

## Application of Rotary & Linear Sensors in Robots

A pick and place robot are the one which is used to pick up an object and place it in the desired location. It can be a cylindrical robot providing movement in horizontal, vertical and rotational axes, a spherical robot providing two rotational and one linear movement.

### Working Principle:

Pick and place robotic arm is a system which can be designed in many different ways according to its applications. Further they heavily depend on joints, which are used to join the two consecutive rigid bodies in the robot and can be rotary joint or linear joint. Joints principally define the movement of the arm as they decide the degree of freedom of the components. Robot system used for manufacturing. Industrial robots are automated, programmable and capable of movement on three or more axes. Typical applications of robots include welding, painting, assembly, disassembly, pick and place for printed circuit boards, packaging and labelling, palletizing, product inspection, and testing; all accomplished with high endurance, speed, and precision.

A simple pick and place robot consist of two rigid bodies on a moving base, connected with Rotary sensor to joint. A rotary sensor joint is a one which provides rotation in 360 degrees around any one of the axes.

- The bottom or the base is attached with wheels and Linear sensor which provide linear movement.
- The 1<sup>st</sup> rigid body is fixed and supports the second rigid body to which the end effector is provided.
- The 2<sup>nd</sup> rigid body is provided with movement in all 3 axes(X,Y,Z) and degrees of freedom. It is connected to the 1<sup>st</sup> body with a rotational joint.
- The end effector should accommodate all 6 degrees of freedom, in order to reach all sides of the component, to take up position to any height.

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The objective of base with Rotary joint and Linear joint combination is to make the end effector into a position to perform the work.

