

EIPC (NEE-403)

Unit-4

Process Control

Resistance Type Processes:

Those parts of the process which resist transfer of energy (or materials) are called resistances.

e.g. Walls of the steam coil

Basic Concept of Instrumentation & Controls

Capacitance Type Process:

Those parts of the process which have ability to store energy (or materials) are called Capacitances.

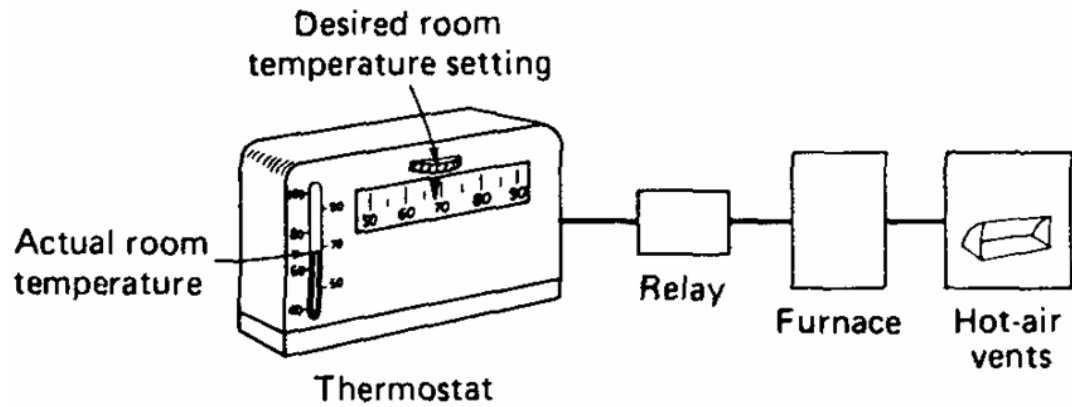
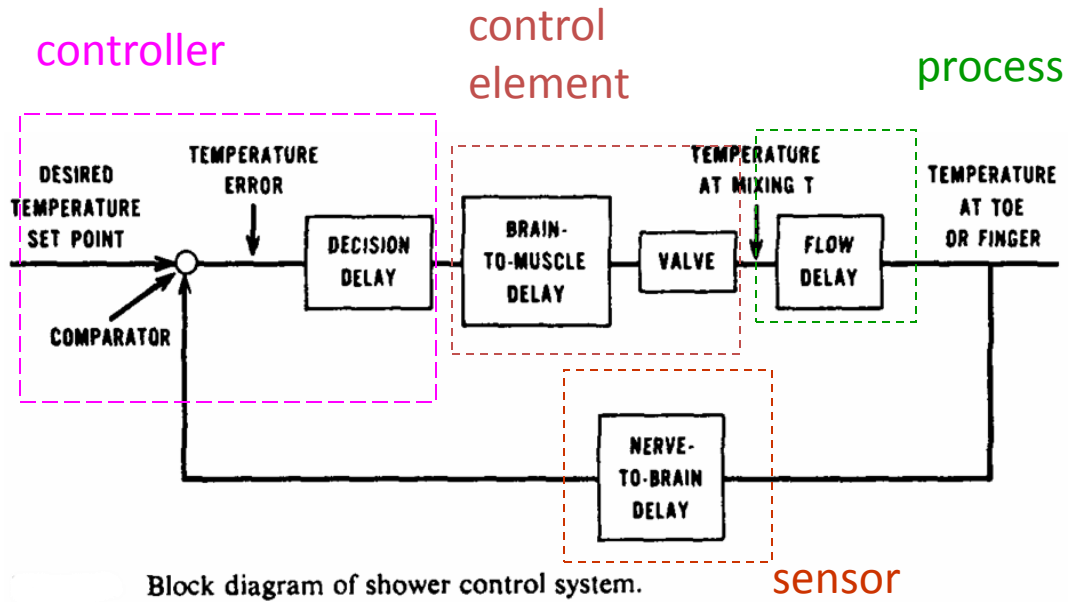
e.g.

- Walls of the steam coils
- Water in the tank

Transportation Time:

Time required to carry a change from one point to another point in the process.

e.g. Time taken at the change in inlet water temp and the measurement point.



Home heating control system.

Control Terminology

Controlled Variables - These are the variables which quantify the performance or quality of the final product, which are also called *output variables*.

Manipulated Variables - These input variables are adjusted dynamically to keep the controlled variables at their set-points.

Disturbances - These are also called the “load” variables and represent inputs that can cause the controlled variables to deviate from their respective set points.

Control Terminology

Servo control - The set-point signal is *changed* and the manipulated variable is adjusted appropriately to achieve the new operating conditions.

Regulatory control – The set-point is *fixed* at a constant value. When any disturbance enters the system, the manipulated variable is adjusted to drive the controlled variable back to its fixed set-point.

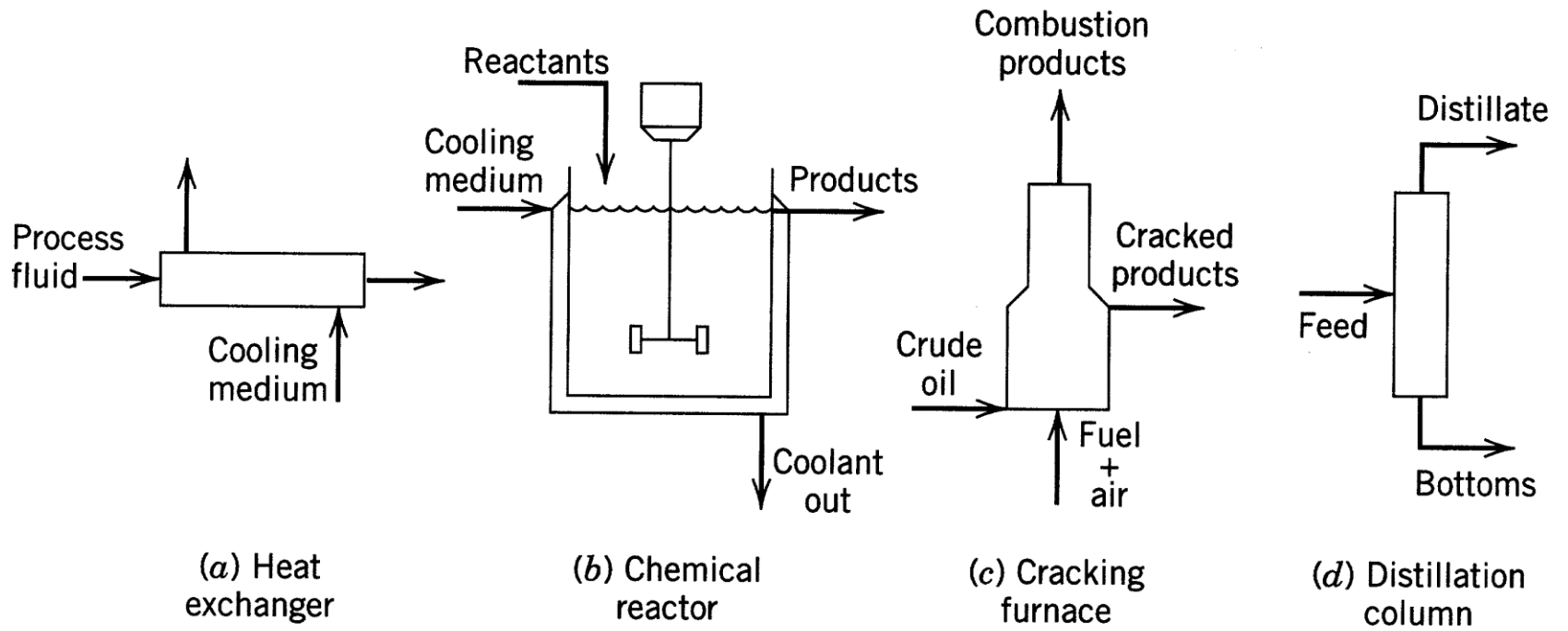


Figure 1.1 Some typical continuous processes.

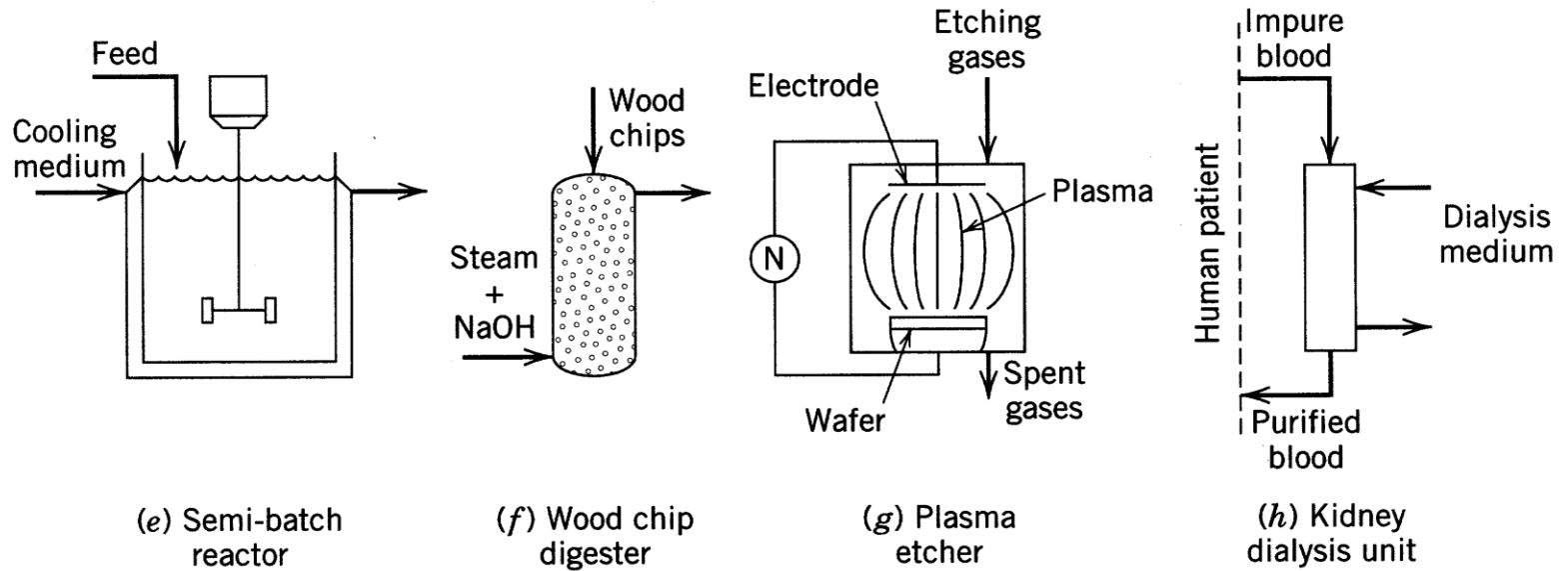


Figure 1.2 Some typical processes whose operation is noncontinuous.

Thank You