COMBER
Drying and Filtration Technology

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Centro Direzionale Colleoni
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Containment - Systems

Active or Passive to 50 ng/m³ TWA

TI 0230 E - 05/08

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Pressofiltro® Containment Devices

Containment devices (Glove boxes) allow for contained sampling, product discharge and pack-off into lined drums or other containers, heel removal for total product recovery as well as filter cloth disposal while fully protecting the operating personnel and at the same time preventing contamination of the product. The isolator is installed on the filter dryer using an adaptor flange around a discharge plug.

Depending on the degree of containment specified, passive or active, single chamber or multiple chamber isolators are required.

Passive isolators, used for less demanding containment requirements, are operated under ambient pressure and are vented to the exterior using HEPA filters.

Active isolators operate under a slight vacuum to prevent powder or gas exiting the containment. Air is extracted from the interior using a fan and double HEPA filters, with air or nitrogen purging through an inlet HEPA filter. The isolator interior pressure is monitored, the extraction rate is raised if a pressure drop indicates containment breach e.g. by a damaged glove. The HEPA exhaust filter differential pressure is also monitored to alarm the onset of filter blockage.

From the isolator product is discharged through a bag out port, continuous liner, active valve etc. into drums or other types of containers.

Side bag in / bag out ports or side RTP's are provided to move items such as sample bottles, tools, etc. in and out of the isolator.

A wash gun permits cleaning the isolator interior, CIP spray balls may be installed additionally. Other accessories include a rake for heel removal, a glove port barrier to prevent the operator from reaching into the unit unless it is safe to do so, hinged front doors, interior lighting, etc.

All filter dryer and isolator functions are monitored and interlocked to assure the safe function and operation of the equipment.

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Pressofiltro® Containment Devices

Single chamber passive isolator for sampling, product discharge, pack-off and heel removal installed on a Pressofiltro® PF 200 with 0.32 m² filtration area.

With open glove port barrier, opened front door and discharge plug of the filterdryer open.

For pack-off this isolator is equipped with a vented barrel adaptor with inflatable seal and a manually operated butterfly valve. A 105 mm RTP is installed to move sample bottles in and out of the isolator. Separate HEPA filters are installed for the venting of the isolator and the venting of the barrel.

Single chamber active isolator for sampling, product discharge, pack-off, heel removal and filter cloth disposal installed on a Pressofiltro® PF 100 with 0.20 m² filtration area.

The 270 mm side RTP permits moving sample bottles in and out of the isolator as well as to dispose of the used filter cloth. Pressure gauges permit monitoring chamber pressure and the differential pressure across the HEPA filters.

A separate control panel contains the required controls and indicators for the operation and the monitoring of the isolator.

Tools required such as the handle to operate open / close the filter dryer discharge plug, the rake for the heel removal, the WIP wash gun etc. are stored in custom designed racks within the isolator chamber.

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Pressofiltro® Containment Devices

Right, single chamber active isolator for sampling and heel removal installed on a Pressofiltro® PF 500 with 0.70 m² filtration area.

Product is discharged through the filter dryer discharge valve on the vessel side opposite from the isolator. Initially, most of the product is discharged using the agitator of the filter dryer. Remaining heel is then pushed towards the discharge valve using a rake with the agitator in its raised position. The heel push operation is performed with the operator protected by the isolator.

Below left, single chamber passive isolators for sampling, product discharge, pack-off and heel removal installed on Pressofiltro® PF 750 filterdryers with 0.85 m² filtration area.

Below right, single chamber passive isolator for sampling, product discharge, pack-off and heel removal installed on a Pressofiltro® PF 2000 with 2.0 m² filtration area.

Isolators are increasingly also used on larger filter dryer units for product discharge and pack-off in a contained environment.

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Pressofiltro® Containment Devices

Multiple chamber active isolators are typically employed for the most stringent containment requirements. Sampling, product discharge and pack-off, heel removal and filter cloth disposal are all performed within the isolator and thus in total containment. Pack-off is typically using continuous liner, mills or/and weigh scales are often installed within the isolator chamber as well.

Left and centre, two designs of double chamber active isolators. The right shows an model (mock-up) for ergonomic trials of the isolator in the centre.

The left shows a special design of a two chamber active isolator installed on a Pressofiltro® PF 100 with 0.2 m² filtration area, with the lower isolator chamber detachable.

Detaching the lower isolator chamber reduces the total height of the filter dryer to permit transport to another location with height restrictions by existing building doors.

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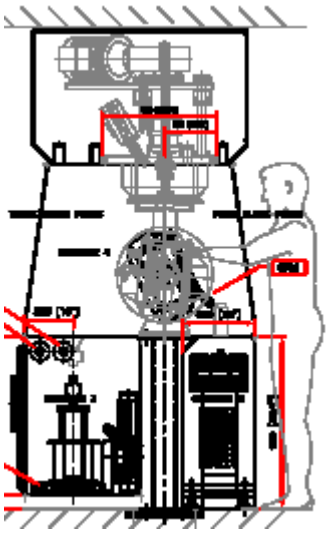
Pressofiltro® PF 20 Filter Dryer



Left: Isolator front Upper right: Filter before installation into Isolator Lower right: Side view

Pressofiltro® PF 20, installed in a multiple chamber isolator. Separate chambers are available within the isolator for a reactor, solvent containers, filterdryer, pack-off and discharge. The upper and lower sections of the filterdryer vessel are installed within the isolator. The lower filterdryer vessel section can be tilted for emptying and for cleaning.