



IIT Kharagpur



Artificial Intelligence based welding automation

Robotic Friction Stir Welding

Salient Features :



- Industry 4.0 enabled
- Suitable for **micro-size** jobs & **dissimilar** materials
- **6D force sensor** for monitoring forces and torque in all three directions
- **Current and speed sensors** for monitoring current consumption and variation in rotational and welding speed



Robotic Spot Welding

Salient Features :

- **Current, voltage and force sensors** for process monitoring
- Capability of welding **similar** and **dissimilar** materials

3-Axis Job Positioner

Salient Features :

- **One revolving axis, and two rotational axes**
- **Payload** of 250 kg
- Capability of moving in **synchronization** with TIG and MIG robots

Robotic TIG and MIG Welding



Salient Features :

- **Current and voltage sensors** for process monitoring
- **Flow level, flow rate and pressure sensors** for health monitoring
- Capability of welding **similar** and **dissimilar** materials up to 0.5 mm thickness



Robotic Laser Welding

(Upcoming)

Salient Features :

- **6 kW fiber laser**
- Infrared and optical cameras for process monitoring
- Capability of welding **similar** materials
- Mounted with **cladding head**

