

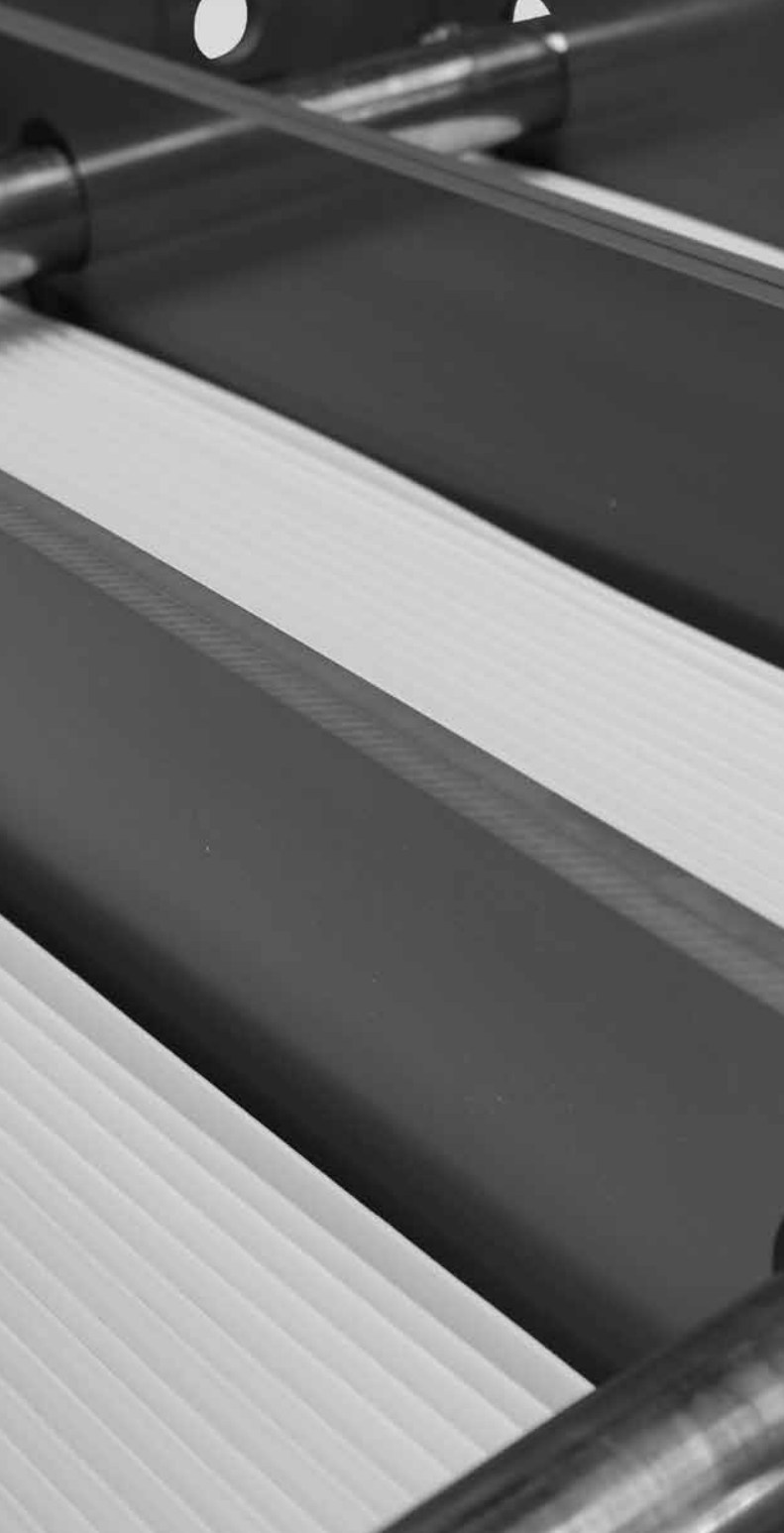
BIO-CEL®

Submerged MBR Modules
for Biological Waste Water Treatment



**MICRODYN
NADIR**

ADVANCED SEPARATION TECHNOLOGIES



BIO-CEL®

Submerged MBR Modules

Tighter discharge regulations, urbanization and the increase in water recycling have made Membrane Biological Reactors (MBR) the leading innovation in waste water treatment through conventional activated sludge. Traditionally, activated sludge treatment relies upon solids settling in a secondary clarifier to separate the biomass from the treated waste water. This process has the disadvantages of running at a lower MLSS, thus requiring more space and producing lower quality effluent. With MBR technology, the clarifier is replaced by a physical barrier – our BIO-CEL® membrane module. This physical barrier enables the MBR to operate at higher MLSS levels, thereby requiring a smaller overall footprint. The BIO-CEL® membrane separates within the ultrafiltration spectrum, producing high capacities of quality effluent at consistent flows. Efficiency, reliability and cost effectiveness, as well as long term viability, are just some of the characteristics of the BIO-CEL® module. The solids free effluent is suitable for recycling applications such as irrigation or feeds for process water. BIO-CEL® combines the benefits of traditional hollow fiber and plate and frame configurations without any of their inherent disadvantages. The self-supporting membrane sheet is just 2 mm thick, resulting in an extremely high packing density and very low specific energy consumption.

The BIO-CEL® configuration centers on flat sheet technology, with directional flow eliminating clogging and reducing downtime. The modules open top and bottom channels reliably prevent the deposition of sludge and fiber accumulation during the continuous cross-flow operating process. The self-supporting structure of the membrane module enables frame-free installation, thus eliminating blockages around the external boundaries of each component.

The membrane module is configured to allow for consistent permeate flow and a highly effective back flush over the entire membrane surface. In summary, the BIO-CEL® offers high packing density with optimal purification.

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

Technical Data for BIO-CEL® Membrane Modules Module sizes

Module	Membrane Surface
BIO-CEL® BC10-10 ¹⁾	10 m ²
BIO-CEL® BC50F-C25-UP150	50 m ²
BIO-CEL® BC100F-C25-UP150	100 m ²
BIO-CEL® BC400F-C100-UP150	400 m ²

Note: (1) Available only for piloting

Membrane Material

Polymer	MWCO	Pore Size	Support Layer	Drainage	Chlorine Resistance
Polyethersulfone (PES)	150 kDa	0.04 µm	Polyester	Polyester	100 000 ppmh

Module and Operating Data

Parameters	BC10-10 ¹⁾	BC50F-C25-UP150	BC100F-C25-UP150	BC400F-C100-UP150
Membrane surface	10 m ²	50 m ²	100 m ²	400 m ²
Frame material	PVC	PE	PE	PE
Cassette material	-	PVC	PVC	PVC
Dimensions [mm]	256 x 350 x 1230	702 x 695 x 1563	702 x 1270 x 1563	1152 x 1298 x 2763
Operating pressure	30 – 400 mbar	30 – 400 mbar	30 – 400 mbar	30 – 400 mbar
Back wash pressure	max. 150 mbar	max. 150 mbar	max. 150 mbar	max. 150 mbar
Max. operating temperature	40 °C	40 °C	40 °C	40 °C
pH-range	2 – 11	2 – 11	2 – 11	2 – 11
Max. air flow rate	6 m ³ /h	30 m ³ /h	60 m ³ /h	140 m ³ /h
Max. content suspended solids	12 g/L	12 g/L	12 g/L	12 g/L

Note: (1) Only for piloting purposes

BIO-CEL® Membrane Module

Decoding of the product code: **BC50F-C25-UP150**

Type	Frame Size	Cassette Size	Membrane Type
BIO-CEL® module	10 m ²	-	Ultrafiltration 150 kDa
	50 m ²	25 m ²	
	100 m ²	25 m ²	
	400 m ²	100 m ²	

Final sizing and selection has to be approved by an official MICRODYN-NADIR representative. Please contact **phone + 49 611 962 6001** or **www.microdyn-nadir.de**

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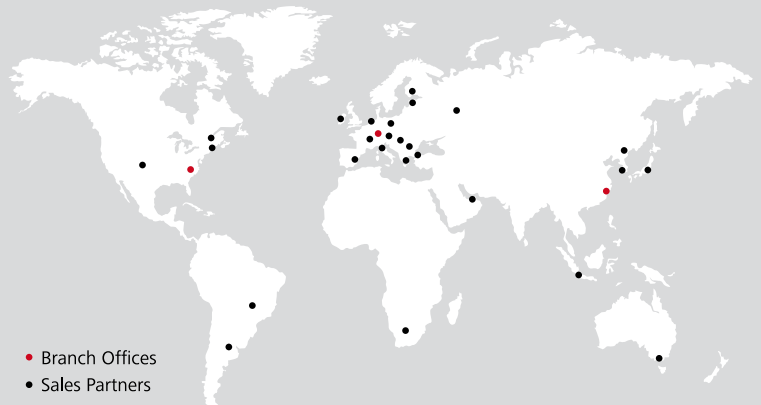
ADVANCED SEPARATION TECHNOLOGIES

SEPARATION – OUR PASSION

For more than 45 years, MICRODYN-NADIR has developed innovative membranes and membrane modules for micro, ultra and nano filtration as well as solutions to support our customers' needs in operations, performance, more efficient membrane processes and regulatory compliance.

We will deliver products, information and services, which fully meet or exceed customer expectations. Our team focuses on continual improvement to achieve the highest possible level of customer satisfaction and to be recognized by our customers as the technology and quality leader.

We are not satisfied until our products have been successfully integrated into your customers' plants and processes, and they are realizing the benefits of our technology. That is our passion. Our quality system is designed to achieve these goals.



WE SUPPORT YOU – WORLDWIDE!

- » Global availability
- » Intensive technical consulting
- » Ideal choice of membranes and modules
- » Support with engineering and plant design
- » Laboratory and pilot tests
- » After Sales Service