



# The Heating Revolution

A FASTER, SAFER  
INDUSTRIAL HEATING  
SOLUTION



Trusted by the best



# 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.



# Trusted by the best.

**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.



# Global Brands. Local Support.

19  
62

## WHERE WE STARTED

Established in 1962, WIA began as a small team of welding specialists, working to develop industry leading, innovative products. Today, we are a leading welding supplier because of our innovation and expertise.

50  
YEARS

## OUR PRODUCTS

50 years of experience gives us the expertise to develop products that deliver!

The Austarc 16TC electrode and Weldmatic Fabricator have been industry icons for decades.



## OUR GLOBAL PARTNERSHIPS

WIA is part of the global organisation ITW (Illinois Tool Works), a diversified manufacturing company.

Our global partnerships give us access to the world's leading welding brands.



## OUR INDUSTRY EXPERTISE

Both locally and globally our products are developed, delivered and supported by a team of industry experts who understand the needs of our customers.



## OUR APPROACH

We work with our customers to develop the best products and deliver the best solutions. Our customers have trust in our products and company because of how we do things. That's why we're trusted by the best.



## OUR BRANDS

Our brands include WIA electrodes, wires and equipment; Miller industrial welding equipment; Hobart filler metals and Bernard™ and Centerfire™ consumables.



## USED BY THE BEST

Our brands are selected by welding professionals and companies who demand the most reliable products, in-depth knowledge and cost-effective solutions.



## WE KNOW THE MARKET

We work hard to build our knowledge and understand what our market needs. Whether it's heavy engineering, mining, oil and gas or pipelines we know the market.



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# We Work With Industry

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

**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**

# 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.

## 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.

## 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.

# 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
- > Sugar Mill
- > Heat Treatment Contractors
- > Rental Companies
- > Shrink Fit
- > Coating Removal



INDUCTION HEATING  
**CD**

## 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.

### OPEN OUTPUT DETECTION

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

### 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.

### MULTIPLE OUTPUTS

Provides two insulated connectors for air-cooled blankets or liquid-cooled cables.

### 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.

### 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.

### ON-BOARD TEMPERATURE CONTROL

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

### TIME-TO-TEMPERATURE

Faster than conventional processes due to the method of applying the heat, reducing heating cycle time.

### 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° Fahrenheit (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	OUTPUT FREQUENCY	RATED OUTPUT	INPUT AMPS AT RATED OUTPUT	KVA/KW AT RATED OUTPUT	DIMENSIONS (MM)	WEIGHT
400 - 460 V, 3 Phase 50/60 Hz CE	5 - 30 kHz	35 kW at 100% Duty Cycle	60 A, 400 V	39/37	H: 669 W: 552 D: 933	103kg

# The Rolling Inductor

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

**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.**



#### **OPTIMAL CONSISTENCY AND QUALITY**

Designed to evenly distribute heat into the work piece, eliminating the 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.

### MAXIMUM PRODUCTIVITY

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

### APPLICATIONS

Process Piping  
Refinery  
Petrochemical  
Power Piping  
Pressure Vessels

### 1 YEAR WARRANTY

For details, refer to Miller's True Blue warranty statement.

Watch the YouTube Video >



Watch the YouTube Video to understand the benefits of the combination of the Pro-Heat 35 and Rolling Inductor.

RATED OUTPUT	AMBIENT TEMPERATURE RANGE		MAX PART PREHEAT TEMPERATURE	REQUIRED COOLER	DIMENSIONS (MM)	WEIGHT
	STORAGE	USAGE				
300 Amps at 100% Duty Cycle	-40° C to 82° C	0° C to 60° C	315° C	Required Cooler (#MR195406)	H: 133 W: 168 (260 with wheel) D: 203	18.1kg 19.7kg with Travel Detect System

NOTE: A dual rolling inductor setup may require additional cooling capacity. Consult with WIA 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.

# Testimonials

## HEAVY EQUIPMENT

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.

## MINING EQUIPMENT

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

## 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	MR907432
Running Gear	For power source or cooler	MR195436
Remote Contactor Control	Provides remote on/off for power source	MR043932
Heavy - Duty Cooler	Attaches to power source	MR195406
TEMPERATURE MEASUREMENT ACCESSORIES		
Digital Recorder with Protective Enclosure	Includes temperature output cable	MR195374
Interconnect Cable	Temperature output, 5 ft, used with alternative recorder (not required if ordering #195 374)	MR300168
Thermocouple Attachment Unit	Welder	MR194959
Thermocouple (Welded)	Type K thermo. wire, 500 ft	MR194999
Thermocouple Connectors (Used with #194 999)	Type K, 2-pin male, pkg of 10	MR195098
Thermocouple (Contact)	Contact thermocouple sensor (for pre-heat only)	MR200202
Thermocouple Extension	Cable, ext, 6 pair type K, 50 ft	MR194968
	Cable, ext, 25 ft type K, armored	MR200201

# 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
	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.	

# AIR COOLED COMPONENTS (PRO-HEAT™ 35)

EQUIPMENT & 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
Induction Blankets (Selected based on pipe size or plate length)	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
	Replacement Blanket Sleeves	For 10.75 in pipe (45" X 11.3" w/sleeve)
For 8.625 in pipe (40" X 13.1" w/sleeve)		MR300080
For 56 in pipe (193" X 7.5")		MR217628
For 52 in pipe (179" X 7.5")		MR200262
For 48 in pipe (166" X 7.5")		MR198670
For 46 in pipe (159" X 7.5")		MR194809
For 42 in pipe (146" X 7.5")		MR198669
For 38 in pipe (133" X 7.5")		MR194813
For 36 in pipe (127" X 7.5")		MR194705
For 34 in pipe (120" X 9.0")		MR194812
For 32 in pipe (114" X 9.0")		MR194811
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 11.3")	MR195338	
For 8.625 in pipe (41" X 13.1")	MR195337	

# LIQUID COOLED COMPONENTS (PRO-HEAT™ 35)

EQUIPMENT & 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
Heavy-Duty Inductor Cooler	Includes case of coolant #300 355	MR951142
Coolant	4 gallons (case)	MR300355
Heating Cables	30 ft	MR300045
	50 ft	MR300046
	80 ft	MR300047
	140 ft	MR300049
Preheat Covers	30 ft	MR204611
	50 ft	MR204614
	80 ft	MR204620
Preheat Insulation	Woven silica (1/2" X 6" X 120")	MR204669
	Woven silica (1/2" X 6" X 240")	MR195376
	Woven silica (1/2" X 12" X 120")	MR211474
	High-temperature rope, 1" wide, 50 ft roll	MR194965
Postweld Heat Treatment Insulation Blankets	For 2.5 in pipe (12" X 15")	MR194947
	For 4 in pipe (12" X 21")	MR194948
	For 5 in pipe (12" X 26")	MR195477
	For 6 in pipe (12" X 30")	MR194949
	For 7 in pipe (18" X 34")	MR195476
	For 8 in pipe (18" X 38")	MR194950
	For 10 in pipe (18" X 43")	MR194951
	For 12 in pipe (18" X 49")	MR194952
	For 14 in pipe (18" X 54")	MR194953
	For 16 in pipe (18" X 58")	MR194954
	For 18 in pipe (24" X 67")	MR194955
	For 20 in pipe (24" X 73")	MR194956
	For 21 in pipe (24" X 76")	MR300449
	For 22 in pipe (24" X 79")	MR194957
	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")	MR222228
	For 36 in pipe (24" X 126")	MR300155
For 40 in pipe (24" X 140")	MR300156	

## 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.

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