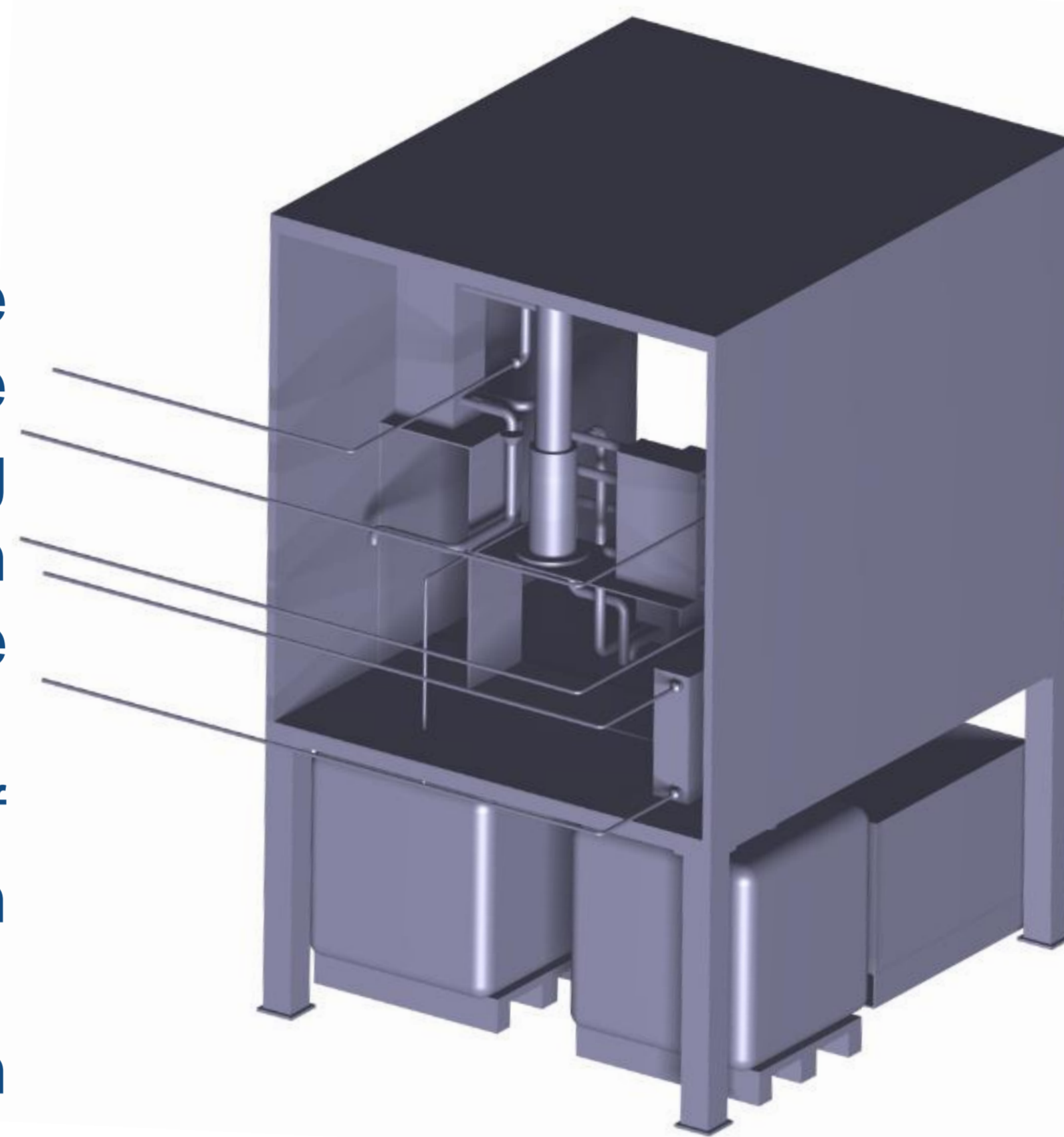


# H-DisNet: Intelligent Hybrid Thermo-Chemical District Networks Demonstrator at biogas plant in Marthalen (Switzerland)

ZHAW plans at the CHP-plant (Combined Heat and Power) at the biogas plant in Marthalen the demonstrator for the regeneration of the salt solution.

- Therefore two different systems will be installed:
  - The solution is regenerated by the exhaust gas from the biogas engine. The existing thermal potential between the exhaust temperature (470° C) and the heating water(90° C) can be used to regenerate the solution without a heat demand. The evaporated water leaving the solution is used to heat up the district thermal network.
  - The regeneration of the solution is driven by usage of residual heat. (if the CHP produces more heat than necessary)
- The concentrated solution is transported to a greenhouse in Wangen ("demand node").

High temperature process  
(without heat demand)



Low temperature process  
(usage of residual heat)  
(Kathabar)

Figure 1: Possible design of the regeneration

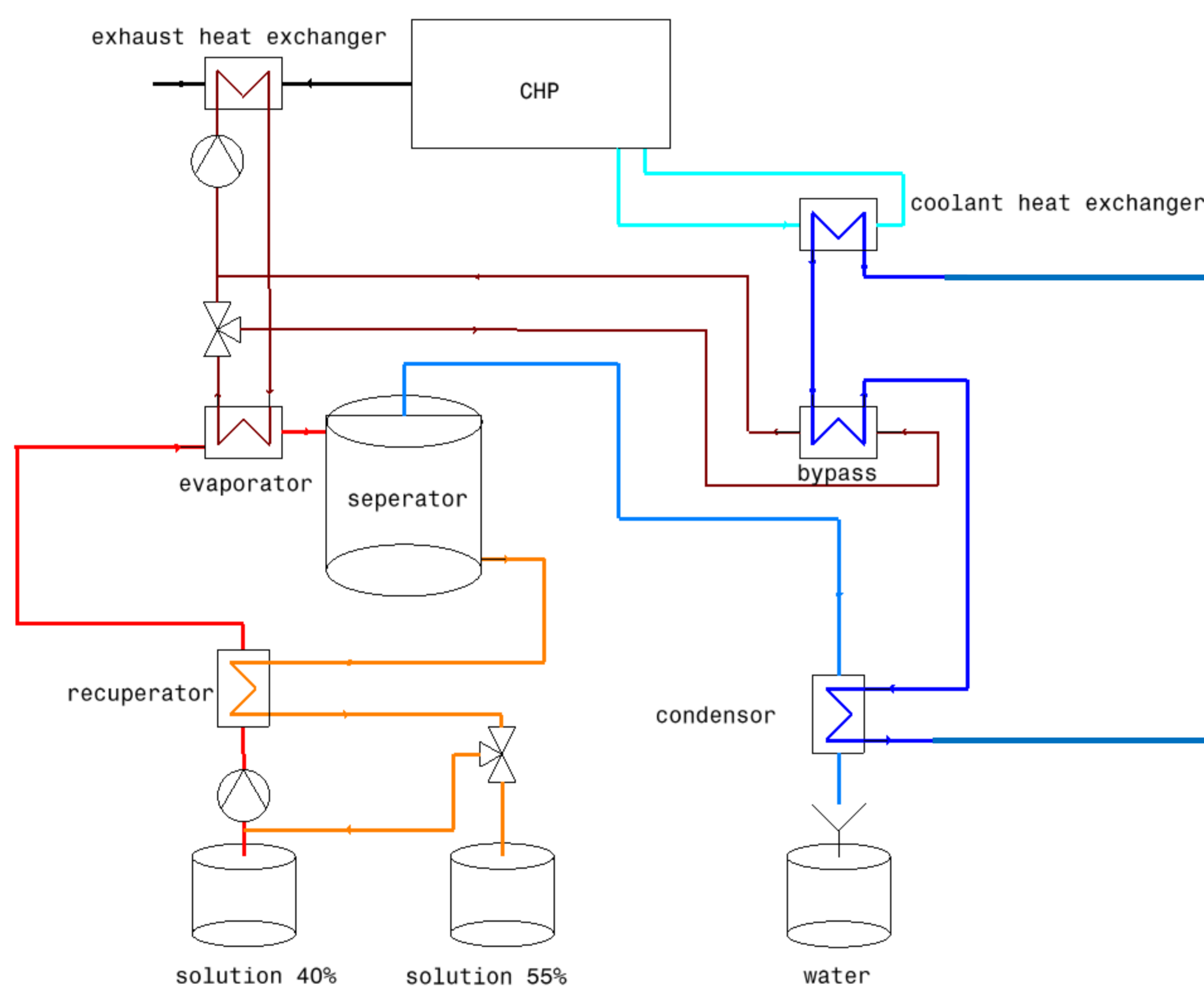


Figure 2: High temperature regeneration (without heat demand, usage of thermal potential)

Main data of the regeneration (example):

- Type of solution:  $\text{Ca}(\text{NO}_3)_2$
- Solution amount: 4 m<sup>3</sup>/day
- Inlet concentration: 40%
- Outlet concentration: 55%

ZHAW plans in a future follow-up project of H-DisNet to use the concentrated solution to dry wood chips at the nearby district energy network. Thereby it has to be proven if it is reasonable to operate with salt solution instead of water. Therefore not only the heat but also the chemical potential could be delivered to the wood chips plant.

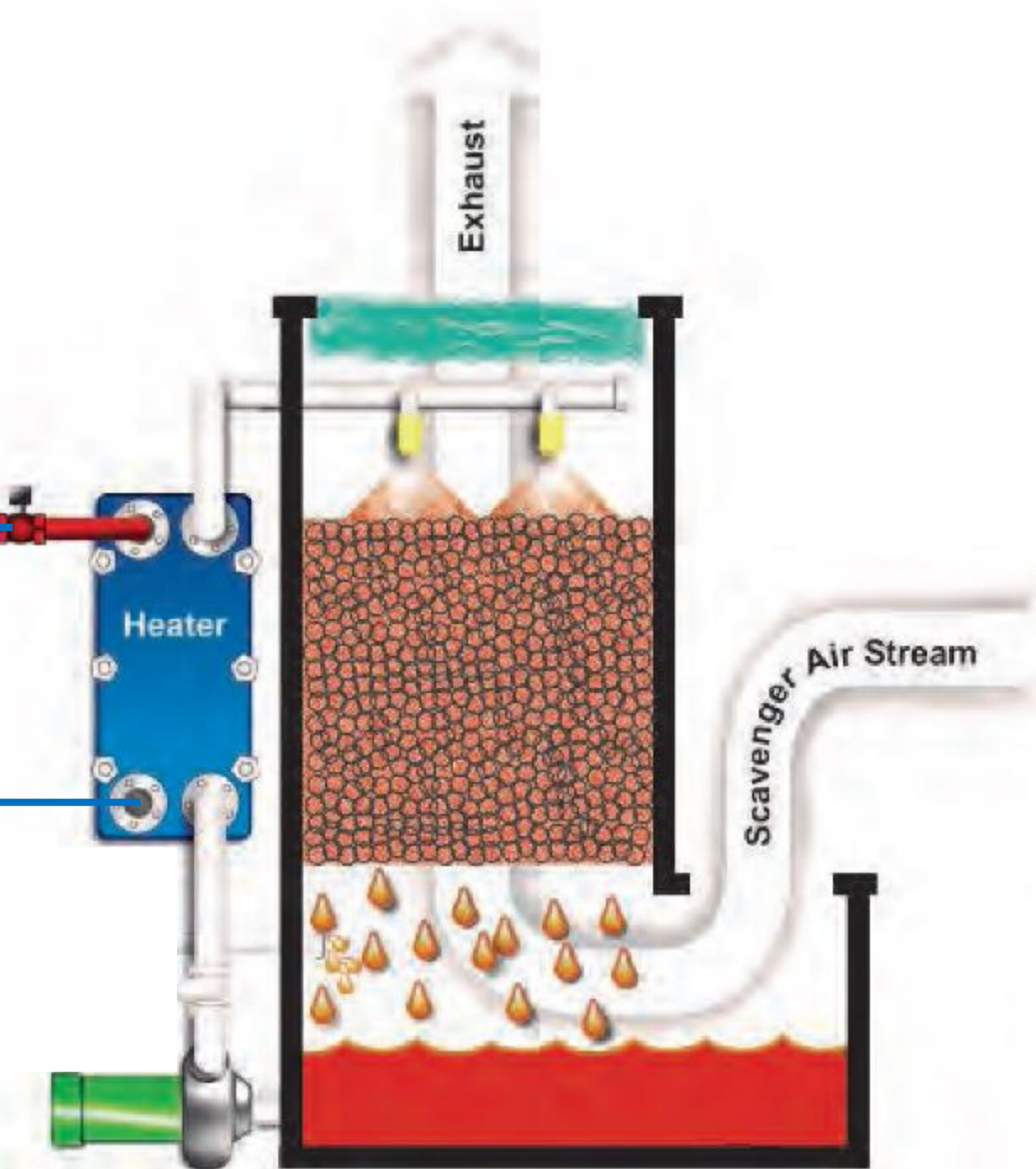


Figure 3: Low temperature regeneration with heat demand (Usage of residual heat)



Figure 4: Situation Marthalen