

Mesleki Yabancı Dil 1 Dersi

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Hafta 6

PROCESS CONTROL SYSTEMS

- Control systems provide a means of replacing human operators in many industrial processes.
- They are widely used to monitor and control pressure, temperature, motor speed, the flow of a liquid, or any other physical variable.
- They must be capable of fulfilling a number of functions.
- First, it must be capable of measuring the physical variable, which is the physical quantity that must be controlled; such as temperature, humidity, motor speed, pressure of the hydraulic system etc.
- Then its value must be compared with the desired value.
- Next, action has to be taken to reduce to zero the difference between the actual and desired value.
- The basic components of a control system are an input transducer, an error sensor, a controller and an output transducer.
- The input transducer converts changes in the physical variable into electrical signals.

- For example; a transducer in a special circuit may change the pressure into frequency changes.
- The error sensor measures the deviation between the actual and desired values for the variable.
- The controller receives the error sensor output and uses it to control the variable either directly or indirectly.
- A simple controller is an electromagnetic relay which uses a small signal to control a much larger signal such as a power supply output.
- The output transducer converts the electrical output from the controller into whatever form of energy is required to change the physical variable.
- It may be a valve, a motor or any electrically operated piece of equipment.
- Let us take as an example a process system for controlling the speed of a DC motor. The input transducer measures the speed and converts it into a voltage. The error sensor compares this voltage with the voltage across a speed-setting potentiometer. The error sensor output is fed to the controller which sends a signal to the power supply of the motor. This increases or reduces the supply of current to the motor, thus controlling its speed.