⚠ Read this manual before operation

FLOCCULANT PREPARATION UNIT

INSTRUCTION MANUAL

YIXING TEIO INTERNATIONAL TRADE CO.,LTD.

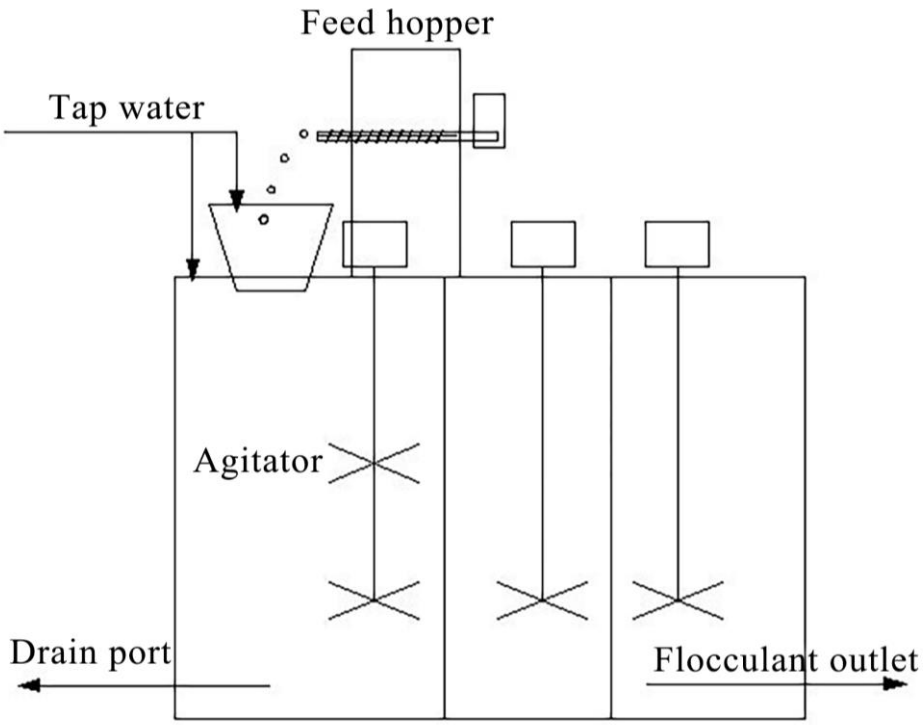
SPECIALIZED IN WATER TREATMENT SOLUTIONS

CATALOGUE

1. Overview

Flocculant preparation unit is designed for continuously preparing and dosing flocculant solution. It continuously and efficiently completes the combination and mixing of the flocculant and water to obtain homogeneous active flocculant solution. It is mainly used in petroleum, chemical, water treatment and other industries.

Dosing process diagram:



2. Technical Parameters

Model	Powder Dosage	Preparation Capacity	Dimensions (L*W*H)
YTH-500	1 - 5 kg	500 L/h	1370*780*1500
YTH-1000	2 - 10 kg	1000 L/h	2000*1100*1710
YTH-1500	2 - 10 kg	1500 L/h	2130*1170*1710
YTH-2000	3 - 15 kg	2000 L/h	2200*1300*1900
YTH-2500	3 - 15 kg	2500 L/h	2400*1300*2140
YTH-3000	3.5 - 20 kg	3000 L/h	2400*1400*2180
YTH-4000	3.5 - 20 kg	4000 L/h	2720*1500*2250

3. Equipment Features

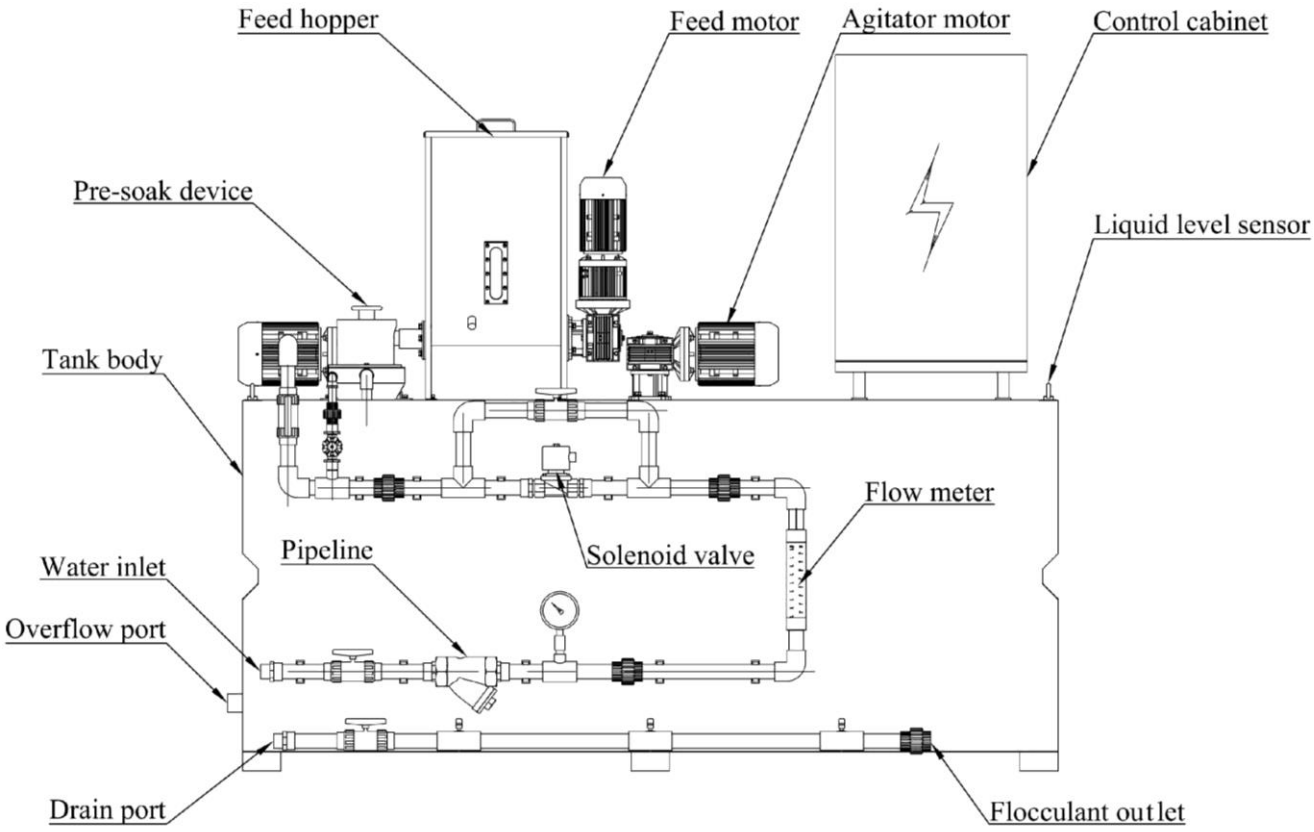
(1) Three-tank integrated (pre-mixing tank, maturation tank, solution storage tank), continuous preparation, easy operation and maintenance, low labor cost.

(2) Flocculant dosing pump and water pump start to work at the same time, the flow rates of flocculant and water are adjustable. The concentration of the flocculant solution (within a certain range) can be prepared according to actual needs.

(3) The feed hopper and pre-soak device are both heated at a constant temperature, which can reduce the agglomeration or blockage of the pipeline, and ensure a stable and consistent concentration of the prepared solution.

(4) The agitator has a unique structure and an appropriate rotation speed, which can ensure the homogenization of the solution.

4. Equipment Structure



4.1 Dosage System

It is composed of a feed hopper, a screw conveyor, an electric heater.

(1) The volume of the feed hopper can meet the long-term dosage requirements. The hopper is equipped with a sight glass for manual observation of the material level. The level meter can automatically monitor the material level and send out an alarm signal.

(2) The screw conveyor is composed of worm gear reducer and a high-precision screw. The reducer has the characteristics of light weight, stable operation and high efficiency. The high-precision screw can fully meet the user's dosage requirements.

(3) The electric heater is installed in the conveyor discharge pipe to avoid the powder agglomeration or deterioration, thereby blocking the discharge pipe.

4.2 Dissolving System

It is composed of a pre-soak device, a tank body and three agitators.

(1) There is a swirl hopper in the pre-soak device. The water enters the swirl hopper from the tangential direction, forming a swirl water curtain, wetting and mixing the dry powder, and then enters the pre-mixing tank.

(2) The tank body is a three-tank structure, which is a pre-mixing tank, a maturation tank, and a solution storage tank. There are partitions and overflow weirs between each tank. During the preparation of the flocculant solution, the flocculant solution must flow from the bottom of the partition through the upper overflow weir to the next tank, which can avoid the short-flow of raw flocculant solution to the mature flocculant solution.

(3) The tank body is a fully enclosed structure, covers with handles are installed on the top of the tank. Concealed overflow pipes are installed in the pre-mixing tank to prevent liquid from overflowing from the tank when the liquid level exceeds the set high level. The three tanks are equipped with flocculant solution outlet pipes and manual ball valves in the bottom. The three outlet pipes are connected together, one end is used as a flocculant feed pipe, and the other end is used as a drain pipe.

(4) Three agitators are installed in the pre-mixing tank, maturation tank, and solution storage tank. The agitator has a unique structure and an appropriate rotation speed, which can ensure the homogenization of the solution.

4.3 Water Supply System

It is composed of UPVC pipes, manual ball valves, a filter, a pressure gauge, a solenoid valve, stop valves and a rotor flowmeter, etc.

(1) The filter is used to intercept impurities in the water and protect the solenoid valve.

(2) The pressure gauge is installed behind the filter to display the pressure. If the pressure is too low,

it means that the filter is blocked and the impurities in the filters need to be removed.

(3) The solenoid valve receives the electrical signal of water inlet, realizing automatic water inlet.

(4) The rotor flowmeter is used to display the water inlet flow.

(5) The stop valve is used to adjust the water inlet flow, which is convenient and stable to adjust.

4.4 Control System

It is composed of an electrical control cabinet and a liquid level switch.

(1) The electrical control cabinet is equipped with Schneider electrical components.

(2) The liquid level switch measures accurately and the signal is stable.

5. Working Principle

(1) When the feed hopper is filled with dry powder, the dosage system starts to transport the dry powder to the pre-soak device. At the same time, the solenoid valve of the water inlet pipe opens. After the dry powder is soaked in the pre-soak device, it flows to the mixing tank by gravity for stirring and mixing.

(2) The flocculant solution that has been initially stirred and mixed flows through the overflow weir to the maturation tank for further stirring and combination. After a certain period of effective and gentle low-speed stirring, the flocculant solution will meet the requirements of homogenization, maturation and activity. Then it flows through the overflow weir to the solution storage tank.

(3) When the solution storage tank is filled with flocculant solution, the liquid level switch sends a signal, the dosage system and the solenoid valve will automatically stop. At this time, the flocculant solution is ready, the ‘Ready’ indicator light will light up.

(4) The flocculant dosing pump starts, and the dilution water solenoid valve opens at the same time. The flocculant solution will be pumped to the next working procedure.

(5) When the liquid level in the solution storage tank reaches the set low liquid level, the liquid level switch sends a signal, and the device starts to automatically repeat the above steps, so as to ensure that there is enough flocculant solution in the solution storage tank.

6. Equipment Installation

Before installation, the foundation should be checked first. The foundation should be constructed strictly according to design dimensions, and the foundation level should be ≤3mm.

(1) Use a forklift or lifting equipment to move the flocculant preparation unit to the foundation.

(2) Clean the dust and sundries inside and outside the flocculant preparation unit.

(3) Connect the water inlet pipe, drain pipe, overflow pipe and dosing pipe to each pipeline respectively.

(4) Open the manual ball valves of the water inlet pipe, dilution water pipe and dosing pipe, close the three drain valves at the bottom of the equipment. Open the manual ball valve at the outlet of the solution storage tank.

(5) Connect the power cord and water pump cable to the electric control cabinet.

(6) Connect the communication line between the flocculant preparation unit and the electric control cabinet.

7. Equipment Commissioning

7.1 Electric & Program Commissiong

(1) Fill the feed hopper with dry powder.

(2) Turn on the power switch on the electric control cabinet, the ultra-low level alarm indicator light will light up and the buzzer will sound. However, this will not affect the operation of the equipment. Turn the ‘Manual/Auto’ switch to ‘Manual’, then turn the switch of dosing device to ‘On’, check whether the dosing device is working properly. Then turn the switches of 1#, 2#, and 3# agitator to ‘On’, check whether the agitators are properly. If all of them are all OK, proceed to the next step.

(3) Turn the ‘Manual/Auto’ switch to ‘Auto’. The dosing device will start to work, the solenoid valve will open. When the liquid level in the storage tank reaches the set high level, the dosing device will stop and the solenoid valve will close.

(4) When there is insufficient dry powder in the feed hopper, the ‘Lack Powder’ indicator light will light up and the alarm will sound.

(5) When any motor is overload or the liquid level is at the set ultra-low level, the equipment will shut down.

7.2 Flow & Concentration Commissioning

(1) Adjust the water inlet flow regulating valve to adjust the water inlet flow to the preset value.

(2) Observe the water inlet condition and the dissolution of the dry powder in the pre-soak device. If

the water inlet flow is insufficient or the dry powder cannot be fully dissolved, gradually adjust the manual ball valve of the water inlet pipeline, so as to increase the water inlet flow to fully dissolve the dry power. But the water level should not exceed the overflow weir.

(3) Adjust the flow rate of the flocculant dosing pump to an appropriate value.

(4) Adjust the dilution water flow regulating valve to adjust the dilution water flow to the preset flow rate.

(5) After passing the commissioning, it can be formally put into use.

8. Maintenance

(1) Regularly clean the worm gear reducer to ensure that its surface is clean.

(2) The water supply should be clean tap water, and the water supply pressure should be ≥0.25 MPa.
(1) The water supply should be kept stable, otherwise it will affect the concentration of the flocculant solution.

(2) If the pressure is normal but the water flow rate decreases, the filter should be cleaned in time.

(3) Before operating the equipment, the garbage in the tank should be removed to ensure internal cleanliness. Normally, the pre-soak device should be kept clean to prevent blockage.

(4) The equipment should be kept ventilated to avoid excessive humidity that will affect the use of dry powder. If the prepared flocculant solution will be not used for a long time (more than 3 days), it will hydrolyze and become ineffective. At this time, the tank should be emptied.

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