

AUSTRIA AND SWITZERLAND

Status and development of MBR-technology

Currently, there are only a small number of applications of membrane bioreactor technology in Austria and Switzerland. Only two full scale applications using the submerged membrane technology exist. The limitation lies mainly on the fact that there are abundant water reserves of high quality for both countries and the receiving streams are generally quite efficient. Despite these factors, there are still areas in which MBRs can offer advantages over conventional systems. In particular, the high purification performance as well the small basin volumes and reduced space requirements open a wide range of opportunities in the future.

According to the Austrian and Swiss regulations, wastewater has to be treated in compliance with the 'State of the art'. In Austria, the 'State of the Art' is defined by several emission ordinances (Emissionsverordnungen), which embody detailed descriptions of the effluent quality for different sectors. It contains exact specifications concerning the parameters which have to be followed. The selection of the wastewater treatment procedure itself is left to the respective applicant. At present, there are no financial incentives for improving the quality beyond the set limits. Only in special cases, e.g. small receiving streams, more stringent standards are required by the authorities. In Switzerland, legislative requirements are similar. The regulatory limits are described in the water protection ordinance (Gewässerschutzverordnung), although less

detailed than that of Austria. Limit values of parameters not enumerated in the ordinance are determined using a corresponding 'State of the art' technology, which is described in several recommendations and directions by the Swiss' Ministry of Environment, Forestry and Agriculture (BUWAL). In particular, the authorities can impose more stringent standards if the 'State of the art' facilitates this.

At present, there is a limited number of applications using MBR process in both countries. In Austria, MBR technology is only used for the treatment of industrial wastewater and landfill leachate. Since 1994, only a few plants have been built to treat landfill leachate using external cross flow filtration systems. The biggest plant of this type is in Halbenrain, Styria, with a



Säntis mountain station

bioreactor volume of 390 m³ and ceramic cross flow membranes having a total surface area of 40 m². It has been designed to treat 100 m³/d at concentrations of 25.000 mg COD/l and 4.000 mgNH₄-N/l. On the other hand, there is only one full scale plant which uses submerged membranes. The Austrian pharmaceutical company, Biochemie Kundl, has been using this type of plant to treat its wastewater since the end of year 2000. The MBR is a partial extension of the existing conventional system and treats 15 to 20% of the total flow and has been designed based on laboratory assessments over a period of five years. The total volume of the wastewater plant is 1,460 m³ with a treatment capacity of 1350 m³/d. The filtration modules are located in two separate basins, each with a total volume of 130 m³. Two different types of submerged membranes have been installed due to the fact that preliminary investigations did not show a clear advantage for one of the tested

Wastewater treatment plant at Säntis.



