

COMPACT™ MBR

PACT

PACT INDUSTRIAL AND MUNICIPAL WATER AND
WASTE WATER TREATMENT EQUIPMENT & PLANTS



PACT PACKAGE SEWAGE TREATMENT PLANT



ISO9001-2000 Certified for Design, Manufacturing and Servicing of
Standard and Custom-Designed and built Equipment and Plants



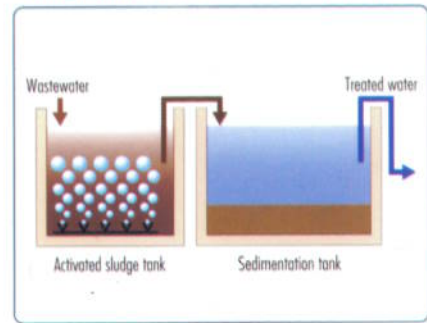
COMPACT™ Advantages

COMPACT™ membrane modules are submerged directly within the bioreactor. It is typically operated in a considerably different range of parameters for the mean cell residence time (θ_c) and substrate utilization rate (U) than the conventional activated sludge processes. Due to this difference, COMPACT™ offers several benefits over the conventional activated sludge process. These benefits include:

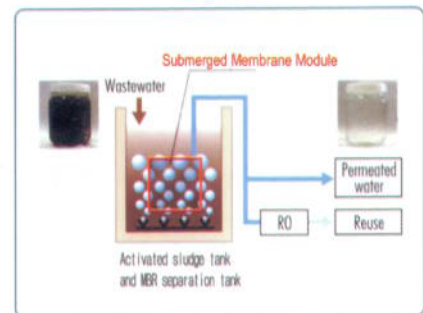
- much smaller space requirements;
- better solids removal (elimination of bulking);
- pathogen reduction through removal of *Cryptosporidium* and *Giardia*;
- increased volumetric loading;
- production of less sludge due to high sludge age;
- high SRT which allows the development of slow-growing microorganisms such as nitrifying bacteria; and
- retention of high molecular weight organic compounds that can enhance the biodegradation process.



Conventional wastewater treatment system



COMPACT™



The modular concept allows for phased construction of wastewater treatment plants and makes it adaptable to a wide range of sizes and flow rates.

COMPACT™ can be delivered as a containerized unit.

This solution has important advantages such as:

- factory installed and tested
- no construction works on-site
- short delivery period
- easy to relocate

Specification of COMPACT™ Package MBR Sewage Treatment Plant

Model	COMPACT™ 50	COMPACT™ 75	COMPACT™ 100	COMPACT™ 150	COMPACT™ 200
Treatment Capacity	5~50 m ³ /day	50~75 m ³ /day	75~100 m ³ /day	100~150 m ³ /day	150~200 m ³ /day
Population ⁽¹⁾	25~250	250~375	375~500	500~750	750~1000
Inlet Condition (BOD/SS)	300mg/L/300mg/L				
Effluent Quality (BOD/SS)	10mg/L/5mg/L				
Package Dimensions ⁽²⁾ (Length x Width x Height)	4.0m x 2.4m x 2.4m	6.0m x 2.4m x 2.4m	9.0m x 2.4m x 2.4m	12.0m x 2.4m x 2.4m	18.0m x 2.4m x 2.4m

Note:

(1) Calculation is based on the discharge of 200 liters/person/day.

(2) Dimensions are subject to change and modification without notice.

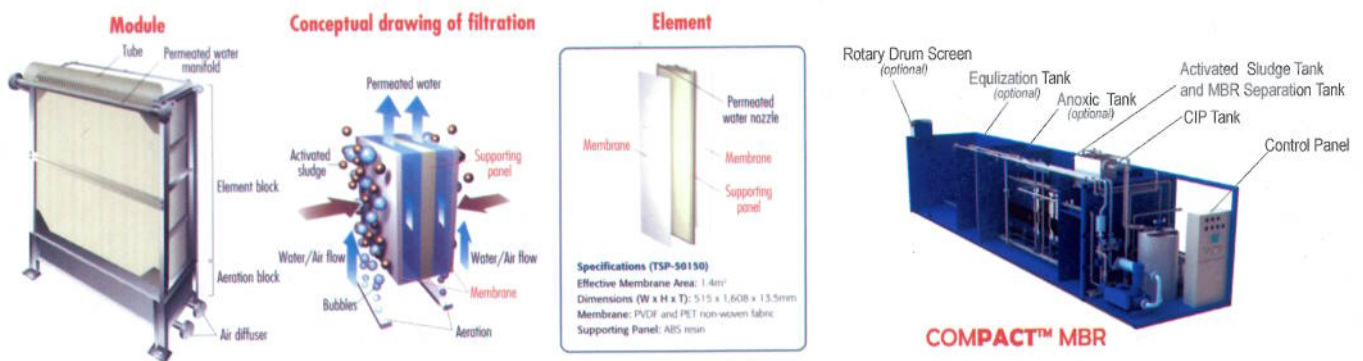


COMPACT™

Package Membrane BioReactor (MBR) Sewage Treatment Plant

Brief Introduction

COMPACT™ is state-of-the-art pre-engineered sewage treatment system utilizing PACT's biological treatment expertise with TORAY's submerged membrane technology. It contains the process elements of secondary, tertiary and advanced wastewater treatment in a single containerized package. The membrane separation process eliminates the conventional sedimentation tank and allows high volumetric loading resulting in a much smaller footprint. COMPACT™ can produce high quality effluent with high BOD5 removal (about 98%), complete nitrification and partial denitrification. It also achieves virtually complete TSS removal. Treated effluents have low turbidity values (<0.3 NTU) and SDI values (<3) which can be re-used for landscaping, flushing or feed to NANO or RO for higher purity water.



COMPACT™ uses TORAY flat sheet membranes, immersed in the process tank and in direct contact with the mixed liquor. Air ejected from a manifold at the bottom of the membrane assembly help keep the membrane surfaces clean as well as to supply oxygen for biological growth.

COMPACT™ is equipped with a high level of automation, ensuring the plant's simple operation and low maintenance cost.

Submerged Flat Sheet Membrane Module Advantages

MBR technology enhances wastewater treatment efficiency

- Using membranes to separate sludge ensures much higher quality for treated water free from suspended solids. Combination with RO membranes allows producing water quality as good as potable water.
- Membranes can retain activated sludge at high concentrations, allowing BOD as well as nitrogen to be removed more efficiently.
- Unique membrane configuration having an immense number of minuscule pores delivers stable high water permeability with minimal clogging and higher permeated water quality.

Smaller footprint

- The module can be submerged directly in an activated sludge tank for combining biological treatment and membrane separation. It eliminates the sedimentation or sludge concentration process.
- More effective biological treatment allows activated sludge tank size to be reduced.



Fewer chemical cleaning requirements and coarse screen pretreatment

- The plate-and-frame configuration that employs flat sheet membranes is inherently stronger against fouling than the hollow fiber membrane configuration. Therefore, it results in fewer chemical cleaning requirements.
- Reduced module fouling from human hair and other obstructive substances allows coarse screening as a pretreatment process.

Energy efficient

- Flat Sheet Membrane consumes less energy compared to hollow fiber membrane due to more effective scouring aeration and lower trans-membrane pressure.



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WASTE WATER TREATMENT EQUIPMENT & PLANTS

Regional Offices

California / USA

Shanghai / China

Dubai / United Arab Emirates

Torino / Italy

Almaty / Kazakhstan

Contact your local PACT office below:

PACT ENGINEERING FZE

Suite 506, 5th Floor Century 21 Bldg.

Abu Baker Siddique Road, Deira

P.O Box 18696 Dubai, U.A.E

Phone +97142668611 Fax +97142668544

Email: info@pacteng.ae Website: www.pactusa.com