Membrane Separation

A modern separation process

Membrane separation processes have risen from a niche process to a worldwide growth market in the last couple of years (2016: 7 billion EUR). In the process industry membranes are successfully used for water production and wastewater treatment. New applications are the recovery of homogeneous catalysts, yield increase in balance reactions and overcoming azeotropic limitations in hybrid processes. Even "exotic" processes like electro dialysis are now gradually accepted in the process industry.

For the successful development and evaluation of membrane processes a multiplicity of influencing factors have to be considered. We offer methodical experimental and theoretical solutions fitting your separation task. Our experts help in designing your process as well as in the realization. Leverage the potential of membrane processes by utilizing the SIEMENS experience on lab scale, pilot scale and process level system from pressure driven membrane processes (reverse osmosis, (organophilic) nanofiltration and ultrafiltration) via vapor permeation to electro dialysis. We apply the latest enhancements of membranes and techniques resulting in increased productivity.

Examples are the development of organophilic ceramic membranes, true nanofiltration (200 Da) with ceramic and polymeric membranes, modern CO_2 separation membranes and energy recovery using pressure exchangers.

Project examples

- Diafiltration of protein solutions
- Micro-/ultrafiltration of fermentation broths
- Ultra filtration of hirudine
- Glycolic acid desalination for cosmetic industry
- Waste water treatment
- Desalination of APIs
- Solvent dewatering
- Solvent recovery using vapor permeation instead of distillation columns - ROI achieved in 3.5 years (see fig. process scheme)

Interested? Contact us!
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Your Benefit

- Low operating costs
- purely physical separation
- low primary energy consumption
- Simple combination with other separation techniques
- Modular structure

Our range of services

- Development / optimization of membrane processes
- Proof of Principle trials including membrane screening and membrane selection
- Process development using mobile lab and pilot scaled plants (also under GMP)
- Process simulation and cost calculation
- Basic Engineering
- Start up
- On-site troubleshooting

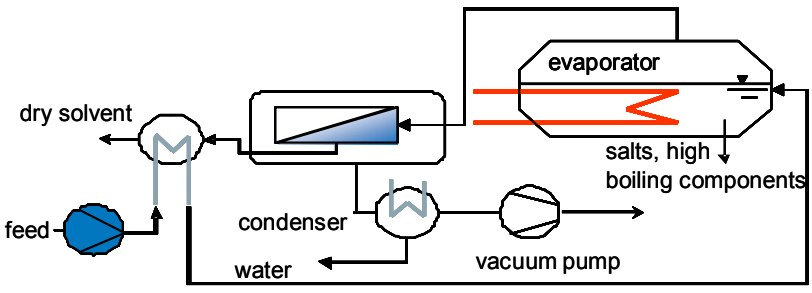

fig.: Solvent dewatering by vapor permeation