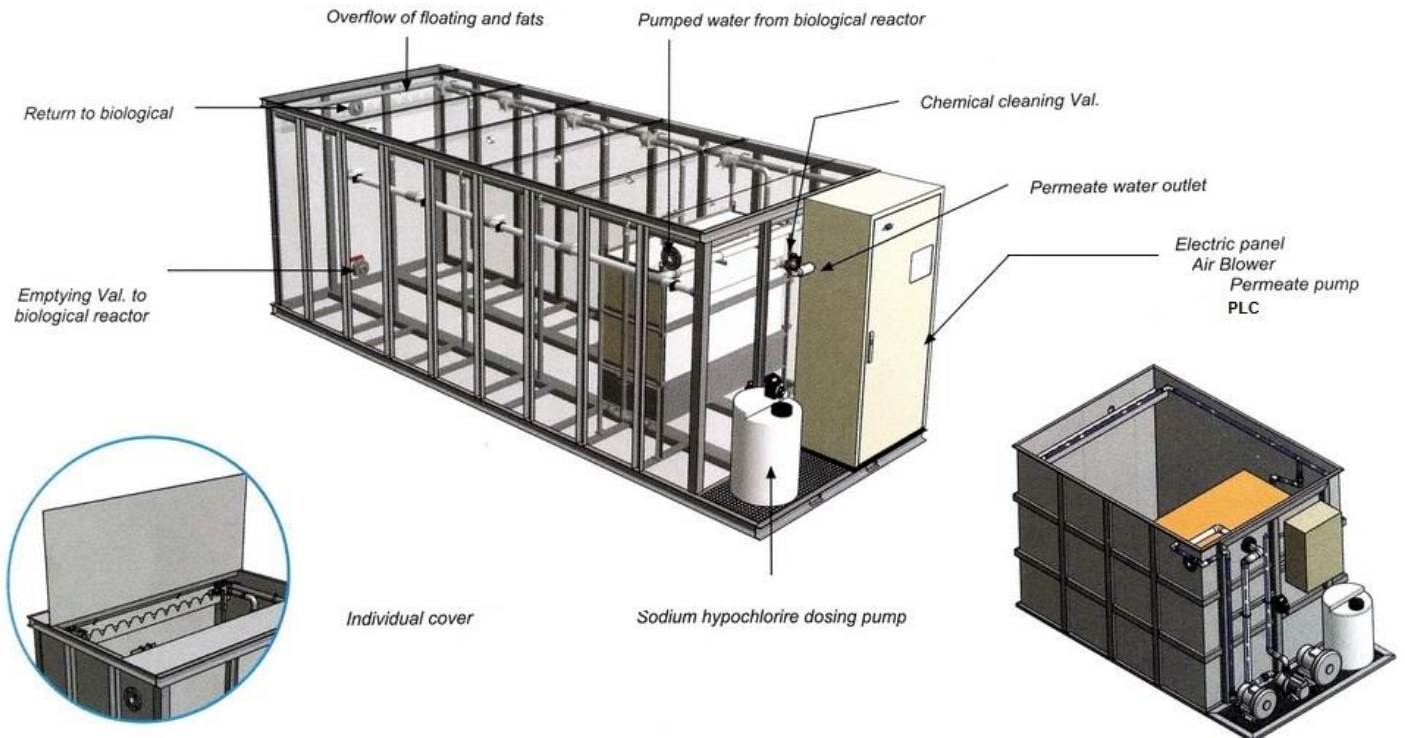


Membrane Reactor MT-MBR

The system consists of an external tank that is installed from 1 to 5 cassettes of membranes maintaining a certain distance between them.

The biologically treated water recirculation arrives to MT-MBR which performance the solid/liquid separation. The MT-MBR has an overflow which is returned the biomass supplied to the MT-MBR back to the biological reactor, allowing the elimination of potential floats. The reactor has also a individual covers for each cassette, which facilitates the possible removal and maintenance.



Components of Equipment

Tank container

Inside the wastewater treatment plant, the tank container MT-MBR constitute the filtration unit, where are submerged the membrane modules. Installation in a separate tank and not integrated into the biological deposit facilitates the maintenance actions as well as to maintain always submerged membranes regardless of the level of the biological reactor.

Cassette MBR

Filtration through MBR Cassettes ensures a high purification performance and retention of viruses and bacteria.

Control Panel

All devices necessary for control and operation of the membrane reactor are located in the control box along with all pumps and blowers, facilitating installation and operation of the plant.

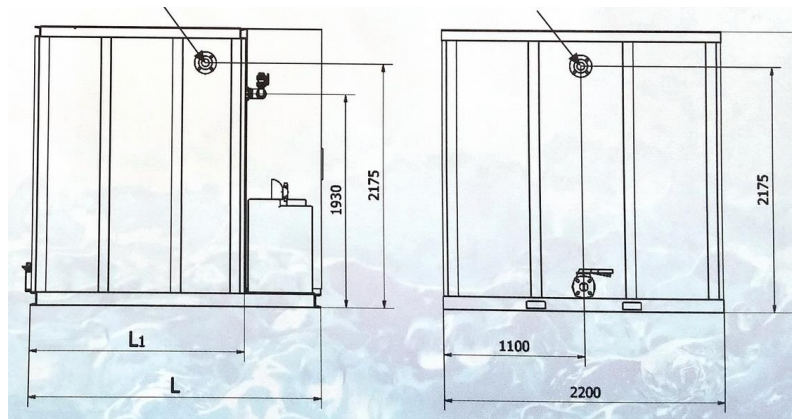
Advantages of MT-MBR

- Compact plant fully assembled transportable to newly built sewage treatment plants and/or modifying and improving existing ones.
- Expandability for being a modular system.
- Increasing the concentration of biomass optimizing the capacity of the plant.
- Simple operation.
- Elimination of the settling process as well as conventional tertiary treatment.
- Process reliability.
- High quality of the effluent through an effective solid / liquid separation, obtaining an effluent free of viruses and bacteria

Parameter	MT-MBR-1	MT-MBR-2	MT-MBR-3	MT-MBR-4	MT-MBR-4
Cassettes Model	MBR6-8E	MBR6-8E	MBR6-8E	MBR6-8E	MBR6-8E
N° Cassettes	1	2	3	4	5
Average production (m ³ /day)	48	96	144	192	240
Installed Power (Kw)	1.8	2.65	3.6	6.5	9.3
Air connection (mm)	DN50	DN65	DN80	DN80	DN100
Permeate connection (mm)	DN50	DN 50	DN 50	DN65	DN65

Remark: Production guidance for urban wastewater

Model	L1 (mm)	L (mm)
MT-MBR-1	1700	2300
MT-MBR-2	2650	3250
MT-MBR-3	3600	4200
MT-MBR-4	4550	5150



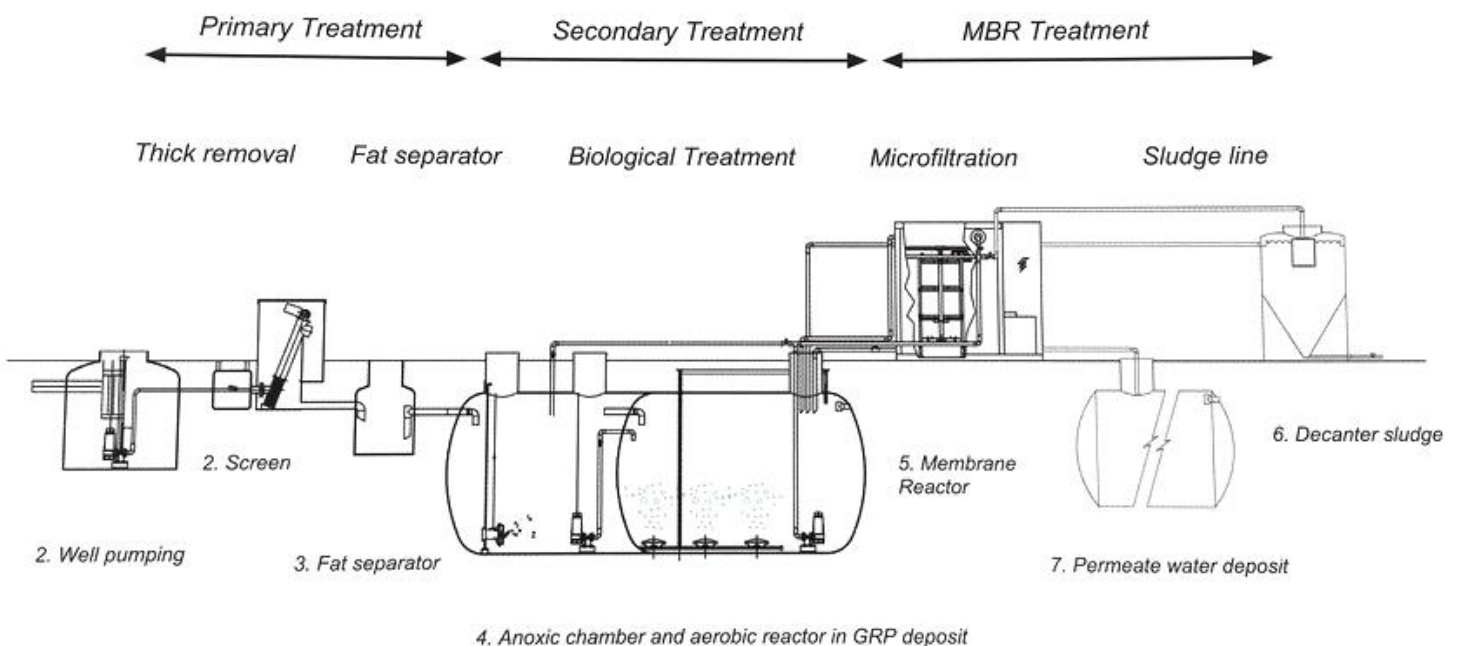
System of treatment MBR

Martin has a wide range of processes and equipment for wastewater treatment. By treatment with MT-MBR allows the combination of microfiltration technology with biological treatment. Effluent quality, consistent and suitable for discharge or reuse is obtained.

- **Reuse/Disinfection:** Effluent from MBR is free of solids, bacteria and viruses and sanitary safe for use in irrigation and green areas for public use or sports centers.
- **Lack of space:** MBR requires approximately 2 to 5 times less volume than any conventional plant.
- **Expanding capacity plants:** Existing plants may work again by simply installation of the membrane modules without requiring extra reactor volume.
- **Reducing sludge production:** The same volume of MBR produces a much lower amount of sludge, with a reduction in operating costs and management.
- **Low flows at high loads:** For situations of low flow and high pollutants load the MBR is more competitive investment cost.



Wastewater Treatment Plant of MBR



GRP Equipment prefabricated warehouses or supply of individual equipment for civil engineering facilities.

Well Pumping: Supplied with all equipment and accessories pumps for pumping sewage treatment plant.

Pretreatment: The equipment is very important in the process of WWT. The aim is to achieve the highest possible degree of solids separation under hydraulic conditions.

- Mini screen.
- Screw for channels and pipes.
- Compact pretreatment plants.

Grease: GRP Tanks, essential to treat water with vegetable fats and/or animals. Thanks to an appropriate retention time fats and oils are separated from the water. Very useful for hotels, restaurants.

Biological Treatment: Through incorporation of buried tanks made of GRP is carry out biological treatment within the entire process of waste water treatment in two separate phases:

- Anoxic Chamber: The influent is feed by gravity as well as internal recirculation of the mixed liquor, allowing it to produce biological denitrification. A submersible mixer ensures the homogeneity of the mixture. At the same time in this compartment allows lamination of peak flow.
- Aerobic Chamber: The aerobic environment is achieved through fine bubble diffusers that inject the required amount of air through the provision of a blower. Here is complete removal of carbonaceous, nitrification and phosphorus reduction.

Membrane Reactor: External tank constituted of a determined number of membrane modules where take place the filtration process.



Pilot Plant Design

Martin offers the design of pilot plants for industrial wastewater or water difficult to treat for study of MBR technology application and combination of different technologies such as ozone, ultrasound, U.V, etc. Installation in container easily transportable.