



Seawater Desalination by BWT

For You and Planet Blue.



Drinking Water – A Scarce Resource

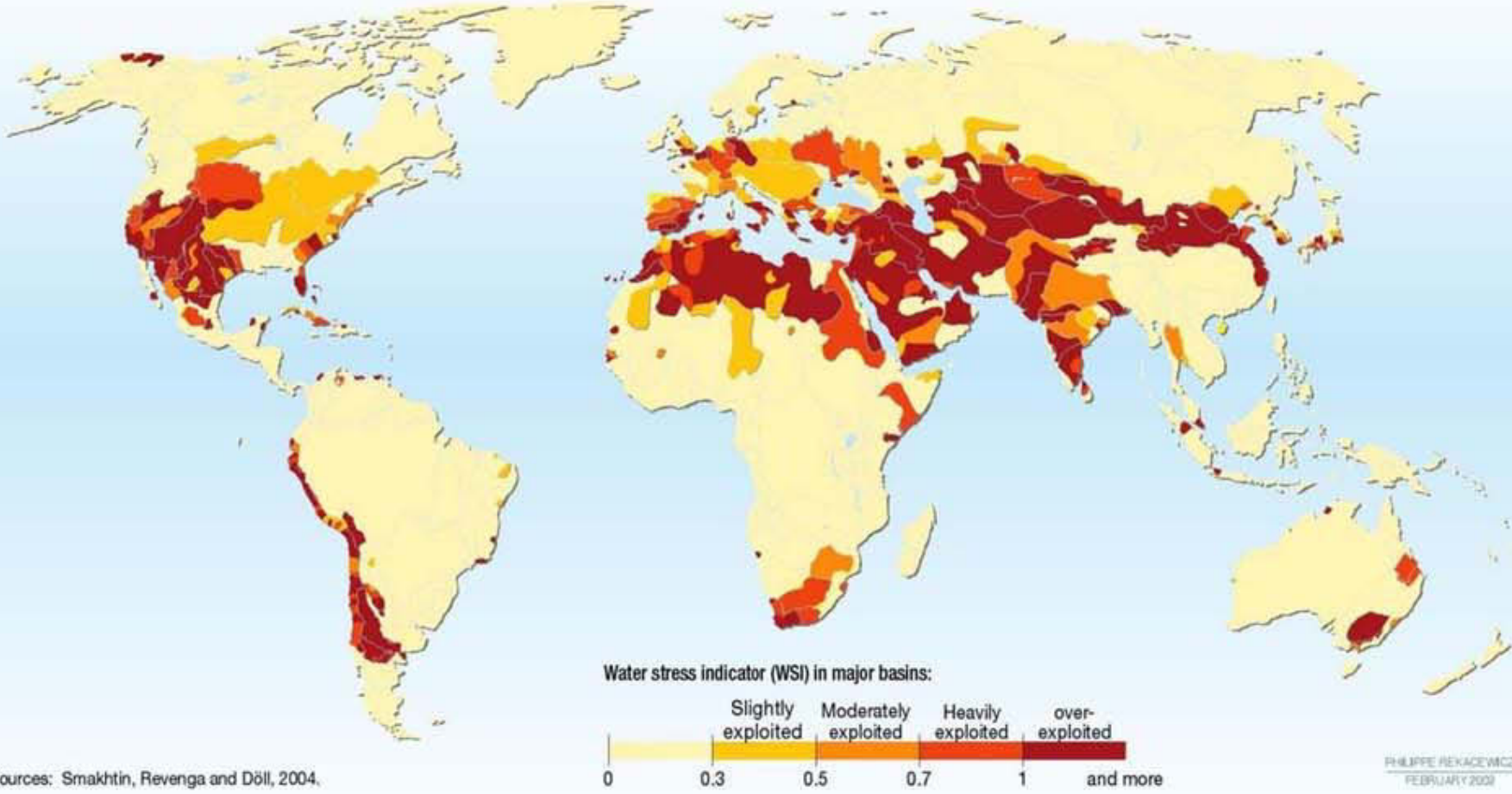
“Water consumption has increased six-fold over the last century and will double by 2050.”

“The supply of fresh water is a critical factor for the global economy.”

“Water crises was long regarded a problem for the poorest of the poor, now it affect even the richest countries.”



Global Freshwater Stress



Sources: Smakhtin, Revenga and Döll, 2004.

Source: Assessing Water Risks, WWF 2011, Philippe Rekacewicz, February 2006, <http://maps.grida.no/go/graphic/water-scarcity-index>



BWT – The Company

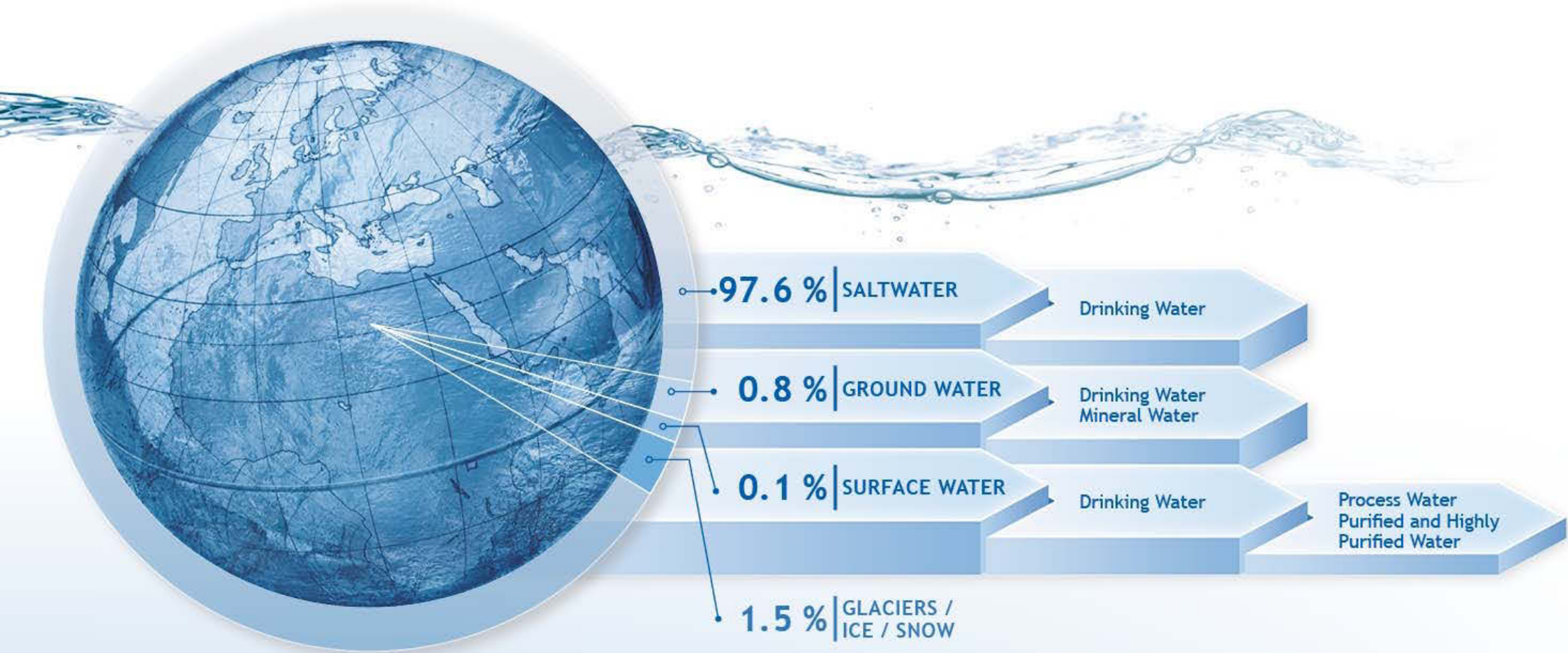
For You and Planet Blue.



The Internationally Leading Water Technology Group

- 4 production facilities
 - 500 million turnover
 - 2,800 employees
 - R&D departments in France, Germany, Switzerland and Austria
 - Globally leading know-how in all areas of water treatment
- 

We go for 98.5 %...



BWT in Europe

BWT offers a wide sales and service network with more than 2,800 employees in our global partner network.

Mondsee (A)



Schriesheim (D)



Aesch (CH)



Saint Denis (F)



Ashbourne (IRE)



Vaihingen (D)



Zaventem (B)



Greve (BWT HOH, DK)



Budaörs (HU)



BWT HOH, a part of the BWT group

For You and Planet Blue.



BWT HOH, Greve, in Denmark



- BWT in Scandinavia - **BWT HOH**
 - Formerly known as HOH Water Technology
 - Headquarters in Denmark
 - Subsidiaries in Sweden, Norway and Finland
- Founded in 1975
- + €50 millions yearly turnover
- +200 employees
- Specialist in advanced water treatment using membrane and ion exchange technology
- Preferred supplier for Desalination plants, Power Plants, District Heating Utilities and Industry applications



Seawater Desalination by BWT

Energy efficient desalination plants

For You and Planet Blue.



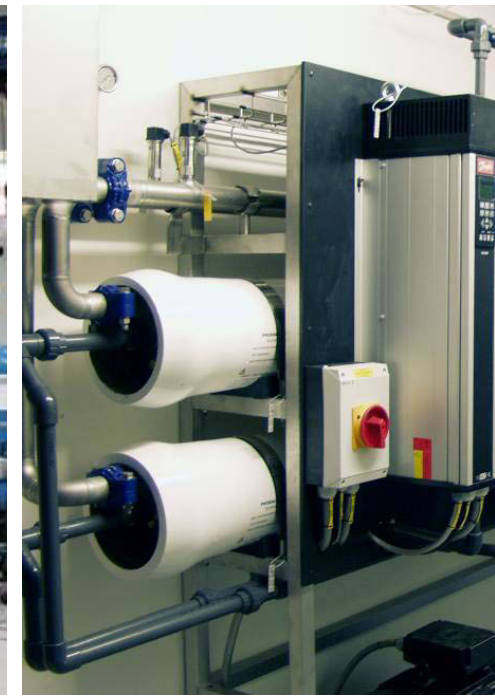
Experts in Desalination solutions

- +30 years of experience with engineering, manufacturing and installing Sea Water desalination RO solutions
- BWT HOH supplies drinking water using high-efficient membrane technology
- Plants are built to be energy efficient and ease of use, low energy consumption ($< 2 \text{ kWh/m}^3$)
- Global reference list



Standard systems

- Standardised Container-based systems (capacity 100 – 1500 m³/day)
- +100 installations provided for hotels & island resorts
- “Plug & Play” solutions



Other standards

Emergency unit

- Drinking water in few minutes
- Unit is petrol-driven and independent



Small-size standard range

- Standard range of high efficient and compact systems (SWRO-ERS)
- Standard range of small size SWRO 100-600 l/h

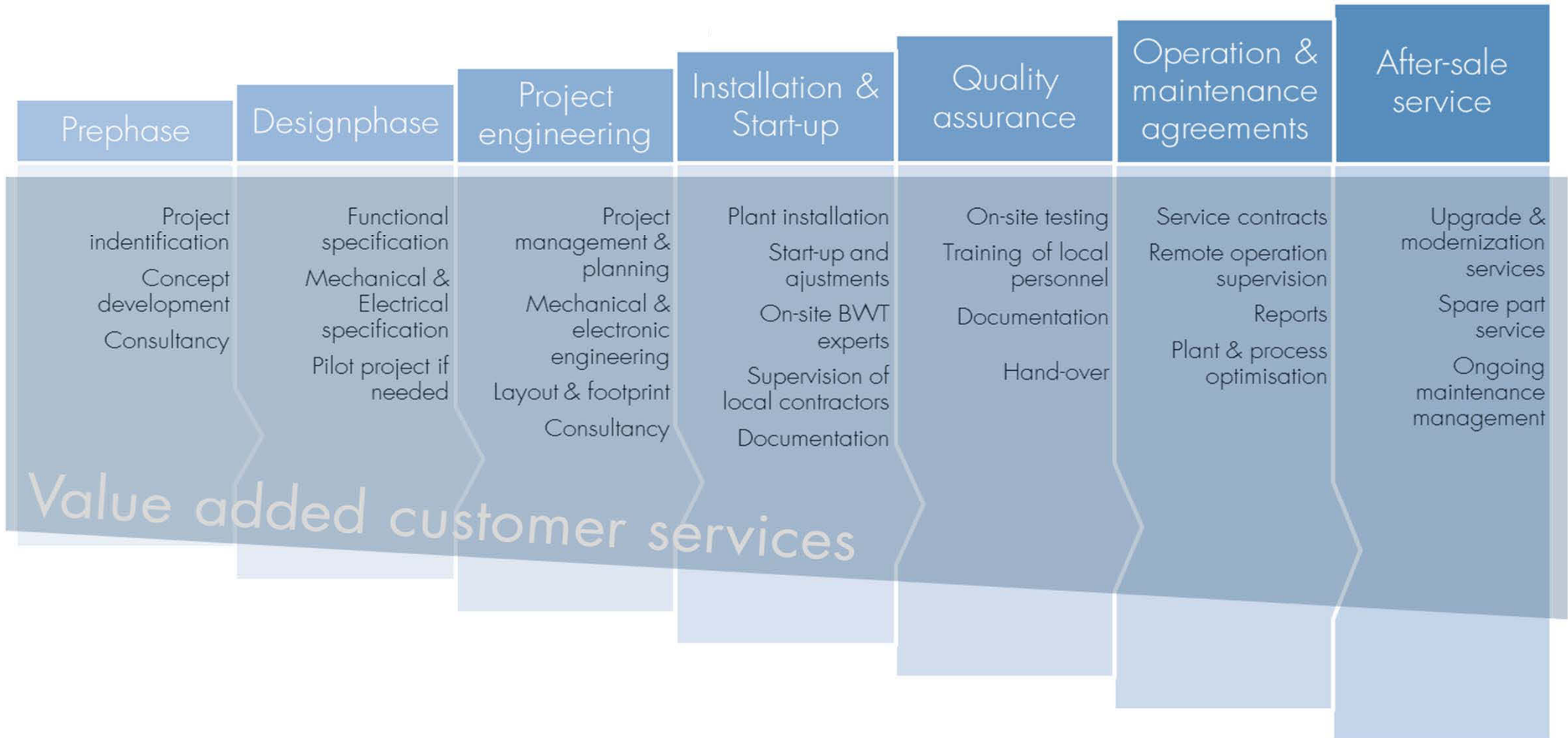


Customised projects

- Customers in need of larger capacities , 5,000 – 30,000 m³/day
- Independent water utilities for vessels, production facilities, power plant and industries
- Strong in small/medium size municipal segment /public water supply (Seychelles/Maldives)



High-Level Project Management



Satisfied customers



A dynamic splash of clear water against a white background. A globe is positioned in the center of the splash, appearing to be the point of impact. The water flows from the top left, splashes around the globe, and continues as a horizontal stream towards the right. The image is framed by a solid blue horizontal bar at the top and a light blue horizontal band across the middle.

Selected references

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Amagerværket, Power plant

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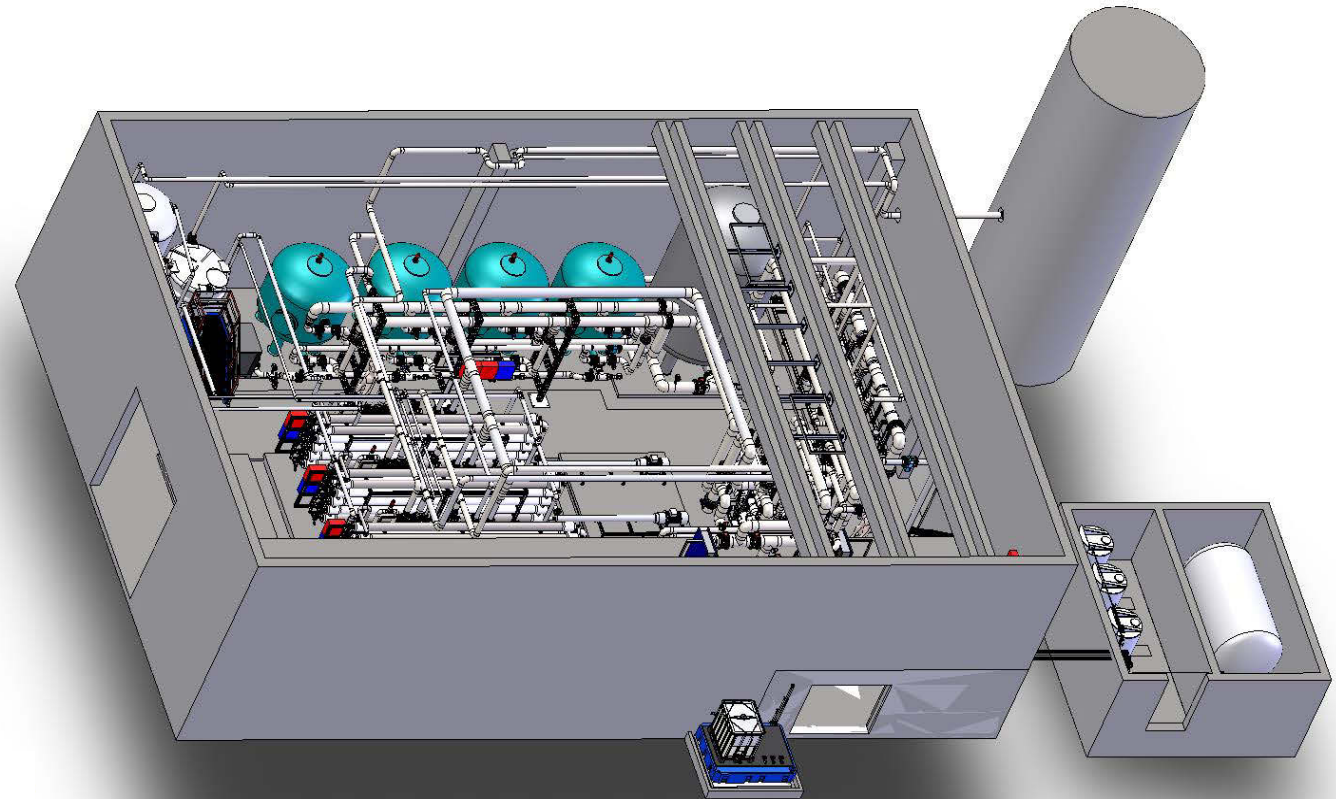
Power Plant in DK, Amagerværket

Combining district heating (583 MW) and electricity (314 MW)

- Covers 12 % of electricity consumption in region Zealand (incl. Copenhagen, capital of DK)
- Supplies district heating to 130.000 family houses

Independent water utility at power plant

1. Pretreatment with multimedia filter
2. Seawater membrane plant, 3*40 m³/h
 - 3 strings plant to enhance flexibility
3. Automatic CIP installation – cleaning of membranes
 - Avoiding any manual work and no handling of chemicals
4. Chemical dosing in pre-treatment and membrane
 - Biocide to avoid algal bloom,
 - Ferro Chloride: bacterial,
 - Sulphuric acid: PH adjustment
5. Neutralisation of concentrate & CIP flush water to protect the environment



Independent water utility at power plant

- Replaces old BWT SWRO plant from 1992, new SWRO plant saves energy and protects the environment
- Important to be independent of public water utilities, because of security of supply, quality and pricing
- Water from SWRO is used at BWT demineralisation plant (50m³/h), which feeds steam-turbines



Special features

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Automatic regulating recovery system due unstable TDS content in feed water

Means the plant automatically and instantly changes from seawater to “brackish” water desalination

Water exploitation

- Seawater: 40 % pure water, 60 % concentrate
- “Brackish” water: 60 % pure water, 40 % concentrate

Pressure

- 40 to 60 bar



Maersk Peregrino FPSO Vessel

(Floating Production, Storage and Offloading vessel)

For You and Planet Blue.





MAERSK PEREGRINO

Maersk Peregrino FPSO (Floating Production, Storage and Offloading vessel)

Maersk Peregrino (2010) is the most expensive and advanced vessel ever built by Maersk.

The vessel is an floating oil refinery supporting oil platforms.

Complete water treatment solution by BWT

Water Quality* >30,000 ppm

Seawater
RO plant 3 m³/h

>250 ppm

2nd Passage RO
plant, 3 m³/h

< 10 ppm

EDI plant 2,5 m³/h
(Electro deionisation)

<0,2 uS/cm

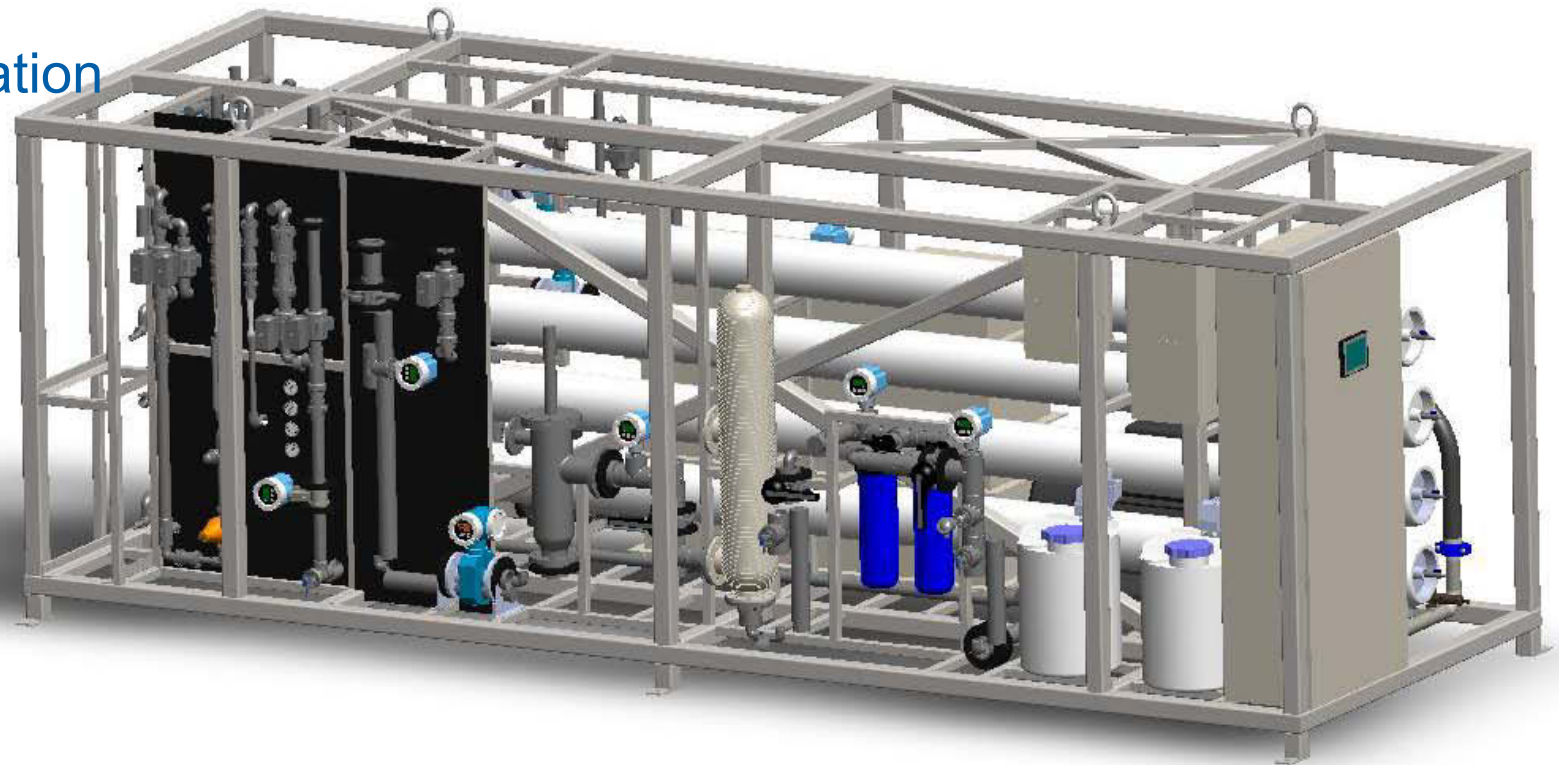
Boiler feed

Drinking water for the crew

*Water Quality: ppm TDS (Total Dissolved Solids) & Conductivity uS/cm

Special features

- Compact design for easy installation in existing engine room and
- Easy possible relocation if needed
- Time saving installation



BWT water treatment in engine room

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Public Water Supplies

For You and Planet Blue.



Public Utilities Corporation in the Seychelles

Local water works

Mahe – Providence	7,500 m ³ /day
Mahe – Anse Boileau	3,750 m ³ /day
Praslin – Baie Ste Anne	900 m ³ /day
La Digue – La Passe	900 m ³ /day

Four BWT HOH sea water desalination plants supply drinking water for +80,000 inhabitants and +200,000 yearly visitors



Public Utilities Corporation in the Seychelles

Scope of delivery
pre-treatment system,
reverse osmosis installation
pump installation,
electrical installations
chlorine and chemical dosing systems
SCADA system



Watlington Waterworks Ltd.
SEA WATER REVERSE OSMOSIS PLANT

Bermuda Water Works

Local water works
Five SWRO Plants, total

3,500 m³/day

Five BWT HOH sea water desalination plants supply drinking water for inhabitants



Bermuda Water Works Ltd.

- Scope of delivery
- pre-treatment filters
- reverse osmosis installation
- pump installation,
- electrical installations
- distribution system
- SCADA system



Hotels and Island resorts

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EDEN Island in the Seychelles

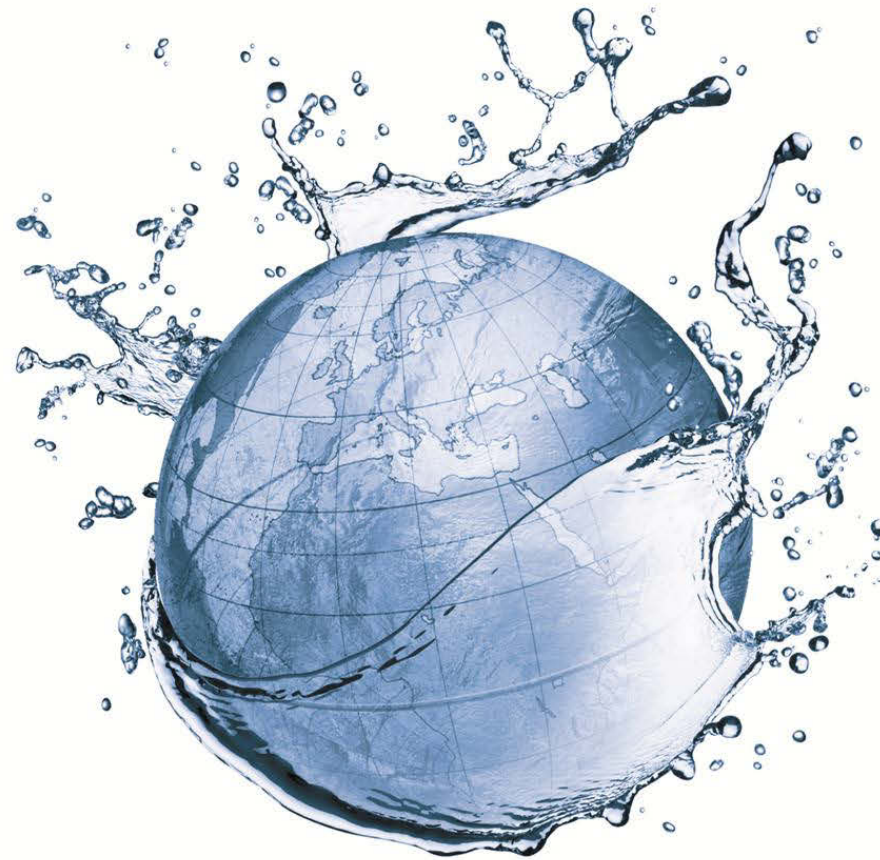
56 hectares of tropical private island with luxury and exclusive apartments, maisons and villas

BWT HOH sea water desalination plant supplies drinking water for the entire island settlement

Scope of delivery

Container-based SWRO plant, 300 m³/day capacity

Sea water pump station



 **BWT**
BEST WATER TECHNOLOGY

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