

Self-Learning Production Cell



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Welded Assembly

Technology :

scan2inspect

Inspect your part to insure geometrical dimensioning and tolerance (GD&T inspection)

scan2mark

Mark your part according to best fit from CAD file, with plasma or laser marker

scan2fit

Make your robot program auto adjust to match actual part shape

scan2assemble

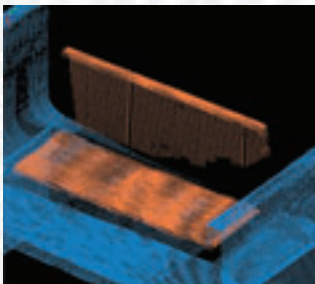
Weld your assembly automatically for lot of one. No robot programming required

scan2trim

Trim your part to meet assembly requirement, while compensating parts deformation

scan2weld

Finish welding on your tacked assembly



Pipes & Vessels

Structural Steel

(Version 1.0)

Features

Direct conversion from CIS/2 to robot program. CIS/2 can be exported from SDS/2, Tekla or Graitec.

Autonomous assembly recognition.

No jig or programming required.

Support for simple pass welding of tacked angle, end plate, base plate, simple bracket and simple stiffener.

Assembly inspection for accessory presence, dimension and position according to CAD file.

Validation of welding length according to CAD file.

Complete logging of welding and inspection done on each beam assembly, with date and hour, face and result.

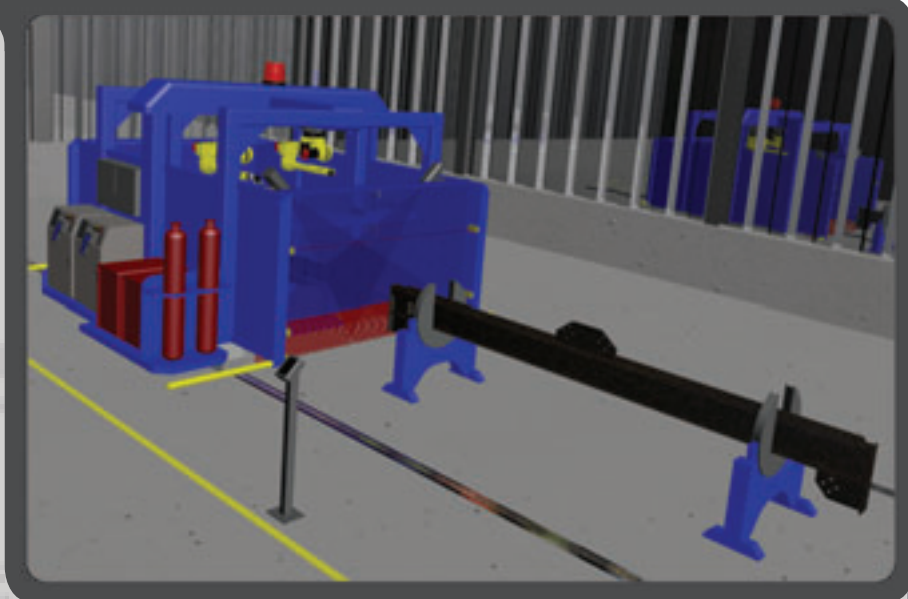
Support for beam assembly up to 60' long

Support for up to 5 beams to weld at a time in working area

Batch validation of beam assembly suitable for self-learning welding station



Structural Steel



How it Works



LOADING THE CELL

Accessories (angles, plates, stiffeners) are placed in the cell in order to be picked up and tacked on the beam.



COMPONENTS SCANNING IN 3D

The cell uses 3D laser scanners on a moving frame to elaborate a complete 3D representation of the accessories table. Based on that information, the robot picks the accessory and puts it precisely at its correct location/orientation on the beam assembly while the welding robot tacks the part in place.



INSPECTION & VALIDATION

Using the 3D cloud of points and the 3D CAD model, the system automatically checks that all accessories are present, are correctly positioned and that there are no extra accessories.



OPTIMIZATION OF WELDING SOLUTIONS

While the accessories are tacked in position, the system also calculates the welding path and gets welding information that was stored in the 3D CAD model. Each welding path is automatically transformed into robot trajectories, optimized to avoid collisions and increase production time.



WELDING

Once everything is validated and the system knows that the robot can perform all the paths, the welding process starts.

case study

Welded Assembly

PRODUCTS:

Large diameter 2 piece tubing

PROCESS TO AUTOMATE:

Cutting & grinding the two halves to create a final assembly

REASONS TO AUTOMATE:

- Limited production capacity
- Long and custom operations

CHALLENGES:

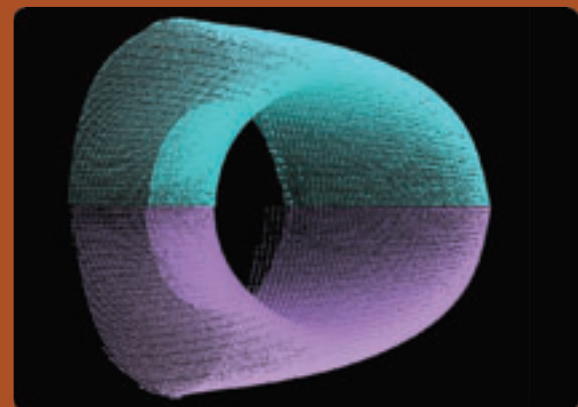
- Thick and heavy stainless steel part
- Many similar parts with differences (dimensions)
- Small lot fabrication

SOLUTION:

Build an automated flexible production cell, that allows cutting and grinding with the same equipment

EQUIPMENT:

- 6-axis industrial robot
- Rotative table
- 3d scanner
- 600 amp plasma cutter





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