KUKA cell4_FSW
__the modular cell for joining non-ferrous metals

KUKA Friction Stir Welding (FSW) cells join non-ferrous metals with a low melting temperature and mixed-material combinations such as aluminum and steel. Ideal for future-oriented markets, such as electromobility. The modular cells can be easily configured for specific requirements and upgraded with expansion modules. For efficiency in top quality.

Highlights

• Maximum process utilization up to 95% with two workstations in separate loading areas
• Compact, modular cell based on the FSW application module
• Enables cost-effective welding of non-ferrous metals and mixed-material combinations
• Loading and unloading with no impact on cycle time
• Precise path accuracy of up to 0.5 mm achievable thanks to KUKA path calibration
• 100% process monitoring
• Ready for IIoT and remote services

KUKA cloud applications
KUKA cell4_FSW
_modular, compact friction stir welding cell for optimum process utilization

<table>
<thead>
<tr>
<th>Standard configuration</th>
<th>cell4_FSW midsize single KR</th>
<th>cell4_FSW large dual KR</th>
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</thead>
<tbody>
<tr>
<td>Length (incl. control cabinet)</td>
<td>5,600 mm</td>
<td>6,770 mm</td>
</tr>
<tr>
<td>Width (incl. control cabinet)</td>
<td>5,400 mm</td>
<td>6,320 mm</td>
</tr>
<tr>
<td>Height (incl. control cabinet)</td>
<td>3,500 mm</td>
<td>3,500 mm</td>
</tr>
<tr>
<td>FSW application modules</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Weight approx.*</td>
<td>5,000 kg</td>
<td>8,000 kg</td>
</tr>
<tr>
<td>Robot</td>
<td>KR 500 R2830 FORTEC MT</td>
<td>2 x KR 500 R2830 FORTEC MT</td>
</tr>
<tr>
<td>Worktable (optional), quantity</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Area of worktable (W x D)</td>
<td>1,400 mm x 800 mm</td>
<td>2,400 mm x 1,600 mm</td>
</tr>
<tr>
<td>Cell equipment</td>
<td>Siemens TIA Portal series 1500, KUKA.SafeOperation, 2 roll doors with point-of-operation guarding and light curtain, polycarbonate fence with 1 or 2 maintenance gates and locking mechanisms</td>
<td></td>
</tr>
<tr>
<td>Robot controller</td>
<td>KR C4 mit KSS 8.6</td>
<td>KR C4 mit KSS 8.6</td>
</tr>
<tr>
<td>Cell operation</td>
<td>HMI Advanced, 23.4&quot; Display with IPC</td>
<td>HMI Advanced, 23.4&quot; Display with IPC</td>
</tr>
</tbody>
</table>

*without clamping system and manipulator

Various option packages can be selected, depending on the specific requirements on the friction stir welding applications:

- PCD 507 for process monitoring with display on HMI Advanced
- Laser-assisted detection of seam positions for automatic compensation of tolerances on the component
- FSW tools:
  - Tooling kit »Rotating Shoulder« (pin and shoulder)
  - Tooling kit »Stationary Shoulder« (pin and shoulder)
  - Special tools on request
- Product-specific clamping systems
- Service for laser-assisted path calibration
- Customer-specific designs on request

Target applications
- Battery housings for EV and HEV
- Housings for power electronics and heat exchangers
- Cooling systems for power electronics
- Casings for smartphones, tablets and operator panels

Features
- Two cell types:
  - One FSW welding robot for welding HEV battery housings and power electronics
  - Two FSW welding robots for welding large battery housings
- Two worktables in separate loading areas
- Improved operating convenience with new KUKA.Web HMI and touch panel
- Ready for I4.0, based on OPC UA

Scope of supply and services
- FSW cell
- Component-specific tooling and clamping systems (optional)
- Process validation (optional)
- Project management with system acceptance
- CE certificate (in the case of turnkey solution)

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