



MBBR PACK

Moving Bed Biofilm Reactor Series (MBBR) for carbon and total nitrogen removal

The modular plug and play wastewater treatment solution

WATER TECHNOLOGIES



The stakes

Whether you're a local authority or an industrial company, both of you have to deal quickly and efficiently with rapid increases – or fluctuations – in the volume of wastewater that needs to be treated. Your other major concern is dealing with the carbon and nitrogen pollution that need to be safely eliminated.

There are two ways to address these challenges: you could install a new sewage treatment plant or upgrade your existing units to meet the higher flows and loads and/or to meet stricter standards.

A growing number of our customers are looking for comprehensive, flexible biological treatment options and are finding an effective solution with a plug and play installation. Why? Because these solutions can be quickly delivered, installed and commissioned, helping our customers to reduce their infrastructure and civil engineering costs while ensuring continuity of sanitation services for their communities or industrial production.

Just like our customers you too could be benefiting from reliable, proven, standardized solutions that reduce production, installation and commissioning costs as well as receiving a high-level of service, combining training, maintenance, technical support and operations.

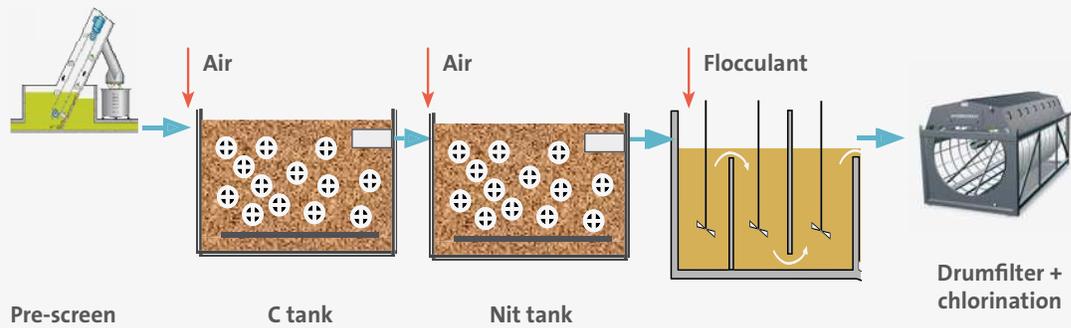
Discover our complete modular solution

Even though these challenges are universal, we also understand that every municipality and industry has unique requirements. To meet your individual needs, at Veolia Water Technologies we have developed MBBR Pack, a modular package solution for treating wastewater.

MBBR Pack provides a flexible solution for

- › Compact industrial facilities
- › Pilot unit
- › Municipal housing development
- › Resorts and hotels
- › Temporary worker camps
- › Remote locations
- › Construction sites
- › Rehabilitation areas
- › Business parks
- › Offshore installations
- › Industry (food and beverage, pharmaceutical)

Standardized wastewater solution Middle East pack: MBBR C Series

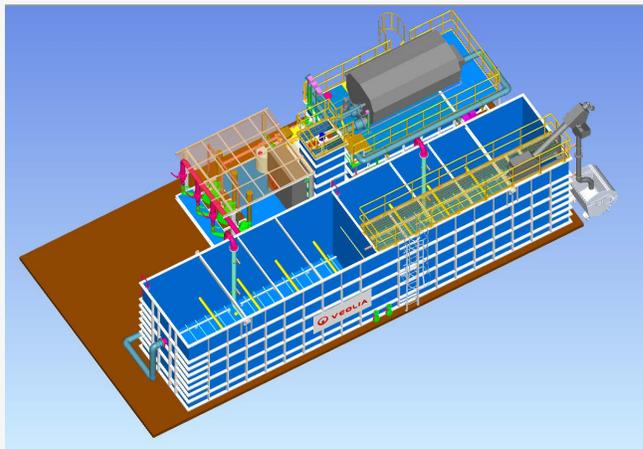


Inlet Data

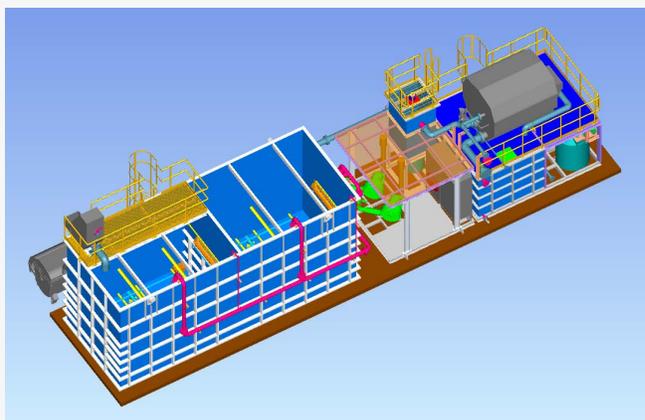
Models	Avg. Flow (m ³ /day)	Max. Flow (m ³ /day)	BOD (kg/day)	COD (kg/day)	TSS (kg/day)	NH4-N (kg/day)	TKN (kg/day)
C-100	100	130	35	74.8	35	4	6
C-250	250	270	87.5	187	87.5	11	15
C-500	500	550	175	374	175	22	30
C-1000	1000	1100	350	748	350	44	60

Performance

Models	Effluent BOD (mg/L)	Effluent COD (mg/L)	Effluent TSS (mg/L)	Effluent NH4- N (mg/L)	Effluent TKN (mg/L)	Temp. (°C)
C-100	≤ 10	≤ 100	≤ 10	≤ 1	≤ 5	22-35
C-250						
C-500						
C-1000						

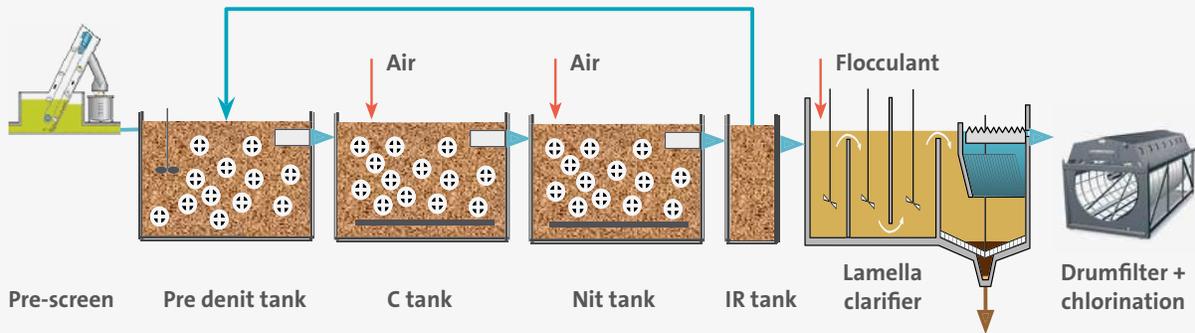


C-1000 = 17.0 x 8.7m



C-500 = 17.0 x 4m

Standardized wastewater solution Middle East pack: MBBR CN Series



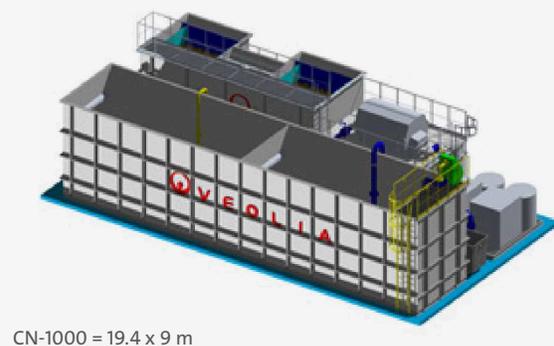
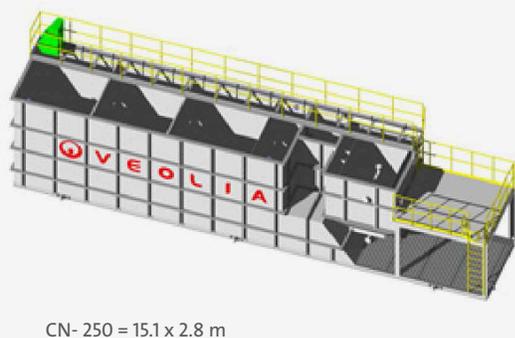
Inlet Data

Models	Avg. Flow (m ³ /day)	Max. Flow (m ³ /day)	BOD (kg/day)	COD (kg/day)	TSS (kg/day)	NH ₄ -N (kg/day)	TKN (kg/day)
CN-100	100	150	30	60	30	4.4	6
CN-250	250	320	75	150	75	11	15
CN-500	500	650	150	300	150	22	30
CN-1000	1000	1250	300	600	300	44	60

Performance

Models	Effluent BOD (mg/L)	Effluent COD (mg/L)	Effluent TSS (mg/L)	Effluent NH ₄ -N (mg/L)	Effluent TKN (mg/L)	Temp. (°C)
CN-100	≤ 10	≤ 50	≤ 10	≤ 5	≤ 10	22-35
CN-250						
CN-500						
CN-1000						

NO₃-N < 10 ppm





You can benefit from multiple bundling possibilities

To solve your challenges and to meet all your quality requirements, MBBR Pack is a comprehensive solution that can be easily combined with other treatment steps, such as pre-treatment (coarse screening, flow equalization), sludge treatment and odour control, without alteration. In addition, MBBR Pack can also be easily retrofitted for large capacity plants with a common control panel, duty/standby arrangement of blowers and pumps.

We can support you with related services

CHEMICAL PROGRAM

Our chemical services provide a complete program for combining chemical products, related equipment and expert service for optimized municipal and industrial water cycle performance. The Hydrex™ 6000 series is a state-of-the-art clarification and wastewater chemistry and application experience that optimizes plant operations.

DIGITALIZATION / REMOTE MONITORING

Our digital offering provides an all-in-one intelligent water management service suitable for a single technology, range of equipment or a complete water or wastewater treatment plant — for Veolia and non-Veolia equipment. Within the Hubgrade digital platform, the Essential service ensures transparency across all water operations so your plant managers and engineers can make better-informed decisions regarding your facility and equipment.

▲ **Biological treatment** MBBR Pack AnoxKaldnes™ Technology & Hydrotech™ Drum Filter

MBBR C & CN Series

Municipal sewage for carbon removal (BOD, COD) and nitrification (TKN, N-NH₄) suitable for reuse, unrestricted irrigation.

And municipal sewage for carbon removal (BOD, COD) and total nitrogen removal (TN, NH₄, NO₃) suitable for reuse, unrestricted sea discharge.

Models	MBBR C	MBBR CN
Pre-screen	✓	✓
MBBR Tanks (C & Nit tank)	✓	✓
Denitrification & Recirculation Tanks	NA	✓
Blower / Mixers	✓	✓
Sieves	✓	✓
Diffusers	✓	✓
AnoxKaldnes™ MBBR Media	✓	✓
Flocculation Tanks + Chemical Dosing Unit	✓	✓
Drum Filter	✓	✓
Lamella Clarifier + Sludge	✓	✓
Pump	✓	✓
Automation Panel	✓	✓
Sensor Levels	✓	✓
Oxygen Sensor	✓	✓

The key benefits are

Customized biological solution in a standardized package.

- › Quick delivery and easy installation
- › Ability to upgrade capacity by adding parallel package units at the same site
- › Limited engineering costs
- › Small footprint
- › Limited on-site infrastructure needed
- › No recirculation needed
- › No bulking problems
- › Self-controlling process with no parameters to adjust or control – minimum manpower
- › High tolerance to toxic shocks and load variations
- › Lower sludge generation, less sludge treatment and disposal costs
- › Automatic operation with minimal need for human monitoring
- › 25 years of experience and more than 1,000 MBBR references worldwide



MBBR Pack is a plug and play solution

By integrating the MBBR biological treatment technology — developed and mastered by our subsidiary AnoxKaldnes over 25 years ago — with our Multiflo™, a compact clarifier, and Hydrotech Drumfilter, a mechanical self-cleaning filter (designed for systems where it is essential to prevent particles from fragmenting), MBBR Pack can meet your needs as a packaged solution based.

MBBR Pack provides all the advantages of a conventional MBBR system, in a standard prefabricated package with a plug and play function, that is easy to install. It is an ideal response for customers who want to be equipped as quickly as possible.

High treatment capacity in a very small footprint

MBBR Pack - AnoxKaldnes™ technology is based on the biofilm principle, which uses microorganisms for biological treatment of wastewater.

The microorganisms grow on the surfaces of plastic carriers in the treatment reactor. As the carriers move through the wastewater, the microorganisms utilize the contaminants present in the effluent for their biological activity.

The proprietary design of the carriers ensures a high protected surface area is provided for the development of biofilm, giving you a high treatment capacity in a very small footprint.

The flexibility of our AnoxKaldnes™ patented technology gives a compact design and efficient MBBR solution for new installations as well as optimal upgrades of existing biological processes.

For small sewage treatment plants, we can design a compact and efficient solution by combining with Multiflo™ and Hydrotech Drum Filter.

Options for C & CN-series

1 -PRETREATMENT	
1.1	Manual Bar Screen before equalization tank
1.2	Equalization Tank
1.3 a	MBBR Feed Pumps (duty+standby)
1.3 b	VFD and Flow meter for pumps
1.4	Aeration System for Equalization & Sludge Holding Tank
1.5	uPVC Piping from Equalization to MBBR maximum 10 meters

2- MBBR PACKAGE	
2.1	Screening bin - 2 units
2.2	Replacing Static screen by Automatic Drum screen
2.3	Standby air blower
2.4	TSE Pump - Duty
2.5	TSE Pump - Standby
2.6	Sludge pump - shelf standby
2.7	Outlet Flowmeter
2.8	Outlet Turbidity Meter
2.9	Outlet Ammonia Meter

3- SLUDGE TREATMENT	
3.1	Sludge Holding Tank
3.2	Sludge Thickening
3.3	Sludge Dewatering System

4 - ODOR TREATMENT	
4.1 a	OCU for a) Equalization Tank
4.1 b	OCU for b) Sludge Holding Tank
4.1 c	OCU for c) Equalization & Sludge Holding Tank

Resourcing the world

Veolia Water Technologies

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