

# Two-Phase Flow Test-Rig

## Pressure Drop and Dynamic Instabilities



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### Test-Rig at a Glance

#### Operational Parameters

- Operation modes:
  - forced circulation
  - natural circulation
- Heating power:
  - Pre-heater: 5 kW<sub>el</sub>
  - Evaporator: 10 kW<sub>el</sub>
- Mass flow: 0 ... 150 kg/h
- Inlet Temperature: up to 150 °C
- Inlet Pressure: up to 8 bara
- Working fluid: demineralized water ( $G < 10 \mu\text{S}$ )

#### Diabatic Test Section

- Geometry:  $d_{\text{hyd}} = 5 \text{ mm}$ ,  $L = 3000 \text{ mm}$

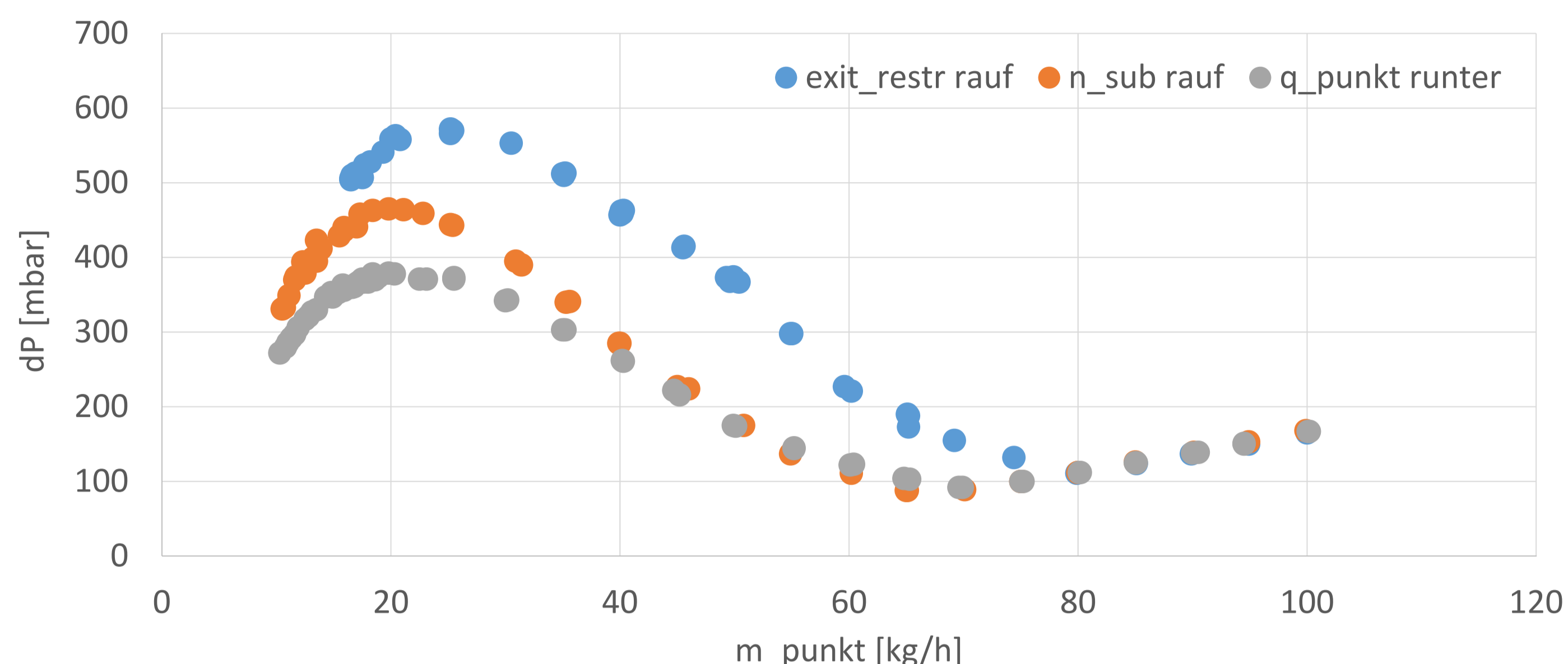
#### Adiabatic Test Section for local pressure drop

- Geometry:  $d_{\text{hyd}} = 5 \text{ mm}$ ,  $L = 500 \text{ mm}$  with needle valve

#### Adiabatic Test Section for distributed pressure drop

- Geometry:  $d_{\text{hyd}} = 5 \text{ mm}$ ,  $L = 1000 \text{ mm}$

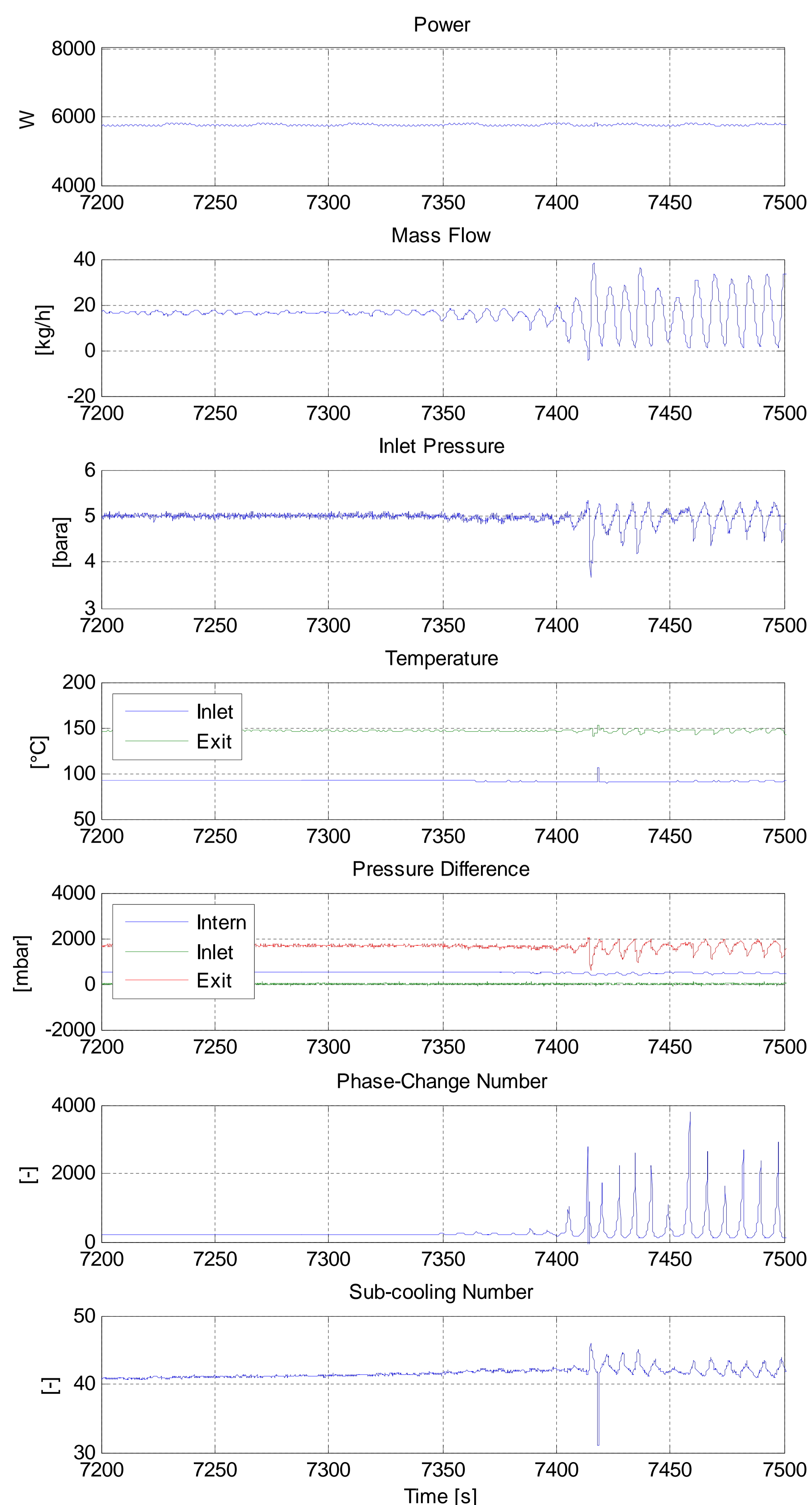
### Exemplary Results: Steady State N-Shape Curves



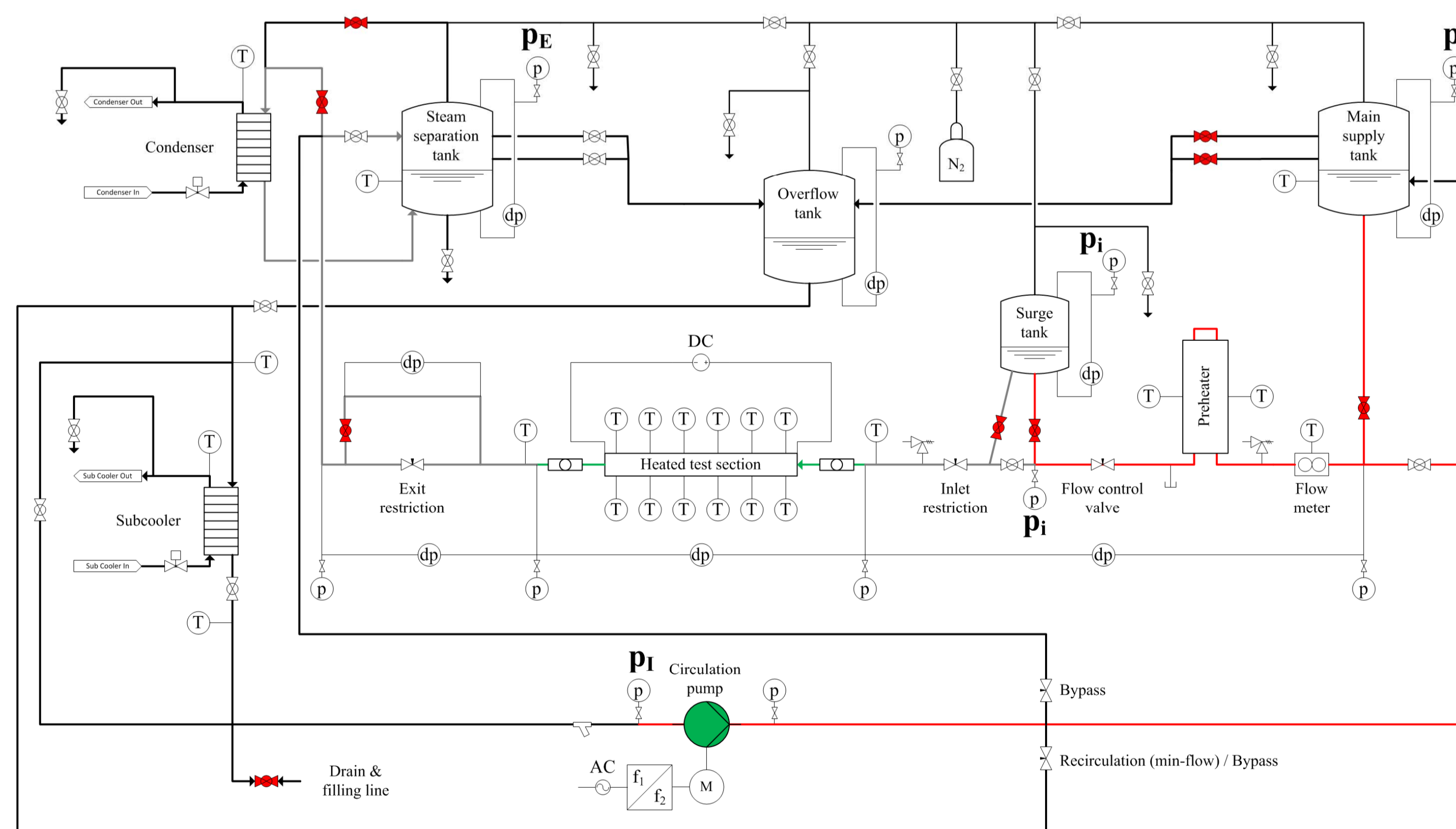
### Picture of the Test-Rig



### Exemplary Results: Density Wave Oscillations



### P&ID of the Test-Rig



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