

## About Emvees - Company Overview and Vision

### Company Overview

Emvees Waste Water Treatment LLC, established in 2006 in the UAE, has become a leader in the field of water and wastewater treatment. With nearly two decades of experience, Emvees has been at the forefront of providing cutting-edge solutions that address the complex water management challenges faced by industries, commercial establishments, and municipalities. Today, Emvees is synonymous with expertise, reliability, and innovation, serving over 250 clients across sectors like food and beverage, hospitality, tobacco, cement, and more.

### Vision and Mission

- **Vision:** To be a pioneer in sustainable water and wastewater management, continually innovating to protect our environment and promote resource efficiency.
- **Mission:** Emvees is committed to delivering advanced, customized solutions for water and wastewater treatment, focusing on environmental stewardship and sustainable practices. We aim to partner with industries and communities to manage water resources responsibly and help them achieve their sustainability goals.

### Why Choose Emvees?

- **Proven Expertise:** With over 17 years of industry experience, Emvees brings unparalleled knowledge and technical know-how to every project.
- **Innovative Solutions:** Emvees is a pioneer in MBBR and MBR technologies, continuously integrating the latest advancements to deliver high-quality treatment systems.
- **Customer-Centric Approach:** Each project is tailored to the client's specific requirements, ensuring optimized solutions that are both efficient and cost-effective.
- **Comprehensive Service Portfolio:** From design and engineering to O&M (Operation and Maintenance) and revamping services, Emvees offers end-to-end water and wastewater management services.
- **Commitment to Sustainability:** Certified by EcoVadis, ISO 9001, and ISO 14001, Emvees upholds the highest standards in environmental management and quality control.

### Strategic Partners

We are allied with the following companies:

- Green Method Engineering
- EHC (Equine Health Centre)

- Envirochemie
- Greasezilla
- Clear-fox

## Services offered by Emvees Detailed

### 1. Industrial Wastewater Treatment

Industrial wastewater treatment is crucial for safeguarding the environment and ensuring compliance with stringent regulations. Emvees provides tailored solutions for various industries, including chemical processing, food and beverage, pharmaceuticals, and tobacco.

#### Services Offered:

- **Effluent Treatment Plants (ETP):** We design, supply, install, and commission ETPs for all types of industrial effluents, focusing on complex chemical, biological, and physical treatment methods.
- **Zero Liquid Discharge (ZLD):** Implementing advanced processes like Reverse Osmosis (RO) and Ultra Filtration (UF) to achieve zero discharge of pollutants.
- **Odor and Sludge Management:** Offering state-of-the-art solutions for odor control and sludge dewatering to reduce environmental impact.

#### Technologies Used:

- **Moving Bed Biofilm Reactor (MBBR):** Ideal for biological treatment of wastewater with high organic load.
- **Membrane Bio Reactor (MBR):** Advanced technology that combines biological treatment and membrane filtration for high-quality output.
- **Dissolved Air Flotation (DAF):** Used for the separation of suspended solids, oils, and greases.

#### Applications:

- Suitable for high-load streams from manufacturing, petrochemicals, textiles, and more.

### 2. Sewage Treatment Plants (STP)

Sewage Treatment Plants (STPs) are integral for managing domestic and commercial wastewater. Emvees offers robust, cost-effective STP solutions that comply with UAE regulations and are suitable for a variety of applications, including residential communities, hotels, and industrial sites.

### Services Offered:

- **Design and Installation:** Comprehensive STP systems that can be customized based on site requirements and effluent quality.
- **Package STP Units:** Compact, modular units ideal for temporary sites or project locations.
- **STP Revamping:** Modernizing existing systems to improve efficiency and reduce operational costs.

### Key Benefits:

- Reduced operational costs and environmental impact.
- Efficient BOD, TSS, and nutrient removal.
- Reuse of treated water for non-potable applications like irrigation.

### Technologies Used:

- **MBBR:** Effective for both municipal and industrial sewage treatment.
- **Sequencing Batch Reactor (SBR):** A cost-efficient process for the treatment of municipal and industrial sewage.
- **Submerged Aerated Fixed Film (SAFF):** A reliable technology for high-quality treatment in a compact footprint.

## 3. Greywater Treatment

Greywater, typically from sources like showers, sinks, and laundry, can be treated and reused for non-potable applications such as irrigation and flushing. Emvees is a pioneer in the design and deployment of innovative greywater treatment systems using advanced filtration and biological processes.

### Technologies Used:

- **Electrocoagulation:** Effective for removing dissolved particles and organic contaminants.
- **Silicon Carbide Membranes:** High-efficiency filtration membranes that ensure the production of clear and odor-free treated water.

### Applications:

- Residential buildings, hotels, sports facilities, and other commercial entities.

## 4. Organic Solid Waste Management

Emvees provides comprehensive solutions for managing organic solid waste, using eco-friendly processes like anaerobic digestion and composting. Our systems are designed

to convert organic waste into valuable byproducts such as biogas or soil conditioners, reducing the burden on landfills and promoting sustainability.

#### **Solutions Offered:**

- **Bio Thermic Digesters:** Efficiently reduce organic waste volume by 80% using high-temperature thermophilic bacteria.
- **Composting Systems:** Transform organic waste into nutrient-rich compost suitable for agricultural use.

#### **Applications:**

- Food processing industries, supermarkets, and municipal solid waste management.

## **Services and Solutions offered by Emvees**

### **Wastewater Treatment Solutions**

1. **Industrial Wastewater Treatment**
  - Specialized in managing hazardous effluents with a focus on the chemical and petroleum industries.
  - Services include the design, supply, installation, and commissioning of Effluent Treatment Plants (ETPs).
2. **Sewage Treatment Plants (STP)**
  - Emvees provides compact, cost-effective STP solutions that comply with UAE government regulations.
  - Options include Modular STPs for temporary and project sites.
3. **Grey Water Treatment**
  - Offers advanced filtration techniques for recycling greywater for irrigation purposes.
4. **Vehicle Wash Water Recycling Systems**
  - Systems designed to effectively treat and recycle water used in vehicle washing processes.
5. **Organic Solid Waste Management**
  - Comprehensive solutions that convert organic waste into valuable byproducts through composting and anaerobic digestion.
6. **FOG (Fats, Oils, & Grease) Treatment**
  - Specialized FOG treatment in partnership with Greasezilla of the US to transform problematic FOG waste into profitable biofuel.
7. **Operation and Maintenance Services (O&M)**
  - Full-time management of wastewater treatment plants with highly skilled operators and preventive maintenance plans.
8. **Annual Maintenance Contracts (AMC)**
  - Regular inspections, upgrades, and 24/7 support to keep systems running smoothly.

## Key Technologies and Innovations

### 1. Membrane Bio Reactor (MBR)

- Latest advancement in biological treatment with unparalleled bacterial reduction and chemical-free operation.

### 2. Moving Bed Biofilm Reactor (MBBR)

- Efficient technology for BOD removal, nitrification, and denitrification in both municipal and industrial sectors.

### 3. Submerged Aerated Fixed Film (SAFF)

- A robust solution for treating high-strength wastewater with reduced energy consumption.

### 4. Dissolved Air Flotation (DAF)

- Used for the removal of suspended solids, oils, and grease from wastewater streams.

### 5. Bio Thermic Digester (BTD)

- Reduces organic waste by up to 80% using extremophilic bacteria, producing a stabilized end product suitable for use as soil conditioner.

## Industries Served

**Hospitality:** Tailored solutions for sewage and greywater treatment for hotels and resorts.

**Food & Beverage:** ETP solutions to handle high organic loads and suspended solids.

**Pharmaceutical:** Advanced treatment methodologies for complex effluents.

**Ready-Mix Concrete:** Wastewater recycling systems to treat and reuse high-alkalinity effluents.

**Edible Oil & Tobacco:** Biological and chemical treatment processes for the removal of hazardous materials.

**Laundry Wastewater Recycling:** Comprehensive systems to treat and recycle laundry wastewater.

## Operations & Maintenance (O&M) Services

### O&M and AMC Services for Wastewater Treatment Systems:

- Routine inspections, preventive maintenance, and 24/7 assistance.
- Services include operational management, system upgrades, troubleshooting, and chemical supply.

### Revamp and Upgradation Services:

- Upgrading existing STP and ETP systems to meet regulatory compliance.
- Reducing operational costs and improving system efficiency.

## Certifications and Compliance

- **ISO 9001:** Quality Management System
- **ISO 14001:** Environmental Management System
- **EcoVadis Certification:** Recognizes Emvees' commitment to sustainable business practices.

## Contact Information

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## Leadership Team

1. **Mathew Tharakan:** Managing Director
2. **Manikath Narendran:** Technical Director
3. **John Varghese:** Finance Director
4. **Rami Kannous:** Manager - Sales & Marketing
5. **Anil Anson:** Manager - Projects & Service
6. **Joseph Abraham:** Manager - Proposals & Estimation
7. **Sujin John Thomas:** Manager - Procurement & Planning

## Membrane Bio Reactor (MBR)

**What is MBR?** Membrane Bio Reactor (MBR) is a hybrid wastewater treatment process combining conventional activated sludge treatment with membrane filtration. The membranes act as a physical barrier, ensuring that only high-quality treated water exits the system, free from suspended solids, bacteria, and other contaminants.

### **Advantages of MBR:**

- **High-Quality Output:** Produces treated water suitable for reuse in non-potable applications.
- **Compact Design:** Requires less space compared to conventional treatment methods.
- **Low Chemical Usage:** The physical separation process reduces the need for chemical coagulants or disinfectants.

### **Applications:**

- Ideal for industries with space constraints and stringent effluent discharge requirements, such as pharmaceuticals, textiles, and food processing.

## **Moving Bed Biofilm Reactor (MBBR)**

**What is MBBR?** Moving Bed Biofilm Reactor (MBBR) is an advanced biological treatment technology using small, plastic carriers with a high surface area to support biofilm growth. The carriers move freely within the reactor, increasing contact time between the microorganisms and the wastewater, enhancing the efficiency of pollutant removal.

### **Advantages of MBBR:**

- **High Organic Load Handling:** Efficient in removing BOD, COD, and nutrients.
- **Low Sludge Production:** Generates less sludge compared to conventional processes.
- **Modular and Flexible:** Can be easily scaled or combined with other treatment technologies.

### **Applications:**

- Suitable for both municipal and industrial wastewater treatment, particularly for high-load effluent streams.

## **Operations & Maintenance (O&M)**

Emvees provides comprehensive Operation and Maintenance (O&M) services for all types of water and wastewater treatment plants. Our experienced team ensures that systems are running at peak performance through regular inspections, preventive maintenance, and 24/7 emergency support.

### **Services Offered:**

- **Annual Maintenance Contracts (AMC):** Tailored to the specific needs of each client, covering routine inspections, preventive maintenance, and immediate repairs.
- **Full-Time Operators:** Deploying skilled personnel to manage day-to-day operations.

- **Revamping and Upgradation:** Modernizing existing systems to enhance performance and meet evolving regulatory requirements.

**Key Benefits:**

- Minimized downtime and operational disruptions.
- Increased system longevity and reliability.
- Compliance with local regulations and industry standards.



## **Membrane Bio-Reactor (MBR)**

The Membrane Bio-Reactor (MBR) is a combination of a biological treatment process and membrane filtration. It uses a series of semi-permeable membranes to separate solids and liquids during wastewater treatment, producing effluent of exceptional quality. The MBR system is typically deployed where there is a need for high-purity treated water, such as in water reuse applications or where space is limited. Unlike conventional systems, the MBR's membrane filtration ensures complete removal of bacteria, suspended solids, and pathogens, making it an ideal choice for municipal and industrial wastewater treatment. MBRs can be tailored to meet varying influent conditions and offer superior performance in reducing biochemical oxygen demand (BOD) and total suspended solids (TSS).

## **Moving Bed Biofilm Reactor (MBBR)**

The Moving Bed Biofilm Reactor (MBBR) is an advanced biological treatment technology that utilizes small plastic carriers within the reactor to provide a large surface area for the growth of biofilms. These carriers move freely within the reactor, enhancing microbial activity for the breakdown of organic pollutants. MBBR is highly effective for the removal of BOD, ammonia, and nitrogen and is often used for industrial and municipal wastewater treatment. Its compact design, flexibility in load management, and ability to operate efficiently even in fluctuating conditions make MBBR a versatile option for both new installations and the retrofitting of existing plants.

## **Sequential Batch Reactor (SBR)**

The Sequential Batch Reactor (SBR) is a modified activated sludge process where wastewater is treated in batches. It involves multiple phases—filling, aeration, settling, decanting, and idle time—conducted in a single tank, providing flexibility in treatment operations. SBR systems are effective in removing organic contaminants, nitrogen, and phosphorus from wastewater. They are suitable for communities and industries with variable flow and load characteristics. Due to its sequential nature, SBR allows better control over reaction times and biological activities, making it ideal for complex wastewater streams.

## **Dissolved Air Flotation (DAF)**

Dissolved Air Flotation (DAF) is a physical-chemical treatment technology that clarifies wastewater by removing suspended solids, oils, and grease. The DAF unit injects air into the wastewater, forming microbubbles that attach to the solid particles. These bubbles increase the buoyancy of the particles, causing them to float to the surface, where they can be removed. DAF is widely used in industries like food and beverage, pulp and paper, and oil refining to handle high concentrations of suspended solids. The DAF process offers high efficiency in separating light particles and fats, oils, and grease (FOG), making it essential for industrial wastewater treatment.

## **Ultra Filtration (UF)**

Ultra Filtration (UF) is a type of membrane filtration technology that uses pressure to separate suspended solids, bacteria, and macromolecules from water and wastewater. UF

membranes have pore sizes ranging from 0.01 to 0.1 microns, which are smaller than conventional filters but larger than reverse osmosis (RO) membranes. The process is particularly useful for removing turbidity, pathogens, and colloids, making UF an effective pre-treatment for RO systems or a standalone solution for water recycling and purification. UF systems are commonly used in municipal water treatment, food and beverage production, and the pharmaceutical industry.

## **Reverse Osmosis (RO)**

Reverse Osmosis (RO) is a widely used water purification process that uses a semi-permeable membrane to remove dissolved salts, minerals, and other contaminants from water. By applying pressure greater than the natural osmotic pressure, water is forced through the membrane, leaving impurities behind in the reject stream. RO is highly effective in desalinating seawater, purifying brackish water, and producing high-quality water for industrial processes and potable use. It is also used in zero-liquid discharge (ZLD) systems. While RO delivers exceptional water purity, it requires pre-treatment to prevent fouling and regular maintenance to ensure optimal performance.

## **Extended Aeration**

Extended Aeration is a variation of the conventional activated sludge process, providing longer hydraulic retention times (HRT) and sludge retention times (SRT). This extended treatment period allows for more complete stabilization of the wastewater, resulting in lower sludge production and improved performance in handling variable loads. The process involves aeration and settling in a single unit, making it ideal for small to medium-sized communities or industries with low organic loads. Extended Aeration systems are valued for their simplicity, low operational costs, and the ability to produce a stable, biologically inert sludge suitable for safe disposal or reuse.

## **Anaerobic Digestion**

Anaerobic Digestion is a biological treatment process that decomposes organic matter in the absence of oxygen. It converts biodegradable waste into biogas (primarily methane and carbon dioxide) and a stabilized sludge. The process is used to treat high-strength industrial effluents, agricultural waste, and municipal sludge. Anaerobic Digestion not only reduces the volume of waste but also generates renewable energy in the form of biogas, which can be used to produce heat, electricity, or as a vehicle fuel. It offers environmental and economic benefits, including lower greenhouse gas emissions and reduced dependence on fossil fuels.

## **Zero Liquid Discharge (ZLD)**

Zero Liquid Discharge (ZLD) is an advanced treatment technology that aims to eliminate liquid waste by recovering water and converting the remaining effluents into solid waste. The process typically involves a combination of pre-treatment, evaporation, and crystallization. ZLD is used in industries such as power generation, textiles, and petrochemicals to achieve complete water recycling and reduce environmental impact. ZLD systems recover up to 95% of the water for reuse, making them essential in regions with water scarcity and stringent

discharge regulations. The resulting solid waste can often be processed for reuse or safely disposed of.

## **Composting Systems**

Composting Systems use aerobic biological processes to break down organic waste, such as food waste, agricultural residues, and sewage sludge, into a stable, humus-like product known as compost. The process involves the controlled application of moisture, temperature, and aeration to facilitate microbial activity. Composting is an environmentally friendly method of organic waste management, reducing the volume of waste and producing a nutrient-rich soil conditioner that improves soil health. It is widely used in agriculture, horticulture, and urban landscaping, promoting sustainable waste management practices and reducing methane emissions from landfills.

## **Tertiary Filtration**

Tertiary Filtration is the final step in the wastewater treatment process, designed to remove residual suspended solids, nutrients, and pathogens from secondary-treated effluent. It typically uses fine media filters, membrane filtration, or chemical precipitation to achieve high-quality effluent suitable for reuse in irrigation, industrial processes, or even as potable water. Tertiary Filtration is essential in water-sensitive regions where stringent discharge standards are in place and is commonly used in advanced water recycling and reuse projects.

## **Bio-Thermic Digester (BTD)**

The Bio-Thermic Digester (BTD) is a high-temperature aerobic treatment technology for organic solid waste management. It utilizes extremophilic bacteria that thrive at temperatures above 75°C to rapidly break down organic matter, reducing its volume by up to 80%. The digester produces a stable, pathogen-free output that can be used as a soil conditioner. BTD is ideal for managing high-moisture organic wastes such as food waste, agricultural residues, and sewage sludge. Its compact design and self-sustaining thermal efficiency make it suitable for decentralized waste management applications.

## **Submerged Aerated Fixed Film (SAFF)**

The Submerged Aerated Fixed Film (SAFF) process is a biological treatment technology that combines fixed-film media and aeration to promote the growth of microorganisms for wastewater treatment. In the SAFF system, the biofilm grows on stationary media submerged in the reactor, while air is supplied from the bottom to facilitate aerobic microbial activity. This setup allows for efficient removal of organic matter and ammonia, making SAFF ideal for treating domestic and industrial wastewater. SAFF units are known for their low energy consumption, compact design, and minimal maintenance requirements. They are particularly suited for small- to medium-sized installations where simplicity and reliability are critical.

## **Activated Sludge Process (ASP)**

The Activated Sludge Process (ASP) is a widely used biological treatment method where aerated wastewater is mixed with a microbial culture, known as activated sludge, to degrade organic pollutants. The process involves aeration to maintain oxygen levels, allowing aerobic microorganisms to consume organic matter. After treatment, the biomass is separated from the treated water by settling in a clarifier. ASP is versatile and effective in removing BOD, COD, and nutrients, making it suitable for both municipal and industrial wastewater treatment. ASP systems can be modified to include processes like nitrification and denitrification for enhanced nutrient removal.

## **Physico-Chemical Treatment**

Physico-Chemical Treatment is a set of processes used to treat wastewater by altering its physical and chemical properties. This method is particularly effective for removing suspended solids, heavy metals, and toxic compounds that are not easily degraded biologically. Typical techniques include coagulation and flocculation, precipitation, adsorption, and advanced oxidation. Chemicals such as lime, alum, and ferric chloride are commonly used as coagulants. Physico-chemical treatments are often used as a pre-treatment step to reduce the load on biological systems or as a tertiary treatment to meet strict discharge standards.

## **Grease Trap Solutions**

Grease Traps are devices designed to capture fats, oils, and grease (FOG) from wastewater before it enters the main sewage system. Grease traps work by slowing down the flow of hot, greasy water, allowing it to cool. As the water cools, grease and oils float to the top and are trapped, while the cleaner water flows out. Emvees provides various types of grease traps (Type-A, Type-B, Type-C, and Type-D), each tailored for different applications and flow rates. Proper grease trap management prevents blockages and reduces the risk of environmental contamination, making it essential for restaurants, food processing units, and commercial kitchens.

## **Aerobic Digestion**

Aerobic Digestion is a biological process that breaks down organic waste material in the presence of oxygen. It is typically used for the stabilization of sewage sludge and organic waste. During this process, aerobic microorganisms consume the organic matter, producing carbon dioxide, water, and a stabilized sludge that can be safely disposed of or used as a soil conditioner. The process reduces the volume and odor of the waste and is suitable for small to medium-sized treatment plants. Aerobic digestion requires continuous aeration to maintain optimal microbial activity, making it energy-intensive compared to anaerobic systems.

## **Anaerobic Sludge Digestion**

Anaerobic Sludge Digestion is a biological process that stabilizes sewage sludge in the absence of oxygen. It involves the breakdown of organic material by anaerobic bacteria, resulting in the production of biogas (methane and carbon dioxide) and a nutrient-rich, stabilized sludge. The methane can be captured and used as a renewable energy source.

Anaerobic digestion is effective in reducing sludge volume and producing less biomass compared to aerobic digestion. It is commonly used in municipal wastewater treatment plants and industries with high organic waste loads, such as food processing and agriculture.

## **Membrane Separation Technology**

Membrane Separation Technology involves the use of semi-permeable membranes to separate contaminants from water based on size, charge, or molecular weight. Technologies include Microfiltration (MF), Ultrafiltration (UF), Nanofiltration (NF), and Reverse Osmosis (RO), each with varying pore sizes and separation capabilities. Membrane systems are used in water purification, desalination, and wastewater treatment. They offer high removal efficiency for pathogens, suspended solids, and dissolved contaminants. The choice of membrane technology depends on the specific requirements of the application, such as desired water quality and flow rate.

## **Activated Carbon Filtration**

Activated Carbon Filtration is a water treatment process that uses activated carbon to adsorb organic compounds, chlorine, and other chemicals from water. The high surface area of activated carbon makes it effective in trapping contaminants, reducing unpleasant tastes, odors, and harmful disinfection byproducts. Activated carbon filters are used in drinking water purification, industrial wastewater treatment, and as a pre-treatment step in RO systems. Regular replacement of the carbon media is necessary to maintain filtration efficiency, as the adsorption capacity diminishes over time.

## **Fluidized Bed Reactors (FBR)**

Fluidized Bed Reactors (FBR) are a type of reactor used for biological wastewater treatment where biomass is attached to small particles that are suspended in the reactor by the upward flow of water or air. This setup provides a large surface area for microbial growth and high contact efficiency between the wastewater and the microorganisms. FBRs are used for high-rate anaerobic or aerobic treatment of industrial wastewater, particularly for streams with high organic loads. The fluidized nature of the bed allows for efficient mixing, high mass transfer rates, and better resilience to toxic shock loads.

## **Electro-Coagulation**

Electro-Coagulation is an electrochemical process used to remove contaminants from wastewater by using electrical current to dissolve sacrificial electrodes, usually made of aluminum or iron. The dissolved metal ions act as coagulants, neutralizing the charges of suspended particles and allowing them to form larger aggregates, which can be easily removed. Electro-Coagulation is effective in removing heavy metals, oil and grease, suspended solids, and certain organic compounds. It is widely used in industrial wastewater treatment, oil and gas industries, and food processing.

## **Trickling Filters**

Trickling Filters are a type of fixed-film biological treatment system where wastewater is distributed over a bed of media (such as rocks, plastic, or ceramic) that supports microbial growth. As the wastewater trickles through the media, microorganisms degrade the organic pollutants. Trickling Filters are known for their simplicity, low maintenance requirements, and high resistance to shock loads. They are commonly used for secondary treatment in municipal and industrial wastewater applications. However, they may require larger footprints compared to other biological treatment systems.

## **Constructed Wetlands**

Constructed Wetlands are engineered systems designed to mimic the water purification functions of natural wetlands. They consist of shallow, vegetated beds that support the growth of specific plants and microbes that help degrade pollutants. The process relies on a combination of physical, chemical, and biological mechanisms to treat wastewater. Constructed wetlands are used for municipal wastewater, stormwater management, and agricultural runoff. They provide an eco-friendly, low-energy alternative for wastewater treatment and contribute to biodiversity conservation and habitat creation.

## **Dissolved Air Flotation (DAF)**

Dissolved Air Flotation (DAF) is a water treatment process used to remove suspended solids, oils, and grease from wastewater. The process involves dissolving air under pressure in water and then releasing it at atmospheric pressure in a flotation tank. The released air forms tiny bubbles that attach to the suspended particles, causing them to float to the surface. These floating particles are then skimmed off. DAF is widely used in industries such as food processing, oil refining, and wastewater treatment plants to reduce BOD, COD, and fats, oils, and grease (FOG) content. It is effective as a primary treatment or a pretreatment step before biological or physicochemical processes.

## **Dissolved Ozone Flotation (DOF)**

Dissolved Ozone Flotation (DOF) is a variation of the DAF process, where ozone is used instead of air to generate bubbles. The ozone not only helps float the contaminants but also oxidizes and disinfects the water. This dual action makes DOF particularly effective for treating complex wastewater streams with high concentrations of organic pollutants, color, and pathogens. The process is commonly used in industries such as textile, pulp and paper, and pharmaceuticals. The use of ozone enhances the quality of treated water, reducing chemical oxygen demand (COD) and eliminating harmful microorganisms.

## **Electro-Oxidation**

Electro-Oxidation is an advanced oxidation process that uses electrical current to generate strong oxidants (such as hydroxyl radicals) at the surface of anodes immersed in wastewater. These oxidants can break down complex organic compounds, remove color, and degrade toxic substances into simpler, less harmful molecules. Electro-Oxidation is suitable for treating recalcitrant pollutants that are resistant to conventional treatment methods, such as pharmaceutical waste, dyes, and petrochemical effluents. The technology

is flexible and can be used as a standalone process or integrated with other treatment stages.

## **Sequential Batch Reactor (SBR)**

The Sequential Batch Reactor (SBR) is a type of activated sludge process designed to treat wastewater in batches. It operates in a single tank that goes through a series of fill, react, settle, and decant phases. During the react phase, the tank is aerated to promote biological degradation of organic matter. In the settle phase, aeration is stopped, and solids are allowed to settle before the treated water is decanted. SBR systems are highly flexible and capable of removing BOD, COD, and nutrients such as nitrogen and phosphorus. They are ideal for small- to medium-sized communities, industrial facilities, and locations with variable flow rates.

## **Rotating Biological Contactor (RBC)**

A Rotating Biological Contactor (RBC) is a fixed-film biological treatment process where a series of closely spaced, rotating discs are partially submerged in wastewater. The rotation allows for alternating exposure to wastewater and air, promoting the growth of biofilm on the disc surfaces. The biofilm removes organic matter and nutrients from the water as it flows through the reactor. RBCs are known for their low energy requirements and high treatment efficiency, making them suitable for small- to medium-sized treatment plants, particularly for municipal wastewater applications.

## **Ultraviolet (UV) Disinfection**

Ultraviolet (UV) Disinfection is a chemical-free water treatment process that uses UV light to deactivate microorganisms by damaging their DNA, rendering them incapable of reproduction. UV disinfection is effective against a wide range of pathogens, including bacteria, viruses, and protozoa. It is commonly used as a final disinfection step in both drinking water and wastewater treatment to ensure compliance with stringent microbial standards. UV systems are easy to operate and maintain, and they do not produce harmful by-products, making them environmentally friendly and safe for applications requiring high-quality effluent.

## **Biological Nutrient Removal (BNR)**

Biological Nutrient Removal (BNR) is a process designed to remove nitrogen and phosphorus from wastewater through a series of biological reactions involving nitrification, denitrification, and phosphorus removal. The process typically involves multiple zones within a reactor, including an anaerobic zone, an anoxic zone, and an aerobic zone. In the anaerobic zone, phosphorus-accumulating organisms (PAOs) release phosphorus, which is then absorbed in the subsequent aerobic zone. Nitrogen is removed through nitrification and denitrification pathways. BNR is essential for preventing eutrophication in receiving water bodies, making it a critical component of municipal and industrial wastewater treatment.

## **Anaerobic Membrane Bioreactor (AnMBR)**

The Anaerobic Membrane Bioreactor (AnMBR) combines anaerobic digestion with membrane filtration to treat high-strength wastewater. In the AnMBR, anaerobic microorganisms degrade organic matter in the absence of oxygen, producing biogas (mainly methane) as a by-product. The membrane unit separates solids and biomass from the treated effluent, allowing for high-quality permeate. AnMBRs are energy-efficient and produce significantly less sludge compared to aerobic systems. They are ideal for treating high-strength industrial wastewater, such as food and beverage, dairy, and brewery effluents, while simultaneously generating renewable energy.

## **Bioaugmentation**

Bioaugmentation is a biological process that involves the addition of specialized microorganisms or microbial consortia to a wastewater treatment system to enhance its performance. The goal is to increase the population of specific bacteria capable of degrading particular contaminants, such as hydrocarbons, phenols, or chlorinated solvents. Bioaugmentation is used to accelerate the breakdown of recalcitrant compounds and improve system stability under adverse conditions. It is commonly applied in cases where the native microbial community is insufficient to handle the pollutant load or where shock loads are expected.

## **Electrocoagulation**

Electrocoagulation is a water treatment process that uses an electrical current to generate coagulant ions from sacrificial electrodes (usually made of aluminum or iron). The ions neutralize the charges of suspended particles, causing them to aggregate into larger flocs that can be easily removed through sedimentation or flotation. Electrocoagulation is effective in removing heavy metals, oils, grease, suspended solids, and emulsified pollutants. It is widely used in industrial wastewater treatment for applications such as mining, metal finishing, and food processing, where conventional chemical coagulation may not be suitable.

## **Chlorine Dioxide Disinfection**

Chlorine Dioxide ( $\text{ClO}_2$ ) is a powerful disinfectant used in water and wastewater treatment to inactivate pathogens and oxidize contaminants. Unlike chlorine,  $\text{ClO}_2$  does not form harmful disinfection by-products, such as trihalomethanes (THMs), making it a safer alternative. It is effective over a wide pH range and is particularly useful for treating water with high organic content or biofilm problems. Chlorine dioxide is commonly used in drinking water disinfection, cooling towers, and industrial process water treatment for its ability to control microbial growth and remove odors and taste issues.



## Specialty Products & Solutions

In wastewater and water treatment systems, specialty products play a pivotal role in optimizing the efficiency and sustainability of treatment processes. These products address a range of challenges, from improving the physical and chemical properties of water to enhancing the biological performance of treatment plants. Below is a detailed description of each specialty product and solution used by EmveesTech to meet the diverse needs of its clients.

### Grease Traps (Type-A, Type-B, Type-C, Type-D)

Grease traps are devices designed to capture and separate fats, oils, and grease (FOG) from wastewater before it enters the main drainage system. In the food and hospitality industry, grease traps are essential for preventing pipe blockages and maintaining the efficiency of wastewater treatment plants. EmveesTech offers a range of grease traps tailored to different applications:

- **Type-A Grease Trap:** Used in smaller kitchens and food service outlets. Type-A traps are typically compact and easy to maintain.
- **Type-B Grease Trap:** Suitable for medium-sized restaurants and facilities, offering larger capacity and enhanced separation efficiency.
- **Type-C Grease Trap:** Ideal for industrial kitchens and large-scale food processing units, where higher grease loads are expected.
- **Type-D Grease Trap:** Designed for maximum capacity and efficiency, often used in commercial establishments with heavy grease production.

Each type of grease trap is made from durable materials like uPVC and stainless steel to resist corrosion and ensure long-term performance. Properly maintained grease traps reduce the risk of sewer blockages, lower maintenance costs, and comply with local wastewater discharge regulations.

### Bio-Enzymes

Bio-enzymes are natural, biodegradable products made from beneficial microorganisms that break down organic waste in wastewater treatment systems. These enzymes enhance the biological activity within the system, improving the degradation of organic pollutants such as fats, oils, grease, and proteins. EmveesTech's bio-enzymes are effective in various applications, including septic tank maintenance, grease traps, and sludge reduction in wastewater treatment plants. They are safe, environmentally friendly, and reduce the need for chemical treatments. Additionally, bio-enzymes are used to control unpleasant odors, maintain system efficiency, and prevent the formation of blockages in pipelines.

### EOC 2100 (Odor Control Chemical)

EOC 2100 is a powerful odor control chemical used to neutralize unpleasant smells in wastewater treatment plants, landfills, and other industrial environments. The chemical contains natural ingredients that absorb and degrade odor-producing compounds such as hydrogen sulfide and ammonia. EOC 2100 can be directly applied to wastewater streams or sprayed in areas with odor issues. It is highly effective, non-toxic, and has a pleasant mint

fragrance, making it suitable for use in residential areas as well. By eliminating odors, EOC 2100 improves the working environment and reduces complaints from nearby communities.

### **Bio Tabs (Septic Tank Maintenance Tablets)**

Bio Tabs are specially formulated tablets containing strains of bacteria and bacterial enzymes designed to degrade organic material in septic tanks. Each tablet contains over a billion bacteria per unit, which multiply and actively break down proteins, fats, carbohydrates, and paper waste in septic systems. Regular use of Bio Tabs improves pipe purification, reduces sludge buildup, prevents unpleasant odors, and prevents pipe and drain blockages. They are an effective alternative to harsh chemical treatments, offering a natural solution for maintaining the health and efficiency of septic systems. Bio Tabs can be used in residential, commercial, and industrial septic tanks.

### **AFM® Activated Filter Media**

AFM® (Activated Filter Media) is a high-performance filtration media used to replace sand in water filtration systems. Manufactured from specially processed glass, AFM® offers superior mechanical and electrostatic filtration compared to traditional sand media. Its activated surface area is three times greater than sand, allowing for better removal of particulate matter and pathogens. AFM® is resistant to biofouling, mudball formation, and channeling, which ensures consistent filtration performance. The media is self-sterilizing, does not require chemical cleaning, and lasts as long as the filtration system itself. It is ideal for use in drinking water, swimming pools, and industrial water treatment applications.

### **Anti-Scalants (RO Plants)**

Anti-scalants are specialty chemicals used in reverse osmosis (RO) systems to prevent the formation of mineral scale on the membrane surface. Scale formation, caused by dissolved salts and minerals like calcium carbonate and sulfate, can significantly reduce the efficiency and lifespan of RO membranes. Anti-scalants work by disrupting the crystallization process of these salts, preventing them from forming hard deposits. EmveeTech's range of anti-scalants is formulated to address different water chemistries and ensure maximum membrane performance. They are compatible with various membrane types and are an essential component of effective RO plant operation.

### **RO Membrane Cleaners**

RO Membrane Cleaners are chemicals used to remove fouling deposits such as organic matter, biofilm, and scaling from RO membranes. Regular cleaning is necessary to restore membrane performance and extend its lifespan. EmveeTech offers a range of acidic, alkaline, and neutral cleaners, each designed to tackle specific types of fouling. Acidic cleaners are effective against inorganic scales, while alkaline cleaners remove organic and biological deposits. These cleaners are applied in a controlled cleaning cycle to ensure thorough cleaning without damaging the membrane material.

### **Sludge Conditioner**

Sludge Conditioners are used to improve the dewatering properties of sludge in wastewater treatment plants. They work by altering the structure of the sludge, making it easier to separate water from solids. This results in drier sludge cakes and reduced disposal costs. Sludge conditioners can be applied before mechanical dewatering processes such as filter presses, centrifuges, or belt presses. EmveeTech's sludge conditioners are formulated to enhance floc strength, reduce polymer usage, and improve overall dewatering efficiency.

### **Sodium Hypochlorite**

Sodium Hypochlorite is a widely used disinfectant and oxidizing agent in water and wastewater treatment. It is effective against a broad spectrum of microorganisms, including bacteria, viruses, and protozoa. In wastewater treatment, it is used for disinfection, odor control, and reduction of color and BOD levels. Sodium Hypochlorite is typically used in controlled dosages to achieve the desired level of disinfection without forming harmful by-products. It is also used in swimming pools, drinking water treatment, and industrial water systems.

### **Molybdate-Based Corrosion Inhibitors**

Molybdate-based corrosion inhibitors are used to protect metal surfaces in closed-loop water systems, such as chilled water and boiler systems, from corrosion. Molybdates form a protective film on the metal surface, preventing oxidative reactions that cause corrosion. These inhibitors are effective over a wide pH range and provide long-term protection against both general and localized corrosion. They are preferred in applications where nitrites are not suitable due to environmental or health concerns.

### **Nitrite-Based Corrosion Inhibitors**

Nitrite-based corrosion inhibitors are commonly used in cooling towers, closed-loop systems, and boiler feedwater to prevent metal corrosion. Nitrite ions react with the metal surface to form a passive oxide layer that protects against corrosion. They are often used in conjunction with other chemicals such as azoles to provide comprehensive protection against both ferrous and non-ferrous metals. Nitrite-based inhibitors are highly effective but require careful monitoring to maintain appropriate concentrations and prevent potential side reactions.

### **Oxygen Scavengers (Sulfite/DEHA)**

Oxygen scavengers are chemicals used in boiler water treatment to remove dissolved oxygen, which can cause severe corrosion in steam systems. Common types include Sulfite-based and DEHA (Diethylhydroxylamine) oxygen scavengers. Sulfite-based scavengers react with oxygen to form inert sulfate, thereby preventing oxygen-induced corrosion. DEHA, on the other hand, is an organic scavenger that not only removes oxygen but also provides passivation of metal surfaces, forming a protective oxide layer. DEHA is particularly useful for high-temperature applications and systems where sulfite-based products are not suitable. These scavengers help extend the lifespan of boilers and reduce maintenance costs by preventing pitting and corrosion of metal surfaces.

### **Polymers (Flocculation, Coagulation, Settling)**

Polymers are essential in wastewater treatment processes for flocculation, coagulation, and settling. They are typically classified into cationic, anionic, and non-ionic polymers, each suited to different applications. Coagulation polymers destabilize suspended particles, enabling them to clump together, while flocculation polymers form larger flocs that can be easily separated from the water. Settling polymers enhance the sedimentation process, allowing solid particles to settle at a faster rate. EmveesTech's range of polymers is tailored to various industries, including municipal wastewater, food processing, and chemical manufacturing, ensuring effective solid-liquid separation and improved water clarity.

## **Biocides**

Biocides are chemical agents used to control the growth of harmful microorganisms such as bacteria, algae, and fungi in water systems. They are commonly applied in cooling towers, closed-loop systems, and wastewater treatment plants to prevent biofouling, which can reduce system efficiency and lead to equipment damage. EmveesTech offers both oxidizing and non-oxidizing biocides, each designed for specific microbial challenges. Oxidizing biocides, like chlorine and bromine, disrupt the cell structure of microorganisms, while non-oxidizing biocides, such as quaternary ammonium compounds and isothiazolinones, inhibit microbial growth through metabolic disruption. Proper biocide management ensures long-term operational efficiency and compliance with environmental regulations.

## **Dispersants**

Dispersants are specialty chemicals used to prevent the accumulation of suspended solids and sludge in water treatment systems. They work by breaking up clumps of particles, allowing them to remain suspended in water and be carried away by the system flow. Dispersants are essential in applications such as cooling towers, where they prevent scale formation and deposition, improving heat exchange efficiency. EmveesTech's dispersants are designed to operate under a wide range of conditions, ensuring effective dispersion of particulate matter and maintaining system cleanliness. They are typically used in combination with scale inhibitors and biocides to provide comprehensive water treatment.

## **pH & Chlorine Controllers**

pH and chlorine controllers are automated systems that regulate the pH levels and chlorine dosage in water treatment plants. Maintaining the correct pH is crucial for optimizing the performance of various treatment processes, including coagulation, disinfection, and chemical reactions. Similarly, accurate chlorine control is essential for ensuring effective disinfection without over-chlorination, which can lead to harmful by-products. EmveesTech's pH and chlorine controllers are equipped with sensors and dosing pumps to provide real-time monitoring and adjustment, ensuring consistent water quality and compliance with regulatory standards. These controllers are widely used in swimming pools, potable water systems, and wastewater treatment facilities.

## **Sodium Hypochlorite**

Sodium Hypochlorite is a powerful disinfectant used in various water and wastewater treatment applications. It is effective against a broad spectrum of pathogens, including bacteria, viruses, and algae, making it suitable for use in swimming pools, potable water

disinfection, and wastewater treatment plants. Sodium Hypochlorite works by releasing chlorine, which oxidizes and destroys the cell walls of microorganisms. Its ease of handling and strong disinfectant properties make it a popular choice for water treatment. However, it must be used in controlled dosages to avoid chlorine-related by-products. EmveeTech supplies Sodium Hypochlorite in different concentrations to meet the specific needs of each application.

### **Molybdate-Based Corrosion Inhibitors**

Molybdate-based corrosion inhibitors are used to protect metal surfaces in cooling and heating water systems from corrosion. Molybdates form a stable, passive film on metal surfaces, preventing oxidation and corrosion. These inhibitors are particularly effective in systems where water quality varies or where high levels of dissolved oxygen are present. Molybdate-based inhibitors are environmentally friendly alternatives to traditional chromate-based inhibitors and are suitable for both ferrous and non-ferrous metals. They are widely used in closed-loop cooling systems, boilers, and other industrial applications where maintaining metal integrity is crucial for system longevity.

### **Nitrite-Based Corrosion Inhibitors**

Nitrite-based inhibitors are used to prevent corrosion in closed-loop systems, such as chilled water systems and steam boilers. Nitrites react with the metal surface to form a passive protective layer, reducing the risk of corrosion. These inhibitors are often combined with azoles to protect both ferrous and non-ferrous metals. Nitrite-based corrosion inhibitors are highly effective and are commonly used in systems that require low-maintenance, long-term protection. Regular monitoring of nitrite levels is essential to ensure the inhibitors remain effective, preventing issues like localized pitting and system degradation.

### **Oxygen Scavengers (Sulfite/DEHA)**

Oxygen scavengers are chemicals used to remove dissolved oxygen from water systems, which can cause severe corrosion. Sulfite-based oxygen scavengers react with oxygen to form sulfate, reducing the risk of corrosion. DEHA (Diethylhydroxylamine) is an organic oxygen scavenger that not only removes oxygen but also passivates metal surfaces, forming a protective oxide layer. These scavengers are essential in boiler water treatment, cooling systems, and other applications where dissolved oxygen is a concern. Proper oxygen management prevents pitting and ensures the longevity of metal surfaces.

## **Industrial & Commercial Applications**

- Industrial Wastewater Treatment
- Vehicle Wash Water Recycling System
- Pharmaceutical Wastewater Treatment
- Edible Oil Industry Effluent Treatment
- Ready-Mix Concrete Wastewater Treatment
- Food and Beverage Industry Wastewater Treatment
- Tobacco Industry Wastewater Treatment
- Metal Coat Recycling Wastewater Treatment
- Laundry Wastewater Recycling
- Hospitality Sector Water Treatment
- Swimming Pool Water Treatment
- Boiler Water Treatment
- Cooling Tower Water Treatment
- Domestic Water Treatment
- Sewage Treatment Solutions
- Organic Solid Waste Management
- FOG (Fats, Oils, and Grease) Treatment
- Wastewater Treatment Chemicals

## **Industrial Wastewater Treatment**

Industrial wastewater treatment refers to the process of treating wastewater produced by various industries, such as manufacturing, petrochemical, food processing, and metal finishing. The objective is to remove harmful pollutants, such as heavy metals, chemicals, suspended solids, and organic matter, before discharging the treated water back into the environment or reusing it within the facility. Treatment technologies include physical (screening, sedimentation), chemical (coagulation, neutralization), and biological (MBBR, MBR) methods. Industrial wastewater treatment is crucial for maintaining environmental compliance and reducing the ecological footprint of industries. Advanced treatments like Reverse Osmosis (RO) and Ultrafiltration (UF) are also used to achieve higher levels of water purity.

## **Vehicle Wash Water Recycling System**

Vehicle wash water recycling systems are designed to capture, treat, and reuse the water used in car wash operations. Due to the high water consumption and potential contamination from detergents, oil, grease, and dirt, it is essential to treat the water before reuse or discharge. Systems typically incorporate sedimentation, oil-water separation, filtration, and sometimes membrane-based treatments like Ultrafiltration (UF) or Reverse Osmosis (RO). These systems can significantly reduce freshwater consumption and operational costs while complying with environmental regulations. Recycled water can be reused for pre-washing, reducing the overall water footprint of car wash facilities.

## **Pharmaceutical Wastewater Treatment**

Pharmaceutical wastewater treatment involves the removal of complex and hazardous compounds from the effluents generated by drug manufacturing facilities. This wastewater often contains high concentrations of Active Pharmaceutical Ingredients (APIs), solvents, and chemical by-products, making it difficult to treat using conventional methods. Specialized processes such as Advanced Oxidation Processes (AOP), membrane filtration, and activated carbon adsorption are employed to degrade and remove these contaminants. Biological treatments, including MBR and MBBR, are also used to reduce organic loads. The treated water can then be discharged safely or reused in non-potable applications.

## **Edible Oil Industry Effluent Treatment**

Effluent from edible oil industries is high in organic content, suspended solids, and oil & grease, which can pose serious environmental hazards. The treatment process involves the removal of these contaminants using Dissolved Air Flotation (DAF), followed by biological treatments like MBBR or ASP (Activated Sludge Process). Emvees' solutions focus on reducing COD (Chemical Oxygen Demand) and BOD (Biological Oxygen Demand) levels, making the water safe for reuse or discharge. The use of Ultrafiltration (UF) and Reverse Osmosis (RO) can further purify the treated water, enabling its reuse in various non-potable applications.

## **Ready-Mix Concrete Wastewater Treatment**

Ready-mix concrete production generates wastewater with high alkalinity, suspended solids, and chemical additives, posing a significant environmental risk. The wastewater is treated using sedimentation tanks, pH neutralization, and filtration systems to remove harmful contaminants. Advanced treatment methods, such as Ultrafiltration (UF) and Reverse Osmosis (RO), may also be employed to achieve water quality suitable for reuse. Emvees provides specialized systems that address the unique challenges of ready-mix concrete wastewater, enabling the recycling of treated water for use in production, washing, and dust suppression.

## **Food and Beverage Industry Wastewater Treatment**

The food and beverage industry generates wastewater with high levels of organic matter, fats, oils, and grease (FOG), and sometimes hazardous chemicals. The treatment process typically includes primary screening to remove solids, followed by biological treatments (MBBR, SBR), Dissolved Air Flotation (DAF), and sometimes chemical coagulation to reduce COD and BOD. Advanced membrane filtration, such as Ultrafiltration (UF) and Reverse Osmosis (RO), is also employed to achieve high-quality water for reuse. Proper treatment ensures compliance with environmental standards and enables the recovery of valuable by-products like biogas from anaerobic digestion.

## **Tobacco Industry Wastewater Treatment**

Tobacco industry wastewater is complex, containing high levels of organic matter, nicotine, and other toxic substances. The treatment process includes chemical neutralization,

biological treatments like MBBR or ASP, and advanced oxidation processes to degrade the toxic compounds. Activated carbon is often used for further purification. Emvees provides specialized systems tailored to meet the stringent discharge standards for this type of effluent, ensuring that treated water is free from harmful contaminants and suitable for safe discharge or reuse in non-potable applications.

## **Metal Coat Recycling Wastewater Treatment**

Wastewater from metal coat recycling is typically high in heavy metals, oils, and chemical solvents. Emvees' treatment solutions focus on removing these contaminants using a combination of chemical precipitation, membrane filtration, and adsorption processes. Advanced treatments like Reverse Osmosis (RO) and Ion Exchange are used to achieve high levels of metal removal, making the treated water suitable for reuse or safe discharge. The system design ensures compliance with regulatory standards, reduces environmental impact, and minimizes waste generation.

## **Laundry Wastewater Recycling**

Laundry wastewater contains detergents, fabric softeners, bleaches, and suspended solids, making it unsuitable for direct discharge. Treatment involves primary screening, oil and grease removal, and biological treatment. Emvees' laundry wastewater recycling systems use a combination of Ultrafiltration (UF), Reverse Osmosis (RO), and advanced oxidation to treat and recycle water for reuse in the laundry process. These systems not only reduce water consumption but also minimize environmental impact, offering a sustainable solution for large-scale laundries, hotels, and hospitals.

## **Hospitality Sector Water Treatment**

The hospitality sector, including hotels and resorts, requires high-quality water for various applications, including drinking, swimming pools, and wastewater treatment. Emvees provides tailored solutions such as Reverse Osmosis (RO) for potable water, pH and chlorine controllers for swimming pool maintenance, and advanced sewage treatment systems. By ensuring water quality and compliance with environmental standards, Emvees helps the hospitality industry maintain high service standards while minimizing environmental impact.

## **Swimming Pool Water Treatment**

Swimming pools require constant treatment to maintain water quality and safety. Emvees' swimming pool treatment solutions include filtration systems, pH and chlorine controllers, and the use of specialty chemicals like algaecides and biocides. Advanced filtration systems using Activated Filter Media (AFM®) ensure the removal of suspended solids, while pH and chlorine controllers maintain optimal chemical balance. These solutions ensure safe, clear, and pleasant swimming conditions, reducing the need for manual maintenance and enhancing water quality.

## **Boiler Water Treatment**



Boiler water treatment is essential to prevent scale formation, corrosion, and fouling, which can reduce system efficiency and lead to costly repairs. Emvees provides a range of chemical treatments, including oxygen scavengers (Sulfite/DEHA), sludge conditioners, and scale inhibitors, to maintain optimal boiler performance. Regular monitoring and dosing of these chemicals ensure that the water quality remains within specified parameters, extending the lifespan of the boiler and reducing maintenance costs.

## **Cooling Tower Water Treatment**

Cooling tower water treatment involves controlling scale, corrosion, and microbial growth to maintain system efficiency. Emvees offers a range of solutions, including anti-scalants, corrosion inhibitors, and biocides, along with monitoring and dosing systems. Proper treatment prevents issues like fouling, reduces water consumption, and ensures the longevity of cooling towers. Emvees' comprehensive treatment programs help maintain cooling efficiency, reduce operational costs, and minimize environmental impact.

## **Domestic Water Treatment**

Domestic water treatment focuses on providing clean, safe water for household use. Emvees offers solutions such as media filtration, reverse osmosis systems, and disinfection units. These systems remove impurities like sediment, chlorine, and bacteria, ensuring high-quality water for drinking, cooking, and bathing. Emvees also provides tailored solutions for residential complexes, ensuring safe and reliable water supply for large communities.

## **Sewage Treatment Solutions**

Sewage treatment involves the removal of organic matter, nutrients, and pathogens from domestic or municipal wastewater. Emvees provides comprehensive treatment solutions, including biological systems like MBBR and MBR, chemical treatments, and disinfection. Proper sewage treatment ensures compliance with discharge standards and minimizes environmental impact. Treated sewage can be safely discharged or reused for non-potable purposes like irrigation.

## **Organic Solid Waste Management**

Organic solid waste management involves the treatment and conversion of biodegradable waste materials, such as food waste, vegetable residues, and sewage sludge, into valuable by-products like compost, biogas, or soil conditioners. Emvees offers specialized solutions, including the Bio-Thermic Digester (BTD), which employs thermophilic bacteria to reduce the volume of organic waste by up to 80%. The system operates at high temperatures to break down organic matter rapidly, producing a nutrient-rich soil conditioner as the final output. Emvees' systems are designed for high efficiency and minimal environmental impact, supporting sustainable waste management practices in industries, hotels, restaurants, and municipal applications.

## **FOG (Fats, Oils, and Grease) Treatment**

FOG (Fats, Oils, and Grease) is a major concern in wastewater treatment, as it can cause severe blockages in sewage systems and destabilize biological treatment processes. Emvees offers advanced FOG treatment solutions, including specialized grease traps and the Greasezilla™ system, which efficiently separates and converts FOG into biofuel. This technology not only prevents system blockages but also provides an opportunity to recover and repurpose FOG as a valuable resource. Emvees' FOG treatment solutions are ideal for restaurants, food processing units, and other industries generating high levels of greasy wastewater.

## **Wastewater Treatment Chemicals**

Wastewater treatment chemicals are essential for optimizing the performance of treatment plants. Emvees supplies a comprehensive range of chemicals, including coagulants, flocculants, pH adjusters, biocides, and odor control agents, to address various treatment challenges. These chemicals help in the effective removal of suspended solids, neutralization of pH, disinfection of effluents, and control of biological growth. Proper use of these chemicals ensures that the treated water meets regulatory standards and enhances the overall efficiency of wastewater treatment processes. Emvees' team of experts provides tailored chemical solutions based on the specific needs of each treatment plant.

## **Hospitality Sector Water Treatment**

Water treatment in the hospitality sector covers a wide range of applications, including potable water, swimming pools, laundry, and wastewater treatment. Emvees provides customized solutions to ensure that hotels and resorts meet stringent water quality standards while maintaining operational efficiency. Solutions include Reverse Osmosis (RO) for drinking water, pH and chlorine controllers for swimming pools, and advanced wastewater treatment systems for safe discharge. Emvees also offers Annual Maintenance Contracts (AMCs) and Operations & Maintenance (O&M) services to ensure consistent water quality and compliance.

## **Swimming Pool Water Treatment**

Swimming pools require precise management of water chemistry to ensure safe and enjoyable swimming conditions. Emvees' swimming pool water treatment solutions include filtration systems, pH and chlorine controllers, and specialty chemicals such as algacides and biocides. Advanced filtration systems like Activated Filter Media (AFM®) improve water clarity, while automated chemical dosing systems maintain optimal pH and chlorine levels. These solutions reduce the need for manual intervention and prevent issues like algae growth, cloudy water, and unpleasant odors, ensuring that pools are clean, safe, and visually appealing.

## **Boiler Water Treatment**

Boiler water treatment is crucial for preventing scale, corrosion, and fouling, which can significantly reduce boiler efficiency and lifespan. Emvees provides a range of chemical treatments, including oxygen scavengers (Sulfite/DEHA), sludge conditioners, and anti-scalants, to maintain optimal boiler performance. These chemicals are carefully dosed

to control water chemistry, prevent the formation of deposits, and protect boiler surfaces. Regular monitoring and maintenance ensure that the water quality remains within specified parameters, reducing the risk of costly repairs and downtime.

## **Cooling Tower Water Treatment**

Cooling tower water treatment involves controlling scale, corrosion, and biological growth to maintain system efficiency and prevent operational issues. Emvees offers a range of solutions, including anti-scalants, corrosion inhibitors, biocides, and dispersants, along with monitoring and dosing systems. Proper treatment prevents fouling, reduces water consumption, and extends the lifespan of cooling towers. Emvees' comprehensive treatment programs are designed to optimize cooling efficiency, minimize environmental impact, and reduce operational costs.

## **Domestic Water Treatment**

Domestic water treatment focuses on providing safe and high-quality water for household use. Emvees offers solutions such as media filtration, Reverse Osmosis (RO) systems, and disinfection units. These systems effectively remove impurities like sediment, chlorine, and bacteria, ensuring that water is clean and safe for drinking, cooking, and bathing. Emvees also provides tailored solutions for residential complexes, ensuring a reliable water supply that meets the needs of large communities.

## **Sewage Treatment Solutions**

Sewage treatment solutions are designed to treat domestic and municipal wastewater, removing organic matter, nutrients, and pathogens before safe discharge or reuse. Emvees provides comprehensive sewage treatment solutions using technologies like MBBR, MBR, and ASP (Activated Sludge Process). These systems are designed to meet stringent discharge standards and minimize environmental impact. Treated sewage can be reused for non-potable applications like irrigation, reducing the demand on freshwater resources and promoting sustainable water management practices.

## **Organic Solid Waste Management**

Organic solid waste management focuses on treating and converting biodegradable waste materials, such as food waste, vegetable residues, and sewage sludge, into valuable by-products like compost, biogas, or soil conditioners. Emvees offers specialized solutions, including the Bio-Thermic Digester (BTD), which employs thermophilic bacteria to rapidly digest organic waste at high temperatures, reducing waste volume by up to 80%. The final product is a nutrient-rich soil conditioner that can be safely used in agriculture and landscaping.

## **FOG (Fats, Oils, and Grease) Treatment**

FOG treatment is critical in industries like food processing and restaurants, where the discharge of fats, oils, and grease into the sewage system can cause severe blockages and operational issues. Emvees offers advanced FOG treatment systems, including specialized

grease traps and the Greasezilla™ system, which separates and converts FOG into biofuel. This technology prevents blockages, enhances wastewater treatment efficiency, and provides an opportunity to recover and repurpose FOG as a valuable resource, supporting sustainable waste management practices.

## **Wastewater Treatment Chemicals**

Wastewater treatment chemicals play a vital role in optimizing the performance of treatment plants. Emvees supplies a comprehensive range of chemicals, including coagulants, flocculants, pH adjusters, biocides, and odor control agents, to address various treatment challenges. These chemicals help in the effective removal of suspended solids, neutralization of pH, disinfection of effluents, and control of biological growth. Proper use of these chemicals ensures that the treated water meets regulatory standards and enhances the overall efficiency of wastewater treatment processes.

## Certifications & Standards

### 1. ISO 9001 Certification

#### **Description:**

ISO 9001 is the internationally recognized standard for Quality Management Systems (QMS). It provides a robust framework and set of principles that ensure a systematic approach to managing an organization's processes, enabling consistent delivery of high-quality products and services. The certification is based on quality management principles such as customer focus, leadership, engagement of people, process approach, continuous improvement, evidence-based decision-making, and relationship management. Organizations that are ISO 9001 certified demonstrate their commitment to meeting customer expectations, regulatory requirements, and striving for continuous improvement.

#### **Importance:**

For a company like Emvees, ISO 9001 certification underlines its commitment to providing products and services that consistently meet regulatory standards and customer expectations. It reflects Emvees' focus on quality, risk management, and process efficiency, which is crucial for maintaining high standards in water and wastewater treatment projects.

#### **Benefits for Emvees:**

- Enhances credibility and customer confidence.
- Facilitates a culture of continuous improvement.
- Reduces operational risks by optimizing processes.
- Provides a solid foundation for compliance and tendering for government projects.

### 2. ISO 14001 Certification

#### **Description:**

ISO 14001 is the standard for Environmental Management Systems (EMS). It provides a framework for organizations to protect the environment, respond to changing environmental conditions, and meet societal needs. This certification specifies requirements for an EMS that enhances an organization's environmental performance through more efficient resource use and reduced waste, pollution, and carbon footprint. ISO 14001 is based on the Plan-Do-Check-Act (PDCA) model and emphasizes continuous improvement of environmental impact through systematic planning and execution.

#### **Importance:**

For Emvees, being ISO 14001 certified signifies its dedication to environmental sustainability. It confirms that Emvees implements proactive measures to minimize its environmental impact in all operations, whether it's waste management, resource conservation, or pollution control. This certification is essential for positioning the company as an environmentally responsible player in the water and wastewater management industry.

#### **Benefits for Emvees:**

- Ensures compliance with regulatory environmental obligations.
- Reduces the environmental footprint and operational costs.
- Enhances the company's image and attracts environmentally conscious clients.

- Demonstrates a commitment to sustainable development and environmental protection.

### 3. **EcoVadis Certification**

#### **Description:**

EcoVadis is a globally recognized provider of business sustainability ratings. The EcoVadis certification assesses a company's performance in terms of environmental, social, and ethical practices. The evaluation process covers four key areas: environment, labor and human rights, ethics, and sustainable procurement. Companies are rated on a scorecard, and depending on the overall performance, they are awarded different levels of medals: Bronze, Silver, Gold, and Platinum. The aim of EcoVadis certification is to drive sustainability through responsible sourcing and business transparency.

#### **Importance:**

EcoVadis certification is a strong indicator of Emvees' commitment to sustainable business practices and corporate social responsibility. It highlights Emvees' efforts in ethical governance, eco-friendly operations, and sustainable supply chain management. With EcoVadis certification, Emvees gains recognition for being a socially and environmentally conscious company, adding value to its brand image in the eyes of clients, stakeholders, and regulatory bodies.

#### **Benefits for Emvees:**

- Strengthens the company's reputation as a sustainable and socially responsible business.
- Attracts potential clients and partners focused on sustainability.
- Enhances transparency and trust in the company's environmental and social practices.
- Facilitates compliance with sustainability mandates, which is becoming increasingly important for global tenders and partnerships.

## **Detailed Impact of Certifications on Emvees' Operations**

### **1. ISO 9001 Certification - Impact on Quality Management**

- **Quality Assurance in Project Execution:**

With ISO 9001, Emvees ensures that each project, whether it's a large-scale wastewater treatment plant or a customized industrial effluent solution, is executed with a systematic quality management approach. Every step, from initial design to final installation and commissioning, follows a predefined quality management protocol. For example, Emvees employs structured quality checks at each project phase — starting from vendor selection and material procurement to installation, testing, and final commissioning. This minimizes errors, reduces project delays, and ensures that the end solution meets both regulatory and client-specific standards.

- **Consistent Client Communication and Documentation:**

Emvees follows standardized protocols for communication, documentation, and reporting to clients, enhancing transparency and reducing misunderstandings. Each client interaction is recorded, every design change documented, and all project updates are shared in a structured format, ensuring smooth project management. For instance, in the design and commissioning of a new Sewage Treatment Plant (STP),

Emvees provides clients with detailed project timelines, engineering drawings, and regular progress reports — all aligned with ISO 9001 standards.

- **Supply Chain and Vendor Management:**

ISO 9001 also governs Emvees' supply chain operations. The company maintains a strict vendor qualification process to ensure that only high-quality components and materials are used in its projects. For instance, in procuring RO membranes, the selection is not just based on cost but also on stringent quality parameters like durability, efficiency, and compliance with environmental norms.

## **2. ISO 14001 Certification - Impact on Environmental Management**

- **Environmental Impact Assessment in Project Planning:**

Every new project undertaken by Emvees begins with a thorough Environmental Impact Assessment (EIA). This includes evaluating potential impacts on local ecosystems, water bodies, and air quality. For example, when designing an Effluent Treatment Plant (ETP) for a chemical manufacturing unit, Emvees ensures that the design adheres to ISO 14001 guidelines by incorporating sustainable technologies like Membrane Bio Reactors (MBR) and Moving Bed Biofilm Reactors (MBBR), which are known for their low environmental impact.

- **Sustainable Technology Integration:**

As part of its ISO 14001 certification, Emvees integrates technologies that minimize resource consumption and environmental impact. This is evident in its adoption of the latest green technologies like advanced sludge dewatering units, anaerobic digesters for biogas production, and zero-liquid discharge (ZLD) systems. For example, in the food processing industry, Emvees' solutions often incorporate energy-efficient aeration systems and sludge management technologies that reduce waste volume and produce biogas as a byproduct.

- **Continuous Monitoring and Environmental Compliance:**

Emvees implements real-time monitoring systems to track the environmental performance of its wastewater treatment plants. Data on effluent quality, emissions, and resource usage is continuously monitored and analyzed to ensure compliance with both local and international environmental standards. If a project is found to deviate from set parameters, Emvees initiates corrective measures to bring the system back into compliance — demonstrating its commitment to sustainability as outlined in ISO 14001.

## **3. EcoVadis Certification - Impact on Sustainability and CSR**

- **Sustainable Supply Chain Management:**

With EcoVadis certification, Emvees places a strong emphasis on sustainable procurement practices. This means that every product, from bio-enzymes to membrane filters, is sourced from suppliers who adhere to similar environmental and ethical standards. For instance, Emvees' partnership with Greasezilla™ for FOG (Fats, Oils, and Grease) treatment is not just a technical collaboration but also a sustainability initiative, ensuring that hazardous FOG is converted into biofuel, reducing landfill waste and promoting circular economy principles.

- **Focus on Ethical Practices and Social Responsibility:**

The EcoVadis certification influences Emvees' approach to employee welfare,

community engagement, and business ethics. The company ensures that its workforce operates in a safe, inclusive, and non-discriminatory environment. It also engages in community outreach programs, such as educational workshops on water conservation and sustainable waste management practices for local communities.

- **Client and Stakeholder Engagement:**

EcoVadis certification requires a focus on transparency and stakeholder engagement. Emvees actively involves clients and stakeholders in its sustainability initiatives, conducting regular meetings, sustainability audits, and performance reviews. For example, Emvees hosts bi-annual client workshops where it shares updates on its environmental performance, new technologies being integrated, and best practices in sustainable water management.

## **Project-Specific Examples of Certification Influence**

1. **Industrial Wastewater Treatment Projects:**

For a large-scale industrial ETP project, Emvees' ISO 9001 certification ensures that every phase, from initial design to final commissioning, adheres to strict quality guidelines. The project teams follow a detailed project management plan, ensuring resource optimization, risk management, and continuous quality assurance.

2. **Organic Solid Waste Management Solutions:**

In organic waste management, ISO 14001 standards guide Emvees to implement solutions like anaerobic digesters that convert organic waste into biogas and compost, thus reducing greenhouse gas emissions and minimizing waste sent to landfills. The company's projects are designed to not only meet but exceed local environmental regulations, making them highly efficient and sustainable.

3. **Operational & Maintenance Services:**

For Operation & Maintenance (O&M) services, EcoVadis standards drive Emvees to adopt best practices in safety, employee training, and sustainable resource use. This ensures that even after project delivery, Emvees continues to operate in a manner that is socially and environmentally responsible.

By aligning its operational practices with these globally recognized certifications, Emvees not only strengthens its competitive advantage but also ensures that every project it undertakes is executed with the highest standards of quality, environmental stewardship, and ethical governance.



## Services & Support - Detailed Overview

### 1. Operation & Maintenance (O&M)

Operation & Maintenance (O&M) is a comprehensive service offered by Emvees, ensuring that all water and wastewater treatment systems operate at peak efficiency throughout their lifecycle. O&M services typically include daily operation, routine inspections, preventive maintenance, troubleshooting, and optimization of plant performance. Emvees deploys highly skilled and trained operators on-site, along with expert engineers to oversee complex systems. The goal of O&M services is to ensure that the treatment plants meet regulatory standards, minimize downtime, and reduce operational costs by maintaining the plant in optimal condition.

#### Key Features:

- **Daily Monitoring & Operations:** Continuous supervision of plant operations to ensure smooth functioning.
- **Preventive Maintenance:** Scheduled maintenance activities to prevent unexpected breakdowns and prolong the system's lifespan.
- **Regular System Audits:** Identifying inefficiencies or potential risks and implementing corrective measures.
- **Reporting & Documentation:** Comprehensive reports on system performance, including operational parameters, compliance status, and maintenance activities.
- **Emergency Support:** Round-the-clock availability for quick resolution of unforeseen issues.

With O&M services, Emvees ensures that clients can focus on their core business activities while having the peace of mind that their critical water and wastewater infrastructure is being managed by professionals.

### 2. Annual Maintenance Contracts (AMC)

Annual Maintenance Contracts (AMC) are designed to provide clients with ongoing support and maintenance for their water and wastewater treatment systems. These contracts are tailored to meet specific client needs, covering all aspects of system upkeep, including routine inspections, preventive maintenance, and timely replacement of parts. AMCs are ideal for ensuring compliance, reducing the risk of equipment failure, and extending the operational life of the systems.

#### Key Offerings:

- **Routine Inspections:** Regular visits to monitor system performance and identify potential issues.
- **Component Replacement:** Proactive replacement of consumables such as membranes, filters, and chemical dosing units.
- **Performance Optimization:** Adjustments and fine-tuning of system parameters to ensure maximum efficiency.

- **Documentation & Reporting:** Detailed logs of maintenance activities, equipment status, and recommendations for further improvements.
- **Cost Savings:** Predictable maintenance costs and minimized risk of expensive emergency repairs.

By opting for an AMC with Emvees, clients benefit from hassle-free system management, reduced operational disruptions, and compliance assurance, making it a preferred choice for long-term maintenance solutions.

### 3. Revamping and Upgradation of Existing Systems

Revamping and upgradation services are essential for plants that have been operating for several years and may not be meeting current efficiency or compliance standards. Emvees specializes in evaluating the condition of existing systems and recommending solutions to enhance their performance, compliance, and operational efficiency. This may involve upgrading technology, replacing outdated components, optimizing treatment processes, or expanding the system's capacity to meet increased demand.

#### Typical Services Include:

- **System Assessment:** Comprehensive analysis of the existing system, identifying inefficiencies and potential areas for improvement.
- **Technology Upgrades:** Integration of advanced technologies like MBR, MBBR, or ZLD systems to improve treatment quality.
- **Component Replacement:** Upgrading critical components such as aeration units, pumps, blowers, and filtration systems.
- **Process Optimization:** Re-engineering processes to reduce energy consumption, improve effluent quality, and enhance overall efficiency.
- **Compliance Assurance:** Modifications to ensure the system meets the latest environmental and regulatory standards.

Revamping and upgradation not only extend the lifespan of the treatment plant but also result in significant cost savings by reducing operational expenses and avoiding penalties related to non-compliance.

### 4. Project Management and Execution

Project management and execution are core strengths of Emvees, encompassing the entire project lifecycle from initial planning to final handover. Each project is meticulously managed to ensure it is completed on time, within budget, and to the highest quality standards. Emvees follows a structured project management methodology, incorporating rigorous planning, risk assessment, resource allocation, and continuous monitoring.

#### Project Management Highlights:

- **Detailed Project Planning:** Developing comprehensive project plans, including scope, timelines, and resource allocation.
- **Risk Management:** Identifying potential risks and implementing strategies to mitigate them.
- **Coordination with Stakeholders:** Ensuring seamless communication and collaboration between clients, vendors, and the project team.
- **Quality Assurance:** Adherence to ISO 9001 standards to ensure that all deliverables meet the required quality specifications.
- **Progress Monitoring:** Regular status updates, milestone tracking, and adjustments to keep the project on track.

This structured approach ensures that each project is executed efficiently, with a focus on meeting client expectations and delivering high-quality solutions.

## 5. On-Site Installation and Commissioning

Emvees provides on-site installation and commissioning services to ensure that each system is set up correctly and functions as intended from day one. This includes site preparation, equipment installation, interconnection of system components, and detailed testing to verify that all systems operate within the specified parameters.

### Installation & Commissioning Services Include:

- **Site Assessment & Preparation:** Evaluating the site for any specific installation requirements and preparing it for equipment setup.
- **Equipment Installation:** Assembling and installing various components, including reactors, pumps, filtration units, and control systems.
- **System Integration:** Ensuring that all components are properly connected and integrated into the overall treatment system.
- **Commissioning & Testing:** Performing rigorous testing to validate system performance and compliance with design specifications.
- **Operator Training:** Training on-site personnel to operate and maintain the system effectively.

With a focus on precision and quality, Emvees ensures that every installation is done right the first time, minimizing startup issues and ensuring a smooth transition to full operation.

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## 6. Supply, Installation, and Commissioning (SIC) Services

The Supply, Installation, and Commissioning (SIC) service model is designed to provide a complete turnkey solution for clients, covering everything from sourcing equipment to final commissioning. Emvees takes responsibility for procuring the highest quality components, handling logistics, installing the equipment, and ensuring it is fully operational.

### SIC Services Cover:

- **Equipment Sourcing:** Selection and procurement of high-quality equipment and components from reputed manufacturers.
- **Logistics Management:** Safe and timely transportation of equipment to the client's site.
- **Installation & Setup:** Installation of systems according to design specifications, ensuring proper alignment and connection.
- **Final Testing & Commissioning:** Thorough testing of the entire system to verify its performance and ensure compliance.
- **Handover Documentation:** Providing clients with comprehensive documentation, including as-built drawings, operating manuals, and compliance certificates.

SIC services offer clients a single point of contact for their project needs, simplifying the entire process and ensuring seamless project execution.

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## 7. Training and Support for Operators

Proper training is crucial for the effective operation of complex treatment systems. Emvees offers comprehensive training programs for on-site operators, covering everything from basic system operation to advanced troubleshooting techniques. This ensures that client personnel are well-equipped to manage the system efficiently and respond to any operational issues.

### Training Programs Include:

- **System Overview & Operation:** Detailed sessions on system components, operational parameters, and process flow.
- **Maintenance Best Practices:** Guidance on preventive maintenance activities and common troubleshooting techniques.
- **Safety & Compliance:** Training on safety protocols and compliance with local environmental regulations.
- **Hands-On Training:** Practical sessions where operators learn by doing, ensuring they gain confidence in handling the system.

Training is often accompanied by ongoing support, ensuring that operators can rely on Emvees for advice and assistance even after the training period ends.

## 8. After-Sales Service and Support

Emvees places a strong emphasis on after-sales service, providing ongoing support to clients long after the project is completed. This includes routine check-ups, performance evaluations, supply of consumables, and rapid response to any operational issues that arise.

### After-Sales Support Includes:

- **Scheduled Maintenance Visits:** Routine visits to monitor system performance and conduct preventive maintenance.

- **Spare Parts Supply:** Availability of spare parts and consumables to ensure uninterrupted operation.
- **Technical Assistance:** Access to expert technicians and engineers for troubleshooting and system optimization.
- **Emergency Support:** 24/7 emergency support to address critical issues and minimize downtime.

This comprehensive support ensures that clients receive maximum value from their investment and that the systems continue to perform optimally for years to come.

## **Partner Companies of Emvees - Detailed Overview**

Emvees collaborates with a diverse range of partner companies that specialize in different areas of environmental technology, water and wastewater treatment, and solid waste management. These partnerships allow Emvees to offer a wider spectrum of services and solutions, leveraging cutting-edge technology and expertise from around the world. Below is a detailed description of each partner company, their areas of expertise, and their contributions to Emvees' service offerings.

### **1. Equine Health Care (EHC)**

**Equine Health Care (EHC)** is a renowned organization specializing in health and environmental care solutions. With a strong focus on sustainable development and health management, EHC provides comprehensive support in areas such as water quality management, health monitoring, and environmental protection. The partnership with Emvees allows the integration of health-focused water treatment solutions that prioritize not just efficiency but also environmental and human health standards. EHC's cutting-edge technologies are often incorporated in projects where maintaining water quality for sensitive environments and industries is crucial.

#### **Core Specializations:**

- Health-centric water quality management
- Environmental monitoring and assessment
- Sustainable environmental technologies

Through this partnership, Emvees is able to offer solutions that meet stringent health and safety regulations, ensuring water treated for consumption or industrial use adheres to global health standards.

### **Green Method Engineering**

**Green Method Engineering** is an environmental engineering company that provides advanced technologies and sustainable solutions for water and wastewater treatment. They are known for their innovative methods in effluent treatment, particularly in the area of biological and physicochemical treatment technologies. With a focus on eco-friendly and

energy-efficient solutions, Green Method Engineering brings a wealth of experience and technological expertise to Emvees' project portfolio.

**Core Specializations:**

- Biological treatment technologies (e.g., MBBR and MBR)
- Physicochemical treatment processes
- Resource recovery and zero-liquid discharge systems

Their contributions include advanced engineering design and technology selection for complex wastewater challenges, helping Emvees implement more sustainable and effective treatment methodologies.

**Mann + Hummel**

**Mann + Hummel** is a global leader in filtration technology, providing innovative solutions for water treatment, air filtration, and automotive applications. With decades of experience and a strong research and development foundation, Mann + Hummel brings advanced filtration systems to Emvees' projects, ensuring superior quality and reliability in treated water.

**Core Specializations:**

- Membrane filtration systems (UF, RO, and NF)
- Air filtration and particulate control
- Filtration solutions for complex industrial applications

Mann + Hummel's products are incorporated into many of Emvees' water and air treatment projects, ensuring high efficiency and compliance with environmental standards. Their expertise in developing robust and long-lasting filtration solutions makes them an ideal partner for projects with stringent quality requirements.

**Pure Air**

**Pure Air** is a leading provider of odor control and air purification solutions. Specializing in removing harmful gases, volatile organic compounds (VOCs), and other airborne pollutants, Pure Air's technology is a critical component in projects where maintaining air quality is paramount. Their systems are widely used in industries such as wastewater treatment, food processing, and manufacturing, where odor management is a significant challenge.

**Core Specializations:**

- Odor control technologies
- Air purification systems
- VOC and gas removal solutions

By partnering with Pure Air, Emvees is able to offer comprehensive air quality management solutions alongside its water treatment services, ensuring a cleaner and healthier environment for industrial and municipal clients.

## **Colsen**

**Colsen** is an innovative engineering company from the Netherlands, specializing in sustainable wastewater and organic solid waste management solutions. Known for their expertise in resource recovery and bio-energy, Colsen's technology is employed in industries seeking to turn waste into valuable resources, such as biogas or nutrient recovery.

### **Core Specializations:**

- Anaerobic digestion and biogas production
- Nutrient recovery (phosphorus and nitrogen)
- Advanced wastewater treatment technologies

Colsen's collaboration with Emvees is particularly valuable in projects focused on achieving energy neutrality and resource recovery from wastewater and solid waste, aligning with Emvees' mission to promote sustainability in every aspect of water and waste management.

## **Greasezilla**

**Greasezilla** is a US-based company specializing in FOG (Fats, Oils, and Grease) treatment. Their proprietary technology transforms problematic FOG waste into biofuel, providing a sustainable solution to an otherwise challenging waste stream. The system is known for its simplicity, cost-effectiveness, and ability to generate value from waste.

### **Core Specializations:**

- FOG treatment and management
- Biofuel production from waste grease
- Environmental compliance for grease waste management

Emvees partners with Greasezilla to offer cutting-edge FOG treatment solutions that convert waste into a profitable resource, supporting clients in meeting environmental regulations while generating additional revenue from biofuel production.

## **Envirochemie**

**Envirochemie** is a globally recognized leader in industrial water and wastewater treatment, known for their innovative and sustainable solutions. With expertise in both biological and chemical treatment processes, Envirochemie offers a wide range of systems designed to

meet the specific needs of various industries, including chemicals, pharmaceuticals, and food production.

#### **Core Specializations:**

- Water and wastewater treatment plants
- Zero-liquid discharge systems
- Industrial effluent treatment and resource recovery

Their solutions are designed to be energy-efficient and environmentally friendly, helping Emvees achieve compliance and sustainability goals for its clients. Envirochemie's advanced technologies are often used in complex treatment applications where standard solutions fall short.

#### **Clear-Fox**

**Clear-Fox** is a leading European company specializing in decentralized wastewater treatment solutions. They offer compact, modular systems that are ideal for small communities, hotels, camps, and remote industrial sites. Clear-Fox's systems are known for their low operational costs, ease of maintenance, and compliance with stringent environmental regulations.

#### **Core Specializations:**

- Modular and containerized wastewater treatment plants
- Decentralized and mobile treatment systems
- Cost-effective solutions for remote locations

Through their partnership with Clear-Fox, Emvees is able to offer scalable and flexible treatment solutions for clients in remote or temporary setups, ensuring high-quality treatment even in challenging environments.

#### **Benefits of Emvees' Wastewater Treatment Solutions:**

- Effective removal of contaminants: Our solutions address the high alkalinity, suspended solids,

and harmful elements present in ready-mix concrete wastewater.

- Tailored treatment options: We provide a range of technologies to meet your specific needs and treatment goals.

- Sustainable operation: Emvees' systems promote water conservation by enabling potential



reuse of treated water.

- Reduced environmental impact: By effectively treating wastewater, Emvees helps the ready-mix concrete industry operate more sustainably.

## **Residential Reverse Osmosis (RO) Systems**

### **Domestic & Commercial RO Units**

Ideal for drinking water, replacing bottled water.

#### **1) RO 6 Stages Filtration System**

- **Stage 1:** 10" Sediment Filter
- **Stage 2:** 10" Granular Activated Carbon (GAC) Filter
- **Stage 3:** 10" Carbon Block Filter
- **Stage 4:** RO Dow Chemical Membrane (Made in USA)
- **Stage 5:** Post Inline GAC Filter
- **Stage 6:** Mineral Filter

Includes:

- Booster Pump (110/220 V, 50/60 Hz)
- Taste and Odor Filter
- Stand for the Filtration Unit
- Storage Tank

#### **2) Standard Installation Kit (Included)**

- 4 Gallon Storage Tank\*
- Tank Valve\*
- Faucet Kit
- Feed Adapter Kit
- Drain Saddle
- Filter Wrench
- Color-coded Tubing
- Installation & Operation Manual

#### **3) Replacement Filter Packs for 5 Stage RO System**

- Model: RO 50 Replacement Filter Cartridge Kit
  - (1) 5 Micron Sediment Filter
  - (2) 10 Micron Carbon Block Filters
  - (1) GAC In-Line Post-Filter
  - Membrane Sold Separately

## **Replacement Components**

- Membrane Elements: 50 GPD
- Sediment Filters: PP
- Carbon Pre-Filter: GAC
- Filter Housing: CTO
- Tubing (500' Roll):
  - Blue, Yellow, Orange, Black, White (PE-08-BI series)

## **Commercial Reverse Osmosis (RO) Plants**

Reverse Osmosis (RO) is a water filtration process that uses membrane technology to remove up to 99% of impurities, such as salts, ions, and other microns dissolved in wastewater. This method reverses the natural osmosis process by applying external pressure, forcing water through a semipermeable membrane that blocks larger contaminants.

### **Types of RO Plants:**

- Tap Water RO (TWRO)
- Brackish Water RO (BWRO)
- Seawater RO (SWRO)

### **Chemicals for RO Plants:**

- Antiscalants (to prevent scaling and extend membrane performance)
- RO Membrane Cleaners (to handle scaling and biofouling)

### **Features:**

- High-quality membranes for durability and low fouling potential.
- Periodic after-sales services to ensure optimum operation.

## **Multimedia Filtration System**

### **Water Multimedia Filter**

Multimedia filters contain multiple layers of filtration media, with progressively coarser layers at the bottom, removing suspended solids such as silt, clay, grit, algae, and organic matter.

### **How to Choose a Water Media Filter:**

- Maximum flow rate
- Nature of suspended solids (colloidal or non-colloidal)
- Feed water analysis
- Required water quality
- Availability of water for backwashing

### Components of a Multimedia Filter:

- **Filter Tank:** Made of stainless steel, FRP, or epoxy-coated steel.
  - **Media:** Layers of gravel, silica sand #20, garnet, and anthracite.
  - **Internal Distributors:** Prevent media from escaping and distribute flow.
  - **Valves:** Automatic or manual, depending on the system.
  - **Controller:** Could be PLC, electromechanical timer, or digital stager.
  - **Face Piping:** Connects valves and controls cycles.
  - **Flow Controller:** Controls backwash flow rate.
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### Water Softener Systems for Hotels

Hard water leads to pipe clogging, scaling inside pipes, and reduced boiler efficiency. Emvees offers softener systems designed to remove hardness minerals like calcium ( $\text{Ca}^{2+}$ ) and magnesium ( $\text{Mg}^{2+}$ ) ions.

#### Types of Softeners:

- **Simplex & Duplex** (Timer or volumetric-based)

The ion exchange resin is used in the process, and salt ( $\text{NaCl}$ ) is used for regeneration. Emvees provides salt tablets and excellent after-sales service to ensure smooth operation.

### Media Replacement Services

Filter media typically lasts 5-10 years and should be replaced every 18-24 months, depending on the water quality and system maintenance.

#### Signs of Media Replacement:

- Decreased filtration efficiency
- Reduced water flow
- Increased frequency of backwashing

Emvees specializes in providing cost-effective media replacement services with minimal downtime, ensuring efficient operation of the filtration system.

### Filtration & Softener Systems for Hotels

Emvees offers the following systems:

- Cartridge Filters
- Centralized Water Filtration Systems
- Softener Systems (Simplex & Duplex)

- Media Replacement (Sand & Activated Carbon)
- Resin Replacement in Softeners

With years of experience and a reputation for reliability, Emvees provides expert services in water softening and filtration, ensuring efficient operation and long-lasting performance.