

NEWA Seawater Desalination and Resource Utilization Business Introduction

Industry background

The development of seawater desalination technology and the exploitation of seawater resources is an important way to solve the problem of water shortage and an important guarantee for the sustainable development of coastal economy and society. Effective exploitation of seawater can be an important supplementary source of freshwater. Conventional desalination produces a large amount of concentrated brine, which contains not only large amounts of sodium chloride, but also compounds such as magnesium, potassium, sulphur, bromine and rare elements. In addition to the impact on the environment, direct discharge will also cause a lot of waste. Therefore, the desalination of seawater while extracting raw salt, bromine, magnesium, potassium, etc. is the trend.

Seawater desalination industry development challenges

Challenge

The scope of water supply from desalination plants is relatively small, and the ability of independent innovation in technology is low.

Challenge

The operation mechanism of the desalination water tariff is unscientific and the structural system is incomplete.

Challenge

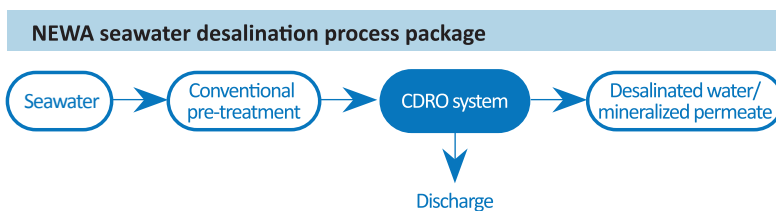
The seawater desalination process produces a large amount of concentrated brine discharge, which leads to an increase in the local salinity of seawater and a decrease in dissolved oxygen, which in turn affects the marine ecosystem.

Challenge

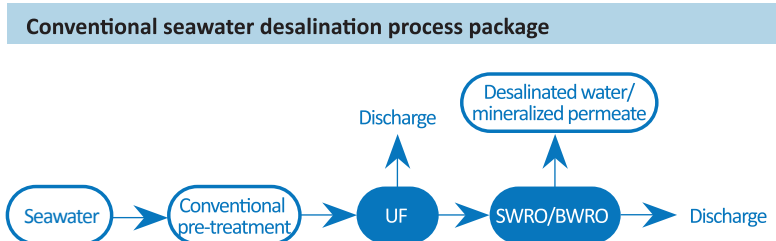
Insufficient competitiveness and imperfect supporting policies.

Comparison of NEWA Seawater Resource Utilization Technology and Conventional Technology

The development direction of NEWA seawater desalination is divided into the development of seawater desalination membrane products and the development of resourcefulness process packages; Research and development of large-scale seawater desalination process and equipment, applying flat membrane (CDNF/CDRO) technology to the field of seawater desalination; Comprehensive utilization process package for seawater salt production and seawater resource utilization; Development of seawater desalination equipment for islands, ships, offshore platforms, and other areas.

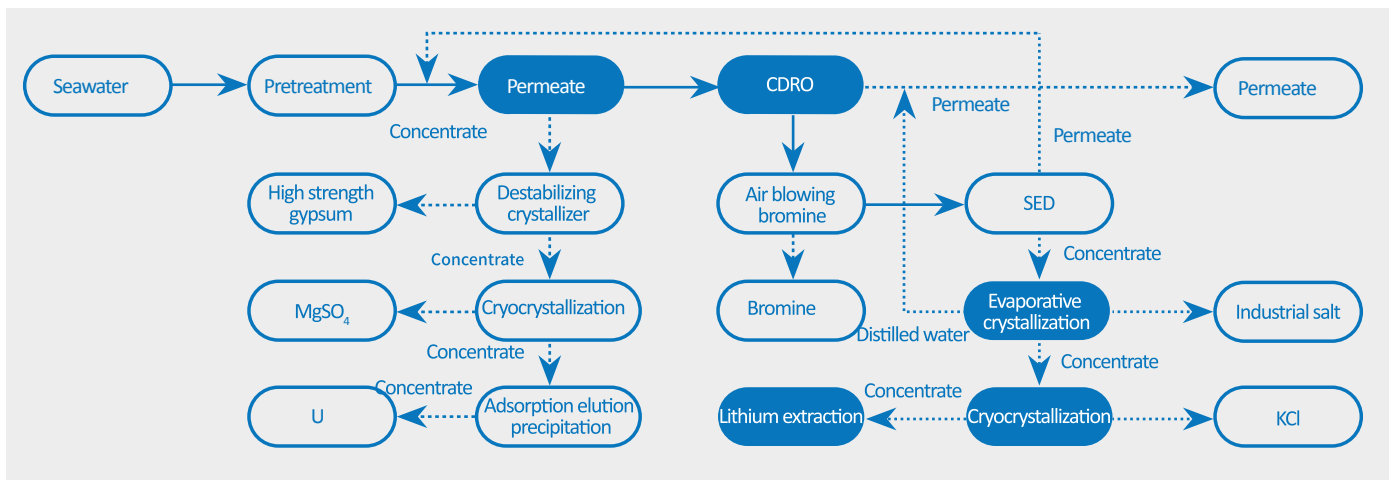


The NEWA seawater desalination process is centered on CDNF flat membrane salt separation + CDRO technology.



UF+RO	Comparison	NEWA
Flocculation + sand filtration	Pre-treatment	Sand filter / self-cleaning filter
Recovery rate 35%~45%	Recovery rate	Recovery rate 60%~75%
Narrow and easily blocked flow paths	Pollution resistance	Wild and difficult blocked flow paths
Whole membrane module replacement	Repair and replacement	Membrane replacement only
Reasonable	CapEx	Slightly higher
Slightly higher	Maintenance cost	Reasonable
High	Dosage cost	Low
High dosage	Dosage	Dosage reduce 30%~50%
Short	Service life	Long

Innovative process package for seawater utilization



Reduce scaling risk

Separation of mono- and divalent ions using nanofiltration membranes effectively removes calcium and magnesium ions from seawater, reduces the risk of scaling in the system, and dramatically improves the purity of sodium chloride and potassium chloride, as well as simplifying the salt production process.

Achieve high levels of concentration

The use of RO membranes to achieve high level concentration of seawater reduces operating costs by 25% compared with ED.

Comprehensive use of seawater resources

Comprehensively utilizing the resources in concentrated seawater to achieve the separation and extraction of sodium chloride, potassium chloride, bromine, calcium sulphate, magnesium sulphate and other substances to create economic value.

NEWA seawater desalination standardized equipment model

System Model	Permeate capacity	Supply population (Person)	Installed power (kw)	Footprint (m ²)	Voltage (V)	Weight (t)
JZHD-0.5A	12	35	8	9	380	5
JZHD-1A	24	70	12	9	380	7
JZHD-1.5A	36	100	20	9	380	10
JZHD-3A	72	200	33	12	380	12
JZHD-5A	120	350	61	12	380	15
JZHD-8A	192	550	99	15	380	17
JZHD-10A	240	700	99	20	380	20
JZHD-20A	480	1400	198	24	380	25

Outputs from seawater resourcing

Product range	Projected output	Quality
Desalination water	100,000m ³ /d	First grade desalinated water
Industrial salt	6000000~800000t/yr	High quality industrial dry salt
KCl	20,000t/yr	First grade for industrial and agricultural use
Industrial bromine	1350t/yr	High quality industrial bromine

Data based on NEWA seawater resourcing equipment and process package for 100,000m³/d permeate production.

Equipment Advantages



Small footprint
Light weight
High mobility



High performance,
stable, safe and reliable
desalination rate



Longer membrane
service life with less
pre-treatment



Easy to install and maintain,
simple system control

Social values

Addressing the problem of marine desertification caused by the discharge of concentrated water into the sea;
Adequate extraction of freshwater resources to address water scarcity challenges;
"Full utilisation" of marine resources to produce more valuable by-products.