



MTI is a global company that provides solid-state joining and welding solutions, with Friction Stir Welding machines and systems as key elements of its core business. MTI is licensed and listed by The Welding Institute (TWI-England) as a Friction Stir Welding machine manufacturer.

WHAT IS FRICTION STIR WELDING?

Friction Stir Welding is a solid-state joining process that creates extremely high-quality, high-strength joints with low distortion. A non-consumable spinning tool bit is inserted into a work piece. The rotation of the tool creates mechanical energy by friction that heats the material to a plastic state. As the tool traverses the weld joint, it extrudes material in a distinctive flow pattern and forges the material in its wake.

WHY FRICTION STIR WELDING?

Friction Stir Welding from MTI is making a dramatic impact across a number of industries, including aerospace, defense, transportation, and electronics. In the automotive industry alone, for example, Friction Stir Welding is used to create everything from drive shafts and fuel tanks to hood panels and suspension links.

UNIQUE ADVANTAGES

- Turn-key Installation
- Pre-loaded, Zero-backlash Linear Drives
- Balanced Actuator Loads
- Precision Spindle
- Data Acquisition System records all significant process parameters: Force, Torque, Position, Velocity, and Temperatures
- Automation
- Manufacturing Cell Integration (including material handling, automatic loading and unloading, robot integration, bar coding, quality control, part destruction)
- Custom design machine diagnostics and maintenance schedule for full preventive maintenance

TOP SIX ADVANTAGES:

1. Provides opportunities for new solutions to old joining problems.
2. Virtually defect-free welding due to easily controlled process parameters.
3. Versatile applications by welding all joint geometries including complex contours.
4. Process flexibility allows for near limitless panel length and width.
5. Low heat input and low distortion.
6. Welds metals and alloys that are unweldable by other processes.



LS-1



GG-1

THE LS-1 FRICTION STIR WELDING MACHINE

The LS-1 is a moving C-frame type machine for Linear Seam Welding and general production. Modular base sections, with a rack and pinion drive system, make it possible to achieve any desired system length. Coordinated Y-axis and an optional turntable provide maximum versatility.

- Cost-effective, robust design for Linear Seam Welding in production environments.
- Ideal for joining flat panels or extrusions to produce panels of unlimited width and length.

Applications: Extrusion Joining – Decking for Ships and Aircraft – Structural Components – General Fabrication

MTI'S USER-FRIENDLY OPERATOR INTERFACES



- Allow for full data acquisition and display.
- Provide programmed and actual forces along with position and velocity data.

THE GG-1 FRICTION STIR WELDING MACHINE

The GG-1 is a multi-axis Friction Stir Welding machine for complex contours. It is specifically designed for applications requiring precision and high stiffness. The large work envelope makes this machine ideal for large components and structures.

Applications: Aerospace – Wing and Fuselage Structures – Defense – Fabrication and Repair of Large Components – Ship Propellers – Transportation Equipment

MTI RESEARCH AND DEVELOPMENT MACHINES

MTI produces premier high-torque, high-stiffness Friction Stir Welding machines that are cost-effective for research and development. These machines have high stiffness and low spindle run-out which makes them ideal for welding steels and high temperature alloys with PCBN tools. MTI's RM-1 is used by such companies as Spirit Aerosystems, Mitsubishi Heavy Industries, Idaho National Laboratory and many other sites around the world. The RM-2 model, offering higher torque and load capacity, is performing advanced materials research at The Welding Institute (TWI) and Brigham Young University.

Manufacturing Technology, Inc. offers consulting, design and build services for Friction Stir Welding machines and tooling. We are licensed and listed by The Welding Institute (TWI) as a Friction Stir Welding machine manufacturer.



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