+357 96 030922
info@marketpublishers.com

# India Membrane Bioreactor Market By Membrane Type (Hollow Fiber, Flat Sheet, and Multi-Tubular), By Configuration (Internal/Submerged MBR and External/Side Stream MBR), By Capacity (Less than 100 m3/day, 100 m3/day - 500 m3/day, and >500 m3/day), By Application (Municipal and Industrial), By Region, Competition, Forecast and Opportunities, 2029

https://marketpublishers.com/r/I6F669607A86EN.html
Date: October 2023
Pages: 90
Price: US$ 3,500.00 (Single User License)
ID: I6F669607A86EN

## Abstracts

India membrane bioreactor market is anticipated to grow at a high CAGR in the forecast period due to the rising wastewater production in offices, industries, and households, which is expected to drive the demand for wastewater management, thereby accompanying market growth over the forecast period.

Membrane bioreactor (MBR) is mainly a term used to define wastewater treatment procedures. It is the integration of a membrane process, such as ultrafiltration or microfiltration, with an activated sludge procedure, a biological wastewater treatment. It is extensively utilized for industrial and municipal wastewater treatment. Gravity-driven or vacuum and pressure-driven systems are the two common types of membrane bioreactor systems. Gravity-driven or vacuum bioreactors are immersed and usually used in a flat sheet or hollow fibre membranes, which are then installed in either the bioreactors or subsequent membrane tanks. Pressure-driven systems are in-pipe cartridge systems situated on the exterior of the bioreactor.

India Membrane Bioreactor Market: Drivers & Trends

+357 96 030922
info@marketpublishers.com

Growing Demand for High-Quality Effluents:

In India, several industries are witnessing growth due to the rise in population. There is a need for excess water and high effluent quality with appropriate treatment technologies. These two vital requirements can be accomplished with the help of a membrane bioreactor (MBR), proven to be effective in eradicating organic and inorganic matter.

MBR is a fast-growing technology, and it is gradually being used for industrial and municipal wastewater treatment applications across the country. These systems offer high-quality effluents due to the efficient elimination of numerous pollutants, including micropollutants present in wastewater. Membrane bioreactors can be used as influents for reverse osmosis and nanofiltration processes.

A membrane bioreactor can generate effluent of higher quality in terms of nutrients, organic matter, and suspended particles. To meet more stringent wastewater discharge regulations, filtering may not be necessary because of the minimal and consistent TSS content in the membrane bioreactor effluent. Other crucial measurements, including the five-day biological oxygen demand (BOD5), the chemical oxygen demand (COD), the total nitrogen (TN), and the total phosphorus (TP), did reveal substantial differences across methods, making MBR the ideal method for treating wastewater. With the use of membrane bioreactors, most of the contamination in wastewater can be eliminated from the effluent. Moreover, the effluent achieves most of the quality requirements specified by international guidelines and regulations for water reuse and reclamation.

Typically, longer solids retention time (SRT) results in increasing wastewater efficiency. During the treatment, the applicability of longer SRT in membrane bioreactors provides higher effluent quality. Membrane bioreactors involve the generation of high-quality treated effluents owing to the presence of a membrane with a pore size smaller than suspended solids. However, for effective secondary clarifiers, the usual suspended solids (SSs) concentration is about 5mg/L, thereby eliminating the necessity for tertiary treatment such as filters in MBR.

Increasing MBR Installations due to the Growing Urbanization:

Urbanisation refers to the increase in the population of cities. Currently, more than 30% of Indians live in urban regions, which are expected to generate 34% of the nation's GDP by 2030. The rapid expansion of the economy, together with the acceleration of urbanisation and industrialization, has increased concern over the water quality. Urban

+357 96 030922
info@marketpublishers.com

population expansion has a tremendous influence on water quality. Additionally, it is anticipated that the growing number of businesses that release pollutants would raise significant demand for membrane bioreactors for water treatment. Thus, it is projected that because of urbanisation and growing consumer awareness, there would be a rise in demand for membrane bioreactors.

Due to population expansion, growing urbanisation has an impact on the environment by reducing the availability of resources. Because of the pollution and the crowded living circumstances, it has negative health effects. Due to industrial pollution and other factors, water quality in metropolitan areas is also poor. Consuming clean water has therefore become the primary goal in metropolitan areas, increasing the demand for membrane bioreactors. The market for membrane bioreactor water treatment systems is anticipated to increase as people become more aware of the negative impacts of polluted water.

Energy and water use have increased nationwide because of urbanisation. Membrane bioreactor installation rises because of the requirement to limit the effluent emission into water bodies in response to rising power plant output. Following this, the market for membrane bioreactors in India is anticipated to experience rapid expansion in the future.

Advances In MBR Technology:

Due to their generally higher efficiency for solid-liquid separation than that of a secondary sedimentation tank, MBRs, an advanced combination of biological process and membrane technology, have been revealing great advantages over the conventional activated sludge (CAS) procedure for wastewater treatment.

In the modern era, innovation in water treatment technology has transformed the progress of MBR technology. The low efficiency, large space requirement, and increased cost of the conventional activated sludge procedure have given the required space for the MBR system to come into action. The traditional activated sludge (CAS) process and tertiary filtration can be replaced by immersed and side stream MBR. MBR has simpler operational management, better permeate quality, and a reduced footprint requirement when compared with CAS. Therefore, MBR can be an efficient tool for sustainable water treatment.

MBR technology plays a vital role in wastewater and reuse applications, both domestically and internationally. Over the past ten years, technological advances have

+357 96 030922
info@marketpublishers.com

brought down the MBR cost significantly by making the wastewater treatment process more effective and efficient. MBRs are a versatile treatment platform, from retrofits to decentralized plants, that can help transform wastewater into a viable resource. Technological advances and developments have made MBRs both the investment for wastewater treatment and reuse and the best available technology (BAT).

MBRs are less expensive to operate than traditional plants, with 50% fewer unit operations. Reuse applications, mainly potable reuse, need a higher level of treatment at a reasonable cost to be viable. As it is the cheapest and most effective technology to reach reuse quality standards, MBRs will play a crucial role in developing the reuse market. MBR effectively and efficiently provide high removal rates of BOD, solids, and nutrients, all required for today's reuse needs. MBR also offers the ideal pre-treatment option in the case of potable reuse, where reverse osmosis is used. The development in membrane technologies has led to the advancement of membranes for MBR application which are more robust and still provide consistent and better water quality, delivering MBR technology to be cost-effective.

Growing Demand for Hospital Wastewater Treatment:

Hospital-discharged wastewater contains several toxic organic compounds, pathogenic microorganisms, radioactive elements, antibiotic groups, and ionic pollutants. These contaminants impact human health and the environment leading to the spread of disease. Therefore, for sustainable development, effective treatment of hospital wastewater is a crucial task. For molecular separations, membranes with controllable porous and nonporous formations have been rapidly developed.

MBR technology determined low waste sludge production and high removal efficiency toward organic compounds. MBRs and their applications are rapidly evolving to further improve the separation efficiency and attain material recovery from hospital waste streams. Membrane bioreactors are developing through hybridizing novel membranes into the MBR units or the MBR as a pre-treatment step and integrating other membrane procedures as a consequent secondary purification step.

Also, from epidemic prevention, the by-product pollutants may lead to environmental issues and ultimately impact human health. Thus, to prevent the spread of diseases, effective treatment of hospital wastewater is a crucial step. The conventional approaches in hospital wastewater treatment includes disinfection and chlorine dioxide detoxification. Though, harmful ions, drugs, antibacterial, antivirals, and other toxic substances persist in the hospital wastewater after the above disinfection stages. Other

+357 96 030922
info@marketpublishers.com

aggressive methods are adopted, such as evaporation, precipitation, and high temperature calcination, which may be helpful but come with environmental strain, high cost, and low efficiency. Therefore, these shortcomings greatly restrict the applications of these technologies in the treatment of hospital wastewater.

In hospital wastewater treatment, membrane separation is an advanced technology due to its relatively low energy consumption, high solute selectivity, attractive process economics, and easy scalability. To separate contaminants such as bacteria and protozoa or ions, membranes have been extensively used in wastewater treatment. Medical activities and hospitals use purified water every day, leading to the emission of a great volume of hospital wastewater. This hospital wastewater includes complicated compounds, including epidemic prevention/sanitation, laboratory research, diagnostic activities, and medicine excretion. Therefore, these factors drives the demand for membrane bioreactors for treating wastewater.

Market Segments

India membrane bioreactor market is segmented into membrane type, configuration, capacity, application, company, and region. Based on membrane type, the market is segmented into hollow fiber, flat sheet, and multi-tubular. Based on configuration, the market is segmented into internal/submerged MBR and external/side stream MBR. Based on capacity, the market is segmented into less than 100 m3/day, 100 m3/day - 500 m3/day, and >500 m3/day. Based on application, the market is segmented into municipal and industrial. The market analysis also studies the regional segmentation to devise regional market segmentation, divided among north, east, west, and south.

Market Players

Major market players of India membrane bioreactor market are VA Tech Wabag Ltd., Ion Exchange India Ltd., SUEZ India Pvt. Ltd., Thermax India Ltd., UEM India Pvt. Ltd., Aquatech Systems Asia Pvt. Ltd., Veolia Water Solutions Pvt. Ltd., Toray International India Private Ltd. (TIID), Hindustan Dorr-Oliver Ltd., Brisanzia Technologies Pvt. Ltd., and Hitachi Plants Technologies India Pvt. Ltd.

Report Scope:

In this report, the India membrane bioreactor market has been segmented into following categories, in addition to the industry trends which have also been detailed below:

+357 96 030922
info@marketpublishers.com

India Membrane Bioreactor Market, By Membrane Type:

Hollow Fiber

Flat Sheet

Multi-Tubular

India Membrane Bioreactor Market, By Configuration:

Internal/Submerged MBR

External/Side Stream MBR

India Membrane Bioreactor Market, By Capacity:

Less than 100 m3/day

100 m3/day - 500 m3/day

>500 m3/day

India Membrane Bioreactor Market, By Application:

Municipal

Industrial

India Membrane Bioreactor Market, By Region:

North India

East India

West India

South India

+357 96 030922
info@marketpublishers.com

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in India membrane bioreactor market.

Available Customizations:

India membrane bioreactor market with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

+357 96 030922
info@marketpublishers.com

# Contents

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

## 15. COMPANY PROFILES

+357 96 030922
info@marketpublishers.com



(Note: The companies list can be customized based on the client requirements.)

+357 96 030922
info@marketpublishers.com

## I would like to order

Product name: India Membrane Bioreactor Market By Membrane Type (Hollow Fiber, Flat Sheet, and Multi-Tubular), By Configuration (Internal/Submerged MBR and External/Side Stream MBR), By Capacity (Less than 100 m3/day, 100 m3/day - 500 m3/day, and >500 m3/day), By Application (Municipal and Industrial), By Region, Competition, Forecast and Opportunities, 2029

Product link: https://marketpublishers.com/r/I6F669607A86EN.html

Price: US$ 3,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/I6F669607A86EN.html