QATARAT Water

Water For The Future

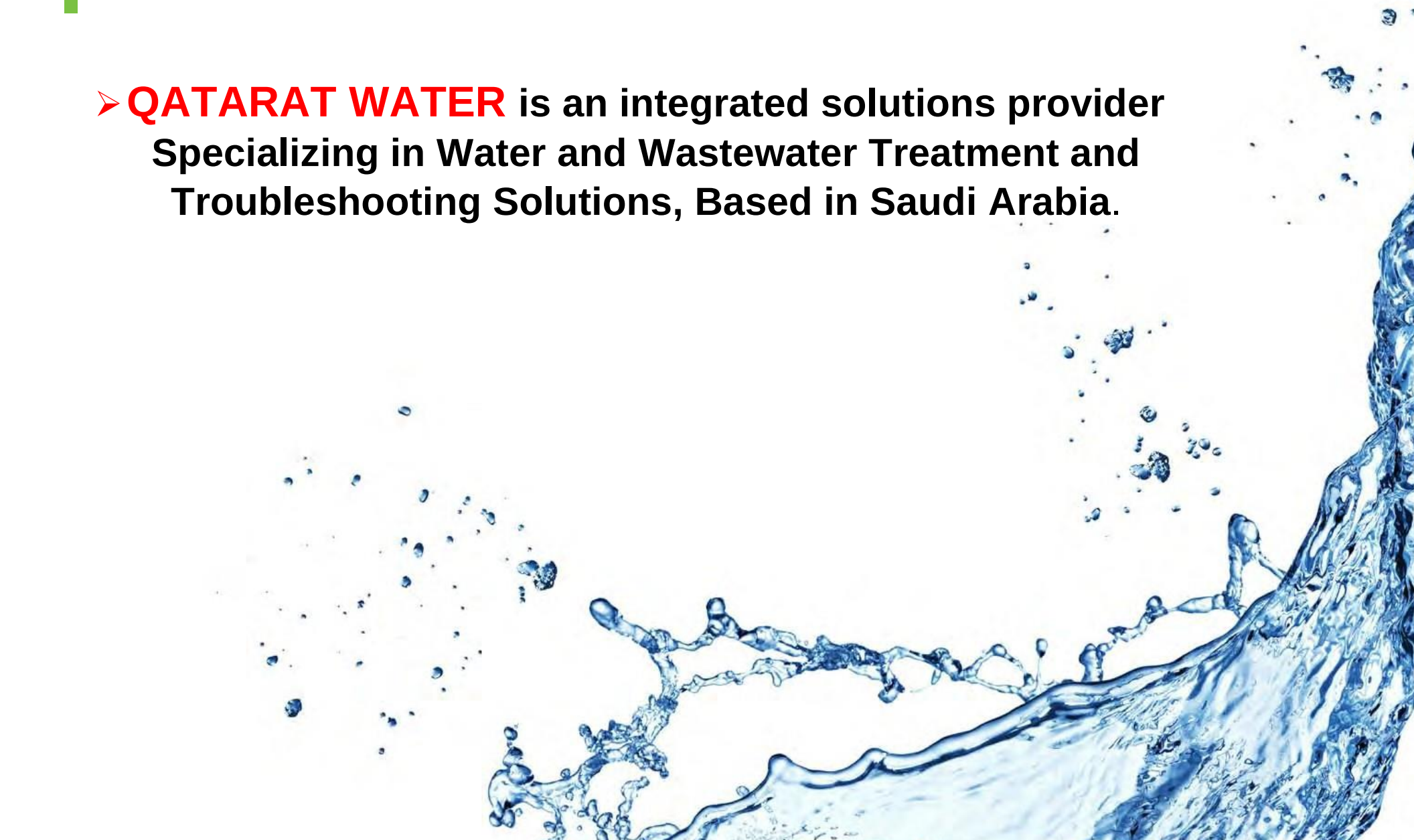
Company Profile 2024

Towards the professionalism

QATARAT Water Introduction

Introduction

- **QATARAT WATER is an integrated solutions provider Specializing in Water and Wastewater Treatment and Troubleshooting Solutions, Based in Saudi Arabia.**



QATARAT Water Introduction

Who We are: -

- **QATARAT - Water** is Saudi Company specialized in water and wastewater treatment products and services.
- **QATARAT- Water** is a Specialized Company in the design, manufacturing, and operation of Water Treatment Systems (**STP & MBR & MBBR & Gray Water & RO System and Equipment and Spare Parts**) for industrial, Commercial, Medical, and agricultural applications.

- **QATARAT - Water** could provide its clients with a wide range of products to cover the needs required.

QATARAT Water – VISION

VISION STATEMENT

"To be the premier Water solutions provider in the Middle East & North Africa, adding value to Customers and Society by leading technology and process innovation."

QATARAT Water – VISION

Mission

Generate innovative products, for qualified teams to offercost-effective sustainable water treatment chemical solutions for our clients, in a positive and continuous learning environment.

Values

- Innovation
- Sustainability
- Saving Water
- Teamwork
- Trust
- Quality

QATARAT Water – Business Units

Reverse Osmosis Plants

Equipment and Spare Parts

Chilled Water System

Sewage and Waste Water Treatment

Business Units

Disinfection & Chlorination

MBR Plants

MBBR Plants

Technical Support & Our Contacts

QATARAT Chemicals

QATARAT Water – RO System

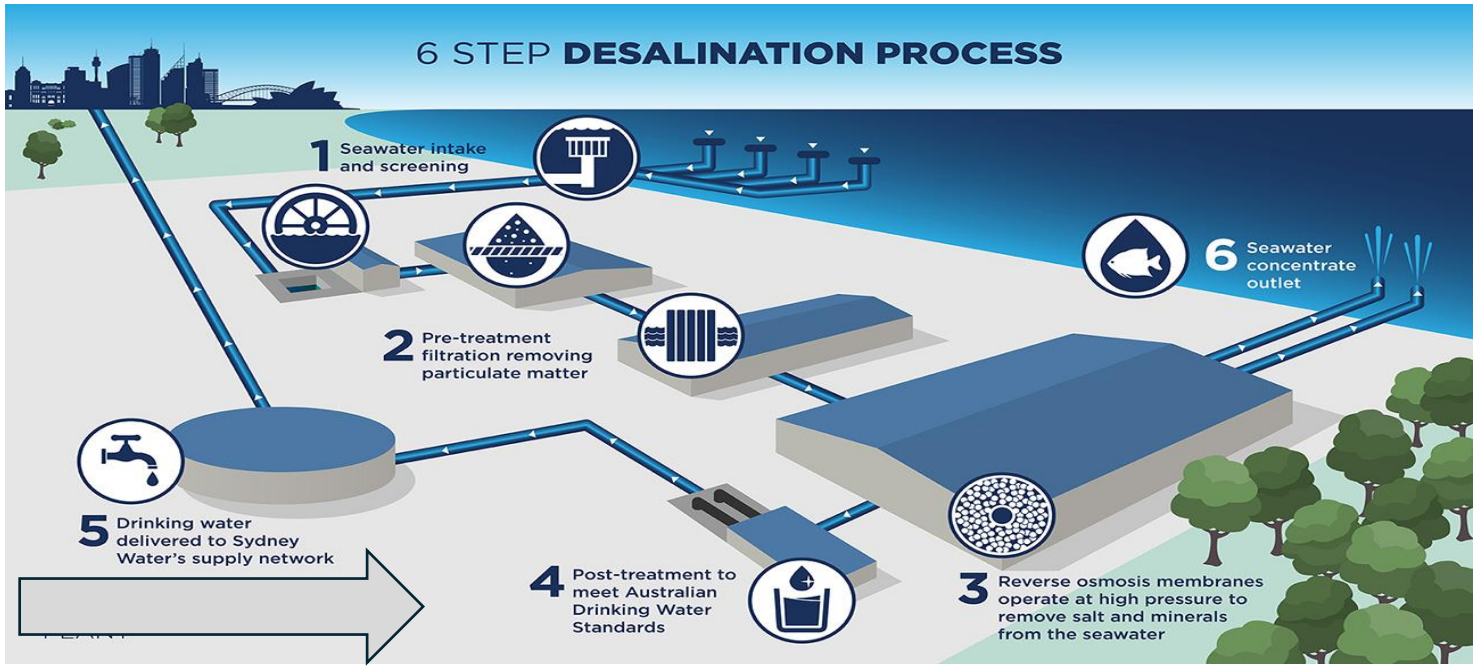
Reverse Osmosis Plants

- **Desalination** is the process by which the dissolved mineral salts in water are removed. Currently, this process, applied to seawater, is one of the most used to obtain fresh water for human consumption or agricultural purposes.
- **Osmosis** is a naturally occurring eco-physical process consisting of the passage of water through a semi-permeable membrane.
- **Our Reverse Osmosis plant** systems are built on skids for both standard and bespoke versions; they are suitable for the desalination of seawater, brackish or tap water, covering all types of applications including drinking water, irrigation water and processing, industrial, pharmaceutical and hospital water.

QATARAT Water – RO System

There are six key steps in the desalination process:

1. Seawater intake
2. Screening and pre-treatment filtration
3. Reverse osmosis
4. post-treatment
5. Water supply
6. Seawater concentrate



QATARAT Water – RO System

- **QATARAT-WATER** Considers the material selection of Reverse Osmosis plants an important issue, as appropriate selection will prolong the plant's life expectancy, Stainless Steel (S.S.) piping is used for feed/reject and high-pressure lines, where PVC piping is usually used for low TDS and low pressures.

QATARAT Water – (STP, MBR, MBBR)

Sewage and Wastewater Treatment

- **Sewage** is the wastewater generated from residential, institutional, commercial, and industrial establishments.
- **STP** plant treats the sewage to make it fit for safe disposal, agricultural use, or domestic use in toilets etc.
- **Sewage** usually contains a high quantity of organic and inorganic wastes. It is essential to treat sewage before it enters any water body. If sewage is allowed to enter the water sources without treatment, it will contaminate them, which is why it is essential to treat sewage properly before letting it into rivers or any other sources of water.

QATARAT Water – (STP, MBR, MBBR)

What is the principle of STP plant?

- **The principle of a Sewage Treatment Plant (STP)** involves the treatment of wastewater through a series of physical, biological, and chemical processes to remove pollutants and contaminants.
- **The primary principle** is to mimic and enhance natural processes that occur in the environment to purify water. This is achieved by promoting the growth of beneficial microorganisms that break down organic matter, settling out solids, and disinfecting the water to ensure it meets quality standards before being discharged or reused.

QATARAT Water – (STP, MBR, MBBR)

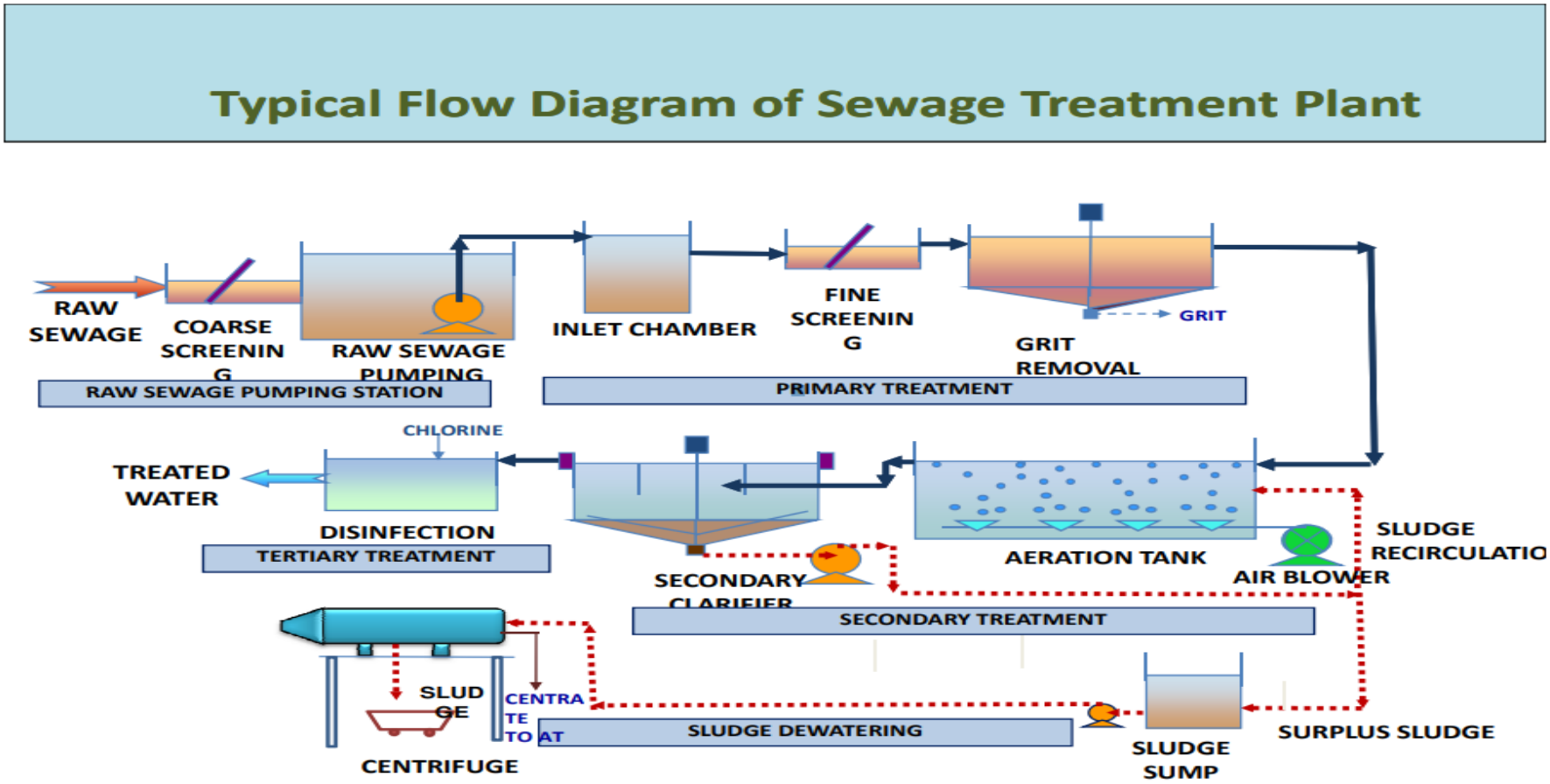
- Our technologies are based on the wastewater characteristics and the client's requirements using a wide and diverse range of biological treatment systems Aerobic or Anaerobic, Suspended or Attached growth such as

  - **MBR** – Membrane Bio-Reactor.
  - **MBBR** – Moving Bed Biofilm Reactor
  - **SBR** – Sequencing Batch Reactor.
  - **Ex-tended Aeration systems**
  - **RBC** - Rotating Bio-Contactors

QATARAT Water – (STP, MBR, MBBR)

How does a sewage treatment plant work?

- **STP** runs wastewater through multiple treatment stages. After preliminary filtration, there are three main stages of wastewater treatment (primary, secondary, and tertiary), with the third stage reserved for polishing.



QATARAT Water – (STP, MBR, MBBR)

Sewage Treatment Plant process

Preliminary Treatment:

- **Screening**: Large solid objects like sticks, rags, and plastics are removed using screens.
- **Grit Removal**: Smaller heavy particles like sand and gravel are settled out to prevent damage to downstream equipment.

QATARAT Water – (STP, MBR, MBBR)

Primary Treatment:

- **Sedimentation Treatment**: Wastewater is allowed to sit in a tank, allowing heavier solids to settle at the bottom as sludge while lighter substances float to the top as scum.

Secondary Treatment:

- **Aeration and Biological Treatment**: Beneficial microorganisms (activated sludge) are introduced to break down organic matter in the wastewater. Aeration provides the necessary oxygen for microbial activity.
- **Aerobic vs. Anaerobic Treatment**: Some STPs use aerobic treatment, where oxygen is supplied to the microorganisms, while others use anaerobic treatment, which occurs in the absence of oxygen.

Tertiary Treatment:

- **Filtration**: Additional solids and fine particles are removed by passing the wastewater through sand, gravel, or other filtration media.
- **Disinfection**: Chemicals like chlorine or ultraviolet (UV) light are used to kill remaining pathogens and harmful microorganisms in the treated water. Additional solids and fine particles are removed by passing the wastewater through sand, gravel, or other filtration media.

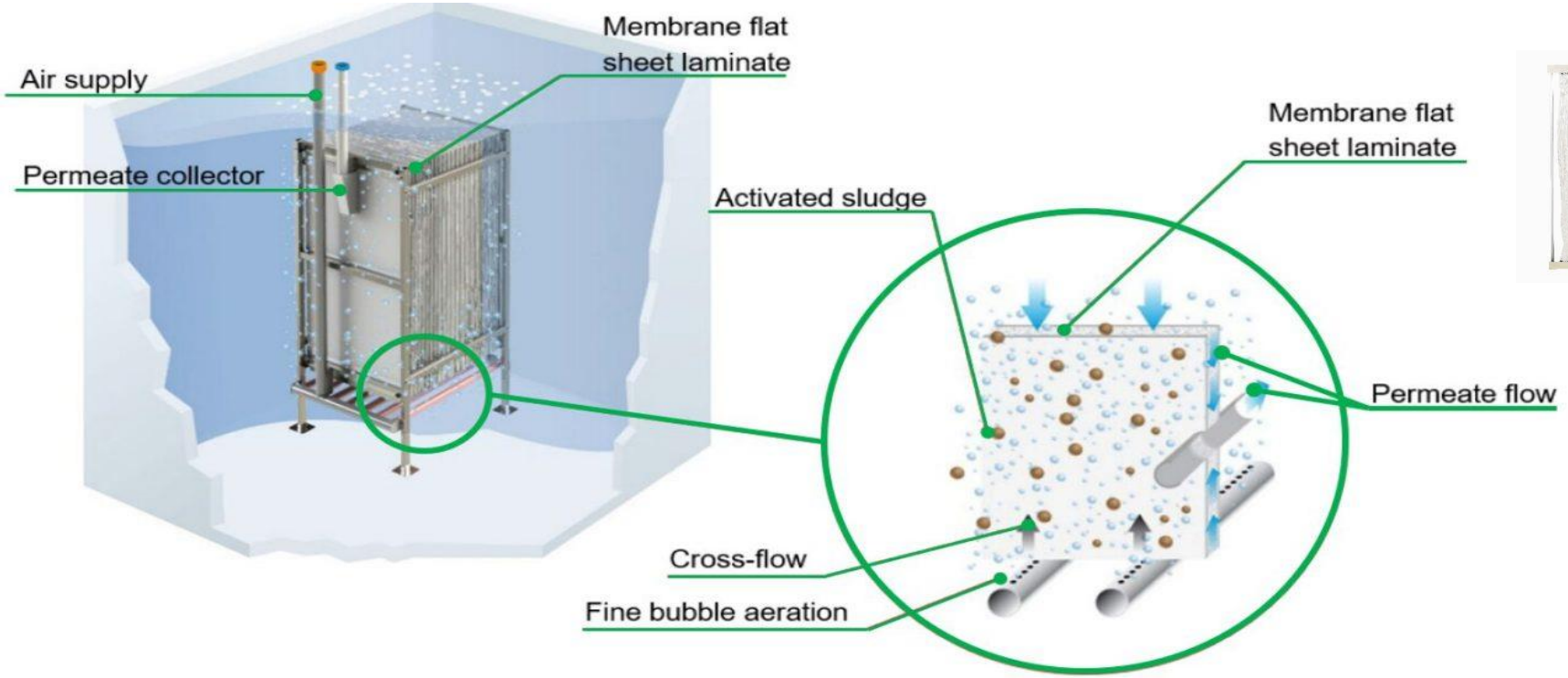
QATARAT Water – (STP, MBR, MBBR)

- **QATARAT-WATER's** Sewage Treatment Plants, MBR, MBBR and Gray Water provide very wide ranges, Capacities and Technologies for their applications requiring aerobic, anaerobic, or anoxic treatment processes for BOD, COD, SS, and Nitrogen and Phosphorous removal.

QATARAT Water – (STP, MBR, MBBR)

Membrane Bioreactor (MBR)

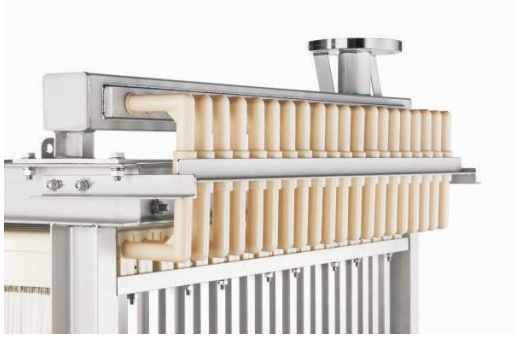
- **A membrane bioreactor (MBR)** is a biological wastewater ultra filtration treatment system which is used to remove organic matter and is used to separate solids from the liquid, generating a bio sludge. Proving to be the most economic, and effective system for wastewater treatment.



QATARAT Water – (STP, MBR, MBBR)

MBR Plants

- The membrane module consists of housing, aeration diffuser, permeating water manifold and membrane elements. Feed water including activated sludge is filtrated by flat sheet membranes with **pore size of 0.02-micron meter**.
- The air bubbles supplied from the bottom of the membrane elements continuously scour off cake of activated sludge accumulated on the membrane surface. This is a continuous filtration operation.
- The air bubbles are also used for the biological reaction to decompose organic substances included in the raw sewage.
- The material of the membrane is hollow fiber PVDF (polyvinylidene difluoride).

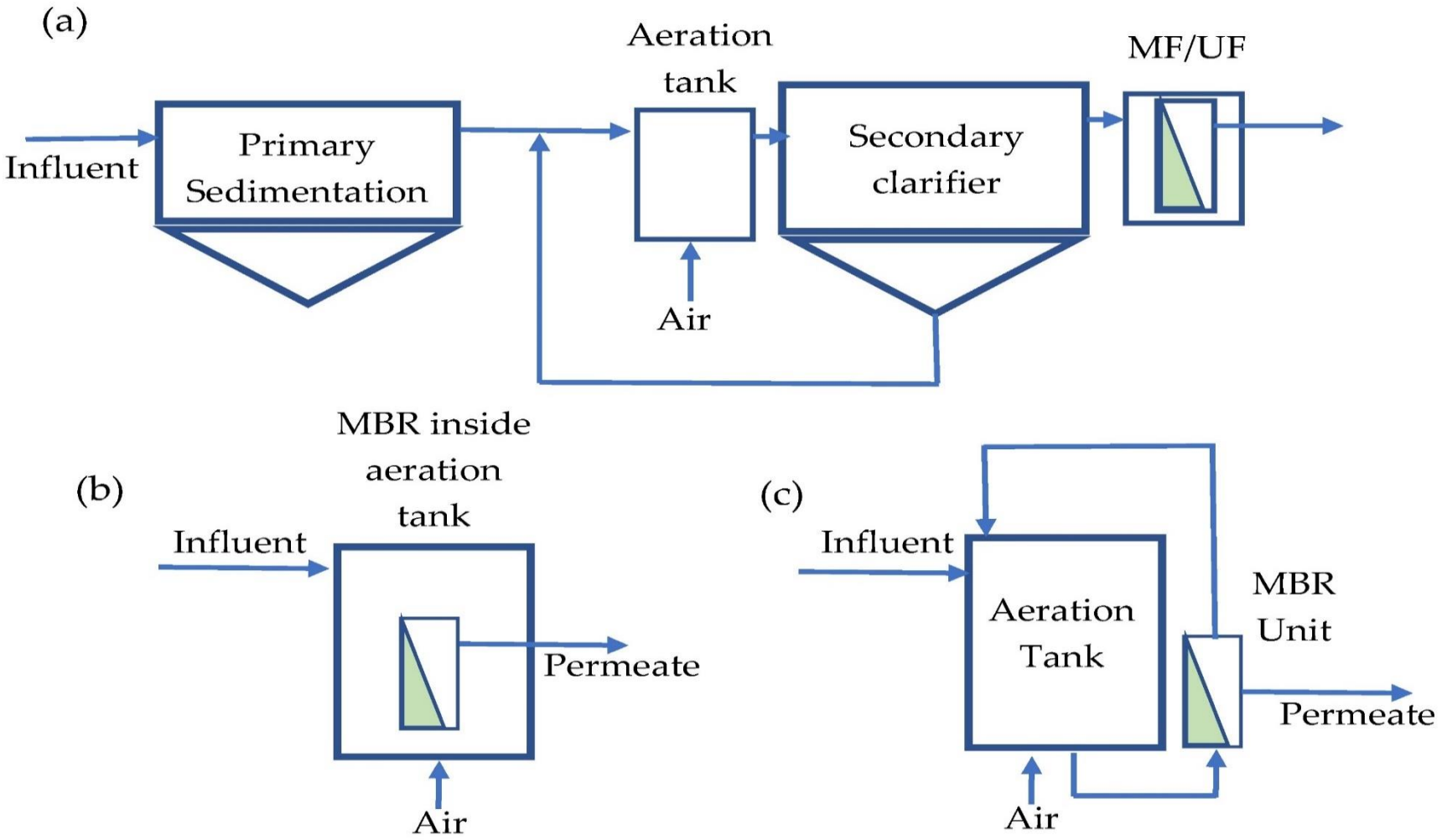


QATARAT Water – (STP, MBR, MBBR)

- **PVDF** is fluorine polymer which has high stability for chemicals and good physical strength. The form of membrane is fiber reinforced flat sheet membrane.
- The membrane is small and uniform pore size. Therefore, the rejection property of this membrane is excellent. Almost all particles with sizes more than 0.1-micron meter can be removed effectively using this membrane.

QATARAT Water – (STP, MBR, MBBR)

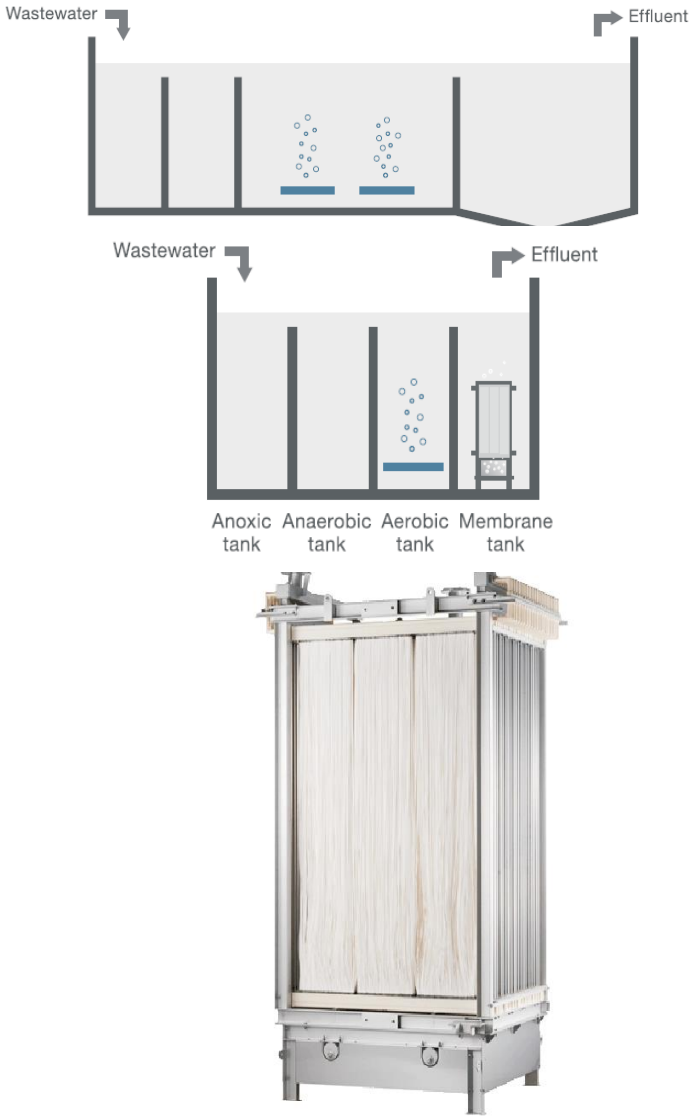
The difference design between STP & MBR



QATARAT Water – (STP, MBR, MBBR)

How does MBR Membrane Work in STP?

- **MBR** stands for Membrane Bio-Reactor.
- **MBR** technology is a combination of ultrafiltration and active sludge treatment technologies.
- **MBR** is used for biological treatments of bio-solids and wastewater.
- **MBR** technology allows for a higher filtration of effluents drawn from the membranes. This provides better sedimentation and filtration.
- **MBR** is a biological wastewater ultra filtration treatment system which is used to remove organic matter and is used to separate solids from the liquid, generating a bio sludge.

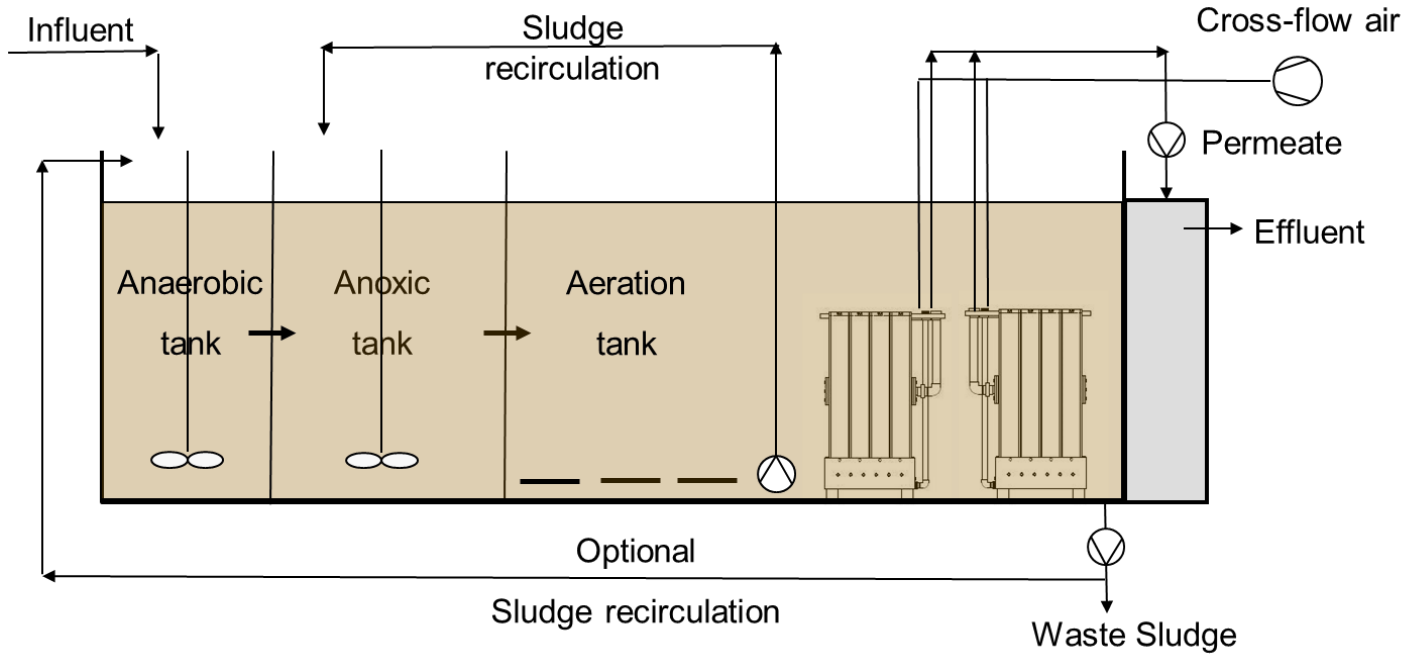


QATARAT Water – (STP, MBR, MBBR)

- **Membrane Bioreactor** facility consists of an aerobic tank and anoxic tank.
- **Membrane modules** are immersed inside the aerobic tank where organic contents (BOD) in the sewage will be biologically degraded by activated sludge.
- **MLSS** (Mixed Liquor Suspended Solid) concentration in the MBR System is **10 to 12 g/L** compared to 3 to 4 g/L in conventional activated sludge systems, thus the retention time required is only 30% of conventional system.

QATARAT Water – (STP, MBR, MBBR)

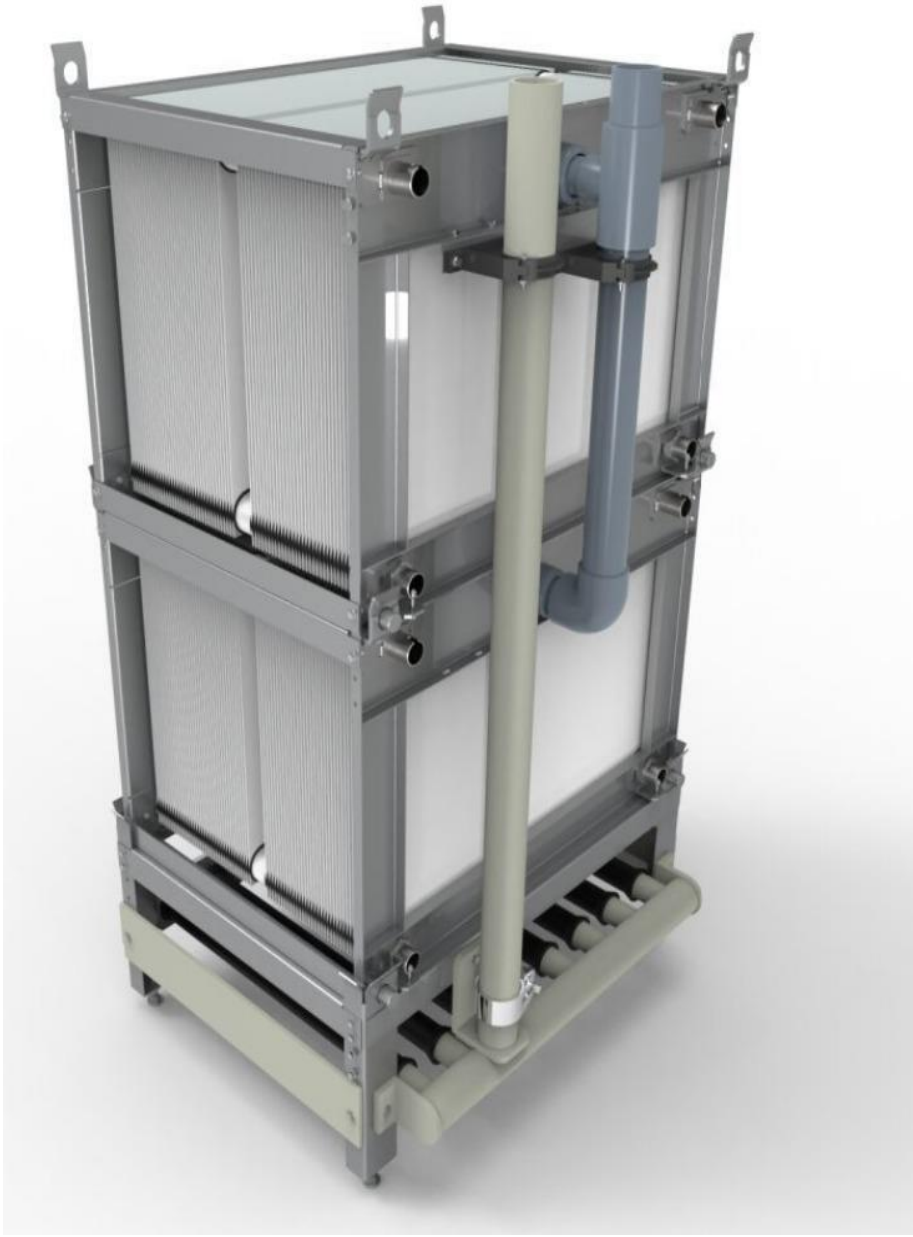
- **The membranes Flat sheet** also separate suspended solids from liquid through the filtration process. As the pore size of the membrane is 0.1 micron, not only suspended solids but also bacteria such as coliform bacteria are also removed.
- **The immersed membrane** filtration process also eliminates the requirement for gravity sedimentation tank or clarifier required by conventional activated sludge systems.



QATARAT Water – (STP, MBR, MBBR)

BENEFITS OF MBR Technology

- **MBR technology** serves to be the bespoke technology now in STPs. The below are a few of those many benefits we would like to highlight for this ingenious technology: -



- MBR technology is compact.
- The effluent quality is High.
- High volumetric load.
- High rate of degradation
- Can also convert the existential conventional active sludge.
- Annual expenditure is less.
- A truly automatic technology.

QATARAT Water – (STP, MBR, MBBR)

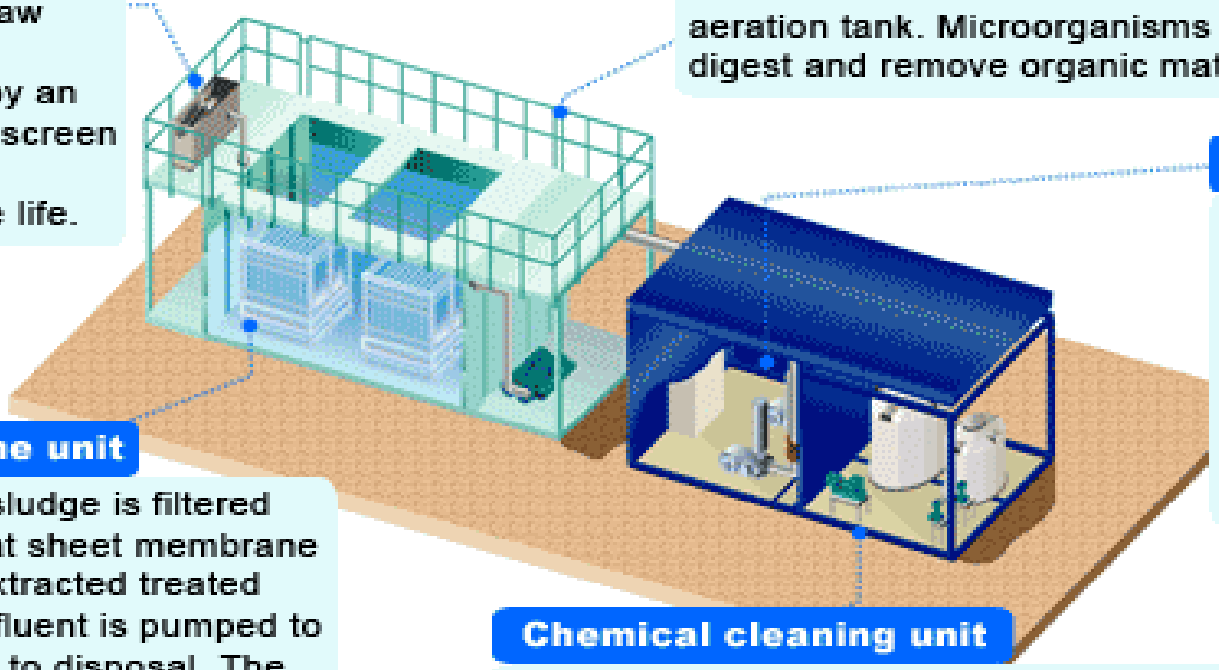
MBR Plant Exploded View

Fine screen

Solids in raw water are removed by an automatic screen to extend membrane life.

Aeration tank

The membrane is immersed in activated sludge in the aeration tank. Microorganisms in the activated sludge digest and remove organic material .



Blower

The blower pumps air to clean the membrane and feed the bioreaction process. Blowers are covered by an acoustic enclosure to minimize noise.

Membrane unit

Activated sludge is filtered using a flat sheet membrane and the extracted treated sewage effluent is pumped to tanks prior to disposal. The membrane is produced in Japan by Hitachi using patented manufacturing techniques.

Chemical cleaning unit

A dosing chemical (Sodium hypochlorite) is used for membrane cleaning. Dosing frequency is approx once per 2 to 3 months, depending on the condition of the raw water and the throughput volume.

QATARAT Water – (STP, MBR, MBBR)

- **QATARAT Team** Can Design, Supplies, Installation, and Operation All Wastewater Treatment Plants.

Product Show

QATARAT Water – Chilled Water

Chilled Water System

- **The chilled/closed water loop** transfers heat between AHU/FCU and the chiller.
- The term “closed loop” seldom means that the chilled water is free from contamination or bacteria.
- Depending on the incoming water, minerals will be deposited in the system over time.
- Bacteria are present everywhere and can also enter the closed loop. Thus, it is important for chilled water systems to be commissioned and treated well, aiming to prevent loss of heat transfer due to fouling, scale, or corrosion, and aiming to prevent damage to major equipment such as AHU/FCU, sensors, thermometers, motorized valves, and pumps.

QATARAT Water – Chilled Water

- Although the low temperature is not conducive for Legionella bacteria, other bacteria including iron bacteria still prevail.
- Therefore, sufficient care must be taken to ensure occupants' health and reduce the corrosion risk.

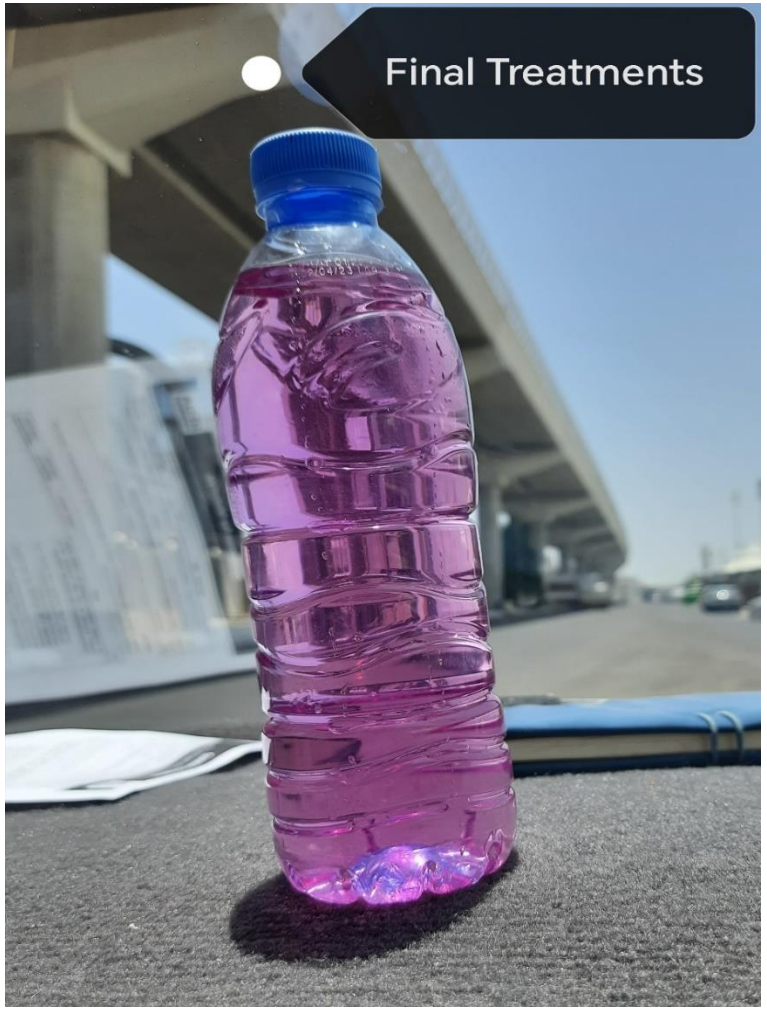
QATARAT Water – Chilled Water

- **QATARAT** Water Treatment Program (**Chemical Cleaning For Chilled Water Piping**) is designed to: -

1- **Balance Flushing** (feed and bleed) using fresh water till the drained water is as clear as the feed water, it is important ensure that the velocity of water in the system during flushing is enough to remove all debris and contamination particles).

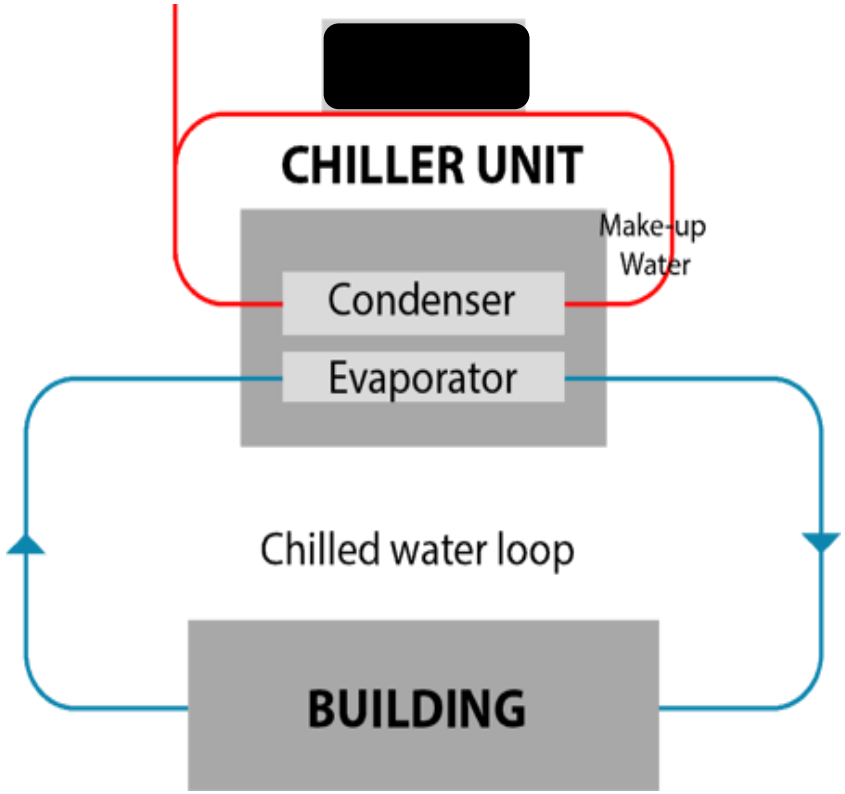
2- **Alkaline Cleaner & Passivator** (A liquid concentrated chemical of alkaline cleaner with steel passivation properties. It is designed to remove mil scales, iron oxides, some mineral scales from heat exchangers, pipelines, reactors, equipment, and other applications. The product is suitable to be used with specific dilution levels depending on its specific application and surface conditions. The solution can be recirculated through the water system until analysis indicates that the cleaning & passivation process is complete.).

3- **Silicate Corrosion Inhibitor** (A chemical designed to inhibit the deterioration of metals through a corrosion process by forming a protective layer on metal surface)



QATARAT Water – Chilled Water

- **Finaly Nitrite-Based Treatment Program**
  - 4- **Corrosion Inhibitor** (organic and inorganic corrosion inhibitors that protect all metals).
  - 5- **Non-Oxidizing Biocide** (A chemical designed to stop the growth of bacteria and disinfect water using non-oxidizing mechanisms of killing bacteria using bacterial poisoning processes).

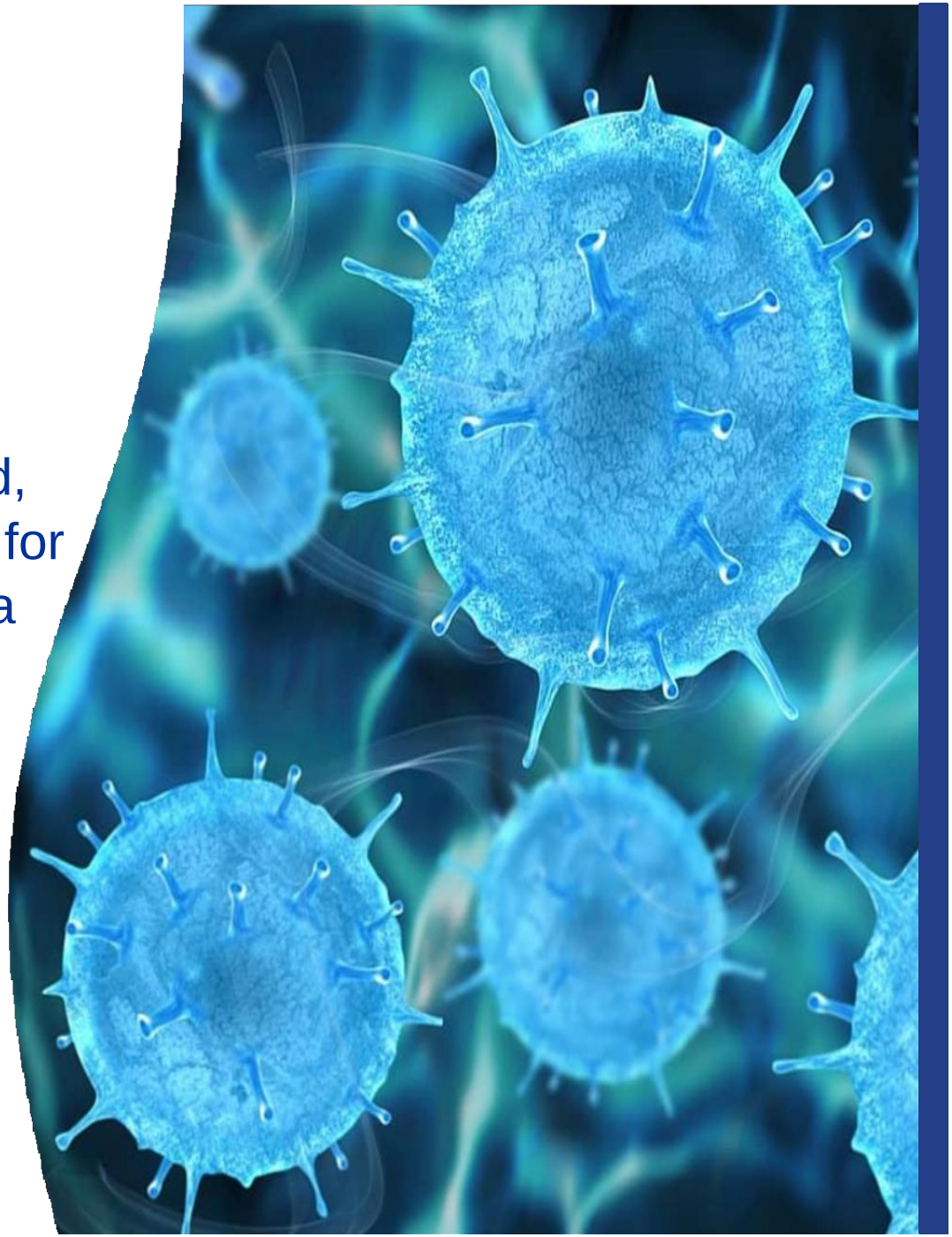


QATARAT Water – Disinfection & Chlorination

Disinfection & Chlorination (Water Supply Tanks & Networks)

- The objective is to ensure that all water lines are cleaned, disinfected, and flushed and must pass testing for chlorine concentration and Bacteria absence before being put into use.

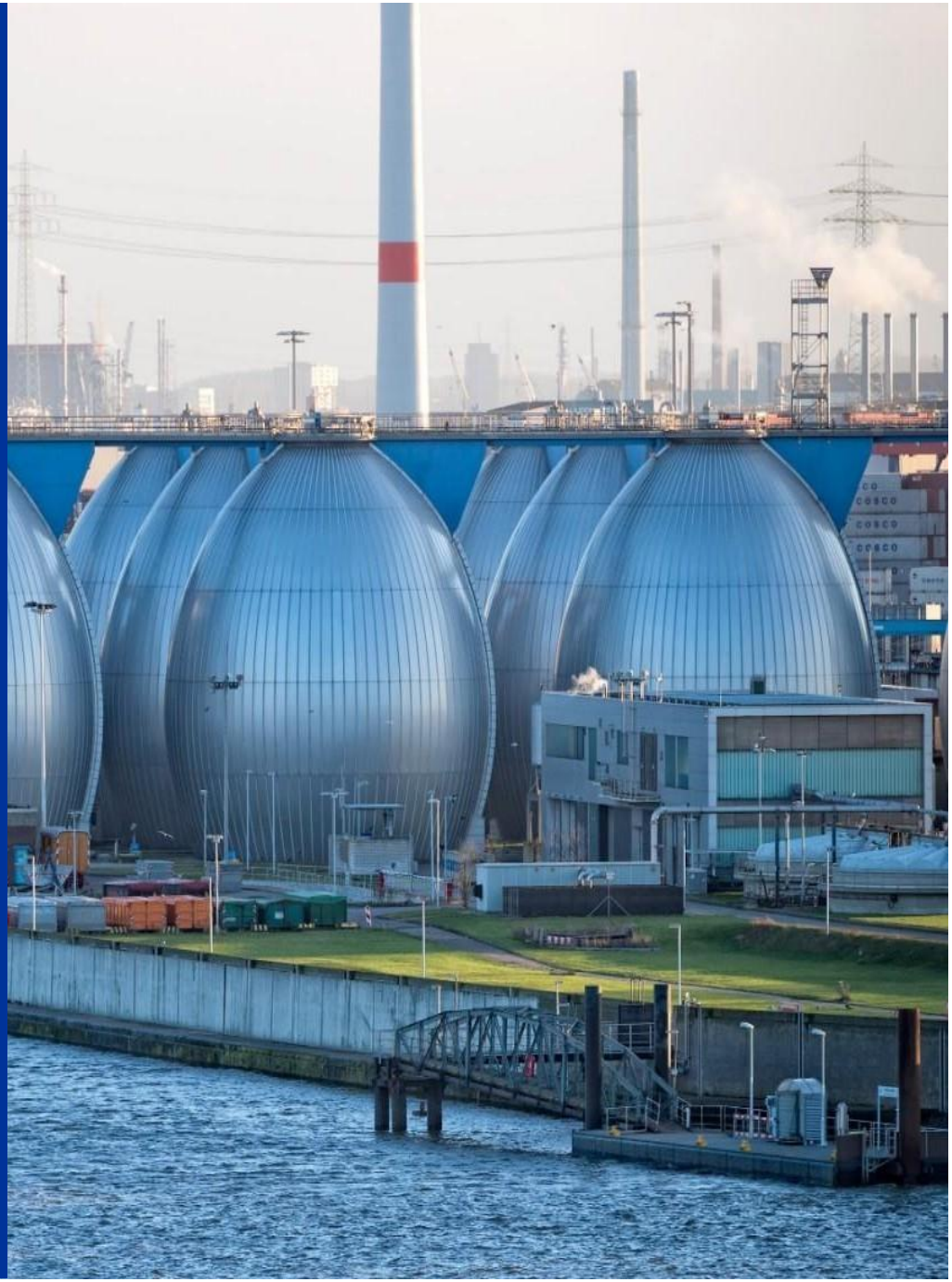
- Purge all new water distribution piping systems and parts of the existing systems that have been altered, extended, or repaired before use.



QATARAT Water – Disinfection & Chlorination

- The purging and disinfecting procedure according to **AWWA Standard C651-14** & Project Specification for Disinfection .
- The final target parameters of Water Quality are details in the below table:

Parameter	Target
Water pH	6.0 – 8.5
TDS	< 500 ppm
Total Iron	< 0.01 ppm
Total Bacterial Count	Nil cfu/ml



QATARAT Water – Spare Parts

Equipment and Spare Parts

- Reverse Osmosis Membranes.
- Pressure Vessels.
- Filtration Media (Sand, Carbon, Birm, Anthracite, Gravel).
- Chemical Dosing Pumps.
- Water Softeners.
- Low- & high-Pressure Pumps.
- Instruments (Pressure, Flow, Level, Temperature, TDS, ORP, etc.).

QATARAT Water – Spare Parts

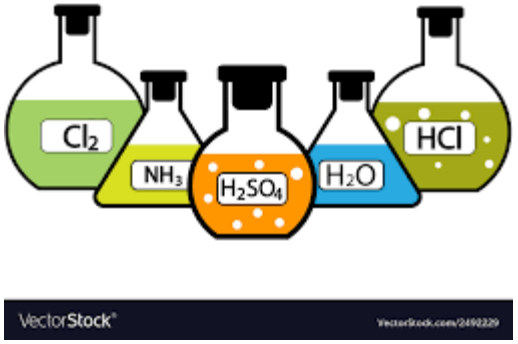
QATARAT Water – Spare Parts

QATARAT Water – Chemicals

QATARAT Chemicals

QATARAT Water can provide all the chemicals used in Water Treatment: -

- RO Chemicals. (Specialty and commodity chemicals)
- Boilers Water Treatment Chemicals.
- Cooling Towers Water Treatment Chemicals.
- Chillers Water Treatment Chemicals
- Swimming Pools Water Treatment Chemicals.
- Waste Water Treatment Chemicals.



QATARAT Water – Chemicals

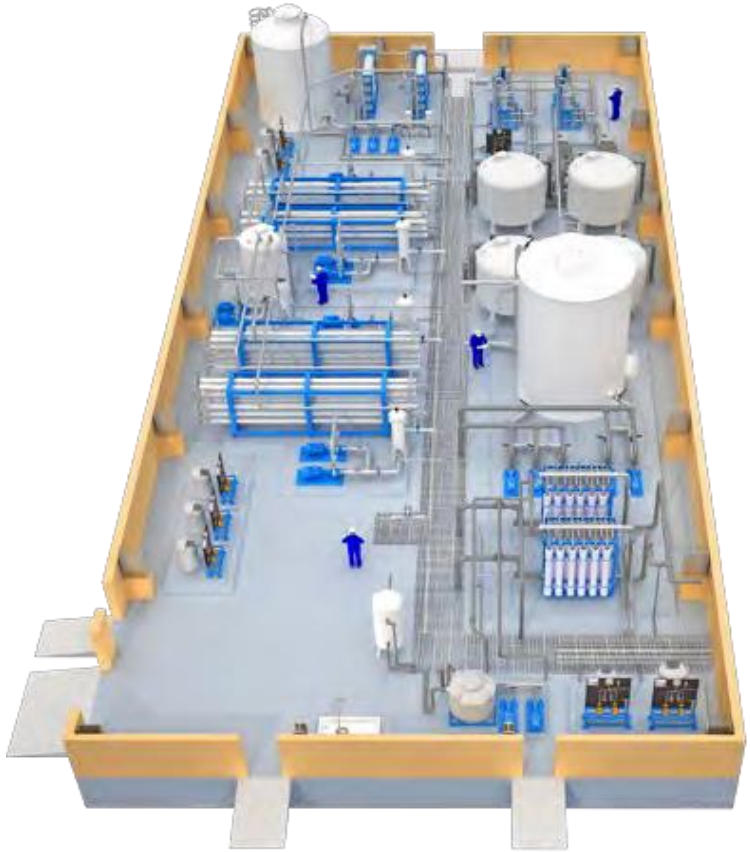
QATARAT list of Specialty Chemicals for Water Treatment includes:

- **Reverse Osmosis Plant / Water Treatment Plant**
  Anti-sealant, Remineralization, Coagulant, Filtration aids, Disinfectant, Neutralizer, Cleaning chemicals.

- **Boiler System**
  Corrosion inhibitor, Scale control, Sludge conditioner, Steam treatment, Alkalinity builder, cleaning chemicals.

- **Cooling Tower**
  (Open cooling) – Corrosion and scale inhibitor, Dispersing agent, non-oxidizing biocide, non-oxidizing algaecide, Oxidizing algaecide, and biocide, Cleaning chemicals

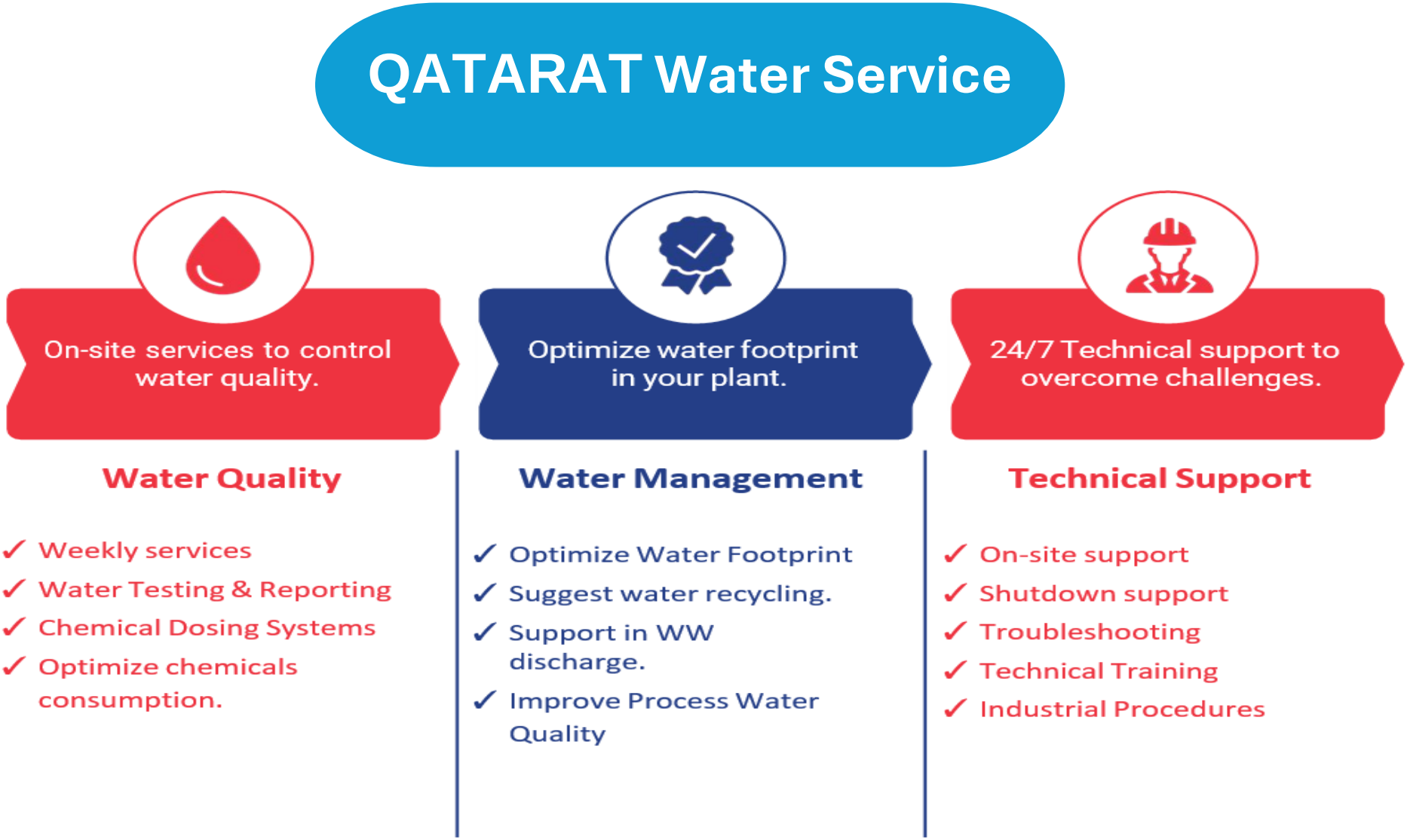
- **Chilled Water System**
  (Closed cooling) – Corrosion and scale inhibitor, non-oxidizing biocide, cleaning chemicals



QATARAT Water – Chemicals

- **Hot Water System**
  Corrosion and scale inhibitor, cleaning chemicals.
- **Domestic and Drinking water**
  Corrosion and scale inhibitor, Disinfectant, Red water control, leaning chemicals, Sterilization.
- **Wastewater/ Irrigation Water**
  Odor control, Disinfectant, Coagulant, and Filtration aids.
- **Room care**
  Hard surface cleaner, Glass cleaner, Hand hygiene, Hand sanitizer, Hand soap.

QATARAT Water – Service



QATARAT Water – Service

Contact With QATARAT

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QATARAT Water

Thank You 2024