

Design and Manufacturing of Material Handling Robot Having XY Gantry Mechanism

Mr. Rakhangi Javat¹ and Prof. S. V. Tawade²

B.E Mechanical Engineering Student, Navsahyadri Group of Institutes, Faculty of Engineering, Pune¹

Assist. Prof. Department of Mechanical Engineering, Navsahyadri Group of Institutes, Faculty of Engineering, Pune²

Abstract: *In powder coating industry there will be heavy and large number of components for the process. For powder coating process the components need to be taken to three stages. For taking this component to these stages it needs to be lifted. This lifting is time consuming and difficult. We need labors for this and thus it can create accident. Thus, for this purpose we are creating a mechanism that would save our time. For horizontal and vertical movement, we use lead screw. The feed is supplied to the lead screw with DC motor. And for holding the component we use grippers. Today because of developments in technology various industries use robots in material handling to avoid accidents in hazardous chemical industries and for increasing efficiency, accuracy, and safety of workers. So, in this work we are developing XY gantry mechanism for material handling in powder coating. The main aim of our work is to manufacture a robot for material handling purpose. For the material handling operation, the robot will be consisting of rack and pinion arrangement in X and Y directions. While working in X direction rack will be fixed and pinion will be moving and for Y direction rack will be moving and pinion will be stationary. For pick and place operation there will be a gripper. The pick and place operation and all motion will be guided by DC motor.*

Keywords: Robot, Gripper, Gantry, Material Handling

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