

Development of Orbital TIG Welding Robot System for the Pipe

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Abstract : This study is about the orbital TIG welding robot system which travels on the guide rail installed on the pipe, and welds and tracks the pipe seam using the LVS (Laser Vision Sensor) joint profile data. The orbital welding robot system consists of the robot, welder, controller, and LVS. Moreover we can define the relationship between welding travel speed and wire feed speed, and we can make the linear equation using the maximum and minimum amount of weld metal. Using the linear equation we can determine the welding travel speed and the wire feed speed accurately corresponding to the area of weld captured by LVS. We applied this orbital TIG welding robot system to the stainless steel or duplex pipe on DSME (Daewoo Shipbuilding and Marine Engineering Co. Ltd.,) shipyard and the result of radiographic test is almost perfect. (Defect rate: 0.033%).

Keywords : adaptive welding, automatic welding, pipe welding, orbital welding, laser vision sensor, LVS, welding D/B

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