

## ME 451 : Control Systems Laboratory

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### **ME451 Laboratory Experiment #6**

### **Air Temperature Control**





References:

C.L. Phillips and R.D. Harbor, *Feedback Control Systems*, Prentice Hall, 4<sup>th</sup> Ed.  
2.9 Temperature-Control System pg. 49-51

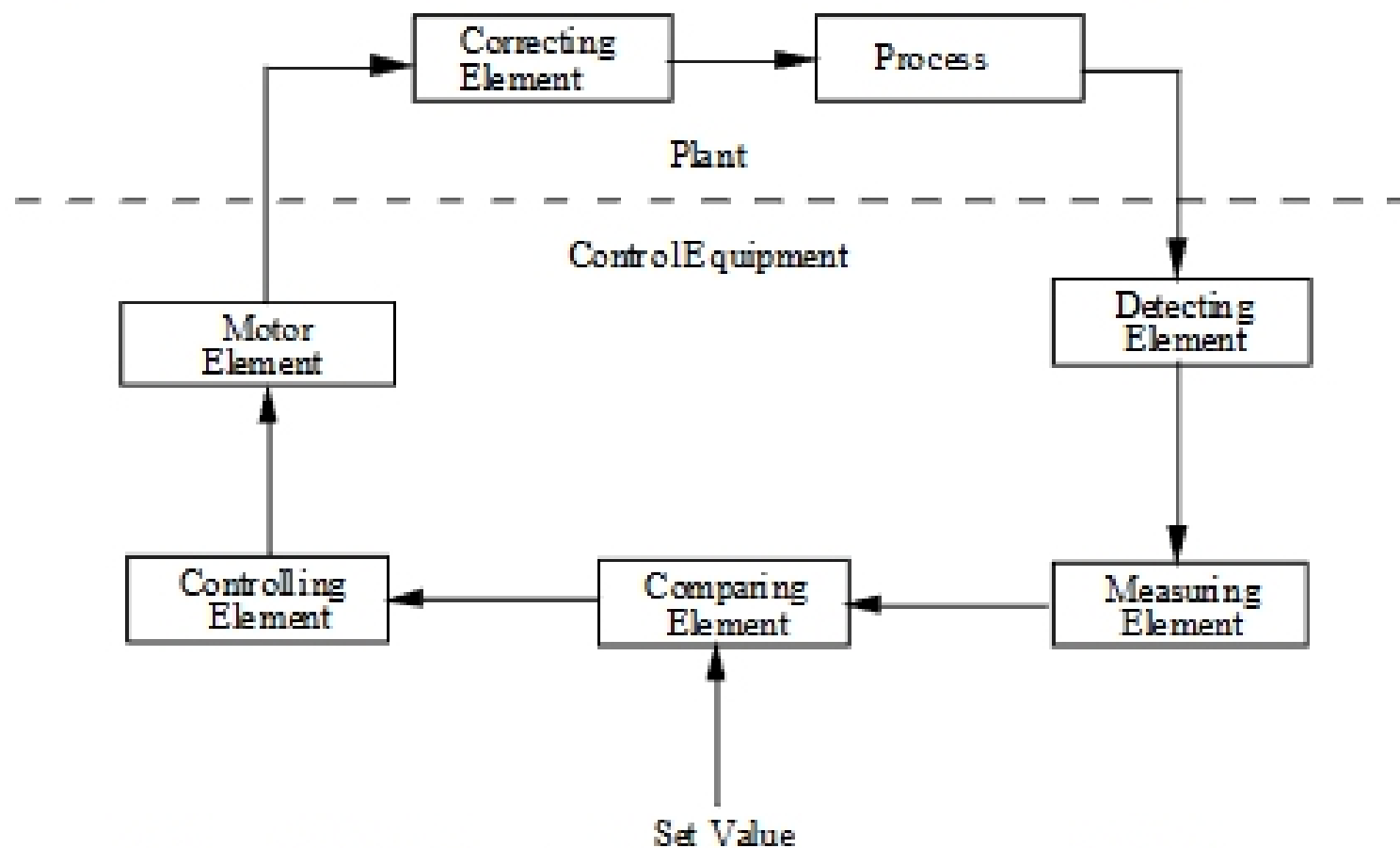
**1. Objective**

The ability to accurately control a process is vital to numerous design efforts. For example, the automatic pilot in an airplane would not prove very useful, and potentially quite dangerous, if large deviations from the desired path could not be avoided. The Continuous Process Control laboratory will provide "hands on" experience with proportional control techniques. A performance evaluation of these methods of control will be conducted.

The process to be controlled in this laboratory session is the temperature of a flowing fluid (air). The PT 326 Process Trainer will be employed in this investigation. The PT 326 is built by Feedback Instruments Ltd. and is discussed in section 2 of this document.

**2. Definitions**

Figure 1 represents the basic components of a closed-loop process control system.



**Figure 1** Basic elements of a closed-loop process control system.

The following list provides the definition of terms and information adapted from the PT 326 Process Trainer Manual:

Process

The term process is used to describe a physical or chemical change or the conversion of energy. The temperature of air flowing in a tube is the process this laboratory is concerned with.