

THE REVIEW OF ARTICULATED R12 ROBOT AND ITS INDUSTRIAL APPLICATIONS

A. B. HUMBE¹, P. A. DESHMUKH² & M. S. KADAM³

¹Student, Department of Mechanical Engineering, J.N.E.C., Aurangabad, Maharashtra, India

²Principal, ICEEM College, Aurangabad, Maharashtra, India

³Professor, Department of Mechanical Engineering, J.N.E.C., Aurangabad, Maharashtra, India

ABSTRACT

This paper presents the recent R12 industrial robot commissioned at Robotics Laboratory of Mechanical Engg. Dept, JNEC, Aurangabad. Paper introduces the overview, functions and industrial applications of this type of robot. The R12 articulated robot motion resembles human arm with 5 degrees of freedom having 5 joints. This robot operates with point to point motion and continuous motion. The R12 Robot can carry a maximum effective payload of 1kg at the centre of gravity of the end effectors. There are five major components namely base, shoulder, elbow, hand and end effectors (mechanical/suction grippers). Hand has flange coupling to accommodate gripper for holding the object. The object gripping is enabled with the help of various types of "end effectors" which are designed for different types of object. Various types of end effectors can be designed and attached to the flange coupling using set of Allen screws for R-12 robot.

The laboratory is equipped with two numbers of pneumatically operated end effectors namely, two finger/mechanical claw and vacuum suction gripper. The compressed air creates vacuum in the suction gripper. There R-series robot has industrial applications such as Pick & Place, Welding, Spray Painting, Inspection of precision screws, Sorting of components etc. The robot designed to sustain the shop floor environment. The R12 robot can be integrated with "Flexible Manufacturing System (FMS)" in advanced industrial applications with visual sensor.

KEYWORDS: R-12 Robot, Pick & Place, Shop Floor Environment