding process.

A mine had been experiencing cold cracking problems and pre-heating inefficiency using propane heating in its repair operations of mining equipment. Welding operators had to remove a conventional insulating blanket from the thick part frequently to apply heat and keep the part at the correct temperature.

The mine opted to try induction heating using flat, air-cooled blankets to pre-heat the parts before welding. The induction process applied heat to the part quickly. It also could be used continuously during the welding process.

Weld repair time was reduced by 50 percent. In addition, the power source was equipped with a temperature controller to keep the part at the target temperature. This virtually eliminated re-work due to cold cracking. The customer reported an annual savings of $80,000.
## Ordering Information

### PRO-HEAT™ 35

**EQUIPMENT AND OPTION** | **DESCRIPTION** | **PART NO.**
--- | --- | ---
Pro-Heat™ 35 with Built-In Temperature Control | 400 - 460 VAC, 3-phase, 50/60 Hz, 35 kW power source, CE | MR07432
Running Gear | For power source or cooler | MR195436
Remote Contactor Control | Provides remote on/off for power source | MR043952
Heavy-Duty Cooler | Attaches to power source | MR195406

### TEMPERATURE MEASUREMENT ACCESSORIES

- Digital Recorder with Protective Enclosure: Includes temperature output cable
- Interconnect Cable: Temperature output, 5 ft, used with alternative recorder (not required if ordering #195 374)
- Thermocouple (Welded): Type K thermo. wire, 50 ft
- Thermocouple (Contact): Contact thermocouple sensor (for pre-heat only)
- Thermocouple (Contact): Contact thermocouple sensor (for pre-heat only)
- Thermocouple Extension: Cable, ext, 25 ft type K, armored

### ROLLING INDUCTOR

**EQUIPMENT** | **DESCRIPTION** | **PART NO.**
--- | --- | ---
Pro-Heat™ 35 Rolling Inductor System | Rolling Inductor Head includes 9.1m liquid cooled output cable, thermocouple extension and cable cover | MR301117
Pro-Heat™ 35 Rolling Inductor Mounting Arm | Attaches to Rolling Inductor for mounting to pipe stand | MR301119
Pro-Heat™ 35 Rolling Inductor Travel Detect System | Attaches to Rolling Inductor, comes with cabling and mounting hardware | MR301183
Pro-Heat™ 35 External Cooler | Attaches to Pro-Heat™ 35. Recommended when running dual Rolling Inductors. Comes with coolant and hoses. | MR300993
Pro-Heat™ 35 Rolling Inductor under pipe stand | Attaches to Rolling Inductor for under pipe mounting | MR301258

### AIR COOLED COMPONENTS (PRO-HEAT™ 35)

**EQUIPMENT AND OPTION** | **DESCRIPTION** | **PART NO.**
--- | --- | ---
Output Extension Cables | Air-cooled, 25 ft | MR195404
Air-cooled, 50 ft | MR195405
Air-cooled, 75 ft | MR300362
Air-cooled, 28 in series cable adapter | MR195437

### LIQUID COOLED COMPONENTS (PRO-HEAT™ 35)

**EQUIPMENT AND OPTION** | **DESCRIPTION** | **PART NO.**
--- | --- | ---
Output Extension Cables | Liquid-cooled, 10 ft | MR300180
Liquid-cooled, 25 ft | MR195402
Liquid-cooled, 50 ft | MR195403
Water jumpers | MR204877

### ROLLING INDUCTOR

**EQUIPMENT** | **DESCRIPTION** | **PART NO.**
--- | --- | ---
For 56 in pipe (185” X 7.5” with sleeve) | MR224584
For 52 in pipe (173” X 7.5” with sleeve) | MR300060
For 48 in pipe (160” X 7.5” with sleeve) | MR300061
For 46 in pipe (154” X 7.5” with sleeve) | MR300062
For 42 in pipe (141” X 7.5” with sleeve) | MR300063
For 38 in pipe (129” X 7.5” with sleeve) | MR300064
For 36 in pipe (122” X 7.5” with sleeve) | MR300065
For 34 in pipe (116” X 9.0” with sleeve) | MR300066
For 32 in pipe (110” X 9.0” with sleeve) | MR300067
For 30 in pipe (104” X 9.0” with sleeve) | MR300068
For 28 in pipe (97” X 9.0” with sleeve) | MR300069
For 26 in pipe (91” X 9.0” with sleeve) | MR300070
For 24 in pipe (85” X 9.0” with sleeve) | MR300071
For 22 in pipe (78” X 9.0” with sleeve) | MR300072
For 20 in pipe (72” X 9.0” with sleeve) | MR300073
For 18 in pipe (66” X 9.0” with sleeve) | MR300074
For 16 in pipe (60” X 10.1” with sleeve) | MR300075
For 14 in pipe (53” X 10.1” with sleeve) | MR300077
For 12 in pipe (47” X 10.1” with sleeve) | MR300078
For 10.75 in pipe (45” X 11.1” with sleeve) | MR300079
For 8.625 in pipe (40” X 13.1” with sleeve) | MR300080

### REPLACEMENT BLANKET SLEEVES

**EQUIPMENT** | **DESCRIPTION** | **PART NO.**
--- | --- | ---
Replacement Blanket Sleeves | | 
For 56 in pipe (193” X 7.5”) | MR221628
For 52 in pipe (179” X 7.5”) | MR220262
For 48 in pipe (166” X 7.5”) | MR198670
For 46 in pipe (159” X 7.5”) | MR198669
For 42 in pipe (146” X 7.5”) | MR198666
For 38 in pipe (133” X 7.5”) | MR198613
For 36 in pipe (127” X 7.5”) | MR197405
For 34 in pipe (120” X 9.0”) | MR198412
For 32 in pipe (114” X 9.0”) | MR198411
For 30 in pipe (107” X 9.0”) | MR198668
For 28 in pipe (100” X 9.0”) | MR198667
For 26 in pipe (94” X 9.0”) | MR198666
For 24 in pipe (87” X 9.0”) | MR194706
For 22 in pipe (81” X 9.0”) | MR198665
For 20 in pipe (74” X 9.0”) | MR198664
For 18 in pipe (68” X 9.0”) | MR194707
For 16 in pipe (62” X 10.1”) | MR194887
For 14 in pipe (55” X 10.1”) | MR194888
For 12 in pipe (49” X 10.1”) | MR194889
For 10.75 in pipe (45” X 11.1”) | MR195338
For 8.625 in pipe (40” X 13.1”) | MR195337

### POSTWELD HEAT TREATMENT INSULATION BLANKETS

**EQUIPMENT** | **DESCRIPTION** | **PART NO.**
--- | --- | ---
Postweld Heat Treatment Insulation Blankets | | 
For 24 in pipe (24” X 76”) | MR300049
For 22 in pipe (24” X 79”) | MR300045
For 24 in pipe (24” X 85”) | MR194958
For 26 in pipe (24” X 91”) | MR195502
For 28 in pipe (24” X 98”) | MR194998
For 30 in pipe (24” X 105”) | MR207817
For 32 in pipe (24” X 112”) | MR209222
For 36 in pipe (24” X 126”) | MR208155
For 40 in pipe (24” X 140”) | MR300016

### SOFTWIRE AND ROPE ASSORTMENT

- High-temperature rope: (1/2” X 120”)
- High-temperature rope: (1/2” X 120”)

### WATER JUMPERS

- 50 ft | MR300355
- 30 ft | MR300045
- 80 ft | MR300049
- 140 ft | MR300049
- 30 ft | MR204611
- 50 ft | MR204614
- 80 ft | MR204620
- 140 ft | MR194965
- 30 ft | MR194947
- 50 ft | MR194948
- 80 ft | MR194947
- 100 ft | MR194940
- 110 ft | MR194945
- 120 ft | MR194949
- 130 ft | MR211474

**Note:** Software upgrade will need to be installed on the Pro-Heat™ 35 power source with serial numbers below ME300304G. For further information email company details along with machine serial number to glenn.callinan@welding.com.au.
More Information:

For more information on Miller’s Induction Heating product, the Pro-Heat™ 35, contact the WIA Customer Support Centre or visit our website.

1300 300 884
welding.com.au