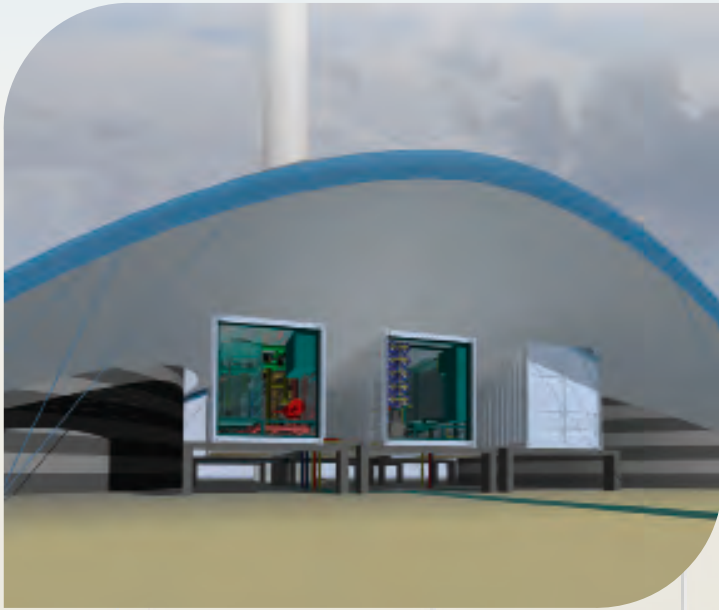




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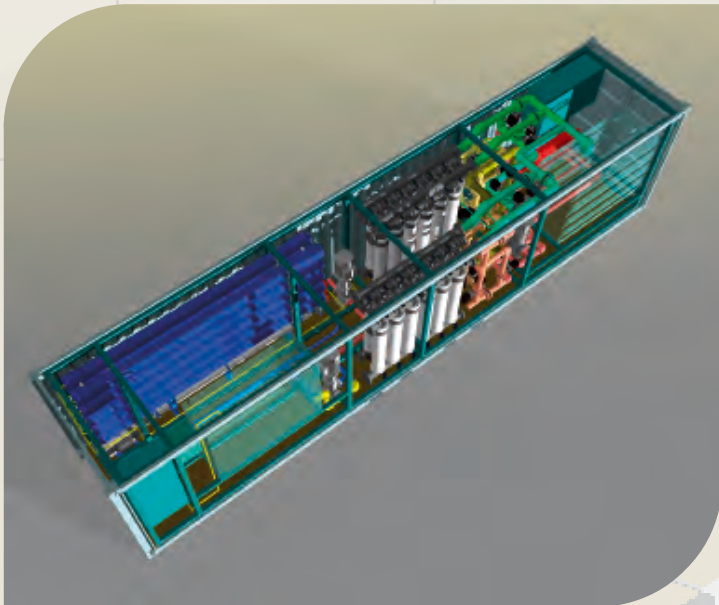


SYNWATER® 400 Kernel System

SYNWATER® systems are grid-connected seawater desalination (RO) plants significantly powered by project integrated wind and/or solar (PV) power. Embedded within the project-specific pre- and post-processing facilities the Kernel System is the heart of each SYNWATER® plant and provides the following features:

- **Flexible operation:** controllable between 50% and 200 % related to the module capacity designed for continuous long-term production (100%) with high variability,
- **Save operation:** the variability of flux is guarded and limited by two independent automatic monitoring routines,
- **Autonomous operation:** full automation of normal operation, flushing and cleaning procedures of RO and UF, semi-automation for safe manual service and maintenance purposes,
- **Controlled operation:** local as well as remote control, monitoring and fault diagnosis,

Kernel Systems include both the *Filtration and Reverse Osmosis* stage and are available as container or in-house option and also as brackishwater application.



SYNWATER® 400 Filtration stage

Automatic backwash filter: screens down to 100 µm mesh size, 99 % recovery,

Ultrafiltration:

Element type:

Membrane:

Configuration:

Capacity:

hollow-fiber,

polyethersulfone, pore size 20 nm,

4 trains with 6 elements,

according to the RO demand,

maximum net 80 m³/h,

for backwash and cleaning agents,

in pre-treatment stage,

Dosing system:

Coagulant dosing:

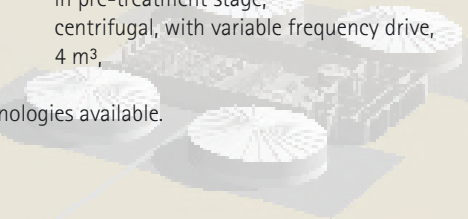
Supply pump:

Filtrate buffer tank:

centrifugal, with variable frequency drive,

4 m³,

Alternative filtration technologies available.



SYNWATER® 400 Reverse Osmosis stage

Capacity:

400 m³/d (continuous operation),

200 to 800 m³/d (variable/temporary operation),

spiral-wound,

Element type:

Membrane:

Thin-Film-Composite - high rejection,

First Pass:

8 vessels each with 4 x 8" seawater membranes,

Second Pass:

1 vessel with 4 x 8" brackish water membranes,

Permeate reservoir:

1,5 m³ for suck-back, permeate flushing and

RO-cleaning,

High-pressure pump:

option A: centrifugal pump,

option B: positive-displacement pump,

Energy recovery:

option C: hydraulic turbo charger,

option D: pressure exchanger,

All pumps equipped with variable frequency drives.