Beijing Bianhuadian Chemical Analytical Instruments Co., Ltd (Huadian)

Application of intelligent floating bed water softener in smart heating system

Content

Challenges addressed

Lack of automation and monitoring
Issue of water treatment system management and control
Waste of resources and inaccurate operation
Inefficient equipment maintenance and management

01

Challenges addressed

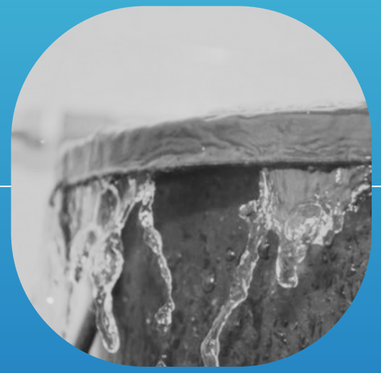
Lack of automation and monitoring

No automatic reminder for the lack of salt in the water softener, and manual inspection is required.

Unable to cope with the situation of water shortage, low pressure, and high pressure in the heat exchange station.

Resulting in the water quality of the produced water being completely out of control, and the raw water and salt water enter the soft water tank and then enter the entire pipe network system together.

Issue of water treatment system management and control



The float switch used in the water softener has a high failure rate, which leads to overflow and waste of water in the water tank.

The timing control of the salt tank water replenishment is inaccurate, which is prone to overflow, and the changes in water pressure and salt content directly affect the water replenishment status.

Waste of resources and inaccurate operatio

The consumption of regeneration salt is not precisely controlled, resulting in salt waste.

The amount of regeneration washing water depends on estimation, resulting in water resource waste.

Inefficient equipment maintenance and management

The heat exchange station equipment does not have accurate operating data, which affects the maintenance effect.

There is no communication between the water softener and the intelligent heat exchange unit, and unified management and collaborative work cannot be achieved.

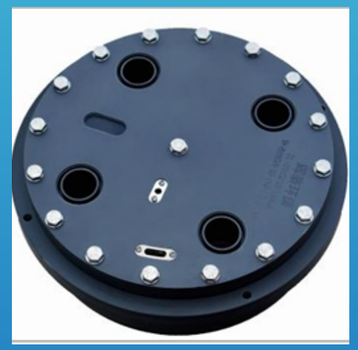
Product introduction

Fully automatic sodium ion exchanger (water softener)
Plane integrated valve
Open regeneration salt box
Control system

02

Product introduction

Plane integrated valve



The core product technical features: large flow multi-way plane integrated valve (the company has applied for multiple patents for this product, patent number:

ZL2015.2 1071186.6

ZL2019.2 0843809.9

ZL2019.2.0844537.4

Fully automatic sodium ion exchanger (water softener)

The 5th generation patented product, the plane integrated valve for water softener (patent number: ZL 2015 2 1071186.6), is used as the core control, with high degree of automation and simple operation. The equipment uses a unique dedicated intelligent PLC controller to control the rotation of the multifunctional plane integrated valve chip to achieve automatic switching of workstations and automatic switching of water production, loosening bed, regeneration, replacement, and cleaning. No manual operation is required, and it can produce water continuously automatically.

Open regeneration salt box

The dry-wet separation regeneration salt box uses stainless steel lining for corrosion protection.

It is convenient for adding salt, beautifully shaped and durable.

The concentration of the regeneration salt solution is stable.

Control system

Intelligent IoT system can be used in heat source plants, heat exchange stations and other scenarios that require intelligent control.

Can be connected to online APP

Product advantages

Intelligent monitoring and remote management
Energy saving and resource conservation
Efficient and stable performance
Structural optimization and design innovation
Wide market application and recognition

03

产品优势

- Active monitoring and alarm: Real-time monitoring of key parameters, abnormal conditions will be promptly and proactively reported to the management personnel's equipment.
- Remote management: Remote monitoring and control of equipment anytime, anywhere.
- Centralized management: One mobile phone can manage up to 500 water softeners, simplifying the management process, improving efficiency and reducing costs.

- Save salt and water: The advanced countercurrent regeneration floating bed technology saves 30% salt and 30% water compared with the traditional fixed exchanger.
- Reduce energy consumption: Effectively reduce energy loss, in line with the needs of modern energy conservation and emission reduction.
- Efficient use of water resources: While ensuring water quality, it improves water utilization efficiency and reduces unnecessary water consumption.

- High water production capacity: The water production flow of the equipment reaches 160T/H, which meets the needs of large-scale water treatment and ensures stable and efficient water treatment capacity.
- Equipment stability and reliability: Through the intelligent IoT system and careful design, the operation of the equipment is stable and reliable, reducing the occurrence of failures and ensuring long-term stable operation.

- Compact design and space saving: The system has a compact structure and occupies a small area, which is suitable for deployment in various places, saving space and improving the aesthetics of the equipment.
- Scientific process technology: The use of advanced countercurrent regeneration floating bed technology makes the water softener more efficient and energy-saving, and optimizes the water treatment process.

- Market recognition: Since its launch, the intelligent IoT water softener has been adopted by many thermal companies and has won unanimous praise from users for its advanced, intelligent and energy-saving features.
- Adapting to industry needs: This product is designed for the actual needs of heat source plants and heat exchange stations in the heating industry, and can effectively solve the common soft water treatment problems in the industry and meet the market's demand for intelligent and efficient water treatment.

Comparison of similar products

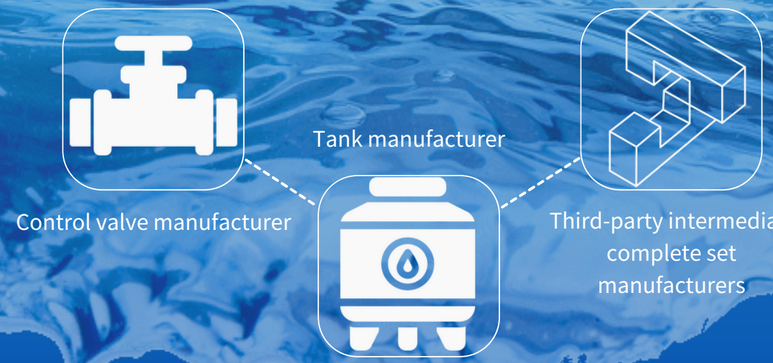
Overview
Multi-way control valve
Process flow
Equipment material
Operation cost
Processing capacity and effect
After-sales service

04

Comparison of similar products

Other products

Current softening equipment is usually composed of control valve manufacturers, tank manufacturers and third-party intermediate complete set manufacturers. The quality and performance of the equipment depend on the professional level of each component and the middleman, resulting in inefficient operation of many equipment. In addition, due to the lack of R&D and production capabilities, it is impossible to effectively solve problems in practical applications.



Overview

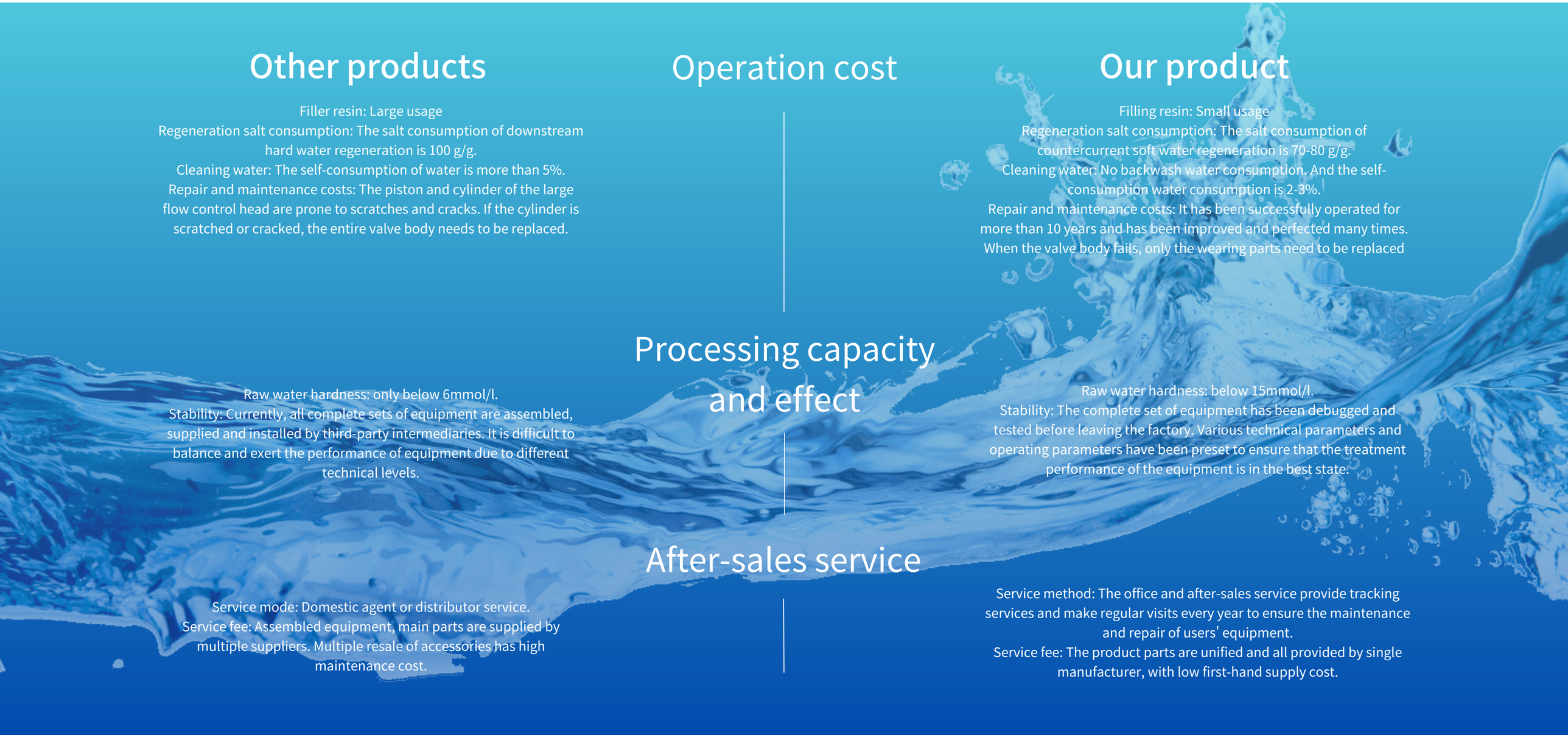
Our product

As a professional manufacturer integrating water treatment equipment design, manufacturing, sales and service, we have independently developed core control valve and tank production lines to achieve full-process quality control. Each device undergoes system testing before leaving the factory, and combines a large amount of on-site operation data optimization technology to ensure superior product performance and strong compatibility.

Comparison of similar products

Other products	Multi-way control valve	Our product
The valve body is made of metal casting and has curved or piston seals. The valve head is easily blocked or worn. As the service time increases, the sealing performance decreases and water is easily leaked. Due to the limitation of casting process, the maximum flow rate of the valve is 50T/h. Equipment above 10T can only adopt a single valve and single tank structure, and single valve and double tanks cannot be realized.		The valve body adopts overall CNC processing and flat floating plane sealing technology, and uses corrosion-resistant and wear-resistant PVC engineering plastics, with high pressure-bearing strength, and factory test pressure of 0.8MPA without leakage. The processing capacity of a single unit is 2-160T/h, and a single valve and two tanks can reach 160T/h, effectively saving equipment space and project investment.
Working form: fixed bed Regeneration method: downstream regeneration, hard water regeneration, cleaning or pump soft water backwash Salt supply system: siphon salt absorption, simple filtration, easy to clog. Salt water concentration and flow rate cannot be adjusted.	Process flow	Working mode: floating bed (high flow rate, high capacity) Regeneration method: countercurrent regeneration (soft water is automatically distributed in the valve for regeneration and cleaning, without secondary hard water pollution) Salt supply system: automatic negative pressure system salt supply method, using secondary filtration, primary sedimentation, automatic circulation and dissolving salt, the concentration and flow of regenerated salt water can be visually adjusted. It can ensure clean, saturated and stable regeneration of salt.
Fiberglass Assembled on site.	Equipment material	Carbon steel or all-stainless steel Assembled and tested in the factory and transported to the site for direct use.

Comparison of similar products



Other products		Our product
Filler resin: Large usage Regeneration salt consumption: The salt consumption of downstream hard water regeneration is 100 g/g. Cleaning water: The self-consumption of water is more than 5%. Repair and maintenance costs: The piston and cylinder of the large flow control head are prone to scratches and cracks. If the cylinder is scratched or cracked, the entire valve body needs to be replaced.	Operation cost	Filling resin: Small usage Regeneration salt consumption: The salt consumption of countercurrent soft water regeneration is 70-80 g/g. Cleaning water: No backwash water consumption. And the self-consumption water consumption is 2-3%. Repair and maintenance costs: It has been successfully operated for more than 10 years and has been improved and perfected many times. When the valve body fails, only the wearing parts need to be replaced
Raw water hardness: only below 6mmol/l. Stability: Currently, all complete sets of equipment are assembled, supplied and installed by third-party intermediaries. It is difficult to balance and exert the performance of equipment due to different technical levels.	Processing capacity and effect	Raw water hardness: below 15mmol/l. Stability: The complete set of equipment has been debugged and tested before leaving the factory. Various technical parameters and operating parameters have been preset to ensure that the treatment performance of the equipment is in the best state.
Service mode: Domestic agent or distributor service. Service fee: Assembled equipment, main parts are supplied by multiple suppliers. Multiple resale of accessories has high maintenance cost.	After-sales service	Service method: The office and after-sales service provide tracking services and make regular visits every year to ensure the maintenance and repair of users' equipment. Service fee: The product parts are unified and all provided by single manufacturer, with low first-hand supply cost.

Case studies

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Case studies

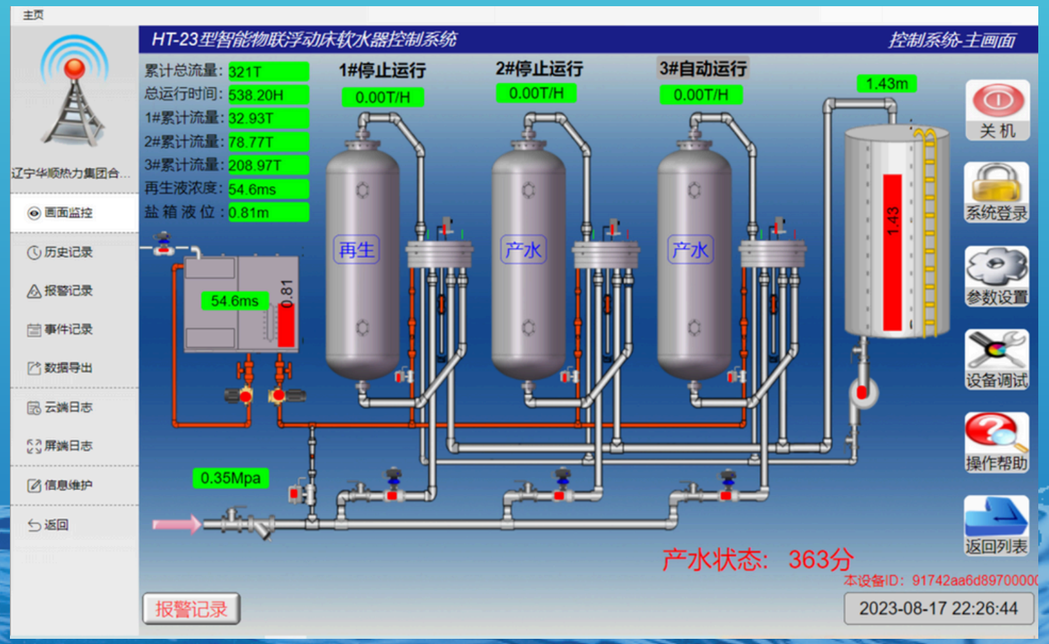
Shijiazhuang Urban Investment Group Co., Ltd.
Pressure Isolation Station
6*80T/h Intelligent IoT Sodium Ion Exchanger

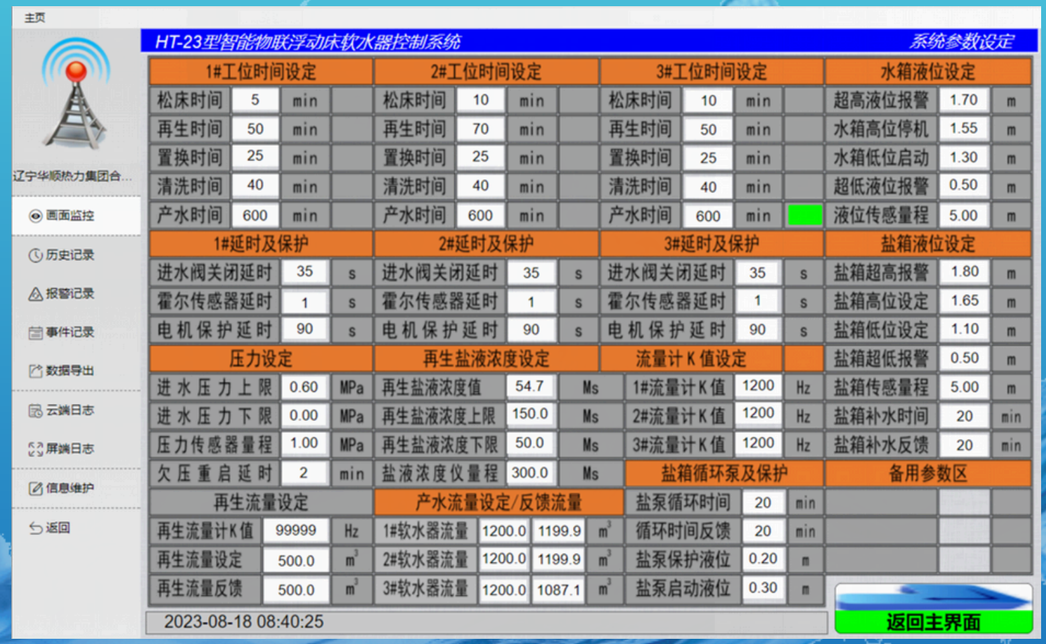
Shenyang Thermal Power Plant of
China Energy Group
4*100T/h Intelligent Water Softener

Shenyang Second Heating Company
Relay Station
4*50T/h Intelligent Water Softener

Exported to Turkmenistan
3*80T/H fully automatic sodium ion
exchanger

Case studies





Intelligent remote monitoring and control interface

Supported devices: computers, mobile APP

Technology safeguards the source of life

And make every drop gets hope!

Thanks for watching