



**Introduction of
EBARA Corporation,
Building Services & Industrial + Infrastructure
Company
FY2026 Pacific Island Countries Waterworks
Workshop, Palau Island**

Looking ahead,
going beyond expectations
Ahead > Beyond

22ND Jan. 2026

EBARA CORPORATION

Background (Yap Chin Foo)

1. Long History with Ebara Engineering Singapore Pte Ltd from Project Engineer to Director from 1988 till to date
2. Water and waste water treatment engineer background before taken up responsibility in machinery division
3. Completed at more than 38 projects in the past years.
4. Education: M Sc (Environment) NUS and B Eng (Chemical Engineering) NUS
5. Looking after FMD from 2002 till now.
6. Professional affiliates : MIES (Member of Institute of Engineer Singapore)
EES (Environment Engineering Society of Singapore)

Contents

- 1. EBARA Corporation**
- 2. BS&I Group**
- 3. Infrastructure Company**
- 4. Our Products & Service**
- 5. Main Factories and Global Service Network**
- 6. Our Supply Records**

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Factory in Ebara-town, Tokyo founding place



Founder
Issey Hatakeyama



Dr. Ariya Inokuty

Beginning of EBARA's Challenge

EBARA was established in **1912** as a university venture to manufacture
“Inokuty type volute pump”

Founding Spirit “Passion and Dedication”



(Netsu to Makoto)

“Passion and Dedication” is the words that Issey Hatakeyama, the founder of EBARA Corporation, lived by.

Based on this Founding Spirit of EBARA, we contribute to society through high-quality technologies and services relating to water, air and the environment.

Company Overview



Founded in

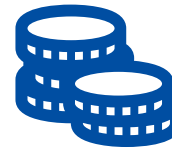
1912



Paid-in Capital

¥79.8

Billion Yen



**EBARA Group's
Global Network**

116

Companies



Headquarters

Haneda

Tokyo, Japan



Revenue

¥680.8

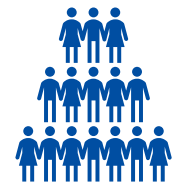
Billion Yen



No. of Employees

19,095

Consolidated

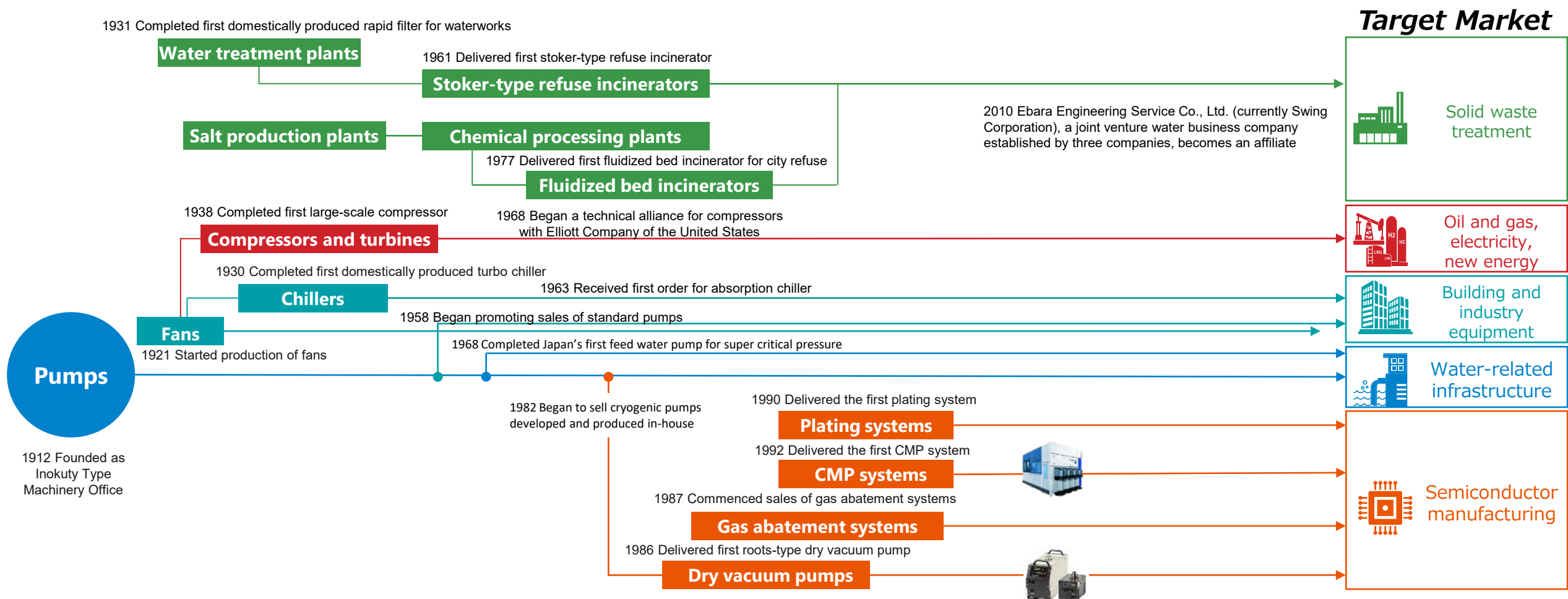


(As of Dec.31, 2023)

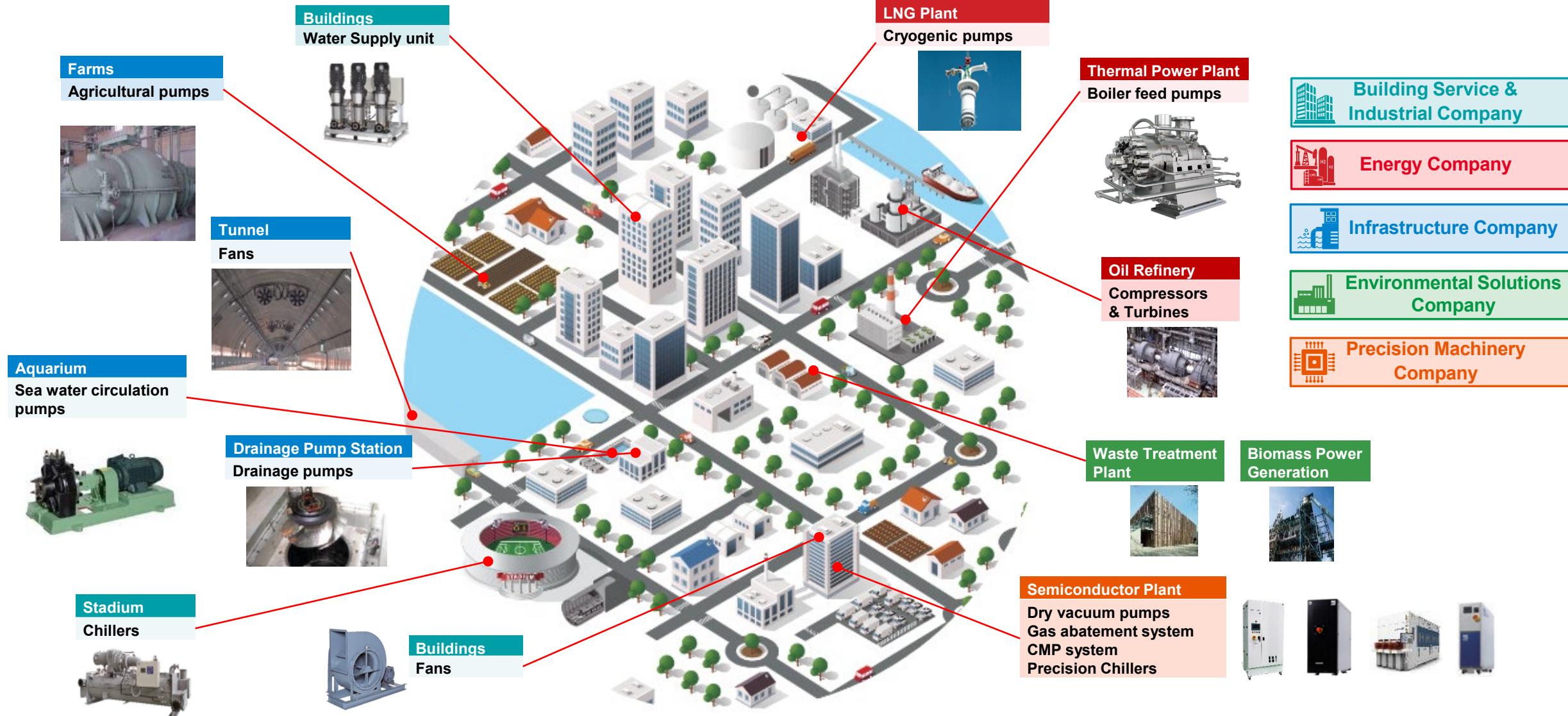
History of EBARA's products



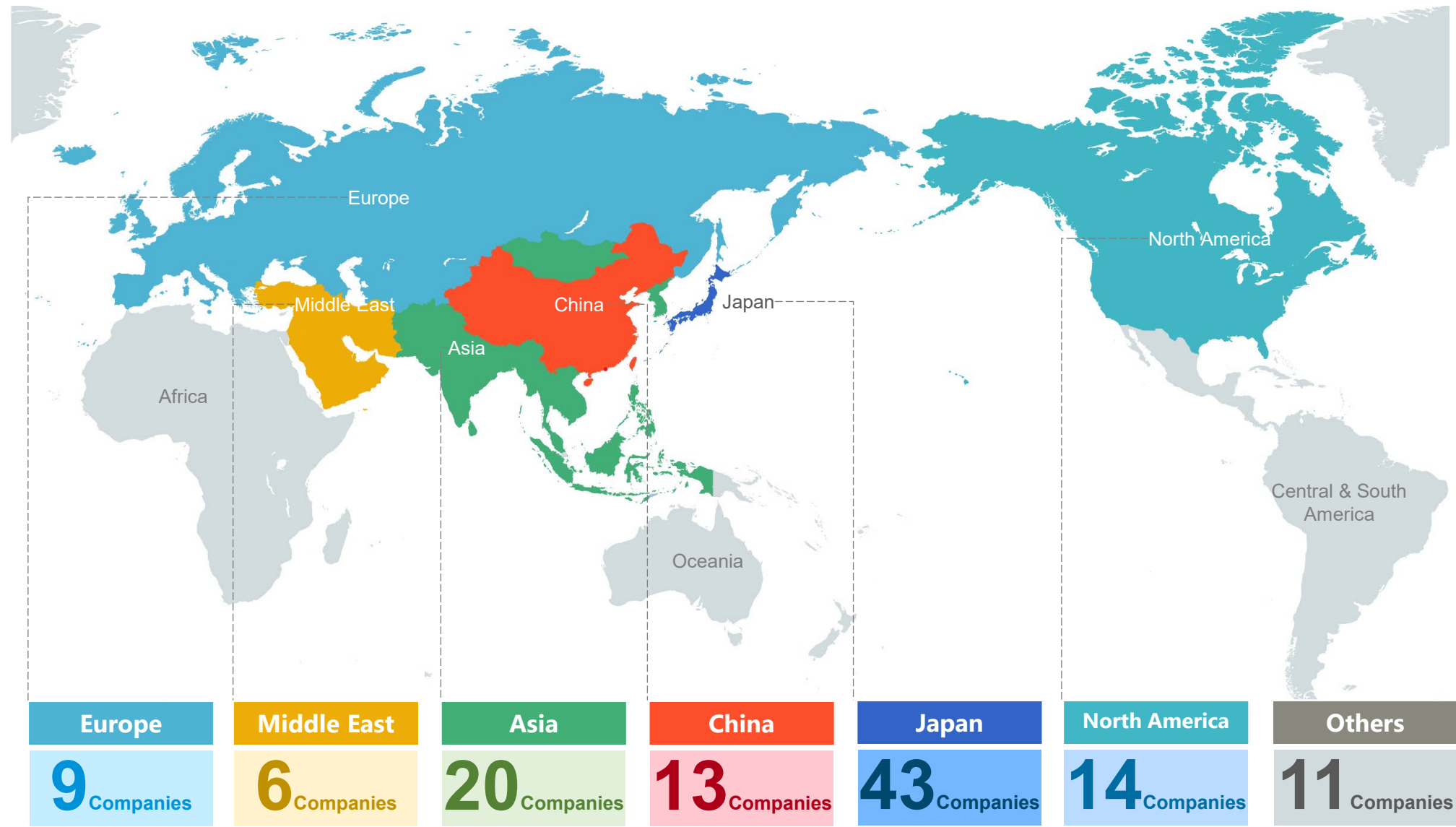
1912 Modernization of Japan	1945 Post-WWII Reconstruction Japan's Economic Miracle	1980 Development of Information Society	2000 Search for Path to Sustainability	2020~ More Diverse and Inclusive Society
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Our Service, Products



EBARA GROUP – Global Network



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BS&I Group President



The Building Service & Industrial Company provides feedwater and air conditioning systems that are essential for daily life and business. Our standard pumps and cooling towers boast the highest domestic market share and are used in many residential apartments, factories, and commercial facilities across Japan.

Our products are now widely used overseas. The percentage of overseas sales grew to 55%, exceeding domestic sales. We are expanding our business hubs around the world, and as a company playing a central role in supporting the foundation of EBARA, we deliver water to people around the world.

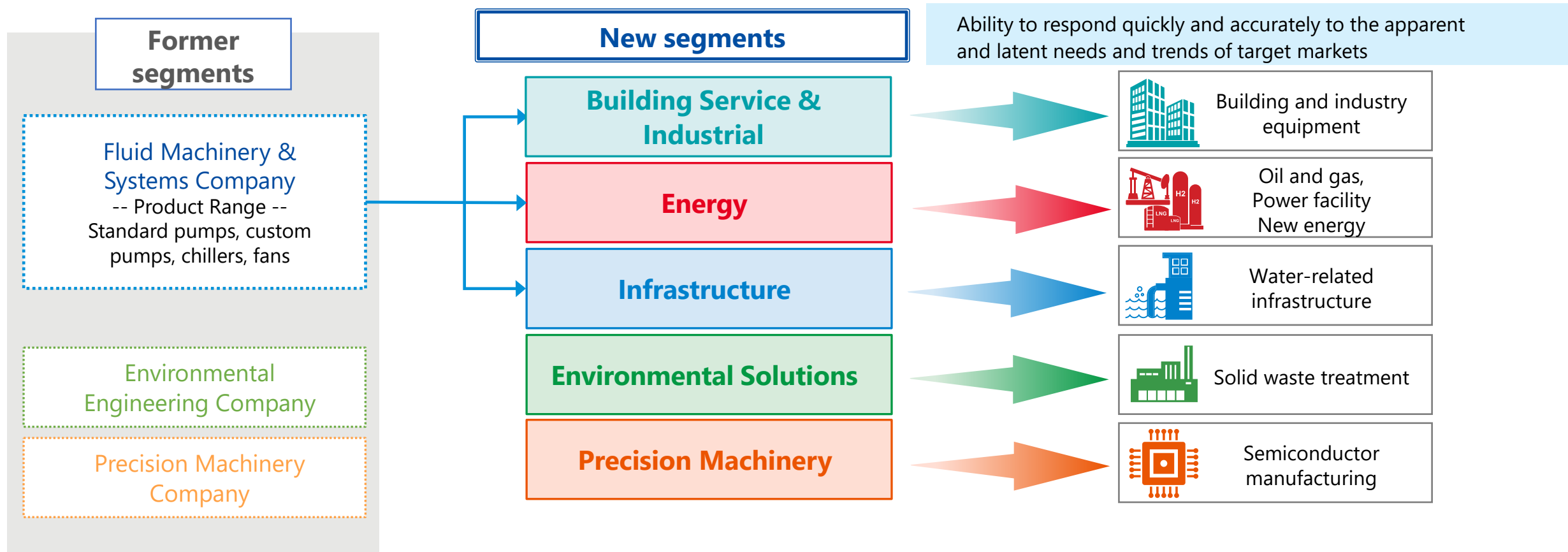
We have set the goal of supplying water to 600 million people around the globe in E-Vision 2030, and we are working to achieve that goal. There are still areas in developing countries with underdeveloped water and sewage systems. A stable supply of water enables industry to grow, creating a comfortable life for local communities. We continue to take on new challenges to empower global industries to overcome barriers.

Superior quality and energy-saving technologies honed in Japan. Making what is standard in Japan, standard around the world. We believe that EBARA's technology, which has been honed over more than 100 years, will serve as the driving force to make the world a better place.

On the other hand, what is common in Japan may not always be applicable overseas. Land area, urban environments and climate. Different national characteristics and cultures require different values. For this very reason, we need to link such requirements with our technology from a customer perspective. We aspire to develop human resources who can provide products and services from undiscovered needs and establish new water and air standards around the world.

Setting a new standard for water and air that the world demands.

To achieve more market-oriented, customer-driven value creation, we have shifted from a product-based organization to a target market organization.



FY22 Financial Results



EBARA's performance and each company's sales revenue

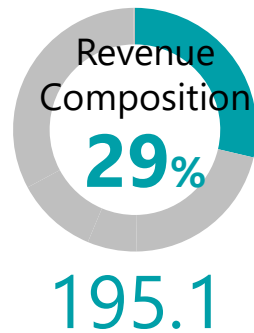
Revenue
680.8

Operating
Profit
70.5

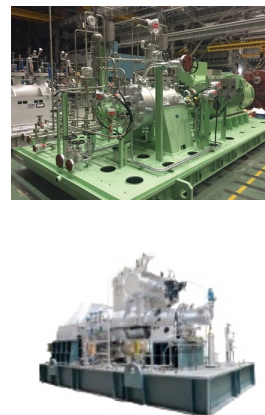
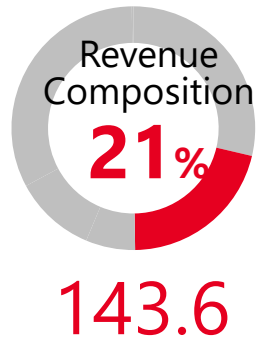
OP Ratio
10.4%

(in billion yen)

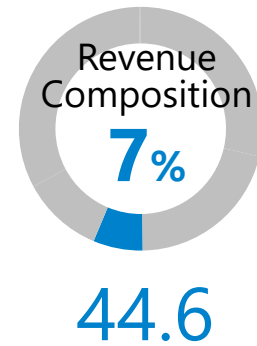
Building Service &
Industrial



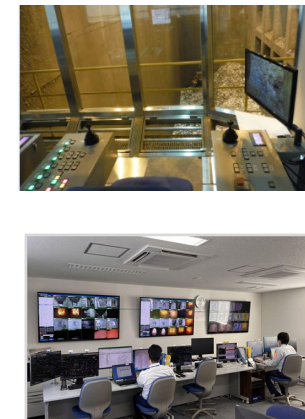
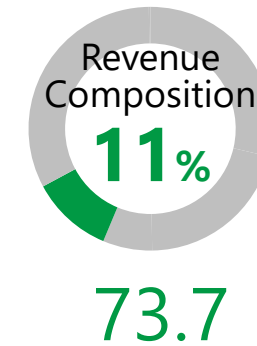
Energy



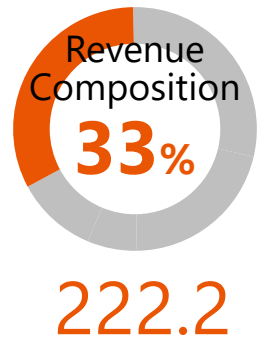
Infrastructure



Environmental
Solutions



Precision
Machinery



We provide a wide range of pumps blowers, chillers, and cooling towers that meet a wide variety of needs, such as water supply and drainage for daily life, heating and cooling of buildings and commercial facilities, air supply and exhaust air, transportation of various liquids, and cooling of production processes.

■ Main Target Market



■ Main Products & Service



Pumps

Standard pumps for use in buildings, condominiums, and other construction facilities.



Fans

Fans used for "ventilation" to send fresh air indoors or to let dirty air out.



Chillers

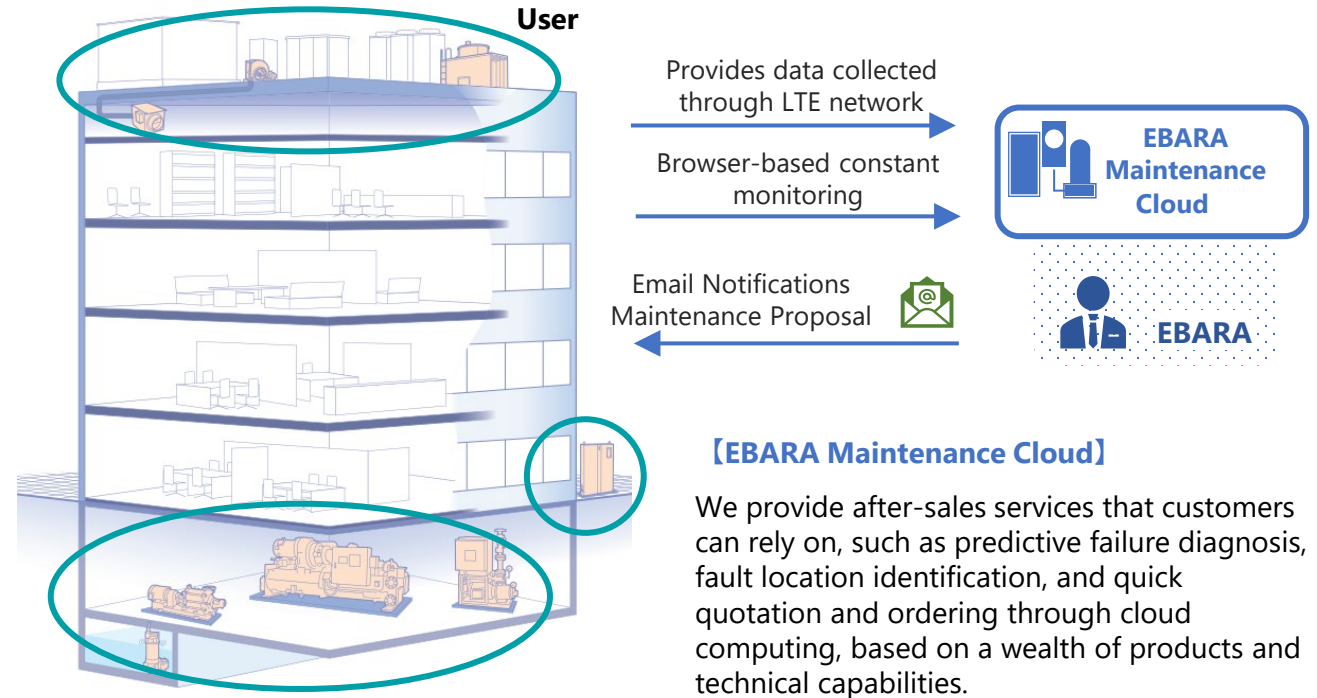
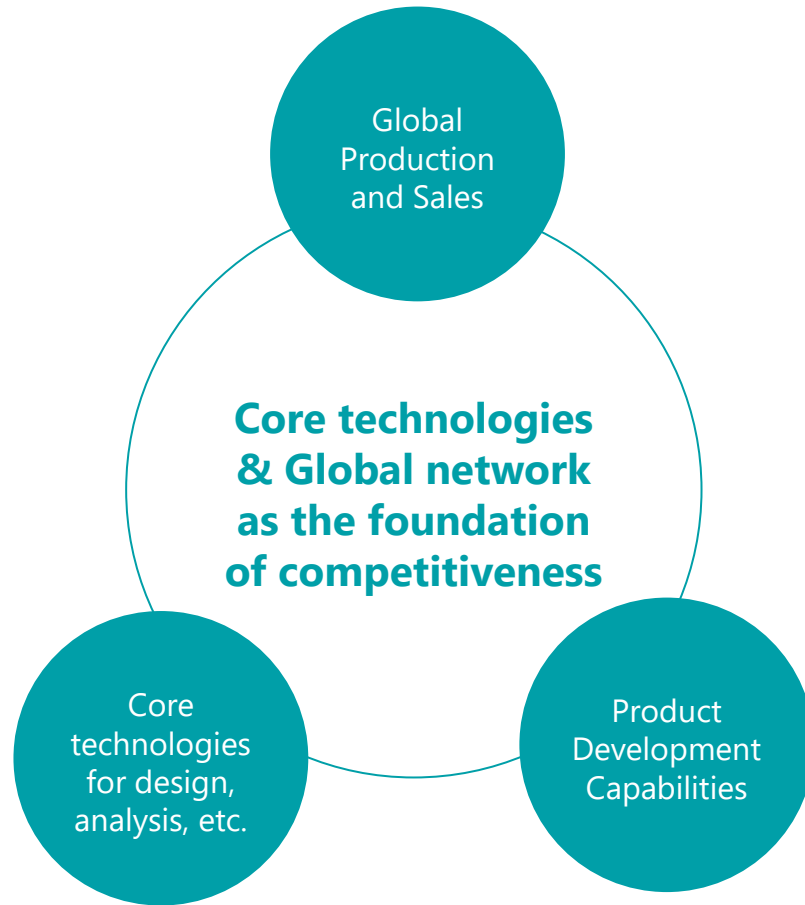
Chillers, cooling towers and related systems used in the heating and cooling systems of buildings and large commercial facilities.



Strengths of Building Service & Industrial Company



We provide comprehensive solutions by leveraging our broad product coverage



幅広い製品群



Pumps, chillers, blowers, etc.

DX



Vibration Sensor Unit 『QiDe』

Smartphone Apps

⇒ we provide new solutions to solve customers' issues with our ability to make proposals across a wide range of product lines.

Looking ahead, going beyond expectations

Building Service & Industrial Company

Energy Company

Infrastructure Company

Environmental Solutions Company

Precision Machinery Company



Achievement of Building Service & Industrial Company



**Standard Pumps
production volume
per year**

Approx. 1300K

**Standard Pumps
market share
in Japan**

No.1



**Chillers
market share
in Japan**

No.1



based on our research

Looking ahead, going beyond expectations

Building Service &
Industrial Company

Energy Company

Infrastructure Company

Environmental Solutions
Company

Precision Machinery
Company

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Summary



We provide comprehensive support from new construction to after-sales service, inspection and maintenance for infrastructure facilities such as pumping stations, sewage treatment plants, water purification plants, and tunnels.

■ Main Target Market

Water infrastructure



■ Main Products & Service



Customized Pump

We provide river drainage pumps, rainwater drainage pumps for sewage systems, water transmission and distribution pumps for water supply systems, and waterlogging prevention and drainage pumps for agricultural use.

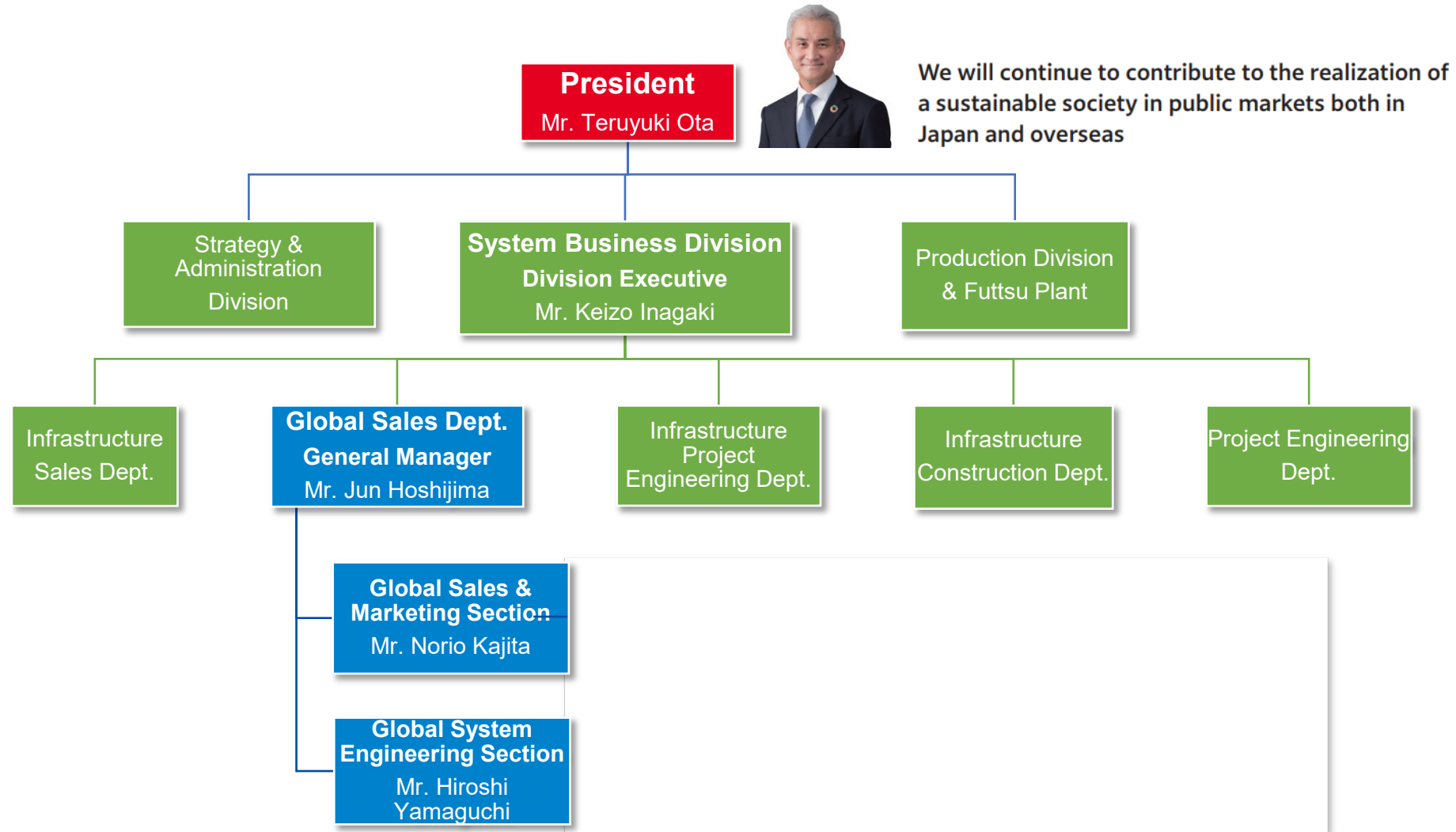


Fan

The environment inside the tunnel is monitored using data from measurement equipment, and optimal ventilation control is implemented to provide a safe environment for passing vehicles at all times.



Organization Chart of Infrastructure Company



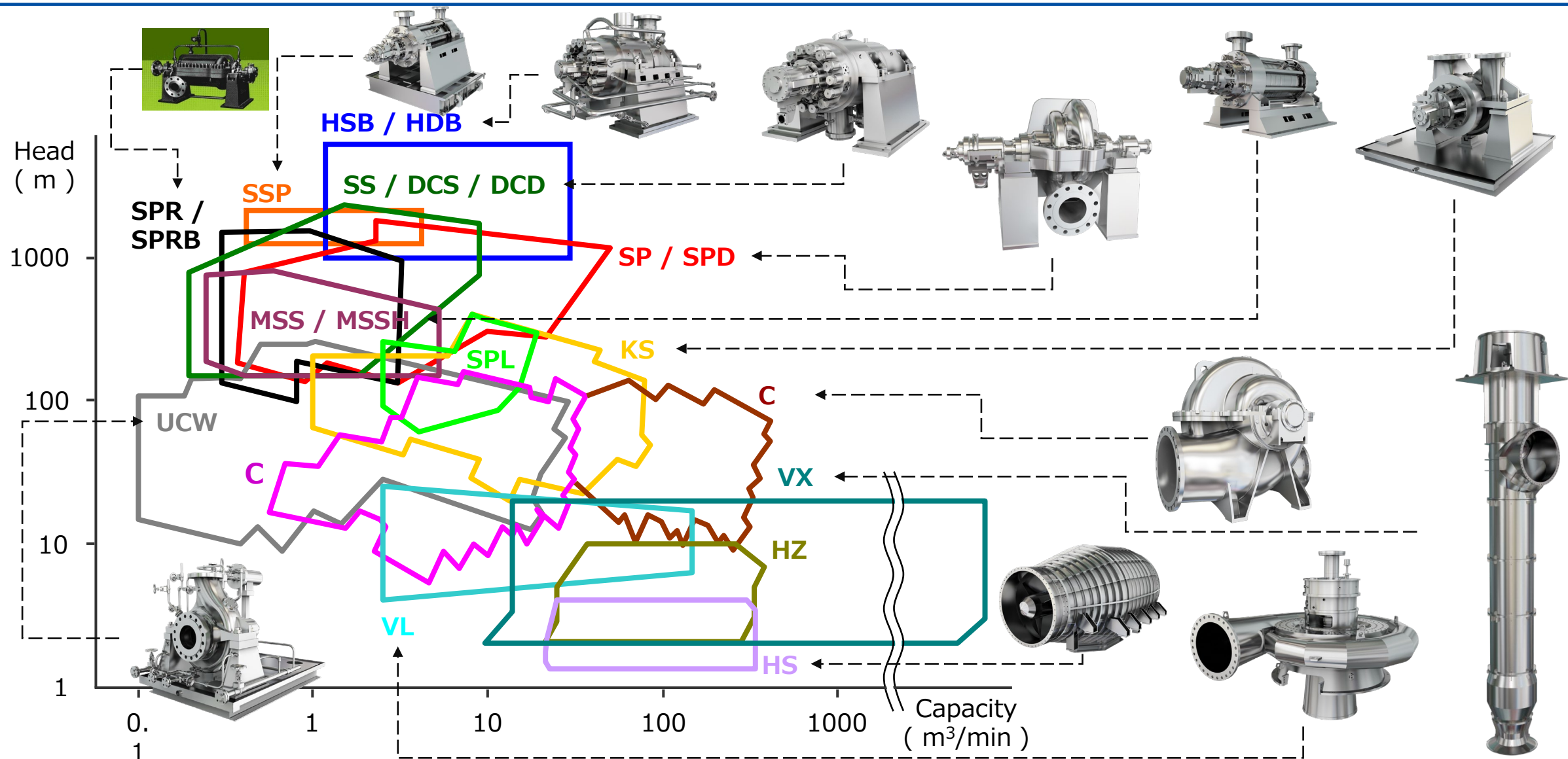
(As of Dec.31, 2023)

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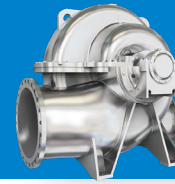
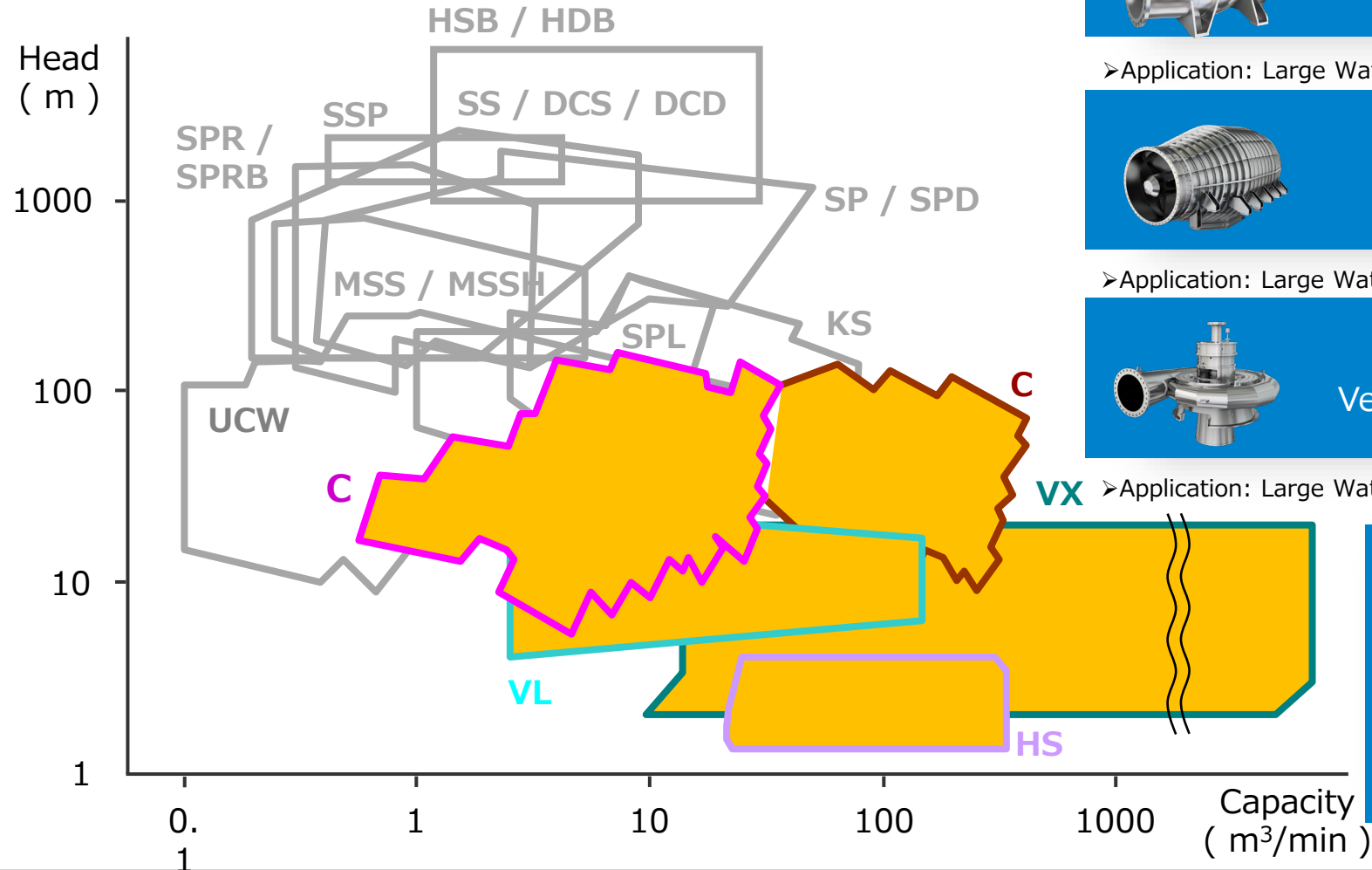


Typical Production Map - Customized Pumps





Customized Pumps for Water Infrastructure



CN/CW :
Horizontal Split-casing
Centrifugal Pump

- Flow : 80~36,000m³/h
- Head : 3~300m
- Temp. : ~120°C

➤Application: Large Water Transfer Project, Seawater Desalination



HST/HDT :
Tubular Pump

- Flow : ~144,000m³/h
- Head : ~ 8m
- Temp. : ~60°C

➤Application: Large Water Transfer Project, Rain & Sewage Water Drainage



VL :
Vertical volute pump

- Flow : ~270,000m³/h
- Head : ~ 150m
- Temp. : 80°C

➤Application: Large Water Transfer Project, Rain & Sewage Water Drainage



VX :
Vertical Mix
Flow Pump

- Flow : ~90,000m³/h
- Head : ~100m
- Temp. : ~ 80°C
- Application: Large Water Transfer Project, Rain & Sewage Water Drainage

Truck pump

Fast and **Easy**
Drainage operation

Example of Working situation of Truck Pump mounting Super Light Pump for Disaster



High capacity



Flow capacity : 7.5m³/min/unit
Total head : 10m
Gross weight : 34kg(Without caple)

Light weight



Flow capacity:5.0m³/min/unit
Total head : 10m
Gross weight:21kg(Without cable)





Main Industrial Pumps for Water Infrastructure

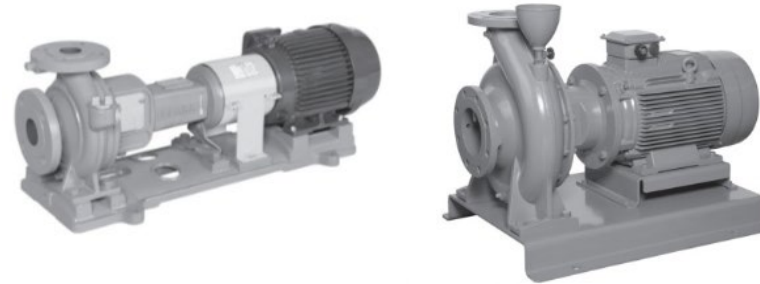


FS/IFW :

Single Centrifugal Pump

➤ Flow : 2.4~1,800m³/h

➤ Head : 2~150m

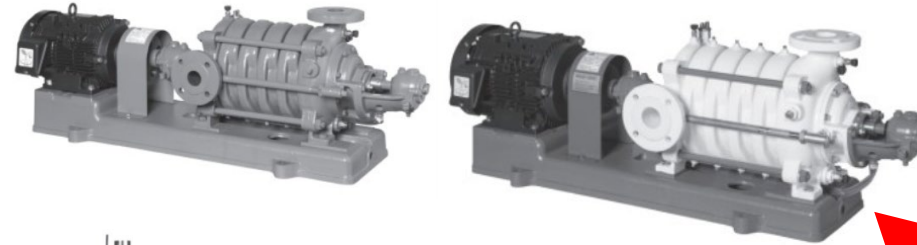


MS/MS420 :

Multistage Centrifugal Pump

➤ Flow : 1.2~270m³/h

➤ Head : ~ 300m



BHS :

Submersible pump for well

➤ Flow : 1.2~270m³/h

➤ Head : ~ 300m

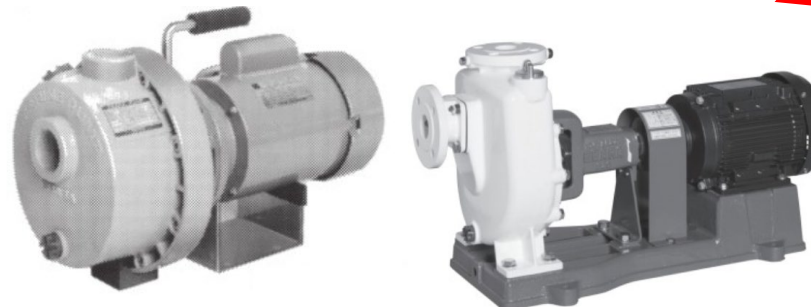


SQ/FPS :

Seawater pump

➤ Flow : 0.6 ~ 600m³/h

➤ Head : 2 ~ 60m



Production of
more than 1.1
million units
per year
worldwide



After installation and operation of the pumps, we understand the other key importance for a customer is **Service and Support**.

Spare parts Service

Genuine EBARA spare parts

Modification / Replacement

EBARA and Non-EBARA pumps

Overhaul Service

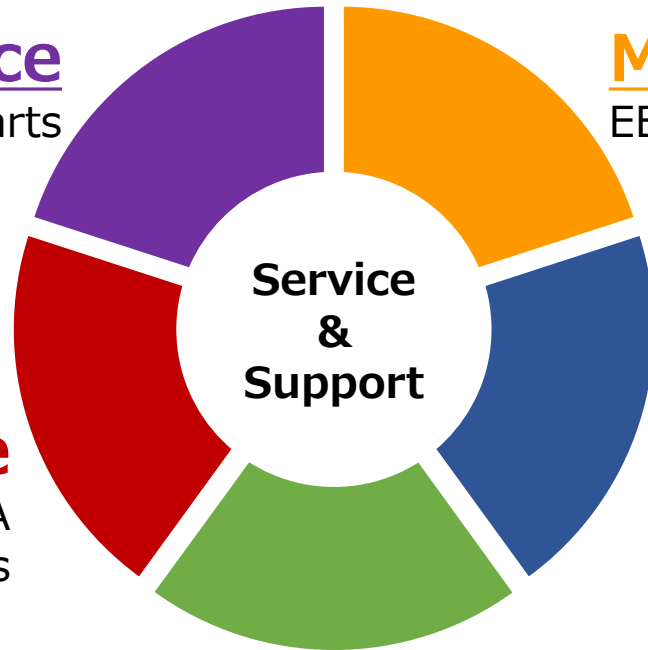
EBARA and Non-EBARA pumps

Technical Support

Technical Advisor for on-site inspection, commissioning and Training Services

LTSA Service

Long Term Service Agreement



Contents

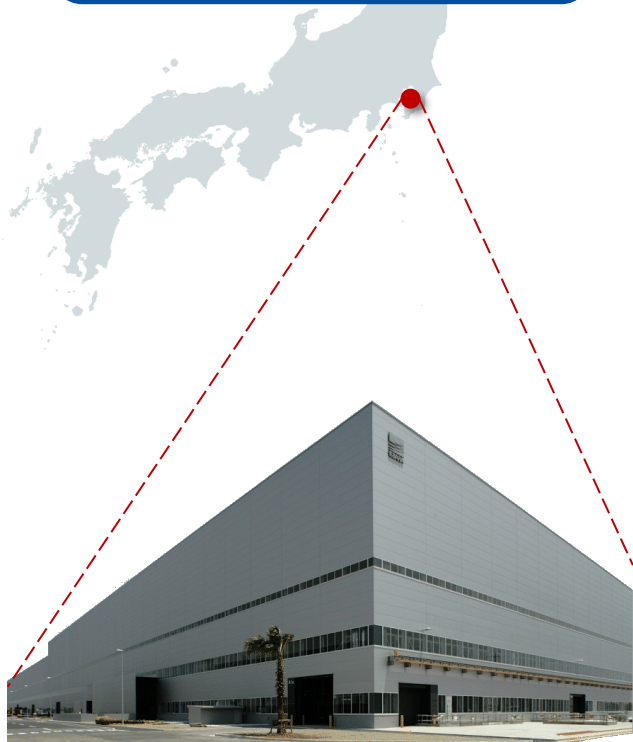
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EBARA Corporation, Japan (Futtsu Plant)



Our Mother Factory.
Fully customized design
up to any size



■ **Location:** Futtsu Town, Chiba, Japan

■ **Site Area:** 103,217m²

■ Main Facilities

- Power Receiving Capacity: Testing: 25,000kVa
General use: 5,000kVa

Machine Facilities

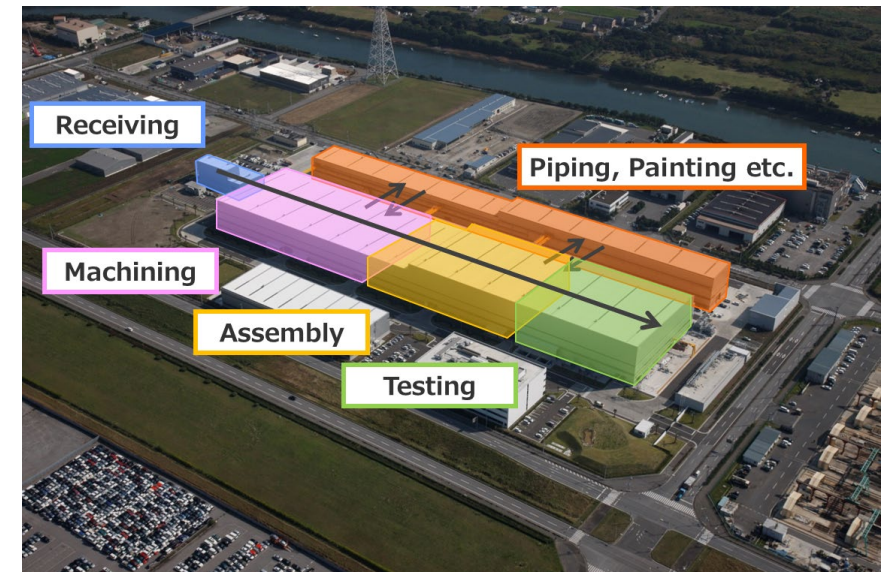
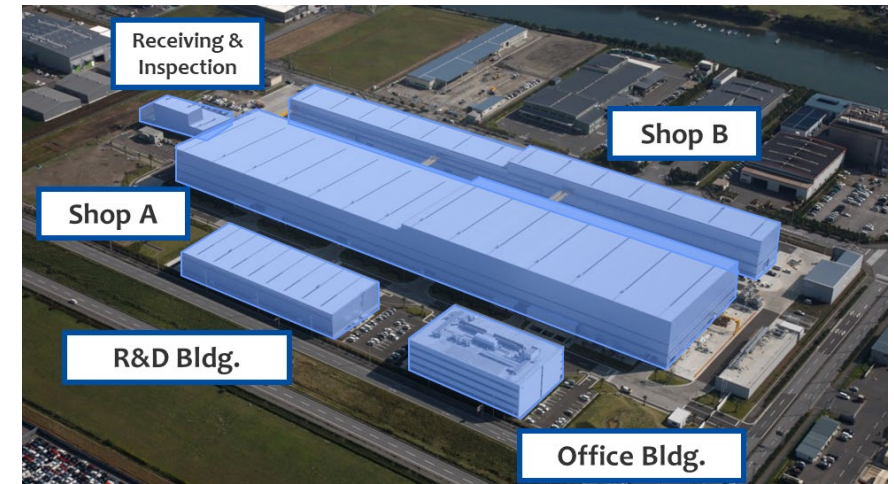
- Vertical Turning Machine: 11.5m(Dia) × 4.1m(H), 10tons
- Plano Miller: 3m(W) × 8m(L), 35tons

Assembly Facilities

- Ceiling Crane: 75tons
- Dynamic Balancing Machine: 10tons

Test Facilities

- Test Power Supply: 10,000kW
- Large Scales Pumps: Tests 4 pumps Simultaneously,
Max.22m³/s
- Hi-Pressure Pumps: Tests 2 pumps Simultaneously,
Max.4,595m³/h
- Medium Pressure Pumps: Tests 1 pump,
Max.110m³/min





**2005
Established**

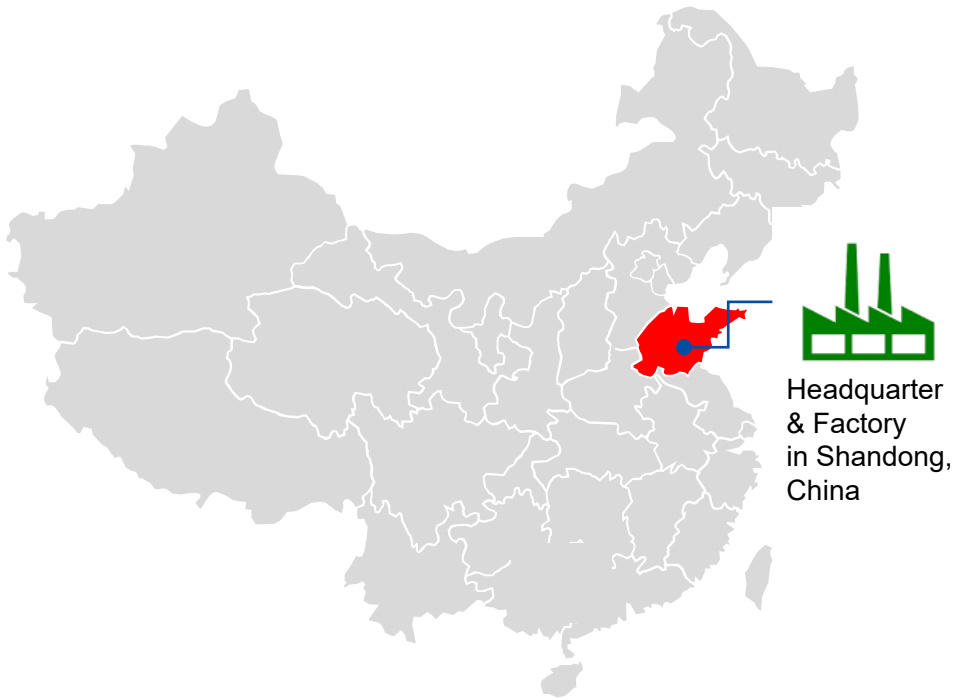


**284 Million RMB
registered capital**



**500 (Resident Japanese 6)
Employees**

- 100% Ebara Corporation Share holding
- Total investment of Phase I & II 105.64 million USD
- Area: 68,000m²
- Business Scope: Customized pump, Large size pump , High pressure pump etc.



Design and Development

- ✓ Design hydraulic parts by using inverse design method and analysis flow pass parts



Manufacturing

- ✓ Qualifications can guarantee to provide the most reliable products to our customers.



Quality Assurance

- ✓ Concept of product designing: To make the pumps according to customers' requirement.



Test capacity

- ✓ Full digitalized testing system, Automatic record system for vibration, noise and bearing.

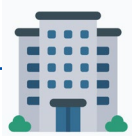


Whole-process service

- ✓ 365 days of comprehensive response with the emergency response mechanism.



Overview



Sale office for domestic market in Ha Noi capital



Headquarter and Factory in Hai Duong Province

To Haiphong Seaport: 1h 30 minutes

To Hanoi Airport: 1h 30 minutes



Workshop in Dong Nai Province

Founded in
1995 ➡ **2023**
The 28th History

Employee
2023
320



Revenue
2022
30 mil. USD



Service and Products



Treatment and Irrigation



Sewage



Drainage



Water supply



Dirty water



Chemical Industry



Pressure Boosting



Hot & cold-water circulation



EVPC also provide repair, maintenance, revert engineering services for not only EBARA pump products but also other pump manufacturers.



Head office
& Factory
In Jakarta



- Established 1980
- Total 500 employees
- Area: 51,000m²
- Business Scope: Manufacturing and Selling of Centrifugal pumps for various industries, Air conditioning equipment (Chillers, Cooling towers, etc.), Maintenance and management services.

Service



Building Infrastructure



General Industry



Power Plant



Water Resources



Cooling System



Global Service Network of EBARA Factories

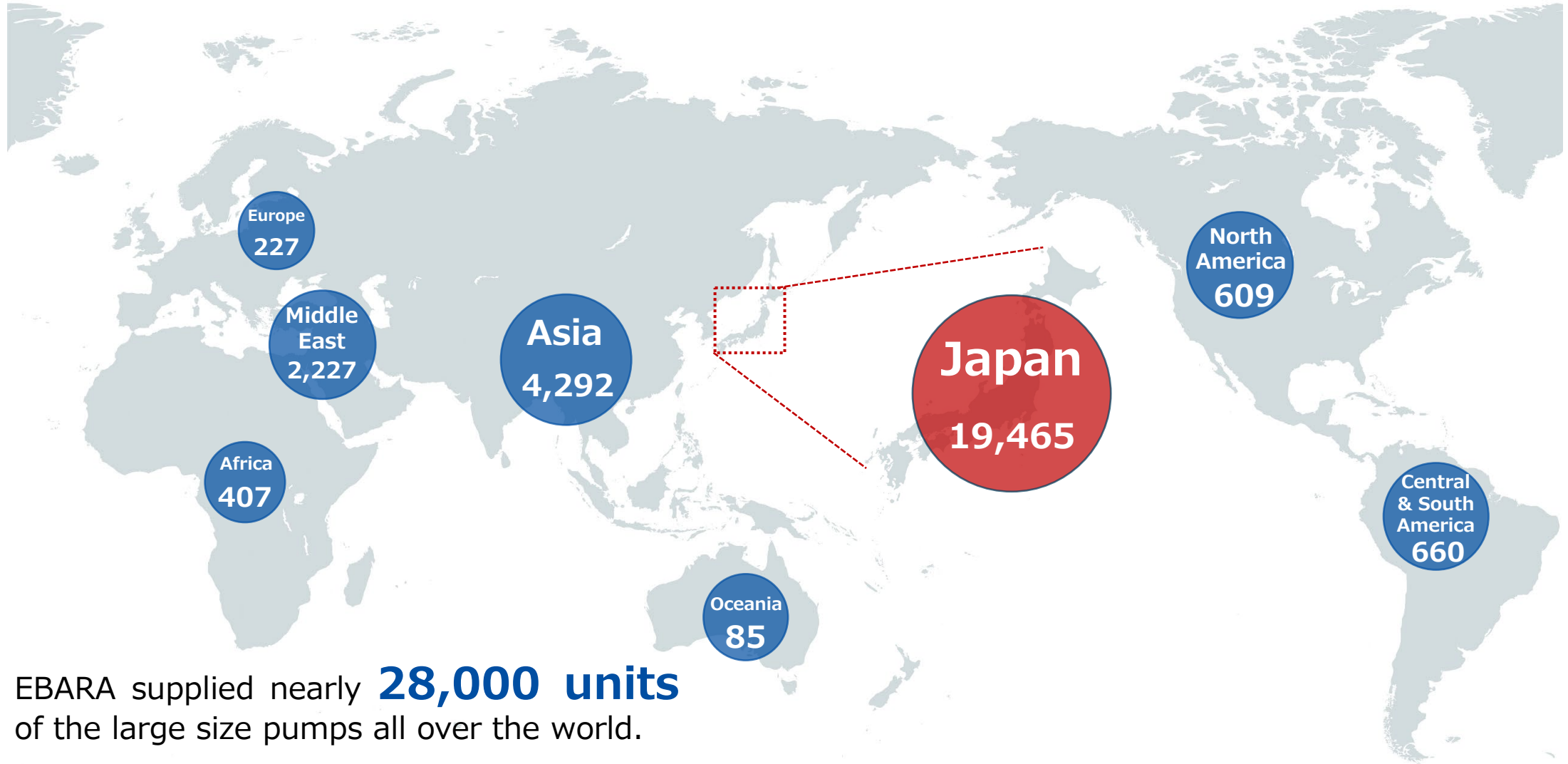


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Worldwide Supply Records of Large size Centrifugal Pumps※



EBARA supplied nearly **28,000 units** of the large size pumps all over the world.

※ Large size pumps: Pump's Suction Pipe Diameter over 350mm

As of Dec. 31, 2023

Created with mapchart.net



Ebara Engineering Singapore Pte Ltd experience

Looking ahead,
going beyond expectations

Ahead > *Beyond*

November 9, 2017

EBARA CORPORATION

(1) M&E Turn-key Pumpset Replacement Project (2013~2015)



River Water Pumps

5~15mgdi Vertical Turbine Pumps

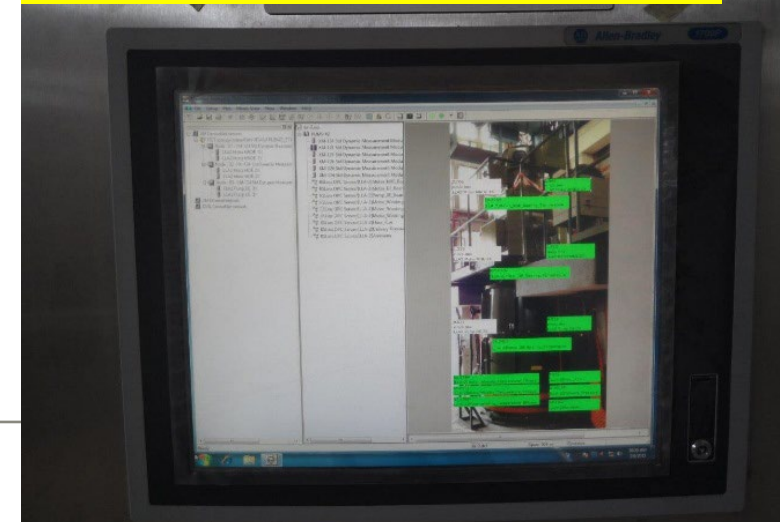


Control panels & Starters

SCADA



Machine Condition Monitoring (MCM)



M&E Turn-key Pumpset Replacement Project (2013~2015)



M&E Turn-key Pumpset Replacement Project (2019~2021)



2000kW Slip Ring Motors

Treated Water Pumps

34mgdi Vertical Split Casing pumps & pipeworks



16~21mgdi Horizontal Split Casing pumps,
pipeworks & control panels



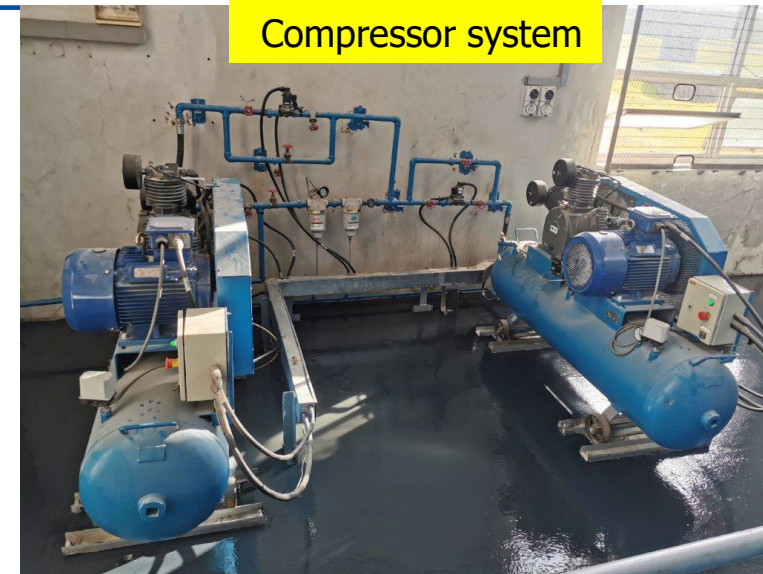
Treated Water Pumps

955~1250kW Slip ring Motors

M&E Turn-key Pumpset Replacement Project (2019~2021)



20T Overhead Crane



Compressor system



Control Panels



Motor Starters & Control Panels

M&E Turn-key Pumpset Replacement Project (2019~2021)



M&E Turn-key Pumpset Replacement Project (2019~2021)



Inlet fans



Exhaust fans



Roof fans



Supply of Pumpsets

Choa Chu Kang Waterworks (CCKWW)



Quick Introduction:

- Choa Chu Kang Waterworks (CCKWW) is the **second largest waterworks in Singapore**.
- It has a **treatment capacity of 80 million gallons per day (364 MLD)**.
- Mainly **draw water from Kranji, Pandan, and Tengah Reservoirs** to homes, businesses, and industries across **western region of Singapore**.

Chronological Development of CCKWW:

1975~198

1
CCKWW was **built in two phases**.

June 2016 ~June 2019

Construction of a new facility, installation of ceramic membranes and the inclusion of ozone-biological activated carbon (BAC) treatment for the plant.

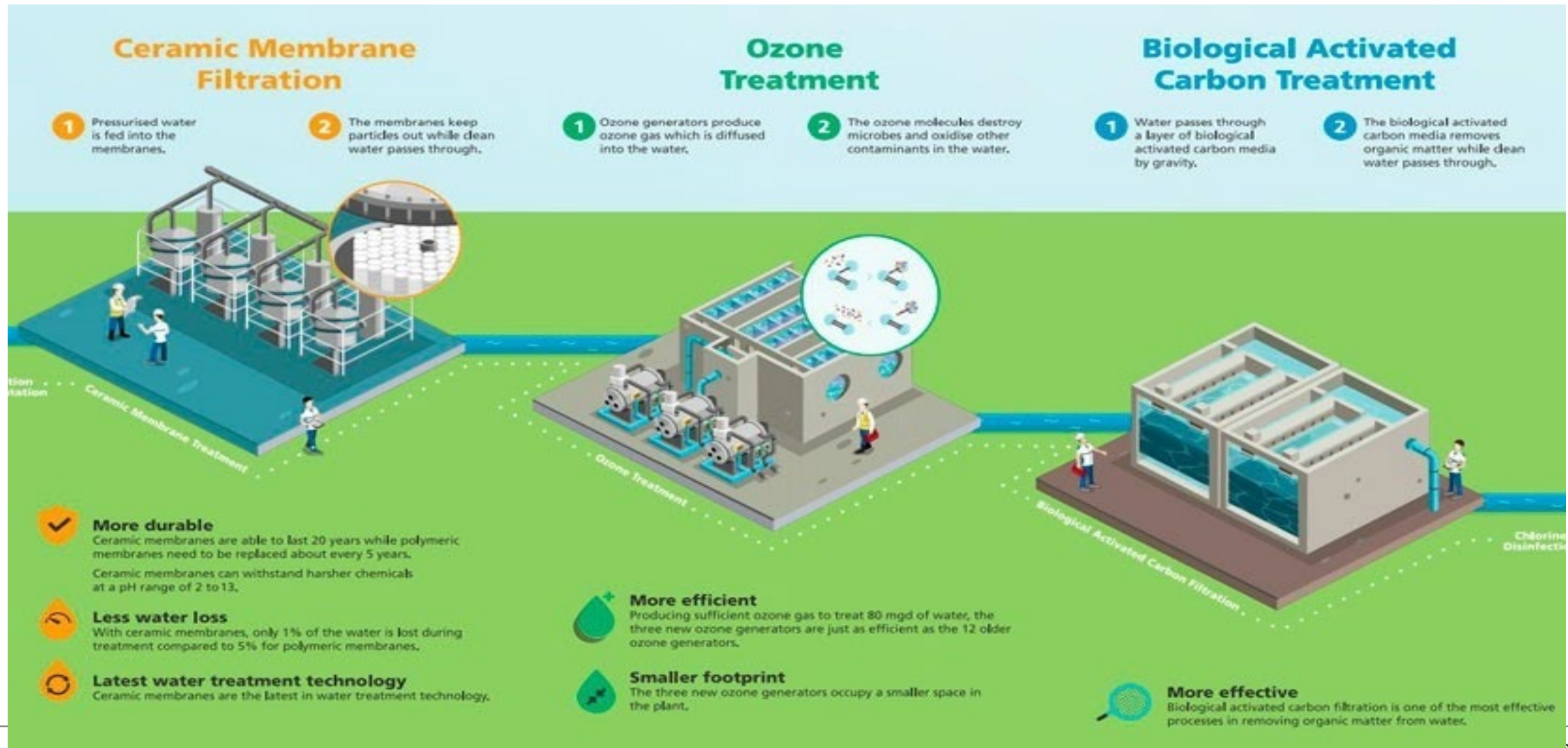
The ceramic membrane system, the world's largest in a single plant, will treat up to 40 million gallons of water per day. Filtering out particles as minute as 0.1 micrometres in size, there will be 12 vessels with 90 ceramic membrane elements in each vessel.

2024~2028 (Tentative)

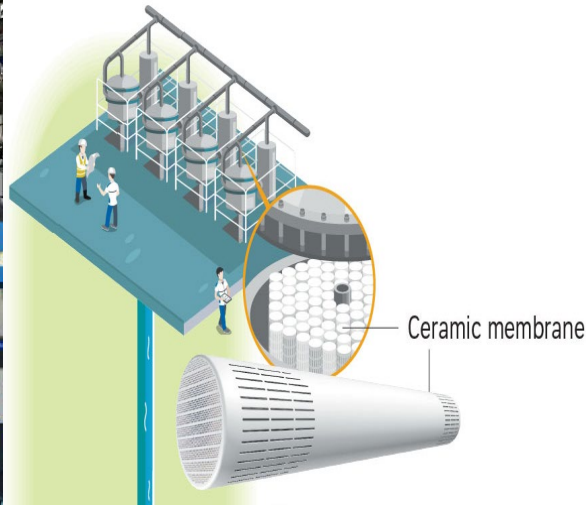
Aims to replace aging infrastructure with state-of-the-art facilities, including high-rate clarifiers, advanced membrane filtration systems, and automated chemical dosing systems.

The reconstruction will also **integrate smart technologies for real-time monitoring and predictive maintenance**, enhancing operational efficiency and safety .

Enhanced water treatment process at CCKWW

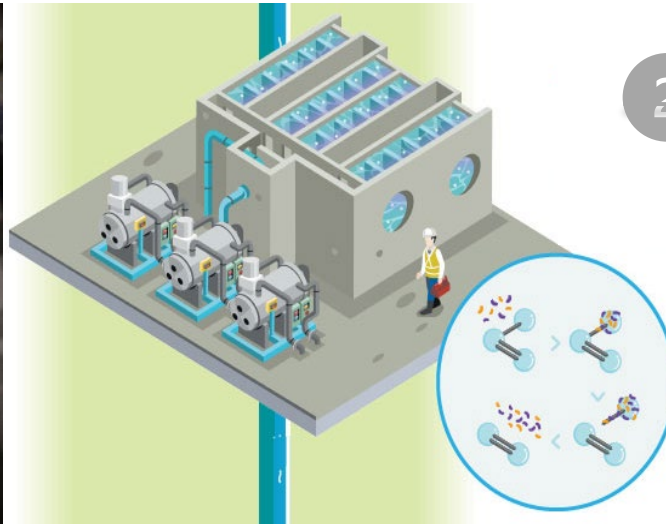


Steps of water treatment process at CCKWW



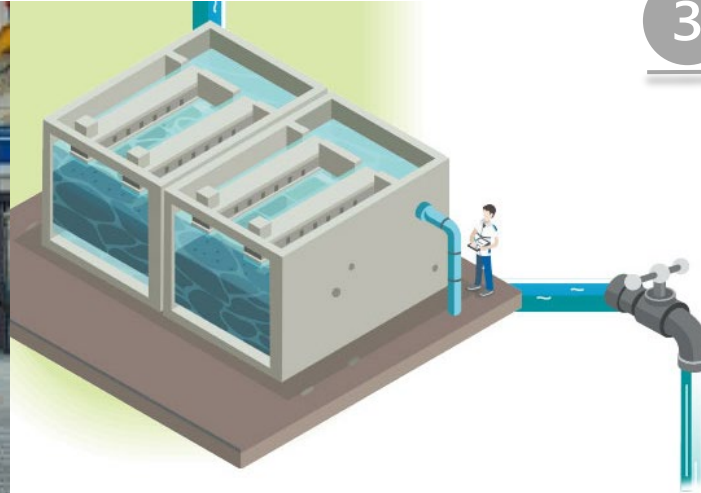
1 Ceramic Membrane Filtration

- The ceramic membrane system, the world's largest in a single plant, will treat up to 40 million gallons of water per day.
- Filtering out particles as minute as 0.1 micrometers in size, there will be 12 vessels with 90 ceramic membrane elements in each vessel.
- Pressurised water is pumped through the ceramic membranes.
- Ceramic membranes are highly durable and expected to last 20 years, four times longer than polymeric membranes.
- Water loss is reduced significantly from 5% to 1% with the use of ceramic membrane



2 Ozone Treatment

- Just three ozone generators are needed, a reduction from 12 previously.
- Bubbles of ozone gas are mixed into the water.
- The ozone destroys microbes and removes other contaminants.



3 Biological Activated Carbon Treatment

- Water passes through a biological active carbon media via gravity.
- Helpful bacteria cultivated in the carbon help consume remaining organic matter.
- Also remove taste and odour compounds such as MIB and Geosmin.

Roles of Ebara Engineering Singapore in CCKWW



- Ebara Engineering Singapore supplied pumps during the last refurbishment of CCKWW in 2016 to 2019.
- Supplied total of 11 units of pumps for various functions in the CCKWW with total sales close to SGD87k.

	Pump Details	Functions	Unit
1	100X80FSS2HC Ebara S/S End Suction Complete Pump Set	Backwash Filling Pump	2 Units
2	80X65FSS2GC Ebara S/S End Suction Complete Pump Set	Neutralization Pump	2 Units
3	FHA 65-200 Ebara End Suction Complete Set with Motor	Ozone Motive Water Pump	5 Units
4	32x32FSS2GC Ebara S/S End Suction Complete Pump Set	Off-Gas Water Collection Pump	2 Units
5	CDXL 70/05 Ebara S/S Single Impeller Centrifugal Pump	Sampling Pump (Feed)	2 Units
6	CDXL 70/05 Ebara S/S Single Impeller Centrifugal Pump	Sampling Pump (Filtrate)	2 Units

SGD87k



Singapore Iconic Landmark

Application:

- Merlion Statue, Singapore Iconic Landmark
- Pump for Water spouting from Merlion, Since 2001
- Sea/blackish/Reservoir water

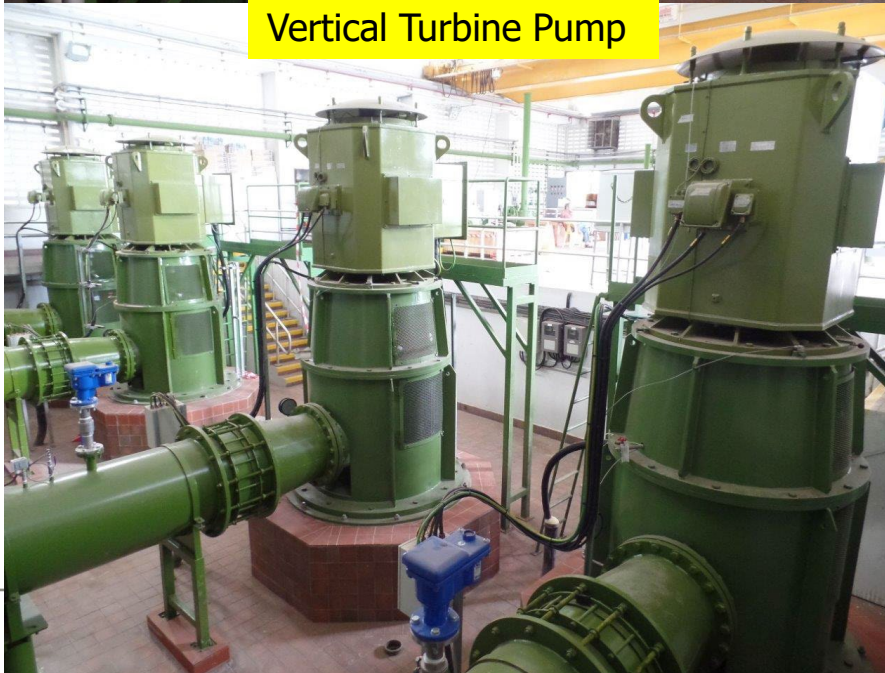


Vertical Turbine Pump

Supply of Pumpsets



Vertical Turbine Pump



Application:

- Reservoir water transfer (2013~2015)
- 15mgdi Vertical Turbine pumps
- 380kW motors
- 22m long column pipe



Pump Column 22m long below floor

Supply of Pumpset



Factory Performance Test @ Ebara Vietnam

Supply of Pumpsets



Application:

- Reservoir water transfer (2012~2015)
- 39mgdi Horizontal Split Casing pumps
- 508kW Slip Ring Motors



Supply of Pumpsets



Vertical Split Casing pump



Application:

- District Cooling System for aircon service
- Chilled & condenser water transfer (2009~2010)
- 0.5~16 mgdi pumps
- 22 ~ 450kW Motors



End Suction pump

Supply of Pumpsets



Application:

- Mobile portable water booster system including truck for Low & high rise building (2015~2016)
- 800 l/min@120m Vertical Inline pumps
- 80kVA Generator Set for power supply to pump motor



On duty



On duty

Supply of Pumpsets



Compact Booster System

Application:

- Compact booster system for cluster of landed household (2014~2015)
- 570 l/min@ 54m Vertical Inline pumps
- High speed 7200rpm
- Permanent magnet motor
- Size 485Dx1080Lx1696mmH



Supply of Pumpsets



Application:

- Compact booster system for cluster of landed household (2011~2012)
- 295 l/min @ 10m Vertical
- Inline pumps
- High speed 7200rpm
- Permanent magnet motor
- Size 272Dx800Lx1300mmH



Outer & Inner view of booster system

Supply of Pumpsets



Testing in progress

Application:

- **Booster system for utilities usage, non-portable (2022~2023)**
- **5m³/hr @ 48.8m Vertical Inline pumps**



Supply of Pumpsets



Application:

- Large booster system for water supply network (2016~2017)
- 19mgdi @ 23.4m Vertical Spilt Casing pumps
- 300kW motors



Large size Booster Pumpset

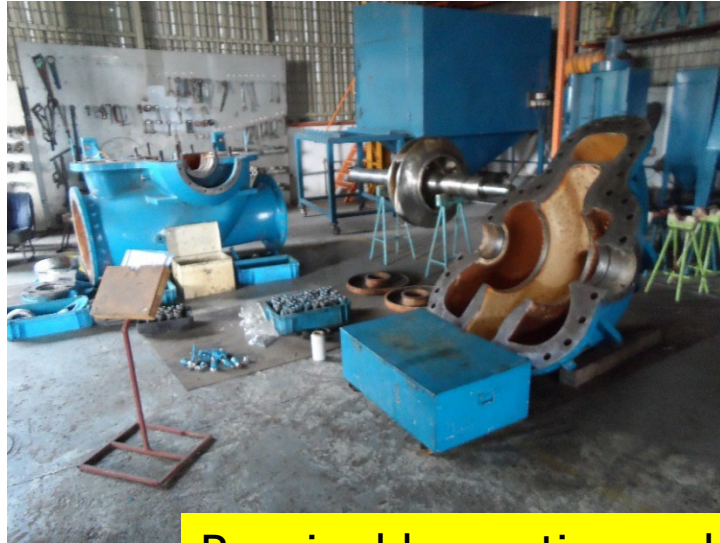


Pump Overhaul Service

Pump for overhaul service:

- Ebara & others pump manufacturer brand**
- Vertical Turbine type**
- Horizontal & Vertical Split Casing type**
- End Suction type**
- Inline booster pump type**
- Submersible type**

Pump Overhaul Service



Repaired by coating on horizontal split pump casing



Reconditioning of Mechanical Seal

(3) Pump Overhaul Service



Repaired by coating on Vertical Turbine Pump parts



(3) Pump Overhaul Service

22



Before welding repair



After welding repair



Worn shaft sleeve



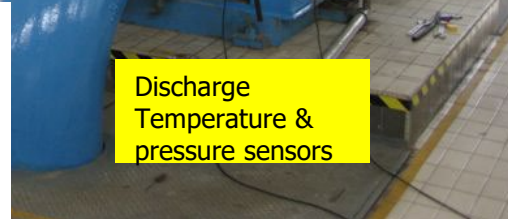
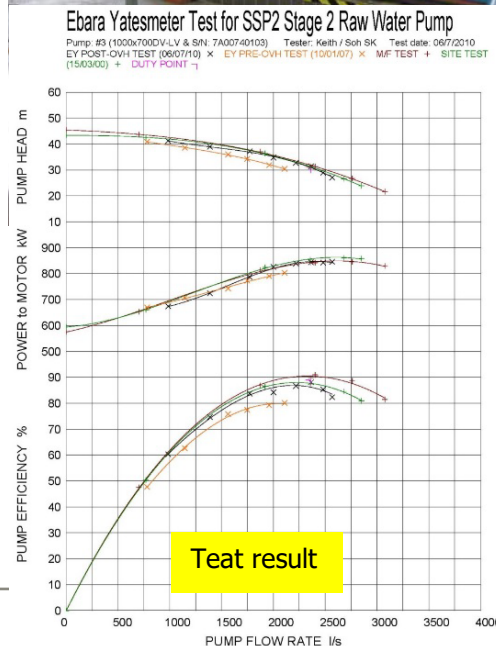
New SUS304 shaft sleeve

(4) Yatesmeter Testing for Pump Performance



Theory :

- Thermal dynamic method
- Using temperature, Pressures, power, without knowing flowrate
- Measures milli Kevin (mK) o different btw suction and discharge temp.
- Measure & display each pump performance without disturbing pump daily operation after initial setup



(4) Consultancy & Engineering Service

STUDY REPORT

Hydraulic Studies

Client / Customer:	PUB Singapore
End User:	PUB Singapore
Prepared By:	Approved By:
	
(Signature)	(Signature)
Name: Keith Lee	Name: Lai Tian Ming
Designation: Engineer	Designation: Manager
Date: 29 August 2014	Date: 29 August 2014

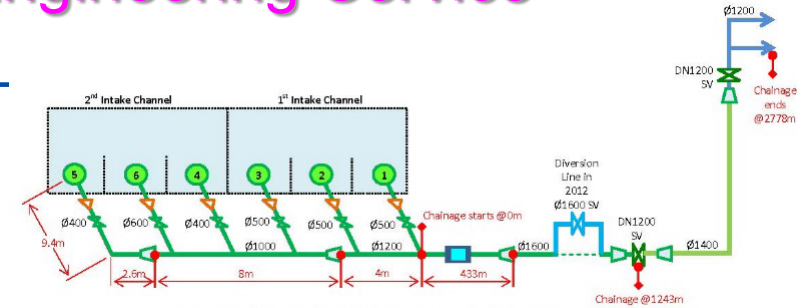
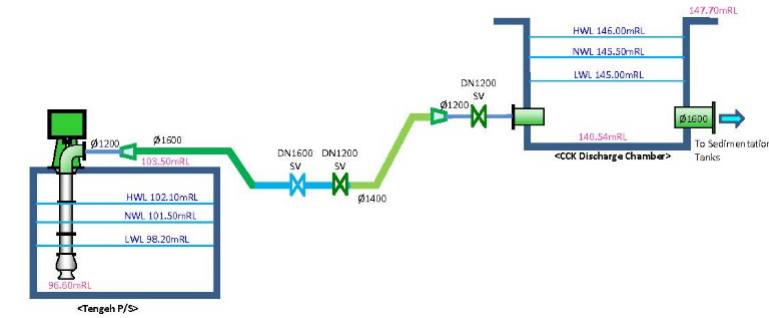
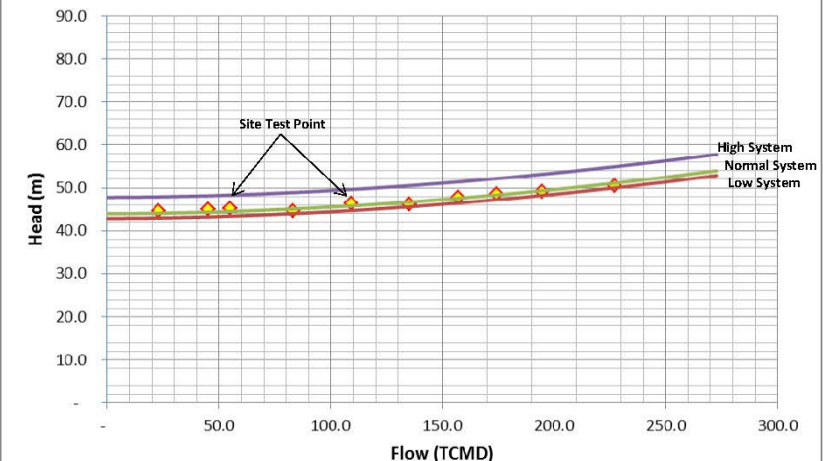


Figure 1 Schematic diagram for Existing Tengoh Pumping System



Tengoh Pumping System Curves & Site Test Points



System Curves : Site test result VS Calculation

Other products



EBARA PUMPS TOWARDS EXCELLENCE



Standard products

Production from various factories in the world

1. Ebara Italy
2. Ebara Machinery China/ Ebara Kunshan
3. PT Ebara Indonesia
4. Ebara Pump Philippines Incorporated
5. Ebara Japan
6. Ebara Thebe Brazil
7. Ebara Thailand Ltd
8. Sumoto Italy
9. Vansan Turkey
10. etc

Fluid Machinery products

Standard products



13. What Ebara can Offer.





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Thank You.