Technical Specifications – CWT Products

CWT MODULE AND RACK

Technical Specifications for CWT's standard module and standard rack

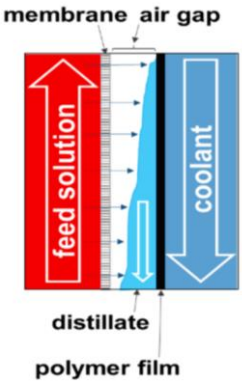
Number of racks or modules would be matched as per customer's demand

		MODULE (1 module)	RACK (24 modules)
Feed water flow	L/h	900 – 1200	21000 – 36000
Feed water temperature	°C	60 – 98	60 – 98
Feed water return temperature	°C	45 – 70	45 – 70
Cooling water flow	L/h	900 – 1200	21000 – 36000
Cooling water temperature	°C	20 – 30	20 – 30
Cooling water return temperature	°C	30 – 40	30 – 40
UPW flow	L/h	20 – 25	480 – 600
Particle weight	ppb	<1	<1
Conductivity* *Depends on the quality of feed water	µS/cm	0.056	0.056
Housing Characteristics			
Housing material		PVDF	PVDF / Stainless for structures
Inlet, outlet connections	Ø mm	20	65
Distillate outlet connections	Ø mm	15	25
Dry weight excl. frame	kg	18	450
Max. working pressure	bar @ 90 °C	<0.2	Same for module and <1 for stack
Max working Temperature	°C	98	98
Dimensions (L x B x H)	mm	420 x 220 x 330	1000 x 500 x 2000
Storage transport Temperature	°C	5 – 70	5 – 70

Circular Water Technologies

Technical Specifications – CWT Products

TECHNOLOGY DESCRIPTION

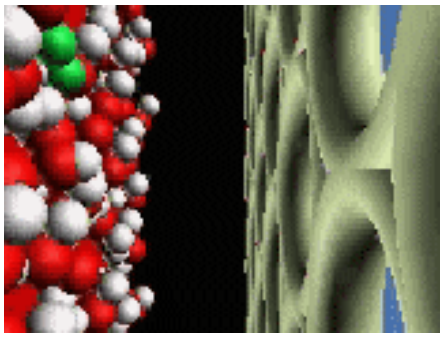


CWT's technology is based on evaporation, filtration, and condensation. The water is heated and pumped to a modular unit conformed by multiple cassettes that contain a series of hydrophobic membranes and chilling plates. Across the membranes, heat and mass/vapor are transported. Only water vapor can pass through the hydrophobic membrane leaving behind all non-volatile pollutants, including nano particles and ions as shown in the figure below. The transport is caused by the pressure difference produced by a temperature gradient between hot and cold water (Ca. 0.2 Bar), the mass is trapped and condensed in an airgap which becomes the permeate/pure water. As a difference from other purification techniques, our process extracts the water from the pollutants.

The return water with pollutants is pumped back to a concentration tank from where it again passes to the membrane system until the pollutants are accumulated in a saturated solution.

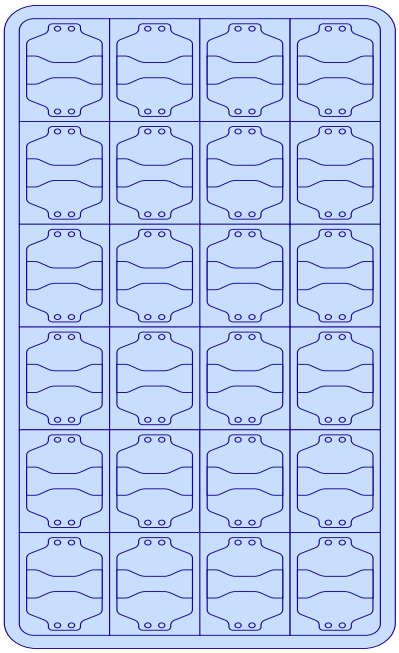
CWT's proprietary technology can produce Ultra-pure water of Type 1 under controlled conditions with a conductivity below 0,05 µS/cm and achieve a theoretical zero liquid discharged in industrial processes.

The technology is economical, as can be coupled to waste heat; is scalable, as modular units can be added as the requirements increase; flexible as it can coupled with multiple heat sources.



OPERATION AND MAINTENANCE

- Reduced requirement for scaling and fouling control due to operation configuration and conditions
- Recommended feed water quality
  - TSS: <100 mg/L
  - TOC: <50 mg/L
  - No volatiles (need to be stabilized)
- Expected lifetime of membranes 3-5 yr.
- Membranes are cleaned in place; alternating module racks; no plant shutdowns



ENERGY USAGE & FOOTPRINT

- ❑ Energy demand for:
  - Heating = 700-800 kWh/m^3
  - Cooling = 550-650 kWh/m^3
    - With low heat recovery the thermal energy demand can go down to 200-300 kWh/m3
- ❑ Electrical Energy demand depending the application 2-5 kWh/ m^3
- ❑ For each m^3/h of permeate produced, 8 – 11 m^2 installation area, depending on the peripherals.

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