Control loop schemes

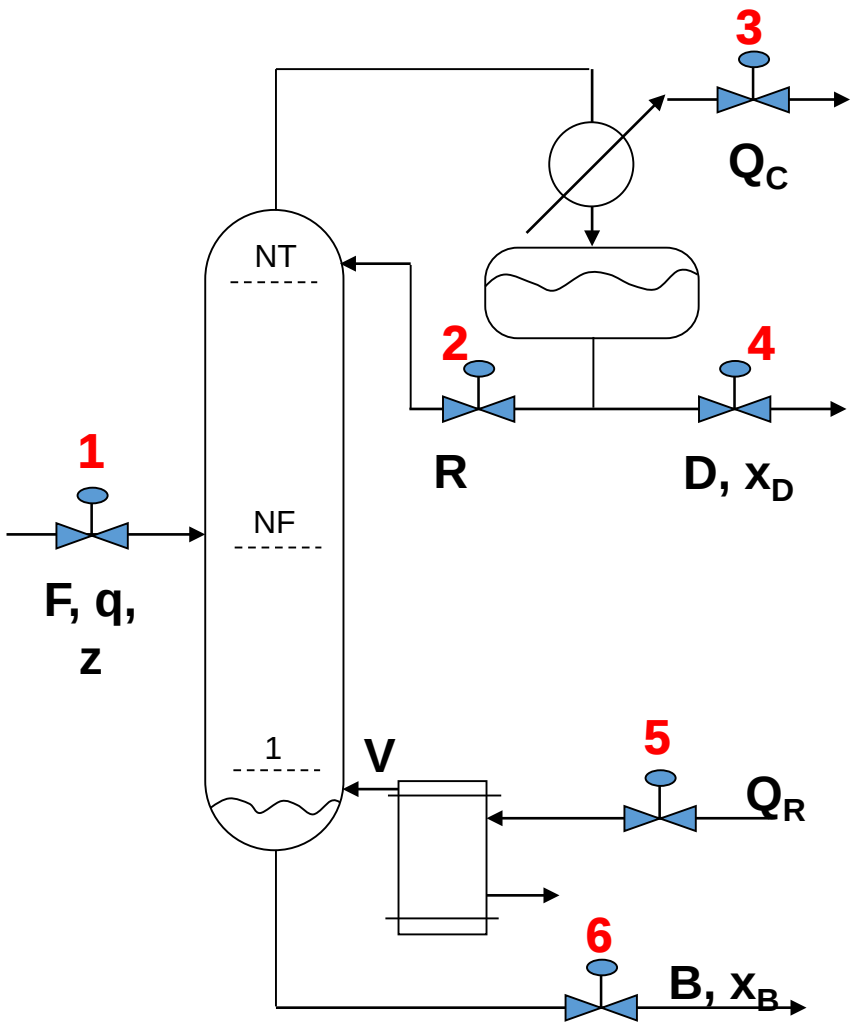
6 valves are associated to the control of the column.

1. A first valve is required to control productivity. Usually, valve 1 is used, unless an "on demand" product is required. In this case valves 4 or 6 are more suitable.

2. Two valves are needed for control of the levels of (i) the reflux drum and (ii) the reboiler/ the column base.
For instance:
Valves 4/2/3/5/1 for the reflux drum level
Valves 6/5/1 for the column base level

Valve 4 is preferentially chosen for the reflux drum level control, unless the reflux ratio RR>4. In this case, valve 2 is used, according to Richardson rule.

In case of the base, valves 1/2 are not optimal choices, as they lead to a delay of the control action related to the residence times on the column plates.

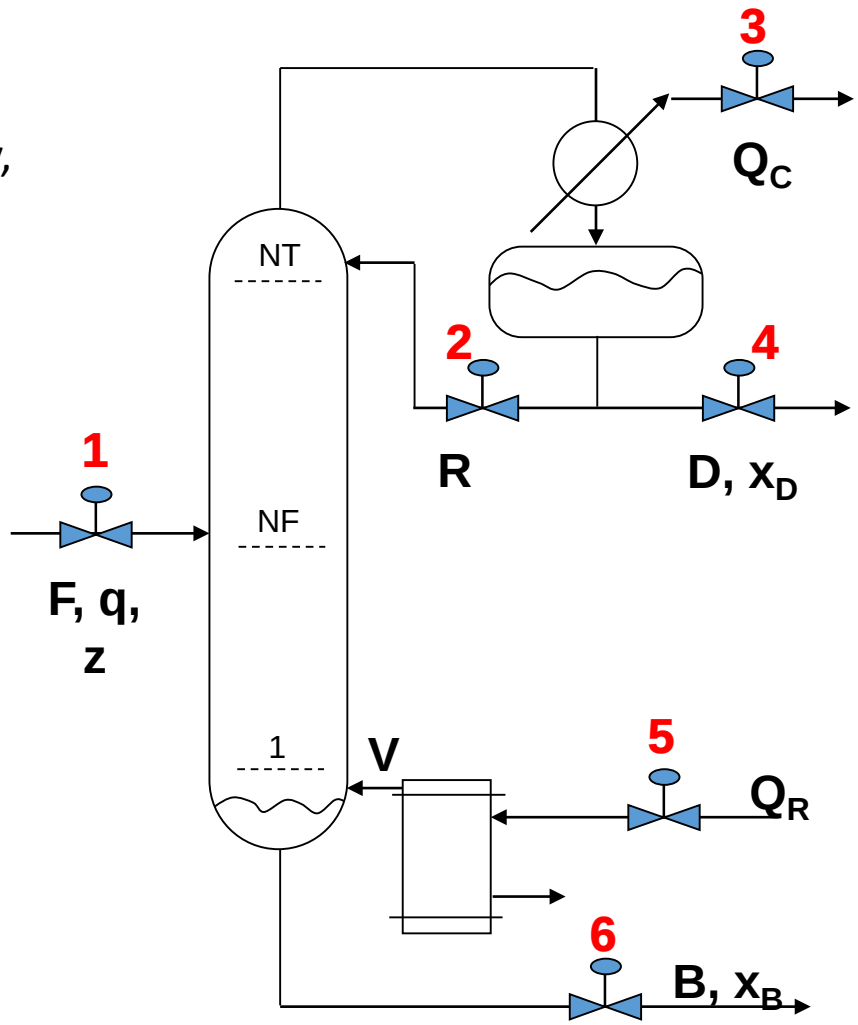


Control loop schemes

3. A forth valve allows controlling the column pressure. Usually valve 3 is used. Alternatively, valves 5 and 1 are suitable.

4. The last two valves control either two compositions or two temperatures, or a flowrate and a temperature.

If a LK and an HK are present, it is possible to control $x_{D,HK}$ e $x_{B,LK}$ or corresponding temperatures.



Control problems

Controllers can work to solve two different problems:

Servoproblem: the controller modifies the manipulated variable to lead the system to a new setpoint of the controlled variable.

Regulator problem: the controller rejects disturbances by modifying the manipulated variable to mantain the setpoint of the controlled variable.