

Water is a precious commodity!



OSMO Membrane Systems, a highly specialised company of the GAW Group, develops and implements high-quality industrial membrane separation systems for a wide range of process applications. The focus here is on tailor-made special systems, ultra-filtration, nano-filtration and reverse osmosis systems as well as solutions for water and process water treatment.

Text: Peter Hubert

Photo: OSMO

Regulatory requirements, increasing demands on efficiency and increasing competitive pressure in international markets place high demands on the operators of existing water treatment plants. OSMO Membrane Systems GmbH has been developing innovative and cost-effective water treatment systems and optimising existing systems for many years. The most important thing here is to minimise investment and operating costs without neglecting the requirement for high system availability. For existing systems in particular, there are a number of starting points for reducing operating costs, e.g. in terms of energy and chemical savings, and significantly increasing the efficiency of the systems.

Optimisation of existing ion exchanger systems

Existing ion exchanger systems can be optimised with regard to production and regeneration processes. This results in a noticeable saving of regeneration chemicals, lower waste water quantities or considerably longer production cycles. In addition, the use of a modern membrane degassing system to remove CO₂ upstream of the anion exchanger can help to improve deionised water quality. The metrological inspection of the entire system often offers considerable potential with regard to the protection of downstream systems. The use of state-of-the-art detection methods for quality parameters (conductivity) and trace substances (silicic acid) extends the desalination intervals of boiler systems or, for example, protects

Future technologies that improve the "Energetic Footprint"

OSMO and GAW technologies, two excellent synergy partners

More than 30 years Experience

downstream turbines from deposits. Prevention is the key to safe and efficient systems operation, because the costs resulting from production downtimes or damaged systems components are much higher.

Use of alternative raw waters (e.g. surface water) is replaced by an upstream ultra-filtration

In many cases, a reassessment of available raw water sources offers new approaches, in particular to changes in procurement costs, restrictions on discharges or changing water quality (e.g. organic). Modernisation of existing systems makes sense, especially for larger process streams. The treatment of river water using ultra-filtration and reverse osmosis can make a significant contribution to increasing efficiency and conserving natural water resources. The best example of this is the upstream installation of ultra-filtration and reverse osmosis systems in front of existing ion exchanger systems. OSMO Membrane Systems GmbH has developed concepts for this together with well-known industrial customers, in which the use of precious drinking or well water can be completely dispensed with in the future. In addition, the upstream membrane system provides a consistently high quality for the existing ion exchangers, independent of raw water fluctuations. This has enabled the operating cycles to be extended, chemicals to be saved and the availability of the system to be increased.

Optimisation of existing reverse osmosis systems

A process-technical examination of existing reverse osmosis systems often offers great optimisation potential. Many existing systems can be operated much more efficiently in terms of energy consumption, operating costs and membrane service life if they are brought up to the state of the art. By using frequency-controlled high-pressure pumps, the energy requirement of reverse osmosis systems can be reduced by up to 30%. The installed membrane area has an equally large influence. Some customers operate the systems at or above the designed performance limit. This has a negative effect on the service life of the diaphragm. Modern systems can generally be controlled in the range of 70% to 100% of the generation capacity. This is necessary due to unsteady and fluctuating consumption values of process water in many branches of industry in order to be economical and competitive.

Many reverse osmosis systems are still fed with city water today. The prices for this have risen noticeably in recent years. The OSMO Factor X system offers an optimal and sustainable treatment concept for this purpose. In this process, the waste water stream produced by reverse osmosis is further processed, which makes it possible to halve the waste water stream. This not only reduces the amount of waste water, but also saves costly city water.

Summary

The potential for cost savings and the possible increase in availability through optimisation of existing systems can be determined transparently and reliably. In most cases, a large savings potential can be achieved with little effort and a renewed process engineering evaluation. OSMO incorporates existing and proven process technology such as ion exchangers or gravel filtration into the overall concept in order to create the best economic conditions. The amortisation period of such op-



timisations is usually between 6 and 24 months. This illustrates once again that the optimisation is not only technically sensible, but also economically justifiable. Our task at OSMO as one of the leading systems constructors in the field of process water treatment is now to advise and support companies in the implementation of such efficient and ecologically and economically sensible optimisation measures.



OSMOs Laboratory system for membrane experiments.

We are pleased to present Auto MemCell, the latest addition to our OSMO laboratory system family.

Text: Peter Hubert

Photo: OSMO

As part of the OSMO laboratory system family, the Auto MemCell was developed to perform manual and automated laboratory tests and support their research and development work. For membrane manufacturers and institutes, the MEMCELL product family can be adapted with cells in parallel or in series so that, for example, different membranes can be tested simultaneously. The system is suitable for membrane screening, cleaning tests, laboratory tests and quality management. All common flat membranes can be used, optionally also other membrane types.

Technical data:

- Operating pressure up to 64 bar (standard), 80–100 bar on request
- Material stainless steel (standard 1.4571), other materials on request
- Capacity of feed tank: 0.5–2 Litre
- Cooling or heating, e.g. by double-walled tank design
- Active membrane surface: 80 cm²
- Option: Application of other membrane types

