FACULTY OF ENGINEERING & TECHNOLOGY

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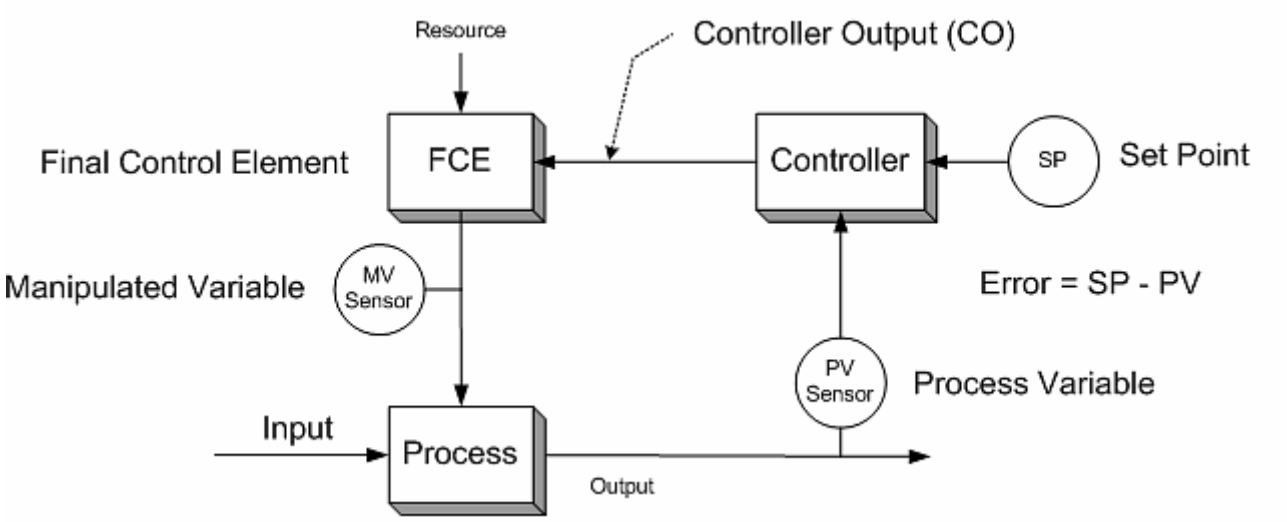
Closed Loop Control Process

In closed loop control the controller output is determined by difference between the process variable and the Set Point. Closed loop control is also called feedback or regulatory control. The output of a closed loop controller is a function of the error.

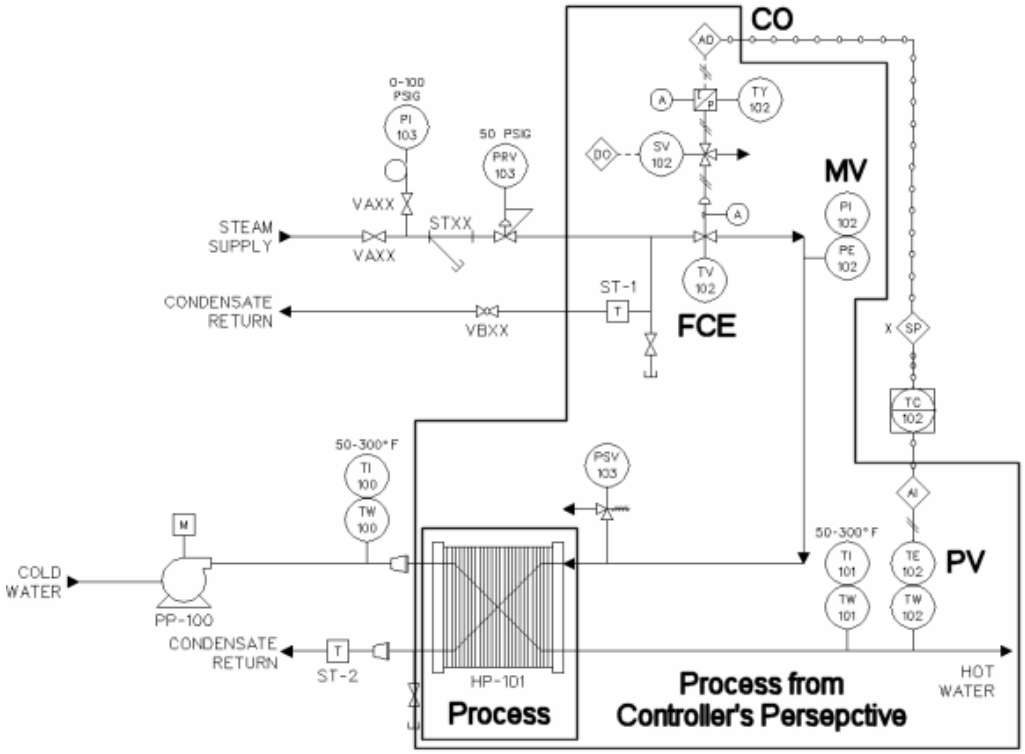
Error is the deviation of the process variable from the Set Point and is defined as E = SP - PV.



A block diagram of a process under closed loop control as shown in figure

INTRODUCTION

Figure depicts the heat exchanger under closed loop control



How the valve responds to the controller output and its corresponding effect on the manipulated variable (steam pressure) will determine the final effect on the process variable (temperature). The quality and responsiveness of the temperature measurement directly effects how the controller sees its effect on the process. Any filtering to diminish the effects of noise will paint a different picture of the process that the controller sees.

The dynamic behaviors of all of the elements in a control loop superimpose to form a single image of the process that is presented to the controller. To control the process requires some understanding of each of these elements.