

Sensor Mounted Robot Manipulator for Applications in Ductile Iron Pipe Industry

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Abstract

The ductile iron pipe making operation is a traditionally human intensive operation wherein humans have to work in close proximity to a large number of moving parts and equipment. With an aim of making a safer and more productive workplace, it was decided to implement robotics in one of the major operations during finishing of the ductile iron pipes at TML. While the use of robots in certain segmented operations had been done in the ductile iron pipe industry; its use in the specific application of deburring at the finishing lines is novel in nature and has not been tried earlier. This project involved bolstering the safety of involved personnel, and improved some critical parameters such as quality of the pipes, cycle time for de-burring. Several challenges were observed during establishment of sequence of operations such as inconsistencies in certain parameters like the length of the pipes, varying ovality of the pipe, degradation of tools and surfaces etcetera. Looking at all these issues, the team conceptualized, designed and assembled a robot manipulator integrated with the sensor, specifically for the de-burring process. This project may be looked at as a pre-cursor to holistic robotisation of the ductile iron pipe making process.

Keywords

Robotic manipulator, Automation, Ductile iron pipes, sensors.

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