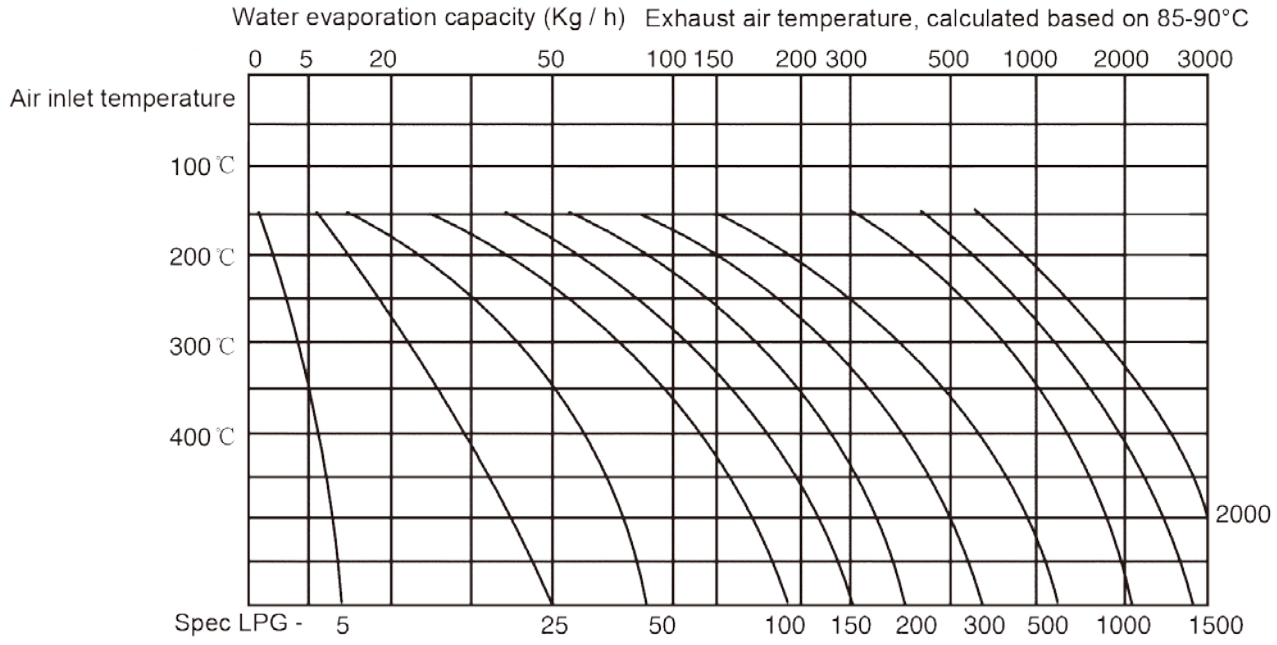
YPG Pressure Spray Dryer

Ⅷ. Dry parameter curve:



Ⅰ.Working principle and configuration options:

The solution, emulsion, suspension liquid or slurry are sprayed into fine beads in the hot air, going down from the top of the drying chamber to the bottom, the water will be evaporated to and the product becomes small granular product.

Induce hot air from the top of drying tower, at the same time, pump the material liquid to the top of the tower by high pressure pump, the feeding solution becomes fine beads or small droplets through the pressure nozzle(s). When the droplets meet the high temperature hot air, the water will be evaporated immediately, and the material liquid is dried into dry product in a very short time, the product is discharged from the bottom of the drying tower, or from the cyclone (depend on the configuration). When the hot air contacts with the droplets, the temperature declines significantly, and the humidity increases greatly, and then will be exhausted by exhaust fan. The fine powder in the air will be collected through different separating devices

There're different fine powder separation and recovery devices, such as cyclone (the common type and various combination type), bag filter, cyclone + bag filter, cyclone + wet scrubber, and bag filter + wet scrubber etc. We should different fine powder separation and recovery devices as per the characteristics of product and requirements of customer.

Depend on the product features and requirements, we might install secondary drying and cooling system (such as ZLG vibration fluid bed or pneumatic transportation), formulation system or powder sieving system etc after the spray dryer, or dehumidifier.

The particle size of the product from pressure spray dryer is normally within the range of 120mesh to 20 mesh. If bigger particles are required, we suggest FL Fluidized Granulator or re-combined agglomerator.

Ⅱ.Features of our equipment:

The designs of our spray dryer are advanced in China, as well as worldwide. If we compare the important parameters of our spray dryers and some famous brand in the world, such as final moisture content, color, flavor, particle size, solubility and bulk density etc, they are very close, or sometimes, ours are even a little better. A lot of customers have achieved their desired results with our equipment.

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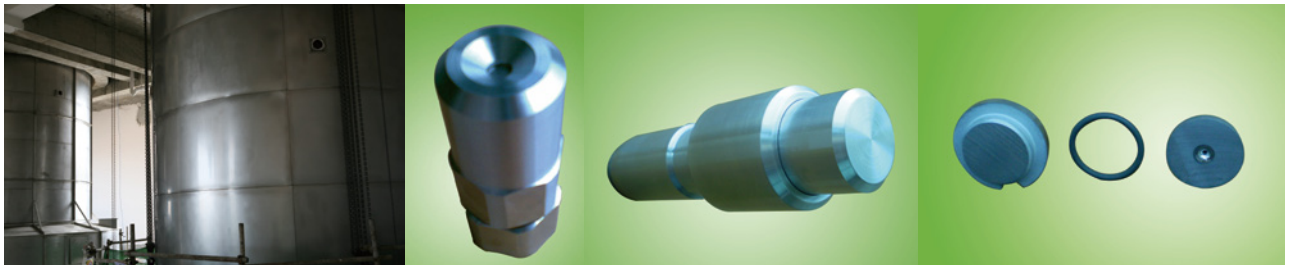

III .Notes for Order:

1. Liquid material name and physical properties: solid contents (or moisture contents), viscosity, surface tension, PH value, etc. If there's any other liquid, such as organic solvent, please specify the name and percentage clearly. 2. Product characteristics: final moisture content required, the range of particle size, and heat sensitive temperature etc. 3. Special requirements (if any): range of specific bulk density, color, and flavor etc.4. 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.
5. Heat source: it could be the pressure of steam, electricity, coal, oil, natural gas, LPG and other combustible materials.6. Control requirements: the way to control the air inlet temperature, liquid supply system, pneumatic hammer etc, and the type of the system control (normal push button type, PLC+HMI, and PC system etc)
7. Fines collection type: depending on the product characters and environment protection requirements, we have following options, cyclone, bag filter, wet scrubber and their combinations.
8. Other special requirements: dimensions of the workshop, height limit and special electricity requirements etc.
Note Customers might provide part of the above mentioned aspects. Other requirements, we should decide after making trials, or after technical discussion with the customer, or as per our experience

IV . Applications

Food Industry: whole milk powder, skimmed milk powder, cocoa milk powder, milk substitute, egg white (yolk), etc. armpit prion, Oats, chicken juice, instant tea, seasoning meat, protein, soybean, peanut protein, protein thydrolyzate. Corn syrup, corn starch, glucose, pectin, maltose, potassium sorbate, pumpkin powder, instant coffee, and non-dairy creamer etc.

Pharmaceutical products: Chinese traditional medicine extract (herb extract), medicine colloid, yeast, vitamins, antibiotics, amylase, lipase, etc.

Plastics resin: AB, ABS emulsion, urea-formaldehyde resin, phenolic resin, dense plastic (urea) formaldehyde resin, polyethylene, polyvinyl chloride, etc.

Detergent: advanced washing powder, normal washing powder, soap powder, soda powder, emulsifiers, brighteners, phosphoric acid agents.

Chemical Industry: Sodium fluoride (potassium), alkaline dyestuff and pigment, dye intermediates, Mn3O4, formic silica acid, catalyst, sulfuric acid agent, amino acids, silica, etc..

Ceramic: aluminum oxide, ceramic tile material, magnesium oxide, talc, etc.

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Ⅴ .Technical parameters:

Specifications	YPG–25	YPG–25	YPG–25	YPG–25	YPG–25	YPG–25
Air Inlet temperature	140-550 ° C (depend on the product to be dried, and URS)					
Air exhaust temperature	60-120 ° C (depend on the product to be dried, and URS)					
Nominal water evaporation capacity (Kg / h)	25	50	100	150	200	300
Heating method	High-pressure steam, or steam + electricity, or any kinds of fuel (diesel, natural gas, liquefied petroleum gas or coal, etc.), or solid fuel (any combustible material). Please specify.					
Drying tower diameter (mm)	1200	1400	1600	2200	2600	3200
Overall Dimensions (m)	5×4×12	6×4×13	6×4×15	8×4.5×19	10×5×20	12×6×22
Product yield	95-99.9% depend on the properties of the product and configurations					

Specifications	YPG–400	YPG–500	YPG–600	YPG–750	YPG–1000	YPG–2000
Air Inlet temperature	140-550 ° C (depend on the product to be dried, and URS)					
Air exhaust temperature	60-120 ° C (depend on the product to be dried, and URS)					
Nominal water evaporation capacity (Kg / h)	400	500	600	750	1000	2000
Heating method	High-pressure steam, or steam + electricity, or any kinds of fuel (diesel, natural gas, liquefied petroleum gas or coal, etc.), or solid fuel (any combustible material). Please specify.					
Drying tower diameter (mm)	3500	3800	4100	4500	5500	7300
Overall Dimensions (m)	Design as per configuration of the plant and URS					
Product yield	95-99.9% depend on the properties of the product and configurations					

Specifications	YPG–3000	YPG–5000	YPG–8000	YPG–10000	YPG–12000	YPG–15000
Air Inlet temperature	140-550 ° C (depend on the product to be dried, and URS)					
Air exhaust temperature	60-120 ° C (depend on the product to be dried, and URS)					
Nominal water evaporation capacity (Kg / h)	3000	5000	8000	10000	12000	15000
Heating method	High-pressure steam, or steam + electricity, or any kinds of fuel (diesel, natural gas, liquefied petroleum gas or coal, etc.), or solid fuel (any combustible material). Please specify.					
Drying tower diameter (mm)	8000	10000	13000	14500	15800	17500
Overall Dimensions (m)	Design as per configuration of the plant and URS					
Product yield	95-99.9% depend on the properties of the product and configurations					

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YPG Pressure Spray Dryer

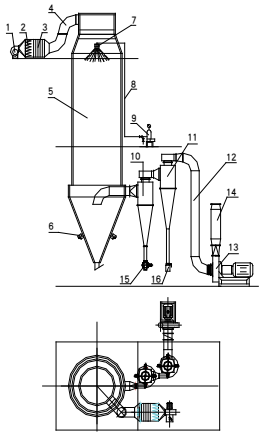
Specifications	YPG–18000	YPG–20000	YPG–23000	YPG–25000	YPG–28000	YPG–30000
Air Inlet temperature	140-550 ° C (depend on the product to be dried, and URS)					
Air exhaust temperature	60-120 ° C (depend on the product to be dried, and URS)					
Nominal water evaporation capacity (Kg / h)	18000	20000	23000	25000	28000	30000
Heating method	High-pressure steam, or steam + electricity, or any kinds of fuel (diesel, natural gas, liquefied petroleum gas or coal, etc.), or solid fuel (any combustible material). Please specify.					
Drying tower diameter (mm)	19000	20300	21800	22800	24000	25000
Overall Dimensions (m)	Design as per configuration of the plant and URS					
Product yield	95-99.9% depend on the properties of the product and configurations					

Remarks:

1. Nominal water evaporation capacity: It is calculated according to the inlet air temperature of 350° C, and the exhaust air temperature of 85-90° C.
2. Standard specification: The specifications listed above are named based on nominal water evaporation capacity.
3. Process specifications: For specific equipment, we normally name the equipment as per the specific processing parameters and requirements.For the products which heat sensitive temperature is more than 110 ° C, the process specifications is about the same with the standard specifications.For most food or the other products which heat sensitive temperature is normally low, the process specifications are about equivalent to 2-3 times of the standard specifications. Such as YPG2000 for drying food, the drying tower is about equivalent to the standard one of YPG4000 or of YPG6000 (vary as per the properties of the product). For the products with high heat sensitive temperature, the inlet air temperature could be up to 450° C or even higher, the process specification is smaller than the standard specifications. But the requirements of the drying tower and relative configurations should be higher if the air inlet temperature is more than 450° C
4. Product yield: We provide a variety of fines collection and product recovery devices as per customer requirements and product characteristics, so to ensure it meets customer requirements.
5. Test: We have the most advanced trial facilities in China to make trials for the customers, so to ensure that the equipment reaches the customer requirements in the contract.
6. Configuration: Please refer to the flowcharts and instructions
7. Advanced design: we are considering the customer's requirements, low investment, low running cost and energy saving when we make a design. If we compare our machines and some other machines, the special feature is that our machine is design for energy saving. For the medium and large specification equipment, the thermal efficiency of our design is normally around 37 - 50%, i.e., around 2.0-2.7kg of steam to evaporate 1 Kg water

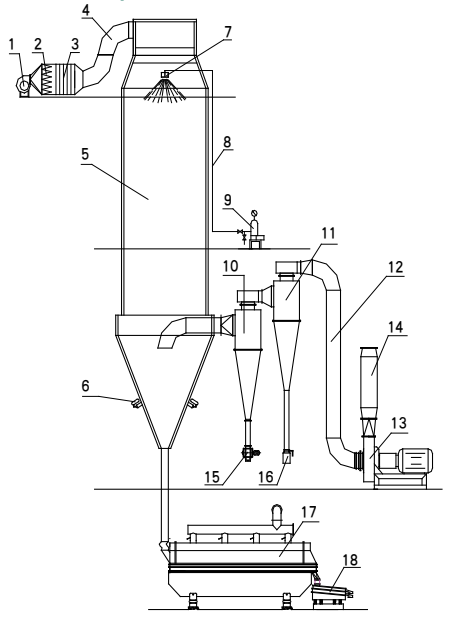
Ⅵ. Flowchart

ⅰ. Normal flow chart



1、Blast fan;
2、Filter;
3、Heat exchanger;
4、Air inlet ducts;
5、Drying tower;
6、Pneumatic hammer;
7、Spray nozzle;
8、Feeding pipe;
9、Feeding pump
10、First cyclone;
11、Second cyclone;
12、Air exhaust ducts;
13、Exhaust fan;
14、Silencer;
15、Rotary valve;
16、Product bucket

ⅱ. Flowchart with second drying, cooling and sieve separation



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8、Feeding pipe;
9、Feeding pump;
10、First cyclone;
11、Second cyclone;
12、Air exhaust ducts;
13、Exhaust fan;
14、Silencer;
15、Rotary valve;
16、Product bucket;
17、Vibration fluid bed;
18、Vibration sieve

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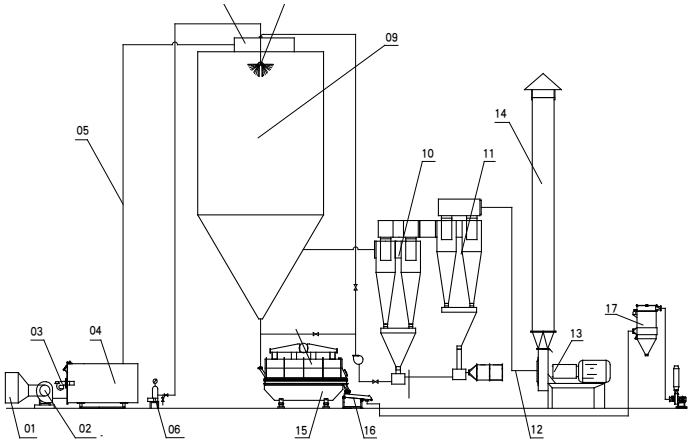
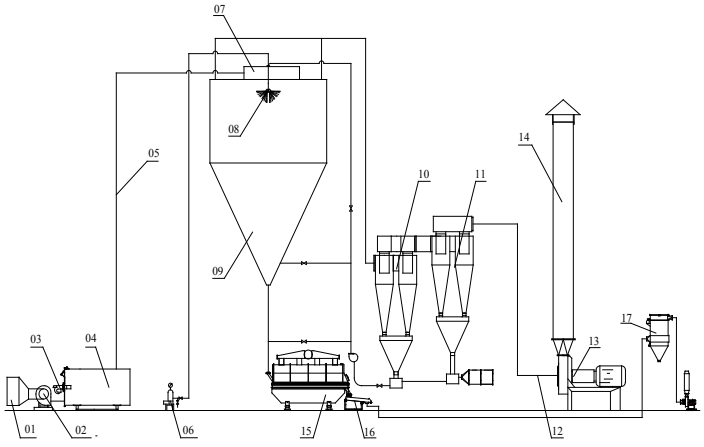
iii . Centrifugal Air Inlet with Bottom Air Outlet



01. Filter
02. Blast fan
03. Burner
04. Hot air furnace
05. Air inlet ducts
06. High pressure pump
07. Spiral case
08. Pressure nozzle
09. Drying tower
10. First cyclone
11. Second cyclone
12. Air exhaust ducts
13. Exhaust fan
14. Silencer
15. Vibration fluid bed
16. Vibration sieve
17. Cloth bag filter

iv .Centrifugal Air Inlet with Top Air Outlet



01. Filter
02. Blast fan
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04. Hot air furnace
05. Air inlet ducts
06. High pressure pump
07. Spiral case
08. Pressure nozzle
09. Drying tower
10. First cyclone
11. Second cyclone
12. Air exhaust ducts
13. Exhaust fan
14. Silencer
15. Vibration fluid bed
16. Vibration sieve
17. Cloth bag filter

VII . Optional Configurations

1. Pneumatic transfer and cooling: Some production need to be transported to distant packaging workshop, it is suggested to use pneumatic transfer + cooling.

2. Fine powder return for granulation and agglomeration with re-combination: For the system that require fine powder return for granulation or agglomeration with re-combination, we have different configurations for different processes of different products. Please contact us for further information.

3. Configurations: The configuration of equipment is designed generally based on product characteristics, process requirements, energy supply and other requirements, such as environmental protection requirements or height restrictions and other specific requirements. The real configuration might be changed flexibly according to customer requirements. 3.1: Heat source: electricity, electricity + steam; high pressure steam; direct hot air furnace; indirect hot air furnace; and thermal oil furnace etc. The fuel of the furnaces might be any kinds of fuel (diesel oil, heavy oil, natural gas, LPG or coal, etc.), or solid fuel (any combustible material). Please specify when to finalize an order.

3.2: The air inlet could be direct air inlet, and also could be waste heat recovery air inlet3.3: The exhaust system could be single cyclone, two-stage cyclone, bag filter, wet scrubber or their combinations. 3.4: Others: We also provide a variety of special configurations according to the process or customer requirements, such as inner wall cooling, conical part cooling, product cooling, scraper, sweeper or some special types drying tower.

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