

RO-Recycle® / MemPhos®

Application

By means of the newly developed RO-Recycle® process it is possible to improve the quality of the effluent of biological water purification systems to fresh water for boiler feed or cooling towers or to process water. This RO (reversed osmosis) technology is capable of processing up to 70 % of the total effluent and generate these water qualities. Current state of the art RO systems are capable of phosphate removal such that chemical de-phosphatization steps can be skipped after biological water purification.

In order to obtain the above yields a special pre-treatment is combined with periodical membrane disinfection and a cleaning regime with standard chemicals. This discipline reduces the cleaning frequency to < 10 x per year and minimizes the operational costs.

This process is called : RO-Recycle®.

The remaining 30% of the effluent consists of the more concentrated brine. Before discharging this fraction a significant part of the salts must be removed. For this purpose a pellet reactor has been developed which allows the removal > 80% of the brine phosphate and reduces the content of calcium, magnesium, potassium and sulphate as well. This is achieved by only raising the pH.

These salts are precipitated and harvested in the form of pellets, which after a short draining have a dry weight of > 90%. The chemical composition of the pellets represents a perfect mix of agricultural nutrients.

This proces is called : MemPhos®.

Process

The effluent of every biological water purification system can be treated using the RO-Recycle® process. After this step more than 70% of the effluent can be reused as boiler feed and/or process water. The effluent grade equals the quality requirments for drinking water.

The cost for drinking water at many locations exceeds the costs for production of water using the RO-Recycle® process.

The MemPhos® system facilitates the desalination of water with high salt concentrations, meanwhile reducing the phosphate levels with > 80%. In combination with the pellet reactor high quality fertiliser pellets are produced. The simple design guarantees minimal investment costs for the MemPhos® reactor. In addition operational costs are low as a consequence of minimal alkali consumption.

The MemPhos® can be used for desalination of RO brines, but also for the removal of salts from a variety of waste waters (e.g. landfill percolates).



*Pellets produced with MemPhos® pellet reactor
EN-2015*