



Prototype linear friction welding machine

Blacks mechanically operated linear friction welding machine

The world's first linear friction welding machine, commissioned to an original design by TWI.

Features and benefits

- Fully instrumented to record input parameters, and force and displacement histories
- Universal adapter, allowing for customised tooling
- Repeatable weld quality
- Capable of oscillating indefinitely, allowing for a slower build-up of heat

Some applications

- Used successfully for a number of years for the development of LFW procedures
- Working with heat-sensitive materials
- LFW research and development for the joining of:
 - Titanium alloys
 - Nickel-based superalloys
 - Aluminium alloys
 - Steels
 - Dissimilar materials
- Integrated bladed disks (blisks) for aero-engines
- Aircraft wing ribs
- Structural preforms (near-net-shape manufacturing)

Technical specification

- Oscillation type: electromechanically actuated
- Oscillation movement: short-stroke oscillation
- Max. oscillation amplitude: $\pm 3.0\text{mm}$
- Max. oscillation frequency: 80Hz
- Max. oscillation capacity: continuous
- Forge type: hydraulic
- Max. force: 100kN
- Override force: 150kN

