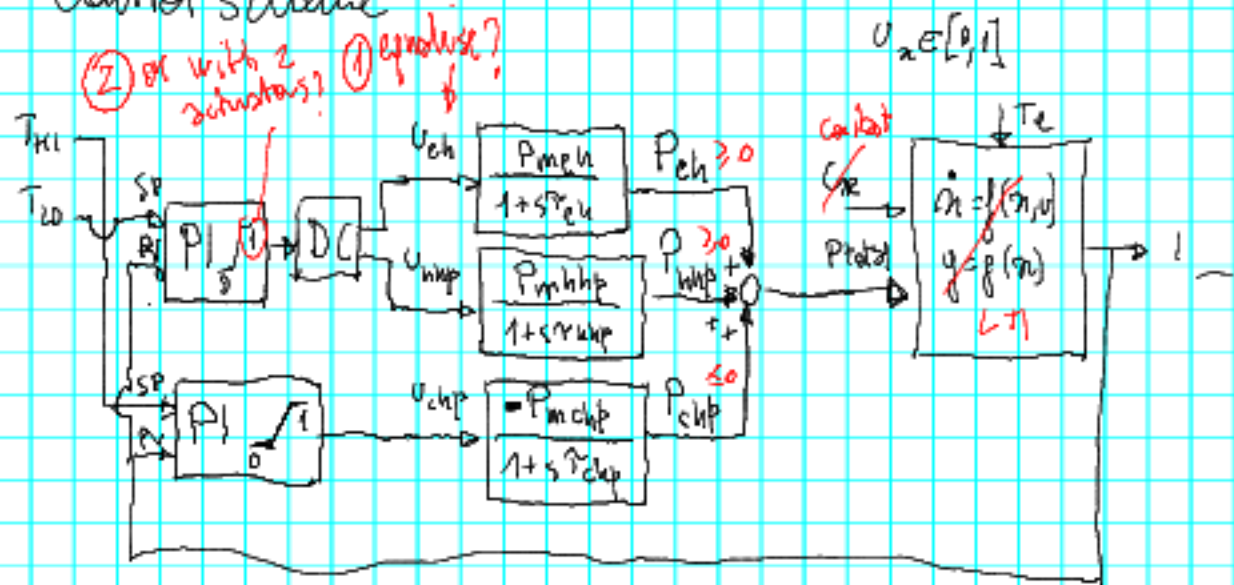
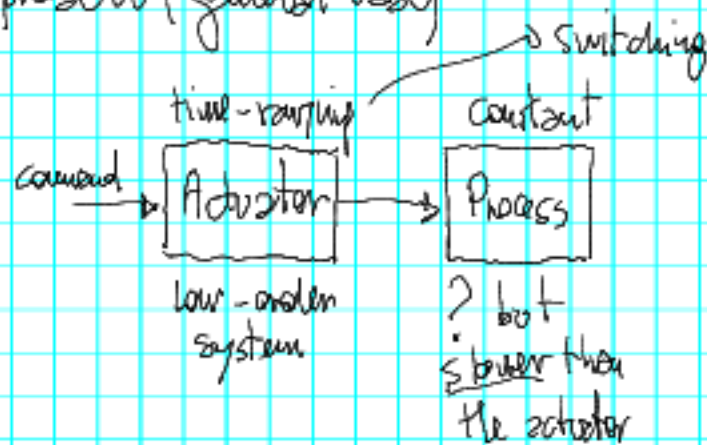


09/06/2016

Control scheme



② Approach (general case)



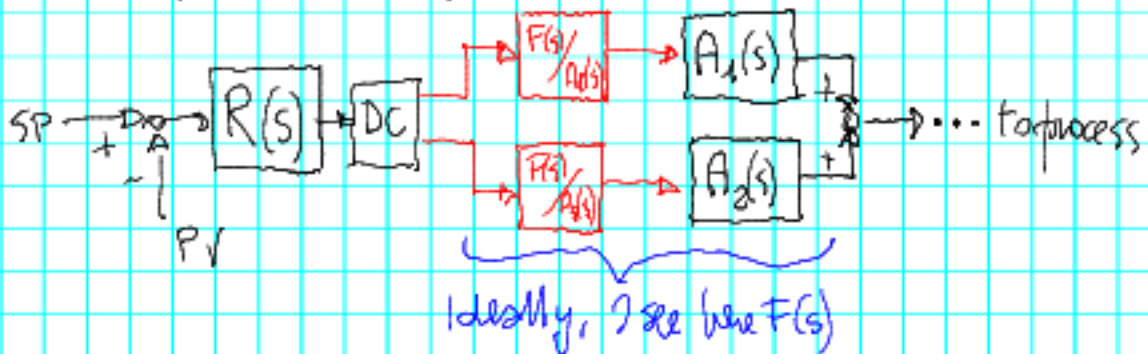
Daisy-chain \Rightarrow only one actuator is modulating,
others 0% or 100%
 \Rightarrow OK to set up control with one
actuator at a time

3 What could we do?

- 1) Cascade control, IF WE CAN MEASURE THE ACTUATOR output (power released to the room)
OR trust a power control about the actuator, OR estimate thermal power
e.g. based on consumption and efficiency.

4 2) Simply tune for the worst case and see if keeping that tuning at any time is OK.

3) Open-loop equalize



5 4) Gain scheduling / switching controller

Forward: tracking



TS: Track Switch (bool)
TR: Track Reference

Operation: TS = FALSE \Rightarrow CS computed by PID (AUTO MODE)
TS = TRUE \Rightarrow CS set equal to TR (TRACK MODE)

6 example (PI)

$$U_p = K(SP - PV)$$

if not TS { // AUTO

$$U_i = U_{old} + \frac{K T_s}{T_i} (SP - PV);$$

$$U = U_p + U_i;$$

else { // TRACKING

$$U = TR; }$$

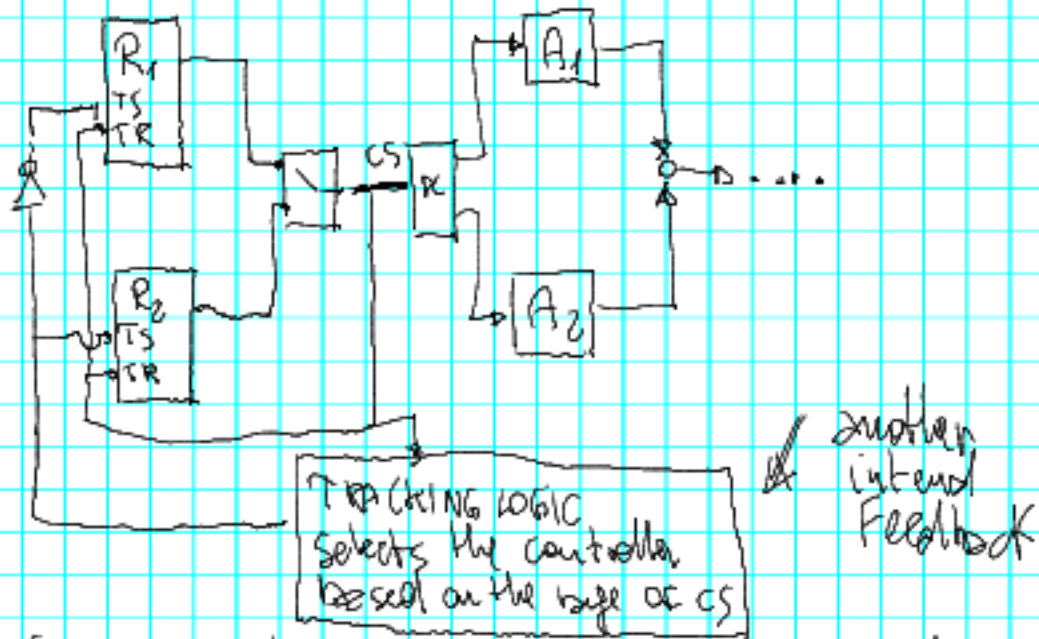
if $U > U_{max}$ $U = U_{max};$ // saturation &

if $U < U_{min}$ $U = U_{min};$ // antiwindup

$$U_{old} = U - U_p;$$

L

7



(not frequently used)

⇒ simulations & ②

④ risky chaining (be careful with the ranges)

