Development of technologies for treatment of heavily polluted condensate streams generated in the petrochemical industry

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Objective: improved condensate quality

- ✓ **Development of novel treatment methods for direct reuse of heavily polluted condensates – "Dilution steam condensate" contaminated with BTEX, other organics and inorganics**
- ✓ **Polishing of "Off-spec" condensates to prevent particulate fouling of CPUs and to limit the impact of byproducts of conditioning chemicals (amines) on CPUs**

Applicability:

- ✓ **Chemical and petrochemical industry**

Motivation:

- ✓ **Optimization of the steam/condensate return ratio**
- ✓ **Higher water and energy efficiency**
- ✓ **Reduced production cost**

Status:

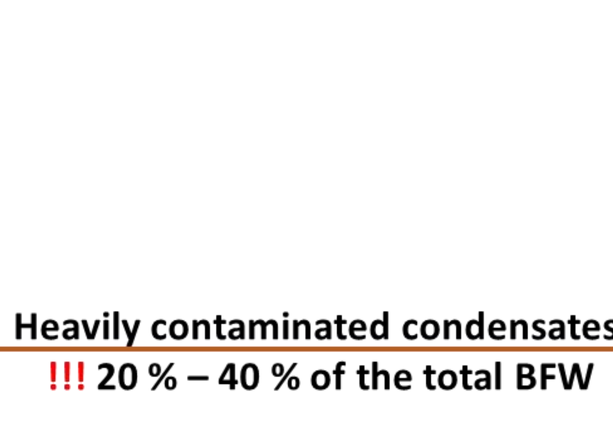
- ✓ **Lab scale experiments with:**
  - **Membrane distillation**
  - **The OxyMem concept**

Project scope

Heavily contaminated condensates

!!! 20 % – 40 % of the total BFW

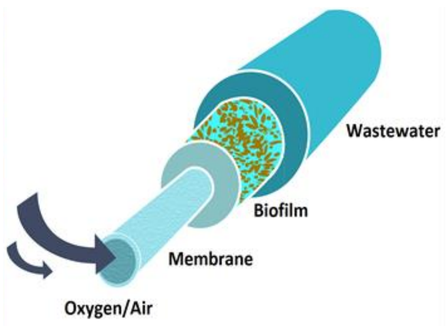
Petrochemical Industry



Steam

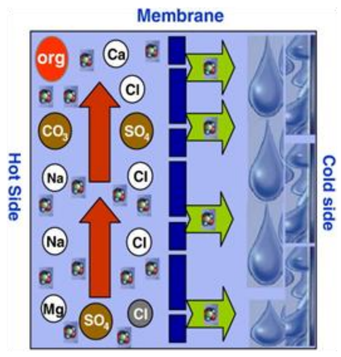
Boiler

WWTP



OxyMem Membrane Aerated Bioreactor

and/ or

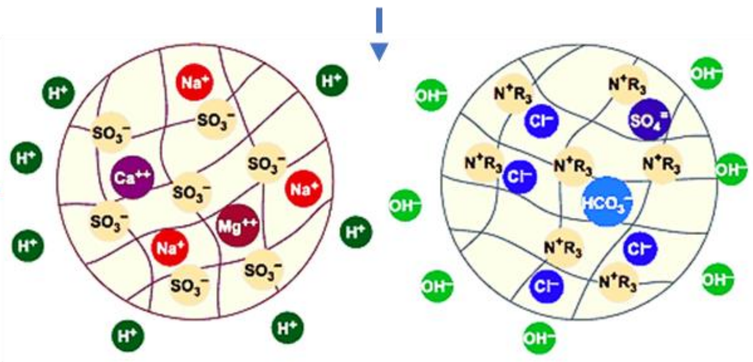


Membrane distillation

"Off-spec" non - heavily polluted condensate streams

- ✓ **Ultra filtration**
- ✓ **Granular activated carbon**
- ✓ **Coagulation - Flocculation**

Boiler Feed Water (BFW)



Condensate Polishing Unit (CPU) = IEX

Boiler Feed Water (BFW)