

# BIO-CEL<sup>®</sup> MBR-Modules

Part of a Comprehensive  
Wastewater Treatment Process



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**MICRODYN  
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ADVANCED SEPARATION TECHNOLOGIES

# BIO-CEL® MBR-Systems

## Part of a Comprehensive Wastewater Treatment Process

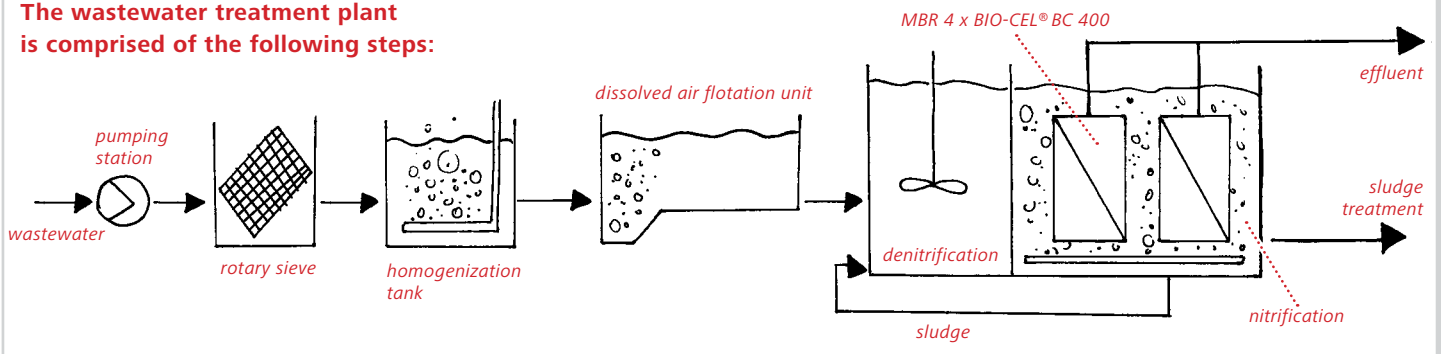
A wastewater treatment plant equipped with 4 BIO-CEL® BC 400 modules has been in operation at a chicken slaughterhouse in Romania since 2009. The 4 modules have a combined membrane area of 1,600 m<sup>2</sup>.

The modules are installed in two separate polyethylene tanks which allows for concurrent cleaning of two modules while the other two are in operation. A scheduled maintenance cleaning is conducted once a month as well as one intensive cleaning per year. The membranes are operated at a continuous flow of 19 l/m<sup>2</sup>h. The performance of the plant has been steady ever since the start-up even with water temperatures as low as 10°C.



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### The wastewater treatment plant is comprised of the following steps:



Industrial wastewater treatment plants often have to treat very complex wastewater to an extent that allows for subsequent use of the treated water as process water or for discharging it to the sewer.

The wastewater of the above mentioned plant is very complex. By applying BIO-CEL® modules in a membrane bio reactor as part of a multi-step process, it is possible to undercut the threshold levels regarding the maximum concentration of contaminants set forth by the Romanian government. Hence, the operator of the slaughterhouse can discharge the water to the sewer.

## ADVANTAGES

- » physical barrier for the retention of solids and bacteria
- » module design is not susceptible to braiding/sludge deposits
- » back washable with filtrate or with chemicals if required
- » high packing density
- » low energy demand
- » reliable performance
- » self-healing
- » fine-bubble aeration

### Design of the Plant with BIO-CEL® MBR Systems

Total number of BC 400F-C100-UP150 modules installed	4
Total membrane area	1,600 m <sup>2</sup>
Number of filtration tanks	2
Start-up	2009

### Influent Parameters of the MBR Plant

COD	4800 mg/l
BOD <sub>5</sub>	2400 mg/l
Solids	1720 mg/l
Phosphorus	80 mg/l
Total Nitrogen	290 mg/l
pH	6 – 8
Temperature	10 – 30° C

### Effluent Parameters of the MBR Plant

COD	125 mg/l
BOD <sub>5</sub>	25 mg/l
Phosphorus	2 mg/l
Total Nitrogen	15 mg/l