



# COMBER

Drying and Filtration Technology

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Centro Direzionale Colleoni  
Agrate Brianza (Milan)

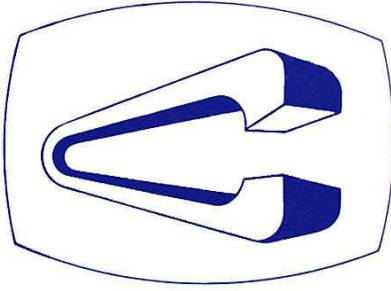
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# Pressofiltro®

## Agitated Nutsche Filter Filter Dryer





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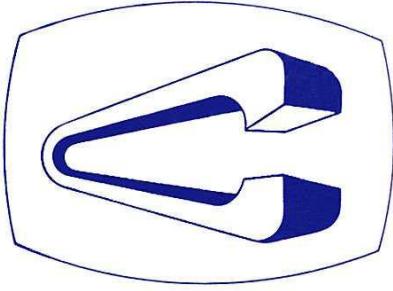
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## Pressofiltro® Agitated Nutsche Filter - Dryer



### Chemical design Pressofiltro® Nutsche filter - dryers

- Calculation, design and manufacture in accordance with the **Pressure Equipment Directive (PED) 97/23/EC** and/or the **ASME** pressure vessel code, Section VIII, with **U-Stamp**.
- Shaft seal with externally accessible stuffing box, optionally double mechanical seals, dry running contacting or non contacting lift-off type seals as well as liquid lubricated seals.
- Closed design or with removable filter bottom using conventional clamps or bayonet locking system.
- Heated or unheated agitator, agitator with two or three arms, with simultaneous axial and radial agitator movements for efficient mixing and agitating as well as for the smoothing of the cake.
- Large heating area resulting in an outstanding heat transfer rate by heating the vessel walls, the vessel bottom as well as the agitator blades. Optional supplemental heating with **microwaves**.
- Good emptying characteristics due to narrow agitator to wall/bottom clearances and a unique agitator blade design.



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## Pressofiltro® Agitated Nutsche Filter - Dryer



Above left:

8 m<sup>2</sup> filter design for product discharge as a slurry. With multilayer filter plate segments, each segment with its own filtrate discharge with isolation valve and sight glass in between the common filtrate header. The individual filter plate segments are installed at a declining angle towards the vessel center, to provide improved drainage of the final product slurry towards the slurry discharge valve installed at the center of the filter bottom.

Above right:

The Nutsche filter shown is equipped with liquid lubricated double mechanical seal and bellows. Note the wash ring with nozzles to provide full coverage of the entire cake for washing.



Left:

8 m<sup>2</sup> Nutsche filter. To assure accurate vertical guiding of the agitator an extremely rigid 4 post agitator guide design is being used.

Below:

Detail of manhole with davit





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## Pressofiltro® Agitated Nutsche Filter Dryers

### Standard Features for Chemical Version:

- Calculation, design and manufacture to ASME U-Stamp or/and PED 97/23/EC standards.
- EC type examination certificate 03ATEX0246X per the 94/9/EC directive or with electrical components UL approved for operation in a Class 1, Division 1 or 2, Groups C & D environment.
- Shaft seal with stuffing box, externally accessible.
- Sample valve.
- Hydraulic prepiping, prewiring to terminal boxes.

### Options:

- Mechanical seal and bellows, double seal, dry running or liquid lubricated, externally accessible.
- Solids discharge valve with metal to metal seal.
- Openable vessel base, with conventional clamps or bayonet system.
- PLC controls, autonomous or slaved to DCS, MCC

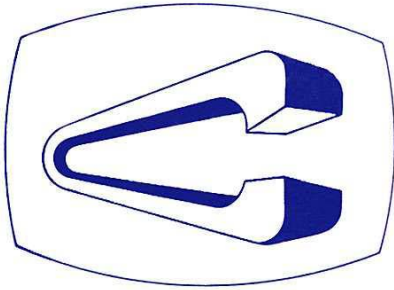
Technical Data: (medium sized units)	PF 2000	PF 2500	PF 3000	PF 4000	PF 5000	PF 6000
Filter area:	2.0	2.5	3.0	4.0	5.0	6.0 m <sup>2</sup>
Vessel internal diameter:	1600	1800	1960	2260	2535	2765 mm
Vessel cylindrical height:	1000	1000	1000	1000	1000	1000 mm
Usable slurry volume:	2000	2500	3000	4000	5000	6000 l
Cake volume:	1000	1250	1500	2000	2500	3000 l
Bottom opening stroke:	600	600	600	600	600	600 mm
Heated area, wetted:	2.92	3.34	3.68	4.35	5.00	5.54 m <sup>2</sup>
Discharge valve ID:	350	350	350	350	350	350 mm
Agitator RPM:	3 - 30	3 - 25	3 - 25	2 - 21	2 - 18	2 - 17 RPM
Agitator drive:	18.5	18.5	22	22	30	30 kW
Agitator vertical stroke:	500	500	500	500	500	500 mm
Agitator up/down speed:	30	30	30	20	20	20 mm/min
Dust filter elements:	2	3	3	4	4	4 pcs.
Filter surface:	0.8	1.2	1.2	1.6	1.6	1.6 m <sup>2</sup>
Nitrogen vessel volume:	6	12	12	12	12	12 l

Design pressure:  
 Design temperature:  
 Finish:

Vessel and jacket: Full vacuum / 4 barg  
 - 10 / + 151° C  
 Smoothly ground welds, pickled and passivated

Note: The technical data listed above are for the standard machine version. Machines with other pressure and temperature ratings and other specifications are available and can be quoted on request.

TI 0093 E - 02/06



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## Pressofiltro® Agitated Nutsche Filter Dryers

### Standard Features for Chemical Version:

- Calculation, design and manufacture to ASME U-Stamp or/and PED 97/23/EC standards.
- EC type examination certificate 03ATEX0246X per the 94/9/EC directive or with electrical components UL approved for operation in a Class 1, Division 1 or 2, Groups C & D environment.
- Shaft seal with stuffing box, externally accessible.
- Sample valve.
- Hydraulic prepiping, prewiring to terminal boxes.

### Options:

- Mechanical seal and bellows, double seal, dry running or liquid lubricated, externally accessible.
- Solids discharge valve with metal to metal seal.
- Openable vessel base, with conventional clamps or bayonet system.
- PLC controls, autonomous or slaved to DCS, MCC

Technical Data: (large units)	PF 7000	PF 8000	PF 9000	PF 10000	PF 12000	PF 14000
Filter area:	7.0	8.0	9.0	10.0	12.0	14.0 m <sup>2</sup>
Vessel internal diameter:	3000	3190	3390	3570	3910	4330 mm
Vessel cylindrical height:	1000	1000	1000	1000	1000	1000 mm
Usable slurry volume:	7000	8000	9000	10000	12000	14000 l
Cake volume:	3500	4000	4500	5000	6000	7000 l
Bottom opening stroke:	600	600	600	600	600	600 mm
Heated area, wetted:	6.13	6.61	7.13	7.61	8.54	9.43 m <sup>2</sup>
Discharge valve ID:	450	450	450	450	450	450 mm
Agitator RPM:	2 - 16	2 - 15	2 - 15	2 - 14	1 - 12	1 - 11 RPM
Agitator drive:	37	37	45	45	55	75 kW
Agitator vertical stroke:	500	500	500	500	500	500 mm
Agitator up/down speed:	15	15	10	10	10	10 mm/min
Dust filter elements:	5	5	6	7	9	10 pcs.
Filter surface:	2.0	2.0	2.4	2.8	3.6	4.0 m <sup>2</sup>
Nitrogen vessel volume:	24	24	24	24	24	24 l

Design pressure:

Vessel and jacket: Full vacuum / 4 barg

Design temperature:

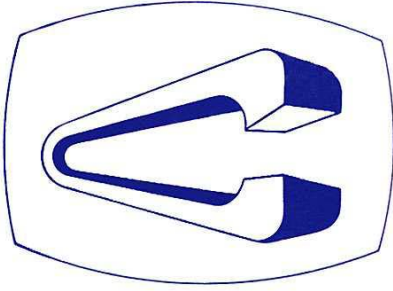
- 10 / + 151° C

Finish:

Smoothly ground welds, pickled and passivated

Note: The technical data listed above are for the standard machine version. Machines with other pressure and temperature ratings and other specifications are available and can be quoted on request.

TI 0094 E - 02/06



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## Pressofiltro® PF 8000 Agitated Nutsche Filter



Pressofiltro® PF 8000 agitated nutsche filter with 8 m<sup>2</sup> filter area, shaft sealing with double mechanical seal and bellows. With multilayer filter plate, divided into 10 filter plate segments to permit their installation and removal through the manhole. Each segment is provided with its own filtrate drain, isolation valve and sight glass, discharging to a common manifold. This permits to isolate individual sections should a breakthrough occur.

TI 0205 E – 10/06