1.9 ROBOTS PARTS AND THEIR FUNCTIONS:

THE CONTROLLER:

It is the "brain" of the industrial robotic arm and allows the parts of the robot to operate together. It works as a computer and allows the robot to also be connected to other systems. The robotic arm controller runs a set of instructions written in code called a program. The program is inputted with a teach pendant. Many of today's industrial robot arms use an interface that resembles or is built on the Windows operating system.

ROBOT ARMS:

Robot Arm can vary in size and shape. The industrial robot arm is the part that positions the end effector. With the robot arm, the shoulder, elbow, and wrist move and twist to position the end effector in the exact right spot. Each of these joints gives the robot another degree of freedom. A simple robot with three degrees of freedom can move in three ways: up & down, left & right, and forward & backward.

DRIVERS:

Motor drivers are integral components in robotics and automation. They act as an interface between control circuits (like microcontrollers) and motors, ensuring that motors function properly and efficiently. The driver is the engine or motor that moves the links into their designated positions. The links are the sections between the joints. Industrial robot arms generally use one of the following types of drives: hydraulic, electric, or pneumatic. Hydraulic drive systems give a robot great speed and strength.

ROBOTIC SENSORS:

They are used to estimate a robot's condition and environment. These signals are passed to a controller to enable appropriate behavior. Sensors in robots are based on the functions of human sensory organs. Robots require extensive information about their environment in order to function effectively. Through these sensors, the robot is able to receive vocal commands, detect faces and gestures, and accurately navigate its way in unfamiliar environments. Sensors not only enable robots to perceive the world around them, but also help robots to communicate with humans and other robots.

END-EFFECTOR:

The end-effector is the "hand" connected to the robot's arm. It is often different from a human hand - it could be a tool such as a gripper, a vacuum pump, tweezers, scalpel, blowtorch - just about anything that helps it do its job. Some robots can change end-effectors, and be reprogrammed for a different set of tasks.