



Petrochemical



› Taking on Challenges. Building Success.

The construction of a petrochemical plant is among the most quality-crucial, labor-intensive and cost-sensitive jobs in the world. Weld-critical applications must endure high pressure and high temperatures. Projects are often burdened by a shortage of skilled labor and the difficulties of improving inefficient weld processes — yet those projects have stringent quality standards and increasingly shorter lead times.

Your competitive advantage lies in reducing time, expenses and risk by addressing critical decisions in the construction phase that focus on higher productivity. Maintaining exceptional weld integrity and maximum arc-on time requires early adoption of, and investment in, the advanced welding processes, products and partners that will significantly relieve industry pressures with maximum returns.

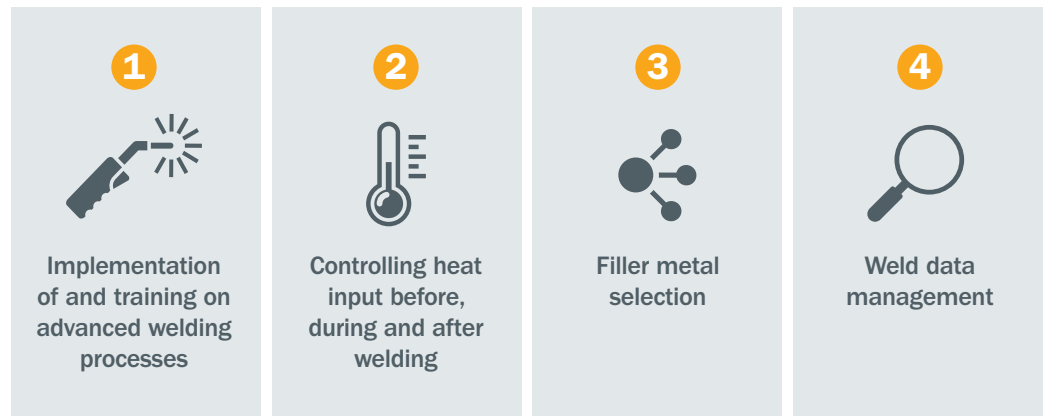
Proven time and again on some of the world's biggest and most important projects, Miller and Hobart support you with the reliable welding equipment, advanced processes and precisely formulated filler metals that empower weld operators of all skill levels to safely and consistently complete critical projects — on time and on budget.





> Advanced Reliable Equipment You Need to Boost Productivity, Improve Quality and Control Costs

Critical welding applications that demand high productivity and exceptional quality while controlling costs challenge the conventional stick and TIG welding processes that remain prevalent in today's petrochemical project fabrication. The keys to success in overcoming industry challenges and achieving construction project objectives include:



Advanced processes including Regulated Metal Deposition (RMD[®]), pulsed MIG and flux-cored welding create more-uniform, higher-quality welds faster than traditional processes. Next-generation Miller[®] machines are engineered with adaptive controls that enable weld operators to quickly train on these advanced processes — and then use them to consistently produce exceptional results. **Your capital investment in these machines and training time has the potential to deliver 25 to 30 percent productivity gains in both shop and field environments.**



> Fabrication Shop Solutions

Miller PipeWorx 400 welding system

Simplified and optimized for pipe fabrication shop welding.

The PipeWorx 400 welding system minimizes training time and maximizes productivity with a streamlined setup process, one-touch welding and quick process changeover abilities. It supports both pulsed and advanced Regulated Metal Deposition (RMD) processes.



Miller SubArc Digital Series welders

Offering both DC and AC/DC capabilities, SubArc Digital Series welders can handle SAW and ESW applications from traditional DC single-arc to multi-wire welding. They are available with a range of wire drive motors and accessories.

- DC models rated from 650 – 1,000 amps, 100% duty cycle.
- AC/DC models rated at 1,000 amps, 100% duty cycle.



Miller SubArc Digital portable welding system

This self-contained system includes the power source, column and boom on a mobile platform, providing a compact, turnkey submerged arc welding solution that's ideal for welding pressure vessels and pipes.

- Built-in fork pockets and caster wheels offer excellent mobility.
- Provides easy positioning of the weld head through use of an integrated motorized column, manual telescoping boom, cross slides and 360-degree column rotation.
- Motorized column with pendant control provides 44 inches of vertical travel to accommodate workpieces of various heights.



> Formulated with Foresight

Critical welds depend on precisely formulated filler metals and fluxes that meet specific application requirements without compromise. Hydrogen induced cracking is a primary concern in the fabrication of petrochemical project components (vital for any high strength alloy). Ensure your filler metal selection includes low hydrogen options designed for use with high-strength chrome-moly materials with an X-factor below 15.

P1 carbon steel welding

Hobart® SDX S3Si-EH12K copper-coated solid wire and Hobart SubCOR™ EM13K-S MOD metal-cored wire are specifically formulated for submerged arc welding P1 carbon steel. When paired with Hobart SWX flux, both wires provide superior weldability covering all P1 applications, while offering critical low-temperature impact toughness down to -50°F.

Chrome-moly steel welding

Hobart SDX CrMo1-EB2R and SDX CrMo2-EB3R are copper-coated wires formulated for submerged-arc welding of SA 387, P11 and P22 creep-resistant steels. Minimal impurities and residual elements make them ideal for step-cooling applications and those requiring a low X-factor (< 15).

Process pipe and vessel welding

Hobart SWX 160 flux is a high-basicity, fluoride-basic agglomerated flux for joining a wide range of carbon and low-alloy steels. SWX 160 provides excellent impact toughness at low temperatures, plus good welding characteristics and quick slag release. It also has a very low residual (tramp) element content, making SWX 160 well suited for applications requiring a low X-factor (< 15).

> Field Solutions

Miller PipeWorx 350 FieldPro™ RMD®/pulse system with Smart Feeder

Sets the standard for durability in field construction.

The PipeWorx 350 FieldPro delivers excellent Regulated Metal Deposition (RMD), pulsed MIG, MIG and flux-cored welding performance up to 200 feet away from the power source with no control cables needed. All system controls can be accessed from the Smart Feeder, including weld process selection, material type, wire diameter, gas type, wire feed speed and voltage.



Miller XMT® 350 and 450 Series multiprocess welders

Portability and excellent arc performance.

With true multiprocess capabilities and easy-moving portability, versatile XMT 350 and 450 welders are perfect for remote jobsite applications. Available ArcReach™ technology adds productivity, allowing weld operator to make parameter adjustments at the wire feeder — without control cables.



Miller Big Blue® 350 PipePro® SF welder/generator

Advanced RMD and pulsed MIG processes in an engine-driven machine.

Designed for the most demanding work, the Big Blue 350 PipePro SF also includes stick and flux-cored capabilities to meet high-strength steel requirements. Weld operators have complete machine control at the weld joint, enabling them to use advanced RMD and pulsed MIG processes up to 200 feet away from the power source with no control cables.



The Hobart SWX moisture solution

With two or more hours of baking often required before most fluxes are usable, moisture content can be a serious productivity problem. Hobart SWX fluxes for submerged arc welding are packaged in five-layer polyethylene-aluminum foil bags that resist any moisture transfer. Your flux is guaranteed to be ready to use right out of the bag, saving you time and money.

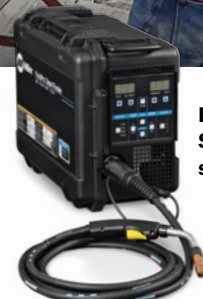
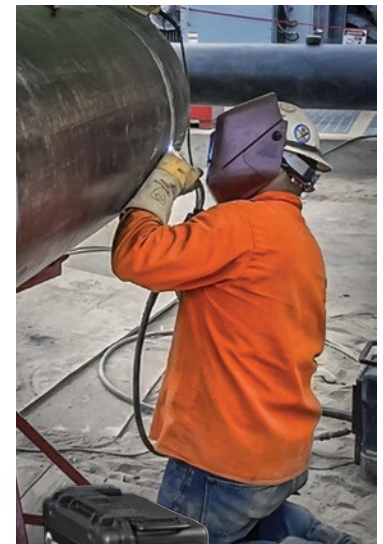
Remote power source control without a cord

Miller remote control solutions like the Smart Feeder and ArcReach technology allow operators to adjust weld parameters at the wire feeder. This simplified cable management strategy communicates changes to the power source using existing weld cables — there's no need for control cables.

Increased productivity and safety:

Remote control systems let operators spend less time walking to and from the welding power supply, so they can deliver more arc-on time — and reduce their exposure to workplace hazards.

Improved weld quality: Operators can precisely set weld parameters at the wire feeder and then monitor the actual output on digital meters. This eliminates guesswork and helps operators better adhere to weld parameters.



FieldPro Smart Feeder shown

> **Controlled Heat = Controlled Costs**

A major contributing factor to successful project outcomes is the ability to control heat input before, during and after the welding process. Too much or too little heat can result in the heat-affected zone (HAZ) cracking, causing premature weld failure. Precise and stable temperature control during the heating cycle is the key to success:

Before

Preheat to drive off moisture, reduce hydrogen, improve weldability and prevent the weld pool from cooling too quickly.

During

Keep the interpass temperature within ranges given in approved, qualified weld procedures.

After

Post-weld heat treatment restores toughness to the weld deposit and HAZ.

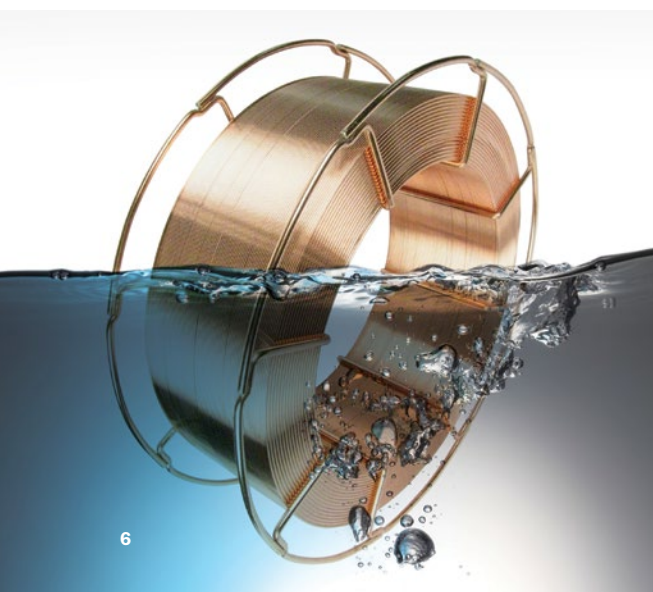
Open flame and resistance heat are still among the most common methods practiced for heat treat applications. Both of these heating options present challenges from quality, productivity and safety perspectives. Alternatively, induction heating delivers quick time-to-temperature and even distribution of continuous heat with minimal temperature variations. Available data-logging capabilities assist with maintaining quality assurance, ensuring code compliance and meeting customer specifications, making induction heating an attractive choice.

Miller ProHeat™ 35 induction heat systems

These cost-effective induction solutions can solve many common preheating challenges, saving time and money while enhancing productivity.

- Applications that typically would require hours to preheat can be done in minutes
- Heats only the work area, reducing safety issues associated with open flames and electrical resistance wires
- Workpieces can continue to be heated as welding takes place
- Full output heating can be delivered at a fraction of the cost of other methods
- Advanced data recording capabilities

ProHeat 35 with rolling inductor shown



Hobart MEGAFIL® : The Low Hydrogen Answer

The seamless technology of the MEGAFIL products offers:

- Extremely low diffusible hydrogen values
- Welded seam and copper coating aids in little to no moisture pick up
- Ideal for field applications where climates can be challenging
- Copper coating improves feedability and provides optimal current transfer

Hobart MEGAFIL® seamless wires are available for both metal-cored and flux-cored applications.

> Insight Welding Intelligence™ Solutions: Data-Driven Cost Control

Insight Pipe and Vessel interfaces with the PipeWorx 400 welding system, electronically recording essential welding information — and offering numerous benefits.

Information with total traceability

Captures and connects welding information to individual weld joints, making it easy and efficient to track productivity and quality metrics.

Real-time data collection

Welding information is collected as welds are completed, allowing progress to be monitored in real time.

Eliminates data entry time and errors

Because data is collected directly from the weld cell, there's no need to manually enter the information — saving time and reducing the potential for errors.

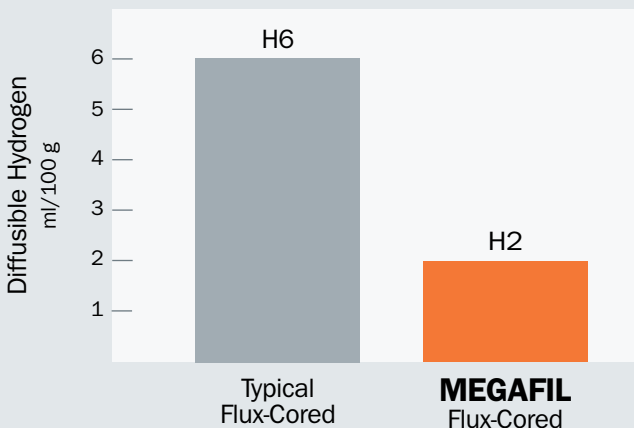
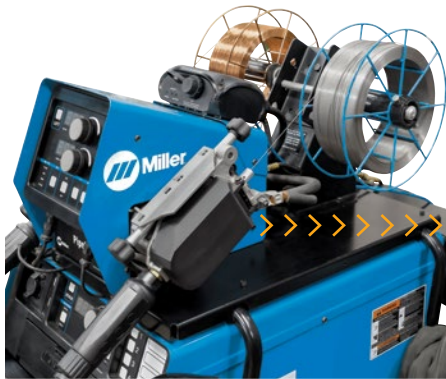
Flexible design for data integration

Data can be imported and exported in a generic file format for easy integration with most business software programs.



The Insight Module for PipeWorx 400 automates documentation requirements by capturing weld data and relating it to a specific weld joint.

Insight Pipe and Vessel





> **Countless Capabilities. Trusted Advice. Integrated Solutions.**

Meet the challenges of welding quality and productivity in petrochemical with the right partners — the ITW Welding companies. Miller and Hobart work together to create a comprehensive welding solution for your unique petrochemical applications.

For all your petrochemical welding solution needs, contact:

Miller Electric Mfg. Co.
1-800-4-A-Miller (1-800-426-4553)
sales@MillerWelds.com

Hobart Brothers Company
1-937-332-5188
hobart@HobartBrothers.com

ITW Welding



MillerWelds.com



HobartBrothers.com