

# Swing Friction Stir Welding .....from R&D to production

Friction Stir Welding (FSW) is an energy efficient solid state joining technique with several advantage for welding Aluminum and Magnesium. SwingStir is HITACHI's Spot-FSW machine that provides welding solutions for a wide variety of automotive applications.



**C-Frame Gun (Robotic)**

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## FEATURES

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- TWI FSW machine license\*
- Standard and custom machines
- Data acquisition system
- Hitachi technical support

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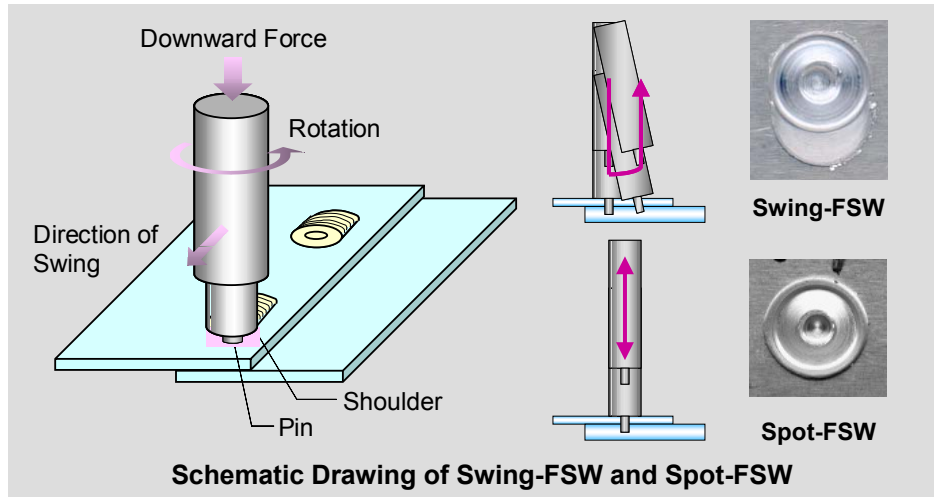
## APPLICATIONS

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- Body in White (BIW)
- Closure Panels such as hood, door, deck lid and liftgate
- Aluminum, Magnesium, etc.

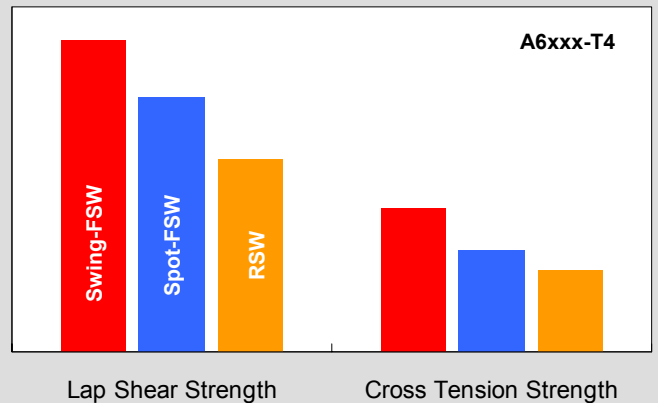
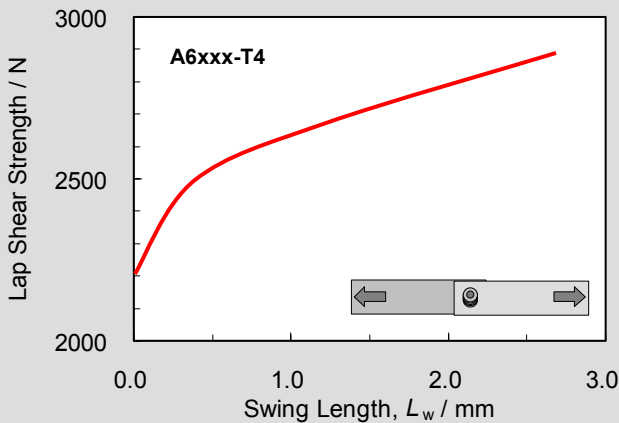
## Process Advantages

- Solid state welding process:
  - No melting of base metal
  - Very low distortion
  - No fumes or spatter
- Can easily weld:
  - Lap (2T, 3T)
  - Wide material applicability
- Simple process:
  - Low electric supply
  - Minimal surface treatment
  - No shielding gas
  - No consumables (Electrode)



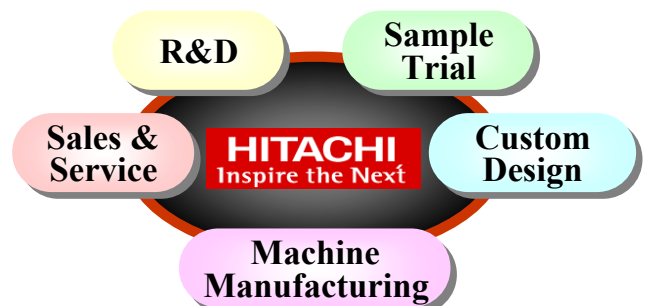
## Unique Features

- Good process repeatability
- No porosity or solidification cracking
- Weld region has a finer grain structure than the base metal
- Excellent mechanical properties
- Swing length increases the joint strength
- Higher strength than resistance spot welding (RSW)



## Hitachi Solutions

- Collaboration with customers for process development
- Sample trial for FSW evaluation
- A variety of Standard Machines
- Custom Machine design
- Technical support



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*\*FSW is a process patented by TWI*

*Notes:  
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