**Vertical Centrifuges**

**V 200 TP – V 400 TP**

The vertical centrifuges Type V 200 TP, V 300 TP, V 400 TP, have been designed for basic tests of centrifugal separation technology.

**Customer benefits:**
- Mobile design with small footprint
- Easy installation; “plug and use”
- Ideal for scale-up
- Simplest handling
- CIP cleaning
- Installation in isolator housing/glove box possible

**Standard specification:**
- Bowl diameter: 200 – 400 mm
- Filter surface: 0.062 – 0.31 m²
- Nominal volume: 1.5 – 16 liter
- Maximum load: 2.0 – 20 kg
- Max. centrifugal force: 900 – 2055
- Material: 1.4571 or 2.4602 (Alloy C22)
- Surfaces in contact with product: Ra < 0.8 μm

**Standard configuration:**
- Housing
- Base frame with bearing
- Sieve drum with removable collar
- Feed pipe
- Washing pipe
- Sight and light glass
- Control
- Variable speed drive

**Options:**
- Mobile design
- ATEX execution
- CIP cleaning
- Heating and cooling jacket
- Electro-polished surfaces
- Several types of bowls (see fig. page 6)
- Filtrate reservoir
- Can be integrated in isolator/glovebox
- Further special equipment on request

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**Pilot Plant Centrifuges**

**H 250 P – H 500 P, HF 300, F I**

The HEINKEL Inverting Filter Centrifuge, type F and HF, and the Horizontal Peeler Centrifuge, types H 250 P, H 320 P and H 500 P, are especially designed for demanding laboratory and test operations as well as production of small quantities.

**Customer benefits:**
- Small footprint
- Easy installation; “plug and use”
- Ideal for scale-up
- Fully automated operation
- CGMP conformity

**Standard specification:**
- Bowl diameter: 200 – 500 mm
- Filter surface: 0.098 – 0.39 m²
- Nominal volume: 2.5 – 20 liter
- Maximum load: 3.1 – 25 kg
- Max. centrifugal force: 1500 – 2020
- Material: 1.4571 or 2.4602 (Alloy C22)
- Surfaces in contact with product: Ra < 0.8 μm

**Standard configuration:**
- Housing
- Base frame with bearing
- Sieve drum
- Feedpipe
- Washing pipe
- Discharging system
- Sight and light glass
- Control
- Variable speed drive

**Options:**
- Mobile design
- ATEX execution
- CIP cleaning
- Clean room separation
- Electro-polished surfaces
- Filtrate reservoir
- Filling systems
- PAC system (inverting filter centrifuge)
- Removal of residual heel (peeler centrifuge)
- Further special equipment on request
Lab Dryer and Mixer
BS-miniDry®

The BS-miniDry® has specifically been designed for research and development with small amounts of product. Tailor made for the requirements in the laboratory, it can be installed in a ventilation booth and be operated under many process conditions.

Customer benefits of the Lab Dryer with 0.15 to 1.5 liter nominal volume:
- Flexible working volume from 10% to 100% of nominal volume
- Mobile and compact design
- Easy “plug and use” installation
- Excellent for scale-up
- Easy to operate
- CIP cleaning
- Installation in ventilation booth

Pilot Dryer and Mixer
BS-pilotDry®

For processes in pilot plants and small scale production, the BS-pilotDry® has been designed. It can easily be moved from one place to another and is fully equipped with the necessary instrumentation.

Customer benefits of the Pilot Dryer with 10, 30 and 50 liter nominal volume:
- Flexible working volume from 10% to 100% of nominal volume
- Mobile and compact design
- Easy “plug and use” installation
- Ideal for scale-up
- Easy to operate
- CIP cleaning

Standard specification:
Material: 1.4404 (SS316L) or 2.4602 (Alloy C22)
Working volume: Type DKL015: 0.15–1.5 liter
Working pressure: –1.0 – 0.5 barg
Working temp.: –20 – 120°C
Heating/cooling: Water/thermal oil at 0–6 barg
Surfaces in contact with product: Ra <0.8 μm

Standard configuration:
- Heating/cooling jacket
- Insulation jacket
- Dust filter
- Two drives with variable speeds
- Manual ball discharge valve
- Pressure and temperature sensors
- Manual sampler
- Height adjustable support frame

Options:
- Hybrid stirrer with central shaft mixer
- Vacuum system with solvent recovery
- Heating/cooling system
- SPS control with lab software
- Operation via PC or laptop
- Free programmable process control
- ATEX configuration
- Additional options are available

Standard specification:
Material: 1.4404 (SS316L) or 2.4602 (Alloy C22)
Working volume: Type DKL015–ML005: 10–15 liters
Working pressure: –1.0 – 3.0 barg
Working temp.: –20 – 120°C
Heating/cooling: Water/thermal oil at 0–6 barg
Surfaces in contact with product: Ra <0.8 μm

Standard configuration:
- Heating/cooling jacket
- Insulation jacket
- Dust filter
- Two drives with variable speeds
- Manual ball discharge valve
- Pressure and temperature sensors
- Manual sampler
- Height adjustable support frame

Options:
- Hybrid stirrer with central shaft mixer
- Vacuum system with solvent recovery
- Heating/cooling system
- SPS control with lab software
- Operation via PC or laptop
- Free programmable process control
- ATEX configuration
- Additional options are available
Pilot Paddel Dryer
Pharmadry® PH100

For processes in pilot plants and small scale production, the Pharmadry® has been designed. It can easily be moved from one place to another and is fully equipped with the necessary instrumentation.

Customer benefits of the Pilot Dryer with 90 liter nominal volume:
- Mobile and compact design
- Easy “plug and use” installation
- Ideal for scale-up
- Easy to operate
- CIP cleaning

<table>
<thead>
<tr>
<th>Standard specification:</th>
<th>Standard configuration:</th>
<th>Options:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Heating/cooling jacket</td>
<td>- Vacuum system with solvent recovery</td>
</tr>
<tr>
<td>1.4404 (SS316L) or 2.4602 (Alloy C22)</td>
<td>Insulation jacket</td>
<td>- Heating/cooling system</td>
</tr>
<tr>
<td>Heated area</td>
<td>Dust filter</td>
<td>- SPS control with lab software</td>
</tr>
<tr>
<td>1.3 m²</td>
<td>Drives with variable speeds</td>
<td>- Operation via PC or laptop</td>
</tr>
<tr>
<td>Usable volume</td>
<td>Manual ball discharge valve</td>
<td>- Free programmable process control</td>
</tr>
<tr>
<td>90 liter</td>
<td>Pressure and temperature sensors</td>
<td>- ATEX configuration</td>
</tr>
<tr>
<td>Working pressure</td>
<td>Manual sampler</td>
<td>- Additional options are available</td>
</tr>
<tr>
<td>–1 – 2 barg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agitator RPM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 – 35 UPM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agitator drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0 kW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surfaces in contact with product</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ra 0.38 μm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Labor PF/TD Filter Dryer – Pan Dryer
Pressofiltro® PF/TD 5 – PF/TD 100

For processes in pilot plants and small scale production, Filter/Filter dryer has been designed. It can easily be moved from one place to another and is fully equipped with the necessary instrumentation.

Customer benefits of the Pilot Dryer with 10, 30 and 50 liter nominal volume:
- Easy “plug and use” installation
- Ideal for scale-up
- Easy to operate
- CIP cleaning

<table>
<thead>
<tr>
<th>Standard specification:</th>
<th>Standard configuration:</th>
<th>Optionen:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter area</td>
<td>In accordance with PED 97/23/EC or/and ASME</td>
<td>- Multilayer filter elements</td>
</tr>
<tr>
<td>0.03 – 0.2 m²</td>
<td>cGMP and FDA guide-lines</td>
<td>- PLC based controls</td>
</tr>
<tr>
<td>Usable slurry volume</td>
<td>ATEX Group II 2 G/D (Zone 1/21) environments</td>
<td>- Other special versions available on request</td>
</tr>
<tr>
<td>0.6 – 80 liter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usable cake volume</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.2 – 25 liter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agitator rotation speed</td>
<td>Suitable for use as a vacuum dryer, filter dryer or agitated nutsche filter</td>
<td></td>
</tr>
<tr>
<td>15 – 70 min⁻¹</td>
<td>Shaft sealing with stuffing box</td>
<td></td>
</tr>
<tr>
<td>Agitator drive</td>
<td>Unit mounted on wheeled trolley</td>
<td></td>
</tr>
<tr>
<td>1.1 – 4.0 kW</td>
<td>Explosion proof control panel (Ex-d)</td>
<td></td>
</tr>
<tr>
<td>Agitator stroke</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 – 300 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–1 – 2 barg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working temperature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–10 – +135°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surfaces in contact with product</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ra 0.4 μm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pilot Units
Pressofiltro® PF 5 – PF 500

For processes in pilot plants and small scale production, the Pharmadry® has been designed. It can easily be moved from one place to another and is fully equipped with the necessary instrumentation.

Customer benefits of the Pilot Filter with filter area from 0.03–0.7 m²:
- Mobile and compact design
- Easy “plug and use” installation
- Ideal for scale-up
- Easy to operate
- CIP cleaning

Standard specification:
- Filter area: 0.03–0.7 m²
- Internal diameter: 200–955 mm
- Usable slurry volume: 8–640 liter
- Usable cake volume: 3–210 liter
- Bottom opening stroke: 120–500 mm
- Heated area: 0.0–1.04 m²
- Agitator RPM: 10–100
- Agitator drive: 0.75–7.5 kW
- Working pressure: –1 – 4 barü
- Working temperature: –10 – +150°C

Standard specification for pilot units:
- Calculation, design and manufacture in accordance with PED 97/23/EC or/and ASME pressure vessel code, Section VIII with U-Stamp as well as in compliance with cGMP and FDA guidelines.
- EC type examination certificate 03ATEX0246X per the 94/9/EC directive or with electrical components UL approved for operation in a Class I, Division I or 2, Groups C & D environment.
- Double mechanical seals, externally interchangeable, dry running contacting or non contacting lift-off type seals as well as liquid lubricated seals.
- Vessel base column mounted for excellent access to the filter plate or dryer base.

Options:
- Vessel base column mounted for excellent access to the filter plate or dryer base
- Skid mounted vessel or vessel mounted on a support column
- Supplemental microwave heating to reduce time required for drying
- Aseptic versions, heel removal systems, contained discharge (Glove Box), DQ, IQ, OQ qualification
- PLC controls, autonomous or slaved to DCS, MCC
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