FRICTION STIR WELDING

Friction Stir Welding has long been the solution for the lightest and strongest welds of aluminum and other difficult-to-weld materials, and I-STIR™ technology is the way to do it.

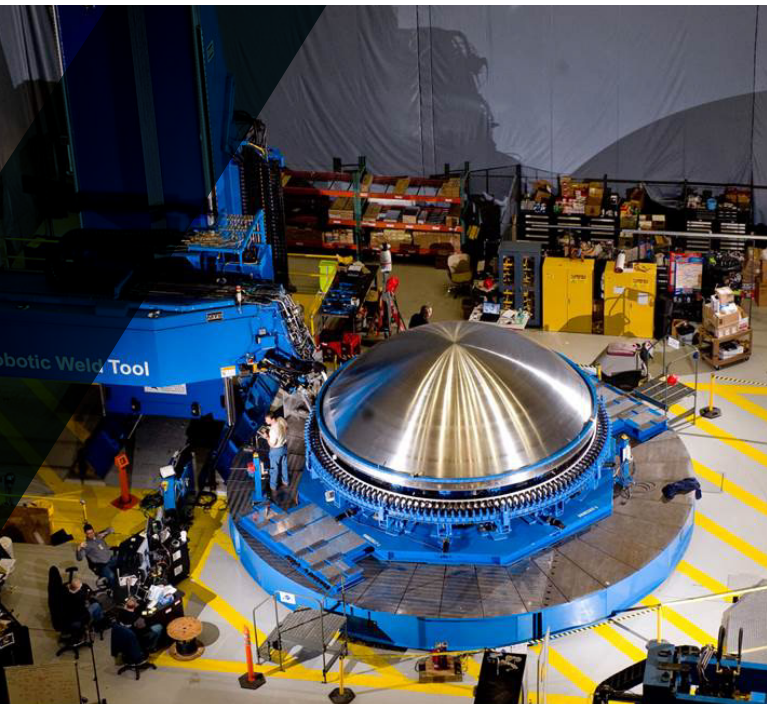
WHAT IS FRICTION STIR WELDING (FSW)?

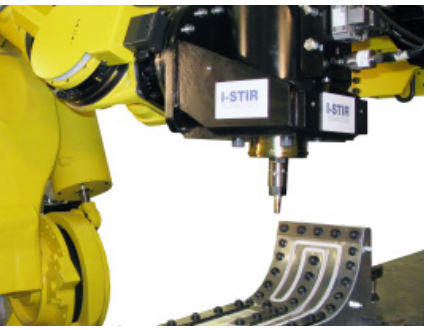
FSW has significant advantages over conventional joining techniques because it stirs the two materials just below their melting point. If your application requires the strongest, welded joints or the tightest, welded seals, friction stir welding is the right option.

BENEFITS OF USING FRICTION STIR WELDING

- 100% improvement in welded joint strength improvements over traditional welding
- Double the static strength of comparable riveted joints
- Ten-fold reduction in distortion on large extrusion panels
- Solid state process drives a Zero Defect Weld
- No consumables (filler material) required
- Can weld materials less then 1mm and greater than 75mm thick
- Can process at rates of up to 10m/min
- Can weld two dissimilar materials
- Faster to set up and faster than fusion welding
- Environmentally friendly- no gases required, no debris or hazardous waste (sparks or fumes)
- Safe- lower required operating temperature

PAR SYSTEMS





INDUSTRIES SERVED

- General Industrial, Structures and Bridges
- Research, prototyping & development
- Transportation
- Medical Device
- Aerospace
- Automotive
- Oil & Gas
- Space

TECHNICAL INFORMATION

Methods

- **Fixed pin:** Works well for single, constant thickness weld geometries; requires a backing anvil
- **Adjustable pin:** Provides variable pin length but requires additional control to move pin relative to shoulder
- **Self-reacting:** Consists of two shoulders with a pin that goes through the base material; the bottom shoulder is attached to the pin eliminating need for backing anvil

Physical Features

- Family of weld heads and pin tools
- Plug welders and tooling
- Proven ability to weld complex and contoured geometries
- Standard products: CNC Series - BR and VM, Process Development Systems (PDS)
- Standard robotic and gantry solutions

Software Features

- Active real-time position and force control
- Active real-time multi-mode weld and seam tracking and monitoring
- Multi-parameter dynamic limits
- High fidelity data acquisition for quality monitoring and recording

Materials

- Aluminum
- Titanium
- Steel
- Copper
- Magnesium
- Many other materials

Typical Applications

- Vacuum testing chambers
- Automotive wheel fabrication
- Commercial aircraft
- Space programs
- High-speed trains
- Bridge decks
- Vessels & Boats

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