Overview

Overview of Belt Vacuum Continuous Dryer

a. high efficiency, low temperature, conduction type & vacuum continuous drying equipment

b. good operation environment, continuous import and export under vacuum

c. high degree of automation, low labor intensity, low energy consumption and low production cost

d. high recoverability of solvent and product & reduced the running cost

e. automatic, thorough and quick cleaning

f. widely used in chemical industry, medicine, food, agricultural products and Chinese medicine processing industries
Working Principle

Simulation Operation Flow of Belt Vacuum Continuous Dryer
GMP Standard
meeting the GMP hygienic requirements to realize drying by finishing continuous charging, discharging and grinding under vacuum condition

Adjustable Parameter
optimizing temperature vacuum degree and speed of the drying process to achieve the best economic benefits

Quality
unchanged thermal sensitivity of materials, recoverability of 95% solvent

No Destruction of Material Property
no destruction of the crystal material, the thermal sensitive material and the oxidation of the material

Easy to Operate
high-degree automation with PLC automatic programing control

CIP Cleaning
CIP automatic online cleaning system with various cleaning methods
Advantages of Belt Vacuum Continuous Dryer

**High Quality**
- No air contact
- Free chemical Oxidation
- No destruction of crystal
- Product yield up to 99%
- Solvent recovery 95%

**Soft Drying**
- Dry temperature
- No mechanical impact
- No air
- Short stay

**Economic Environment Protection**
- Lowest steam power consumption
- No dust, solvent
- No pollution
- Direct packaging of discharging

**Automatic production**
- PLC automatic programming control
- Automatic omnidirectional cleaning

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Component of Belt Vacuum Continuous Dryer

1. Vacuum Equipment System
2. Feed system
3. Grindy System
4. Sieviy system
5. Product collection system
6. Vacuum condensing system
7. Heating and cooling systems
8. CIP cleaning system
9. Operating systems
10. Liquid feed system
Operating Process of Belt Vacuum Powder Continuous Dryer

Step 1: Water content
- Feeding system

Step 2: Vacuum chamber Out
- Vacuum chamber distributor

Step 3: Primary Condenser
- Primary condenser

Step 4: Vacuum Auto Discharge Service
- Two stage condenser

Step 5: Two stage condenser
- Two stage recycling tank

Step 6: Two stage recycling tank
- Vacuum pump

Material Flow:
1. Feeding system
2. Vacuum chamber distributor
3. Vacuum chamber
4. 1# Heating Zone
5. 2# Heating Zone
6. Cooling zone
7. Crushing granulation
8. Discharging system
9. Packing

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Application

Applicable Scope of Belt Vacuum Powder Continuous Dryer

- **Food**: food additives and chemical raw materials for food
- **Medicine**: various kinds of powders, crystals, granules etc.
- **Chemical Engineering**: oxidizable, explosive, strongly stimulation and highly toxic materials
- **And more**: products containing various recyclable solvents

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Operating Process of Belt vacuum Liquid Continuous Dryer

Step 1: Water content

Step 2: Vacuum chamber Out

Step 3: Primary condenser

Step 4: Vacuum Auto Discharge device

Step 5: Two stage condenser

Step 6: Two stage recycling tank

Material

1. Metering Pump
2. Vacuum Chamber Distributor
3. Discharging system
4. 1# Heating Zone
5. 2# Heating Zone
6. Cooling zone
7. Crushing granulation
8. Discharging system
9. Packing

Vacuum pump

Vacuum automatic drain tank

Cushing granulation

Tin package

Discharging system
Application

Applicable Scope of Belt Vacuum Liquid Continuous Dryer

- **Instant Coffee**: Liquid drying of coffee
- **Fresh Juice**: Liquid drying of vegetables and fruit
- **Chinese Traditional Medicine Extract**: High concentration, high viscosity extract
- **Plant Extract**: Biological preparation plant extract

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Contrast

Comparison Between Spray Dryer and Belt Vacuum Continuous Dryer

Spray Dryer
- spraying under high pressure
- sticking to the wall
- strong wind shear force
- product loss and quality damage

Belt Vacuum Continuous Dryer
- smooth conveyer drying
- no mechanical pressure impact
- not sticky to the wall

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Automation

High Degree of Automation, Continuous and Stable Production of Equipment

Touch Screen

Remote Control

Intelligent Monitoring

Safer and More Reliable

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Adjustable Parameter

Controlled by Parameters to Ensure Different Requirements

**Feed Control**
- Feed crushing control material particle size
- Feeding time controlled feed quantity
- Metering pump control feed rate

**Vacuum Degree (90-99)Kpa**
- Controlling the vacuum degree in the warehouse to ensure the material moisture

**Fabric Thickness (3-30mm)**
- Adjustable height of material and material thickness

**Material**
- Water ≤ 1-4%
- Particle Size
- Feed Quantity
- Time Stay
- Moisture Content of the material charged
- Adjustable Temperature
- Fabric Thickness
- Crushing speed

**Conveyor Belt Speed (0-50Hz)**
- Adjustable speed and thickness of each conveyer belt

**Heating Temperature (40-180)°C**
- Adjustable temperature of each layer, heated gradient and bottom cooling

**Crush**
- Adjustable grinding speed, controlled uniform size of the particles

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## Selection of Belt Vacuum Powder Continuous Dryer

### Table: HCF Belt Vacuum Power Continuous Dryer

<table>
<thead>
<tr>
<th>Basic Parameters/Model</th>
<th>HCF6.5-3</th>
<th>HCF15-3</th>
<th>HCF30-5</th>
<th>HCF50-5</th>
<th>HCF80-5</th>
<th>HCF100-7</th>
<th>HCF120-7</th>
<th>HCF160-7</th>
<th>HCF200-11</th>
<th>HCF220-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating Area(m²)</td>
<td>6.5</td>
<td>15</td>
<td>30</td>
<td>50</td>
<td>80</td>
<td>100</td>
<td>120</td>
<td>160</td>
<td>200</td>
<td>220</td>
</tr>
<tr>
<td>Water Evaporation Capacity(kg/h)</td>
<td>5~10</td>
<td>10~20</td>
<td>25~35</td>
<td>40~60</td>
<td>70~90</td>
<td>90~120</td>
<td>110~130</td>
<td>150~180</td>
<td>180~210</td>
<td>210~230</td>
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<tr>
<td>Number of Drying Bed(Layer)</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>11</td>
<td>11</td>
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<tr>
<td>Drying Temperature Range(°C)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40~180</td>
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<tr>
<td>Moisture Content of the Material Charged (%)</td>
<td></td>
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<td></td>
<td>20~30</td>
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<td>Moisture Content of the Dried Charged (%)</td>
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<td>≤1~4</td>
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<tr>
<td>Discharging Form</td>
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<td></td>
<td></td>
<td>Screwing grinding and sieving (20~200 meshes) with adjustable discharging</td>
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</tr>
<tr>
<td>Heating Media</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Superheated water, vapor, conduction oil</td>
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<tr>
<td>Equipment Dimensions(mm)</td>
<td>6500×1200×2200</td>
<td>6500×1900×2500</td>
<td>9500×1900×2500</td>
<td>12000×2200×2800</td>
<td>12000×2600×3000</td>
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<td>17500×1900×3000</td>
<td>17500×3200×3200</td>
<td>19500×3200×3200</td>
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<tr>
<td>Total Installed Power(kw)</td>
<td>18</td>
<td>24</td>
<td>30</td>
<td>34</td>
<td>36</td>
<td>40</td>
<td>45</td>
<td>48</td>
<td>50</td>
<td>58</td>
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<tr>
<td>Operating Pressure of the Cleaning System(mpa)</td>
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<td>0.5~1.0</td>
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<tr>
<td>Yield of Dried Product(kg/h)</td>
<td>30~60</td>
<td>60~100</td>
<td>100~150</td>
<td>150~220</td>
<td>200~300</td>
<td>250~350</td>
<td>300~400</td>
<td>350~450</td>
<td>400~600</td>
<td>500~800</td>
</tr>
</tbody>
</table>

### Notes

1. The yield is calculated based on 70% content at 90°C drying temperature with dry power containing about ≤4% moisture. In case the dried liquid is water, specific gravity of the dry power is determined to be 1. The yield will be larger if the dry liquid is solvent.

2. All technical parameters are for reference only depending on the material conditions, and our company has the right to change them without further notice.

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## Selection of Belt Vacuum Liquid Continuous Dryer

### HCY Belt Vacuum Power Continuous Dryer

<table>
<thead>
<tr>
<th>Basic Parameters/Model</th>
<th>HCY15-1</th>
<th>HCY3-2</th>
<th>HCY6-3</th>
<th>HCY20-4</th>
<th>HCY35-5</th>
<th>HCY70-6</th>
<th>HCY100-7</th>
<th>HCY135-8</th>
<th>HCY160-9</th>
<th>HCY200-10</th>
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<tbody>
<tr>
<td>Heating Area (m²)</td>
<td>1.5</td>
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<td>70</td>
<td>100</td>
<td>135</td>
<td>160</td>
<td>200</td>
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<tr>
<td>Cooling Area (m²)</td>
<td>0.7</td>
<td>1.5</td>
<td>2.5</td>
<td>3.5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>27</td>
<td>30</td>
<td>35</td>
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<tr>
<td>Water Evaporation</td>
<td>2 - 3</td>
<td>3 - 5</td>
<td>5 - 10</td>
<td>15 - 30</td>
<td>30 - 45</td>
<td>55 - 80</td>
<td>90 - 110</td>
<td>150 - 180</td>
<td>180 - 220</td>
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<tr>
<td>Capacity (kg/h)</td>
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<tr>
<td>Number of Drying</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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<td>Bed (layer)</td>
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<td>Drying Temperature</td>
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<td>Range (°C)</td>
<td>40 - 180</td>
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<td>Heating and Cooling</td>
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</tr>
</tbody>
</table>
| Zone                   | 2: Heating Zone  
Cooling Zone | 3: Heating Zone  
Cooling Zone | 4: Heating Zone  
Cooling Zone | 5: Heating Zone  
Cooling Zone |         |        |         |          |          |           |
| Moisture Content of the|         |        |        |         |         |         |          |          |          |           |
| Material Charged (%)   | 20 - 30  |        |        |         |         |         |          |          |          |           |
| Moisture Content of the|         |        |        |         |         |         |          |          |          |           |
| Dried Charged (%)      | ≤1 - 4   |        |        |         |         |         |          |          |          |           |
| Discharging Form       | Screwing grinding and sieving (20 - 200 meshes) with adjustable discharging |       |        |         |         |         |          |          |          |           |
| Heating Media          | Superheated water, vapor, conduction oil |       |        |         |         |         |          |          |          |           |
| Equipment Dimensions   | 6000×1200×2200 | 6500×1900×2500 | 7000×2000×2500 | 11000×2200×2800 | 12500×2200×2800 | 12500×2400×2800 | 17000×2600×3000 | 17500×2800×3200 | 18000×3200×3200 | 18500×3200×3500 |
| (mm)                   |         |        |        |         |         |         |          |          |          |           |
| Total Installed Power  | 15      | 20     | 30     | 35      | 39      | 45      | 50       | 55       | 60       | 67        |
| (kw)                   |         |        |        |         |         |         |          |          |          |           |
| Operating Pressure of  |         |        |        |         |         |         |          |          |          |           |
| the Cleaning System    | 0.5 - 1.0|        |        |         |         |         |          |          |          |           |
| (mpa)                  |         |        |        |         |         |         |          |          |          |           |
| Yield of Dried Product | 2 - 5   | 3 - 8  | 8 - 15 | 15 - 30 | 30 - 50 | 50 - 80 | 90 - 120 | 120 - 150| 150 - 180| 180 - 220 |
| (kg/h)                 |         |        |        |         |         |         |          |          |          |           |
| Notes                  | ① The yield is calculated based on 70% content at 90°C drying temperature with dry powder containing about ≤4% moisture. In case the dried liquid is water, specific gravity of the dry powder is determined to be 1. The yield will be larger if the dried liquid is solvent.  
② All technical parameters are for reference only depending on the material conditions, and our company has the right to change them without further notice. |       |        |         |         |         |          |          |          |           |

Haichang Machinery
Wuxi Haichang Machinery Co., Ltd. is an enterprise specialized in manufacturing drying, crystallizing and granulating & tableting equipment for such industries as pharmacy, food, chemical engineering and biochemistry.
Our Products

National Leading Automated Drying Solution Supplier

Spherical Dryer
Belt Vacuum Powder Continuous Dryer
Belt Vacuum Liquid Continuous Dryer
PTFE Lining

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