

INDUSTRIAL ROBOTS



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What we're going to talk?



**Definition of a
robot**



**Robot
components**



**Types of industrial
robots**



Bibliography



**What is
a
ROBOT?**



What is a robot?

The word robot was invented in the 20th century and comes from the Czech word robota.

A machine capable of carrying out a complex series of actions automatically, programmable, that is to say, a machine resembling a human being and able to replicate certain human movements and functions automatically.



What is a robot?



A robot consists of electric, electronic and mechanical.

The Robots are very good for certain functions, because unlike humans never get tired, or fatigued and can work in dangerous conditions, without air and without the easily distracted.



**Parts of
a
ROBOT**



Parts of a robot

Robot arms:

Robots arms can vary in size and shape. The robot arm is the part that permit that the robot can move freely. With the robot arm, the shoulder, elbow and wrist move and twist to the exact position. A simple robot with three degrees of freedom can move in three ways: up & down, left & right, and forward & backward.

Sensors:

Sensors allow the robot to receive feedback about its environment. The sensor collects information and sends it to the robot controlled. One use of these sensors is to keep two robots that work closely together from bumping into each other. Sensors can also assist end parts by adjusting for part variances. Vision sensors allow a robot to differentiate between items to choose and items to ignore.



Parts of a robot

The end part:

The end part connects to the robot's arm and functions as a fingers of a hand. This part comes in direct contact with the material the robot is manipulating. Some variations of an effector are a gripper, a vacuum pump, magnets, and welding torches.

The controller:

The controller is the "brain" of the robot and allows the parts of the robot to operate together.

The controller gives instructions written in code called a program.



Parts of a robot

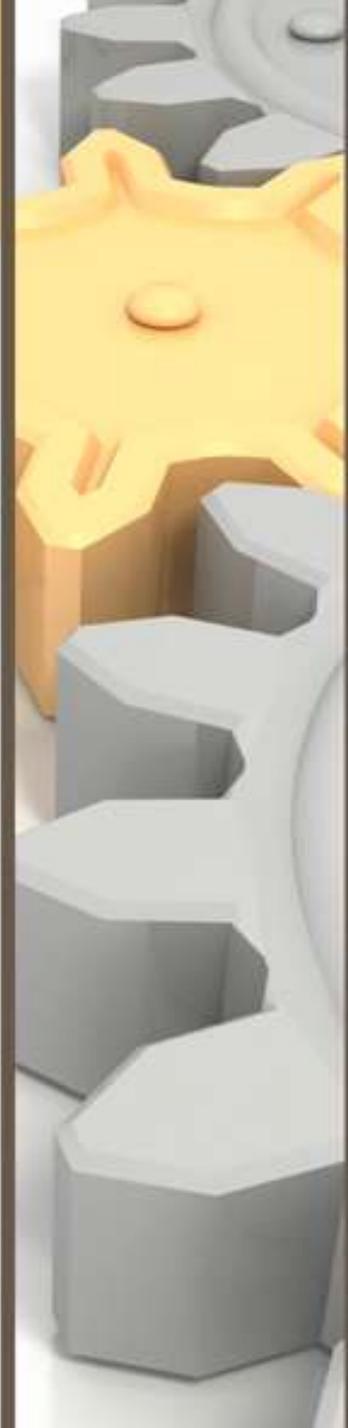
The drive:

The drive is the engine that moves the articulations into their designated positions. The joints are the sections between the parts of the robot. The following types of units are: hydraulic, electric, or pneumatic.

- Hydraulic drive systems give a robot great speed and strength.
- Electric system provides a robot with less speed and strength.
- Pneumatic drive systems are used for smaller robots that have fewer axes of movement.

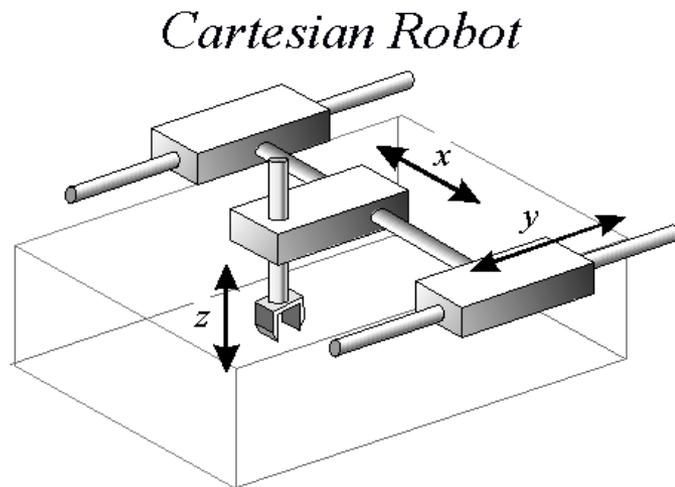


Types of industrial ROBOTS



Types of industrial robots

Cartesian Robot



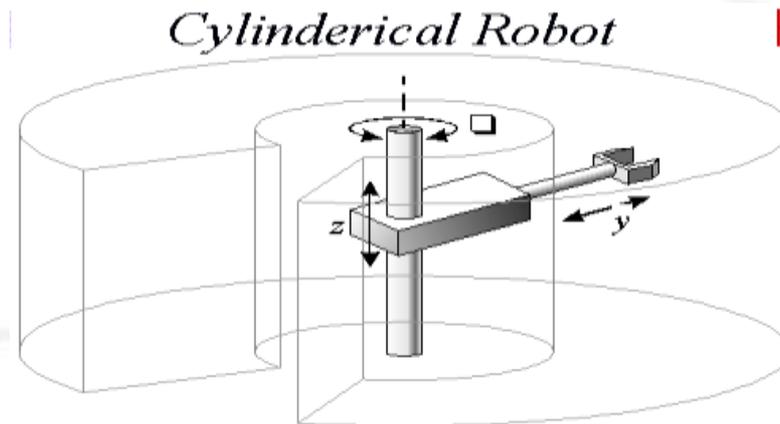
A type of robotic arm that has prismatic joints only. The linear movement of the joints gives the Cartesian robot a highly rigid structure that allows it to lift heavy objects.



Types of industrial robots

Cylindrical Robot

Used for assembly operations, handling at machine tools, spot welding, and handling at die-casting machines. It's a robot whose axes form a cylindrical coordinate system.

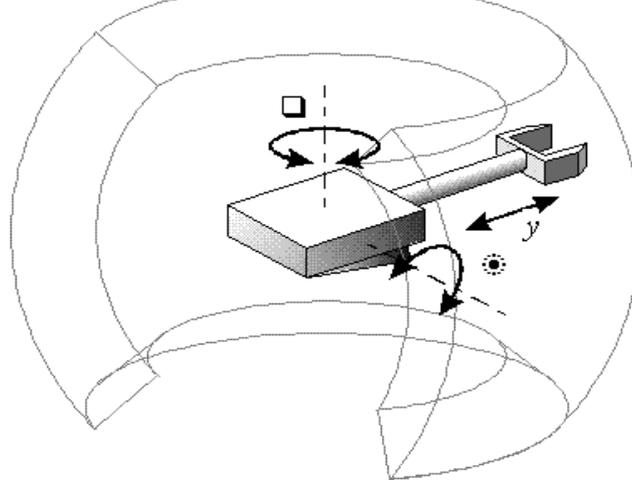


Types of industrial robots

Spherical / Polar Robot

Used for handling at machine tools, spot welding, die-casting, fettling machines, gas welding and arc welding. It's a robot whose axes form a polar coordinate system.

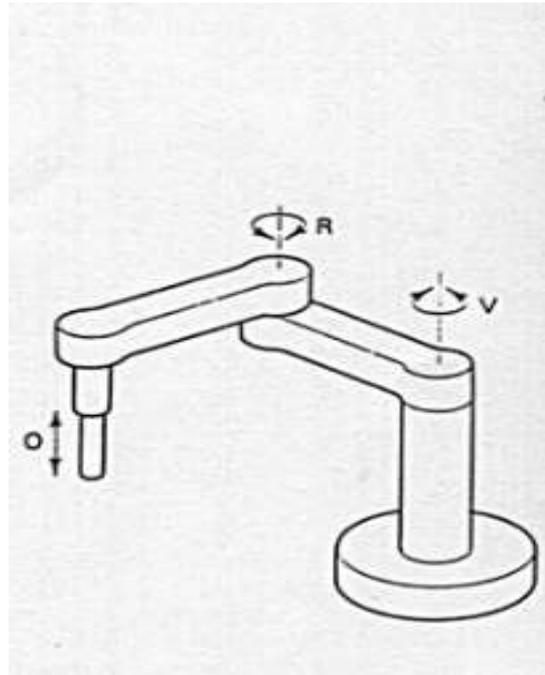
Polar Robot



Types of industrial robots

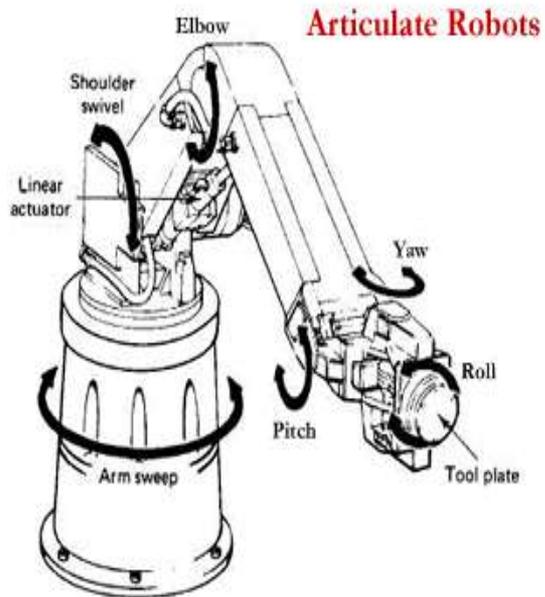
Scara Robot

Used for pick and place work, application of sealant, assembly operations and handling machine tools. It's a robot which has two parallel rotary joints to provide compliance in a plane.



Types of industrial robots

Articulated Robot



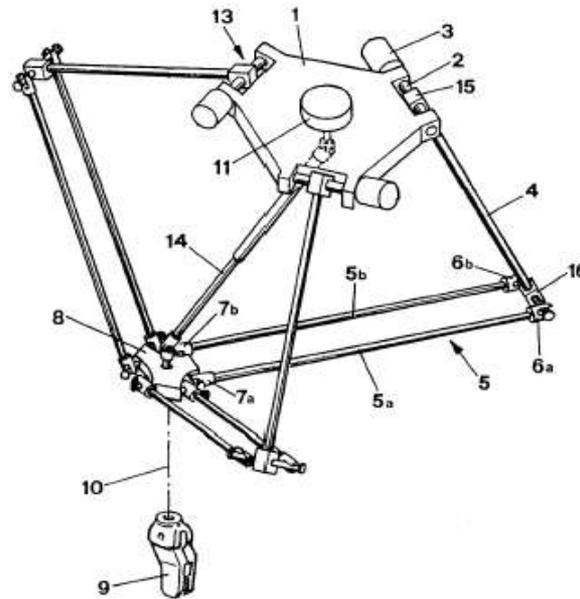
Used for assembly operations, die-casting, fettling machines, gas welding, arc welding and spray painting. It's a robot whose arm has at least three rotary joints



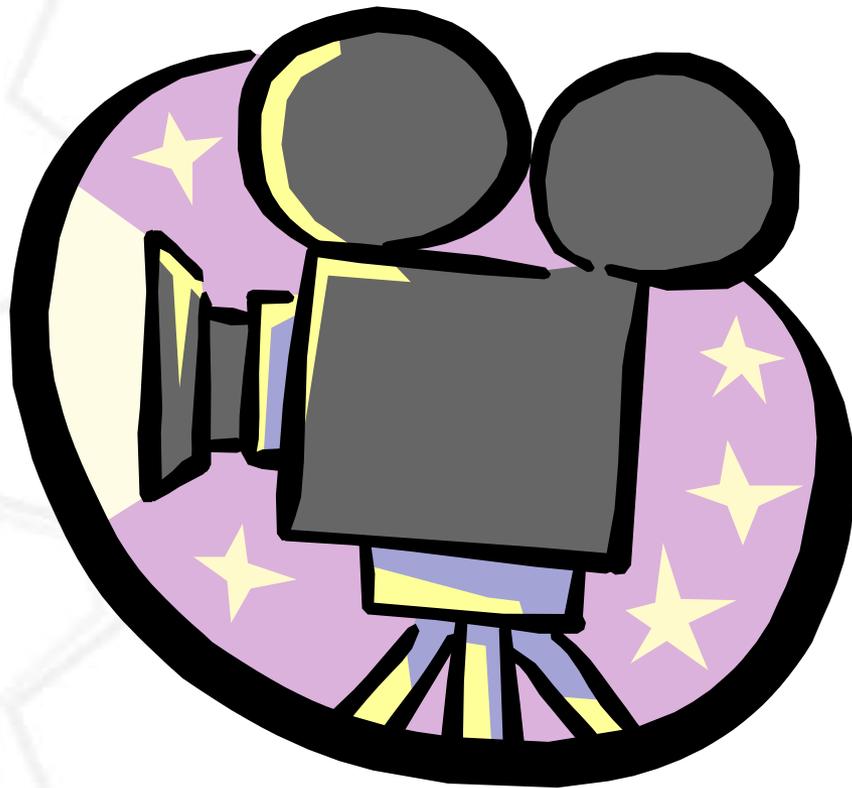
Types of industrial robots

Parallel robot

One use is a mobile platform handling cockpit flight simulators. It's a robot whose arms have concurrent prismatic or rotary joints.



Video





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