

Municipal sewage high-quality recycling industry |

Yantai Taoziwan Renewable Water Supply Project for Wanhua Chemical Industry Park

Project Introduction

The Yantai Taoziwan Sewage Treatment Plant's Renewable Water Supply Project for Wanhua Chemical Industry Park is a demonstration project focused by Nawa in the field of high-quality municipal wastewater reuse. It will effectively increase the available amount of water resources, provide a stable second water source for Yantai Wanhua Chemical Industry Park, and provide reliable guarantee for the production of the park. The CDRO membrane system has advanced technology, stable operation, high wastewater reuse rate, and significantly reduced operating costs. This project marks Nawa's pioneering role in municipal wastewater industry with a new demonstration model project.



Capacity: 12500m³/d

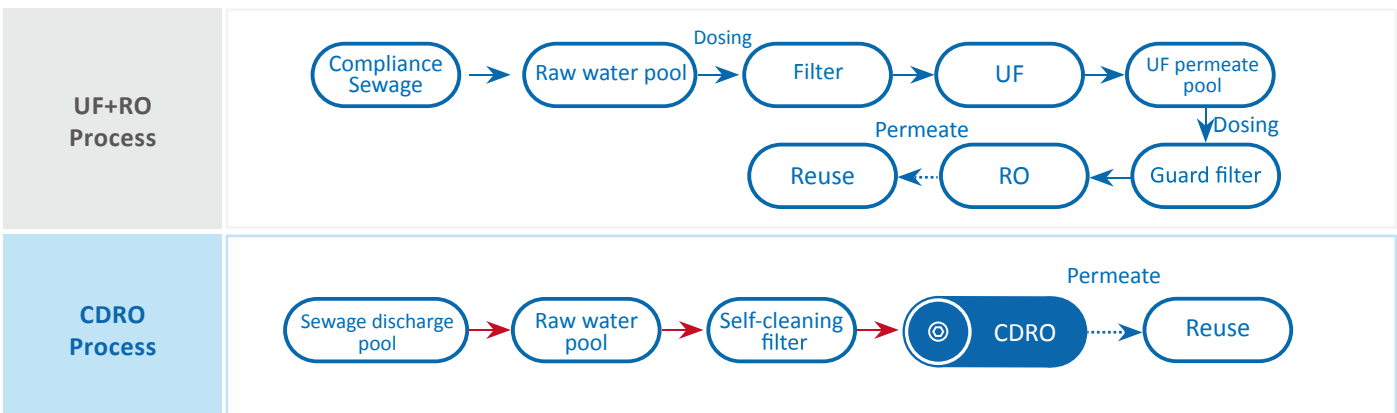
Technological process: Self-cleaning filter + CDRO

Inlet: TDS≤4000mg/L, COD≤60mg/L

Permeate: TDS≤90mg/L, CODMn≤2mg/L

System recovery rate: ≥80%

UF+RO process and CDRO process comparison



Highlights



The CDRO process has been proven to be a complete replacement for the UF+RO process, with simple pre-treatment, a short process flow and a high level of automation;



Good permeate quality, the desalination rate of the system is stable at above 98%, and the system recovery rate is above 80%;

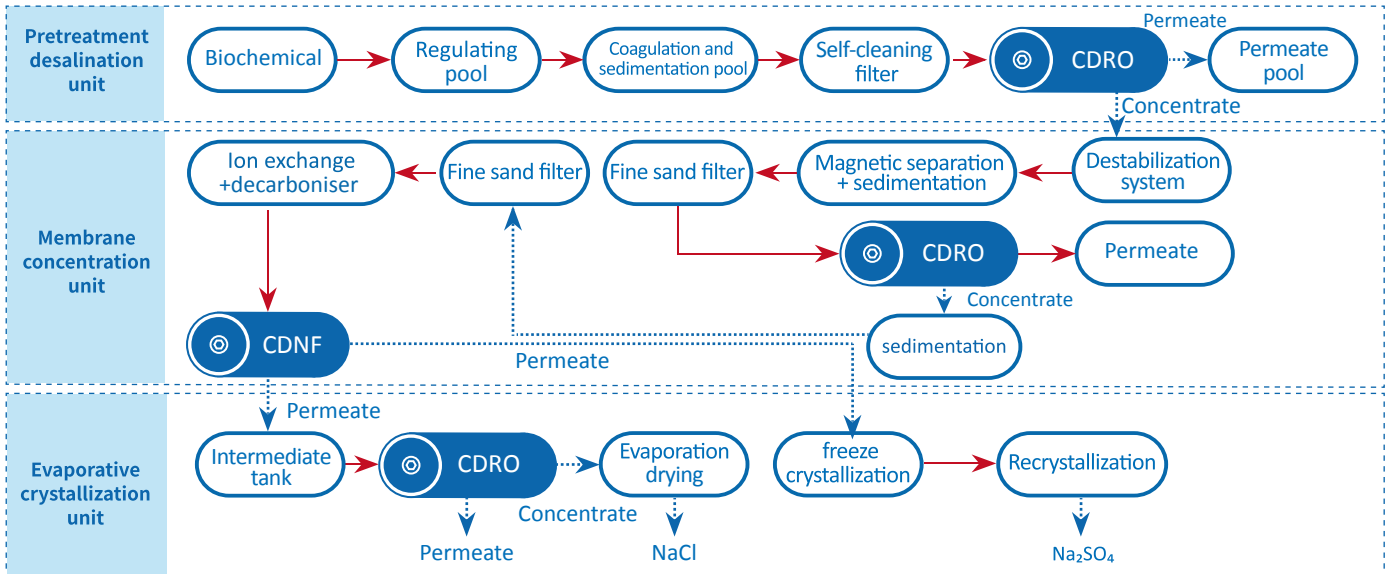


The system has good operational stability, and there are no problems such as ultrafiltration wire breakage and membrane flux attenuation. The chemical cleaning cycle exceeds three months;



Low operating cost, reduced energy consumption and dosing cost.

Newa innovative high-quality recycling solutions



Pretreatment desalination unit

CDRO is used to replace UF+RO process.

Membrane concentration unit

Using efficient destabilization to remove some hardness and reduce operating costs. Using CDNF for salt separation is highly efficient and has low relative operating costs.

Cryogenic crystallization unit

CDNF is used for circulating concentration of concentrate to reduce crystallization costs.

Process characteristics



Process advantages

Open flow channel, high resistance to fouling and scaling, small footprint, long cleaning cycle.

Recovery rate increased from 65% to 80%-90%, simple process, 10% reduction in overall operating energy consumption

More than 50% reduction in dosage, 20% reduction in operating costs, stable system operation, low maintenance costs.

Process comparison

Item	NEWA	Conventional
Main process	CDRO	UF+RO
System pollution resistance	Open flow channel, low concentration polarization, and resistance to pollution and blockage	Easy to break wire, easy to pollute and block, poor resistance to pollution
Water production stability	Easy to clean, pre-treatment, full flow filtration, strong equipment continuity	Hollow UF/Spiral Wound RO is difficult to clean, and once UF is contaminated, RO will lack water
Membrane restorability	Open flow path, good cleaning and recovery effect, flow path 2.5mm	The RO flow path is narrow, spacer blockage, and the cleaning and recovery effect after pollution is poor. The flow path is 0.7-0.8mm
Oxidative damage	No need to add oxidizing fungicides, no risk of oxidative damage	UF added with oxidizing bactericide, improper operation can easily cause irreversible damage to RO
Chemical cleaning	No need for backwashing, over 90 days	Backwashing/30min, CEB/12h, CIP/168h, RO chemical cleaning every 30-60 days
Hardness tolerance	High tolerance, requiring only partial softening or no softening	Low tolerance and requires a large amount of softening agents
Reagent addition	Reduce 60%~80%	more
Membrane replacement cost	Single membrane replacement	Overall membrane module replacement
Membrane module replacement cycle	Long 3-5 years	Short 2-3 years
Operation cost	Reduce operating costs by more than 20%	High