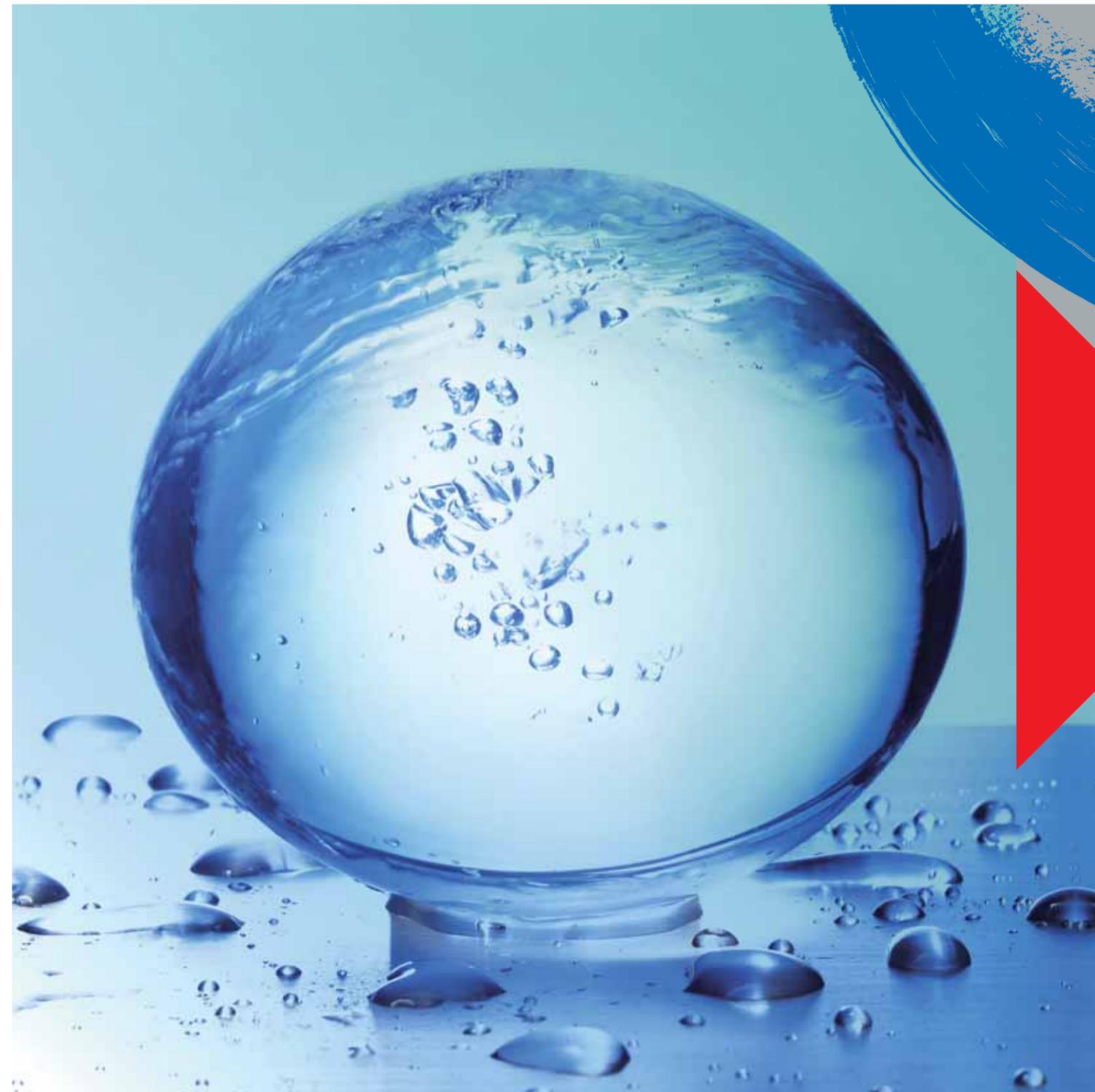


TOSHIBA

Water & Wastewater Solution

for Sustainable Future



Toshiba Infrastructure Systems & Solutions Corporation

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Product names mentioned herein may be trademarks or registered trademarks of respective companies.

The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by Toshiba for any infringements of patents or other rights of third parties which may result from the use of our products. No license is granted or otherwise implied under any patent or patent rights of Toshiba or others.

Toshiba products should not be embedded in other products for which the production or sale is prohibited by law.

Toshiba does not assume any responsibility for incidental damage (including business interruption, loss of business information, and other pecuniary damage) arising out of the use or disability to use Toshiba products.

All information herein is subject to change without notice, including product specifications.

All information herein is based on the latest information available as of March 2022.

As a Water Expert, Toshiba will be Your Best Partner for Water and Wastewater Treatment Solutions

We, Toshiba, aim to realize a sustainable society with safety, security and reliability through our social infrastructure business worldwide.

In the water infrastructure business that we have been involved in since the 1970s, we are addressing customer issues ranging from business planning to operation management, and offering a variety of solutions based on our comprehensive technologies.

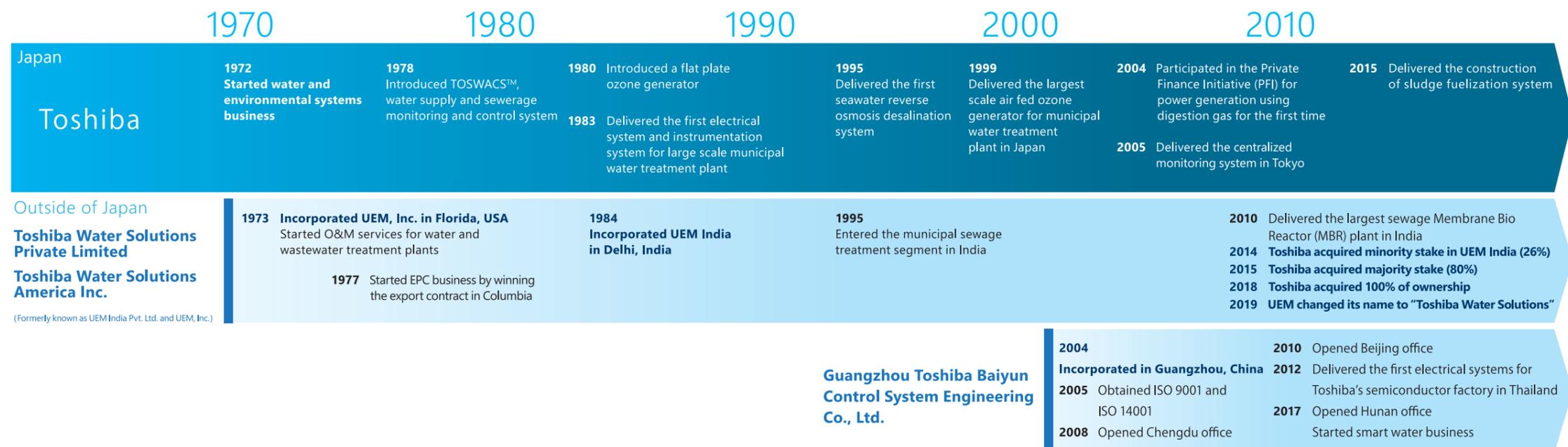
We provide highly reliable water and wastewater treatment systems and operation know-how to solve customer issues all over the world.

We will contribute to the creation of environmentally advanced communities with sustainable water infrastructure in response to regional, cultural, and environmental requirements.



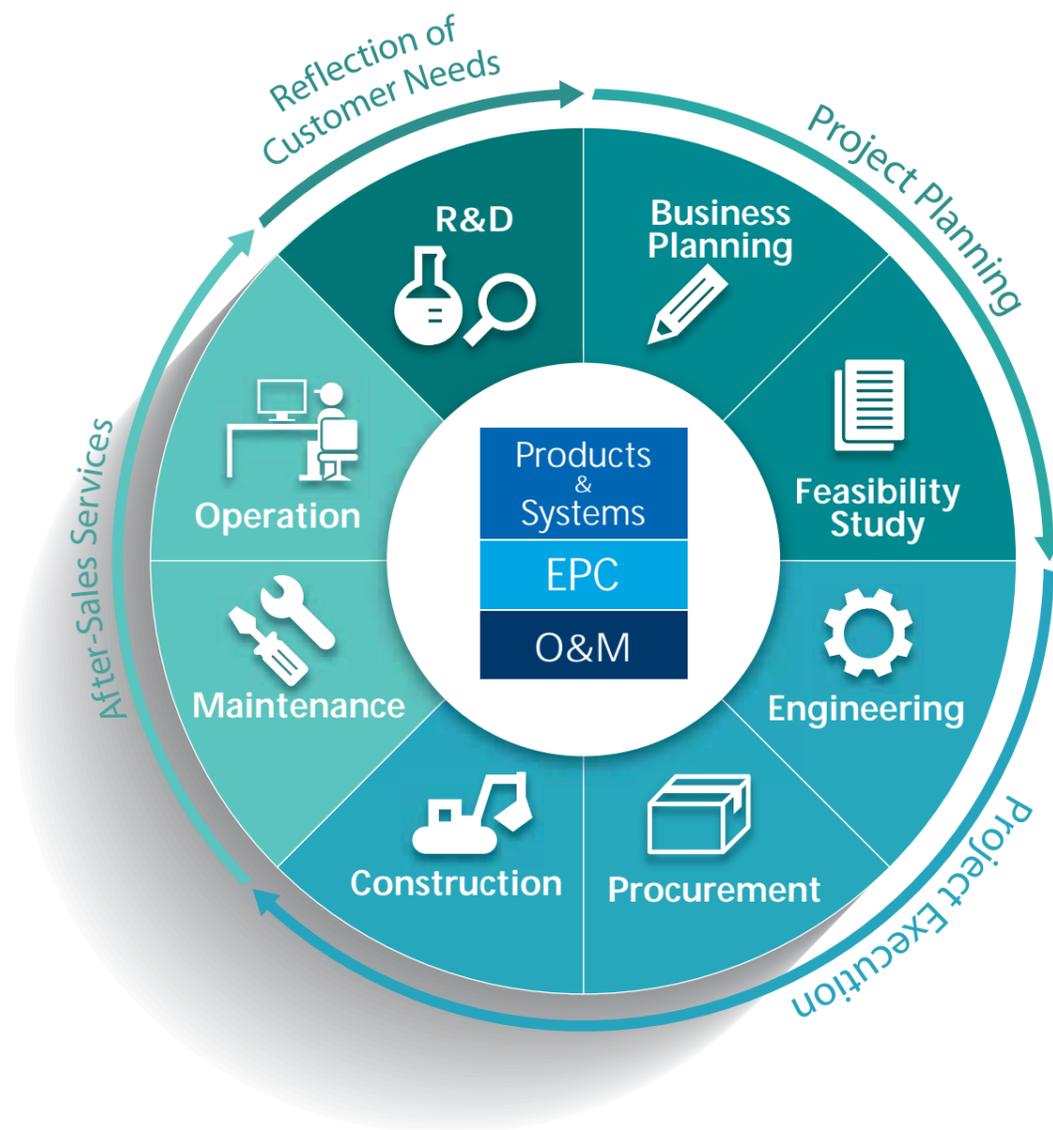
History

We started our water infrastructure business by offering electrical equipment of pumps for water supply and sewerage systems in Japan, along with related engineering services. Since then, we have expanded our business by developing electrical systems and instrumentation systems and providing operation and maintenance (O&M) services in Japan, as well as engineering, procurement, and construction (EPC) services outside of Japan.

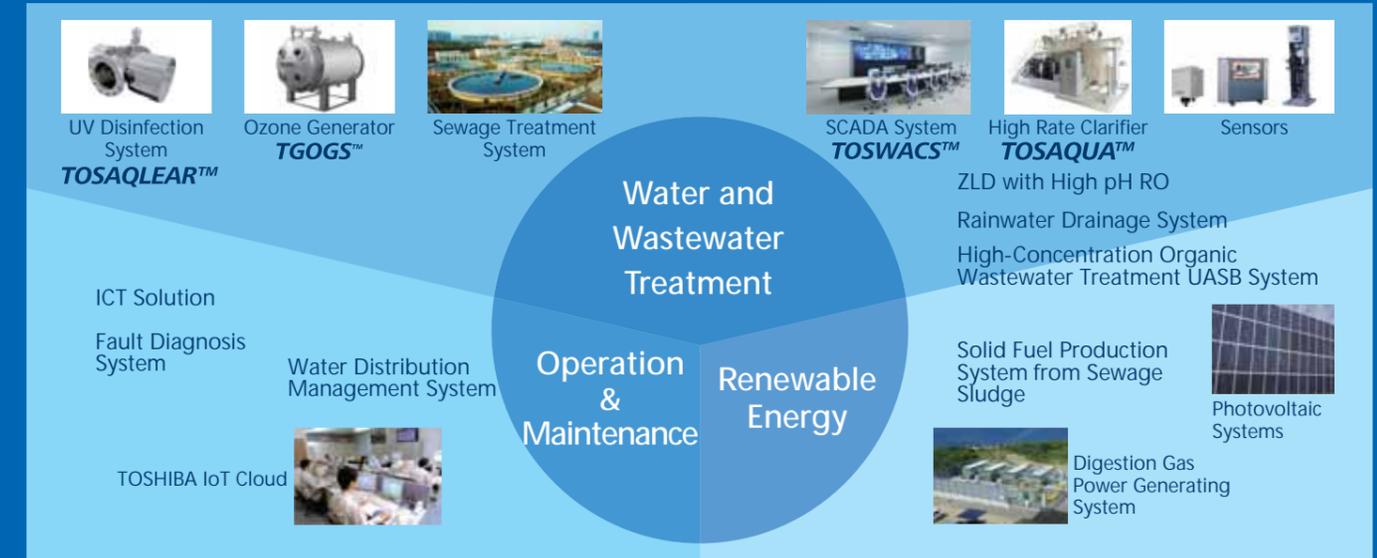


Consistent Approach from Business Planning to Operation Management

We offer one stop solutions throughout the plant's life cycle. As a solution partner with superior reliability, we contribute to our customers' business development based on our experience and expertise accumulated through extensive practice of these services.



Products and Systems



We offer water and wastewater treatment, renewable energy and O&M products and systems intended for high performance through the use of simulation, monitoring and control technologies.

EPC Engineering, Procurement and Construction



We offer water and wastewater treatment systems based on a proven record of deliveries to various industrial fields as well as municipal fields. We conduct engineering business according to the local situation and regional characteristics through our global network.

O&M Operation and Maintenance

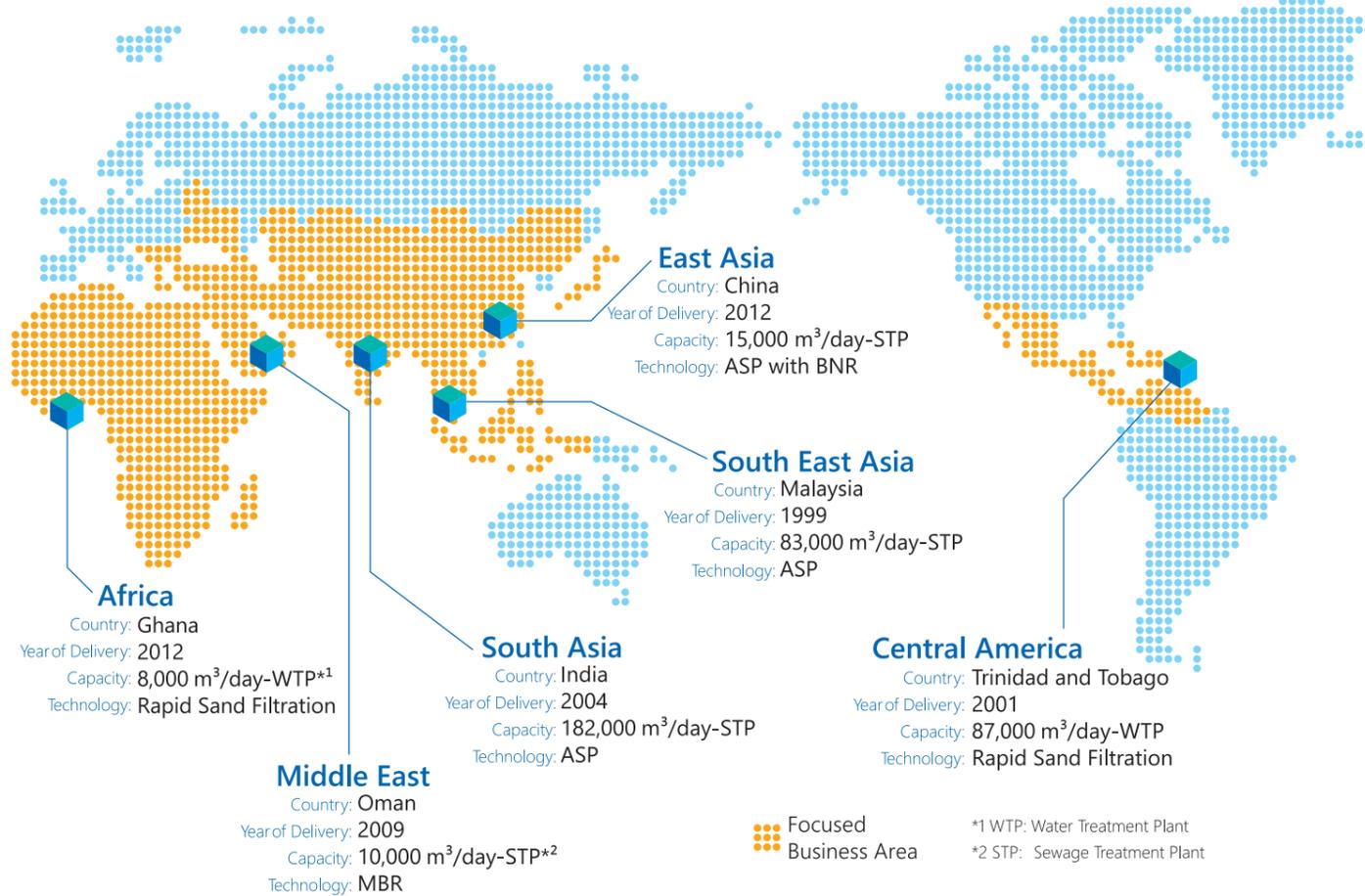


We offer comprehensive solutions to solve issues in operation and maintenance of water and wastewater treatment. We provide O&M services throughout the plant's life cycle, such as efficient plant operation, improvement in cost and determination of appropriate timings for renewal.

Contributing to Water Supply and Sewerage Infrastructure around the World with Advanced Technologies

We have been in the water infrastructure business as a supplier and a system integrator for monitoring and control systems, electrical systems and instrumentation systems in Japan since the 1970s.

Overseas, we have been involved in water supply and sewage treatment plant construction as a global EPC company.



Providing Optimum Technologies from Experience through Global Network

We select and provide optimum technologies that meet customer requirements.

Water Treatment	Sewage and Sludge Treatment
DMF (Dual Media Filter) ACF (Activated Carbon Filter) Membrane Filtration - UF (Ultra Filtration) - MF (Micro Filtration) - RO (Reverse Osmosis)	Biological treatment - ASP (Activated Sludge Process) - SBR (Sequential Batch Reactor) - MBR (Membrane Bio Reactor) - MBBR (Moving Bed Bio Reactor)
IX (Ion Exchange) Desalination Ozone Generator	Advanced treatment - BNR (Biological Nutrient Removal) - Ozone Generator Sludge Digestion and Power Generation

Products SCADA*3 System – TOSWACS™ / Ozone Generator – TGOGS™
 Electrical System & Instrumentation System / Water Distribution Management System

*3 SCADA: Supervisory Control and Data Acquisition

Record of Actual Deliveries

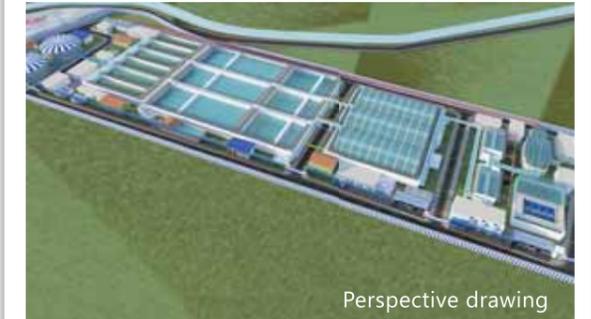
Akshardham Sewage Treatment Plant



The MBR system ensures space saving. Automatic control and centralized monitoring for water and sewage treatment processes are carried out through PLC and SCADA. The BNR process is applied for denitrification and dephosphorization.

Client: Delhi Jal Board
 Location: Delhi, India
 Year of Delivery: 2010
 Capacity: 4,546 m³/day-STP
 Technology: MBR with BNR

Las Piñas Water Reclamation Facility



This will be the first BNR plant after globally stringent effluent regulations are established in the Philippines. The sewage gas power generation system will be installed to reduce the life cycle cost.

Client: Maynilad Water Services, Inc.
 Location: Metropolitan Manila, Philippines
 Year of Delivery: Under construction
 Capacity: 88,000 m³/day-STP
 Technology: ASP with BNR, Clarifier, Disc Filter, UV, Anaerobic Digester, Biogas Power Generation

Izari River Water Purification Plant Wide Area Monitoring and Control System - TOSWACS™



The monitoring and control system integrates and monitors several water treatment plants. Based on know-how which we cultivated during commissioned O&M services, this system has been completely renewed without affecting plant operation.

Client: Ishikari Toubu Water Supply Authority
 Location: Hokkaido, Japan
 Year of Delivery: 2017
 Capacity: 72,000 m³/day-WTP, etc.
 Technology: SCADA System, Electrical & Instrumentation System

Kitachiba Water Purification Plant Ozone Generator - TGOGS™



The durability and industry's highest gas generation efficiency of the system are ensured based on our experience with ozone generator since the 1970s.

Client: Kitachiba Water Supply Authority
 Location: Chiba, Japan
 Year of Delivery: 2014
 Capacity: 470,000 m³/day-WTP
 Technology: Ozone Generator
 48kg/h (12kg/h x 4units)

Providing Optimum Solutions based on Our Abundant Proven Record and Experience

We respond to a variety of customer requirements that vary by region and field, based on our proven record and experience accumulated in wide-ranging industrial fields.

We provide highly reliable and optimum water and wastewater treatment plants by the productive discussions with customers from the early planning stage.

Field of Deliveries

Oil and Gas, Petrochemical, Chemical, Power Generation, Industrial Park and Estate, Steel and Metal, Pulp and Paper, Automotive, Textile and Tannery, Food and Beverage, Mining, and other Industries



Water Treatment

- DMF (Dual Media Filter)
- ACF (Activated Carbon Filter)
- Membrane Filtration
- UF (Ultra Filtration)
- MF (Micro Filtration)
- RO (Reverse Osmosis)
- IX (Ion Exchange)
- Desalination



Wastewater Treatment

Biological Treatment

- ASP (Activated Sludge Process)
- SBR (Sequential Batch Reactor)
- MBR (Membrane Bio Reactor)
- MBBR (Moving Bed Bio Reactor)
- AHD (Anaerobic Hybrid Digester)
- UASB (Upflow Anaerobic Sludge Blanket)
- DAF (Dissolved Air Filtration)



Recycle Water Treatment

- Membrane Filtration
- MBR (Membrane Bio Reactor)
- RO (Reverse Osmosis)
- UF (Ultra Filtration)
- MF (Micro Filtration)
- IX (Ion Exchange)

*4: The recycling rate varies depending on the water quality condition. 95% is not guaranteed in every case.

ZLD with High pH RO

For ZLD (Zero Liquid Discharge)*5 application, we provide High pH RO system, which can maximize the RO recovery rate and minimize the evaporation capacity.

*5 ZLD is the concept of wastewater recycling with nearly 100% recovery, resulting in no effluent discharge to the outside of the premise.

Comparison of Recycling Rates*4	High pH Reverse Osmosis Regular RO System	At least 95% 70 to 80%
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Oil and Gas, Petrochemical

Client : Oil & Gas Company
Location : Gujarat, India
Year of Delivery : 2015
Capacity : 2,000 m³/day
Technology : CPI*5, IGF*6, NSF*7, UF

*6 CPI: Corrugated Plate Interceptor
*7 IGF: Induced Gas Floatation
*8 NSF: Nut Shell Filter

Client : Petrochemicals Company
Location : Haryana, India
Year of Delivery : 2007
Capacity : 6,480 m³/day-WWTP
Technology : DAF, AHD, ASP, Clarifier, DMF, ACF



Thermal Power Station



Client : Power Company
Location : Bihar, India
Year of Delivery : 2020
Capacity : 1,650 m³/hr-WTP
Technology : Clarifier, Gravity Filter



Food and Beverage



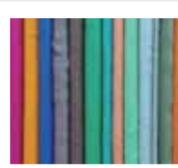

Client : Shimizu Corporation India Pvt Ltd (End User Oriental Yeast India Pvt. Ltd.)
Location : Maharashtra, India
Year of Delivery : Under Construction
Capacity : 2,553 m³/day-WWTP/ZLD
2,007 m³/day-WTP
Technology : Evaporator, AHD, MBR, Clarifier, DMF, UF, Softener, RO, EDI



Industrial Park



Client : Majis Industrial Services SAOC
Location : Sohar Industrial Port Area (SIPA), Oman
Year of Delivery : Phase-1 2016 / Phase-2 2018
Capacity : 20,000 m³/day-WWTP
20,000 m³/day-RTP*8 (Consolidated Phase-1 and 2)
Technology : WWTP-Cooling Tower, ASP with BNR, Clarifier, RTP-UF, IX, Degasser, RO



Textile



Client : YKK India Pvt. Ltd.
Location : Haryana, India
Year of Delivery : 2019
Capacity : 1,887 m³/day-WWTP/ZLD
Technology : Fenton Oxidation, Clarifier, DAF, MBR, IX, Degasser, High pH RO, Evaporator



Automotive



Client : Automobile Manufacturer
Location : Andhra Pradesh, India
Year of Delivery : 2016
Capacity : 242 m³/day-WWTP/ZLD
Technology : DAF, Clarifier, MBR, IX, Degasser, High pH RO, MB, Evaporator



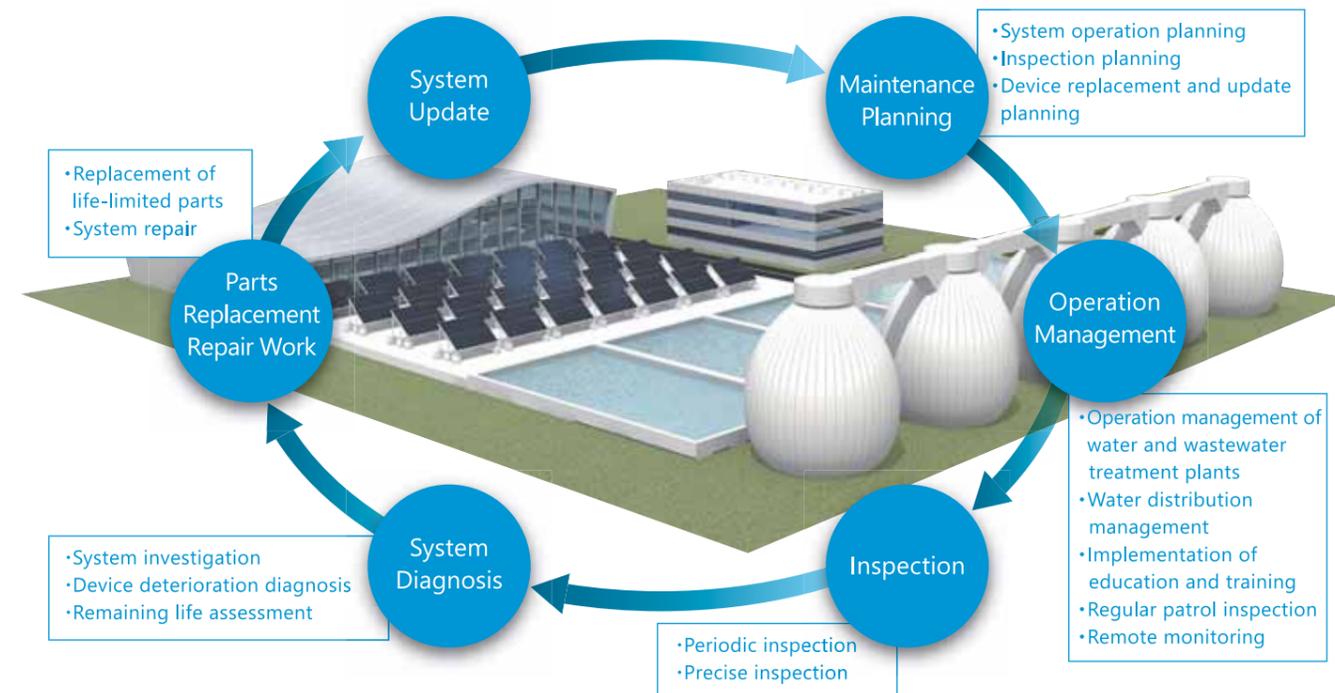
*9 RTP : Recycle Treatment Plant

Making Plant Operation and Maintenance Stable and Efficient

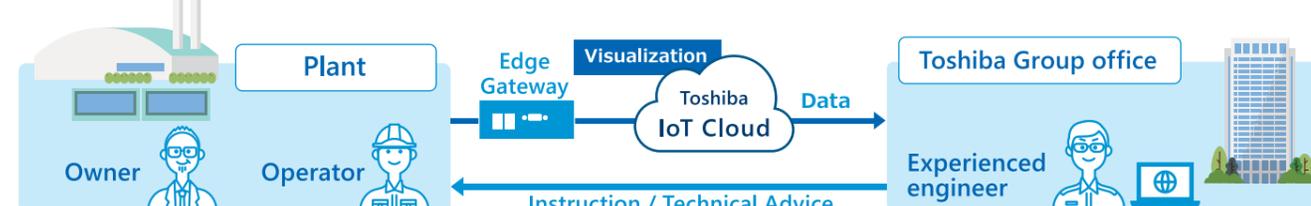
Water and wastewater treatment requirements are becoming increasingly diverse and complicated. Accordingly, demands for technological expertise and know-how are growing to optimally operate and maintain water and wastewater treatment plants. By making use of our experience and know-how accumulated over the years, we provide comprehensive solutions to solve various business issues.

Advantages of Introducing O&M Services

<p>POINT 1</p> <p>Efficient</p> <p>Our energy saving and efficient operation helps to generate operation cost benefits.</p>	<p>POINT 2</p> <p>Stable</p> <p>We support customers to provide stable water quality and quantity through appropriate operation and maintenance.</p>	<p>POINT 3</p> <p>Long-life</p> <p>We provide condition-based maintenance with our technological expertise to prolong the system life.</p>
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Utilization of IoT in O&M



1. Visualize the status
2. Improve the operation
3. Optimize the plant

IoT supports customers to collect, store and share plant data. Through IoT Cloud, we can share detailed site information with plant owners and operators to improve the operation and optimize the plant together with them.

Record of Actual Deliveries

Water Distribution System Monitoring and Operation in Yao City



Client: Yao Waterworks Bureau
 Location: Osaka, Japan
 Contract Period: 2018 to 2023
 Capacity: 153,000 m³/day
 Description: Operation management, patrol inspection and periodic maintenance of water distribution systems throughout Yao City

Kakihara Purification Plant Operation Management



Client: Uwajima Municipal Waterworks Bureau, Nanyo Water Supply Authority
 Location: Ehime, Japan
 Contract Period: 2018 to 2023
 Capacity: 30,890 m³/day (Kakihara + Uwajima)
 Description: Operation management and patrol inspection of 89 spots in the plants

Indirapuram Sewage Treatment Plant Operation Management



Client: Uttar Pradesh Jal Nigam
 Location: Ghaziabad, India
 Contract Period: 2013 to 2018
 Capacity: 72,000 m³/day
 Description: Operation and maintenance of the sewage treatment plant - SBR technology with BNR

Sohar Industrial Port Area (SIPA), Central Effluent Treatment & Recycle Plant Operation Management



Client: Majis Industrial Services SAOC
 Location: Sohar Industrial Port Area (SIPA), Oman
 Contract Period: Phase-1: 2016 to 2022
 Phase-2: 2018 to 2028
 Capacity: 20,000 m³/day-WWTP
 20,000 m³/day-RTP
 (Consolidated Phase-1 and 2)
 Description: Periodic inspection, expert audits, operation management, parts replacement, experts trade effluent evaluation and advice, and staff training, etc.

Offices Worldwide

We conduct EPC and O&M business of water and wastewater treatment from business planning to operation management for customer requirements in each region, in cooperation with our experienced staff.

Number of projects executed

Over
10,000 projects*¹⁰
in **36** countries and regions

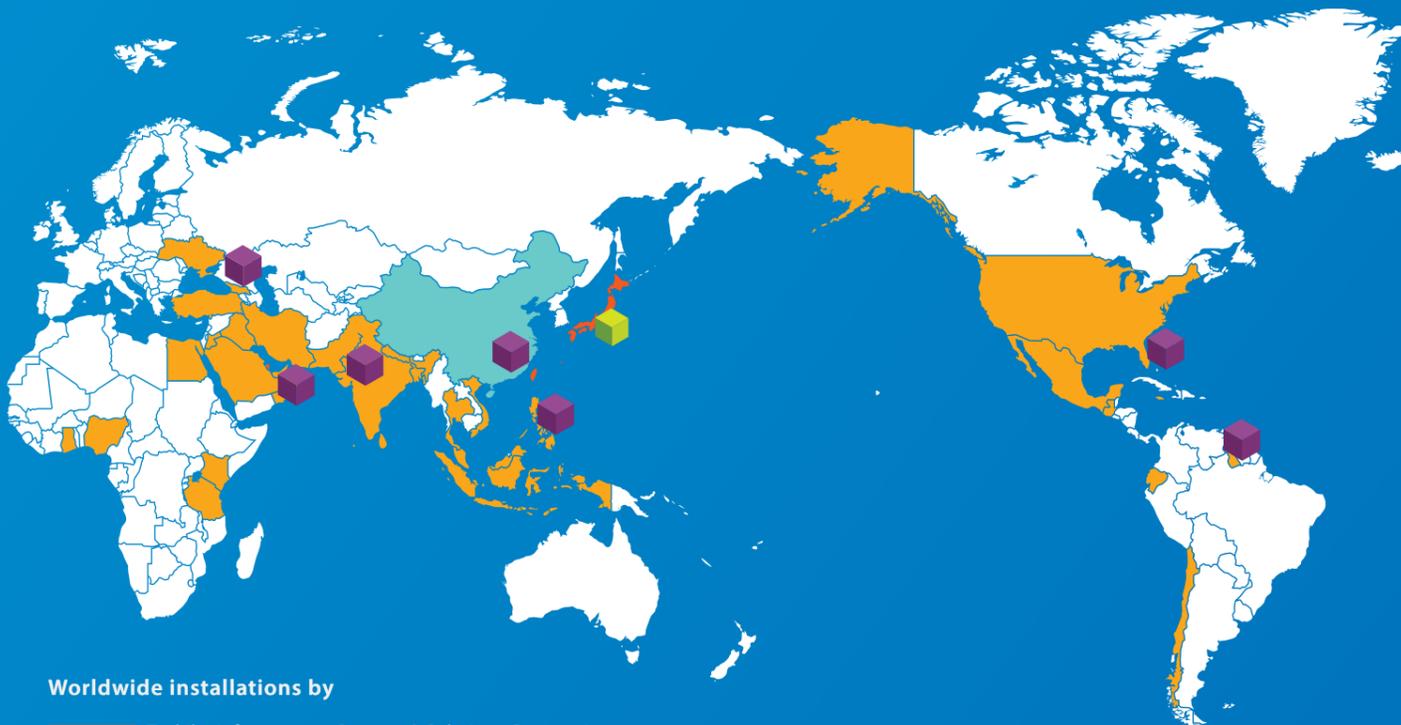
Response to customers

Conducting operations in
8 countries*¹⁰ in **7** areas
South, Southeast, East and West Asia,
North and Central America,
and the Middle East

Number of employees

Approx.
3,000 employees*¹⁰
engaged in water business

*10: As of March 31, 2021



Worldwide installations by

- Toshiba Infrastructure Systems & Solutions Corporation
- Toshiba Water Solutions Private Limited
- Guangzhou Toshiba Baiyun Control System Engineering Co., Ltd.

Head Office and Engineering Center

Toshiba Infrastructure Systems & Solutions Corporation

JAPAN



Engineering Offices

Toshiba Water Solutions Private Limited

Main Business
EPC and O&M of WTP and WWTP

Established
1973

Toshiba's Ownership
100%

Location
India, Oman, USA, Georgia,
Philippines, Trinidad & Tobago

Toshiba Water Solutions (formerly known as "UEM") was established in USA in 1973 and expanded its business to India in 1984. As a core company for Toshiba water and wastewater treatment business, the company conducts its business worldwide. With a proven record of executing over 450 EPC and O&M projects in 35 countries, the company offers consistent services from plant planning, design and construction to operation management and maintenance in both municipal and industrial fields.



Toshiba Water Solutions Group Offices

Toshiba Water Solutions Private Limited

Oman Branch



OMAN

Philippine Branch



PHILIPPINES

Georgia Branch



GEORGIA

Toshiba Water Solutions America Inc.

Trinidad & Tobago Branch



USA



TRINIDAD & TOBAGO

Guangzhou Toshiba Baiyun Control System Engineering Co., Ltd.

Main Business
Electrical System Integration and
EPC of WTP & WWTP

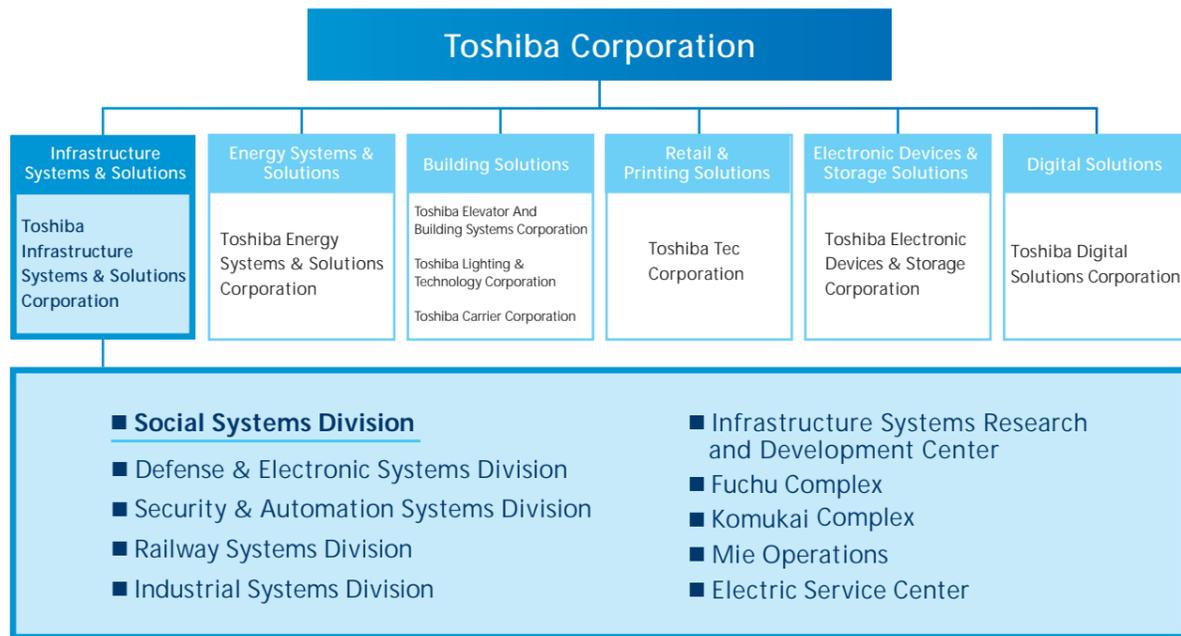
Established
2004

Toshiba's Ownership
50%

Location
China

Guangzhou Toshiba Baiyun Control System Engineering was established by Toshiba together with a Chinese electrical system manufacturer in 2004. With a proven record of executing over 400 projects, the company is involved in sales, design, manufacturing, local procurement and maintenance services of electrical systems and monitoring and control systems, which are mainly used in water and wastewater treatment plants. The company provides safe and reliable products and services through the sales, design, manufacturing and system integration that best fits local needs, and quality capabilities with Toshiba's technologies. The company has also launched IoT and Smart Water business to contribute to solving various issues of water environment.





(As of March 31, 2021)

Toshiba Infrastructure Systems & Solutions Corporation	
Headquarters	72-34, Horikawa-cho, Saiwai-ku, Kawasaki-shi, Kanagawa 212-8585, Japan
Date of Succession	July 1, 2017 (Split off from Toshiba Corporation)
Common Stock	10 billion yen
Business Outline	Development, manufacture and sales of social infrastructure business products, systems and services
Net Sales (consolidated basis)	670.9 billion yen (FY 2020)
No. of Employees (consolidated basis)	19,800

Social Systems Div.	
Start of Water Business	1972
No. of Employees Engaged in Water Business (consolidated basis)	Approx. 3,000
No. of Branch Offices Conducting Water Business	31

Contact Us

Toshiba Infrastructure Systems & Solutions Corporation



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<https://www.global.toshiba/ww/products-solutions/social/water-environmental.html>

Toshiba Water Solutions Private Limited / Toshiba Water Solutions America Inc.

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 Philippine Branch 19/F Panorama Tower 34th Street corner Lane A Bonifacio Global City Taguig City 1634, Philippines TEL: +63-2-8819-1048 Fax: +63-2-8819-5479	 Georgia Branch N3, Non-Residential Space, N72a, Kostava Street, Saburtalo District, Tbilisi, Georgia. E-mail : twsgeorgia@toshiba-water.com	 Trinidad & Tobago 22 Crawford Street, Vistabella San Fernando, Trinidad & Tobago TEL: +1-868-652-9713 E-mail : twstrinidad@toshiba-water.com

<https://www.toshiba-water.com>

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