The experimental setup

This is the «Whistler»

y=T [C] (at top)
u=Q [0-1] (at bottom)

First we did a step response experiment where u was increased from 0 to 1 (manual vontrol). The temperature y=T increased from 20C to 54C (new steady state). This gives k=68. The dynamics are quite slow because it takes time to heat up the glass. , θ=5s, τ =120s

From this we obtained the model parameyters and SIMC tunings (with τ_c=θ=5s)

We then put it into automatic andf increased the setpoint to 70C. The input (u=Q) increased immediately to max=1, and we should then have stopped the integration («anit windup») but we had forgotten to do this and this is why you can see that u=Q stayed at max=1 even after y=T has oassed the setpoint…. Not so good… but eventually we see that itr was working well.

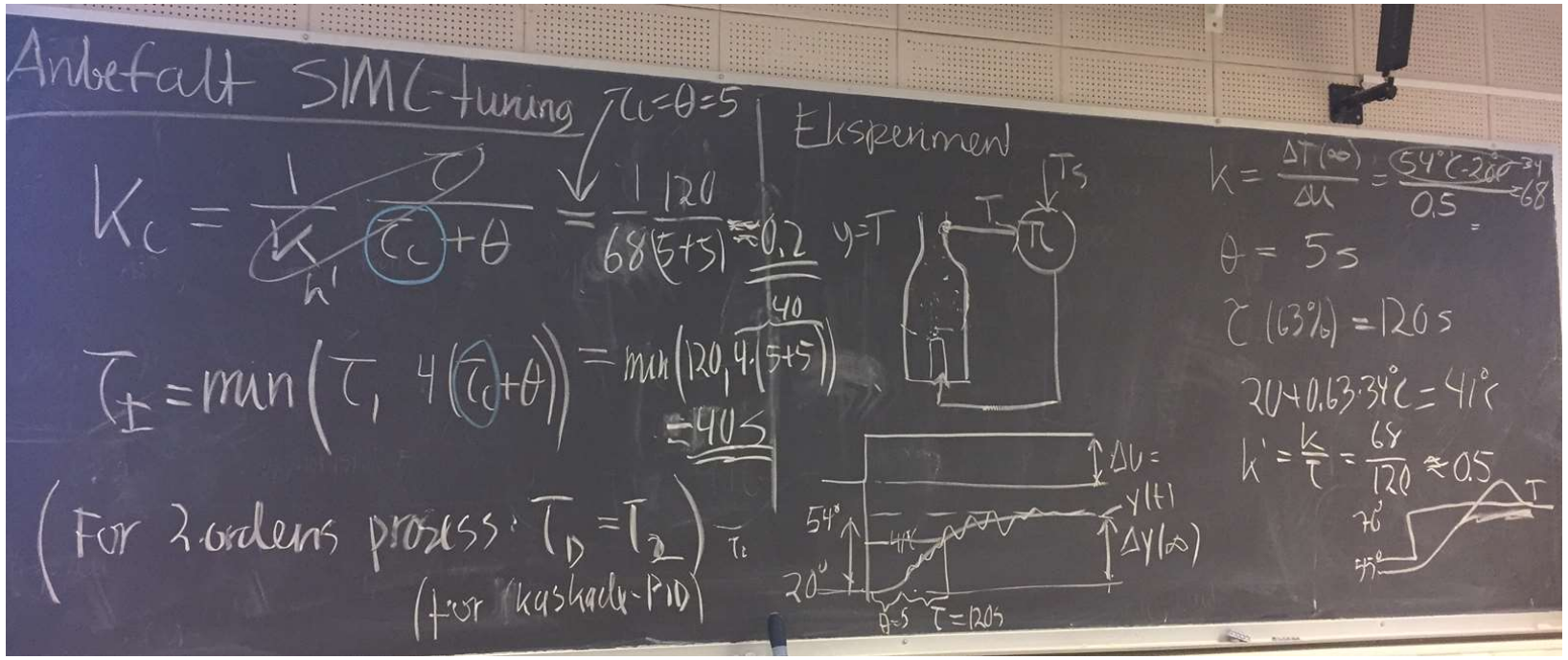
This can be confirmed by Ida who was the ONLY student who stayed behind to check how thinsg went. Thanks, ida!

Thanks to Tamal Das

Thanks to Ida

The model. Step response: k=68, θ=5s, τ =120s

The controller. SIMC (with τ_c=θ=5s): K_c=0.2, τ_I=40s



The closed-loop response

Ja, reguleringen virket etter hvert! - noe Ida kan bekrefte