

HotPulse[®] Technology

Innovation for orbital welds

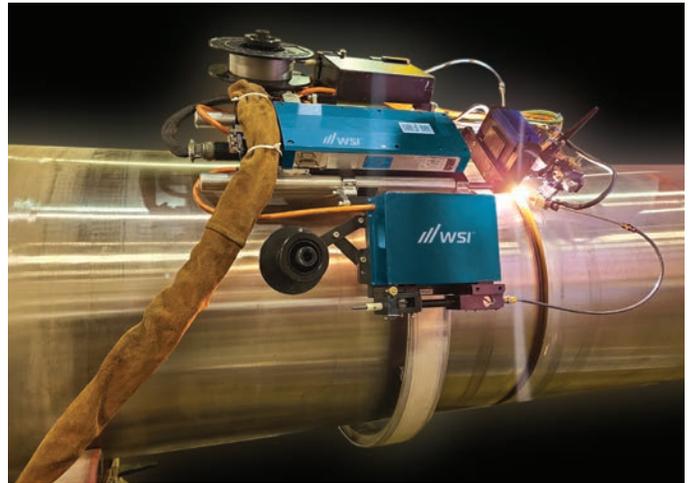


Superior weld quality, increased production rates, and reduced risk of failure

WSI's machine HP GTAW[™] welding technology combines unparalleled deposition rates with superior arc control. By utilizing a proprietary system of wire pre-heating, precise dabbing mechanics, and controlled waveforms, the HP GTAW process decreases porosity, improves grain refinement, and is significantly less susceptible to fit up imperfections in field joints. HotPulse technology provides superior weld quality with increased production rates and reduced risk of failure.

Consistent results with enhanced safety

WSI is the largest provider of machine orbital welding services for refineries, nuclear plants, and fossil plants. Our revolutionary HotPulse-enabled orbital welding equipment provides mechanical properties and volumetric quality better than conventional field welding processes, with deposition rates competitive with SMAW and FCAW. HP GTAW technology exceeds quality and schedule expectations while being completed safely. It lowers the risks commonly associated with access constraints and high pre-heat temperatures coupled with machine control. More plant operators turn to WSI for machine orbital pipe welding services during planned or emergent outages.



Solutions specifically configured to address difficult U-bend welds

Many refiners are upgrading the metallurgy of heaters and furnaces to reduce degradation and maintenance costs. Since these replacements involve many orbital welds performed in situ, the high preheat requirements and complicated geometry often cause significant weld failures. Advanced materials are not forgiving to multiple repairs, which creates a difficult challenge in meeting quality and schedule requirements. WSI HotPulse-enabled specialty machine welding systems are specifically configured to make these difficult U-Bend welds with an exceptionally high-quality GTAW weld at high production rates. With our high alloy base materials, the mechanical and chemical properties of the welds are also significantly improved over conventional welding.



The highest level of quality and productivity

Short schedules, tight budgets, and high-quality specifications offer little tolerance for welding defects and poor productivity. Current high-energy systems rely on heavy wall and higher alloy materials for process reliability, making conventional techniques and practices no longer the best option or economical. WSI's machine HP GTAW welding technology significantly impacts the speed, quality, and production of orbital pipe welding projects.



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HotPulse GTAW Advantages:

- First-time quality welds
- Up to 6x higher deposition rate than cold wire TIG
- Reduced surface tension for better wetting and bead profile
- Reduced porosity from puddle agitation
- Grain refinement for better weld metal impact properties
- Welds with high-alloy or nickel materials
- Semi-automatic and machine-operated versions provide application flexibility
- Improved appearance and fit up tolerance

HotPulse GTAW Proven Applications:

- Thick wall pressure vessel repairs
- P91 high-energy line in coal-fired boilers
- Head replacement on hydrogen reactors in refineries
- Heavy wall piping systems on combined-cycle power plants
- Seam weld repair on heavy wall vessels at chemical plants
- Furnace U-Bend replacements

