

XLP Closed Cycle Spray Dryer



. Working principle

First of all, filling the heated nitrogen into the tower, the liquid materials to be dried are transported to the centrifugal atomizer by the liquid transport pump, then they are rotated in a high speed, and finally become the fine droplets, the droplets in the drying tower fully heat exchange with hot nitrogen, the liquid parts have been instant evaporated, the solid parts become powder materials down to the bottom of the drying tower, and then the dried powder will be discharged from the bottom of the tower.

Under the effects of the fan, the evaporated organic solvent passes through the cyclone separator, bag filter to remove the powder in the nitrogen, and then is condensed in the condenser. To avoid any liquid solvent to be brought out, we included a gas-liquid separator after the condenser.

The inert gas (such as nitrogen etc) works as drying media will be heated again and circulate in the system to form a closed cycle. XLP Closed Cyclone Spray Dryer works under the fully sealed system, the drying media is inert gas (such as nitrogen etc), and the working system is under positive pressure. The pressure transmitter will control the nitrogen inlet system to feed nitrogen when the system is under negative pressure, so to ensure pressure balance of the system.

It has a protective effect on the dry material since using nitrogen as the circulation carrier. The circulation carrier, such as nitrogen will carry moisture, dehumidify and circulate in the system. The circulation carrier will be reused.

The conventional ordinary centrifugal spray drying has a continuous air supply, and air exhaust to reach the purpose of drying and the drying tower controlled under negative operation pressure, which is obviously different with the explosion-proof closed cycle spray drying system. So the explosion-proof closed circulation spray drying system is particularly suitable for drying the materials with organic solvents, toxic gas and the drying process need to protect the material from oxidation.

. Main characteristics and applications

Closed cycled centrifugal spray drier is applicable for the solution, emulsified suspension and slurry which contains organic solvent, volatile toxic gas, or the material products are easy oxidation, and the solvent need to be recovered. It has not only all the advantages of the centrifugal spray drier, but also there is no powder discharged into the ambient air during the drying processing. The collection rate of the dry product is almost 100%. The solvent recovered by the recovery system can be used again and keep circulating in the system, so that production cost is reduced. It is widely applied in pharmaceutical and chemical industries.

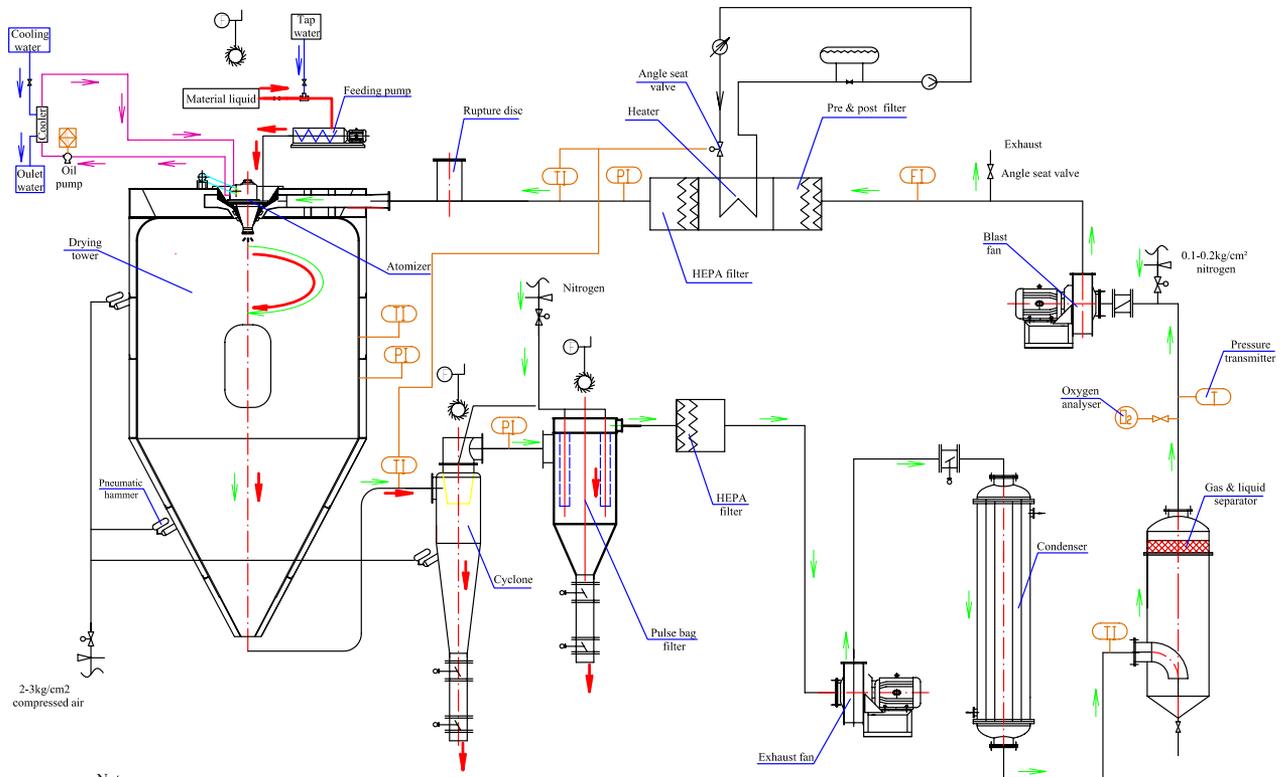
Main features

1. The design is explosion-proof, equipped with explosion release discs or vents on the main machine and the key part, so ensure the safety of the operation. (There's no explosion release discs or vents with volatile toxic gas, but the design is special)
2. The solvent will be recovered, so the product cost is low.
3. Adopt full closed design, so that the collecting rate of the finished product is very high, almost 100%, which the other types of dryers are normally lower.
4. Equipped with washing tower device in the system, and adopt advanced atomizing rinsing device in order to improve the operational reliability.
5. For the oxidable material, the closed cycle spray drier use inert gas as the medium to ensure the materials will not be oxidized.

. Technical parameters

Specifications	XLP-5	XLP-10	XLP-25	XLP-50	XLP-100	XLP-150
Inlet air temperature	90-140°C, adjustable					
Exhaust air temperature	60-80°C, depend on the product to be dried, and URS					
Nominal water evaporation capacity (Kg / h)	5	10	25	50	100	150
Heating method	Steam					
Drying tower diameter (mm)	1300	1500	2000	2500	3200	3600
Overall dimensions (m)	According to the configuration and URS					
Product yield	99-99.99%, varies with the product features and configuration					

. Flowchart



Note:

1. Green arrows represent the direction of nitrogen gas;
2. Red arrows represent the direction of material liquid and product;
3. Blue lines & arrows represent the direction of water;
4. Purple lines & arrows represent the direction of cooling oil;
5. Dark yellow symbols represents control system;
6. Black represents the real equipment

Notes:

1. The sprayer might be centrifugal atomizer, pressure nozzle, or air stream nozzle;
2. The dust separation section might be one cyclone, two grade cyclone, cloth bag filter or their combinations.

. Notes for Inquiry

1. Liquid material name and physical properties: solid contents (or moisture contents), viscosity, surface tension, PH value, etc.
2. Product characteristics: final moisture content required, the range of particle size, and heat sensitive temperature etc.
3. Working capacity (kg/h or ton/h). If the capacity is based on per day, per month or per, please also indicate the working hours.
4. Heat source: The pressure of steam
5. Control requirements: if the air inlet temperature should be automatically controlled,

