



SPARKLE CLEAN TECH

WATER TREATMENT SOLUTIONS

Water is the world's most precious resource—essential for life, growth, and progress. From nurturing ecosystems to powering industries, it plays an irreplaceable role in our daily lives. Yet, with growing demand and limited supply, the need to value and conserve water has never been greater. Protecting every drop is not just a responsibility, it's a necessity for a sustainable tomorrow



MANUFACTURING UNIT



Sparkle Clean Tech (SCT) has established a modern manufacturing ,testing & research facility at Sajgaon Khopoli. The facility is located on a 14-acre plot with state-of-the-art ultra-modern manufacturing systems. The factory has in-house testing Laboratory, R&D centre QA/QC unit. The Factory is equipped with modern equipment & machineries to supply high-quality products to the clients using effective methods for efficient production.

CEO'S MESSAGE

At SCT, we are guided by a powerful mission: safeguarding one of our most precious resources—water. Our commitment transcends technology, becoming the very essence of our purpose and vision. For nearly two decades, we have pioneered water and wastewater solutions, continually adapting to meet the evolving needs of industries, communities, and ecosystems worldwide.

Our expertise, technology, and deep passion set us apart. With a team of leading experts in water treatment, we work closely with each client—listening, adapting, and crafting solutions that address not only technical demands but also align with broader values.

Collaboration is at the core of our work. Every project we take on is an opportunity to listen and deliver solutions that enhance efficiency, reliability, and sustainability. Together with communities, industries, and governments, we're building a cleaner, greener future.

Looking ahead, SCT remains dedicated to creating a world where clean water is accessible and sustainable for all. We are thrilled to share this journey with you and invite you to join us as we continue advancing the future of water treatment.

Regards,
Sumeet Mehra
CEO



OVERVIEW OF THE COMPANY

Sparkle Clean Tech is a leading global provider of process technologies and engineered solutions, specializing in sustainable and value-driven energy solutions for upstream oil and gas operations. We focus on addressing the industry's complex water management challenges by offering a comprehensive portfolio of integrated water solutions. These solutions encompass the entire water treatment lifecycle, including primary, secondary, and tertiary oily water treatment, produced water management, and water reuse. Sparkle Clean Tech is dedicated to innovation, constantly developing and refining its technologies to maximize efficiency, minimize environmental impact, and optimize operational performance for its clients. Our commitment to sustainability drives them to help customers achieve their waste reduction and resource conservation targets, while adhering to stringent environmental regulations. Sparkle Clean Tech strives to be a trusted partner, delivering tailored solutions that meet the unique needs of each project and contribute to a cleaner, more sustainable energy future.

OUR VISION

To be recognized globally as the leader in water treatment, setting benchmarks for innovation and sustainability. We aim to ensure access to safe and clean water, leveraging our technologies to foster a sustainable future where effective water management is a standard practice.

OUR MISSION

To revolutionize water treatment globally through innovation, providing efficient and sustainable solutions that enhance water security and quality for industries and communities. Sparkle Clean Tech is dedicated to advancing water management practices that are environmentally responsible and technologically advanced.

OUR CORE VALUES



Integrity

We ensure our actions align with our words.



Execution

Always delivering projects on time.



Honesty

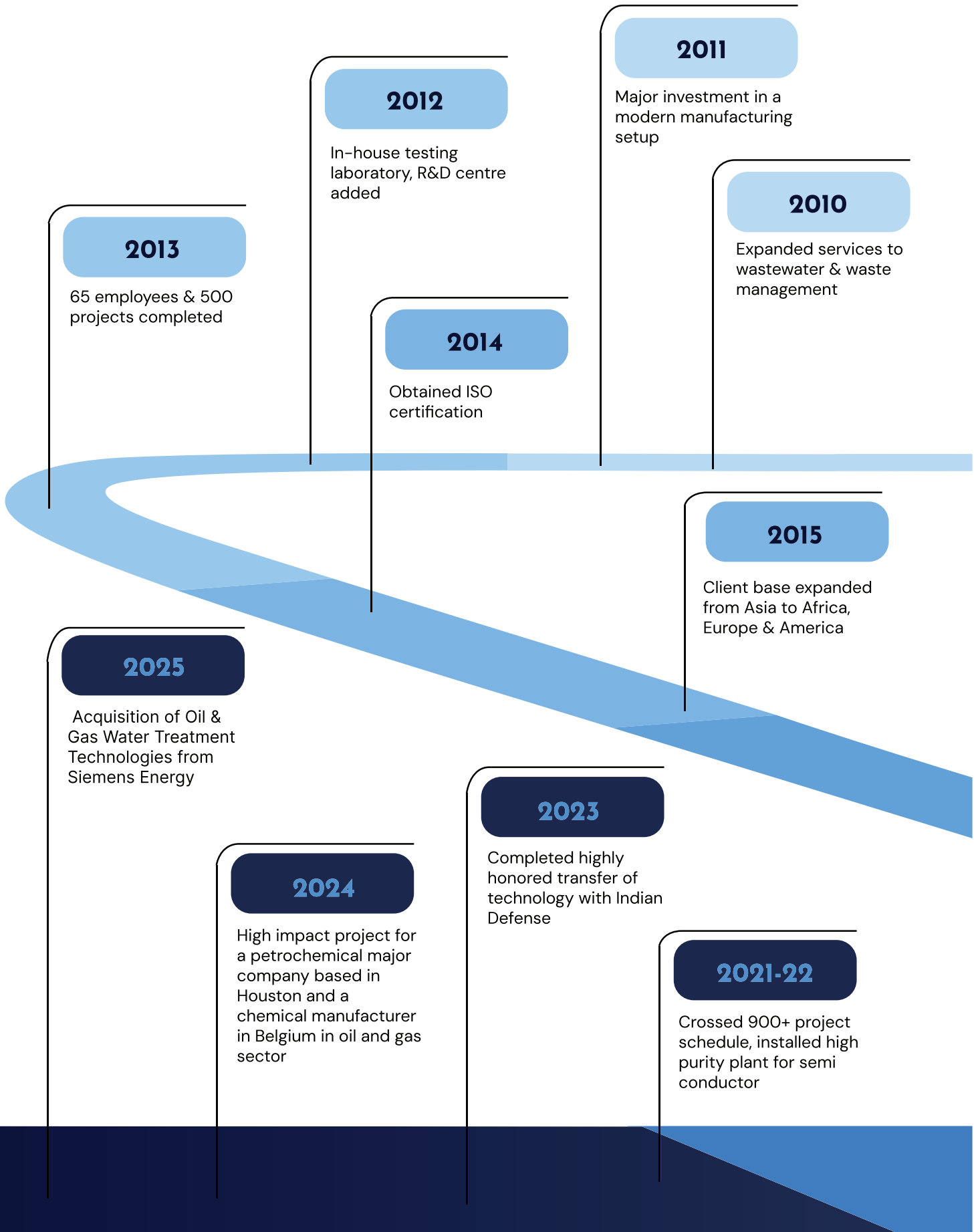
We are truthful in all our engagements.



Innovation

Continuously seeking novel solutions.

OUR JOURNEY



2008

The factory is located on a 14-acre plot with ultra-modern manufacturing systems

2006

First full year of operation: 10 clients, 8 employees

2009

Completed 300 projects with clients in India & rest of Asia

2007

Domestic products + small-scale community drinking plants

2005

Founded by Sumeet Mehra & SDL Ventures (US Venture Capital partners in Navi Mumbai, India)

2016

Became an approved vendor with leading EPC companies & consultants

2017

75 employees & 750 projects completed

2018

Designed, built & supplied Water Treatment Plants with capacities ranging from 5 m³/day to 4800 m³/day in more than 25 industries

2019

Moved into a new factory and office

2020

Offshore Desalination plant

OUR TEAM



Sumeet Mehra
President & CEO

President and CEO of Sparkle Clean Tech, leading with innovation and a strong commitment to sustainability.



Chetan Shah
Chief Financial Officer

With 30+ years of experience, Chetan excels in financial and cash flow planning, process improvement, and data analysis to drive strategic growth.



Steve Bolman
Principal Process Engineer

Holder of multiple oil-water separation patents, he led major oil and gas projects as former Principal Process Engineer at Siemens Energy Water Solutions.



Pradip Mankame
Vice President, Factory

Pradip has nearly 40 years of experience in factory administration and legal activities, making him an invaluable asset to the Sparkle team. He is responsible for managing and streamlining factory operations.



Manoj Kumar Verma
Operational Head

Manoj, a Chemical Engineer with over 40 years of experience, specializes in project planning, management, and procurement, streamlining material department activities.



Ritu Nangia
Vice President of Supply Chain & Projects

Ritu has 25+ years of experience in procurement, vendor management, and project execution, focusing on supply chain optimization and client satisfaction.



William J. Cunningham P.E.
Director, Global Business Development

With over 45 years in wastewater treatment and reuse, William directs global business development for industrial water solutions.



Rakesh Ranjan
General Manager, Projects

With 20 years in the water treatment industry, Rakesh focuses on sustainability and integrating advanced technologies to improve wastewater treatment.



Mahesh Giram
DGM Sales and Marketing

Mahesh specializes in the sales and marketing of water, effluent, and sewage treatment plants across various industries.



Eric Samuel

GM, Sales & Marketing

Eric has 30 years of experience targeting international markets in the oil and gas, semiconductor, and green hydrogen sectors.



Kirtikumar Bendavade

GM, Fabrication

Kirtikumar has 16 years of experience overseeing the production, fabrication, assembly, and commissioning of water treatment equipment.



Anil S. Potdar

GM, QA/QC

Anil has over 20 years of experience in Quality Control and Assurance, ensuring stringent quality standards across all projects.



Seema Valunj

DGM, Process & Proposal

Seema excels in treatment scheme selection, cost estimation, and providing technical support to engineering and project teams.



Neelam Shirodkar

Sr. Manager, Human Resources

Neelam has over 16 years of experience and excels in recruitment, employee relations, performance management, and HR strategy development.



Kalpana Sonawane

DGM, Electrical & Instrumentation

Kalpana has 12 years of experience in the Electrical & Instrumentation engineering sector.



Narendra Ingale

Manager, Laboratory Analysis

With over 30 years of expertise in water treatment, testing (chemical and microbiological), and validation, Narendra leads the Sparkle laboratory setup and ISO implementation.



Pankaj Tandalekar

DGM, Accounts & Finance

Pankaj brings over 20 years of experience in accounts, finance, and import/export logistics at Sparkle Clean Tech Pvt Ltd.



Nitish Telge

GM – Design & Engineering

Nitish Telge, Head of Design & Engineering, has 15 years of experience, specializing in mechanical and piping design for water treatment and oil & gas.

OUR KEY CLIENTS



SOLUTIONS WE PROVIDE



Oil & Gas Effluent Treatment Plant

Primary source of Oil & Gas Industrial effluent is the produced water separated from a well-fluid separation system. Majority of contaminants in this effluents are Oil, TSS, SRB & GAB counts.



Municipal Water Treatment Plant

Municipal water is supplied to industry and households through underground pipes. A municipal water supply system usually consists of a water source like canal, dam, river etc, a transmission pipeline, a water plant and a distribution network.



Industrial Water Treatment Plant

Raw water entering an industrial plant often needs treatment to meet tight quality specifications to be of use in specific industrial processes. Industrial water treatment encompasses all these aspects which include industrial wastewater treatment, boiler water treatment and cooling water treatment.



Industrial Process Water Treatment Plant

Process water is water that is used in a variety of manufacturing operations, such as coating and plating, rinsing and spraying, washing, etc.



High Purity Water Treatment Plant

High Purity or Ultrapure water in manufacturing refers to water treated to the highest purity levels, removing all types of contaminants—organic, inorganic, dissolved, particulate, volatile, non-volatile, reactive, inert, hydrophilic, hydrophobic, and dissolved gases.



Effluent Treatment Plant

An Effluent Treatment plant is a unit plant where using multiple methods wastewater is treated for its reuse or safe disposal to the environment.



Sewage Treatment Plant

A sewage treatment plant treats wastewater from residential buildings, including black water from toilets and bidets, and greywater from kitchen sinks, washing machines, dishwashers, baths, and showers.

OUR CERTIFICATES

At Sparkle Clean Tech, our customer-centric approach drives us to deliver tailored water treatment solutions that meet specific client needs. We prioritize excellence in both technology and service quality, continuously innovating to provide efficient and sustainable solutions. Our commitment to industry-leading standards is reinforced by our ISO 9001:2015 certification for quality management, ISO 45001:2018 for occupational health and safety, and ISO 14001:2015 for environmental management. These certifications ensure strict compliance with global standards while fostering continual improvement across all aspects of our operations, from design and engineering to execution and customer support.

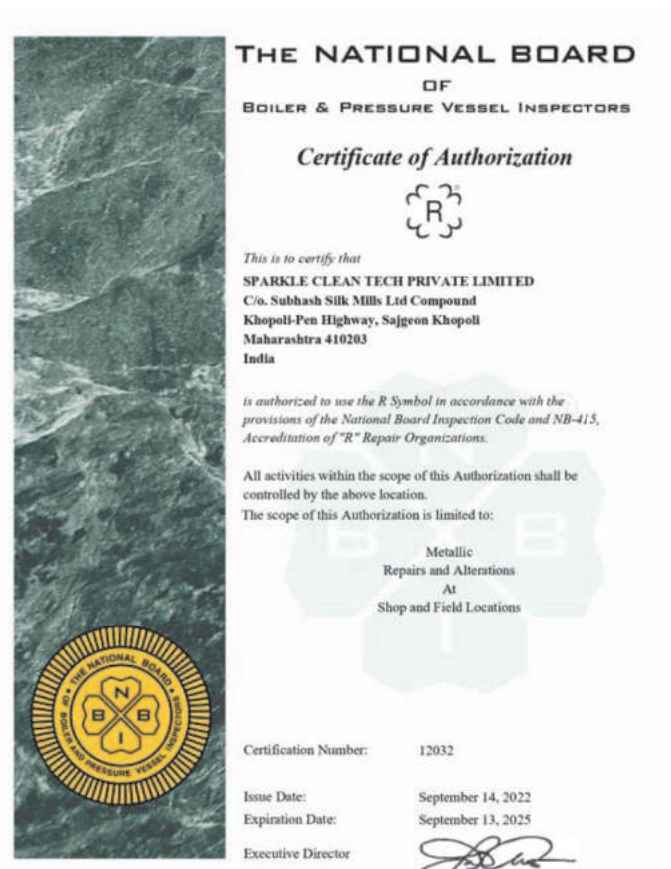
The certificates we have received are :-

Certificate of National Board - NB Stamp


Certificate of National Board - R Stamp

ASME - U Stamp Certification

First Quality Certification



The American Society of Mechanical Engineers



CERTIFICATE OF AUTHORIZATION

The named company is authorized by The American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the ASME Single Certification Mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with the ASME Single Certification Mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:

SPARKLE CLEAN TECH PRIVATE LIMITED.
C/o. Subhash Silk Mills Ltd Compound,
Khopoli Pen Highway, Sajgaon
Khopoli, Maharashtra 410 203
India.


SCOPE:

Manufacture of pressure vessels at the above location and field sites controlled by the above location (This authorization does not cover impregnated graphite)

AUTHORIZED: September 15, 2022
EXPIRES: September 15, 2025
CERTIFICATE NUMBER: 60350

Rishi B. Capth
Board Chair, Conformity Assessment

GM Eisenberg
Managing Director, Standards & Engineering Services




CERTIFICATE

The Certificate,

SPARKLE CLEAN TECH PVT LTD

89, GAUTAM COMPLEX, SECTOR-11 CBD BELAPUR, NAVI MUMBAI-400614, INDIA
SURVEY NO.2,3,4,5 AT VILLAGE SAJGAON, TALUKA KHALAPUR, DISTRICT- RAJGAD
410203, INDIA

The organization,

**DESIGN, MANUFACTURE, SUPPLY, INSTALLATION, COMMISSIONING AND
OPERATION & MAINTENANCE OF WATER TREATMENT PLANTS**

EA code: 18

In the scope of
ISO 45001:2018
to certify that Occupational Health and Safety Management System in accordance with standard's clauses is established and being implemented

First Date of Issue : 07.03.2022
Date of Issue : 06.03.2025
Certificate Period : 3 Years
Reissue Due Date : 06.03.2026
Certificate No : 03.22.10042.0658.I
No/Revision Date/No :-

[Signature]
First Quality Certification
(System Certification Approval)






CERTIFICATE

The Certificate,

SPARKLE CLEAN TECH PVT LTD

89, GAUTAM COMPLEX, SECTOR-11 CBD BELAPUR, NAVI MUMBAI-400614, INDIA
SURVEY NO.2,3,4,5 AT VILLAGE SAJGAON, TALUKA KHALAPUR, DISTRICT- RAJGAD
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OPERATION & MAINTENANCE OF WATER TREATMENT PLANTS**

EA 18

In the scope of
ISO 14001:2015
to certify that Environmental Management System in accordance with standard's clauses is established and being implemented

First Date of Issue : 07.03.2022
Date of Issue : 06.03.2025
Certificate Period : 3 Years
Reissue Due Date : 06.03.2026
Certificate No : 02.22.10042.9085.I
No/Revision Date/No :-

[Signature]
First Quality Certification
(System Certification Approval)






CERTIFICATE

The Certificate,

SPARKLE CLEAN TECH PVT LTD

89, GAUTAM COMPLEX, SECTOR-11 CBD BELAPUR, NAVI MUMBAI-400614, INDIA
SURVEY NO.2,3,4,5 AT VILLAGE SAJGAON, TALUKA KHALAPUR, DISTRICT- RAJGAD
410203, INDIA

The organization,

**Scope: DESIGN, MANUFACTURE, SUPPLY, INSTALLATION, COMMISSIONING
AND OPERATION & MAINTENANCE OF WATER TREATMENT PLANTS**

EA code: 18

In the scope of
ISO 9001:2015
to certify that Quality Management System in accordance with standard's clauses is established and being implemented

First Date of Issue : 07.03.2022
Date of Issue : 06.03.2025
Certificate Period : 3 Years
Reissue Due Date : 06.03.2026
Certificate No : 01.22.10042.115520.I
No/Revision Date/No :-

[Signature]
First Quality Certification
(System Certification Approval)



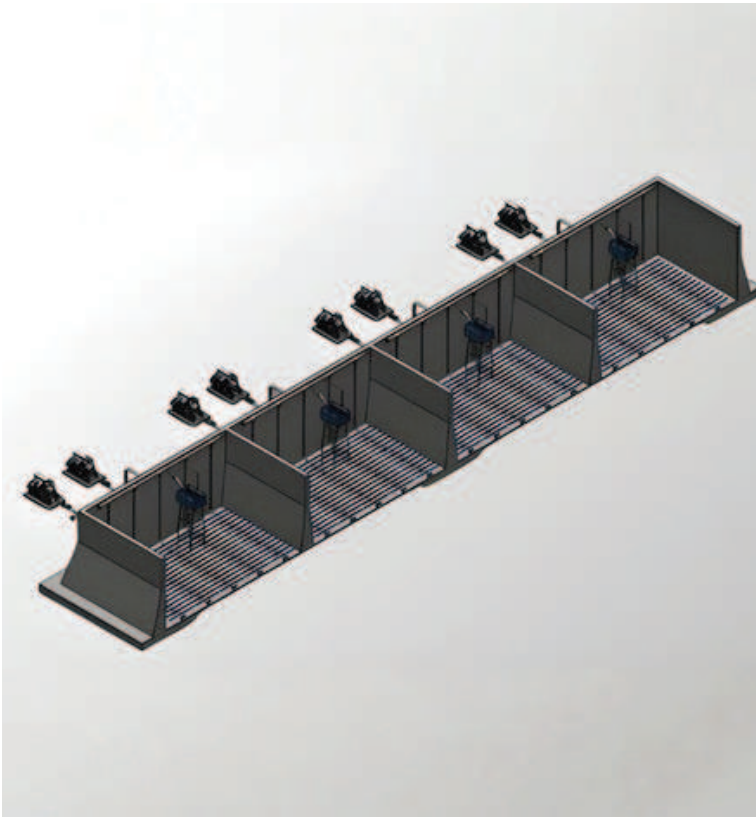




Our Technologies

ABOUT THE TECHNOLOGY

At Sparkle Clean Tech, we are committed to delivering advanced and sustainable water treatment solutions through cutting-edge technologies and innovation. Our product range, including state-of-the-art filtration systems, high-quality chemicals, and automated control systems, is designed to ensure efficiency, reliability, and environmental sustainability. Manufactured under strict quality controls and adhering to global standards, our solutions empower industries to conserve natural resources and operate responsibly. By continuously pushing the boundaries of innovation, we strive to shape a greener future where technology meets sustainability.



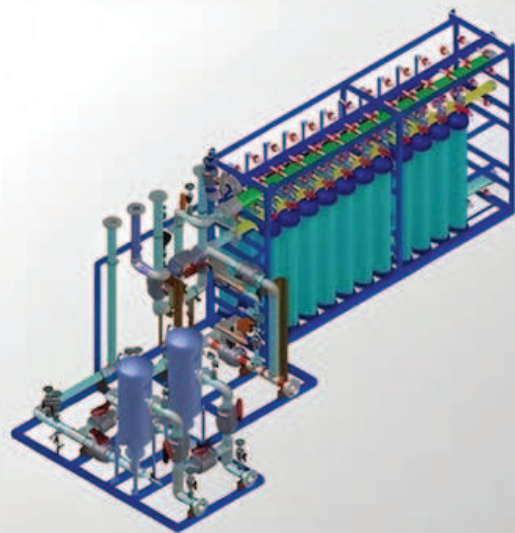
Sequential Batch Reactor (SBR)

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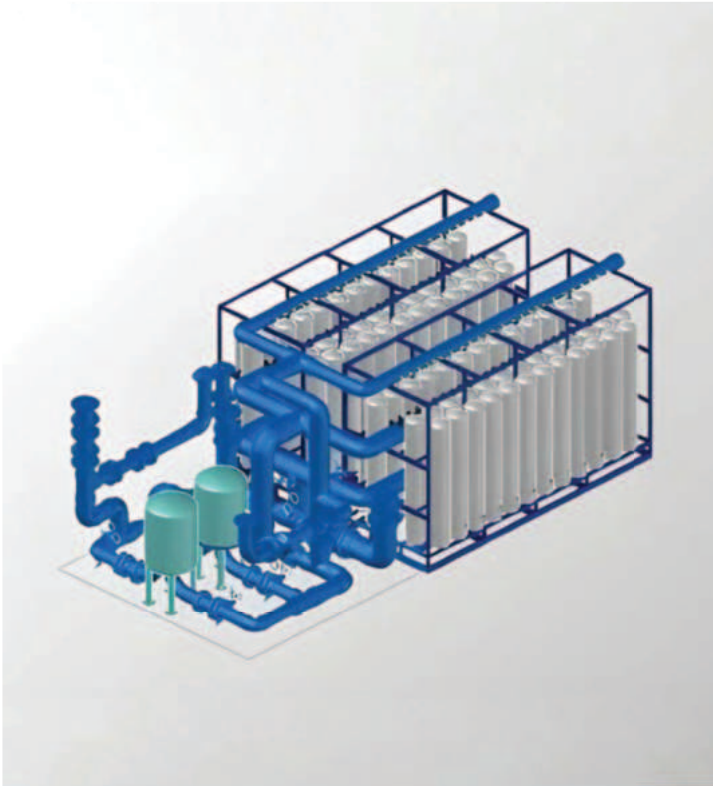
The sequencing batch reactor (SBR) is a fill-and-draw activated sludge system used for wastewater treatment. SBR systems have proven effective in treating both municipal and industrial wastewater, finding applications in large-scale municipalities as well as the modular expansion and up-rating of existing wastewater treatment facilities. Advantages of the SBR system include the ability to achieve equalization, primary clarification (in most cases), biological treatment, and secondary clarification within a single reactor vessel. This translates to operating flexibility and control, a minimal footprint, and potential capital cost savings by eliminating clarifiers and other equipment. Furthermore, SBRs offer simplified operation due to the automated control of the treatment cycles and can achieve high effluent quality, often meeting stringent discharge requirements.

Ultrafiltration – Aquabrane (UF-A)

Sparkle uses Aquabrane, hollow-fibre ultrafiltration membrane of MOC Modified PES. Aquabrane Ultrafiltration membrane is designed for Cross Flow as well as Dead End filtration. Aquabrane Developed Special membrane module to handle High Temperature Feed water 65 to 70 deg C. Moving forward, Aquabrane has developed Graphene coated Membrane that has significant advantages over conventional UF. Silent features of Aquabrane UF Membranes are due to low TMP, the TSS does not penetrate deep into the surface pores & hence can be easily removed by back washing, no aggressive chemical enhanced backwash, low CIP requirements hence low generation of chemical waste & low operating cost, fiber repairing can be easily done by dismantling the end caps.



Ultrafiltration – Aquabrane (UF-A)



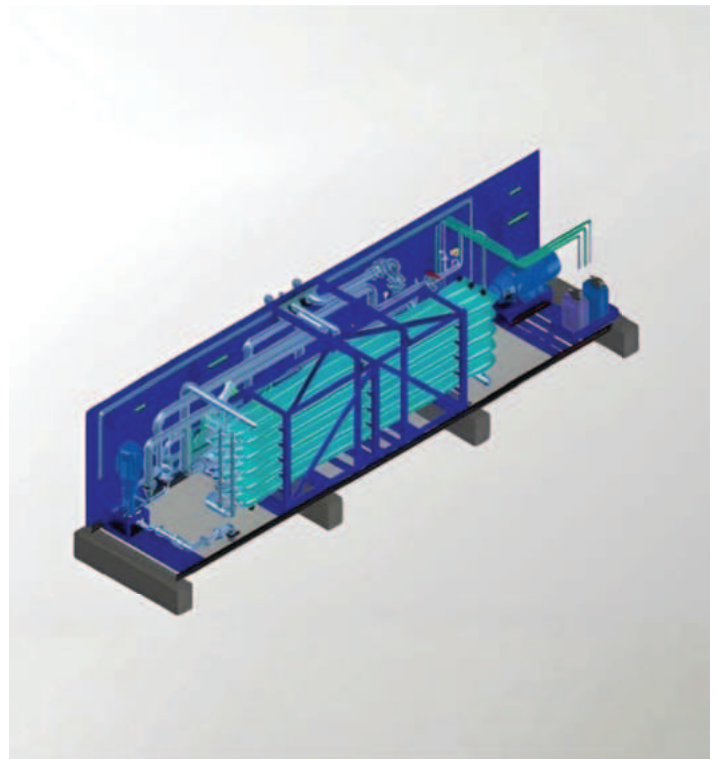
Ultrafiltration(UF) – Others(UF – O)

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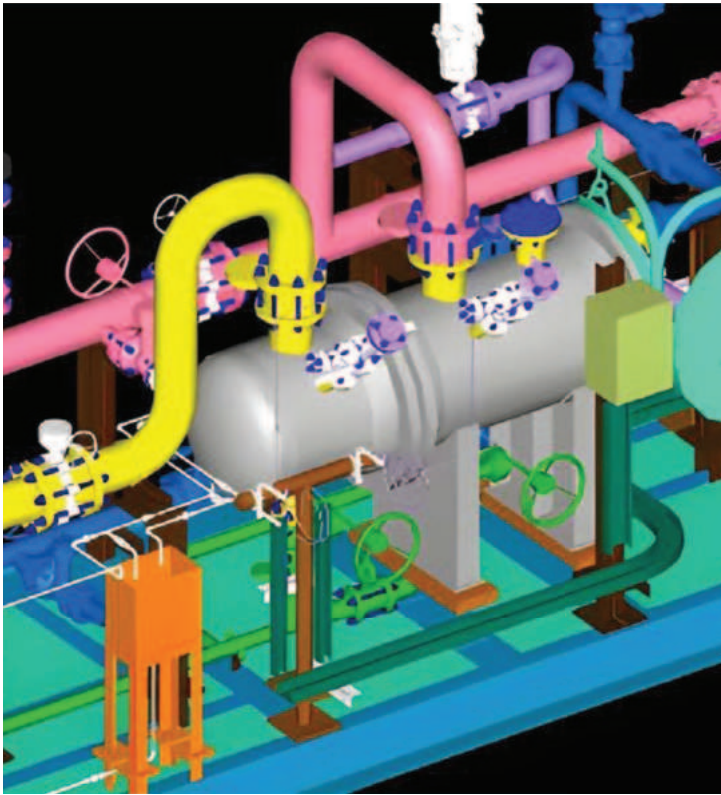
Ultrafiltration (UF) is a type of membrane filtration where hydrostatic pressure pushes a liquid against a semi-permeable membrane. This process retains suspended solids and solutes with high molecular weights, while allowing water and low molecular weight solutes to pass through. UF technology produces high-quality water by removing harmful pathogens and suspended solids. It's particularly effective at removing colloids, proteins, bacteria, pyrogens, and macromolecules larger than the membrane pore size. Additionally, UF systems are known for their relatively low energy consumption and compact footprint, making them versatile for various applications like drinking water treatment, wastewater reuse, and industrial processes.

Sea Water Reverse Osmosis (SWRO)

Reverse osmosis (RO) is a water purification technology that uses a semipermeable membrane to remove ions, molecules from water. RO membrane is designed to allow only water to pass through this dense layer, while preventing the passage of solutes. This process requires that a high pressure is exerted on the high concentration side of the membrane. Sea water reverse osmosis (SWRO) is a desalination process that uses high-pressure to force seawater through a specialized semipermeable membrane, which removes salts and impurities. Pre-treatment removes particles and organic matter, while a high-pressure pump drives the process. Post-treatment adjusts water quality, ensuring the produced fresh water meets standards. As the freshwater supply on our plant is limited, we should preserve its resources by utilizing the method of desalination to eliminate water shortage crisis that the world might face.



Sea Water Reverse Osmosis (SWRO)



Hydro-Cyclone (HC)

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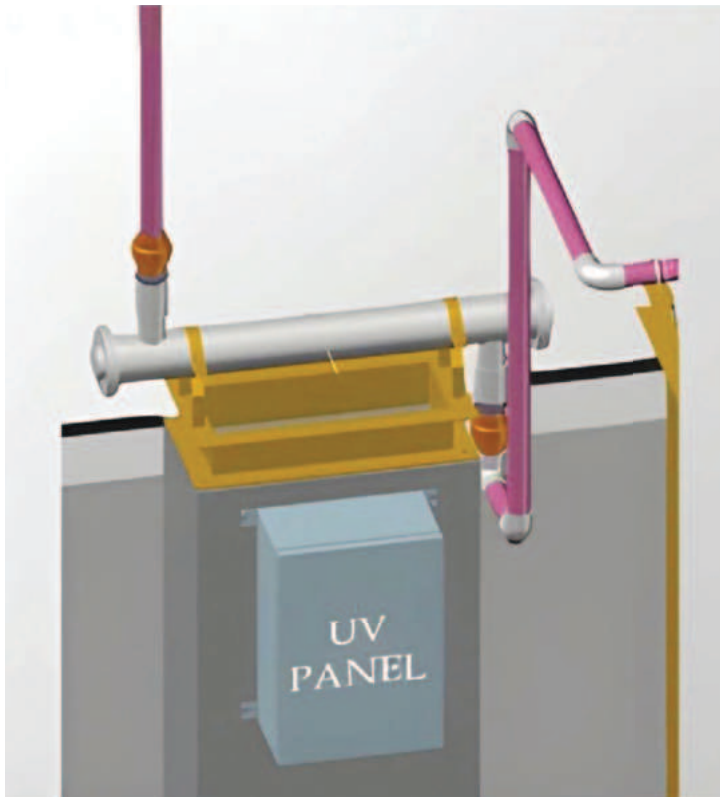
Hydrocyclones are a type of cyclonic separators that separate product phases mainly on basis of differences in gravity. Based on composition, two type of Hydro cyclones are available i.e. Liquid/Liquid and Solid/ Liquid Hydrocyclone. A hydrocyclone comprises a cylindrical shaped feed part with tangential feed. Wastewater is fed into the hydrocyclone tangentially under a certain pressure. This creates a centrifugal movement, pushing the heavier phase outward and downward alongside the wall of the conical part. The decreasing diameter in the conical part increases the speed and so enhances the separation. The result is a simple but effective, and very compact, oil/water separator with no moving parts.

Nutshell Filter (NSF)

A Nutshell Filter is a device designed to remove oil from water. Utilizing nutshells, which possess an equal affinity for both water and oil, the filter allows oil to adsorb onto the nutshell media during normal operation. Critically, this adsorbed oil can then be removed from the bed during agitation, enabling reuse of the filter media. While not primarily designed for solids removal, an added benefit is the incidental accumulation of solids within the bed, leading to an increase in differential pressure as solids collect. Nutshell filtration finds applications in treating various wastewater streams, including oil field produced water, refinery wastewater, steel mill direct spray and caster water, ethylene plant quench water, copper concentrate decant, and cooling water. Furthermore, nutshell filters are known for their high oil removal efficiency and relatively low backwash requirements.



Nutshell Filter (NSF)



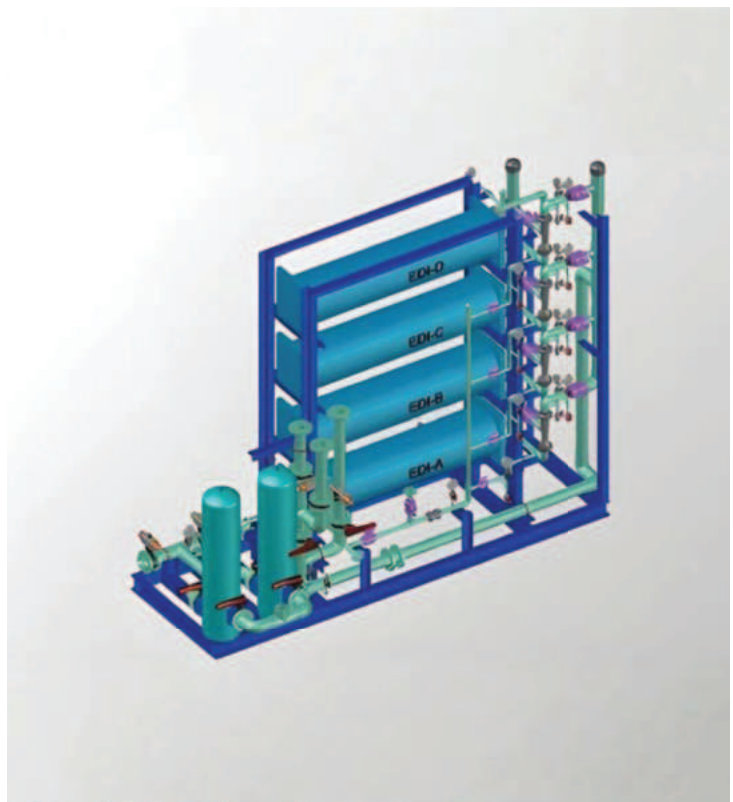
Ultraviolet for TOC (UVTOC)

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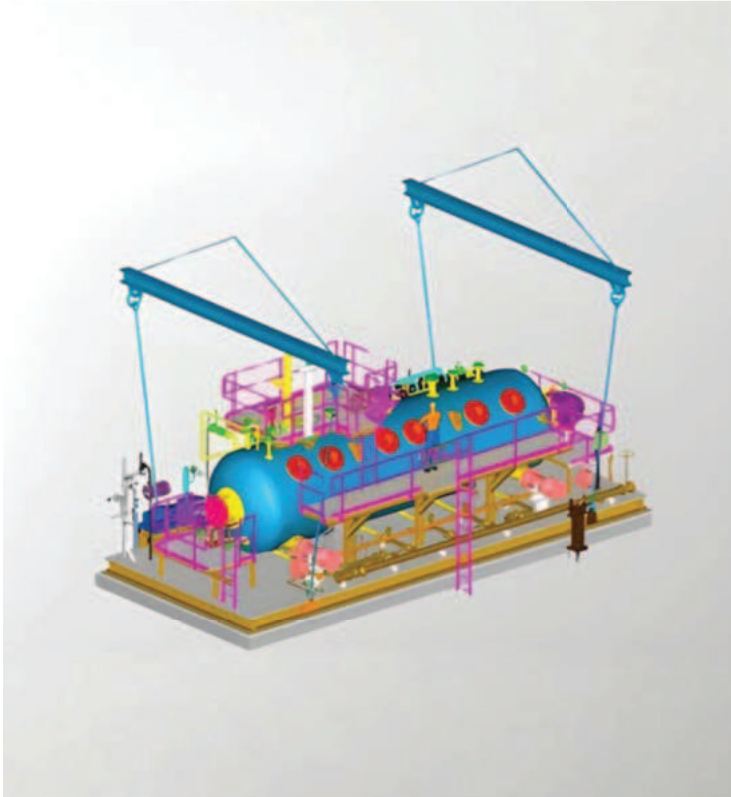
Ultraviolet (UV) light is a well-established water treatment technique, renowned for its potent disinfection capabilities. Its strong germicidal effect stems from its ability to break chemical bonds within microorganisms, effectively inactivating and killing them. Beyond disinfection, UV technology can also be employed to reduce Total Organic Carbon (TOC) in water. TOC reduction systems utilize UV light at a wavelength of 185 nm. This high-energy radiation triggers the formation of free radicals, which then oxidize organic compounds into carbon dioxide (CO₂) and water (H₂O) molecules. UVTOC systems offer several advantages, including high TOC reduction rates, minimal chemical usage, and a compact footprint.

Electrodeionization (EDI)

Electrodeionization is an advanced technology for producing high-purity water, crucial in industries like pharmaceuticals and electronics. It operates continuously, using ion exchange resins and an electric current to remove ions from water without needing chemical regeneration. EDI employs ion exchange membranes and resin beds through which water flows, while a direct current separates ions. The process also includes electrochemical regeneration, where the current splits water into hydrogen and hydroxide ions to regenerate the resin beds effectively. This method ensures consistent production of ultrapure water with minimal ion content, meeting stringent quality standards for industrial applications demanding pristine water quality.



Electrodeionization (EDI)



Induced Gas Flotation (IGF)

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Induced gas flotation (IGF) is a wastewater treatment process that removes emulsified oil or solids by injecting gas bubbles into the water. These bubbles attach to contaminants, causing them to float to the surface for skimming. IGF systems are available in horizontal and vertical designs, with horizontal units further categorized as pressurized or atmospheric depending on space requirements. As complete, self-contained units, these separators occupy minimal space and are easily installed for fixed or portable operation. IGF units are highly effective in treating wastewater from various industries, including oil and gas, petrochemical, and food processing. Moreover, they can achieve high removal efficiencies for oil and suspended solids, often exceeding 90%, making them a crucial component in many wastewater treatment plants.

Corrugated Plate Interceptor (CPI)

A Corrugated Plate Interceptor (CPI) is a wastewater treatment process that removes free oil and solids. It uses a series of parallel plates to increase the separation surface area, allowing small oil droplets to coalesce and separate from the water. This separation occurs due to differences in specific gravity and liquid temperature. CPIs offer several advantages, including better effluent quality by removing free oil droplets of 60 microns or larger, and a low-maintenance design with no moving parts. Additionally, they have a compact design, reducing space requirements, and are cost-effective due to their simple construction and minimal maintenance.



Corrugated Plate Interceptor (CPI)



Our Products

ABOUT THE PRODUCTS

Our product range encompasses a wide variety of advanced solutions, including sophisticated filtration systems, high-performance chemicals, and state-of-the-art automated controls. Each product is meticulously designed and manufactured with the highest standards of quality control to ensure superior performance and durability. We use the latest technology and industry best practices in every stage of production, ensuring that our products meet or exceed global standards of excellence, reliability, and safety. Our commitment to innovation and quality guarantees that our solutions are not only effective but also efficient, offering long-term value for our customers across various industries. Whether for water treatment, chemical processing, or any other specialized application, our products are engineered to deliver optimal results in diverse and demanding environments.



Hydro-Cyclone (HC)

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Membrane Bioreactor (MBR)

A Membrane Bioreactor (MBR) is a cutting-edge water treatment technology that seamlessly integrates biological treatment with membrane filtration. Within an MBR system, microorganisms in a bioreactor work diligently to break down organic pollutants present in wastewater. The defining characteristic of an MBR is the utilization of membranes, usually ultrafiltration or microfiltration types, to separate the treated water from the activated sludge biomass. This membrane barrier acts as a highly effective filter, guaranteeing superior treated water quality by removing suspended solids, bacteria, and even pathogens. This results in a much cleaner and safer effluent compared to conventional treatment methods. Furthermore, MBRs often operate at higher biomass concentrations, leading to a smaller footprint and reduced sludge production.



Membrane Bioreactor (MBR)



Ultrafiltration(UF) – Others(UF – O)

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Electrodeionization (EDI)



Ultraviolet for TOC (UVTOC)

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Ultraviolet for TOC (UVTOC)

Tilted Plate Interceptor (TPI)

The tilted plate interceptor (TPI) is an oil-water gravity separator, suitable for oily wastewater treatment and rainwater runoff. Tilted plate separators are similar to API separators but incorporate a tilted parallel plate pack. Tilted plate oil interceptors enable high-efficiency gravity separation with a corrugated plate pack, providing excellent treatability even with high flow rates. The simple structure reduces construction costs and facilitates maintenance. Tilted plate oil interceptors are primarily used to remove bulk oil from water. Furthermore, TPIs offer a compact footprint compared to traditional API separators, minimizing space requirements. They also exhibit low headloss, which reduces energy consumption during operation.



Tilted Plated Interceptor (TPI)



Induced Gas Flotation (IGF)

Induced Gas Flotation (IGF)

Induced gas flotation (IGF) is a wastewater treatment process that removes emulsified oil or solids by injecting gas bubbles into the water. These bubbles attach to contaminants, causing them to float to the surface for skimming. IGF systems are available in horizontal and vertical designs, with horizontal units further categorized as pressurized or atmospheric depending on space requirements. As complete, self-contained units, these separators occupy minimal space and are easily installed for fixed or portable operation. IGF units are highly effective in treating wastewater from various industries, including oil and gas, petrochemical, and food processing. Moreover, they can achieve high removal efficiencies for oil and suspended solids, often exceeding 90%, making them a crucial component in many wastewater treatment plants.

Dissolved Gas flotation (DGF)

Dissolved Gas flotation (DGF) treatment process that clarifies wastewaters by the removal of suspended matter such as oil or solids. Dissolved gas flotation involves the use of pressure to dissolve more air/ gas into wastewater than can be dissolved under normal atmospheric pressure. Then releasing the air at atmospheric pressure in a flotation tank basin. The released air forms tiny bubbles which adhere to the suspended matter causing the suspended matter to float to the surface of the water where it may then be removed by a skimming device. In the oil industry, dissolved gas flotation (DGF) units do not use air as the flotation medium due to the explosion risk. Nitrogen gas is used instead to create the bubbles.



Dissolved Gas flotation (DGF)



Nutshell Filter (NSF)

Nutshell Filter (NSF)

A Nutshell Filter is a device designed to remove oil from water. Utilizing nutshells, which possess an equal affinity for both water and oil, the filter allows oil to adsorb onto the nutshell media during normal operation. Critically, this adsorbed oil can then be removed from the bed during agitation, enabling reuse of the filter media. While not primarily designed for solids removal, an added benefit is the incidental accumulation of solids within the bed, leading to an increase in differential pressure as solids collect. Nutshell filtration finds applications in treating various wastewater streams, including oil field produced water, refinery wastewater, steel mill direct spray and caster water, ethylene plant quench water, copper concentrate decant, and cooling water. Furthermore, nutshell filters are known for their high oil removal efficiency and relatively low backwash requirements.

Softener

Water softening is the removal of calcium, magnesium, and certain other metal cations in hard water. The resulting soft water is more compatible with soap and extends the lifetime of plumbing. Water softening is usually achieved using lime softening or ion-exchange resins. It is widely used in the food & beverage, hydrometallurgy, metals finishing, chemical & petrochemical, pharmaceutical, sugar & sweeteners, ground & potable water, nuclear, softening & industrial water, semiconductor, power, and a host of other industries. Soft water also reduces scaling in pipes and appliances, improving their efficiency and longevity. Moreover, it enhances the lathering and cleaning action of soaps and detergents, leading to better cleaning results and reduced soap scum.



Softener



Two bed Deminersalisation

Two bed Demineralisation

Demineralization, often used interchangeably with deionization, is the process of removing virtually all minerals from water. This is crucial when water is used in chemical processes where the presence of minerals could interfere with other chemicals, such as in the production of chemical and beauty products. While often resulting in "softened" water by replacing undesirable minerals with salts like NaCl, demineralized water actually has a higher conductivity than truly deionized water. Two-bed demineralization systems typically involve passing water through a cation exchange resin bed followed by an anion exchange resin bed, effectively removing positively and negatively charged ions, respectively. This process is essential in various industries, including power generation, pharmaceuticals, and electronics manufacturing, where high-purity water is required.

Three bed Demineralisation

When a process demands even higher water purity than a two-bed demineralization system can provide, a three-bed demineralization plant, incorporating a mixed bed, is employed. This mixed bed, consisting of both cation and anion exchange resins, acts as a polishing step after the two-bed system, further reducing the levels of remaining ions. The mixed bed effectively removes trace impurities, producing water with extremely low conductivity and high resistivity, often required in industries like semiconductor manufacturing and pharmaceuticals. Three-bed demineralization systems are thus essential for applications where even minute amounts of dissolved minerals can be detrimental to the final product or process.



Three bed Demineralisation



Standalone Mixed bed

Standalone Mixed bed

Mixed bed deionization is a mixture of cation and anion resin combined in a single ion exchange column. With proper pretreatment, product water purified from a single pass through a mixed bed ion exchange column is the purest that can be made. Most commonly, mixed bed demineralizers are used for final water polishing to clean the last few ions within water prior to use. Small mixed bed deionization units have no regeneration capability. Commercial mixed bed deionization units have elaborate internal water and regenerant distribution systems for regeneration.

High Rate Solid Contact clarifier (HRSCC)

A High Rate Solid Contact Clarifier (HRSCC) utilizes turbulence and high velocity to reduce silica load in water, in addition to removing suspended impurities and turbidity. Because of its design, an HRSCC requires less area and process time, which in turn reduces the initial civil cost of the plant. HRSCC systems offer several advantages, including high removal efficiencies for silica and other suspended solids, a compact footprint, and reduced chemical usage. They are also known for their robust design and ability to handle fluctuating flow rates, making them suitable for various industrial and municipal applications.



High Rate Solid Contact clarifier (HRSCC)



Dissolved Air Flotation (DAF)

Dissolved Air Flotation (DAF)

Dissolved air flotation (DAF) is a water treatment process that clarifies wastewaters (or other waters) by the removal of suspended matter such as oil or solids. The removal is achieved by dissolving air in the water or wastewater under pressure and then releasing the air at atmospheric pressure in a flotation tank basin. The released air forms tiny bubbles which adhere to the suspended matter causing the suspended matter to float to the surface of the water where it may then be removed by a skimming device. Dissolved air flotation is very widely used in treating the industrial wastewater effluents from oil refineries, petrochemical and chemical plants, natural gas processing plants, paper mills, general water treatment and similar industrial facilities.

Clari - Flocculation

A Clari-Flocculator combines the functions of a clarifier and a flocculator into a single unit. The physio-chemical processes of settling and flocculation occur within this unit. A separate chamber is typically provided for dosing flocculants. Clari-Flocculators are available in various designs, including central drive, peripheral drive, and agitator gate types. These combined units offer a smaller footprint and simplified operation compared to separate clarifiers and flocculators. They are commonly used in water and wastewater treatment to remove suspended solids and improve water clarity.



Clari - Flocculation



Tube / Plate Separation

Tube / Plate Separation

Tube / Plate/ Lamella settlers are modern unconventional solid - liquid separation systems units. These settling units due to higher settling area and effective arrangement of multiple tubular channels sloped at an angle of 55°- 60° and adjacent to each other, increases the rate of settling. These modern settlers provides particle settling depth that is significantly less than the settling depth of a conventional clarifier, reducing settling times. Tube settlers capture the settleable fine floc that escapes the clarification zone beneath the tube settlers and allows the larger floc to travel to the tank bottom in a more settleable form.

Oil skimmer

An oil skimmer is a device used to remove floating oil, grease, or other hydrocarbons from water surfaces. It enhances wastewater treatment, prevents pollution, and improves equipment efficiency by collecting contaminants using belts, disks, drums, or floating weirs. Oil skimmers are crucial in various industries, including oil and gas, maritime, and manufacturing, to minimize environmental impact and ensure compliance with environmental regulations. They also play a vital role in protecting wildlife and ecosystems from oil spills and contamination.



Oil Skimmer



Pressure & Sand Filter

Pressure & Sand Filter

A sand bed filter is a type of deep bed filter used to separate small amounts (<10 parts per million or <10 g per cubic metre) of fine solids (<100 micrometres) from aqueous solutions. Pre-treated water passes through sand filters to remove suspended impurities. Sand bed filters are used for both fresh and wastewater filtration. These filters are effective in removing suspended solids, turbidity, and some dissolved impurities. They are widely used in municipal water treatment, industrial processes, and swimming pool filtration. Pressure sand filters, specifically, operate under elevated pressure to increase the filtration rate and enhance the removal of finer particles.

Activated Carbon Filter

Carbon filtering is a method of filtering that uses a bed of activated carbon to remove contaminants and impurities through chemical adsorption. Activated carbon works by adsorption, where pollutant molecules in the fluid are trapped within the pore structure of the carbon. Carbon filtering is commonly used for water purification. Activated carbon filters are effective at removing a wide range of contaminants, including chlorine, organic compounds, and some heavy metals. They are widely used in household water filtration systems, industrial processes, and even aquariums. Furthermore, activated carbon filters can improve the taste and odor of water by removing chlorine and other organic compounds.



Activated Carbon Filter



Iron Removal Filter

Iron Removal Filter

Iron removal from water can be achieved through various treatment methods depending on its form. For soluble ferrous ions, removal is done using ion exchange with a metal-selective strong acid cation resin or reverse osmosis (RO) if the iron concentration is below 0.05 mg/L. For insoluble iron, methods like chemical oxidation using ozone, hydrogen peroxide, or chlorine, media adsorption with active media and chlorine as a catalyst, or pH adjustment above 8 through aeration or caustic dosing are commonly used. These processes ensure effective iron removal, improving water quality to meet industry standards.

Multigrade Filtration

To achieve better results in terms of specific flow and outlet quality, multigrade filters are being used. Multigrade filters have more than one media for filtration. Other than filtering sand, more porous media are utilized for filtration, such as anthracite and garnet. Because of their better porosity, they are used as the primary filtering media along with the filtering sand as a secondary level. The outlet of a multigrade filter can give less than 2 ppm turbidity. Multigrade filters offer several advantages, including higher flow rates, improved removal of suspended solids, and longer filter runs between backwashes. They are widely used in municipal and industrial water treatment applications.



Multigrade Filtration



Micron Cartridge Filter

Micron Cartridge Filter

Micron cartridge filters restrict particulate matter in water down to their rated pore size, which can be as small as 0.2 microns. These cartridges can be made from inert polymer materials or steel. Cartridge filters are classified as either absolute or nominal. Absolute filters remove 99.9% of particulate matter above their rated micron size, while nominal filters remove between 80–90% of particles above the rated size. A major use of micron cartridge filters is as a pre- or guard filter for ultrafiltration and reverse osmosis systems. They are also used for removing bacteria and pyrogens in high-purity water systems, particularly in the pharmaceutical industry. Additionally, micron cartridge filters are relatively easy to install and replace, making them a convenient choice for many applications. They also offer a cost-effective way to protect downstream equipment from fouling and damage.

RO Plant

A Reverse Osmosis plant comprises of membranes made of polyacid, etc. The spirally bound membranes are subjected to pressure to complete the process of Reverse Osmosis. They are typically used whenever salt removal or deionization is required. Reverse osmosis removes more than 97%–99% of the total dissolved solids along with organics, bacteria and other particulates. Reverse Osmosis is becoming more and more popular viz a viz ion exchange process because of input TDS restrictions in ion exchange and ease of operation.



RO Plant



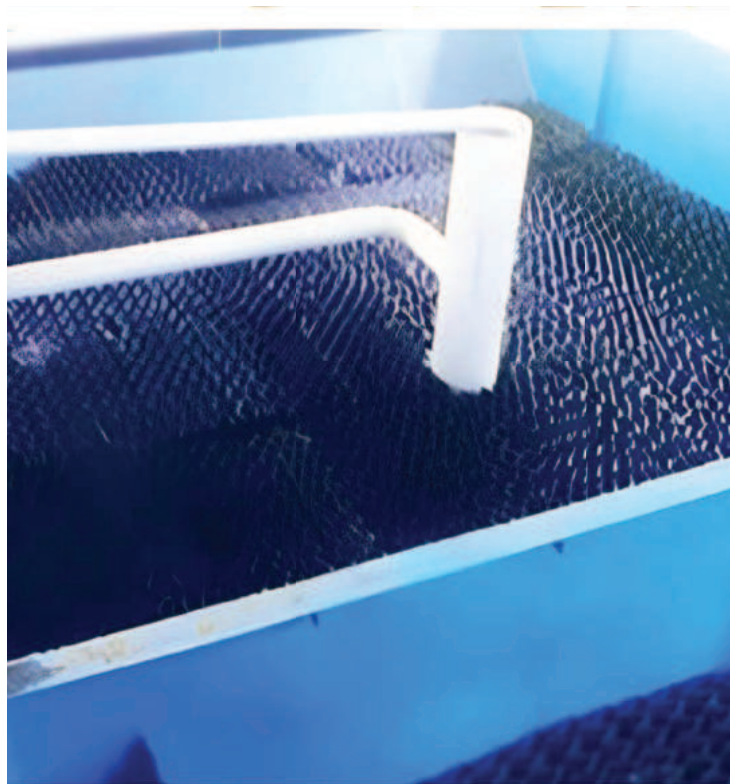
Extended Aeration

Extended Aeration

Extended aeration is aerobic biological treatment process used in wastewater treatment. This process is principally modified version of most commonly used and proven technology i.e. activated sludge process. Extended aeration systems are simpler in construction and operation. The wastewater is brought directly to the aeration basin after screening and grit removal. In aeration basin the aeration is carried out for extended period of time thus mineralizing the sludge solids sufficiently hence the sludge produced is completely digested. Extended aeration is a method of sewage treatment using acclimatized active biomass, the oxygen for bioprocess is provided from mechanical aeration system of blowers and fine bubble diffusers.

Submerged Aerated Fixed Film Bio Reactor – SAFF

Submerged Aerobic Fixed Film Reactor (SAFF) is a cost-effective method of waste water treatment and sewage sanitation that is primarily used in residential and commercial complexes. SAFF process is attached growth type aerobic biological process which uses corrugated inert UV stabilized PVC media. Unlike other aerobic processes of suspended growth principally it provides higher mechanical surface area due to corrugation on media surface. This higher surface area helps biomass microbes for rapid digestion of biomass.



Submerged Aerated Fixed Film Bio Reactor – SAFF



Moving Bed Bioreactor – MBBR

Moving Bed Bioreactor – MBBR

MBBR (Moving bed biofilm reactor) as the name suggests is a high rate attached growth aerobic treatment system wherein the bacterial growth takes place on a inert PP media. MBBR process uses the floating type plastic media for the attached growth process. Treatment units based on MBBR are operating successfully worldwide, as the technology is rugged and simple to operate. Units can be pre-assembled for rapid on-site installation. The major advantages include a compact, efficient design (less than a half of conventional plants), low sludge generation, low odor and low visual impact, and simple maintenance requirements. Like SAFF process the basic principle of treatment is attached growth which is carried out on media surface which is extensively corrugated specialized structure.

Degasser

Degasser breaks weak carbonic acid into carbondioxide and water. The unit operation used is stripping. The weak acid, either from weak acid cation or strong acid anion is introduced from the top of the degasser column. The Degasser column has ballrings to increase the contact area. Air is blown from the bottom of the degasser tower. The air will split the Carbonic acid into carbondioxide and water, Co₂ will be vented of from the degasser tower and the water will be collected in a tank. Degassed tower considered in a DM water system or in D Alclysing system when the alcalynity in the water is very high and the pay back of degasser tower is favorable.



Degasser

Nano Filtration



Nanofiltration is a membrane filtration process that bridges the gap between ultrafiltration (UF) and reverse osmosis (RO), selectively rejecting high molecular weight salts. Primarily used for hardness removal, specifically calcium and magnesium salts, nanofiltration finds applications as a pre-filtration stage for RO systems and in boiler feed water treatment. The underlying principle is similar to reverse osmosis, relying on pressure-driven transport across a semi-permeable membrane. Nanofiltration membranes typically have a looser structure than RO membranes, allowing some monovalent ions to pass through while effectively retaining divalent ions and larger molecules. This makes nanofiltration a valuable tool for water softening, reducing scaling potential, and removing specific contaminants while minimizing the removal of beneficial minerals.

Nano Filtration

Ultra Violet System

UV systems are a common method for water disinfection. Water is passed through UV light, which effectively eliminates bacteria and viruses. UV light, a form of electromagnetic radiation with wavelengths from 10nm to 400nm, penetrates harmful microorganisms and destroys them. Disinfecting with UV light is simple and effective, destroying up to 99.99% of harmful microorganisms without adding any chemicals, thus preserving the water's taste and odor. UV systems offer several advantages, including rapid disinfection, low maintenance requirements, and no chemical byproducts. They are widely used in residential, commercial, and industrial applications for water disinfection. Furthermore, UV disinfection is a non-contact process, meaning there is no direct contact between the UV source and the water, minimizing the risk of contamination.



Ultra Violet System



Ozonator

Ozonator

Ozone is an unstable molecule which readily gives up one atom of oxygen providing a powerful oxidizing agent which is toxic to most waterborne organisms. It is a very strong, disinfectant that is widely used. It is a very good disinfectant. Ozone is made by passing oxygen through ultraviolet light or a "cold" electrical discharge. To use ozone as a disinfectant, it must be created on-site and dosed in to the water. As compared to chlorine the issue of odour and smell is lesser. Ozone though is a very good disinfectant does not leave any disinfectant in residual water. This may be termed as advantage as well as disadvantage. It is applied as an anti-microbiological agent for the treatment, storage, and processing of foods.

API Separator

Fixed vapor containment covers on API oil/water separators effectively reduce odors and VOC emissions by enclosing skimming equipment in a nitrogen-blanketed vapor space, ensuring a non-explosive environment and enhanced oil skimming. These steel covers feature access hatches for inspection and maintenance, with durable gaskets providing a secure seal. Designed for safety, our separators include double containment steel tankage for leak detection, vapor-tight covers, corrosion-resistant collector components, and stainless steel for durability. With extensive experience in API separator applications, we prioritize customer satisfaction, ensuring efficient, long-term performance and risk-assessed, safe operation with pressure/vacuum relief and flame arrestors.



API Separator



Monosep™ High-flow Walnut Shell Filtration

Sparkle CleanTech Water Solutions offers a complete line of products to remove oily contaminants from water. Our Monosep high-flow walnut shell filter offers improved technology in walnut shell filtration. The proprietary filter design requires no moving equipment to perform backwashes and greatly reduces the volume of backwash water produced when compared to other walnut shell filter designs. This simplifies the design of the filter, reduces the weight and footprint, and lowers the cost of multiple filter systems.

Monosep™ High-flow Walnut Shell Filtration

Solid-Liquid Hydrocyclone

SCT's cyclone clarifiers offer efficient solid/liquid separation in a compact design, using hydrocyclone technology to remove particles as small as 5 microns without moving parts or backwash cycles. Operating under pressure, they use centrifugal force to separate solids, which are discharged continuously or intermittently. Available in various sizes and materials, including urethane, alloys, ceramics, and proprietary boron alloys, they provide durability for diverse applications. Their modular design allows easy expansion, and their minimal maintenance ensures near 100% service uptime. With a footprint far smaller than traditional clarifiers, cyclone clarifiers offer cost-effective, space-saving filtration solutions.



Solid-Liquid Hydrocyclone

CASE STUDY – EFFLUENT TREATMENT PLANT FOR WALNUT SHELL FILTER BACKWASH WATER

Introduction

The Mangala Processing Terminal (MPT) operates 11 Walnut Shell Filters to treat produced water. To ensure effective treatment of backwash water generated from these filters, an Effluent Treatment Plant (ETP) was commissioned. This plant operates under anaerobic conditions to maintain oxygen levels below 10 ppb, enabling safe recycling or disposal of treated water.

Problem Background

The backwash process generates approximately 2,520 m³/day of water containing high levels of Oil in Water (OIW) (3,000–10,000 ppm) and Total Suspended Solids (TSS) (1,500–6,500 ppm). The high pollutant concentration posed a significant challenge in meeting environmental discharge standards. Additionally, the intermittent batch processing (110 m³ per cycle, lasting 30–45 minutes) created variability in inflows, necessitating a robust treatment system.

Challenges Faced

High levels of OIW and TSS necessitated advanced treatment to meet environmental standards. Additionally, the batch-wise nature of backwash water discharge led to variable inflow volumes, creating operational challenges. Ensuring strict anaerobic conditions was essential to prevent oxygen ingress and maintain system performance.

Proposed Solutions

The solution involved converting batch inflow into a continuous treatment process. To optimize efficiency, alternating surge tanks were employed to receive and process backwash water effectively. Additionally, the system incorporated de-oiling polymer, flocculation, and Dissolved Nitrogen Floatation (DNF) for the efficient removal of oil and suspended solids. Finally, nitrogen blanketing was implemented to maintain anaerobic conditions throughout the process.

Solutions Implemented

The ETP was engineered to treat 2,520 m³/day by utilizing two surge tanks operating in alternating modes, thereby optimizing capacity. The treatment process followed these key steps:

- Flash Mixing & Flocculation: Introduction of de-oiling polymer to enhance separation.
- Dissolved Nitrogen Floatation (DNF): Removal of oil and suspended solids.
- Sludge Removal: Settled solids were periodically extracted and disposed of as per environmental regulations.
- Nitrogen Blanketing: Prevented oxygen ingress to sustain anaerobic conditions.

Final Outcome

Following commissioning, the ETP successfully reduced OIW and TSS levels to below 10 ppm, ensuring compliance with environmental standards. The optimized system design improved operational efficiency and effectively managed high pollutant loads and variable inflows.

Final Outcome

The Effluent Treatment Plant at MPT represents a well-engineered solution for managing complex water treatment challenges in the oil and gas sector. Its efficient design and implementation set a benchmark for sustainable and regulatory-compliant effluent treatment.



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