

Likuid Product Technical Data

FILTRATION SYSTEMS FAMILY
LIKUID FILTRATION SYSTEM

MBR systems are characterized by the high quality of the treated water, which fits the requirements for reuse in many cases. Furthermore, the existence of a physical barrier as the membrane, avoids the escape of solids from the biological reactor and the wash out of the biomass. As a result, the efficiency of the process is increased due to the higher biomass concentration and the footprint is reduced significantly. MBR filtration systems can be placed inside the bioreactor, in submerged configuration, although the more extended option

in industrial wastewaters and small/medium size installations is the external configuration. When the membranes are placed outside the reactor, the operation and maintenance is simplified, and the MBR system can be operated with higher flows in a more stable operation, higher biomass concentration and considerably lower bioreactor volumes. In consequence we obtain a more compact, robust and easy to operate installations. The potential of Likuid filtration systems designed for MBR is highlighted when dealing with high-loaded wastewater, industrial waters and small-medium flows.

Likuid-CBR® filtration system



LIKUID-CBR® FILTRATION SYSTEM

The system is fully equipped and assembled on a frame. It can be easily modularized and includes the option of electric panel and PLC.

Description

Filtration system for small industrial MBRs up to 500m³/d. Robust filtration based on ceramic membranes and ready to be coupled to the biological reactor.

Likuid-CBR® system can be supplied complete and automated or in separate parts, with 3 possibilities of supplying: cartridges, module or full system. All of them, with Likuid's warranty seal.

Likuid-CBR® filtration system

In which cases is especially interesting to design the membrane bioreactor with Likuid-CBR® series?

Likuid-CBR® filtration system has been conceived for small MBRs up to 500m³/d, that treat industrial wastewater, compact depuration systems, decentralized wastewater treatment plants and any depuration system in which it is important to achieve high quality treated water in robust treatment systems, with minimum operation and maintenance requirements, small footprint and high depuration efficiency.

Highly hydrophilic ceramic membranes of CBR® series provide high stable fluxes, minimizing the fouling phenomena, as well as being regenerated with a wide range of cleaning reagents and chemical cleaning conditions.

The membranes are accessible and placed outside the reactor, which simplifies any maintenance or control operation.

As a result, the system is ideal for chemical, pharmaceutical, paper, petrochemical and high-load agro-food industries, leachates, small systems for domestic wastewater, compact depuration systems, touristic resorts, etc.

General technical characteristics of Likuid-CBR® series:

Membrane material	Al ₂ O ₃ /TiO ₂ / ZrO ₂ highly hydrophilic
Frame type	Stainless steel cartridge
Filtration type	Tangential / Cross-flow
System location	Outside the biological reactor
Backwash requirement	NO
Chemical cleaning requirement	YES
Chemical cleaning periodicity	3 - 8 /year
Total duration of chemical cleaning	2 - 8 h
Temperature resistance range	Up to 90°C
pH resistance range	0 - 14
Maximum pressure	1 - 2 bar
Nominal energy consumption	2,5 - 3,5 kWh/m ³
Membrane warranty ^[1]	0 - 10 years

^[1] Depending on the warranty terms and conditions signed in the contract.

Advantages of the MBR process using Likuid-CBR® filtration system:

MBR process presents countless advantages compared to the conventional technologies, but in addition, most of them are reinforced when Likuid-CBR® series is used:

- 1 Optimum quality of treated water:** ceramic membrane presents the maximum reliability in pore size distribution and allows to obtain disinfected water, free of SS and turbidity, suitable for reuse or tertiary treatment as RO.
- 2 Compactness:** minimum footprint is required, since CBR® series ceramic membranes are able to operate with high SS concentrations in the biological reactor (up to 25g/L), allowing a compact and robust design of the bioreactor.
- 3 Minimum maintenance:** it is a robust system, able to operate in a wide range of SS concentrations, which handles organic load and contaminant peaks, due to the easy recovery with a wide range of reagents and chemical cleaning conditions, even with steam.
- 4 Minimum biological sludge production:** due to the low F/M ratio, as well as the small size of floccules that are generated, the endogenous growth is accelerated and the biological sludge production rate (kgTS/kgCOD) can be the lowest in the market, even reaching the zero sludge production in certain conditions.
- 5 High efficiency and high loading rate:** due to the efficiency and to the high concentration of active biomass, the system can operate with high volumetric loads (up to 10 kgCOD/m³day). Moreover, the biomass retention inside the bioreactor and the associated high SRTs, allow the growth of highly specialized biomass able to assimilate complex substrates and remove substances that are considered non biodegradable in the conventional systems.

Available products:

Product	CBR-10	CBR-40	CBR-100	CBR-200	CBR-500
Maximum flow m ³ /d	10	40	100	200	500
CBR cartridge type	L7	L19	L37	L61	L61
Maximum N° cartridge	4	6	8	8	20
Maximum filtration area m ²	7	36	73	120	300
Maximum dimensions					
Width (mm)	900	1.200	1.600	1.800	2.100
Length (mm)	1.400	3.100	3.800	6.500	10.000
Height (mm)	1.800	2.100	2.100	2.400	2.700
Maximum weight aprox. (kg)	380	1.800	2.500	3.300	5.500