

[RFD] Cylinder cone filtering&washing&drying equipment

Professional sealing, multifunction with automatic control, Clean-in-place

Features

1. Hermetic operation with professional sealing technology

Thanks to our professional sealing technology, processing within RFD is one completely hermetic step that ensure the product purity; therefore, RFD is able to process with combustible, explosive or toxic products; hygienic grade sealing is possible to satisfy the latest GMP criteria, and enables RFD to be implemented in operation environments subject to strict safety or hygiene regulations; during the filtering process, running spiral blade leaves quite thin cake on the filtering media that significantly enhance the filtration efficiency.

2. Multifunctional unit with automatic control system

Steps of filtering, washing, drying can be successively processed during one batch operation, avoiding the possibility of transfer pollution during different processes; considering reduce the customer labor demand during processing, automatic control center is implemented basing on user-friendly concept; operation training programme is provided.

3. Cleaning in place

The clean system can be customerized to ensure washing performance; meanwhile, clean design for system itself is fully considered; realize clean in place specifically for strict purity requirement products.

4. Spiral hollow mixing blade

The temperature circulatory system includes hollow stirring structure and jacket layer; slurry receives maximum thermal energy during drying process; with running spiral mixing, heat exchange capacity is comprehensively improved- about 1-2 times higher efficiency compare to traditional drying technology; we have accumulated 15 years application experience during batch operation lines in wide range of industries.

5. Alternative materials

We manufacture in various grades of stainless steel or alloys to satisfy customer individual application; polished surface is possible.

6. Process tests

RFD equipment is available in our test center for customer specific filtration tests; test reports are offered as reliable basis for product selection.



Structural principle & Process steps

Structures

① Drive structure (with anti-dust cover)

The main stirring shaft is driven by the ATEX certified motor while anti-dust shield is adaptable for strict operation environment hygiene regulation;

② Mechanical sealing

Professional sealing part designed and manufactured by DING CHANG;

③ Stirring structure

The stirring structure covers all active filtration area during running, including hollow stirring shaft, hollow spiral and straight mixing blade; temperature controlling media is cycling internally;

④ Cylinder part

Process integration connectors and RFD functional connectors are distributed on the sealing head; cylinder wall is jacketed by temperature circulatory layer and heat preservation layer; mounting brackets, temperature and sampling ports and temperature controlling media cycling ports are located on cylinder wall;

⑤ Lifting structure for maintenance

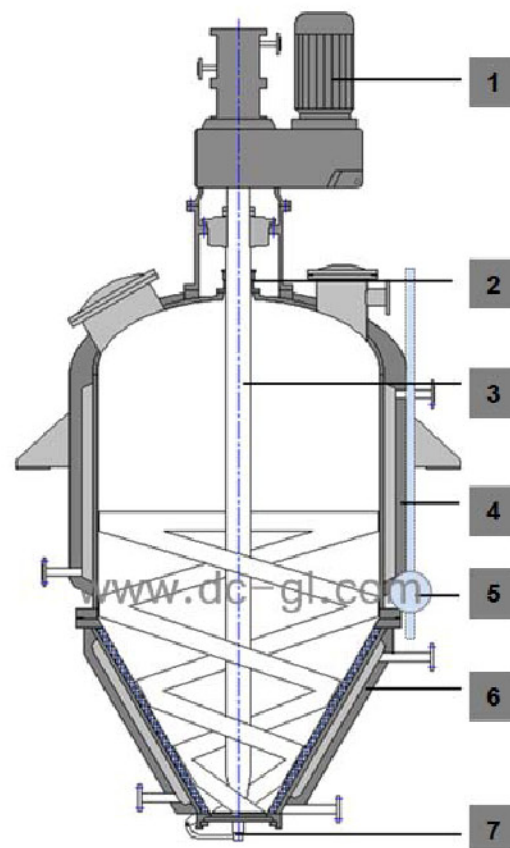
Two lifting motors are under synchronization control, assisting with filtration media change and equipment maintenance;

⑥ Cone part

Filtration media is mounted on inner wall of the cone part, and is jacketed by temperature circulatory layer and insulation layer; temperature controlling media cycling ports and filtrate outlet are located on cone wall;

⑦ Discharging structure

Automatic controlled discharging structure with no dead angle design; specific sealing mechanism ensure the hermetic operation.



Process steps

a. One batch feed and filtration

One batch slurry is fed into RFD; compressed gas is supplied via functional connector (or vacuum from filtrate outlet); the motor drives the stirring part to stir the slurry while forming very thin cake between filtration media and running spiral blade while filtrate draining off from outlet efficiently;

b. Cake washing

Washing media is supplied via corresponding connector if the process is necessary, and stirring structure is continuously mixing; filtration after slurried mixing; repeat processes till getting qualified products;

c. Cake drying

Temperature controlling media is fed into the circulatory system (with certain pressure is possible); use corresponding port for vacuuming drying while heat loss is prevented by jacket layer; stirring structure keeps mixing the cake and making maximum heat exchanging; temperature and cake drying condition can be on-line monitored via the sampling ports;

d. Automatic discharge

After drying, vacuum or compress air supply will be stopped; discharge valve will be automatically opened when internal pressure reaches environment level; stirring structure is reversely driven for auto-discharging.

Applications

Pharmaceuticals/ Food/ Chemicals/ Organic chemicals/ Agrochemicals/ Dyes/ Textiles/ Metallurgy/ Ceramics and so on.

Performance data and dimensions

Items	Type	RFD - 0.5	RFD - 1.0	RFD - 2.0	RFD - 3.0	RFD - 5.0	RFD - 10	RFD - 15	
	Volume	[m ³]	0.5	1.0	2.0	3.0	5.0	10	15
Temperature Exchange area	[m ²]	5.0	9.0	14	18	23	38	48	
Active filtration area	[m ²]	1.2	1.8	2.7	3.6	5.2	7.6	9.5	
Filtration type	Vacuum filtering or pressure filtering with compressed air								
Drying type	Hermetic vacuum drying								
Drive power	[kw]	7.5	11	15	18.5	30	45	55	
Material	Carbon steel, stainless steel, titanium, alloy and so on (coated design is possible)								
Dimensions		φ1000	φ1200	φ1500	φ1700	φ2000	φ2400	φ2700	
Cylinder Diameter x Hight	[mm]	×2700	×3200	×3800	×4000	×4600	×5500	×6500	
Weight	[t]	1.8	3.5	5.0	6.5	10	14.5	19	
Others	Depends on the requirement, equipments with volume of 0.3-15m ³ are possible; filtration media size and material are customer specific								

DING CHANG national patented products:

- Cylinder cone filtering&washing&drying equipment
- Cylinder cone press filter
- Bi-conical spiral mixing dryer
- Continuous press filter with composite rotary plate
- Horizontal crystallizing&washing&filtering&drying equipment
- Multi-tube continuous filtration concentrator
- Multi-plate continuous filtration concentrator
- Spiral mixing continuous crystallization reactor



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