

Genesis Case Study #: J6671-002
Application: Unapplied Two-station, Two-robot Workcell with Overhead Servo Track
Market Segment: Industrial
Product: Miscellaneous



Summary

System is designed to weld large flat weldments like trailer beds. One overhead Kuka KR16 robot is upside down on a linear servo driven transporter that enables the robot to move between stations. The second KR16 robot is floor mounted between the stations. It works on one end of each station. An HMI is in the front of the cell between the stations. The controls are all located on one end of the machine.

Project Challenges

- Developing a system layout to get the maximum work envelope out of both robots
- Protecting the operator in one station while the robot is working in the other station
- Developing a cable delivery system to the upside down robot

Genesis Solution

- The system was conceived using Delmia 3-D programming to verify maximum robot reach and robot location. The floor mounted robot and the overhead robot get very close when the overhead robot is moving from station to station. A proximity switch was added to verify that the stationary robot is “ducked down” before the overhead robot passes by. The overhead robot also has a switch to verify that it is in a safe position prior to moving by the floor mounted robot.
- The floor mounted robot is able to rotate and work in either position so operator protection was needed during the part loading process. The floor mounted robot has light curtains on both sides to protect the operator when the robot is working in the other station. The location of the overhead robot is also monitored via redundant switches to verify its location along the track. The light curtains and switches are part of the emergency stop circuit.
- The overhead robot required a special cable delivery method so that the maximum robot work envelope could be utilized. This was achieved by developing the cable mounting points and then testing with the full range of the robot.
- A standard Genesis TCP /Mastering verification station was added to the track carriage to facilitate with recovery.