

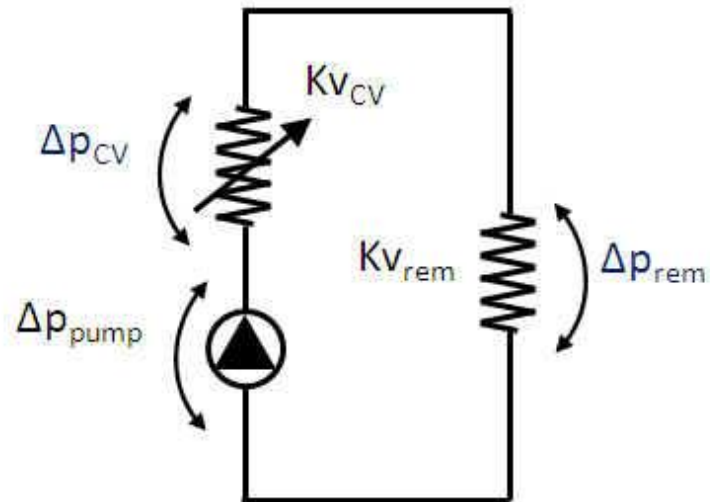
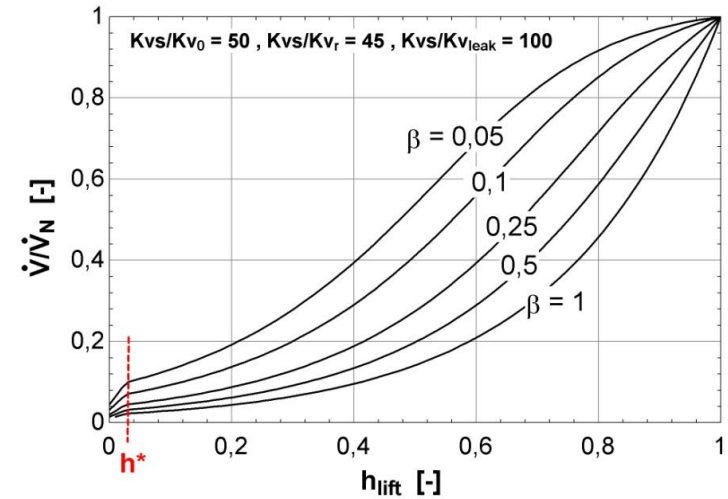
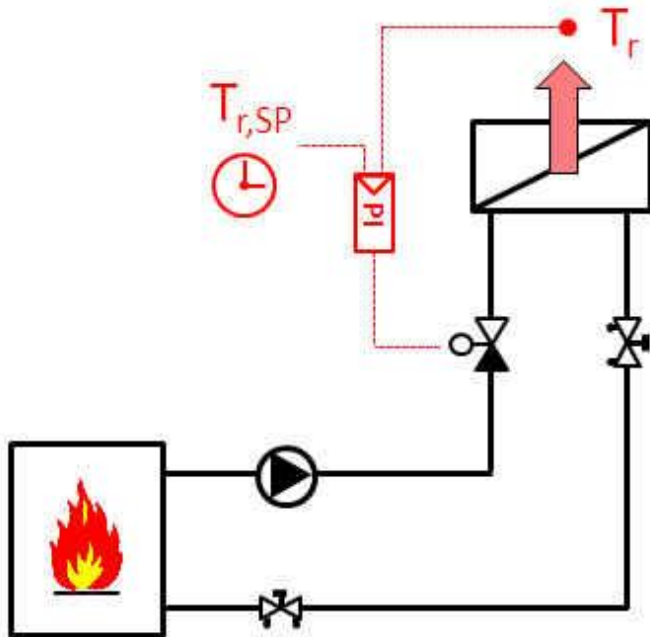
Autoriteit, interactiviteit en drukcompensatie bij regelventielen.

-resultaten doctoraatstudie –

Dr. Ing. Roel Vandenbulcke

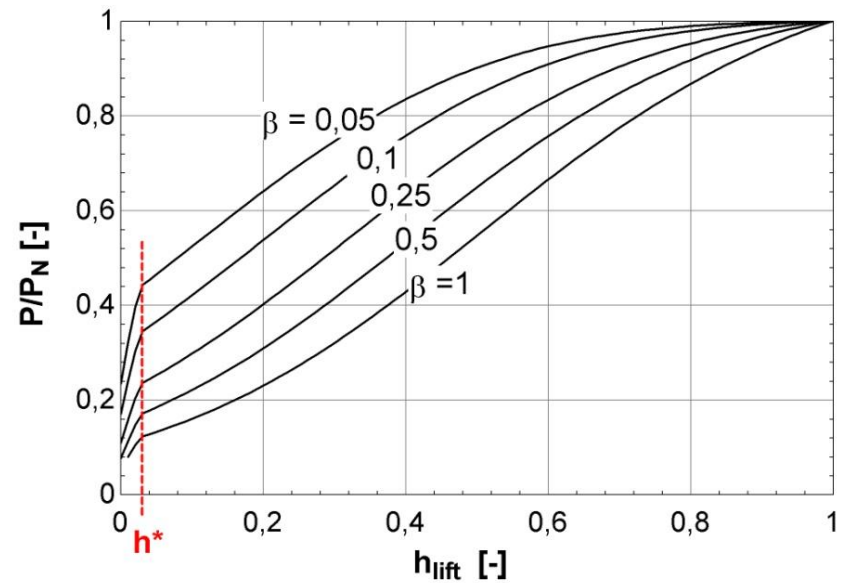
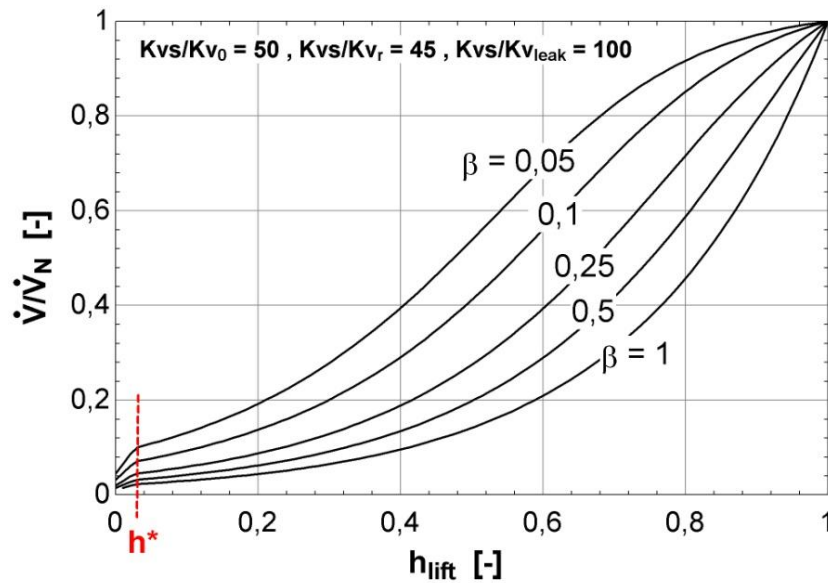
1. Autoriteit

→ Principe



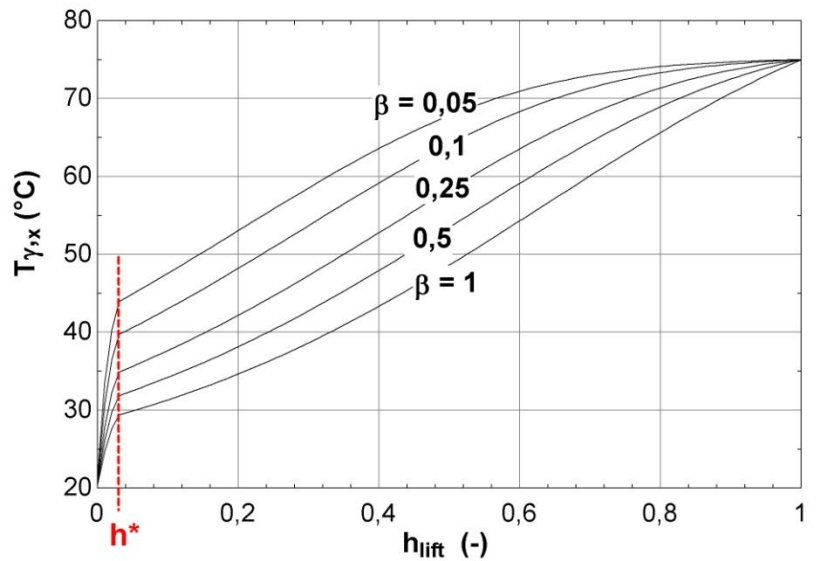
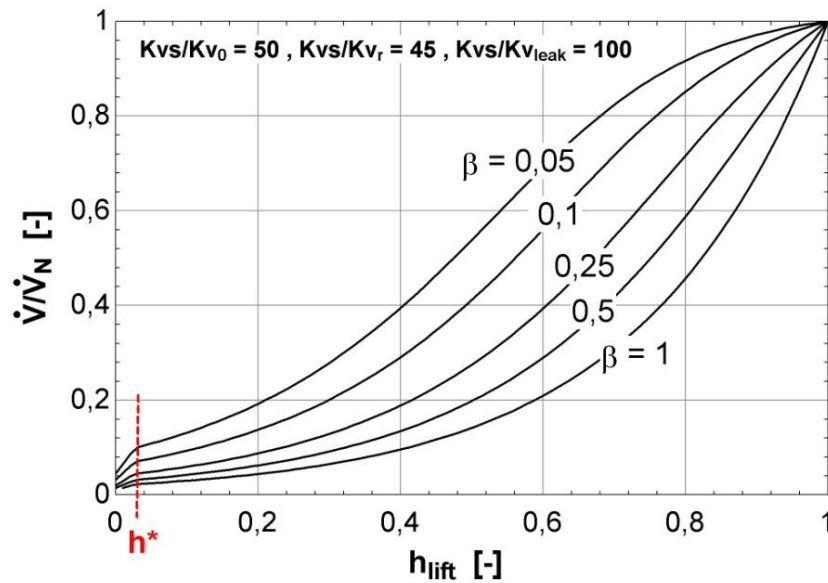
1. Autoriteit

→ Vervormd regelgedrag



1. Autoriteit

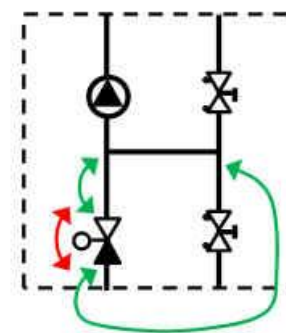
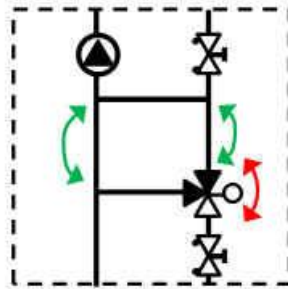
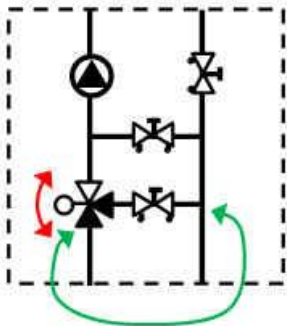
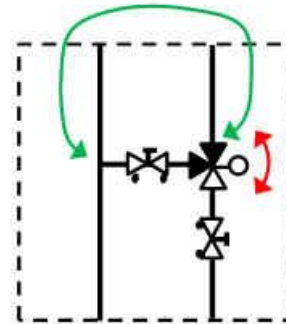
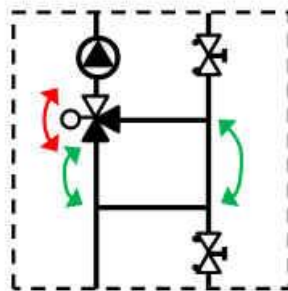
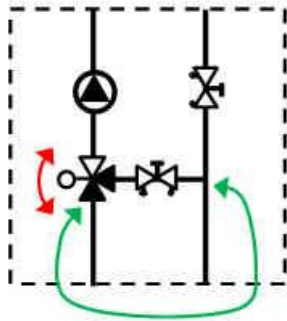
→ Vervormd regelgedrag



1. Autoriteit

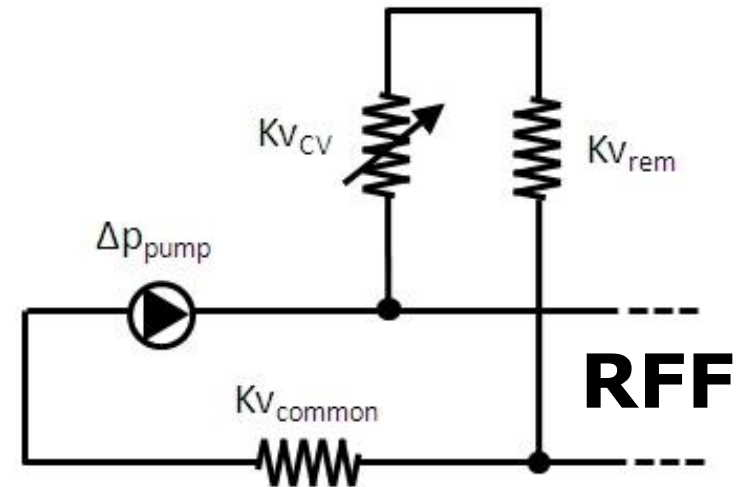
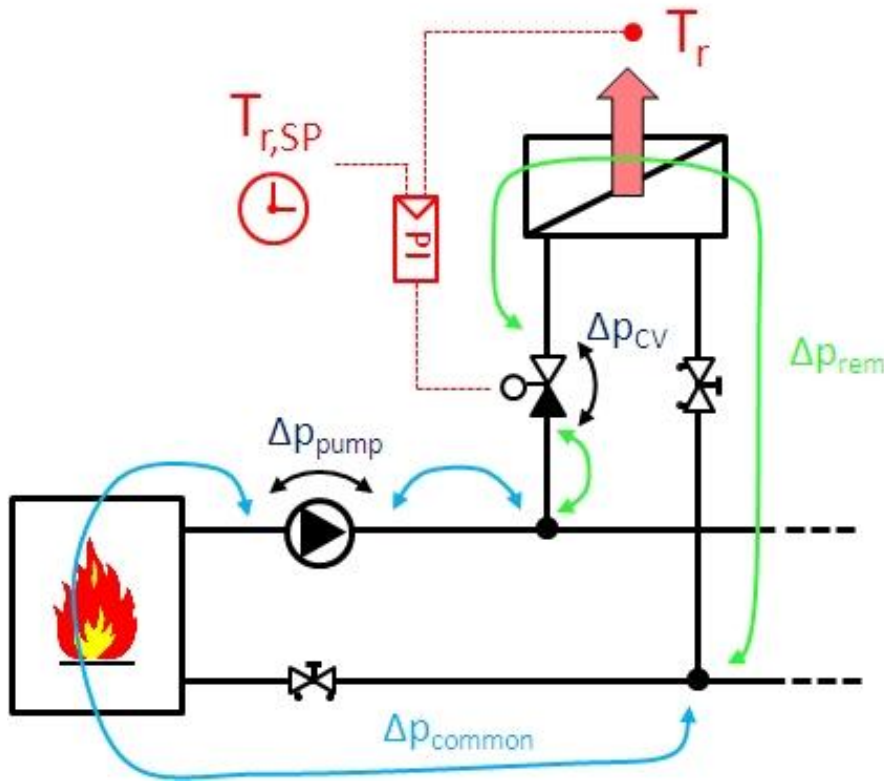
→ Autoriteit berekenen

$$\beta = \frac{\Delta p_{CV;100}}{\Delta p_{CV;100} + \Delta p_{variableflow;100}}$$



2. Hydraulische interactiviteit

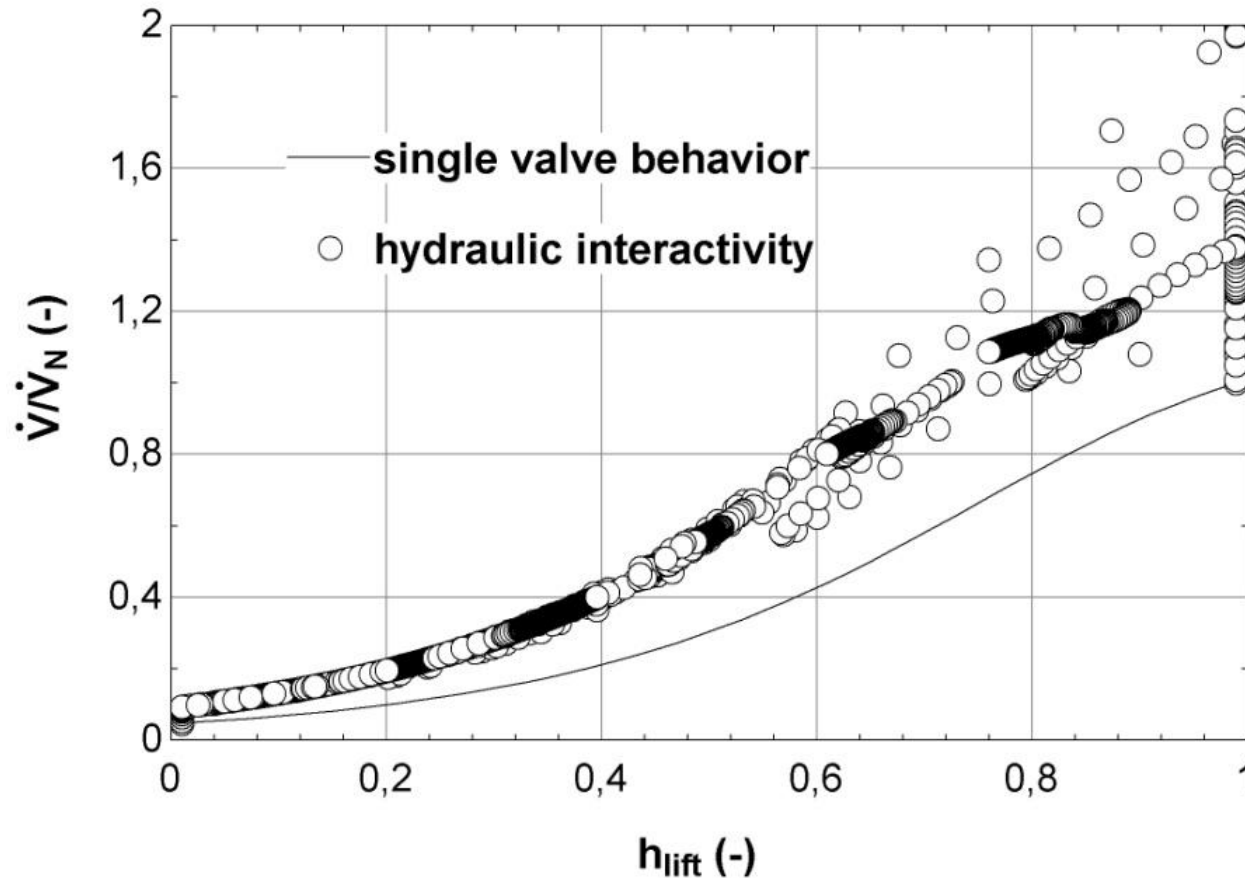
→ Principe



Remainder Flow Fluctuation

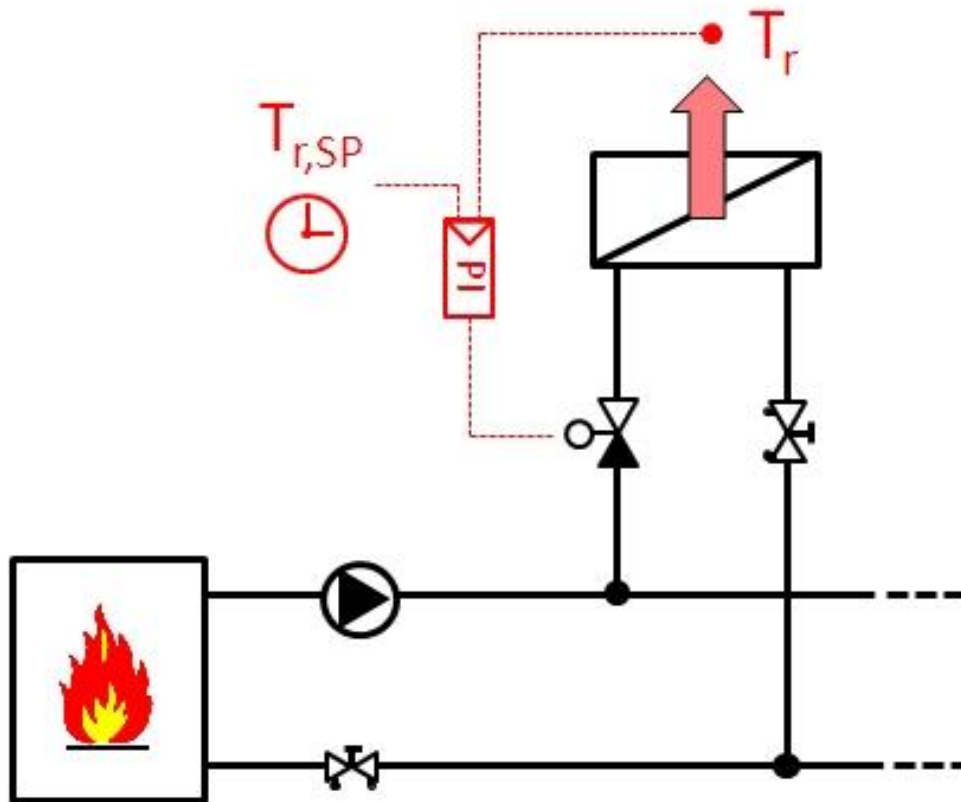
2. Hydraulische interactiviteit

→ Vervormd regelgedrag



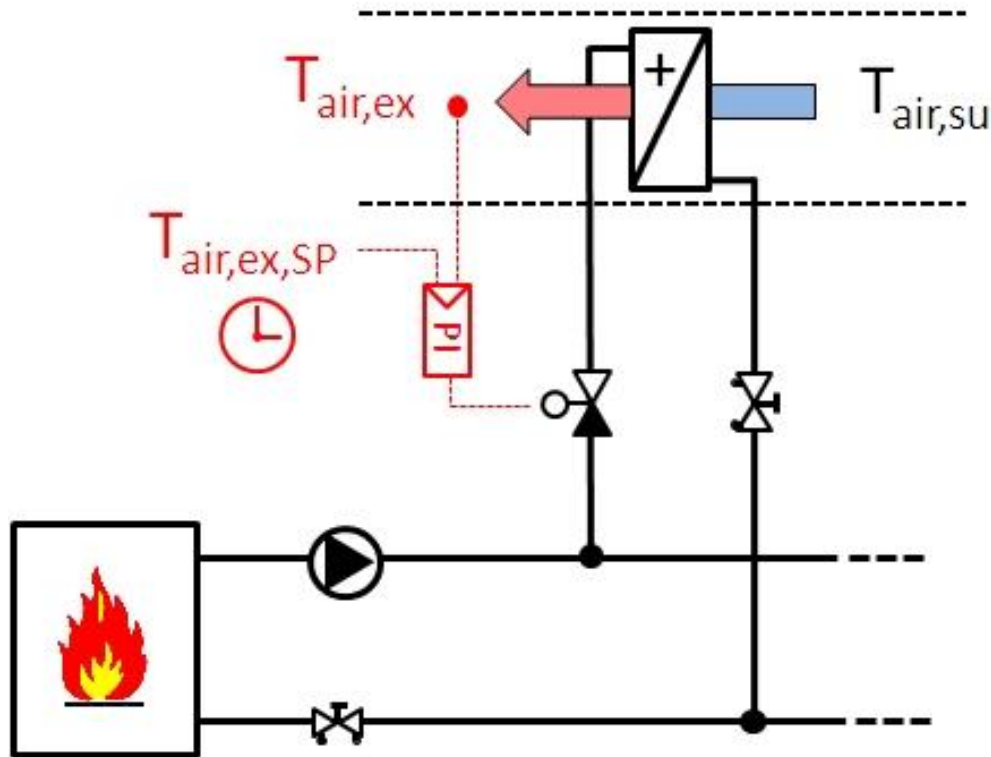
3. Analyse hydronische regelkringen

→ Radiator



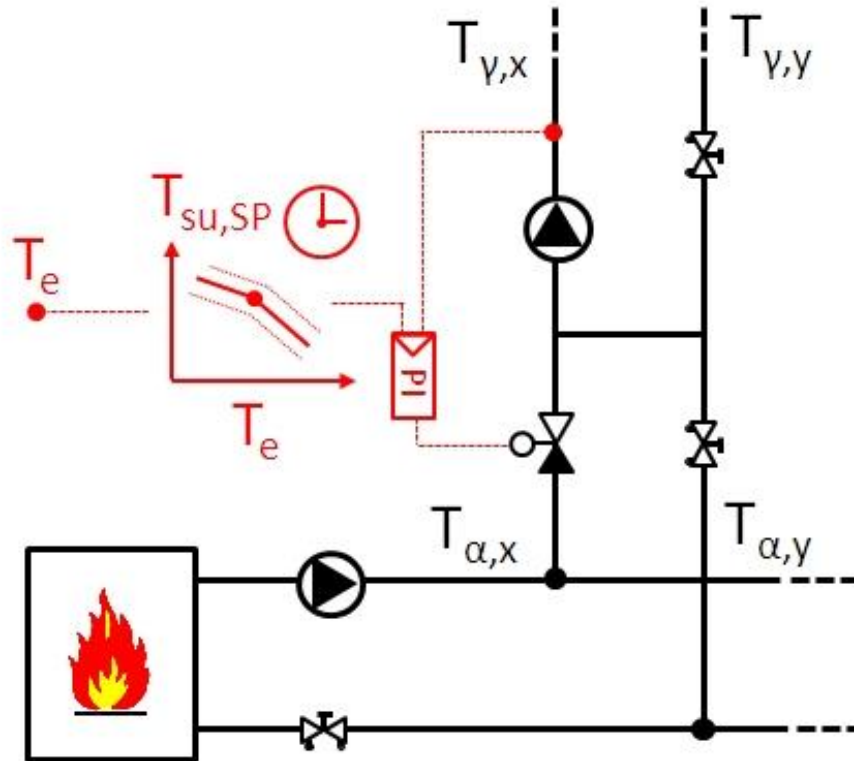
3. Analyse hydronische regelkringen

→ Verwarmingsbatterij



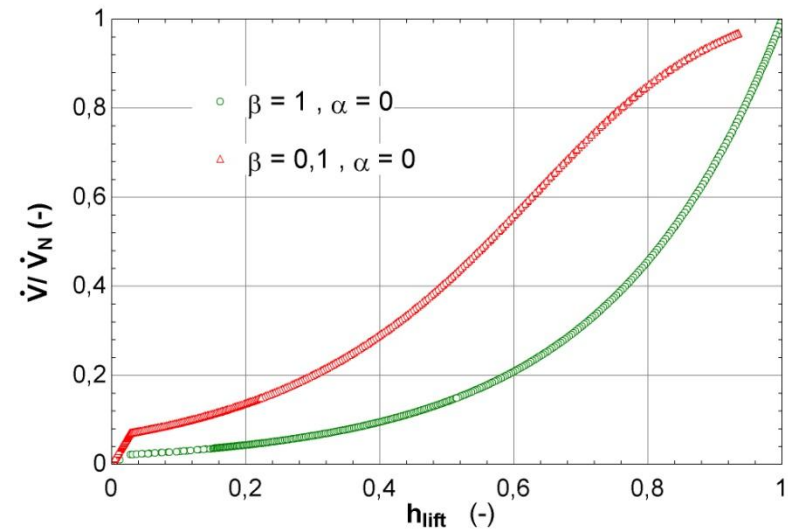
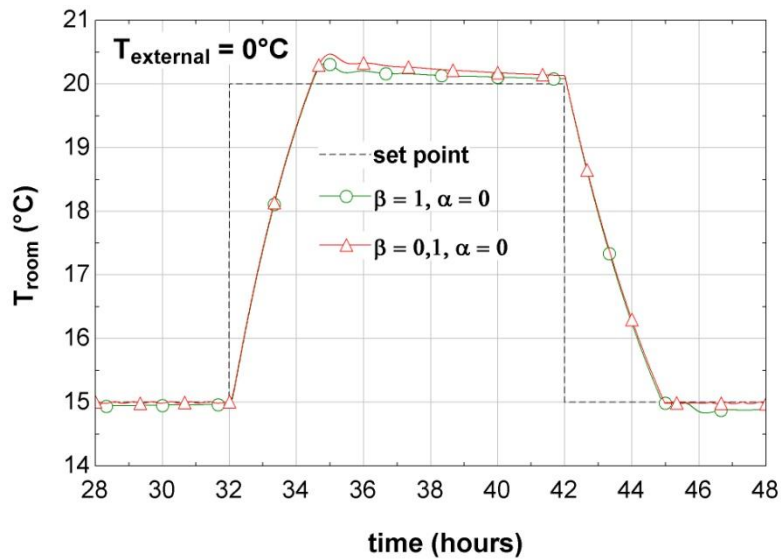
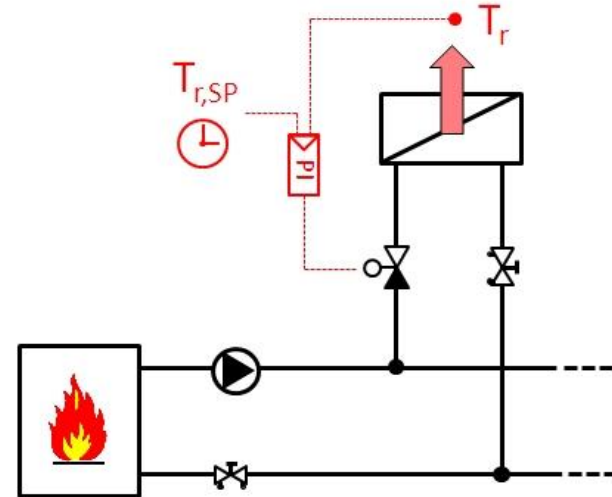
3. Analyse hydronische regelkringen

→ Passieve mengschakeling



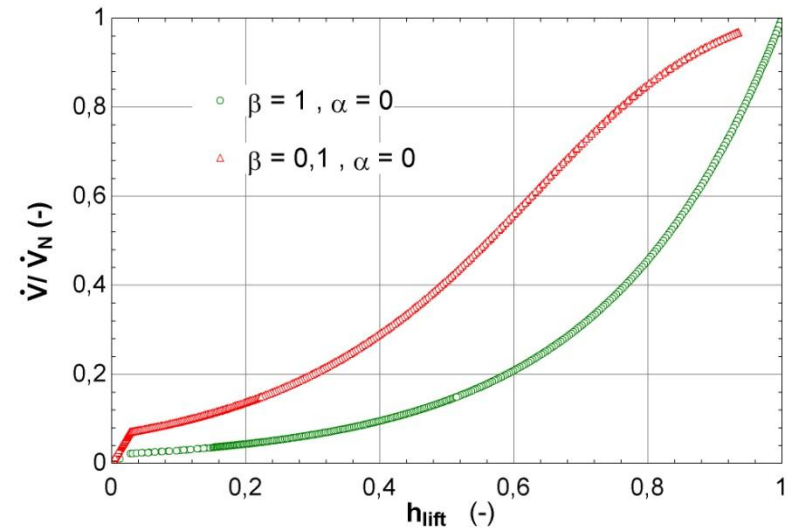
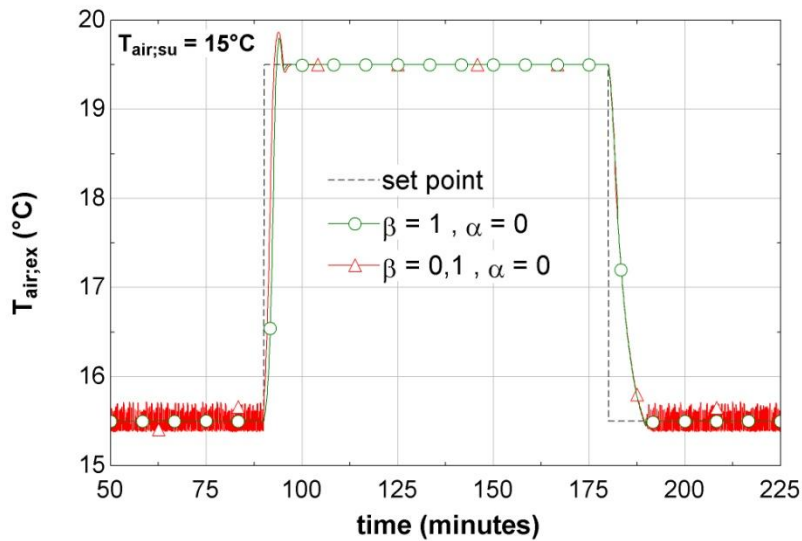
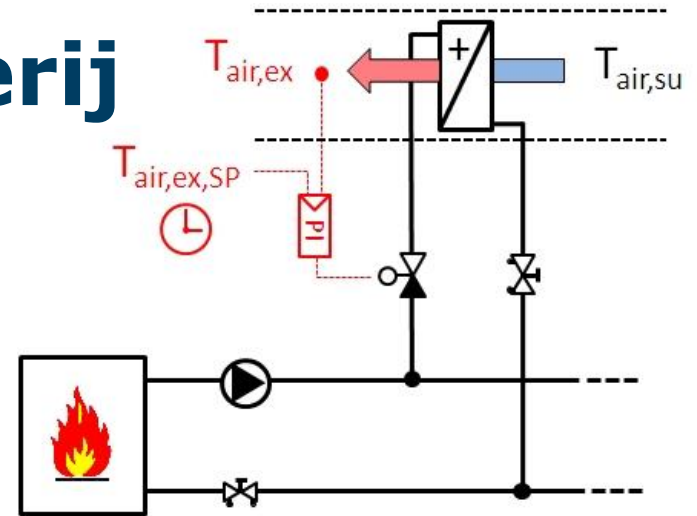
3. Effect van de autoriteit

→ Radiator



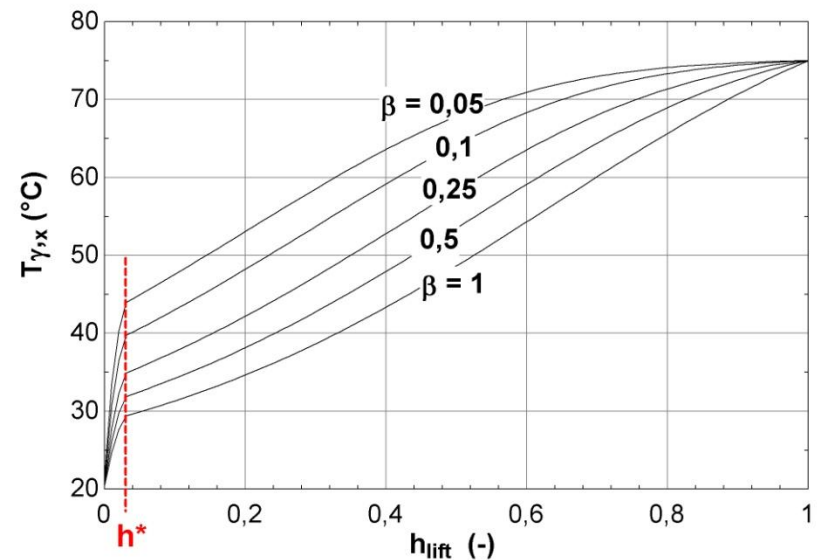
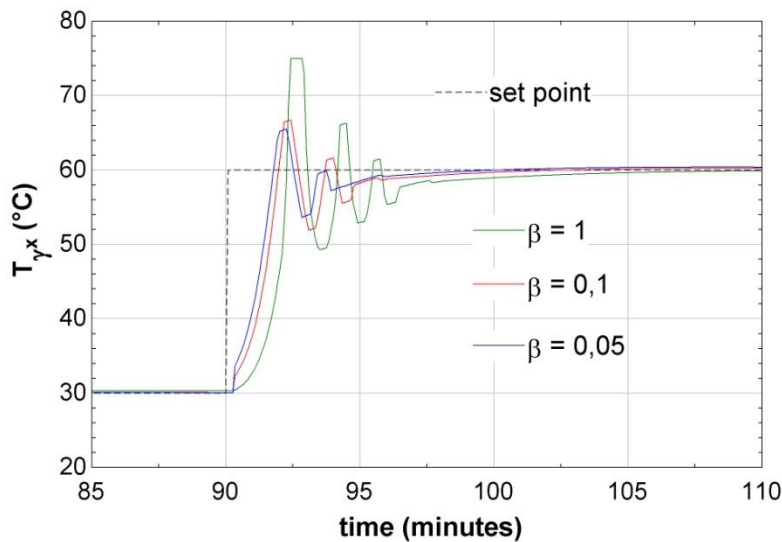
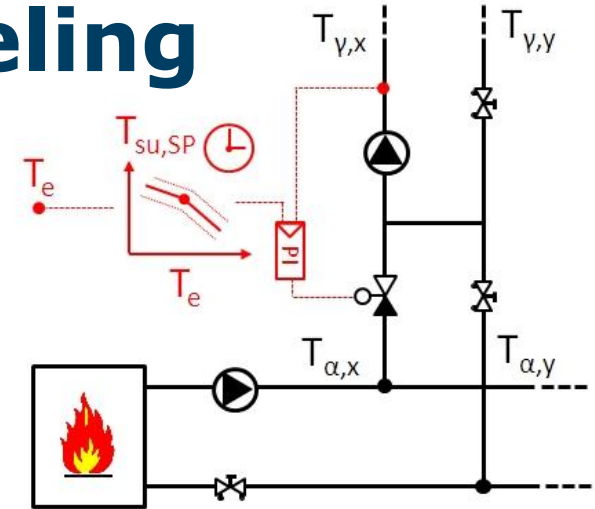
3. Effect van de autoriteit

→ Verwarmingsbatterij



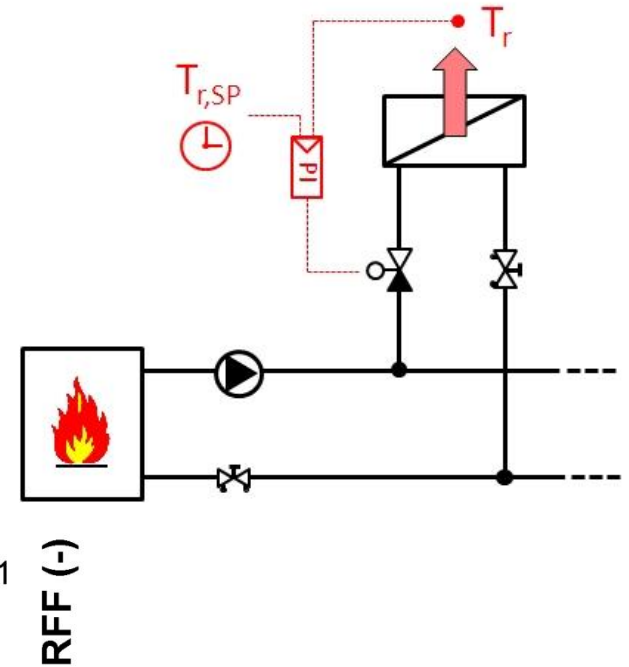
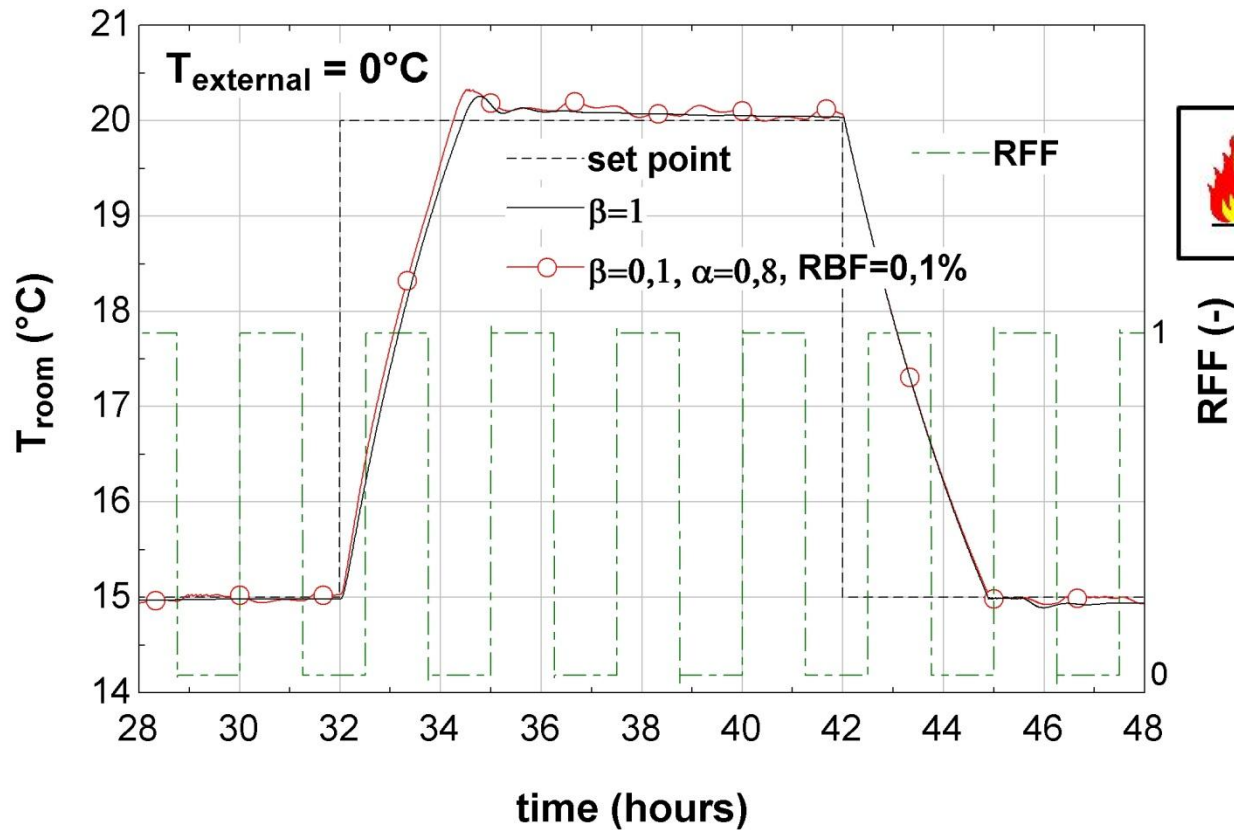
3. Effect van de autoriteit

→ Passieve mengschakeling



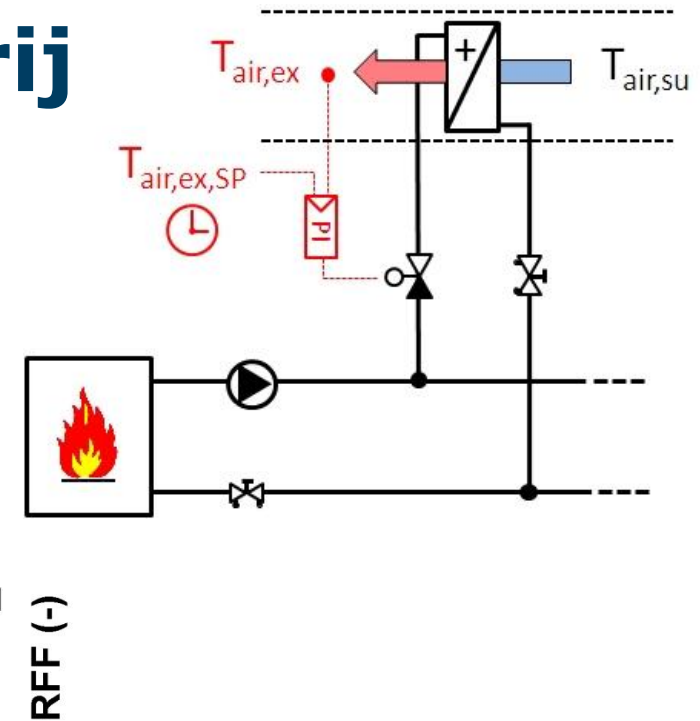
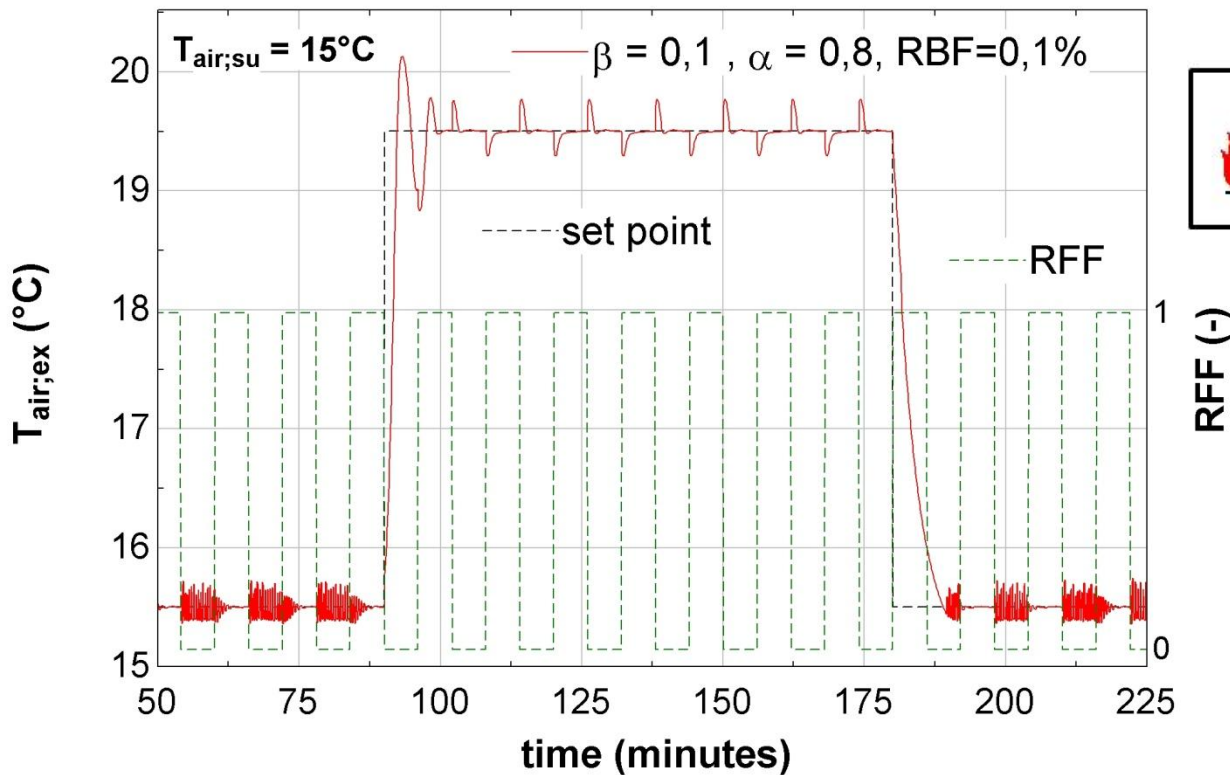
4. Effect van de hydraulische interactiviteit

→ Radiator



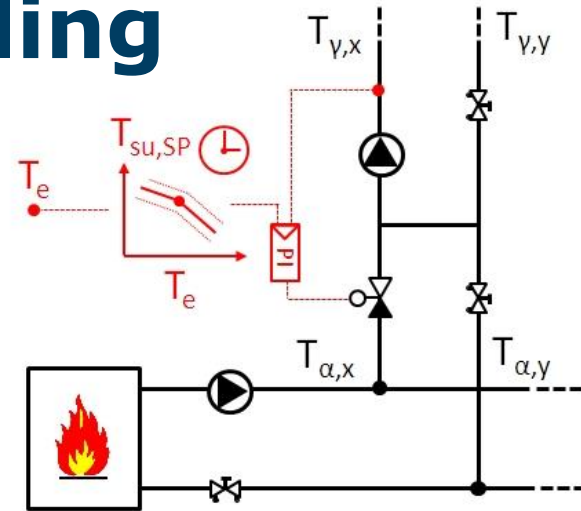
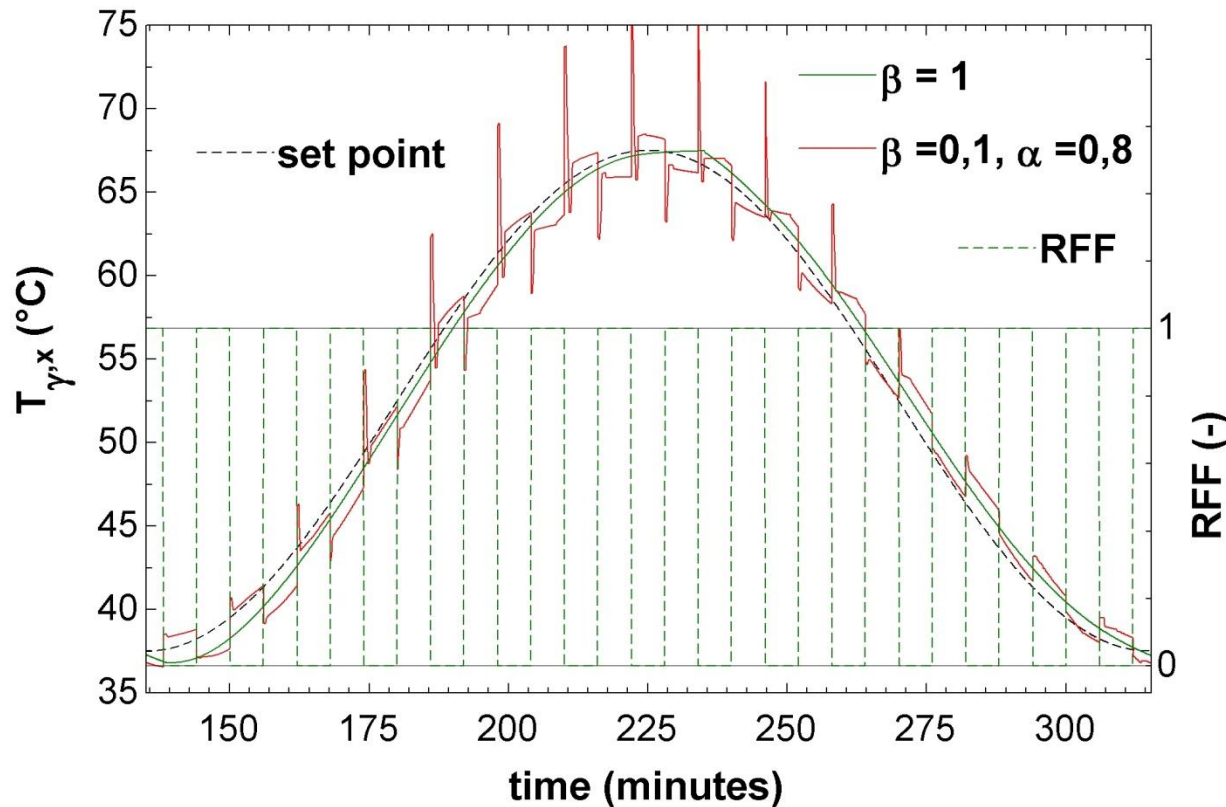
4. Effect van de hydraulische interactiviteit

→ Verwarmingsbatterij



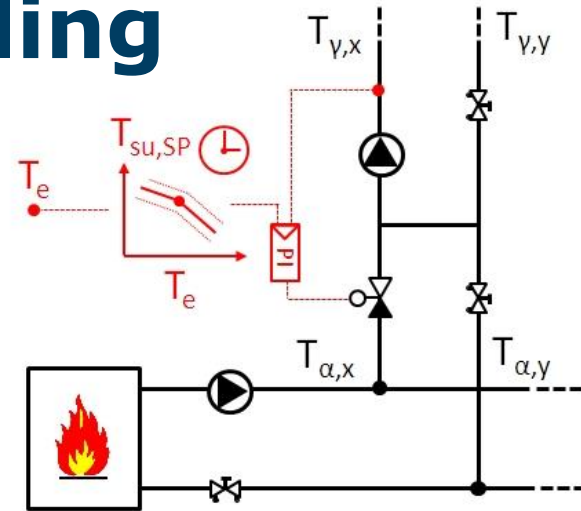
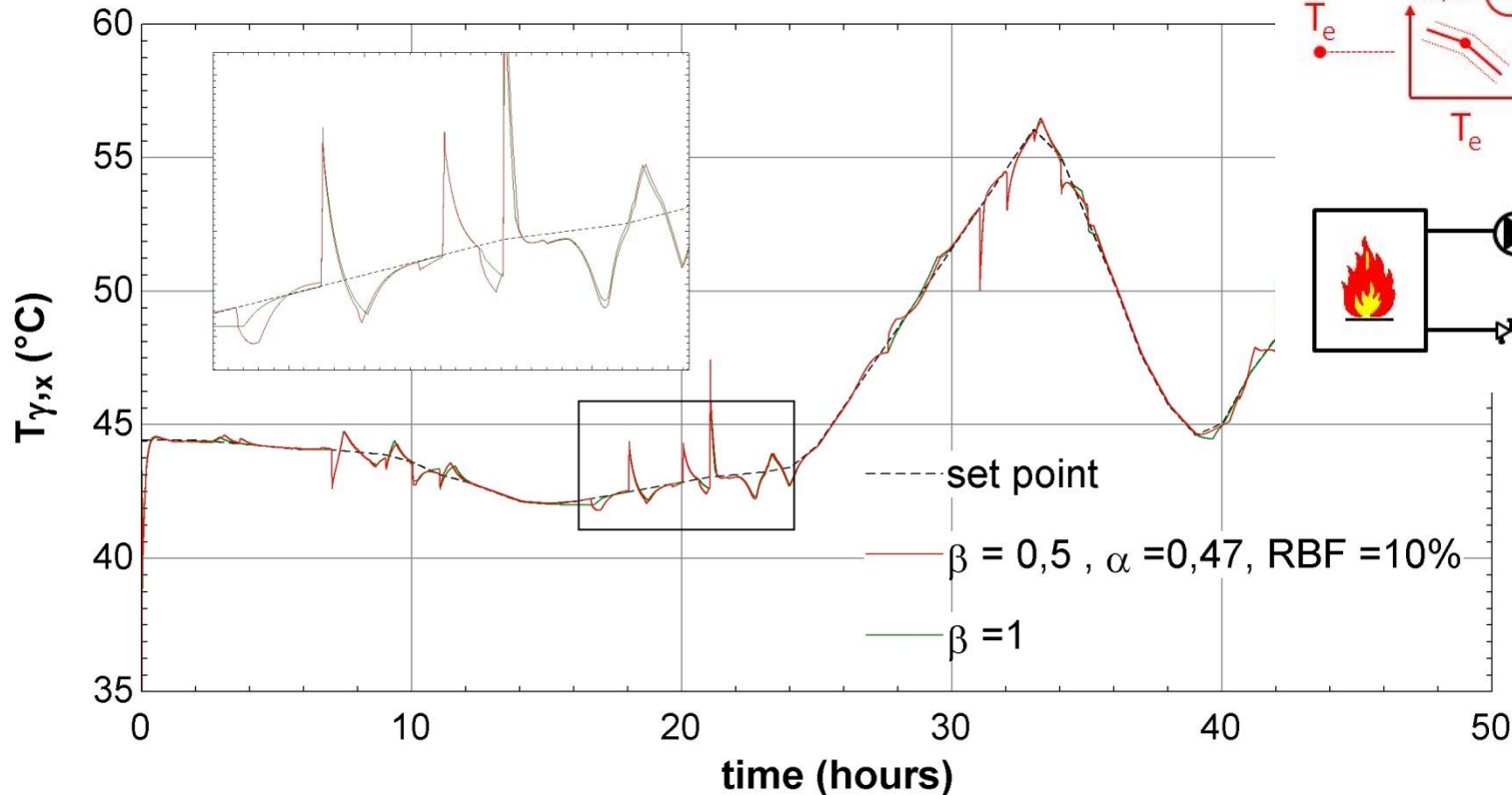
4. Effect van de hydraulische interactiviteit

→ Passieve mengschakeling



4. Effect van de hydraulische interactiviteit

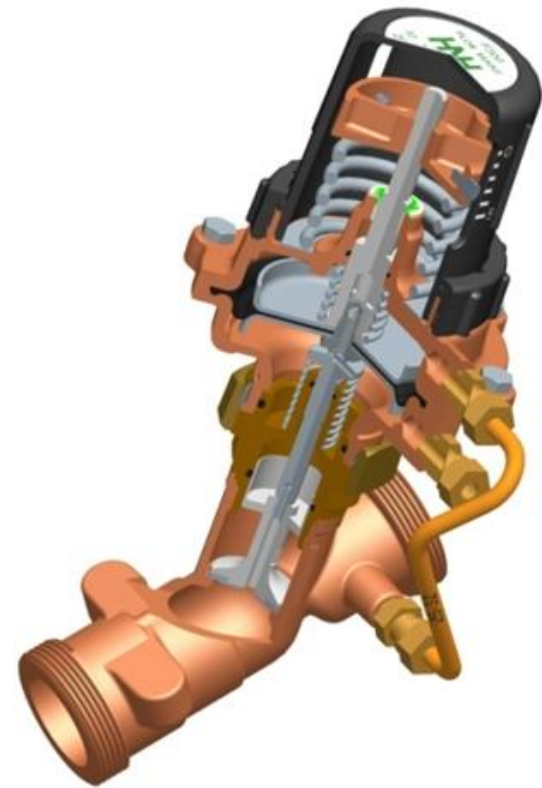
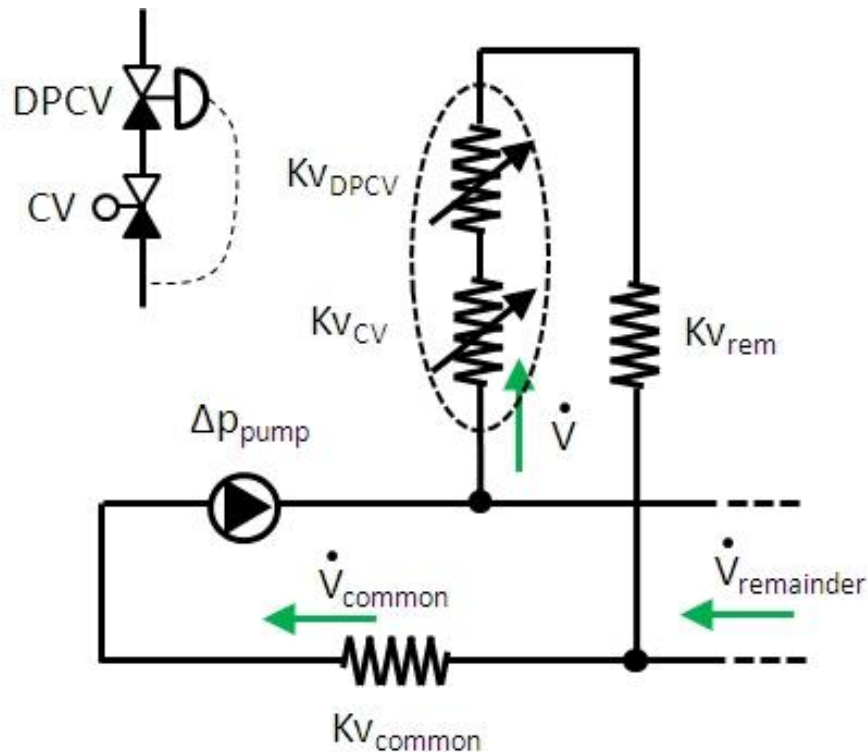
→ Passieve mengschakeling



Realistisch gedrag

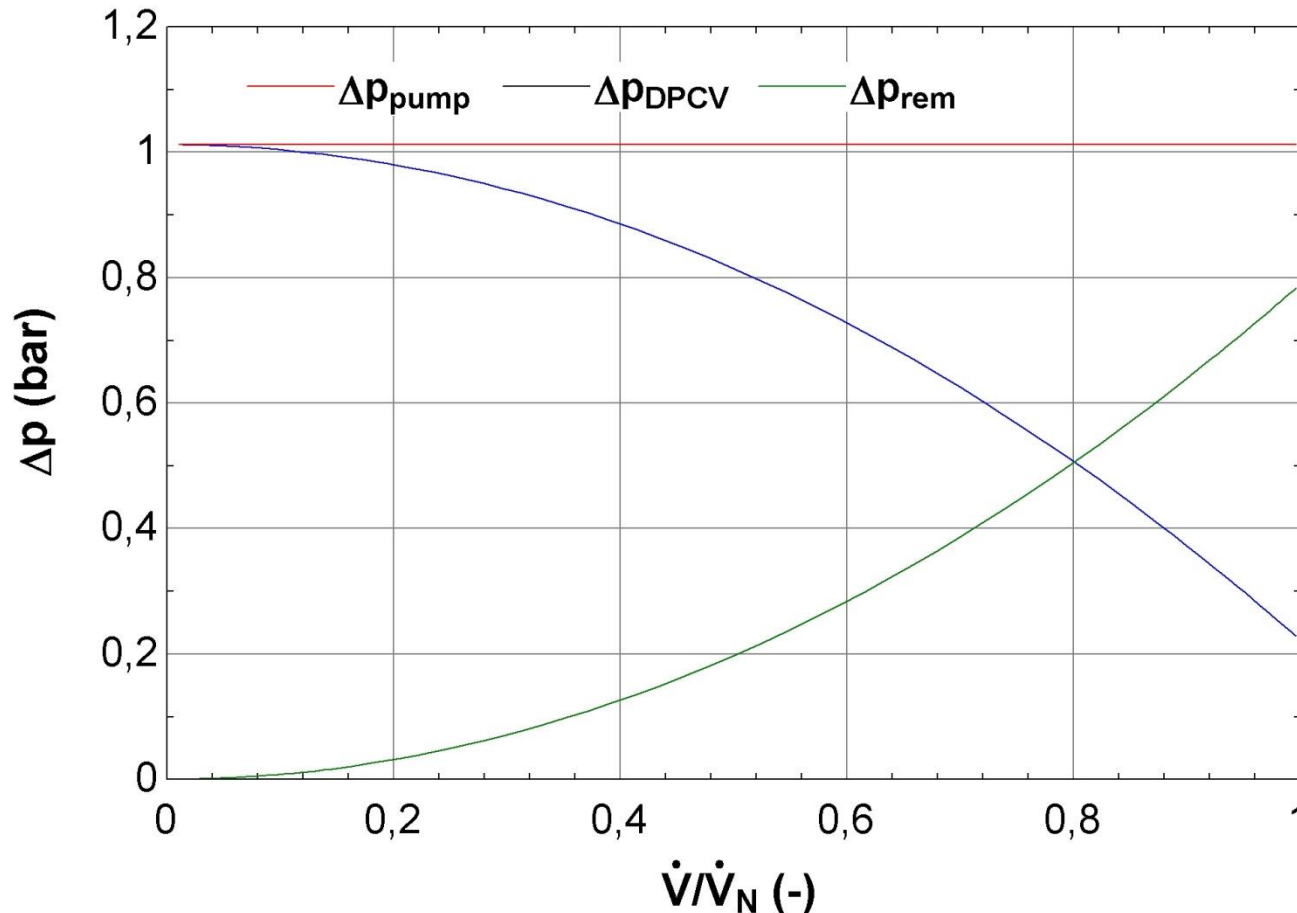
5. Dynamische drukcompensatie

→ **DPCV** (Differential Pressure Control Valve)



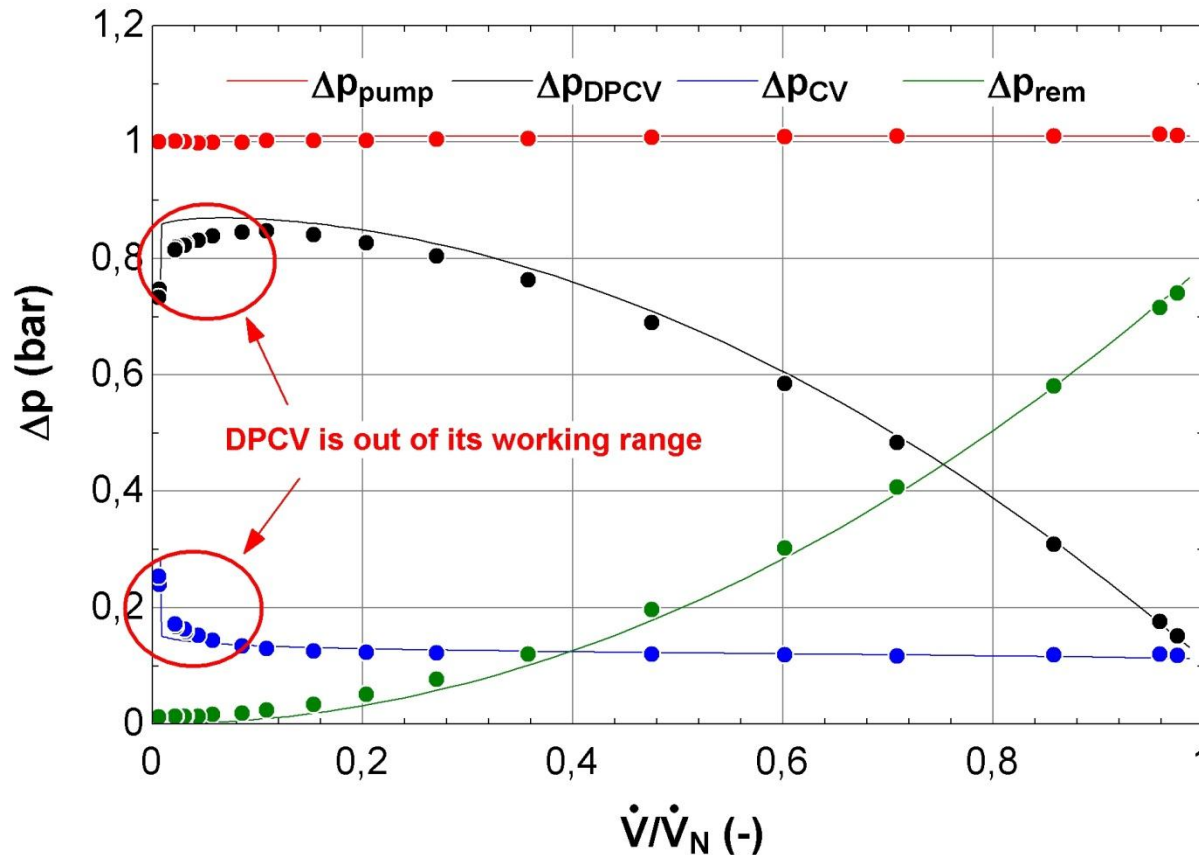
5. Dynamische drukcompensatie

→ **DPCV (Differential Pressure Control Valve)**



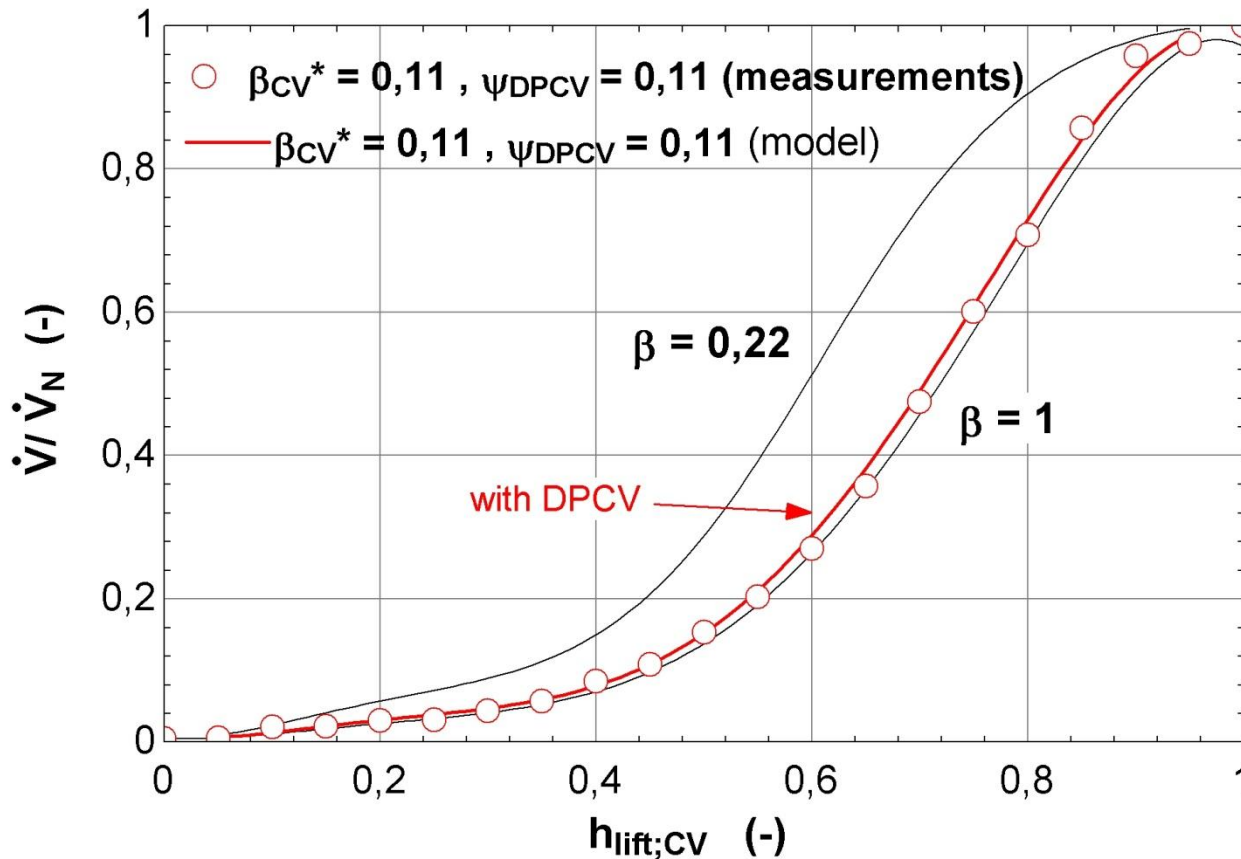
5. Dynamische drukcompensatie

→ **DPCV (Differential Pressure Control Valve)**



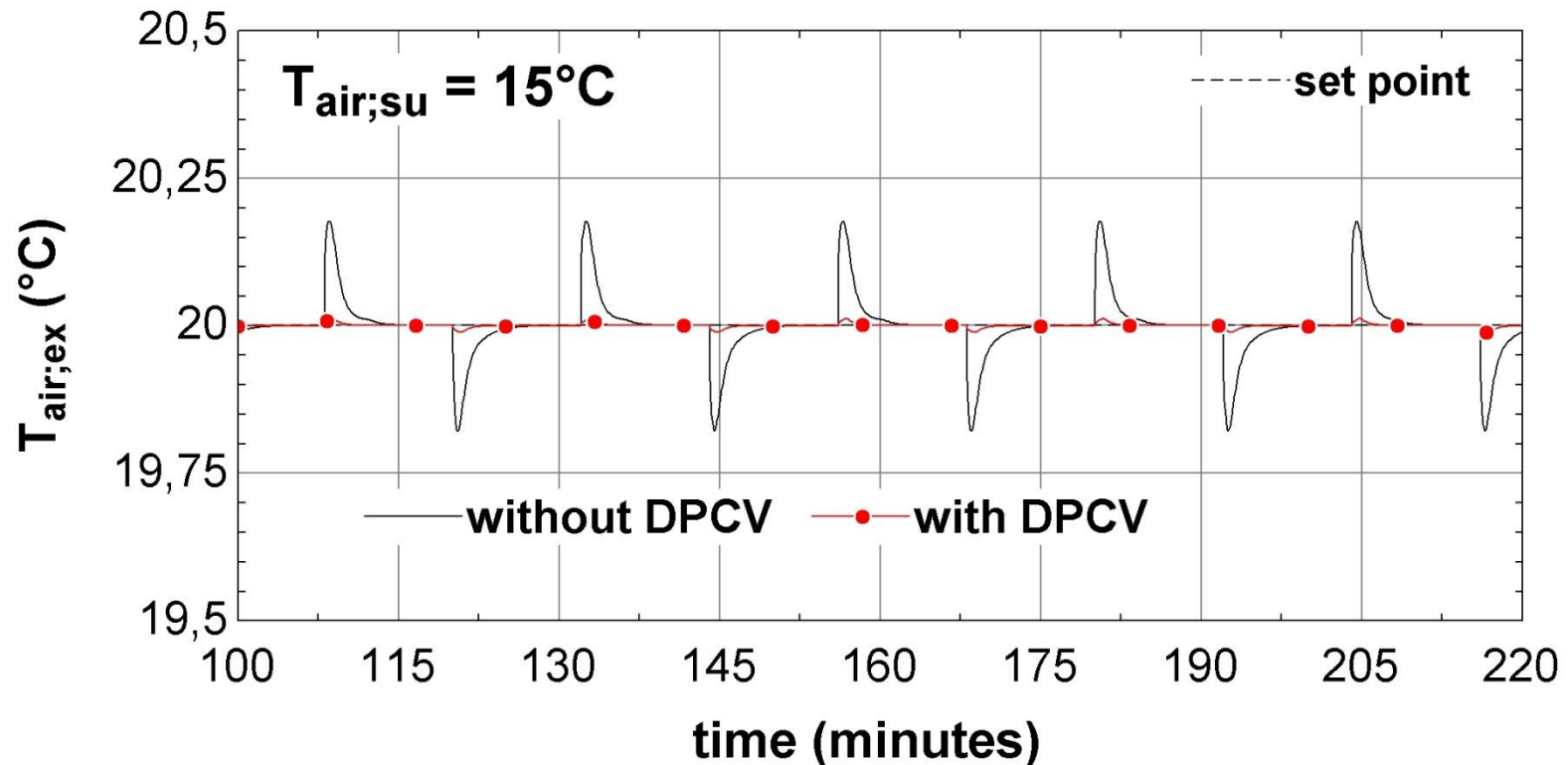
5. Dynamische drukcompensatie

→ **DPCV** (Differential Pressure Control Valve)



5. Dynamische drukcompensatie

→ Simulatieresultaten



6.Conclusies

1. De effecten van autoriteit en interactiviteit nemen toe bij regelkringen met een sneller responsiegedrag.
2. Het effect van autoriteit en hydraulische interactiviteit wordt doorgaans overschat.
3. Hydraulische interactiviteit is zelden een probleem bij passieve mengschakelingen.
4. Het secundair debiet van een passieve mengschakeling heeft een grotere invloed op het regelgedrag dan het primaire debiet.
5. Een DPCV is goed in staat de klep te vrijwaren voor hydraulische interactiviteit en houdt de autoriteit van de klep hoog.