

Industrial wastewater treatment with HUBER Membrane Bioreactor at GZM Extraktionswerk AG, Lyss, Switzerland

GZM Extraktionswerk AG is one of the biggest slaughtering by-products processing companies in Switzerland with 120,000 tons slaughtering waste and animal carcass per year being processed to meat-and-bone meal and animal grease. The 600-700 m³ heavily polluted production wastewater is pre-treated in the company's own treatment plant and has until recently been discharged to the local municipal sewage treatment plant. But as the high nitrogen and suspended material loads repeatedly caused problems and enormous costs, they decided to install their own industrial wastewater treatment plant.

After a tough competition and intensive technical and economic valuation the Picatech-HUBER AG in Kriens, Switzerland received at the end of 2005 the order for two turnkey ready membrane filtration plants VRM® 20/300 including fully automatic electrical control

Half a year later the installation of the concrete tanks was completed so that the membrane units and mechanical

equipment could be installed. The tanks were then filled with clean water and the plant tested for leakage and perfect electrical function.

For plant start-up excess sludge from the WWTP Lyss was filled into the aeration tanks, which were aerated intermittently and fed with wastewater. After only one week the elimination rates exceeded by far the expected values and the effluent values were far below the required standards. More than 99 % of the nitrogen is eliminated.

The clarified wastewater meets the high EU standards for bathing waters and is reused as service water in the production process and on the wastewater treatment plant or discharged into the river Alte Aare.

The energy demand of the VRM® membrane filtration plant is only one third of the energy demand for wastewater aeration, which is significantly less than that of other membrane plants.



VRM® Membrane Filtration Plant

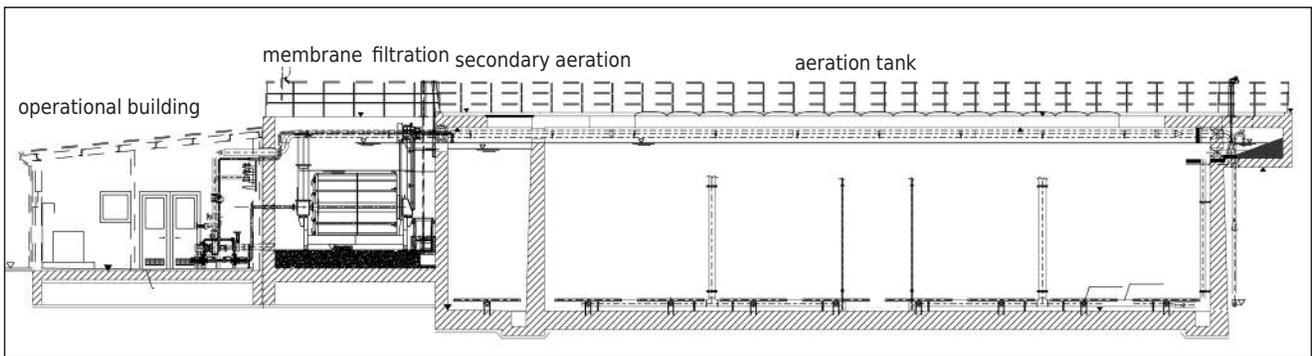
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Leak control for VRM® bearing



Membrane filtration chamber prior to start-up



Schematic diagram of the Membrane Bioreactor

Parameter	Raw Wastewater	Permeate	Elimination
COD	5.000 mg/l	48 mg/l	99.0 %
BOD ₅	3.400 mg/l	4 mg/l	99.9 %
NH ₄ -N	800 mg/l	0,2 mg/l	99.9 %
N _{tot}	940 mg/l	8 mg/l	99.1 %
Suspended Solids	220 mg/l	0 mg/l	100 %