

## Friction Stir Welding (FSW) Quality Control

FSW is an advanced solid-state bonding technology featuring significant technical advantages such as minimal welding deformation, elimination of filler materials, and excellent overall joint performance.



### Pre-weld Preparation and Inspection

- Welding surface: Thoroughly remove oxide layers, oil stains, and dust to ensure cleanliness.
- Clamping and tools: Rigid clamping of workpieces to prevent edge misalignment; inspect mixing heads for wear or cracks.



### Process Core Monitoring

- Basic parameters: Real-time monitoring of spindle speed, welding speed, and pressure to ensure process stability.
- Key indicators: Torque monitoring is a mandatory inspection item, and abnormal fluctuations require immediate alarm and shutdown.



### Post-weld quality verification

- Appearance and dimensions: The surface is smooth and free of defects, with flatness and positional accuracy verified by CMM inspection.
- Performance testing: 1.5 times pressure hold test + helium mass spectrometry leak detection (mandatory) + ultrasonic/CT flaw detection.