BioCleaner

envi-pur

MEMBRANE WASTE WATER TREATMENT PLANTS

Series of packaged BioCleaner® waste water treatment plants with a membrane bioreactor (BC MBR) use the most advanced technology for treatment of sewage water from family houses, villages, recreation facilities, as well as biologically cleanable industrial waste water.

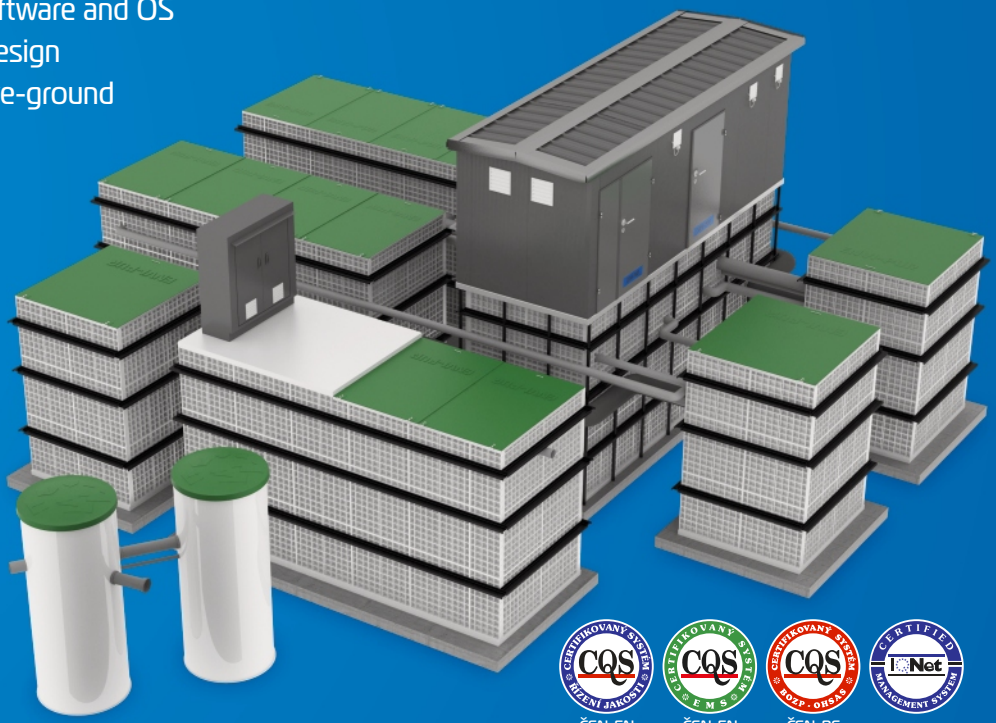
Advantages of the MBR technology

- High efficiency in removing the organic contamination, nitrogen substances, bacteria and viruses from the waste water:
  - Treated water is sanitized and it may be used for watering ornamental green, as well as crops meant for direct consuming
  - Treated water may be reused as service water (e.g. for flushing toilets)
  - Treated water may be used for drainage into the underground waters (seepage)
- Lower spatial demands as opposed to the conventional technology

EP-UF membrane module

Layout advantages of BioCleaner® MBR

- Modular layout Plug & Operate
- Simple capacity increase by adding membrane modules or containers
- Non-demanding building preparedness and transport
- Specially developed software and OS
- High-quality material design
- Underground and above-ground mounting



MODULAR DESIGN

HIGH EFFICIENCY

EASY CLEANING

NON-DEMANDING SERVICE

ČSN EN ISO 9001

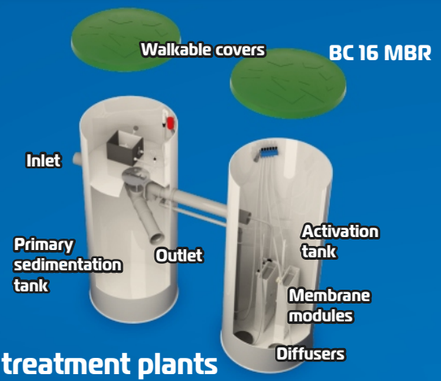
ČSN EN ISO 14001

ČSN BS OHSAS 18001

BC 6 – 30 MBR

The BC 6 – 30 MBR series consists of two cylindrical tanks, with the first one serving the function of a primary sedimentation and sludge depositing, and the second one being the aerobic activation tank with an inserted membrane module.

optional PAX



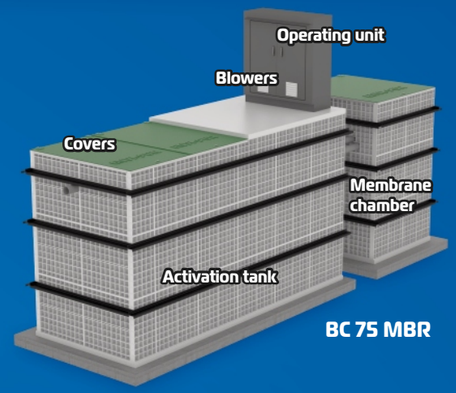
Parameters of the BC 6 – 30 MBR BioCleaner® treatment plants

Type	Capacity [PE]	$Q_{d\,max}$* [m³/day]	Load BOD_5 [g/day]	Number of tanks [pcs]	Tank diameter [m]	Tank height [m]
BC 6 MBR	6	1.4	360	2	1.4	2.06
BC 8 MBR	8	1.8	480	2	1.4	2.06
BC 12 MBR	12	2.7	720	2	1.7	2.36
BC 16 MBR	16	3.6	960	2	1.8	2.51
BC 20 MBR	20	4.5	1 200	2	2.0	2.71
BC 30 MBR	30	6.8	1 800	2	2.3	2.81

BC 50 – 150 MBR

The technology of the BC 50 – 150 MBR series is situated in two rectangular containers. The first container is divided via a partition into a sedimentation tank (mechanical pre-treatment) and aerobic activation tank. The second tank serves the purpose of a separated membrane chamber with inserted modules.

optional CEB PAX



Parameters of the BC 50 – 150 MBR BioCleaner® treatment plants

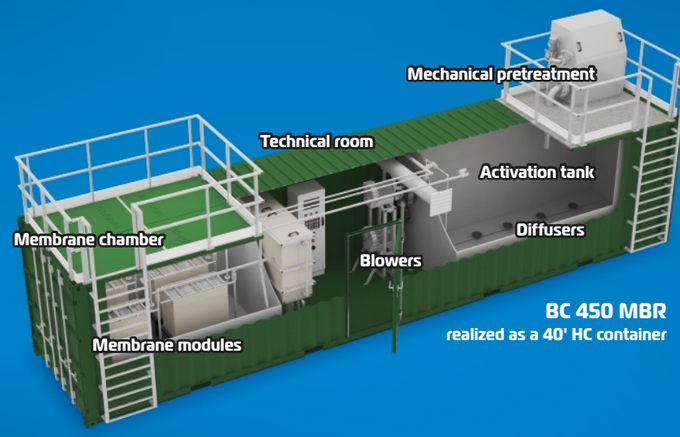
Type	Capacity [PE]	$Q_{d\,max}$* [m³/day]	Load BOD_5 [kg/day]	Nr. of tanks [pcs]	Weight** [kg]	Tank dimensions L×W×H [m]	Membrane chamber L×W×H [m]
BC 50 MBR	50	11.3	3	2	3 300	4.5×2.2×2.9	1.8×2.2×2.0
BC 75 MBR	75	16.9	4.5	2	3 550	5.5×2.2×2.9	1.8×2.2×2.9
BC 100 MBR	100	22.5	6	3	4 650	3.5×2.2×2.9 (×2)	1.8×2.2×2.9
BC 150 MBR	150	33.8	9	3	5 450	4.6×2.2×2.9 (×2)	1.8×2.2×2.9

BC 200 – 1100 MBR

The technology of the BC 200 – 1 100 MBR series is situated in rectangular containers. Automatic rotary screens are used for mechanical pretreatment, onto which the waste water has to be pumped. The number of the activation containers depends on the size of the treatment plant. The membrane chamber is a separated tank with inserted membrane modules. Standard material design is in plastic, with optional concrete or steel designs. 20' and 40' steel containers are designed for above-ground mounting.

includes

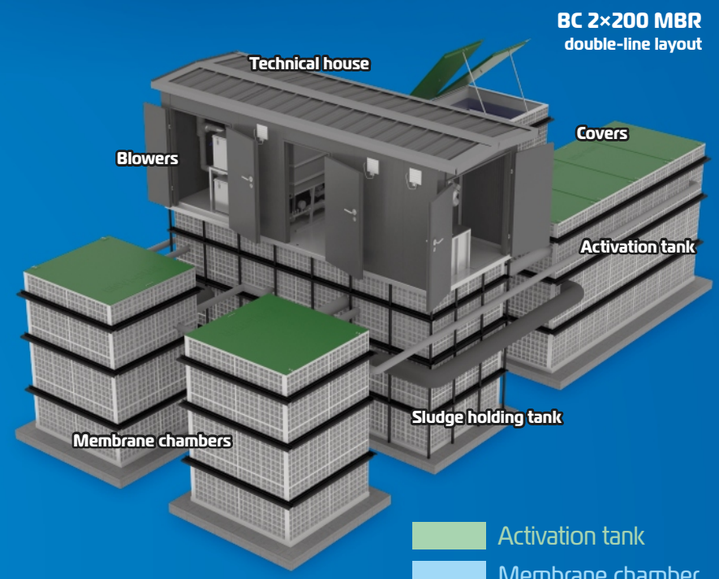
optional CEB PAX

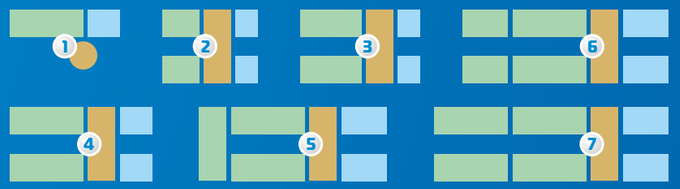


Parameters of the BC 200 – 1 100 MBR BioCleaner® treatment plants

Type Single line / double line	Capacity [PE]	$Q_{d\,max}$* [m³/day]	Load BOD_5 [kg/day]	Number of tanks [pcs]	Total weight** [kg]	Activation tank L×W×H [m]	Membrane chamber L×W×H [m]	Sludge holding tank L×W×H [m]	Technical house L×W×H [m]	
BC 200 MBR	200	45.0	12.0	3	7 400	6.0×2.2×2.9	2.6×2.2×2.9	Ø2.3×3.4	3.8×2.4×2.6	1
BC 2×100 MBR	200	45.0	12.0	5	11 300	3.0×2.2×2.9 (×2)	1.8×2.2×2.9 (×2)	6.0×2.2×2.9	6.2×2.4×2.6	2
BC 300 MBR	300	67.5	18.0	3	7 500	6.0×2.2×2.9	2.6×2.2×2.9	Ø2.3×3.4	3.8×2.4×2.6	1
BC 2×150 MBR	300	67.5	18.0	5	11 450	3.0×2.2×2.9 (×2)	1.8×2.2×2.9 (×2)	6.0×2.2×2.9	6.2×2.4×2.6	2
BC 400 MBR	400	90.0	24.0	5	12 600	5.0×2.2×2.9 (×2)	1.8×2.2×2.9 (×2)	6.0×2.2×2.9	6.2×2.4×2.6	3
BC 2×200 MBR	400	90.0	24.0	5	13 250	5.0×2.2×2.9 (×2)	1.8×2.2×2.9 (×2)	6.0×2.2×2.9	6.2×2.4×2.6	3
BC 600 MBR	600	135.0	36.0	5	13 700	6.0×2.2×2.9 (×2)	2.6×2.2×2.9 (×2)	6.0×2.2×2.9	6.2×2.4×2.6	4
BC 2×300 MBR	600	135.0	36.0	5	14 600	6.0×2.2×2.9 (×2)	2.6×2.2×2.9 (×2)	6.0×2.2×2.9	6.2×2.4×2.6	4
BC 900 MBR	900	202.5	54.0	6	16 700	6.0×2.2×2.9 (×3)	3.7×2.2×2.9 (×2)	6.0×2.2×2.9	6.2×2.4×2.6	5
BC 2×450 MBR	900	202.5	54.0	7	18 500	(6.0+3.7)×2.2×2.9 (×2)	3.7×2.2×2.9 (×2)	6.0×2.2×2.9	6.2×2.4×2.6	6
BC 1 100 MBR	1 100	231.0	66.0	7	19 400	6.0×2.2×2.9 (×4)	3.7×2.2×2.9 (×2)	6.0×2.2×2.9	6.2×2.4×2.6	7
BC 2×550 MBR	1 100	231.0	66.0	7	20 000	6.0×2.2×2.9 (×4)	3.7×2.2×2.9 (×2)	6.0×2.2×2.9	6.2×2.4×2.6	7

* Maximum daily water production is estimated at 225 L/person/day. ** Approximate values, may vary depending on the equipment and arrangement.





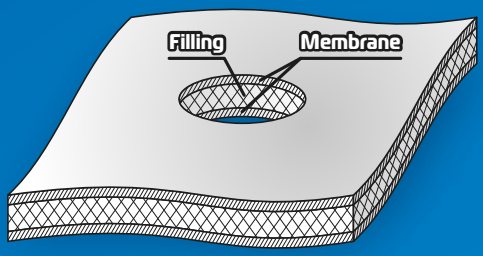
Key:

included equipment · optional equipment · sludge holding tank · automatic rot. screen · technical house · chemical backwash (CEB) · phosphorus coagulation (PAX) · double-line layout

Constructional advantages of the EP-UF memb. module

- Sandwich layout combines the advantages of the capillary and desk modules
- Full-scape lamination of the membranes allows for:
  - full-featured backwash
    - » prolonging the regenerating interval of the membranes
    - » longer life of the membranes
  - automatic closing-up of the membrane upon a mechanical damage
- High surface density of the thin self-supporting plates
- Low pressure losses
- Unique frameless construction of the EP-UF module eliminates the silting and sludge depositing in the corners
- Simple cleaning
- Non-demanding operation

Membrane modules installation



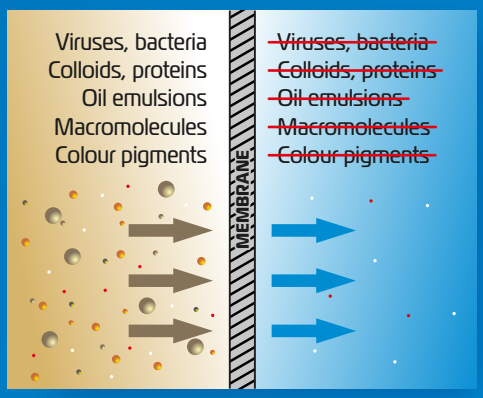
Membrane structure in detail

EP-UF membrane qualities

- Made of a stable hydrophilic polyethersulfone (PES)
- Plate membrane
- Pore size is 0.04 μm

Parameters of the treated waste water

Parameter		BC MBR
BOD_5	[mg/L]	< 10
COD_{Cr}	[mg/L]	< 50
SS	[mg/L]	< 1
Turbidity	[NTU]	< 1
E-Coli (bacteria)	[KTJ/100mL]	0
Viruses (degree of removal)		99.99 %

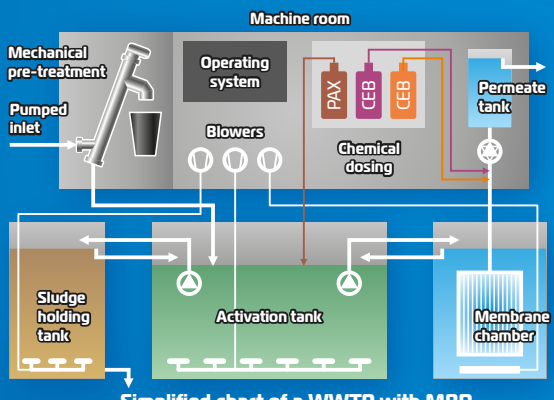


Summary of the filtered particles

Cleaning of the membranes

Number of PE	6 – 30	50 – 150	200+
Air cleaning	●	●	●
Backwash		○	●
Chemical backwash (CEB)		○	●
Chemical regeneration	●	●	●

● standard equipment ○ optional



Simplified chart of a WWTP with MBR

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ENVI-PUR, s.r.o.
Na Vlčovce 13/4
160 00 Praha 6
Czech Republic

Main office and production
Wilsonova 420
392 01 Soběslav
Czech Republic

+420 381 203 211
info@envi-pur.cz
www.envi-pur.cz