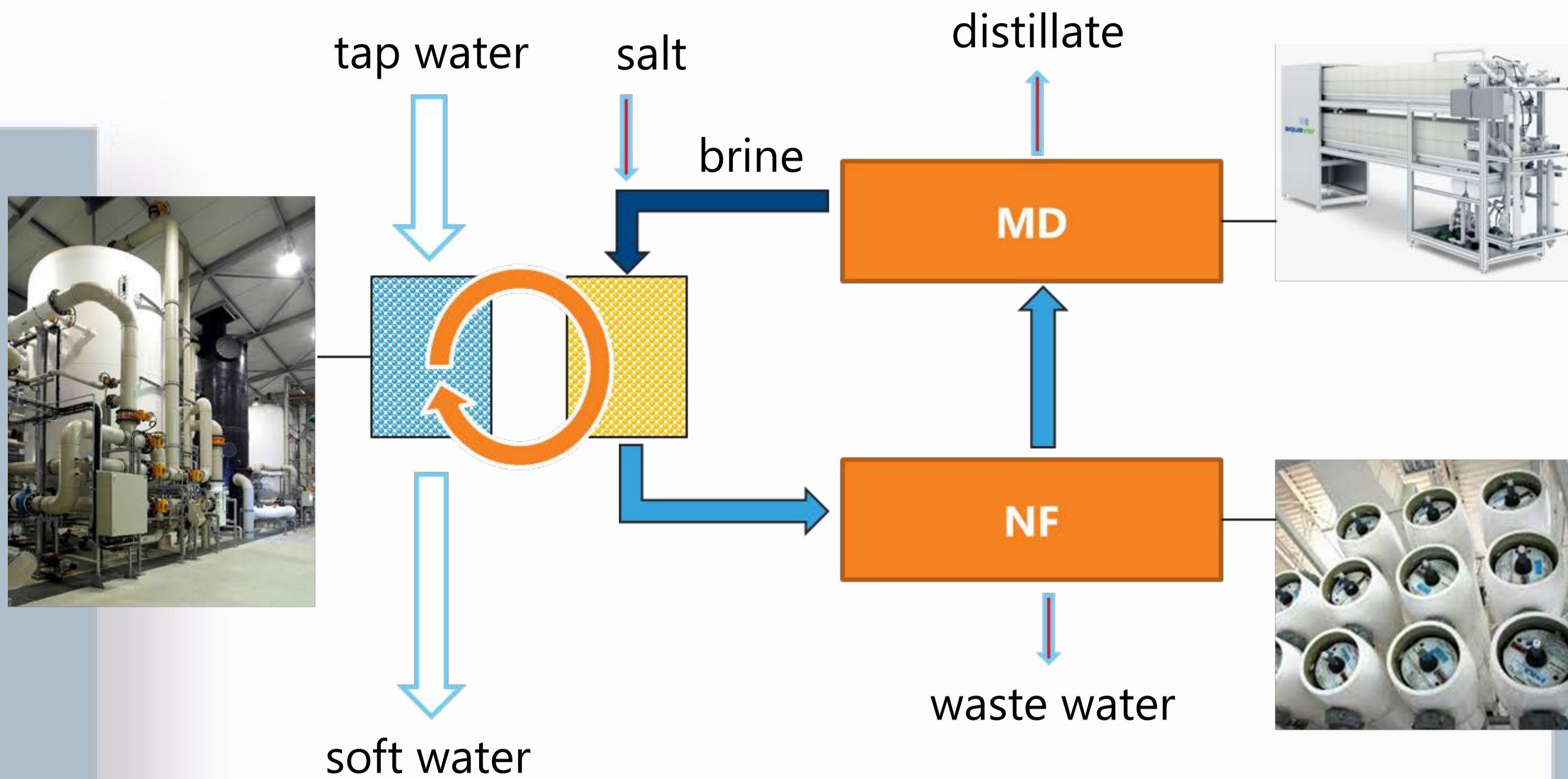


Reuse of ion exchange softening regenerate – a pilot study

VIS-traject the Blue Circle

Ion exchange is frequently used in industry for softening of tap water. Regeneration of the saturated resin results in a regenerate with high concentration in NaCl and lower concentrations of CaCl₂, MgCl₂ and other salts. Treatment of this regenerate by nano filtration (NF) and membrane distillation (MD) enables reuse of salt and water.



Within the **Blue Circle-project** the **technical feasibility** was **demonstrated** at a Belgian manufacturer of hygiene products.

Conditions on-site

Nano Filtration (200 Da)

- TMP : 20 bar
- Average flux : 18-19 l/h.m²
- Ca retention till VCF 5 : > 84%

Membrane Distillation

- Stable operation (distillate < 5 μS/cm)
- Flux ~ 4,5 L/h.m²
- CF ~ 4,5 – 5,0
- GOR : 2,3

Savings



70%



84%



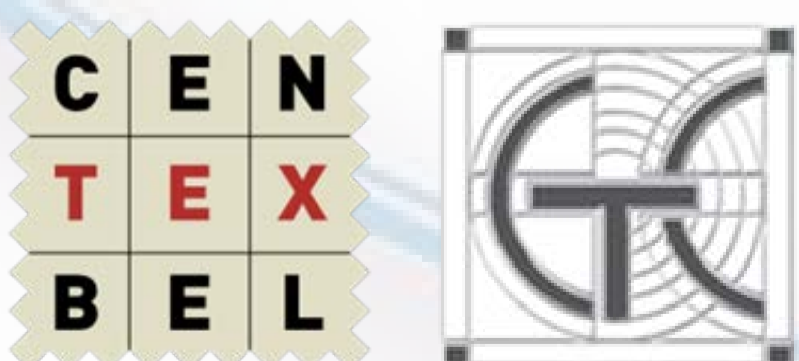
Pilot nano filtration



Pilot membrane distillation

The combination of NF and MD is **technically feasible**. Operational cost is estimated at **less than 25 euro/m³ of regenerate** for medium and large installations. For companies that need external disposal of the regenerate – caused by chloride discharge restrictions – the investment is profitable. The **chloride-load** originating from the regenerate can be reduced by **70 %**.

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