

# U-Bend HP GTAW™

Meeting challenges through  
innovative automation



## Advanced Welding Technologies to Meet the Industry's Rapidly Changing Process Needs

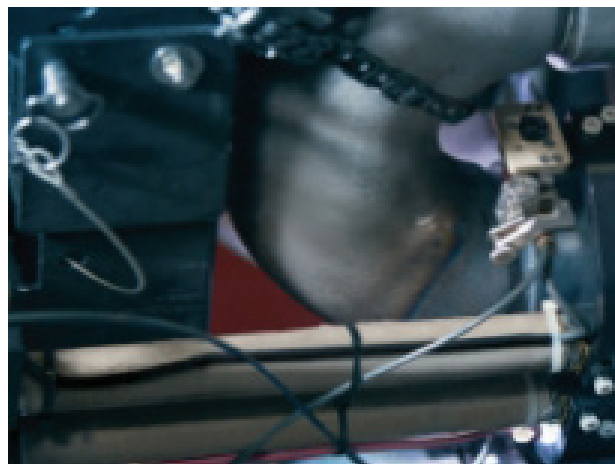
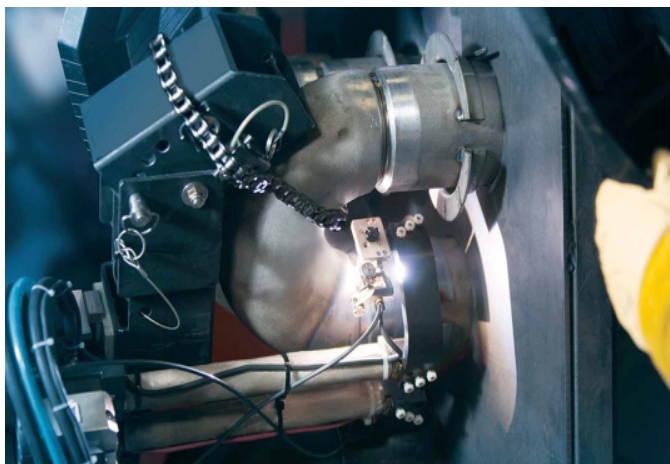
WSI provides turnkey automated welding solutions that reduce outage schedules and result in increased uptime through professional project management, quality control, and safety practices.

### U-Bend HotPulse® Welding: A New Solution to an Old Problem

Advanced cleaning methods such as mechanical pigging and online spalling are being increasingly adopted as quick and easy methods of mechanical decoking. While maximizing onstream factors, these technologies often necessitate the replacement of "mule ear" return headers with heavy-duty cast return bends.

Additionally, high temperature creep-resistant material upgrades in a convection section introduce unique project challenges. Due to limited clearances and high preheat temperatures, these tasks require specially trained craft just to achieve marginally acceptable results.

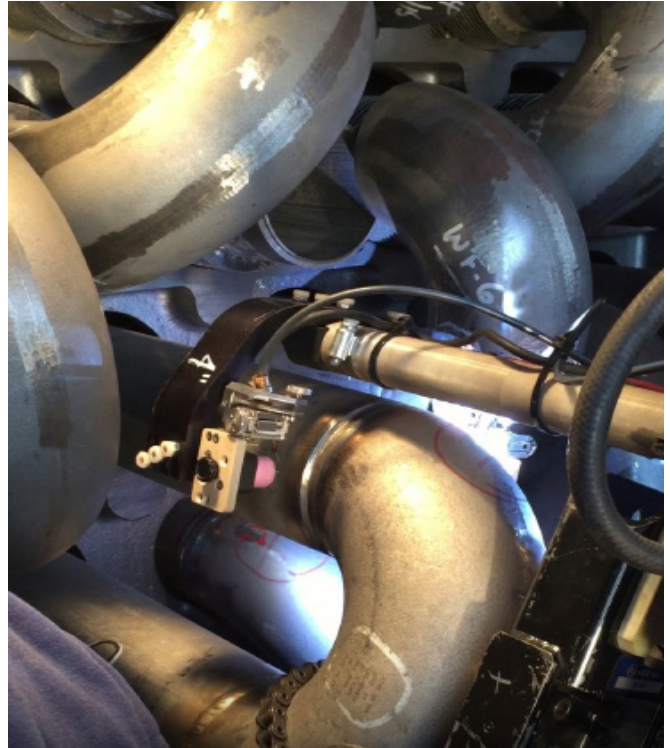
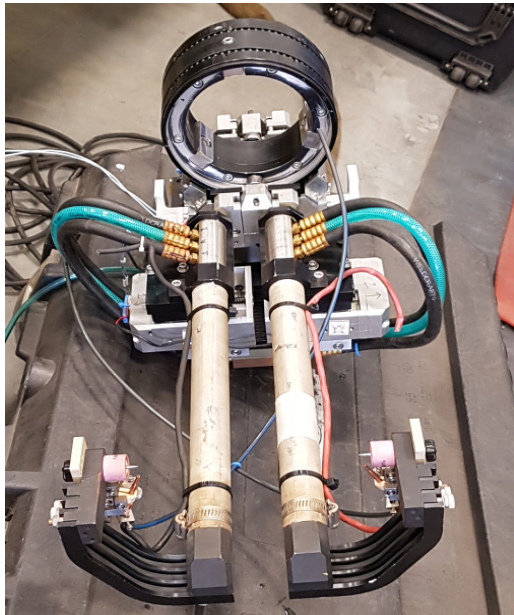
As the industry's leader in innovative welding technologies, WSI has developed an automated solution for this challenging application. Field testing and experience have demonstrated time savings and improved quality and safety while reducing total labor for the scope.



## Safer. Faster. Better.

WSI's automated HP GTAW™ process provides a number of advantages over traditional manual methods, including:

- Faster and repeatable fit up relies on WSI-proprietary J-prep weld joint design and custom clamps.
- Extended reach curved torch design reduces schedule by allowing return bends to be fit and tack welded prior to automated welding.
- Custom Alignment Jig and Universal U-Bend Mounting Fixture ensure precise tracking of the weld head, resulting in reduced in-process steering and a higher weld quality.
- Double-up design eliminates rewrap and time between welds, greatly reducing the risk of losing preheat between passes.
- Proprietary welding process provides full GTAW welds at high production rates. The process delivers higher quality and much lower reject rates.
- WSI's remotely operated welding system and tooling technology greatly reduces risk of accidental burns and heat exhaustion, especially when high preheat is required.
- Automated HotPulse U-Bend process nearly doubles production rate, greatly reducing required crew size.



## Comprehensive Design for Welding Automation

The return bend welding method and tooling combines the four key ingredients for successful field automation into a single platform:

- Automation friendly root weld joint prep design.
- Consistent and repeatable fit up.
- Automated weld head with precise welding parameter control; efficient mounting and alignment to minimize non-productive downtime.
- Real-time override of weld parameters and torch trajectory allows skilled operator to compensate for minor irregularities in joint prep and fit up.



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