

Process comparison

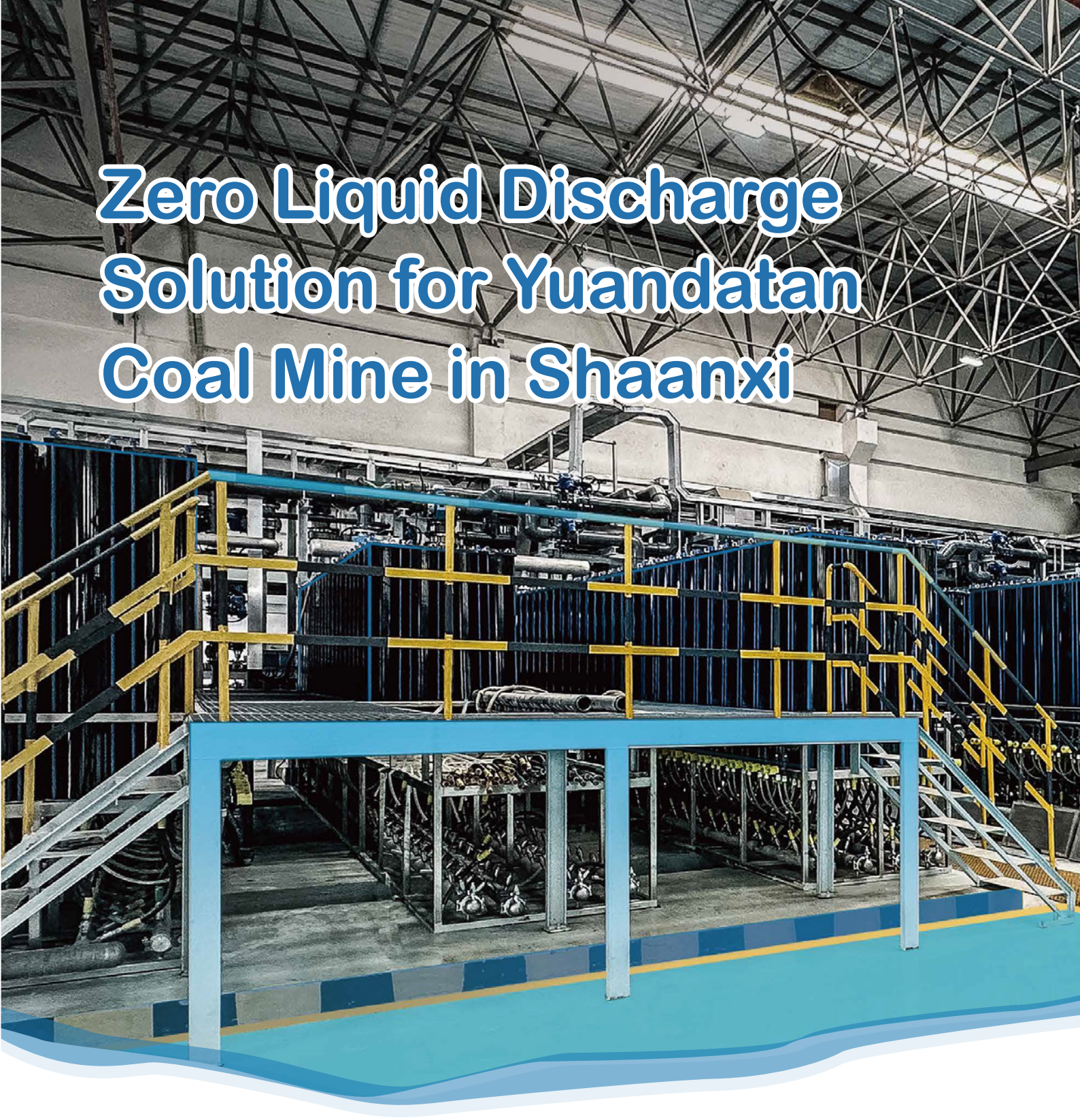
Item	Newa	Old	Comparison results
Main process	Destabilization method + flat membrane	Ultrafiltration + reverse osmosis	Can completely replace traditional processes
Reagent dosage	Less	More	60% - 80% year-on-year decrease
Adding sodium hydroxide	9.71 m³/day (w%≥30.0%)	61.64 m³/day (w%≥30.0%)	Year-on-year decrease of 84.2%
Adding sodium carbonate	3.98 m³/day	12.83 m³/day	Year-on-year decrease of 69.0%
Evaporation system capacity	Low	High	5% - 25% year-on-year
Generation of softened sludge	46.16 m³/day (Water content 60%)	105.45 m³/day (Water content 60%)	56.2% year-on-year decrease
Gypsum	65.78 m³/day (Water content 40%)	nil	Resource utilization(Purity 96.2%)
Process	Short	Long	Fewer failure points and lower maintenance costs

Newa process saves more than CNY100 million a year compared to traditional processes

*An example of Yuan Datan coal mine ZLD project

Projects in the same industry

Name	Location	Type	Capacity
Huanghaojie Coal Mine Water Treatment Project	Shaanxi	Coal mine water	28800m³/d
Weiwall Coal Mine Water Depth Treatment Project	Shaanxi	Coal mine water	24000m³/d
Yanchang Petroleum Kekagai Coal Mine Water Treatment Project	Shaanxi	Coal mine water	36000m³/d
Feicheng Mining Liangbaosi Mine Water Full Salinity and Sulphate Treatment Project	Shandong	Coal mine water	3365m³/d
Wanfu Energy High Salinity Mine Water Treatment Project	Shandong	Coal mine water	19200m³/d
Binhu Coal Mine Water Emergency Treatment Project	Shandong	Coal mine water	2000m³/d
Coal Mine Water Emergency Treatment Project	Shandong	Coal mine water	2000m³/d
Lilou Coal Mine Water Treatment BOT Project	Shandong	Coal mine water	24000m³/d
Gaozhuang Coal Mine Water Comprehensive Utilisation Project	Shandong	Coal mine water	7000m³/d
Guotun Pengzhuang Coal Mine High Salinity Water Treatment BOT Project	Shandong	Coal mine water	24000m³/d
Pengzhuang Coal Mine High Salinity Water Treatment BOT Project	Shandong	Coal mine water	4800m³/d
Tianchen Coal Mine Water Emergency Treatment Project	Shandong	Coal mine water	1000m³/d



Wastewater Resource Utilisation
and High Quality Reclaimed Water Reuse

Mine Water ZLD Project of Yuandatan Coal Mine of Shaanxi Coal Mine

Process Overview

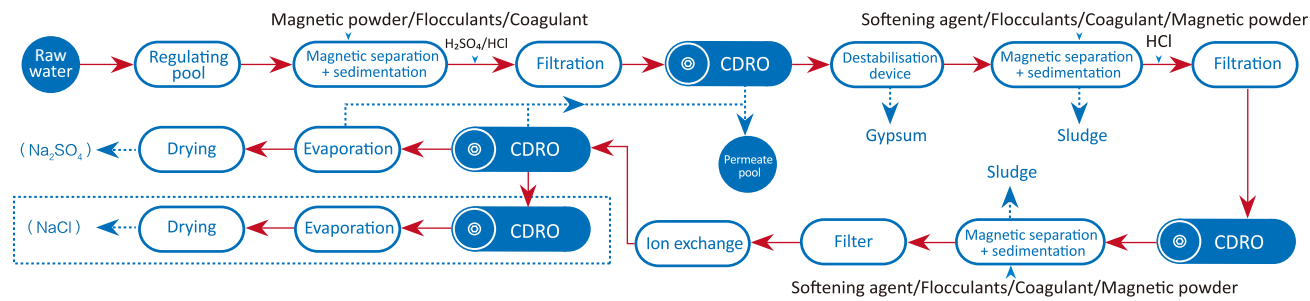
With the scarcity of water resources and the increasingly severe pollution of the water environment, in recent years, the country has successively issued the Action Plan for Water Pollution Prevention and Control, the Guiding Opinions on Energy Conservation, Environmental Protection, and Comprehensive Utilization of Resources in the Coal Industry during the 13th Five Year Plan, and other clear requirements for "accelerating the implementation of comprehensive utilization of mine water and improving the utilization rate of mine water resources.". Based on the actual situation of Yuandatan Coal Mine, Shaanxi Coal and Chemical Industry Group took the lead in implementing the comprehensive utilization project for advanced treatment of mine water in Yuandatan Coal Mine. This project is the first coal mine water ZLD project of Shaanxi Coal and Chemical Industry Group, with a treatment scale of 36000m³/d. The "destabilization method+flat membrane" ZLD main process originally created by Newa is adopted. After advanced treatment of mine water, it meets the Class III standard for reuse of surface water, and the by-products sodium sulfate and calcium sulfate reach the industrial Class I first-grade product, realizing resource utilization.



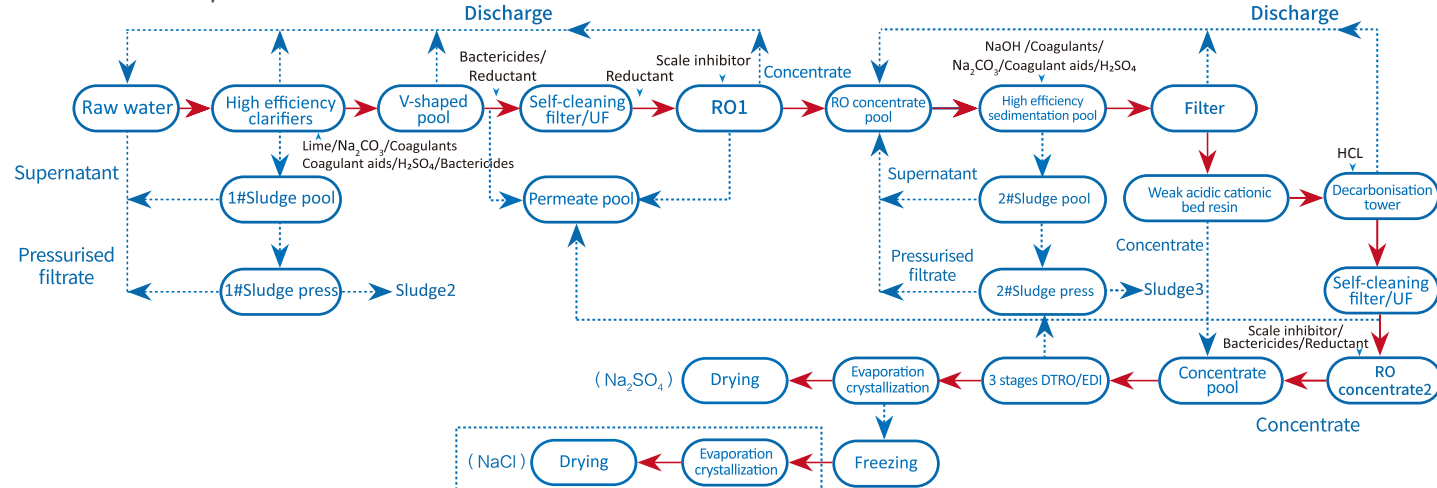
Capacity:36000m³/d (Phase I 24000m³/d, Phase II 12000m³/d) **Process:**Pre-treatment +Destabilization method+ flat membrane+Evaporation crystallization
Inlet:TDS≤3300mg/L, Calcium hardness≤1100mg/L
Permeate:TDS≤600mg/L, other indicators comply with the Class III standard for surface water in the Environmental Quality Standard for Surface Water (GB3838-2002)

Process Overview

■ Newa Innovation Process Route



■ Conventional process route



Project Highlights

- Low cost ZLD coal mine water treatment, achieving significant reductions in operating costs
- More than 80% reduction in dosage and 60% reduction in sludge output compared to conventional processes
- Remove more than 70% of calcium sulphate, the by-products of sodium sulphate and calcium sulphate reach the industrial grade 1 standard.
- Stable system operation and high membrane fouling and scaling resistance
- It saves more than CNY100 million a year compared to conventional processes
- Short process flow, fewer failure points

"Destabilization method+flat membrane" process advantages

Fully independent intellectual property rights

The main process of Newa's "destabilization method+flat membrane" integrates advanced processes and equipment such as pretreatment, destabilization crystallization, and flat membrane, forming a unique process patent technology with fully independent intellectual property rights. The entire process has over 100 patents of various types.

Destabilization technology

The destabilization technology developed by Newa is particularly suitable for the treatment of high calcium sulfate type mine water. Compared with conventional reagent softening processes, it can significantly reduce the dosage and sludge output, and achieve the resource utilization of by-products. The supporting development of destabilizing agent regeneration technology can continuously generate new destabilizing agents, achieving a minimum operating cost.

Magnetic separation+ sedimentation pool" coupling technology

The "magnetic separation+sedimentation pool" coupling technology developed by Newa has incomparable flocculation effects compared to ordinary sedimentation pool, strong flocculation ability, and stable effluent quality (turbidity generally<5NTU). This technology, as a pretreatment of the membrane treatment process, ensures the stable operation of the entire system.

Flat membrane technology

The flat membrane technology can effectively solve the fouling and blocking problem of Spiral Wound RO, ensuring the stable operation of the entire system. Newa has a globally advanced fully automated production line for flat membrane modules, achieving large-scale production of flat membrane modules. Compared to conventional manual production lines, the fully automated production line has an annual output of 430,000 modules, with the advantages of high efficiency, high pass rate, stable product quality and low cost.

Suitable for ZLD of high calcium wastewater

Through integrating mature processes such as destabilization technology, "magnetic separation+ sedimentation pool " coupling technology, flat membrane technology, and evaporative crystallization technology, Newa has created a ZLD process package for mine water with low operating costs and strong reliability, providing a unique and creative solution for the ZLD industry of mine water. This process package is not only applicable to coal mine water, but also applicable to industries such as power plant desulfurization, coal chemical industry, steel coking, fine chemical industry, and other high calcium wastewater treatment.

Reduce operating costs by around 60%

In conventional processes, operating costs have been a pain point in the industry. Under specific water quality conditions, Newa's innovative process reduces agent consumption by 60% -80%, reduces evaporation system treatment capacity by 5%-25%, reduces sludge and solid waste by 30%-60%, and reduces direct operating costs by 30%-60% compared to conventional processes.