The SuperStir™ FSW Gantry
A flexible gantry for Friction Stir Welding

The SuperStir™ FSW Gantry – a flexible gantry for friction stir welding based upon a modular, five-axis motion system platform that can be scaled to cover a range of applications.

Cleaner leaner stronger
In contrast to conventional welding techniques, the FSW process requires no filler material, gas or other consumables – and consumes much less energy. Generating no harmful gases, no slag, no spatter and low sound, the process actively contributes to a better working environment, while simultaneously boosting productivity.

Best of all, no or minimum of post treatment is needed and weld strength quality is excellent!

Strong and Stiff yet Fast and Flexible
The SuperStir™ FSW Gantry system for automated friction stir welding is a modular, 5-axis motion platform in a gantry configuration. The gantry system is based on ESAB’s well proven control system and is designed to fit a broad range of welding applications with a modular architecture that allows it to be tailored to the specific needs of your application. Its strong structure gives it the precision, strength and stiffness needed to support the high forces of friction stir welding at high welding speeds. The gantry is running on rails making it particularly well suited to weld long components.

Fully Automated Process
At the heart of ESAB’s SuperStir technology is the control system developed for the FSW process. The control system manages all of the critical variables in the FSW process throughout the welding process. Simultaneously, it monitors for anomalies, record events and provide feedback to the operator of the system and the weld process status.

For fast support, the operation of the gantry can in real-time be remotely monitored from any PC computer through a standard Ethernet connection. The human machine interface (HMI) provides a simple, easy to use touch screen, which allows the operator to easily set up welds, store operating parameters and visually monitor the operation of motion system and the welding process.

SuperStir™ FSW Gantry features
• Flexible and modular gantry available in a range of sizes.
• The gantry structure offers high rigidity and stiffness for the FSW process.
• Welding speed up to 6 m/min thanks to very strong and high precision motion components.
• High quality welds - increased tensile strength and outstanding fatigue properties compared to conventional welding.
• Minimum of post treatment - low distortion and shrinkage thanks to low heat input.

Applications
The SuperStir™ FSW Gantry is capable of welding a large variety of product geometries for applications in diverse industries such as:
• Railway
• Marine
• Aerospace
• Research & Development
• Fabrication
Technical Data

BASIC SYSTEM

Working range, m
- X axis up to 150
- Y axis up to 10
- Z axis up to 3

Rotation axis
- A axis ± 6° (Around Y axis)
- B axis ± 90° (Around X axis)

Transport speed, m/min up to 10
Welding speed, m/min up to 3
Welding tool rotation, rpm 100 - 3000

Power Supply, V 400 ± 10%
Power Consumption, kW ~50

Welding aluminium thickness (welding tool dependent)
- Series 6000, mm 1-18 Head 4 1-35 Head 5
- Series 5000, mm 1-10 1-20
- Series 2000 & 7000, mm 1 - 8 1 -18

Down force Z axis, kN 60 100

Options

- FSW Heads for different welding thicknesses
- Retractable Pin Tool (RTP) & Bobbin tool head
- Welding FSW tools
- Joint tracking system
- Weld video monitoring system
- Milling head
- Vacuum system
- Protection bellows for Y and Z range motion components
- Central lubrication system
- Fixture systems

Other combinations of working ranges and welding thicknesses on request

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ESAB

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV
- ISO 9001
- ISO 14001
- OHSAS 18001

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