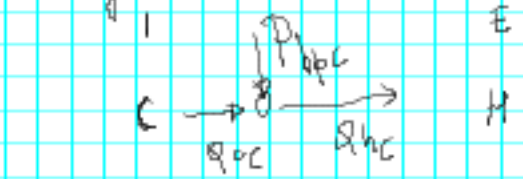
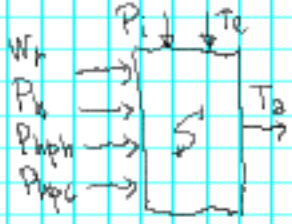
19/05/2016



Note: unreviewed material

2) Overall system (conditioned room case)

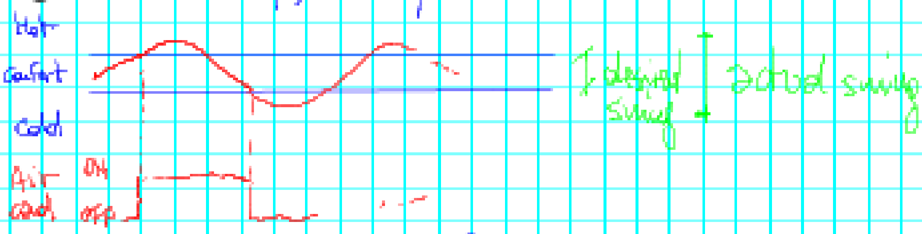


Needs: keep T_a near a set point value? NO keep comfort

⇒ blurs

3

• bloc #1 : relay, with hysteresis



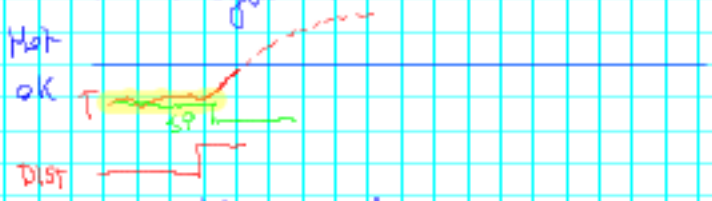
• bloc #2 : saturation (? you get w...)

Idea # 3: PI control with adaptive set point

prompt reaction to disturbances from P action

slow I action to keep steady state

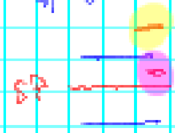
SP movement:



Idea # 4: sliding mode

Problem: sliding surface should attract on one side only (?!?)

Idea # 5: SP in the middle (+ ∇V controller, ??, ...)



If we control the s. state is Here then ?
need control, if it is Here ? ?
just wasting energy

wish: turn on the controller only near the bound limits.

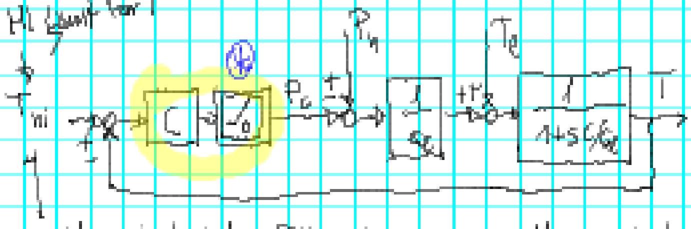
Introductory (but useful) case: overtemperature

$$C\dot{T} = P_h - P_c - G_e(T - T_e)$$

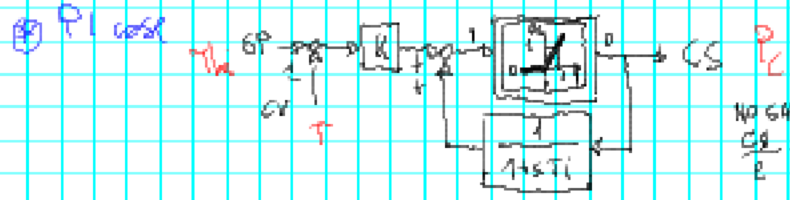
$$(sC + G_e)T = P_h - P_c + G_e T_e$$

$$\left(1 + s\frac{C}{G_e}\right)T = T_e + \frac{1}{G_e}(P_h - P_c)$$

HL limit for T



settling just before Tm, mass see small overshoot is allowed

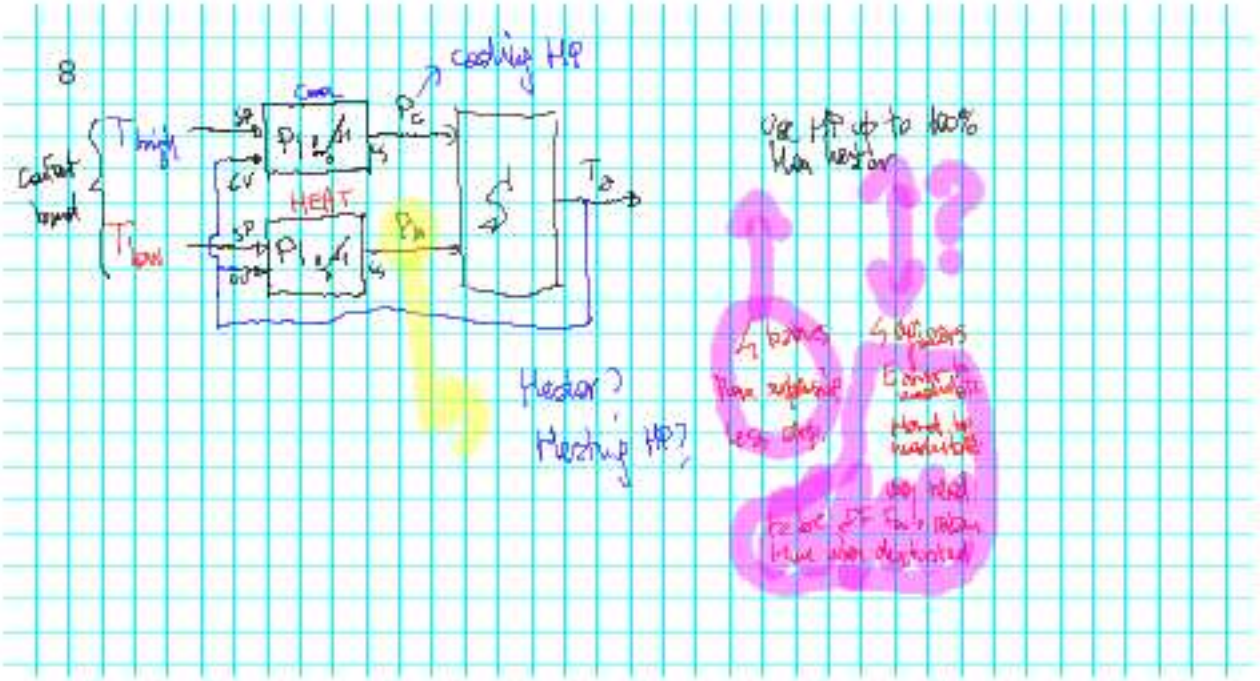


No SAT:

$$\frac{CS}{E} = \frac{K}{1-\frac{1}{1+sT_i}} = K\frac{1+sT_i}{sT_i}$$

PI

SAT: loop open


8
cooling HP
Comp
HEAT
Heater?
Heating HP?