Ch.6

- Alarm Annunciator is an array of indicator lights. It signals the presence of abnormal conditions by blinking LED and sounding an audible buzzer. In industrial process control, an annunciator panel is a system to alert operators of alarm conditions in the plant.

Alarm annunciator

- It is basically an audio visual warning system, which highlights the fault or mishap which is going on, or even before it happens.
- This is very necessary for safety concern also, and sometimes the warning comes before improper procedure which warns the operator to avoid unwanted accident etc.
- This is the basic concept of **Alarm Annunciator**, and the **alarm annunciation system**.

- **Alarm Annunciator** is a centralized model, which gives audio visual signals for the faulty processes. Latest models of annunciators are based upon microprocessor or microcontroller circuitry, which ensures the maximum reliability as well as enhanced wide ranges of features and functionalities.

- Modern Alarm Annunciators consist of a power supply unit SMPS, a programming unit CPU and other connections including fault contacts and facial display units. The blinking windows are generally acrylics, which are enlightened by LED with very low power consumption. Typically, annunciation effectively starts from 4 faults that is 4 windows, if the number of faults to be monitored is more than 64, it is preferable to install the programming unit CPU, power supply unit PSU and the display facial unit individually, which ensures the maximum accuracy and effectiveness.


ALARM ANNUNCIATOR

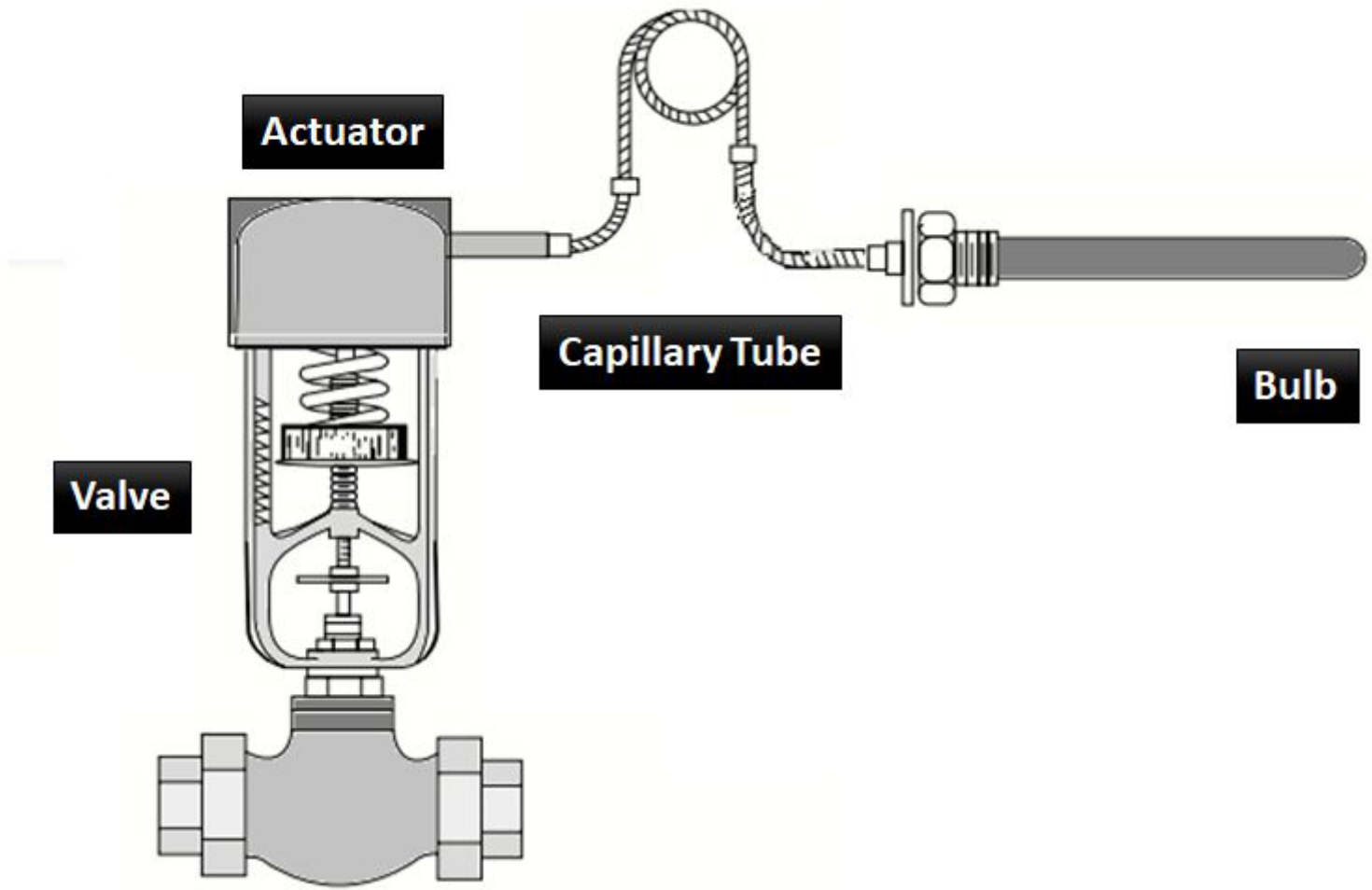
- The Self-Operating Temperature Regulator is a mechanically operated device designed to regulate system temperature by modulating the flow of a heating or cooling fluid in response to temperature changes.

Regulators

- Self-operated regulators take over all the tasks required in a control loop. They integrate measuring sensor, controller as well as control element all in one system .The combination of these components results in very rugged and reasonably priced devices.
- Self-operated regulators are available for temperature, pressure, flow, and differential pressure control. They are suitable for all those applications where deviations of the controlled variable from the adjusted set point are acceptable and the set point remains constant over a long time often during the entire useful life.

Temperature regulator

- The Temperature Regulator is a fully self-contained unit, requiring no external power source (i.e., compressed air or electricity). Regulation takes place when the sensing element (bulb) of the thermal system is exposed to changes in temperature. The thermal system is charged with a predetermined amount of vapor fill, which, when heated, will cause a bellows within the unit's actuator housing to expand. As the bellows expands, it compresses a return spring while simultaneously moving the valve stem downward to stroke the valve. When the process temperature decreases (or in the event of thermal system failure), the return spring will move the valve stem upward to the "out" position. The choice of valve action (stem In-To-Close or stem In-To-Open) will determine its system failure position.


Actuator
Capillary Tube
Bulb
Valve

- When the medium is heated, the filling liquid in the operating element or bulb expands and applies the actuating force to the valve unit.
- The valve closes opposing the spring force, thereby bringing down the flow of heating media.
- When the flow is reduced, the temperature falls until a new balance of force, and hence a new valve position is attained.

Advantages

- Capillaries can be interchanged.
- Regulators are compact in size, costs less than a control loop.
- Simple in design, and operation.
- Economical, as savings in both purchase and installation costs.
- No external power source, no air supply is required.
- Quick, easy, and require little maintenance.
- Rapid response and good temperature control in the laboratory, household applications.

Diasadvantage

- failure of the diaphragm causes the main valve to open which leads to passage of process fluid through the main valve in uncontrolled manner

Flow regulator