

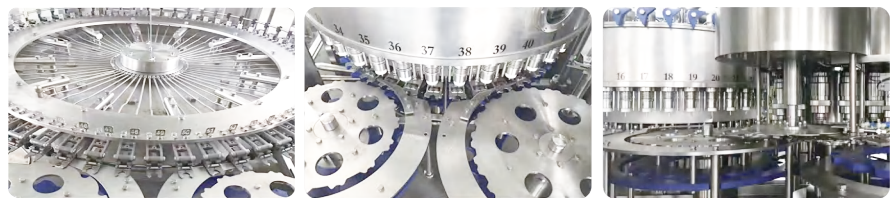
XGF 瓶装饮用水灌装线
Drinking Water Filling Line



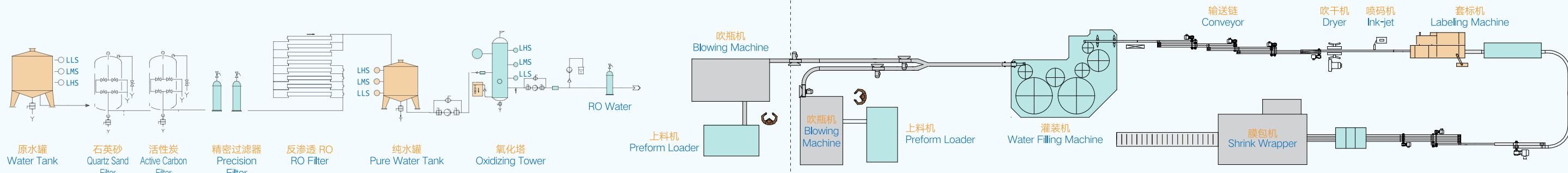
产品描述 / Product Description

用于纯净水、矿泉水等不含气饮料生产的XGF、XXGF三合一、四合一系列，产量2000-42,000瓶 / 小时，可供用户选择。

XGF , XXGF series apply to the production of non-carbonated drink as pure water and mineral water, with optional capacity from 2000 BPH to 42,000 BPH.



工艺流程图 / Flow Chart



主要技术参数 / Main Technical Parameters

型号 Type	冲瓶头数 Washing Nos	灌装头数 Filling Nos	封口头数 Capping Nos	生产能力 Capacity	外形尺寸(mm) Measurement	装机容量 Power
XGF8/8/3	8	8	3	2000BPH	2000x1500x2500mm	1.5kw
XGF14/12/5	14	12	5	5500BPH	2360x1770x2700mm	2kw
XGF16/16/5	16	16	5	8000BPH	2850x2150x2750mm	2.2kw
XGF24/24/8	24	24	8	12000BPH	2880x2180x2750mm	2.2kw
XGF32/32/8	32	32	8	15000BPH	3380x2580x2750mm	3kw
XGF40/40/10	40	40	10	18000BPH	4430x3280x2750mm	7.5kw
XGF50/50/15	50	50	15	24000BPH	4720x3550x2750mm	7.5kw
XGF60/60/15	60	60	15	30000BPH	6000x5450x2750mm	11kw
XGF72/72/18	72	72	18	36000BPH	6500x4680x2750mm	15kw
XGF80/80/22	80	80	22	42000BPH	7800x6380x2750mm	19kw

1)、Air conveyer



(1) Equipment overview

The air duct is supported on the ground by a tripod, and the fan is installed on the upper part of the air duct. The air inlet of each fan is equipped with an air filter to prevent dust from being blown into the bottle. The bottles are stuck in the bottle neck by the bottle hanging plate in the air conveyer, and are transported to the bottle rinser by wind power.

(2) main feature

- Except for the plastic and nylon parts such as legs and bottle hanging plates, the rest are made of high-quality stainless steel.
- The air inlet of the fan outside the clean room is equipped with a primary air filter to prevent dust from being blown into the bottle.

(3) Technical Parameters

- Fan model: F-9 type
- Fan power: 2.2KW/unit
- Air duct length: determined according to the layout plan.
- Number of fans and motor brand/place of origin: The specific fan configuration is based on the production line equipment layout diagram, well-known domestic brand fans; power 2.0-2.5kW/unit; wind pressure $\geq 0.5\text{kg/cm}^2$, ensure bottle body is stable during transportation, and noise when the fan is working ≤ 70 decibels

- Bottle clamping and control mode: Bottle accumulation mode. When the photoelectric switch detects that the bottle accumulation reaches the specified amount, the bottle clamping device opens and closes after the bottles have been transported.
- Cylinder and solenoid valve brand/origin: Japan SMC solenoid valve/SMC
- Brand/origin of photoelectric switch: BANNER/USA
- Conveying speed and efficiency of air conveying line: 12000bph, efficiency $\geq$ 95%
- Fan filter and grade: G4, the fan uses a layer of filter, the outer layer is non-woven cotton filter, the inner layer is SUS304 steel mesh, the inner mesh is movable and can be replaced separately, removable for cleaning, non-woven filter element
- Air duct material: bottleneck conveyor, material is SUS304 polished panel, thickness 1.5mm
- Bracket material: 304 stainless steel, legs
- Bottleneck guide bar material: If damaged within the one-year warranty period, it will be replaced free of charge;
- Cable trough and cover: top and side of air duct, stainless steel cable trough and cover

Washing Filling Capping 3 in 1 Machine



main feature:

The XGF50-50-15 PET bottle pure water rinsing, filling and capping machine has absorbed the advanced technology of similar foreign products and has stable performance, safety and reliability.

This machine has compact structure, complete control system, easy operation and high degree of automation.

- **Adopts the technology of direct connection between the air conveyor and the bottle feeding dial, eliminating the bottle feeding screw and conveyor chain, making it simple and easy to change the bottle type. After the bottles enter the machine through the air conveyor, they are directly sent to the rinsing machine by the bottle-feeding steel dial (bottleneck clamping method).**
- **Parts in contact with materials are made of imported high-quality stainless steel, with no dead ends and easy to clean.**

- **Using high-precision, high-speed quantitative filling valve, the liquid level is accurate and there is no liquid loss, ensuring excellent filling quality.**
- **The capping head adopts a constant torque device to ensure capping quality.**
- **Adopt an efficient cap management system with complete cap feeding technology and protection devices.**
- **There is no need to adjust the height of the equipment to change the bottle shape. It can be achieved by replacing the bottle star wheel. The operation is simple and convenient.**
- **The filling system adopts the bottle neck feeding technology to avoid secondary contamination of the bottle mouth.**
- **Equipped with a complete overload protection device, which can effectively protect the safety of the machine and operators.**
- **The control system has functions such as automatic water level control, cap missing detection, flushing automatic stop and output counting.**
- **The bottle washing system adopts high-efficiency cleaning spray nozzles produced by American spray company technology, which can clean every part of the bottle.**
- **The main electrical components, electronic control valves, frequency converters, etc. are all imported parts to ensure the excellent performance of the whole machine.**
- **All components of the gas circuit system adopt internationally renowned products.**
- **The whole machine operation adopts advanced touch screen control, which can realize human-machine dialogue.**

(1)、 Washing machine



After the bottle enters the host machine, it enters the rinsing machine through the transmission star wheel. The bottle clamp clamps the bottle mouth and flips it upward 180° along the rinsing guide rail, so that the bottle mouth faces downward. In a specific area of the rinsing machine (determined by the water distribution tray - the rinsing water is pumped into the water distribution tray by the rinsing water pump, and then distributed from the water distribution tray to the rinsing clamp through 24 pipes), the rinsing clamp nozzle sprays out Rinse the bottle with water and rinse the inside of the bottle. After the bottle is rinsed and drained, it is held by the bottle clamp and then flipped 180° downward along the guide rail to make the bottle mouth

upward. The washed bottles are exported from the rinsing machine through the transition steel dial wheel (pure water rinsing) and transferred to the next process - filling.

(3) Filling machine



Using a high-precision, high-speed filling valve, the liquid level is accurate and there is no liquid loss, ensuring excellent filling quality; the valve does not open when there is no bottle, preventing liquid material from being lost, ensuring excellent filling quality; the filling valve is made of high-quality stainless steel, the seal adopts the cone surface method, which is easy to clean and has no scaling. The bottle mouth contacts the filling valve and opens to complete the filling process. The filling valve is equipped with a flow control mechanism, which can set the flow rate within a certain range according to actual needs.

The filling sealing gasket is made of EDPN material, which is acid and alkali resistant and ozone resistant.

The connection between the filling system and the capping system is smooth and there is no spillage of the material in the bottle. After the capping operation, the liquid level of the material in the bottle can still be maintained within the filling level.

The power of the filling machine is transmitted through the gears through the transmission system in the frame.

The use of large plane toothed bearings can make the equipment run more smoothly.

Bottles are transported by bottle neck support at the filling, filling and capping connection dials and capping points.

(3) Capping machine



After filling, the bottle enters the capping machine through the transmission star wheel. The anti-rotation knife on the capping machine blocks the bottle neck, and together with the outer bottleneck guard of the capping machine, keeps the bottle upright and prevents rotation. The capping head revolves and rotates driven by the main shaft of the capping machine. Under the action of the cam, it realizes the actions of cap grabbing, capping, capping, capping and decapping, completing the entire capping process.

The capping head adopts a magnetic constant torque device. When the capping head takes out the cap through the capping plate, the top cap sleeve holds the

cap and straightens the cap to ensure the correct position of the cap in the capping mold and ensure the capping quality. When the capping is completed, the capping head overcomes the magnetic force and slips without damaging the cap. At the same time, when the capping head rises, the capping rod ejects the cap from the capping mold.

The capping disk transmits power through the pin wheel and the capping head to ensure that its movement is synchronized with the capping machine. The bottle caps enter the cap dividing disk through the capping channel, and then the cap transfer star wheel separates the caps according to the station and transfers them to the capping head for pickup. cover.

(4) Organize bottle caps machine

The caps are transported to the cap sorter through the cap loading device. After sorting the caps, the caps enter the capping channel through the reverse cap recovery device with the opening upward. When there is a cap with the opening facing downwards, the cap will enter the cap return pipe through the reverse cap recovery device and return. The cap sorter ensures that the caps coming out of the cap sorter enter the cap sterilizer through the cap passage in the correct position.

Disinfect the inside of the lid. There is a photoelectric detection switch in the cover channel between the cap sorter and the cap sterilizing machine and between the cap sterilizing machine and the main machine. The start and stop of the cap sorter is controlled by the accumulation of caps on the cover channel.

The main equipment configuration is filling machine:

No.	Name	Supplier
1	3in1 main motor	ABB
2	Organize bottle caps motor	Chinese famous brands
3	Conveyor chain motor	Chinese famous brands
4	wash pump	Southern Pump Industry

5	electromagnetic valve	AirTAC
6	cylinder	AirTAC
7	Air source triple piece	AirTAC
8	pressure regulating valve	AirTAC
9	Frequency converter	Mitsubishi
10	switching power supply	Taiwan MEAN WELL
11	contactor	Schneider
12	Intermediate relay	Schneider
13	transformer	Chinese famous brands
14	Photoelectric switch	Omron
15	Proximity switch	Omron
17	PLC control system	Mitsubishi
19	touchscreen	Mitsubishi/Taiwan Weineng
20	Pneumatic components	AirTAC
22	AC contactor	Schneider
23	microrelay	Schneider

Waterfall automatic capping feeding and organizing machine



This machine adopts the principle of gravity and replaces the original complex equipment processes such as air supply type, climbing type and cap sorter, which greatly saves equipment costs and floor space.

The equipment consists of: cover bin, scraper belt

A detection switch is installed on the capping path. When the caps are consumed to a certain extent, the detection switch sends a signal and starts the cap sorter to feed the caps.

A certain number of bottle caps are installed in the cap bin, and the bottle caps are fed into the cap sorter under the action of a belt with a scraper.

Principle of upper lid: Put the lid into the lid bin, start the lid handler, lift the lid vertically through the scraper on the nylon chain, and use the gravity of the lid itself (the lid with the bottom facing out will automatically fall into the lid bin), the bottom-facing lid is automatically lifted into the lid channel) to complete the entire workflow of lid management.

Motor power: 0.55KW

Chain plate: nylon/polymer

Equipment size: 1200*800*2400

Speed: more than 25,000

Bottle conveyor



Overview:

The operating efficiency of the production line has a great relationship with the configuration of the conveyor line. In the configuration of the conveyor line, it must be considered that when the back-end equipment is temporarily shut down (for example, changing labels, etc.), it will not have an impact on the operation of the front-end equipment. At the same time, the equipment in the front and rear sections should be well connected together to ensure that the entire line The production line achieves higher operating efficiency. Our company's production line layout fully considers the relationship between customer investment and production line efficiency. Based on the introduction of foreign technology, the above requirements can be well achieved. The system adopts foreign advanced technology and has the advanced level in the 1990s. The mechanical structure is a new design and most components are stamped or bent. It has the advantages of good rigidity, light weight and good interchangeability. The transmission mode is reliable in operation and easy to maintain. It is suitable for conveying bottles with diameters of $\phi 40$ to $\phi 110$ mm. The electrical control system uses PLC to control the operation of the entire solid bottle conveying buffer system, automatically realizing the functions of speed acceleration and deceleration and automatic buffering.

(2)、main feature:

The conveying is stable and reliable, and the bottle belt and the host are synchronously tracked and controlled or the upstream and downstream equipment are online controlled so that the bottles will not fall, get stuck, or be blocked during the conveying process. According to user needs, a buffer platform can be set up in front of the sleeve labeling machine (the time is usually about 1-2 minutes). When the sleeve labeling machine changes labels, the filling machine in the front section does not need to stop and wait. During this time, the filling machine is filling. The products are stored by the buffer platform. When the sleeve labeling machine replaces the labels, the sleeve labeling machine uses a higher speed to finish producing the bottles stored in the buffer platform, and then resumes the synchronous production speed.

The conveyor belt structure is modular in design, with strong interchangeability of parts, compact structure, low noise, easy installation and maintenance, and can be combined according to different capabilities and bottle types, giving it great flexibility.

The electrical control design is advanced and reasonable. The control method can be designed according to the customer's floor plan requirements and the required electrical control components can be selected to further improve the smoothness of transportation.

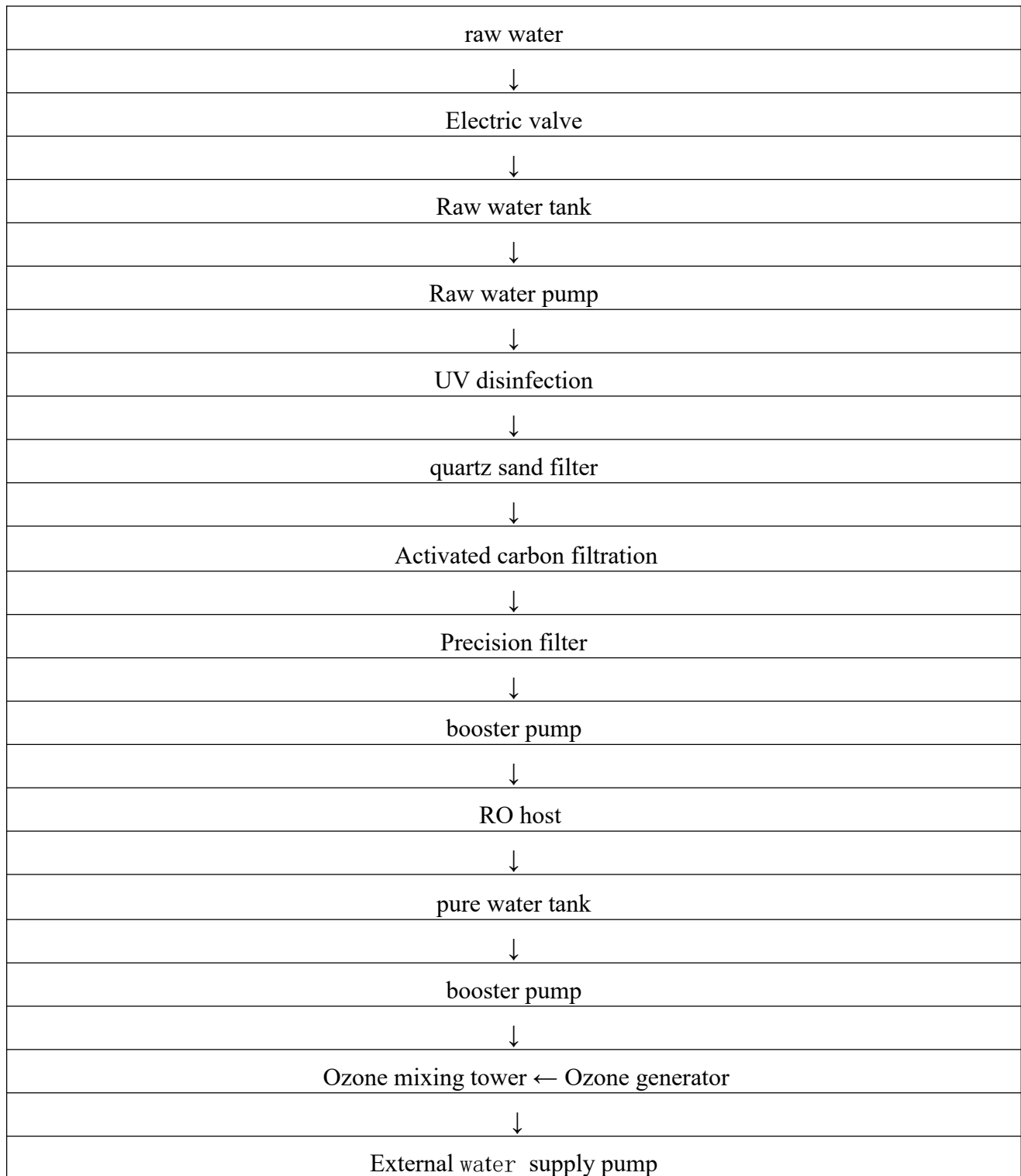
Set the control switch position reasonably according to the layout of the conveyor system or customer needs to facilitate user operation.

The main structural components are made of stainless steel, the chain plates are made of products from well-known companies, the motors and reduction gearboxes are made of joint venture companies, and the main electrical components are made of products from world-renowned companies.

Water treatment system



1. Process Description



The purpose of pretreatment is mainly to remove some coarse particles and impurities, suspended solids and odors, residual chlorine, organic matter, etc. in the water. Commonly used methods are mechanical filtration, activated carbon filtration, and adsorption.

Ultrafiltration separation is increasingly used in electronics, food and pharmaceutical industries, such as ultrapure water preparation, highly concentrated juice, peptide and amino acid separation, antibiotic concentration and purification, whey protein concentration, RO membrane-biochemical reactor coupling and other actual separation processes. Compared with reverse osmosis, the RO ultrafiltration process has poor retention of monovalent ions and organic matter with a molecular weight below 200, but has a higher removal rate for divalent or multivalent ions and organic matter with a molecular weight between 200 and 500. Based on this characteristic, the RO ultrafiltration process is mainly used for water softening, purification, and the separation, classification, and concentration of substances with relative molecular weights in the hundreds (such as the classification and concentration of chemical and biological engineering products such as dyes, antibiotics, polypeptides, and polysaccharides). Concentration), decolorization and odor removal, etc. It is mainly used to remove hardness components such as Ca and Mg ions, trihalomethane intermediates, odor, color, pesticides, synthetic detergents, soluble organic matter, and evaporation residues from drinking water. Equipped with an online cleaning device, it can be cleaned easily without disassembly.

3、 Introduction to main components

1.Raw water electric valve



In order to better realize the automation program of the equipment, an electric control valve is used in front of the raw water pump. When the water level in the raw water tank reaches a low level, a signal is given to the valve through the PLC system to start working. When the water level reaches a high level, the valve is notified to stop working to prevent water overflow. .

2.Raw water tank



Since the raw water pressure is not very stable, it will cause unstable flow rate and affect the filtration effect. At the same time, in order to avoid impact on the preprocessor, a raw water tank needs to be configured to buffer and balance the water pressure. Equipped with two sets of liquid level control valves.

3. Raw water pump



It is mainly used to overcome the resistance of the pre-processor during operation and at the same time provide sufficient water flow to backwash the pre-processor.

Through the low liquid level control of the original water tank, it can be prevented from running idle due to lack of water.

4.UV sterilizer



Ultraviolet rays are a kind of light that cannot be seen by the naked eye. According to different wavelengths, it can be subdivided into UVA (315~400nm) UVB (280~315nm) and UVC (200~280nm). UVC is most easily absorbed by DNA (ribonucleic acid), and the ultraviolet disinfection system uses UVC. The strong UV-C light generated by a specially designed high-efficiency, high-intensity and long-life UV-C light generating device is used to illuminate the flowing water. When bacteria, viruses, algae, etc. in the water are irradiated by a certain dose of ultraviolet C light (wavelength 253.7nm), the DNA and RNA structures of their cells are destroyed and cell regeneration becomes impossible, thereby achieving the purpose of water disinfection and purification. The spectral line with a wavelength of 185nm produces ozone in the air, and ozone can have sterilizing and deodorizing effects. The 185nm spectral line can also decompose organic molecules in the water, generate hydrogen radicals, and ultimately oxidize the organic molecules in the water into carbon dioxide, thereby achieving the purpose of removing TOC.

Please carefully read the original instructions provided with the pump for installation, operation, maintenance and upkeep.

5.Quartz sand filter



The quartz sand filter is an important pretreatment device of this system. It uses quartz sand and refined quartz sand as filter materials. Its function is to filter out fine particles, suspended solids, colloids and other impurities brought by the raw water to ensure that the produced water quality meets the requirements. The inlet water quality requirements of the subsequent treatment device are that the suspended solids in the outlet water should be less than 5 mg/L.

Backwash

As impurities continue to accumulate in the packing layer, the pressure head loss will continue to increase. When the pressure head loss reaches a certain set limit (when the pressure difference between the inlet and outlet water of the filter is increased by 0.07MPa compared with the initial operation), the system is switched to the backwash state to clean the accumulated impurities and avoid quartz sand for a long time. Run while the board clumps. Compressed air can be introduced during backwashing to enhance the backwashing effect.

Filter replacement

When the effluent turbidity is $>1\text{NTU}$, the cause needs to be found to see if the packing needs to be replaced. Depending on the situation, under continuous operation conditions, the packing is generally replaced once every two years.

Characteristic

- *Can effectively remove colloids, suspended solids and rust in raw water;
- *It has a unique uniform water distribution method, which can retain the filter material and balance the resistance of the filter layer to prevent biased flow, so that the filter can achieve the best effect;
- *The filler is made of high-quality filter material, and the non-uniformity coefficient of the filter material is 2-3 to ensure good filtration effect and no backwashing phenomenon;
- *Choose a lower operating flow rate to accommodate the possibility of future water quality deterioration;

6.Activated carbon filter



Activated carbon has extremely strong adsorption and filtration properties, and has a strong adsorption effect on residual chlorine, abnormal color, odor, organic matter, microorganisms, etc. in the water. Since the reverse osmosis membrane is very sensitive to residual chlorine and organic matter, activated carbon must be configured to absorb residual chlorine and organic matter, so that the residual chlorine in the effluent is $\leq 0.1\text{mg/L}$ and $\text{SDI} \leq 4$, which meets the water supply requirements of the reverse osmosis membrane. The control valve can be used to perform forward and backwashing to flush away dirt on its surface, prevent it from clogging, and restore its filtration capacity.

Backwash

As impurities continue to accumulate in the packing layer, the pressure head loss will continue to increase. When the pressure head loss reaches a certain set limit, the system is switched to the backwash state to clean the accumulated impurities.

Packing replacement

Since the backwash of the activated carbon filter can only wash away the pollutants on the surface of the activated carbon, it is impossible to wash away a large amount of pollutants adsorbed in the inner pores of the carbon particles. Therefore, when the adsorption of the inner pores of the activated carbon is saturated and the free residual chlorine in the effluent is $\geq 0.1\text{ppm}$, the activated carbon should be replaced. Our company recommends that the activated carbon replacement cycle be one year.

Characteristic

*Be able to effectively remove residual chlorine, abnormal color, odor, organic matter, and microorganisms in raw water. This indicator must be explained in detail;

- *It has a unique uniform water distribution method, which can retain the filter material and balance the resistance of the filter layer to prevent biased flow, so that the filter can achieve the best effect;
- *The filler is made of high-quality filter material, and the non-uniformity coefficient of the filter material is 2-3 to ensure good filtration effect and no backwashing phenomenon;
- *Choose a lower operating flow rate to accommodate the possibility of future water quality deterioration;

7.Precision/Security Filter



After pretreatment, a security filter is installed in front of the high-pressure pump to prevent impurity particles from entering the high-pressure pump and damaging the high-pressure pump and nanofiltration membrane. This system uses a PP filter element that is loose on the outside and tight on the inside (with a skeleton and good strength). The water is filtered from the outside to the inside, which can prolong the time when the filter element is clogged. By flushing with tap water, the sludge on the surface can be washed away to prolong the blockage of the filter element. service life.

8.Booster pump



Since the nanofiltration membrane must produce the expected designed water volume

and achieve the ideal water output under a certain working pressure, a booster pump must be configured to provide sufficient working pressure for the nanofiltration membrane. The inlet water is equipped with low pressure protection to prevent damage caused by lack of water in the inlet and pump idling. The booster pump inlet is set with low-pressure protection and the outlet is set with high-pressure protection. When the inlet pressure of the booster pump is lower than the limit value or the outlet pressure is higher than the limit value, the pressure controller sends a signal to the booster pump switch and the booster pump automatically stops running. , thereby ensuring the safety of the nanofiltration system.

9.Pure water pump

It is mainly used to transport the ultrafiltration produced water to the water inlet of the ozone mixing tower. Through the low liquid level control of the ultrafiltration water tank, it can prevent it from running idle due to lack of water.

10.Cleaning device

When the conductivity of the equipment's outlet water increases significantly and the water production decreases rapidly, this device must be used to clean the equipment to restore the normal operation of the equipment.

The cleaning system includes cleaning water tanks, cleaning water pumps, cleaning filters, detachable pipes connected to the RO device, and easy-to-disassemble sealing joints.

11、 Ozone mixing tower

The water is pressurized by the booster pump and distributed evenly through the upper water distributor into the ozone mixing tower to achieve uniform and thorough sterilization through ozone water and gas mixing. The sterilization booster pump is used to control the liquid level to prevent the water pump from running idling due to lack of water.

12、 Ozone device

This series of ozone generators uses IGBT integrated technology to generate ozone by corona discharge. The discharge chamber is composed of a dehydroxylated

quartz structure tubular generator. Unique anti-backwater design (return water is not easy to damage the machine), the service life is much longer than that of ordinary manufacturers, the circuit adopts a modular design, the dielectric components, connectors and pipes are all made of anti-oxidation devices, which is not easy to oxidize, has a long working life and a large corona area, the temperature is low, which greatly increases the ozone concentration. Its performance indicators and actual use effects are better than most current similar products.

Features:

1. It adopts air cooling and the ozone amount can be adjusted.
2. Unique structural design makes the return water less likely to damage the ozone generator.
3. The generator unit has a long working life and can work continuously.
4. The shell is made of stainless steel.
5. Dual-purpose type, air source and oxygen source can be selected according to needs.

Ozone is a strong oxidant, and its oxidizing ability in water is second only to fluorine.

Ozone can remove difficult-to-biodegrade organic matter in water, improve the bioavailability of organic wastewater, and reduce COD, chroma and ultraviolet-absorbing organic matter in the effluent.

Ozone can react with many functional groups, such as: double bonds, triple bonds, aromatic hydrocarbons, heterocyclic compounds, cycloalkanes, $=N-N$, $=S$, $C\equiv N$, $C-N$, $C-S$, $-OH$, $-SH$, $-NH_2$, $-CHO$ and other compounds equipped with ozone generation systems can achieve sterility in water.