MBR TYPE ACTIVATED SLUDGE PLANTS

This type of plants is recommended for treating residential and industrial waste water containing sludge which is hard to settle, or in situations implying high sludge concentration within the oxidation chamber.
In such systems, based on the active sludge treatment process, membranes replace the secondary sedimentation stage.
Thanks to this technique, which successfully separates suspended material from outgoing purified water, it is possible to maintain sludge content in the oxidation tank higher than in standard active sludge systems, allowing for a reduction in the volume to be treated.
However, it must be pointed out that the use of membranes does not imply an increase in the treatment system yield (except for the suspended solids parameter), as such standard is exclusively connected to the degree of efficiency of the biological process that takes place in the oxidation tank.

MBR plant - Process description

The treatment process includes the following stages:
PRIMARY DECANTATION in an Imhoff tank, to retain floating material and any settleable solids and obtain a partially clarified effluent with pollutant load cut down by approx. 30% in residential waste water, and by a variable percentage in industrial waste water according to type.
EQUALIZATION, for industrial waste only. As production processes generally vary, and waste water type changes throughout a day/week, an adequate collection volume must be guaranteed in order to achieve the highest degree of homogeneity possible in oxidation tank incoming effluent.
BIOLOGICAL OXIDATION Sewage comes in contact with aerobic microorganisms (active sludge), which, in the presence of the oxygen provided by the submerged aerators in the tank, degrade organic matter producing waste water compliant with the threshold limit values set forth by law. Sludge concentration value in the tank usually corresponds to approx 12 kg S.S./ sq m.
MEMBRANE FILTRATION The innovative feature that makes this system different from standard biological plants. Gravimetric sedimentation no longer applies in this case; in fact, waste water flows through specific membranes able to retain sludge and exclusively release clear treated water.

The strong point of the system is the absence of sludge leakage, hence the suspended solids content is always kept to the minimum in the effluent.

Running and maintenance

Probably the only weak point of the system. The membranes require consistent maintenance, manual or automatic, which is certainly more expensive than in traditional active sludge plants. In addition, the treatment of surplus sludge adds up to the economy and to the running costs in large plants.

Products and technical features

Plant size varies according to specific requirements. Oxidation tank size is calculated according to the degree of sludge concentration to be maintained in the same. Membrane type and size are selected to suit type of waste water.