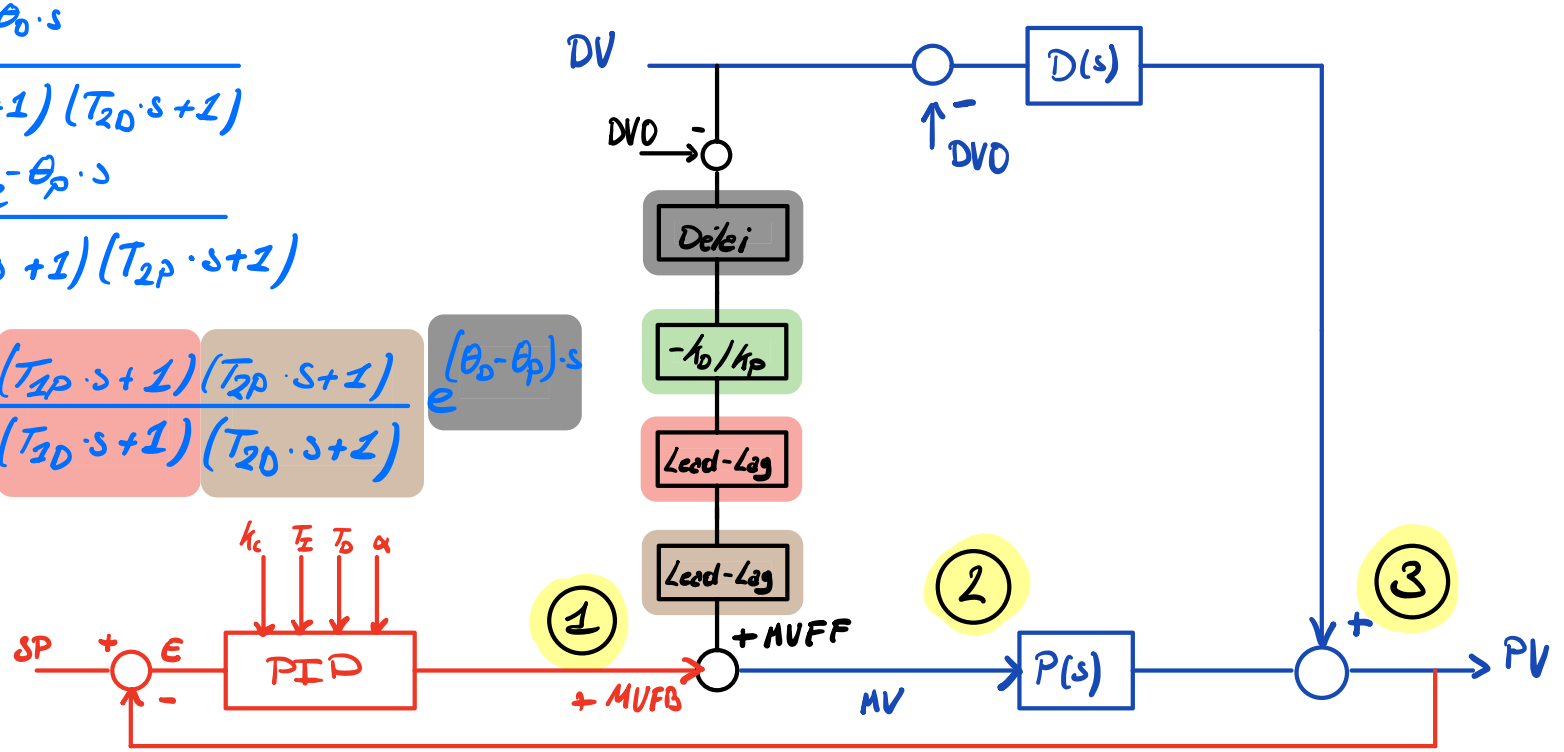
$$\hat{D}(s) = K_D \cdot \frac{e^{-\theta_D \cdot s}}{(T_{1D} \cdot s + 1)(T_{2D} \cdot s + 1)}$$

$$\hat{P}(s) = K_P \cdot \frac{e^{-\theta_P \cdot s}}{(T_{1P} \cdot s + 1)(T_{2P} \cdot s + 1)}$$

$$\Rightarrow \frac{-\hat{D}(s)}{\hat{P}(s)} = \frac{-K_D}{K_P} \cdot \frac{(T_{1P} \cdot s + 1)(T_{2P} \cdot s + 1)}{(T_{1D} \cdot s + 1)(T_{2D} \cdot s + 1)} e^{(\theta_D - \theta_P) \cdot s}$$



$$\Rightarrow \textcircled{1}\ MVFF = K_{FF} \cdot \frac{T_D \cdot s + 1}{T_D \cdot s + 1} e^{-\theta_{FF} \cdot s} DV = \frac{\hat{D}(s)}{\hat{P}(s)} \cdot DV \quad \text{avec} \quad K_{FF} = \frac{K_D}{K_P},\ \theta_{FF} = |\theta_D - \theta_P|$$

$$\Rightarrow \textcircled{2}\ MV = MV_{FB} + MV_{FF} \Rightarrow P(s) \cdot MV = P(s) \cdot MV_{FB} - \hat{D}(s)$$

$$\Rightarrow \textcircled{3}\ P(s) \cdot MV_{FB} - \hat{D}(s) + D(s) \approx P(s) \cdot MV_{FB} = PV$$