



Septech MBBR Moving Bed Biological Reactor STP

SHL Global Investments

SHL Global Investments is a leading investor operating in the global growth markets across Asia, Africa, Latin America and the Middle East. Since inception, it completed the acquisition of industry recognised brands including Septech, New Water Corporation and a number of specialised engineering, manufacturing and technology companies across the G.C.C., thereby creating the deepest bench of engineering experience across global growth markets. Employing over 400 people, the Group has 10 country offices and 7 manufacturing facilities spread across 3 regional hubs in Australia, Spain and the United Arab Emirates.

Local presence across these markets provides the group with unmatched expertise, know-how, proprietary transactional access and the ability to grow partner businesses across borders. SHL Global Investments shareholders and management currently manage sector and in-country value (ICV) specific investments for these subsidiary group companies, encompassing full-service Asset Management, Investment Banking, Private Equity and Finance.

Investments managed by the group have holdings in sectors including manufacturing, water infrastructure, engineering and oil and gas. The group's current portfolio of shareholders include industry leaders and private long-standing investors.

The group has set the standard for infrastructure related investments through its investment into a regionally built infrastructure wastewater business which started in 1997 and has 18 years of proven track records for delivering projects on time and budget, the highest corporate governance and transparency and a wealth of capabilities to take on projects of almost any calibre from an engineering or financial standpoint. Expanding on this investment, SHL Global Investments further invested into New Water Corporation (NWC) and its world class recognised team to cement its position as one of the most advanced integrated water and wastewater engineering companies globally which currently holds some of the most advanced Intellectual Property available in the market. Through this investment, the formation of New Water Corporation was integrated into the portfolio of SHL and a globally recognised team has emerged today capable of handling a wider range of the world's challenges in the water industry globally.

SHL Global Investments is committed to the highest environmental, stakeholder engagement and corporate governance standards. The group's subsidiaries have leading industry recognised certifications and registrations which are all fully compliant to the highest standards available in the industry. The group has supported best in class organizations focused on entrepreneurship and job creation, community engagement and impact on the economic landscape of the markets in which it operates.

Septech MBBR

Moving Bed Bio Reactor (MBBR) is an attached growth activated sludge process. The basis of the process is the carrier elements (or biomed) that are made from polyethylene. The biomed provide a large protected surface area for the aerobic biofilm and optimal conditions for the bacteria culture to grow and thrive. The biofilm is responsible for the biological oxidation of organic constituents in the wastewater. The MBBR reactor can be loaded with biomed up to 40% to 60% of the tank's effective volume thus, significantly reducing the required footprint.

Advantages of the MBBR system over other activated sludge processes are:

- Reduced footprint for the aeration tank (MBBR reactor) and overall plant footprint Relatively stable and can withstand shock loads
- Low sludge production
- Mother Liquor Suspended Solids (MLSS) is not a design parameter so no need for Return Activated Sludge (RAS) and the associated pumps/pumping facilities
- Modular design, easy to expand
- Utilises medium/coarse bubble diffusers, instead of more expensive fine bubble systems
- May be used to retrofit or upgrade existing conventional activated sludge plants without need for new tanks

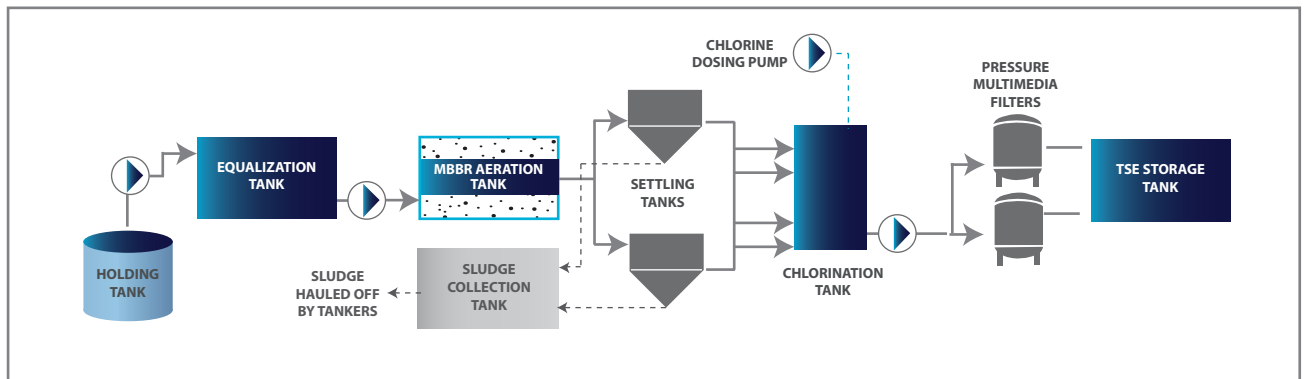
Service and After Sales

Septech gives you one-stop shopping for a complete and comprehensive waste management system, for seamless integration, both aesthetic and functional with your environment. Septech provides a full back-up after sales service to ensure the installation runs effectively, including long term contract maintenance, if required.



Al Reef Villas, Abu Dhabi, UAE

A typical process flow diagram of the MBBR Sewage Treatment Plant



Aeration System

- The aeration system for the MBBR reactor consists of a peripheral aeration and airlifts
- The cleansing effect of the airlifts makes the MBBR Reactor constantly self cleaning
- The debris cleared off the bio-media, consisting almost exclusively of inert bacteria cell membranes, is flushed out of the aeration tank with the general circulation
- The system has 3 compartments and is designed for removal of maximum Biological Oxygen Demand (BOD) in the 1st and 2nd compartment while the nitrification is carried out in the 3rd compartment
- Air from positive displacement blowers is supplied to fulfill the oxygen requirement for the process

Settling Tanks

- The incoming water from the reactor tank is allowed to settle in the settlement tank to separate solids from clear water. The tank is designed for conservative overflow rate to ensure good separation and minimise solids carryover into chlorine contact tank

Chlorine Contact Tank

- The supernatant liquid overflows from settlement tank to chlorine contact tank via V-notch. Sodium Hypochlorite is dosed and the sufficient residence time is provided for disinfection

Tertiary Filtration

- As a final step, this disinfected Treated Sewage Effluent (TSE) is filtered for achieving the Effluent water quality, prior to transfer to TSE storage tank

Influent Characteristics

Parameter	Unit	Values
BOD ₅	mg/l	300
COD	mg/l	500
Total Suspended Solids (TSS)	mg/l	250
Ammonia Nitrogen (NH ₃ -N)	mg/l	30
Oil and Grease	mg/l	< 2
pH	units	6.5 - 8.5
Wastewater Temperature	Deg C	25 - 35
Total coliform	MPN/100 ml	10 ⁷ - 10 ⁸

The above table shows a typical analysis of domestic sewage for which our MBBR units are designed.

Effluent Quality

Parameter	Unit	Values
BOD ₅	mg/l	≤ 10
TSS	mg/l	≤ 10
pH	units	6 - 9
NH ₃ -N	mg/l	≤ 5
Oil and Grease	mg/l	≤ 1
Wastewater Temperature	Deg C	25 - 35
Total coliform	MPN/100 ml	≤ 20

Treated sewage quality shall be as follows if the influent parameters are compliant to the above and the STP is operated in accordance with the O&M manual that will be provided by Septech.

Why Septech?

- A world-class diverse management team, consisting of water infrastructure specialists with local and global expertise
- A mature and solid financial base
- A prestigious shareholder profile
- A symbiotic business unit structure, allowing the tailoring of complete project solutions: from design through to execution and maintenance
- Exclusive regional manufacturing and license agreements with global leaders
- A regional home base with presence in neighbouring Middle Eastern countries
- Specialised design-build-operate management capabilities
- Purpose built manufacturing facilities throughout the UAE
- Dedication to adhering to the most stringent global standards for manufacturing and environmental awareness
- ISO 9001:2008 Accreditation
- Compliance with IFRS Accounting Standards

SEPTTECH WASTEWATER SIGNATURE PROJECTS



Sharjah Municipality, Kalba

Project Name: Sharjah Municipality Capitox extended aeration sewage treatment plant
Client/Operator: Sharjah Municipality
Location: Kalba, Sharjah, UAE
Project Size: STP processing 1,100m³/day
Services Provided: Design and installation of Extended Aeration Treatment Plant
Products Provided: Capitox Extended Aeration Sewage Treatment Plant



Yas Island, Abu Dhabi

Project Name: Yas Island Worker Camp Sewerage Treat Plant (STP)
Client/Operator: Aldar
Location: Yas Island Worker Camp Sewerage Treat Plant (STP), Abu Dhabi, UAE
Project Size: STP processing 3,000m³/day
Services Provided: Concept, design and installation of STP for Yas Island construction worker camp
Products Provided: STP with Moving Bed Biological Reactor (MBBR) producing water suitable for irrigation purposes



Al Reef Villas, Abu Dhabi

Project Name: Al Reef Villas
Client/Operator: Manazel Real Estate
Location: Al Reef Villas, Abu Dhabi, UAE
Project Size: STP processing 1,000m³/day
Services Provided: Concept, design and installation of STP for Al Reef Villas (1100 villa complex)
Products Provided: STP with Moving Bed Biological Reactor (MBBR) producing water for irrigation purposes



Sir Bani Yas, Abu Dhabi

Project Name: Sir Bani Yas Hotel Development (3 STP Plants)
Client/Operator: Hilalco
Location: Sir Bani Yas Hotel, Abu Dhabi, UAE
Project Size: STP processing 120m³/day, 20m³/day and 15m³/day
Services Provided: Supply, installation & commissioning of UTB STP plants
Products Provided: Underground Trickling Biofilter and pumping stations



Wadi Al Helo, Sharjah

Project Name: 30 Nos. and 50 Nos. Villas Compound at Wadi Al Helo
Client/Operator: Sharjah Municipality
Location: Wadi Al Helo, Sharjah, UAE
Project Size: STP processing 70m³/day
Services Provided: Supply and installation of Sewage Treatment Plant
Products Provided: Underground Trickling Biofilter (UTB)



Al Maha Desert Resort, Dubai

Project Name: Al Maha Desert Resort (3 STP Plants)
Client/Operator: Al Maha Desert Resort
Location: Dubai, UAE
Project Size: STP processing 80m³/day, 25m³/day and 15m³/day
Services Provided: Supply and installation of Sewage Treatment Plant
Products Provided: Underground Trickling Biofilter (UTB)



ABU DHABI OFFICE
 P.O. Box 73374
 T: +971 2 627 3188
 F: +971 2 627 3185

DUBAI OFFICE
 P.O. Box 27930
 T: +971 4 408 8777
 F: +971 4 408 8788

SHARJAH OFFICE
 P.O. Box 5985
 T: +971 6 542 0888
 F: +971 6 542 0332

JEDDAH OFFICE
 P.O. Box 7219
 T: +966 1223 46969
 F: +966 1223 46868

RIYADH OFFICE
 P.O. Box 25808
 T: +966 1129 14788
 F: +966 1129 16322

MUSCAT OFFICE
 P.O. Box 583
 T: +968 245 04280