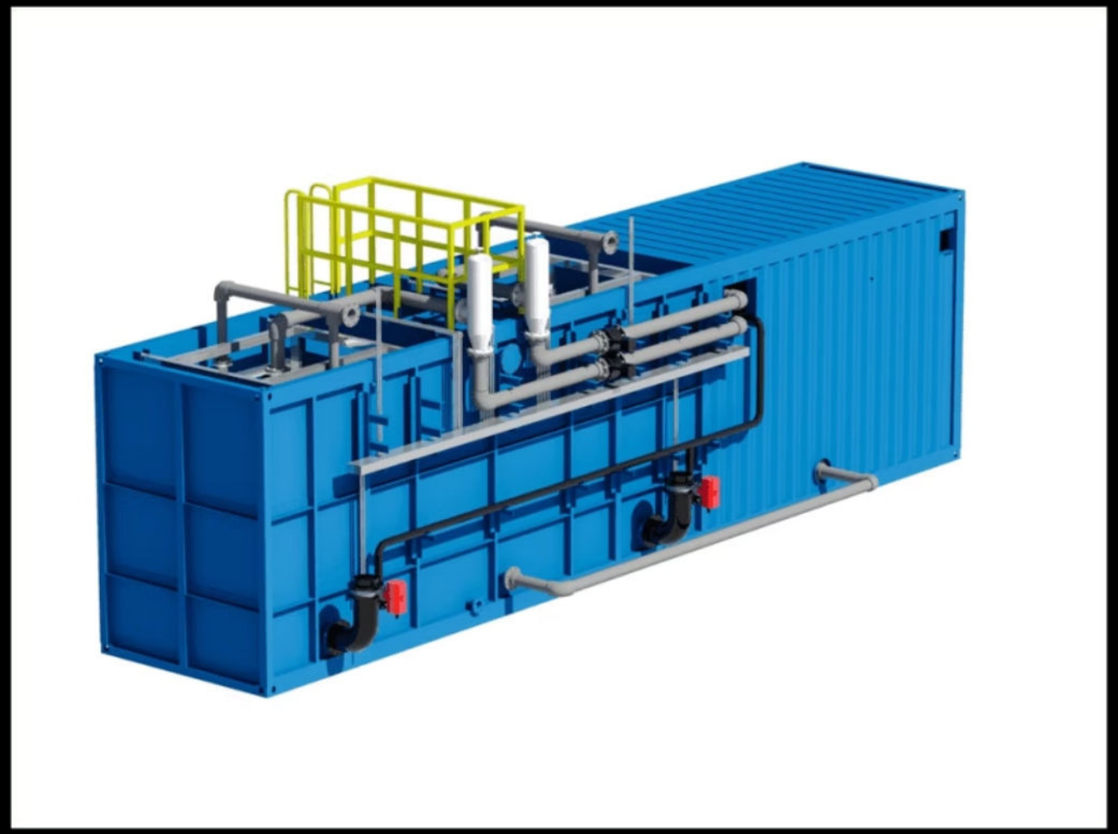
Advanced MBR Wastewater Treatment Solutions

Discover Sahi Rasa Co.'s MBR Wastewater Treatment Package, an advanced solution integrating biological degradation with membrane filtration for superior effluent quality and reduced operational costs.

Understanding Membrane Bioreactor (MBR) Technology

MBR combines a bioreactor with a membrane filtration unit, replacing traditional chemical treatment and sedimentation stages. This system uses suspended biomass for biochemical reactions like oxidation, nitrification, and denitrification.

Membranes, installed either inside or outside the bioreactor, physically filter treated water, ensuring high efficiency in pollutant removal.



Design & Construction: Engineered for Excellence

Polymer Membranes

MBR systems utilize membranes made from advanced polymers like polyethylene, polypropylene, and polyvinylidene fluoride, ensuring durability and high performance.

Optimized Pore Sizes

Microfiltration and ultrafiltration membranes are preferred for their smaller pore sizes, effectively minimizing the risk of clogging and ensuring consistent effluent quality.

Biological Degradation

The bioreactor efficiently breaks down organic matter through aerobic biological processes, enhancing the overall treatment effectiveness.

This design ensures a robust and reliable system, capable of handling diverse wastewater compositions while maintaining optimal performance.

Operational Efficiency: Maximizing Performance

Reduced Sludge Production

MBR systems allow for extended sludge age (up to 100 days), significantly minimizing sludge production and disposal costs, leading to more economical operations.

High-Quality Effluent

The integration of membrane filtration ensures superior effluent quality, making MBR packages increasingly popular for meeting stringent environmental standards.

Membrane Fouling Management

Operational challenges like membrane fouling are effectively managed through aeration and chemical cleaning strategies, maintaining consistent performance and longevity.

Superior Biological Treatment Efficiency

Organic Matter Removal

Achieves over 95% removal of organic matter through efficient decomposition by microorganisms in the bioreactor.

Suspended Solids Removal

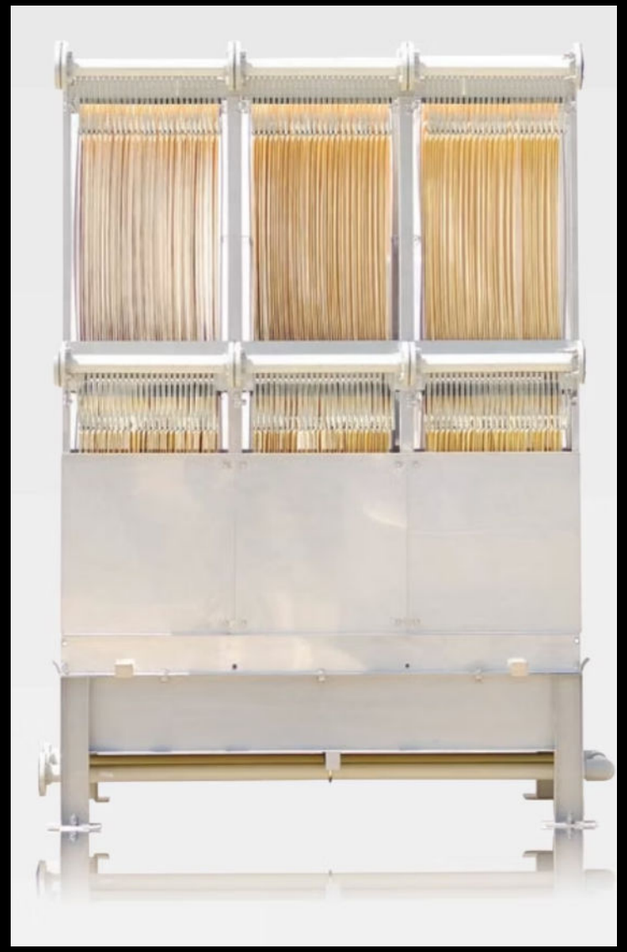
Nearly 100% removal of suspended solids and bacteria by semi-permeable membranes, ensuring clear and clean effluent.

Nitrogen & Phosphorus Reduction

Effective reduction of nitrogen and phosphorus through advanced nitrification, denitrification, and specialized removal techniques.

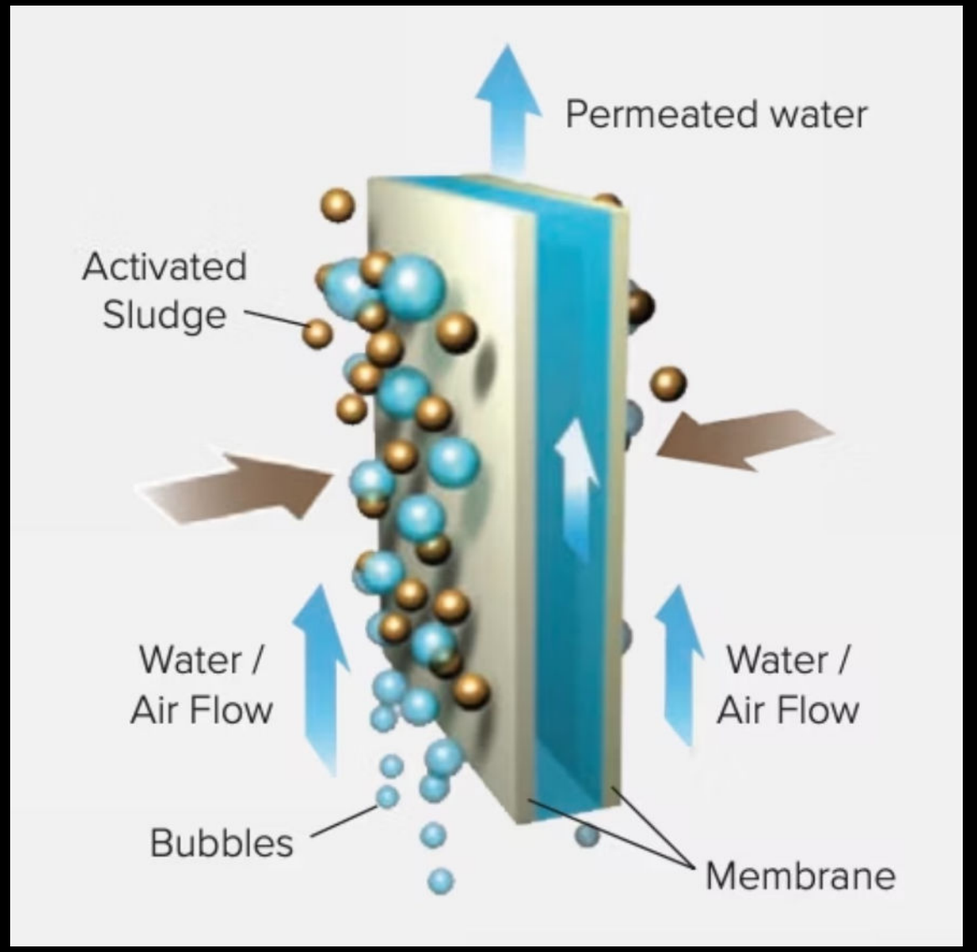
MBR stands out as one of the most efficient biological wastewater treatment methods, consistently delivering high-quality treated water.

Comprehensive MBR System Components



Biological Unit

Aeration tanks where microorganisms break down organic matter and nutrients. This core unit facilitates the primary biochemical reactions for pollutant degradation.



Membrane Filtration Unit

Features semi-permeable membranes (e.g., hollow fiber or flat sheet) made from advanced polymers like polyethylene, effectively removing residual solids and pathogens.

Key Features & Integration

Compact Design

MBR packages offer a compact footprint, ideal for space-limited urban or industrial areas, reducing land requirements significantly.

Intelligent Control

Equipped with intelligent control systems for real-time monitoring and optimization, ensuring peak performance and operational efficiency.

Durable Materials

Constructed with high-quality, durable materials to minimize maintenance needs and ensure long-term reliability.

Disinfection Unit

An essential separate disinfection unit (chlorination, UV, or ozonation) eliminates remaining microbial contaminants, meeting strict environmental standards.

System Integration

MBR can be seamlessly integrated with pre-treatment (coagulation, sedimentation) or advanced methods (reverse osmosis) for enhanced effluent quality and longevity.

Advantages of MBR Systems

- **High-Quality Effluent:** Ensures treated water meets stringent environmental discharge and reuse standards.
- **Full Control:** Precise management over Solids Retention Time (SRT) and Hydraulic Retention Time (HRT) for optimized processes.
- **Reduced Space:** Significantly less space required compared to conventional systems due to integrated design.
- **No Sedimentation Tanks:** Eliminates the need for secondary clarifiers, simplifying the overall plant design.
- **Consistent Separation:** Reliable solid separation, unaffected by mixed liquor characteristics.
- **Minimal Sludge:** Long sludge age leads to reduced sludge production and lower disposal costs.

Versatile Applications of MBR

Industrial Wastewater

Effective for treating wastewater from food production, slaughterhouses, and oil & gas petrochemical industries.

Municipal & Rural

Ideal for urban and rural areas, providing sustainable solutions for community wastewater management.

Commercial & Institutional

Suitable for hospitals, hotels, recreational complexes, schools, and educational centers, ensuring high effluent quality.

MBR systems by Sahi Rasa offer a robust and adaptable solution for diverse wastewater treatment needs across various sectors.

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