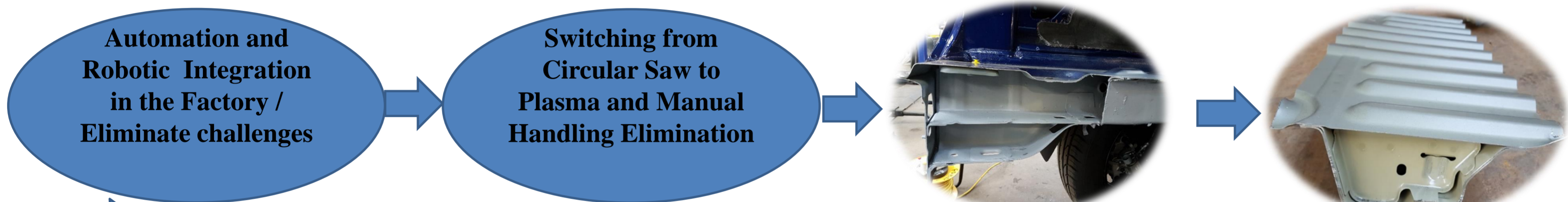


# Robotic Integration in the Vehicle Conversion Process at Trimming Stage

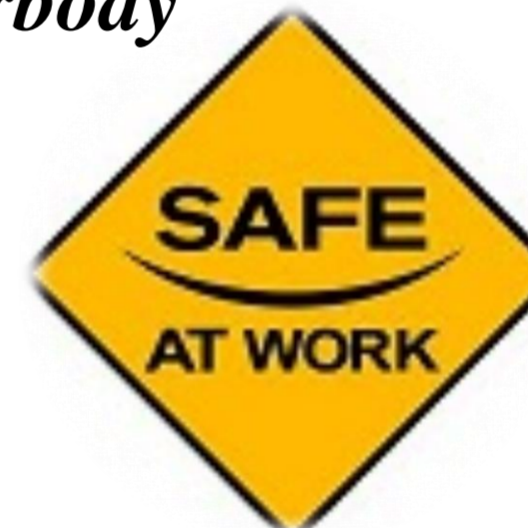
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Allied Mobility is the UK and Ireland leading manufacturer of adapted and special purpose wheelchair accessible vehicles.



Dealing with Challenges Including Cutting Parts with Complex Shapes Such as Vehicle chassis underbody



- Fanuc S-420iL RJ2 Robotic Arm Plasma Cutter
- Touch Trigger Prob for positioning
- Magnetic Gripper
- Plasma Torch Design
- Safety Cage
- Smoke Extractor
- Widely used by the car manufacturers

- Understand The nature of the Cut and process
- Know the challenges
- Nature of the structure
- Methodology of cut and strategy
- Research and optimizing the cut
- Build an algorithm for the cut path and parameters optimization



- ❑ **Change:**
- ❑ Manual Tooling: Circular/ Reciprocating Saws
- ❑ Production Process
- ❑ Factory Layout
- ❑ Moving Vehicles Manually

- ❑ **Research Experiment:**
- ❑ The influence of the Plasma Parameters (Cutting Current, Gas Pressure and Cutting speed)
- ❑ Effect of the gap distance between two sheets on the Quality Cut
- ❑ Plasma flame deflection effect on the second sheet
- ❑ HAZ, Structure change, Kerf size, Dross size, Cut edge roughness, Sheet distortion
- ❑ Optimal Cutting process (DOE)

- Experimental research provides the data needed for different types of analysis and consideration of events and processes in order to generate useful information for a complex problem solving mainly for an unknown process mechanisms such as Multi-layered Metal Cuts.
- Plasma cutting process modelling requires a certain number of experiments which consists of measuring the output system based on different sets of input parameters
- Provides the information needed to understand the process mechanism

Aims

- Accurate Tool
- Fast
- Convenient
- Safe
- Profitable