PMI

# PMI TECHNOLOGICAL SOLUTIONS FOR PALM OIL & OLEOCHEMICAL INDUSTRY PROCESSES

## OUR INNOVATIVE AND CUSTOMIZED FILTERS HAVE BEEN SUCCESSFULLY UTILIZED IN AN EXTENSIVE RANGE OF APPLICATIONS INCLUDING THE EDIBLE OIL AND OLEOCHEMICAL INDUSTRIES.

### PALM OIL REFINERY

| | |
|---|---|
| Crude Oil Filtration | - Vertical Leaf Filter |
| Bleached Oil Filtration | - Vertical Leaf Filter |
| | - Pulse Tube Filter |
| Winterized Oil Filtration | - Membrane Filter Press |
| | - Horizontal Pressure Leaf Filter |
| Hydrogenated Oil Filtration | - Vertical Leaf Filter |
| | - Pulse Tube Filter |
| | - Cricket Filter |
| Heel Filtration | - Pulse Tube Filter |
| | - Silumin Plate Filter Press |
| Degumming & Neutralization | - Separator |
| Polishing Filters | - Cartridge Filter |
| | - Single/Multi Bag Filter |

### PALM OIL FRACTIONATION

| | |
|---|---|
| Olein & Stearin Separation | - Membrane Filter Press |
| | - Belt Filter |

### SPECIALTY FATS

| | |
|---|---|
| Oleic/Stearic Acid | - Membrane Filter Press |
| Solvent-extracted Oils | - Gastight Vacuum Belt Filters |

### OLEOCHEMICALS

| | |
|---|---|
| Nickel Catalyst Filtration | - Vertical Leaf Filter |
| | - Pulse Tube Filter |
| | - Silumin Plate Filter Press |
| Glycerin Filtration | - Recessed Chamber Filter Press |

### BIO-DIESEL

| | |
|---|---|
| Pre-treatment | - Vertical Leaf Filter |
| | - Pulse Tube Filter |
| Winterization | - Horizontal Filter Press |
| Methyl Ester/Water Separation | - High Speed Centrifuge |

## PMI is a specialist provider of technological solutions in:

PMI semi and fully-automatic control filtration systems optimize and visualize the entire process, providing expert technical support to even the simplest filter model. We provide comprehensive technical sales, testing and maintenance services, assist with plant design and ensure optimum filtration efficiency and reliability. Our diverse range of filter presses are used worldwide for a variety of applications, including the palm oil industry.

# FILTRATION TECHNOLOGY

PMI agitators have a wide range of applications and are a vital component in industrial processes. Designed to provide effective solutions to fulfill different needs, our customized equipment offer the highest levels of technological know-how and engineering experience.

# MIXING TECHNOLOGY

# STEEL WORKS

Manufactured in accordance with the strictest of international industry standards, our products have been delivered for use worldwide in various industries, from food processing to engineering-related and recycling industries.

**Together with our international partners, we are one of the largest suppliers of filtration equipment for the palm oil and oleochemical industries worldwide.**

PMI produces membrane filter presses, recessed plate filter presses, plate and frame filter presses for a wide range of applications, including those in the chemical, food, mining and waste water industries.

# OUR MEMBRANE FILTER PRESSES

*MFP under construction of 1500 X 2000mm plate size and 6 bar squeeze pressure for olein stearin filtration. Fully-automated with Human-Machine Interface system.*

*MFP 1500 X 1500mm plate size, 16 bar squeezing pressure for fractionation process in China.*

*MFP 1500 X 1500mm plate size, 30bar squeeze pressure under construction for palm bio-diesel.*

*Our hydraulic system is designed for efficient and easy maintenance.*

We are the regional manufacturer and supplier of Vertical Leaf, Retractable Bundle, Pulse Tube and Multiple Bag filters, suitable for Edible Oil and Oleochemical industry processes in:

- **Crude Oil Filtration**
- **Bleach Oil Filtration**
- **Winterized Oil Filtration**
- **Nickel Catalyst Filtration**
- **Pre and Post Treatment**
- **Polishing Filtration**

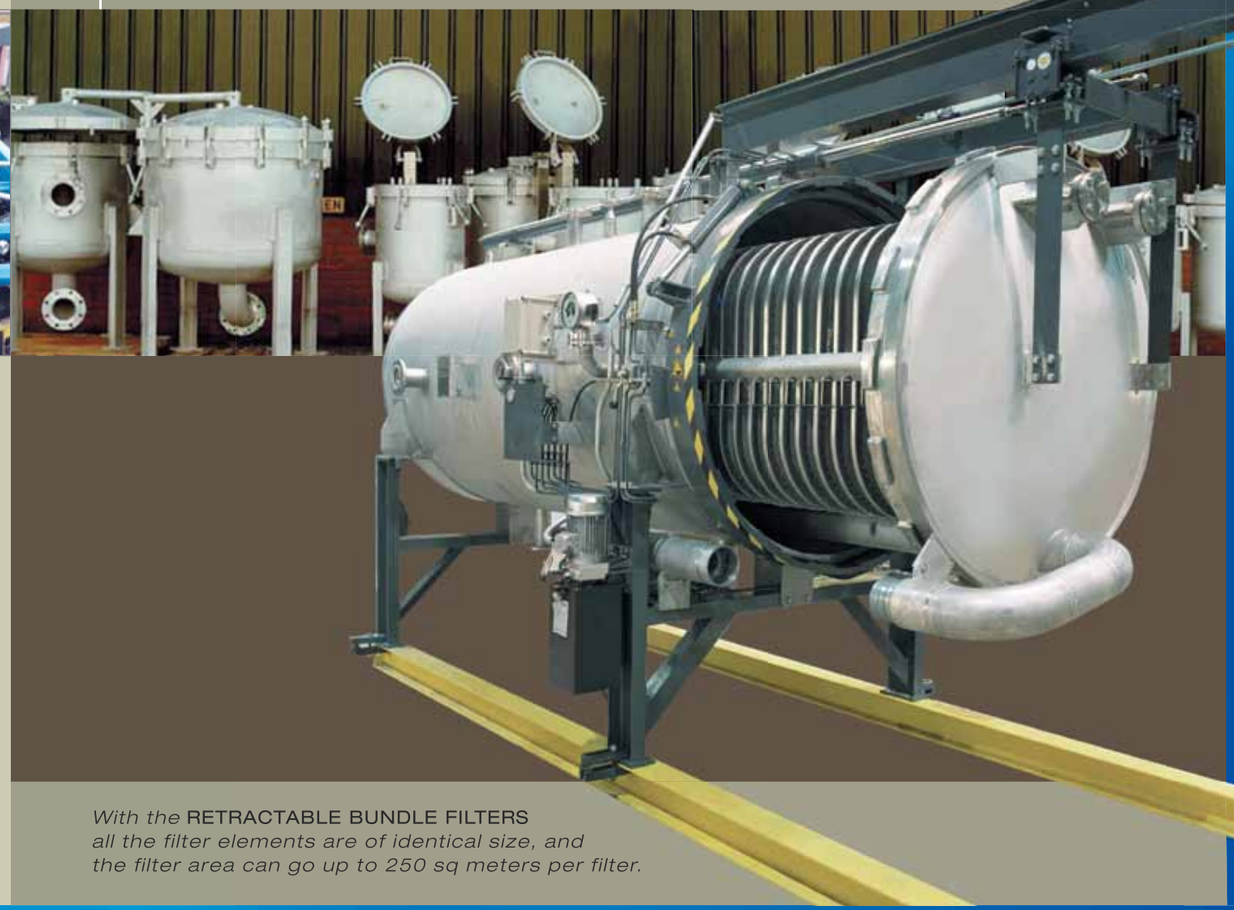
With our experience, we are continuously striving to develop new and innovative applications not only for the Edible Oil and Oleochemical industries, but for other industries as well.

## VERTICAL/HORIZONTAL
# PRESSURE FILTERS

*Our* **VERTICAL LEAF FILTERS** *are widely used in the Edible Oil and Oleochemical industry. The filter elements comprise a stainless steel screen with a top screen of either 24 X 110 Dutch Weave, PZ 80S Panzer Weave or KPZ 55 Köper Panzer Weaver, depending on the application. Generally, our Vertical Leaf Filters have up to 125 sq meters of filter area per filter.*

**PULSE TUBE FILTERS** *use seamless filter sleeves covering the main stainless steel filter tubes. Predominantly used for heel filtration, nickel catalyst filtration and as an oil polishing filter operating on a continuous basis. The filter area can be up to 100 sq meters per filter, either in carbon steel or stainless steel vessels.*

**MULTIPLE BAG FILTERS** *are usually used for the polishing process, utilizing replaceable filter bags. We have both single bag models as well as multiple bag designs. An alternative would be our Pulse Tube Filter or cartridge filter, for the polishing process.*



*With the* RETRACTABLE BUNDLE FILTERS *all the filter elements are of identical size, and the filter area can go up to 250 sq meters per filter.*


*Testing of 2m X 2m presses in our facility.*

# QUICK DISCHARGE FILTERS (QDF)

**Quick Discharge Filters (QDF) can be used in many applications, including the Edible Oil industries, Mining, Chemicals, Food and many others where its features may be utilized to great advantage.**

Key benefits of the QDF include:

- *Quick discharging of the filter cakes, typically in the range of 60 to 100 chambers dependent on the opening between plates, allow the filter cake to discharge efficiently.*
- *Multiple short hydraulic cylinders (pressure cylinders) facilitate easy maintenance.*
- *The multi closing cylinders allow a more even closing pressure to be achieved, especially when large plates are utilized.*
- *The QDF Skeleton can be adapted for various applications and is easily configured to accommodate various plate designs. If the Polypropylene (PP) plates are not utilized for filtration, they may be used for heat transfer applications as well. PMI's current program delivers equipment that is suitable for PP plate sizes of 2m X 2m and 2m X 3m, and can accommodate lengths in excess of 220 chambers.*

*Assembling of 2m X 3m presses.*

*Several 2m X 2m presses during the assembly stage at our facility.*

*Delivery of the 2m X 3m press skeleton to our customer's factory.*

PMI agitators are widely-used in the general industry for blending, dispersion, suspension and where heat transfer efficiency either for heating or cooling is required.

# OUR AGITATORS

*Side entry agitators widely used in edible oil tank farms, bulking installations and other tank farms as well*

*Different impellers for different applications: hydrogenation • bleached oil • degumming • neutralization • storage tanks •*

*PMI agitators in a palm oil refinery can be installed either in a pressurized or non-pressurized tank*



*Side Mounted agitator mounting positions for blending*

*Top Mounted agitators for cocoa liquor production*

# STEEL WORKS

Our expertise in this field includes designing, fabricating and installing steel works for pressure vessels, tanks, piping, specialized food processing equipment and a range of engineering-related industries – including the cocoa industry, oil & gas, power stations, waste water treatment plants, the food industry and used oil recycling plants.

OUR PRODUCT RANGE INCLUDES:

- PressureVessels
- Tanks
- Heat Exchanges
- Reactors
- Columns
- Silos
- Filters
- Conveyors and Hoppers
- Reformer Ovens
- Platforms
- Skids
- Ducting
- Ljunsgstrom Gas Air Preheater
- Regenerative Thermal Oxidizer
- Cor-Pak Thermal Oxidizer
- Site Installation
- Piping works
- Project Management

*Our excellent track record and innovative skills in steel works have attracted many to our growing list of international clients. We continue to supply to established international engineering companies in Thailand, Indonesia, Singapore, China, Australia and also to Europe.*

# STEEL WORKS

ONE OF OUR FACILITIES

*Our pressure vessels are manufactured with JKKP approval when required.*

*Our stringent quality checks ensure our quality delivery.*

*Our pressure vessel designs are in accordance with the ASME Code and construction materials can be Carbon Steel, SS304, SS316 and Duplex materials.*

PMI-Technology Sdn Bhd

YOUR SOLUTION PARTNER FOR SOLID/LIQUID FILTRATION TECHNOLOGY

# Filter Presses

*One of our manufacturing plants in Ipoh, Malaysia*

PMI was established in Malaysia in 1986, engaged in the manufacturing and distribution of filter presses primarily for the edible oil industry. As the company expanded, PMI provided technical support to customers in the region for palm oil processing as well as in other applications such as in environmental, food industry, chemicals, industrial minerals, mining and a wide range of other applications.

In the past few decades, the experience and expertise of PMI's management, engineers and skilled staff has grown the company's business significantly.

Pressure leaf filters were added to PMI's product range and the company further diversified into other industrial equipment used in the processing industry, including agitators and various industrial steel works such as pressure vessels and tanks.

Today, PMI has effectively established itself as a credible and reputable player in the solid liquid filtration business, specialising in three particular areas: Filtration Technology, Mixing Technology and Steel Works.

As a leading global manufacturer of filtration equipment, PMI supplies its worldwide clientele with top-quality innovative products and services. Together with its customers, PMI has successfully developed and provided efficient solutions to enhance their business operations, and provide effective solutions to increase productivity and efficiency.

With decades of sound experience behind us, we are well able to provide our clients with the best possible solutions in dealing with a wide range of filtration requirements as well as tailoring specific solutions to suit different applications.

The Filter Presses that we offer include:  Plate & Frame Filter Press,  Recessed Chamber Filter Press and Membrane Filter Press - and our latest innovation, the Quick Discharge Filter (QDF) design, which allows for extremely quick opening of the filter elements.

# PMI FILTER PRESSES

PMI Filter Presses are pressure filters for solid-liquid separation, and conform to international standards.

They consist of modular components, and the basic structure is provided with all the elements required for the fitting of any accessories. Thus, for each individual installation, the best combination can be chosen. The filter can also be adapted at any time to changed service conditions.

Our range comprises industrial sizes of 500, 630, 800, 1000, 1200, 1500, 1500/2000 and 2000 mm square plate size. Depending on the plate size and the required filter volume, the filter skeletons have round side bars or sectional. Even with a greater number of chambers, the skeletons are designed in such a way that the foundations are not subject to any transverse forces.

The Filter Presses are equipped with automatically-controlled hydraulic valves, which make it possible to use them in processes which are controlled by a process computer. Depending on the application, the valves can be activated pneumatically, electrically, hydraulically and/or manually. We also offer mechanical, manually-operated hydraulic or electro-hydraulic closing devices for different degrees of mechanisation.

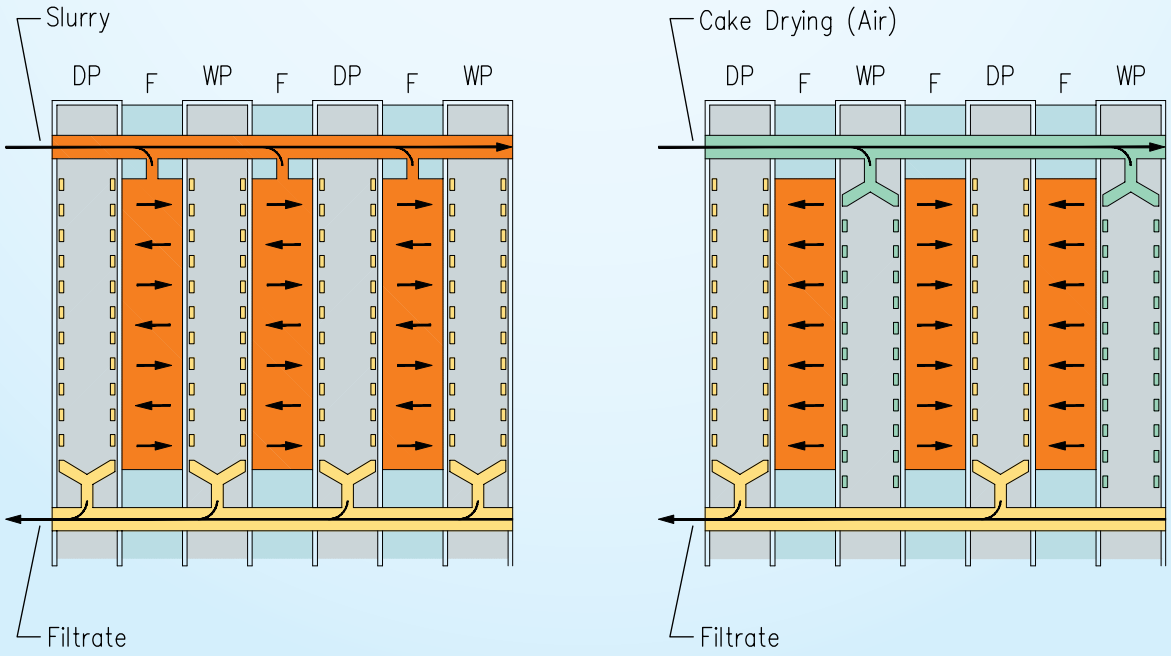
# PLATE AND FRAME FILTER PRESSES

PMI has had years of experience manufacturing the Plate and Frame Filter Presses with polypropylene plates. With the knowledge gained, we have developed our own cast silumin plates with or without cast-in heating or cooling coils.

The Plate and Frame Filter Presses can be adapted to widely differing practical applications by varying the size, the frame thickness and the filter volume. Filter elements are either made of paper, cardboard or technical textile. These elements are hung over the filter plates to enable quick-changing of the filter elements.

Our Plate and Frame Filter Presses are also available in explosion-proof design.

## Plate and Frame – Closed Design



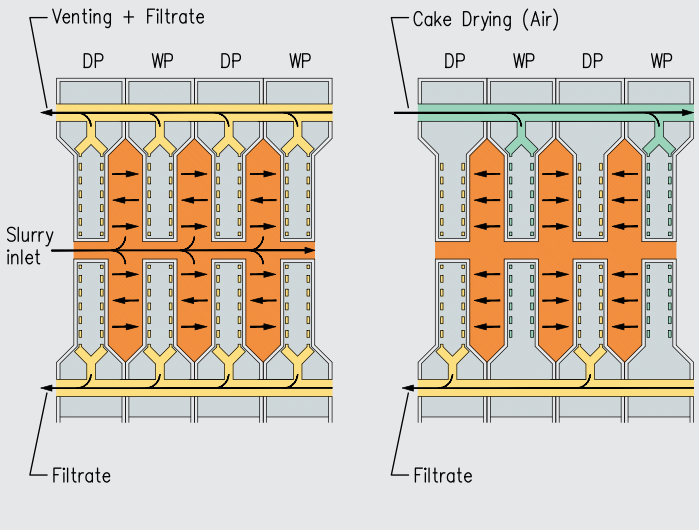
# RECESSED PLATE FILTER PRESSES

PMI Recessed Plate Filter Presses can be used in a wide range of applications due to the numerous variations in the set of filter plates. A great number of combinations are possible depending on size, chamber depth, filtration area and filter volume, resulting in optimum filter lay-outs for any application.

The installation of our plate shifting system, together with our automatic filter cloth cleaning system is an important feature for the use of Recessed Plate Filter Presses in automated process operations.

Either over-hung filter cloths which are fixed on the slurry inlet, or put-through cloths are used.

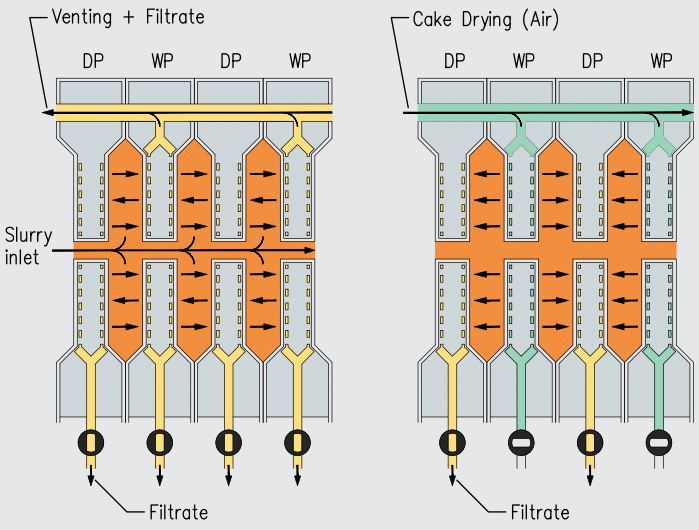
## Recessed plate Filter – Closed Design




FILTRATION

CAKE DRYING

## Recessed plate Filter – Open Design




FILTRATION

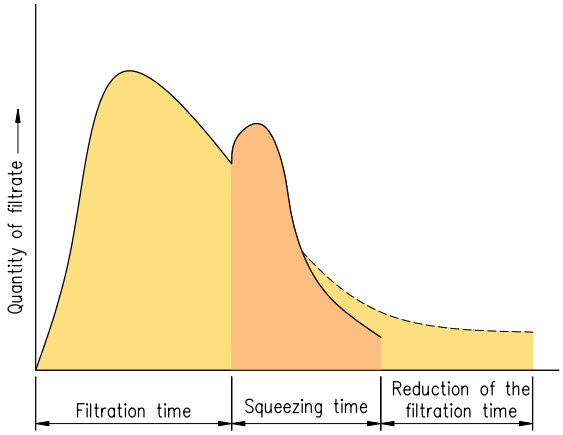
CAKE DRYING

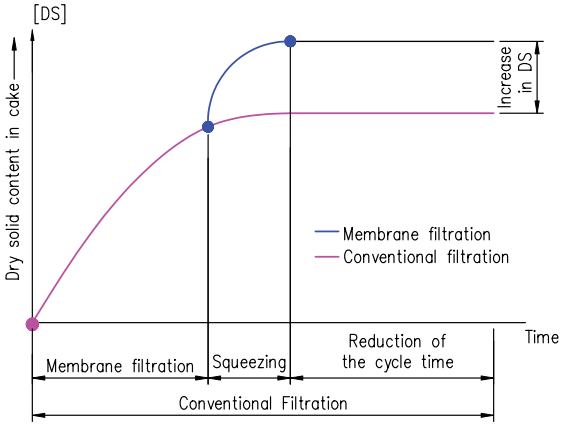
# MEMBRANE FILTER PRESS

PMI Membrane Filter Presses have been developed from the technology of Recessed Plate Filter Presses. The plates are provided with a flexible filter face on both sides made of elastomer or polymer.

The dewatering of the filter cake is achieved by initiating these filter faces. The pressure medium used is either compressed air or liquid.

## Feeding and Filtration Characteristics Compared with Conventional Filter Presses



Due to the squeezing effect, our Membrane Filter Presses offer the following additional advantages:

## REDUCTION in:

- filtration, washing and discharge times
- wash liquid consumption, due to a more homogenous filter cake structure
- the residual moisture of the filter cake

## IMPROVEMENT in:

- flexibility for varying product compositions
- product purity (filter cake) by reduction of the percentage of solubles
- cake release and automatic cake discharge out of the filter press
- uniformity of dewatering and washing of the filter cake

## SAVINGS in:

- time and cost for downstream thermal drying processes
- cost for transport and storage by reduction of the cake volume and increase of the solids concentration
- use of compressed air consumption as blow drying is minimised
- use of low pressure feeding pumps instead of more expensive high pressure pumps

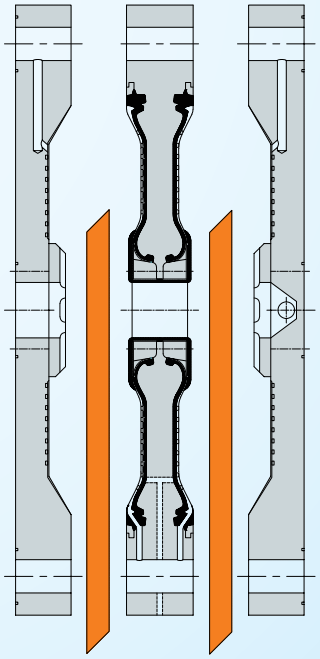
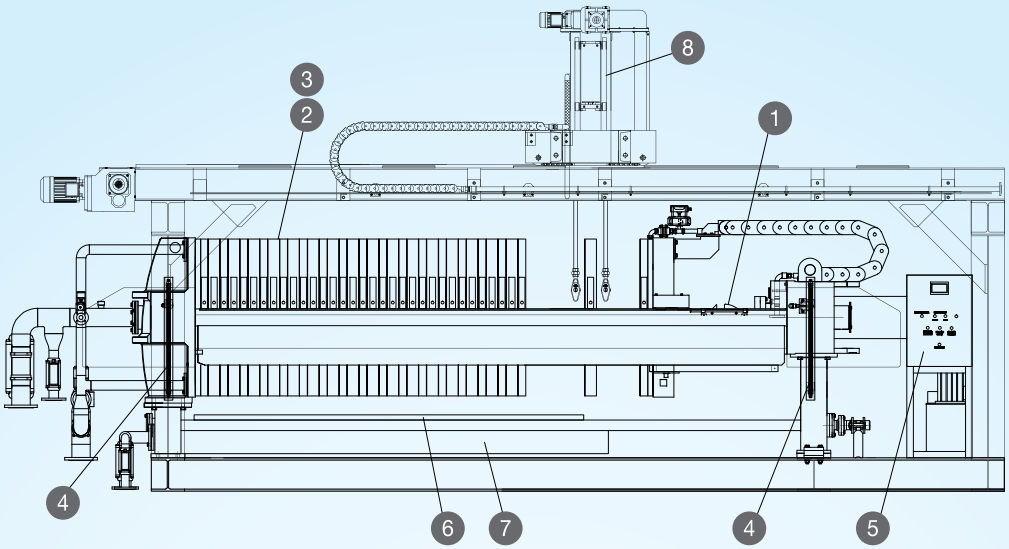


*Illustration of the cake discharge step*




## ACCESSORIES AND OPTIONAL EQUIPMENT

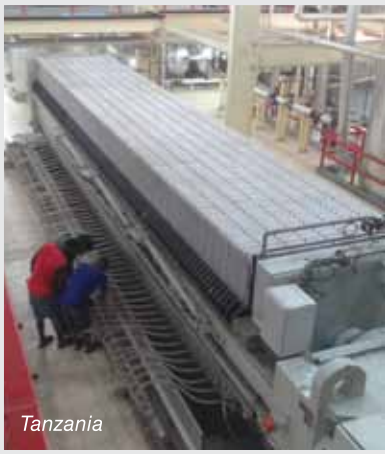
| | |
|---|---|
| 1 **Plate Shifting Device** | Hydro-mechanical shifting of the filter elements by the pair of articulated carriers, which are fixed to two endless chains and which grip the last filter element, displace it towards those already shifted and automatically release it. An interlocking system ensures that the filter elements are shifted one after the other. Alternatively, the Snatch and Latch plate opening system can be adapted to the filter to open the plates in a continuous sequence for non-sticky filter cakes. |
| 2 **Set of Filter Plates** | The parallel recessed filter plates or plates and frames respectively are available in a wide range of materials. The filter plates are designed as pressure or wash plates, with open or closed filtrate discharge. Membrane recessed filter plates are used whenever a lower residual moisture and good washing of the filter cake are required. |
| 3 **Filter Cloths** | Filter cloths are available as simple cloths, straddle cloths, put-through cloths and overhung cloths made of synthetic fibre materials such as polypropylene, polyester, polyamide and a wide range of other synthetic materials. |
| 4 **Safety Light Curtains** | Added to the standard lanyard switch, this automatic device increases the safety, as movement of the plates during opening, closing and plate shifting is stopped immediately the light curtain is interrupted. |
| 5 **Electric Control** | The control of the filter press, the process valves and other accessory devices is alternatively ensured by programmable logic electronic controls, permanently linked electronic controls or relay controls. |
| 6 **Auto Drip Tray** | The slightly inclined drip plates are arranged below the set of plates and guide filtrate leakages into the collecting chute. For cake discharge, they are swiveled downwards and thus form an opening for the cakes which fall out of the chambers. During opening and closing of the filter press, the swivel plates are moved automatically by means of a hydraulic system. |
| 7 **Filtrate Collecting Chute** | This chute serves to collect and guide the filtrate which comes out of individual outlets, when it is necessary to make a visual inspection of the filtrate to check clarity. Combined with swivel plates, the filtrate collecting chute also serves to collect filtrate leakages. |
| 8 **Hydro-Mechanical Filter Cloth Cleaning** | Fully automatic with pressure water unit and spray device, this is integrated into the filter control. The spray pipes are fed by a high-pressure pump and can be shifted vertically and laterally. |

# PMI FILTER PRESSES UNDER PRODUCTION


*PMI Plant 4 in Ipoh*

*Brake, Germany*

*Xiamen, China*



*Tanzania*

PMI develops and builds Filter Presses for customers all over the world.

# FILTER ELEMENTS

PMI Filter Presses are universal in application because of the numerous variations in the set of filter plates. These are made of a variety of materials – polypropylene, cast iron, cast silumin or other cast metal with cast-in heating or cooling coils, closed or open design, as wash and press plates with differing port arrangement, with or without stay bosses.



*Our trademark FILTEX cloths*

Generally, filter cloths are made of synthetic fibres such as polypropylene, polyester, polyamide, PBT and other synthetic materials. These filter cloths can also be made with anti-static properties. The common weaves are in plain, twill and sateen.

# VARIOUS FILTER PARTS

*Frontal piping in stainless steel*

*Continuous plate opening with straddle cloth*

*Hydraulically-operated automatic drip pan*

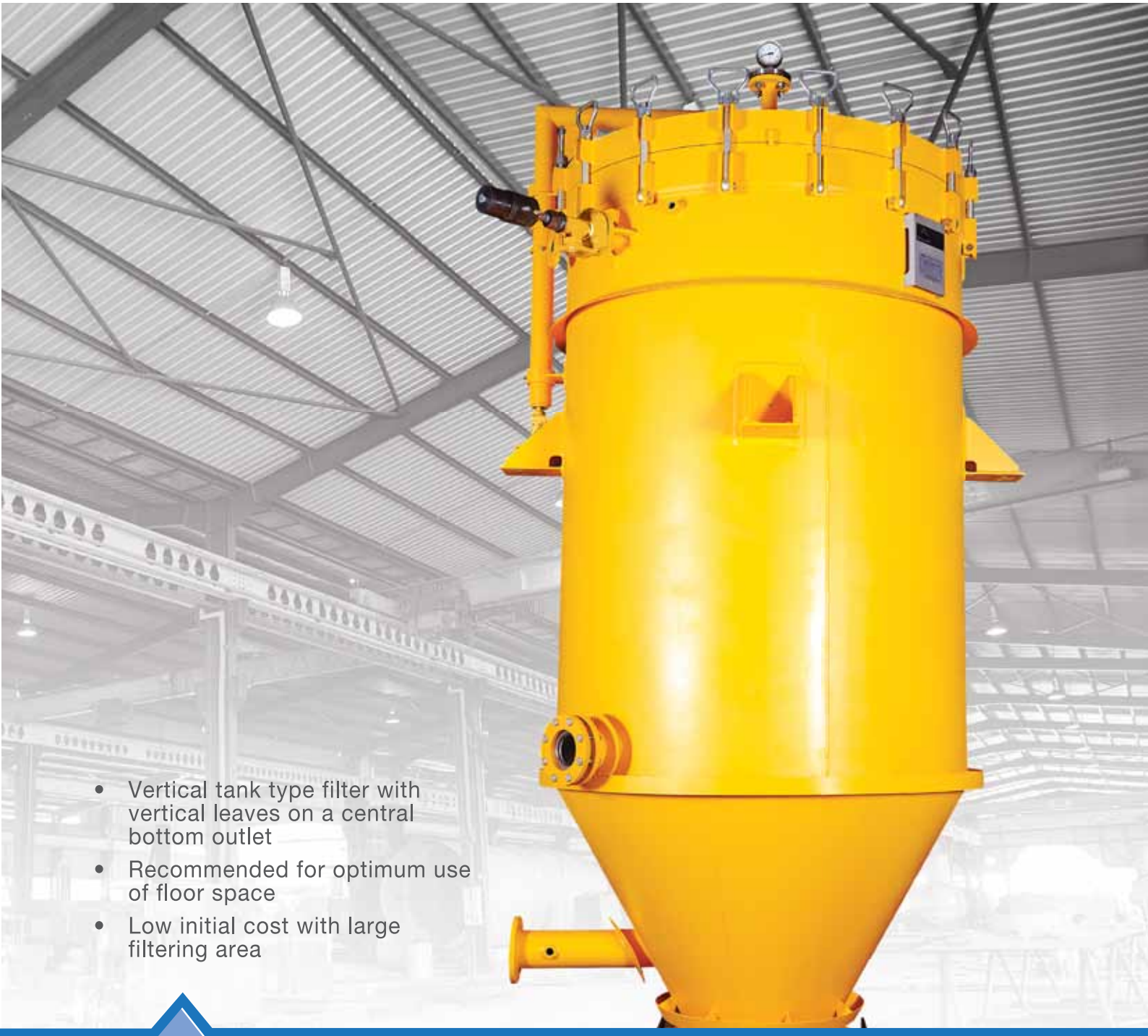
*Photo electric light curtains and lanyard switch*

*Filter cake chute and hopper*

*High pressure squeeze and filter cloth wash pump*

PMI-Technology Sdn Bhd
Company No. 568062-K

YOUR SOLUTION PARTNER FOR SOLID/LIQUID FILTRATION TECHNOLOGY



- Vertical tank type filter with vertical leaves on a central bottom outlet
- Recommended for optimum use of floor space
- Low initial cost with large filtering area

# Pressure Leaf Vertical Type

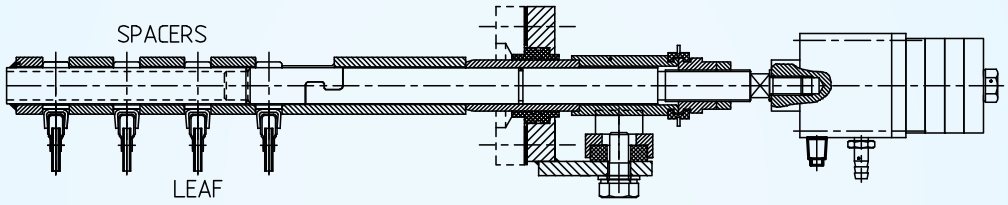
## PLV(D) / PLV(W) Filter

## PLV (D) – Dry Cake Discharge Filter

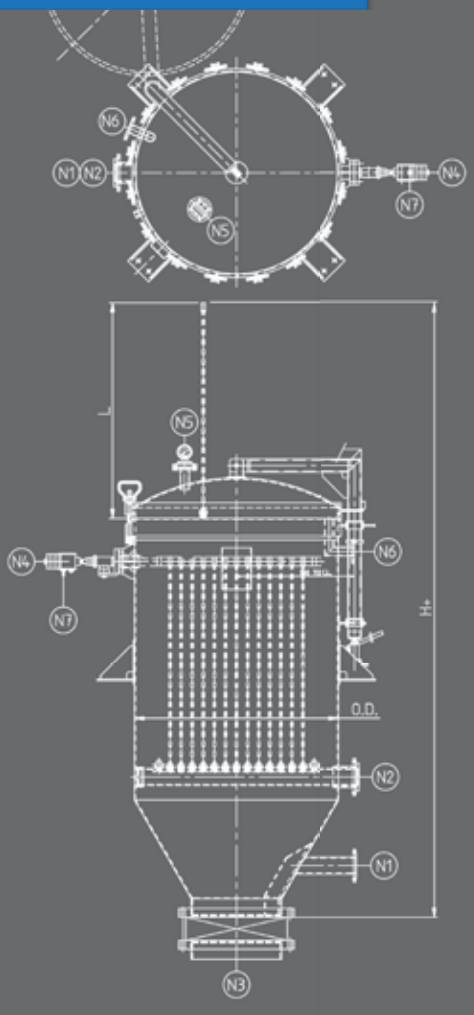
| Type PLV(D) | Filter Area ($m^2$) | Cake Volume (litre) | Number of Leaves | L=Leaf Height (mm) | Filter Volume (litre) | Leaf Pitch (mm) | Foot Print (mtr) | H+ (mtr) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|
| 780/8 | 8 | 175 | 9 | 920 | 800 | 70 | 1.75 x 1.09 | 3 | 650 |
| 900/8 | 8 | 175 | 7 | 920 | 1000 | 70 | 1.2 x 1.25 | 3.2 | 800 |
| 900/10 | 10 | 220 | 9 | 920 | 1000 | 70 | 1.2 x 1.25 | 3.2 | 800 |
| 900/12.5 | 12.5 | 275 | 11 | 920 | 1000 | 70 | 1.2 x 1.25 | 3.2 | 800 |
| 1100/15 | 15 | 330 | 9 | 1250 | 2000 | 70 | 2.4 x 1.7 | 4 | 1100 |
| 1100/17.5 | 17.5 | 385 | 9 | 1250 | 2000 | 70 | 2.4 x 1.7 | 4 | 1100 |
| 1100/20 | 20 | 440 | 11 | 1250 | 2000 | 70 | 2.4 x 1.7 | 4 | 1100 |
| 1225/23.5 | 23.5 | 520 | 11 | 1225 | 2500 | 75 | 2.2 x 2.6 | 4.2 | 1725 |
| 1225/25 | 25 | 550 | 11 | 1225 | 2500 | 75 | 2.2 x 2.6 | 4.2 | 1725 |
| 1225/27 | 27.5 | 590 | 13 | 1225 | 2500 | 75 | 2.2 x 2.6 | 4.2 | 1725 |
| 1225/30 | 30 | 660 | 15 | 1225 | 2500 | 75 | 2.2 x 2.6 | 4.2 | 1725 |
| 1380/30.5 | 30.5 | 670 | 11 | 1350 | 3600 | 75 | 2.9 x 2.10 | 4.5 | 1980 |
| 1380/35 | 35 | 770 | 13 | 1350 | 3600 | 75 | 2.9 x 2.10 | 4.5 | 1980 |
| 1380/38.5 | 38.5 | 850 | 15 | 1350 | 3600 | 75 | 2.9 x 2.10 | 4.5 | 1980 |
| 1500/42 | 42 | 920 | 13 | 1500 | 4500 | 75 | 3.1 x 2.3 | 4.9 | 2300 |
| 1500/46 | 46 | 1010 | 15 | 1500 | 4500 | 75 | 3.1 x 2.3 | 4.9 | 2300 |
| 1500/50 | 50 | 1100 | 17 | 1500 | 4500 | 75 | 3.1 x 2.3 | 4.9 | 2300 |
| 1500/60 | 60 | 1320 | 17 | 1650 | 4500 | 75 | 3.1 x 2.3 | 5.2 | 2500 |
| 1650/70 | 70 | 1590 | 16 | 1810 | 6300 | 75 | 3.8 x 2.65 | 5.5 | 3200 |
| 1650/78 | 78 | 1720 | 18 | 1810 | 6300 | 75 | 3.8 x 2.65 | 5.5 | 3200 |
| 1850/85 | 85 | 1870 | 18 | 1810 | 8200 | 75 | 3.45 x 3.9 | 5.7 | 4400 |
| 1850/100 | 100 | 2200 | 20 | 1810 | 8200 | 75 | 3.45 x 3.9 | 5.7 | 4400 |
| 2000/125 | 125 | 2750 | 24 | 1810 | 9400 | 75 | 4.5 x 3.25 | 5.8 | 4900 |

*Discharge opening fitted with butterfly valve*

## Vibrator Assembly – PLV (D)




## Tank Assembly Detail



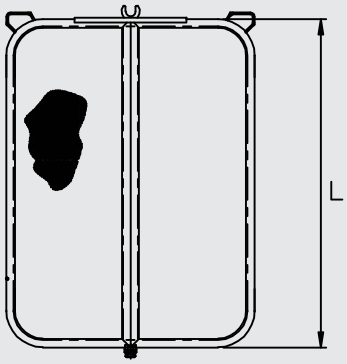

### Construction Materials:

**Housing:** Standard in Carbon Steel or Stainless Steel 304/304L, 316/316L, Duplex or SMO. In special cases, Carbon steel with lining, Rubber or Halar lined and Special Alloys upon request.

**Leaves:** Standard in 316L, 316S (NSCD/1.4539) or Duplex (1.4462). Full Polypropylene or other materials upon request.

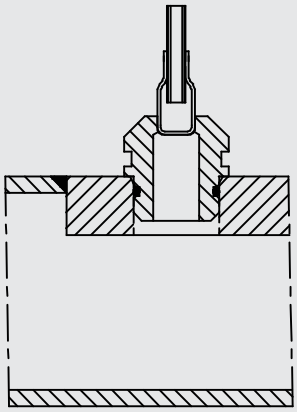
**Design in accordance with ASME code Section VIII Div.1 or other design codes upon request.**

## Leaf Detail



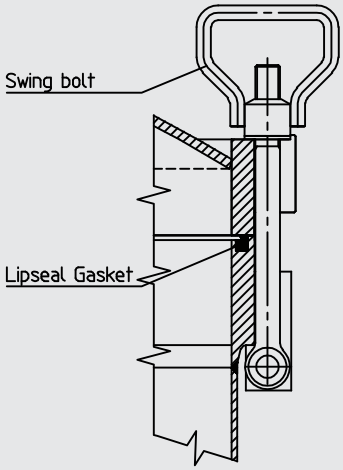

*Leaf detail*

## Filter Leaf Outlet Nozzle



*Filter Leaf outlet nozzle*

## Swingbolt-Handwheel Nut



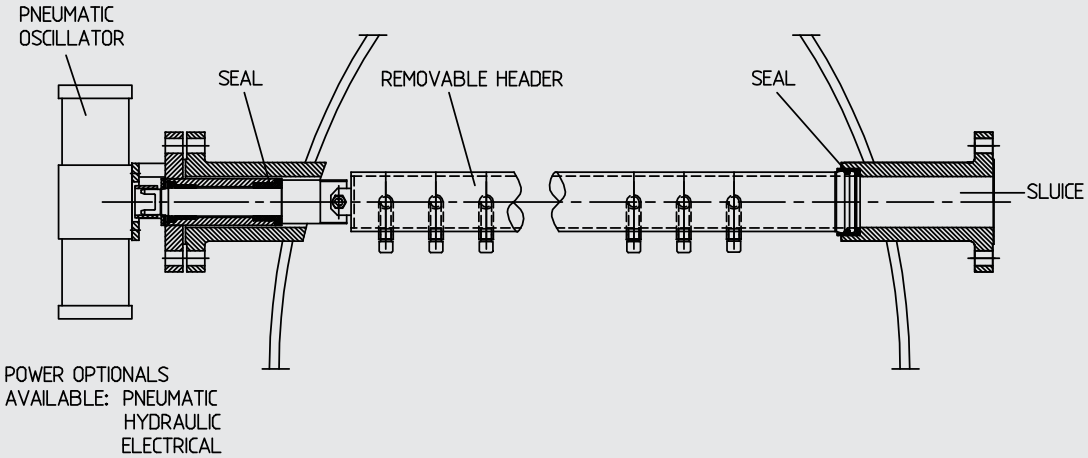

*Swingbolt-Handwheel Nut standard (wedge lock, bayonet type closure, or other options upon request.)*

## PLV (W) – Wet Cake Discharge Filter

| Type PLV(W) | Filter Area ($m^2$) | Cake Volume (litre) | Number of Leaves | L=Leaf Height (mm) | Filter Volume (litre) | Leaf Pitch (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|
| 500/3 | 3 | 75 | 5 | 920 | 350 | 70 | 400 |
| 780/5.5 | 5.5 | 137.5 | 9 | 920 | 790 | 70 | 680 |
| 780/7.5 | 7.5 | 187.5 | 7 | 920 | 790 | 70 | 680 |
| 900/10 | 10 | 250 | 9 | 920 | 1050 | 70 | 750 |
| 900/12.5 | 12.5 | 312.5 | 11 | 920 | 1050 | 70 | 750 |
| 1100/16 | 16 | 400 | 7 | 1250 | 2050 | 70 | 1150 |
| 1100/20 | 20 | 500 | 9 | 1250 | 2050 | 70 | 1150 |
| 1100/23 | 23 | 575 | 11 | 1250 | 2050 | 70 | 1150 |
| 1225/28 | 28 | 700 | 11 | 1250 | 2600 | 70 | 1300 |
| 1225/30 | 30 | 750 | 13 | 1250 | 2600 | 70 | 1300 |
| 1380/33 | 33 | 825 | 11 | 1250 | 3400 | 75 | 1450 |
| 1380/37 | 37 | 925 | 13 | 1350 | 3650 | 75 | 1550 |
| 1380/42 | 42 | 1050 | 15 | 1350 | 3650 | 75 | 1550 |
| 1380/50 | 50 | 1250 | 13 | 1500 | 3870 | 75 | 1600 |
| 1380/53 | 53 | 1325 | 15 | 1650 | 4100 | 75 | 1750 |
| 1500/55 | 55 | 1375 | 17 | 1500 | 4650 | 75 | 1900 |
| 1500/61 | 61 | 1525 | 17 | 1650 | 4900 | 75 | 2000 |
| 1650/70 | 70 | 1750 | 16 | 1810 | 5600 | 75 | 2200 |
| 1650/78 | 78 | 1950 | 18 | 1810 | 5600 | 75 | 2200 |
| 1850/100 | 100 | 2500 | 20 | 1810 | 6000 | 75 | 4000 |

## Oscillating Sluice Header – PLV (W)

*Oscillating sluice header – PLV (W). Filter tank equipped with Pressure gauge DN 50 flange; oscillator drive connection sluice header inlet DN 80*



PMI-Technology Sdn Bhd
Company No. 568062-K

YOUR SOLUTION PARTNER FOR SOLID/LIQUID FILTRATION TECHNOLOGY

- Fully retractable bundle
- Features for maximum convenience in operation and maintenance
- Large filtration area

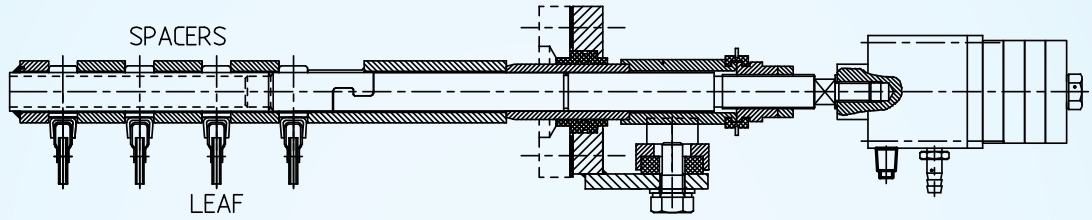
# Pressure Leaf Horizontal Type

## PLH(D) / PLH(W) Filter

## PLH (D) / PLH (W) – Dry or Wet Cake Discharge Filter

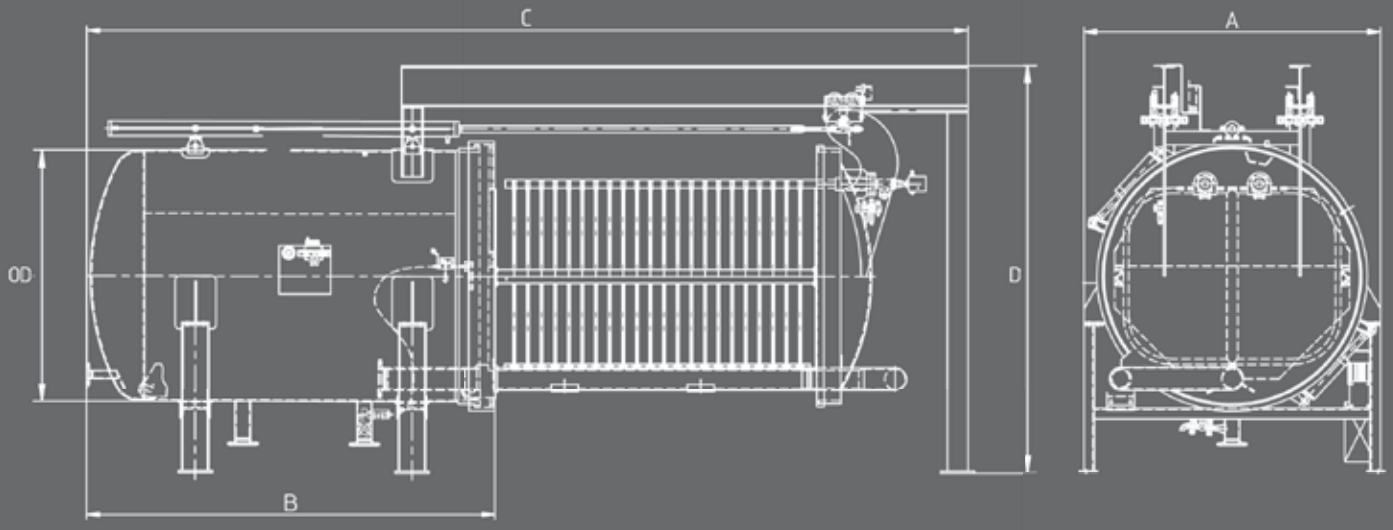
| Type PLH (D)/(W) | Shell OD (mm) | Filter Area ($m^2$) | Number of Leaves | Leaf Pitch (mm) | Filter Volume ($m^3$) | Weight (kg) | A (mm) | B (mm) | C (mm) | D (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 900/5.5/7 | 900 | 5.5 | 7 | 100 | 0.8 | 800 | 1150 | 1100 | 2550 | 1800 |
| 900/10/13 | 900 | 9.5 | 13 | 100 | 1.1 | 1100 | 1150 | 1700 | 3750 | 1800 |
| 1250/12/8 | 1250 | 12.5 | 8 | 100 | 1.3 | 1500 | 1500 | 1300 | 2800 | 2000 |
| 1250/15/10 | 1250 | 15 | 10 | 100 | 1.8 | 1700 | 1500 | 1500 | 3200 | 2000 |
| 1250/20/14 | 1250 | 20 | 14 | 100 | 2.3 | 1900 | 1500 | 1900 | 4000 | 2000 |
| 1250/25/17 | 1250 | 25 | 17 | 100 | 2.7 | 2050 | 1500 | 2200 | 4600 | 2000 |
| 1250/30/20 | 1250 | 30 | 20 | 100 | 3.1 | 2200 | 1500 | 2500 | 5200 | 2000 |
| 1650/40/16 | 1650 | 40 | 16 | 100 | 4.4 | 2500 | 2000 | 2100 | 4700 | 2400 |
| 1650/50/20 | 1650 | 50 | 20 | 100 | 5.2 | 2750 | 2000 | 2500 | 5500 | 2400 |
| 1650/60/24 | 1650 | 60 | 24 | 100 | 6 | 2410 | 2000 | 2900 | 6300 | 2400 |
| 1650/70/28 | 1650 | 70 | 28 | 100 | 6.8 | 3000 | 2000 | 3300 | 7100 | 2400 |
| 1650/80/32 | 1650 | 80 | 32 | 100 | 7.6 | 3250 | 2000 | 3700 | 7900 | 2400 |
| 1850/100/28 | 1850 | 100 | 28 | 100 | 11 | 6500 | 2300 | 3500 | 7200 | 2800 |
| 1850/125/35 | 1850 | 125 | 35 | 100 | 13 | 7200 | 2300 | 4200 | 8800 | 2800 |
| 2000/150/36 | 2000 | 150 | 36 | 100 | 14 | 7800 | 2600 | 4600 | 10000 | 3000 |
| 2000/175/42 | 2000 | 175 | 42 | 100 | 16 | 8150 | 2600 | 5200 | 11200 | 3000 |
| 2000/200/48 | 2000 | 200 | 48 | 100 | 18 | 8500 | 2600 | 5800 | 12400 | 3000 |

## Vibrator Assembly – PLH (D)

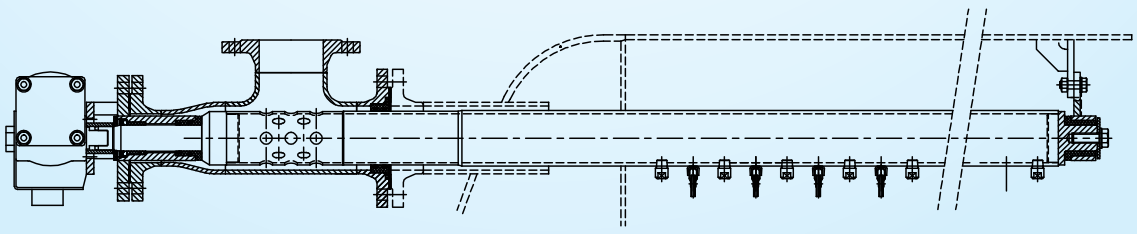



*Vibrator assembly for dry cake discharge*

## Tank Assembly Detail

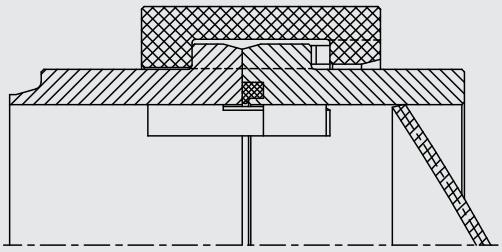



## Pneumatic Oscillator – PLH (W)



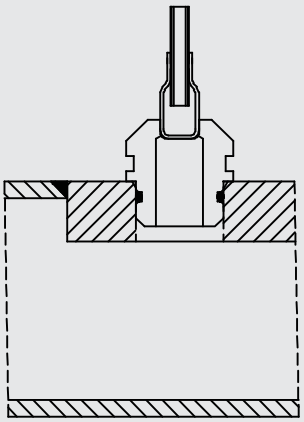
*Pneumatic oscillator for wet cake discharge (hydraulic or electric drive)*

## Wedge Lock Bayonet Door Closure



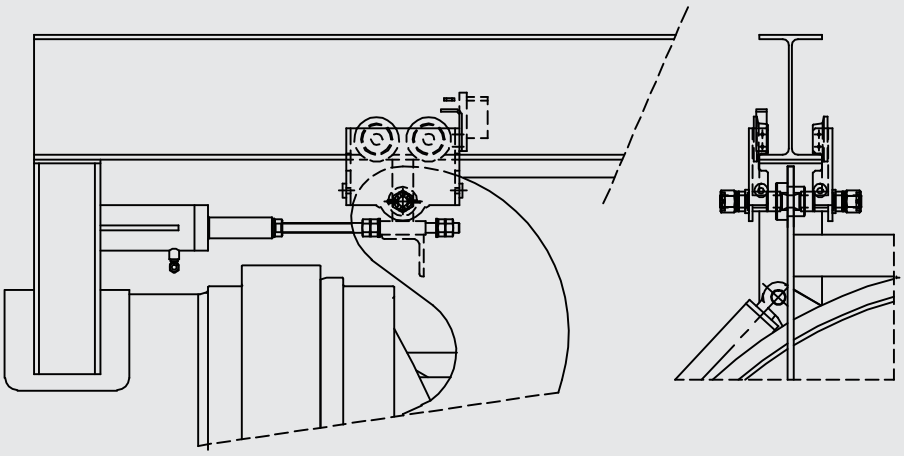
*Wedge Lock, bayonet type closure*

## Filter Leaf Outlet Nozzle



*Filter leaf outlet nozzle*

## Leaf Bundle Retraction Mechanism



*Retraction mechanism: hand, hydraulic or mechanical (motor retraction, gearwheel and rack)*

## Supply Scope Specifications:

### Leaf Designs:

**Leaf Types:** 3-ply, 5-ply, riveted or bolted to application.

### Filter Medium:

Metal screen or metal screen with filter cloth/media or needlefelt.

**Design in accordance with ASME code Section VIII Div.1 or other design codes upon request.**

### Construction Materials:

**Housing:** Standard in Carbon Steel or Stainless Steel 304/304L, 316/316L, Duplex or SMO. In special cases, Carbon steel with lining, Rubber or Halar lined and Special Alloys upon request.

**Leaves:** Standard in 316L, 316S (NSCD/1.4539) or Duplex (1.4462). Full Polypropylene or other materials upon request.

### Flanges:

Flanges are in accordance with DIN, ANSI or British Standard. Other standards also available, to specifications.

PMI-Technology Sdn Bhd
Company No. 568062-K

YOUR SOLUTION PARTNER FOR SOLID/LIQUID FILTRATION TECHNOLOGY

- Fully enclosed system with optimum dry or wet cake discharge
- Wide range of applications eg. process filter, thickening, heel filtration, polishing
- Direct filtration without filter aids

# Reverse Pulse Type

## RPP(D/W), RP(D) & RP(W) Filter

## RPP (D/W) – Dry or Wet Cake Discharge Filter (Process)

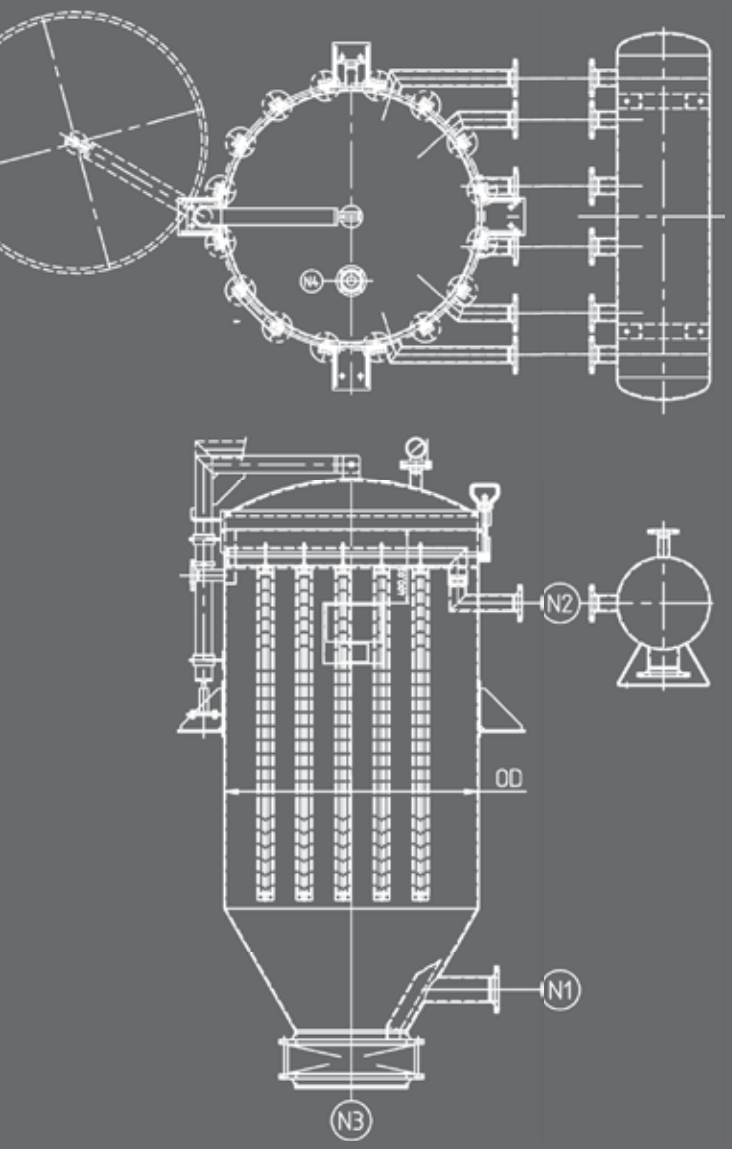
| Type RPP(D/W) | Filter Area ($m^2$) | Tube Pitch (mm) | Cake Thickness (mm) | Filter Volume (litre) | Number Of Manifolds For 10mm/25mm cake | Pulse Buffertank Volume/Dry (litre) | Pulse Buffertank Volume/Wet (litre) | Number Of Tubes (L=1750mm) |
|---|---|---|---|---|---|---|---|---|
| 780 | 12/8 | 120/150 | 10/25 | 1100 | 4/3 | 180/90 | 30/20 | 24/16 |
| 900 | 16/10 | 120/150 | 10/25 | 1500 | 4/3 | 200/120 | 40/15 | 32/20 |
| 1000 | 20/13 | 120/150 | 10/25 | 1900 | 5/3 | 220/150 | 40/30 | 40/26 |
| 1100 | 26/16 | 120/150 | 10/25 | 2300 | 5/4 | 200/175 | 45/30 | 53/33 |
| 1225 | 33/22 | 120/150 | 10/25 | 2900 | 6/4 | 250/200 | 50/45 | 68/44 |
| 1380 | 45.5/27.5 | 120/150 | 10/25 | 3800 | 7/4 | 300/250 | 60/45 | 92/56 |
| 1500 | 54/33.5 | 120/150 | 10/25 | 4600 | 7/5 | 300/250 | 65/50 | 110/68 |
| 1650 | 68/39 | 120/150 | 10/25 | 5700 | 7/6 | 350/300 | 70/60 | 138/79 |
| 1850 | 88/57 | 120/150 | 10/25 | 7400 | 9/7 | 400/325 | 80/65 | 178/115 |
| 2000 | 103/63.5 | 120/150 | 10/25 | 9000 | 9/7 | 450/350 | 90/70 | 208/128 |

Our Reverse Pulse filter is a vertical tank filter with specially-designed internal filtertubes for optimum dry or wet cake discharge without the need of using filter aids.

For smaller filters, these filtertubes are connected to a tubesheet, whereas for larger models, they are connected to a few outlet manifolds with clamps or threaded connections.

The cake discharge mechanism is by way of introducing a reverse pulse (liquid backwash) method, with pressurized air or inert gas. These filters are fully-enclosed constructions, free of moving parts and easily automated.

## Tank Assembly Detail



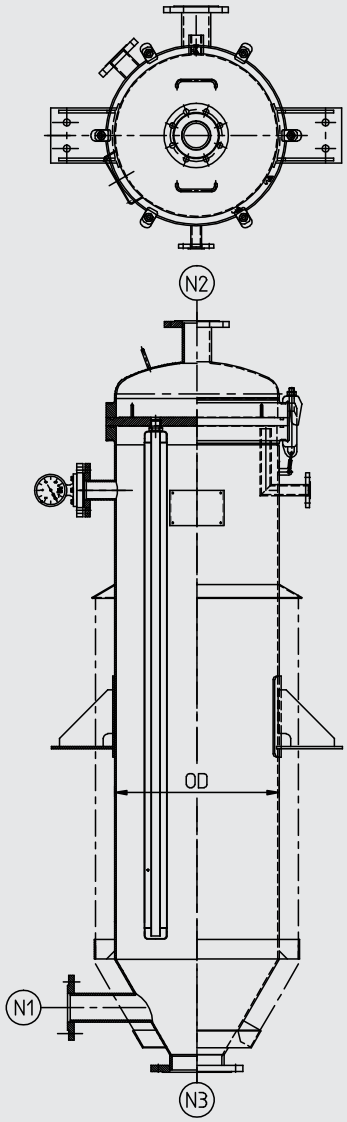

The outside of these filtertubes are fitted with seamless or welded filtersleeves, made from different materials like polyester, polypropylene, Nylon, PTFE, PVDF and others.

The choice of the correct filter media is important for the efficient operation of the filter. The correct selection will also enable a proper cake discharge and long-lasting use of the filtersleeves.

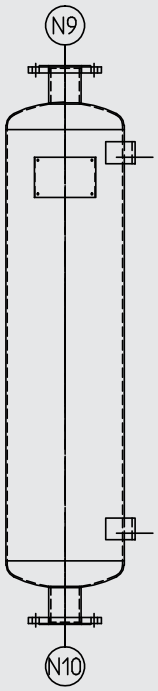
For dry cake discharge and to prevent settling of solids inside the filtertubes, each filtertube has an internal pipe open at the bottom, which forces the liquid to flow out from the bottom and up through the entire tube section.

## RP (D) / RP (W) – Dry or Wet Cake Discharge Filter (Heel Filtration)

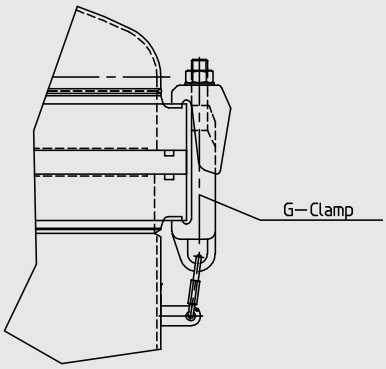
| Type RP (D)/(W) | Filter Area (m²) | Number of Element | Filter Volume (litre) | Pulse Buffertank Volume (litre) | Weight (kg) |
|---|---|---|---|---|---|
| 324/1750 | 2 | 4 | 165 | 60 | 300 |
| 406/1750 | 3 | 6 | 250 | 100 | 365 |
| 508/1750 | 5.4 | 11 | 425 | 160 | 515 |
| 610/1500 | 6.8 | 16 | 580 | 200 | 645 |
| 610/1750 | 7.8 | 16 | 650 | 250 | 670 |
| 711/1750 | 10.7 | 22 | 875 | 300 | 830 |




### Buffer/Pulse Tank




### G-Clamp Closure



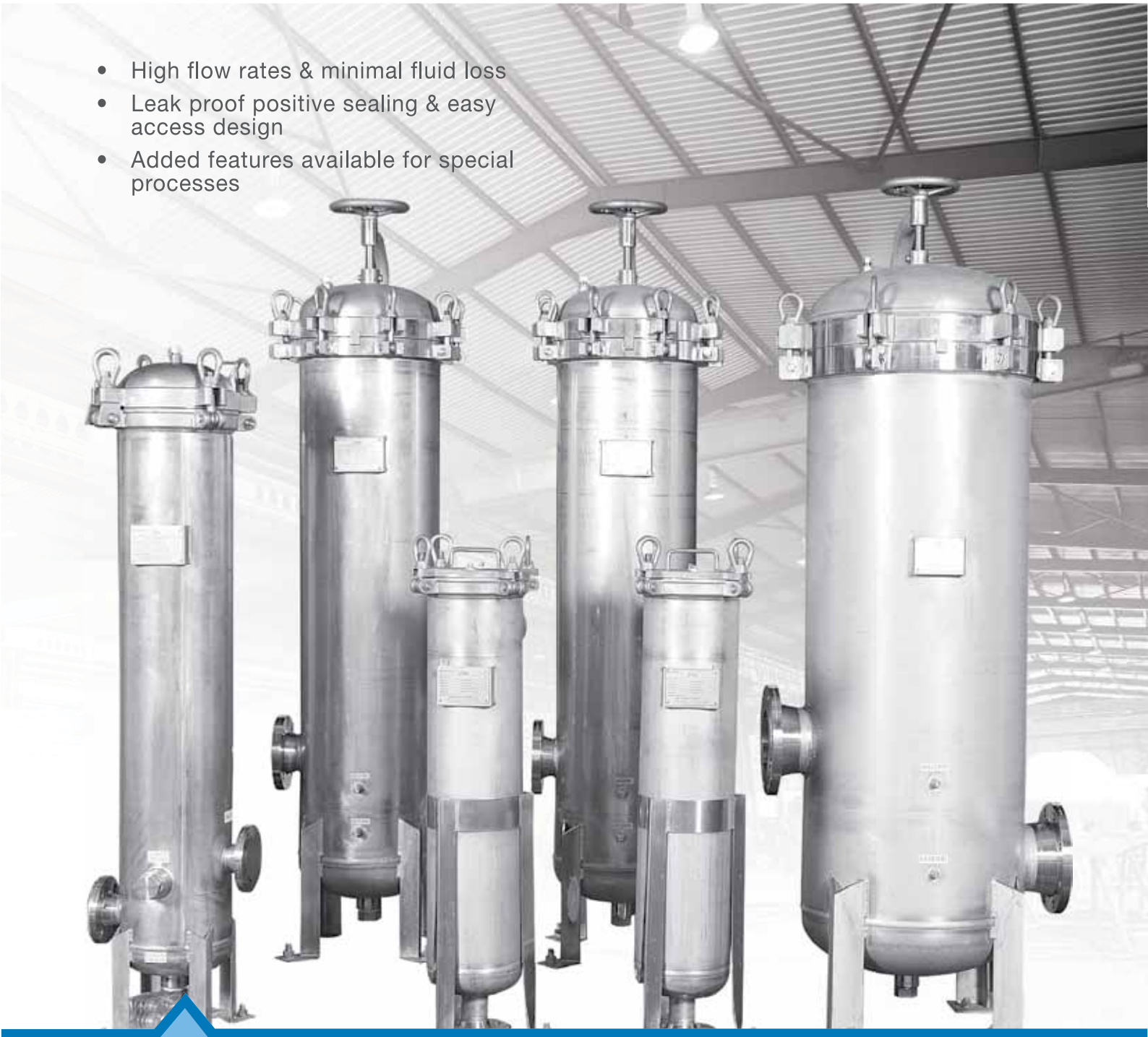

## RP (W) – Wet Cake Discharge Filter (Polishing)

| Type RP(W) | Filter Area (m²) | Number of Element | Filter Volume (litre) | Pulse Buffertank Volume (litre) | Weight (kg) |
|---|---|---|---|---|---|
| 273 | 2.4 | 7 | 120 | 10 | 200 |
| 324 | 2.4 | 7 | 150 | 20 | 292 |
| 406 | 4.5 | 13 | 250 | 30 | 378 |
| 508/1500 | 7.6 | 22 | 360 | 50 | 482 |
| 508/1750 | 8.6 | 22 | 560 | 100 | 580 |
| 610/1500 | 12.8 | 37 | 580 | 100 | 672 |
| 610/1750 | 15 | 35 | 670 | 110 | 672 |
| 711/1500 | 19 | 55 | 750 | 150 | 830 |
| 711/1750 | 22 | 55 | 875 | 165 | 830 |

PMI-Technology Sdn Bhd

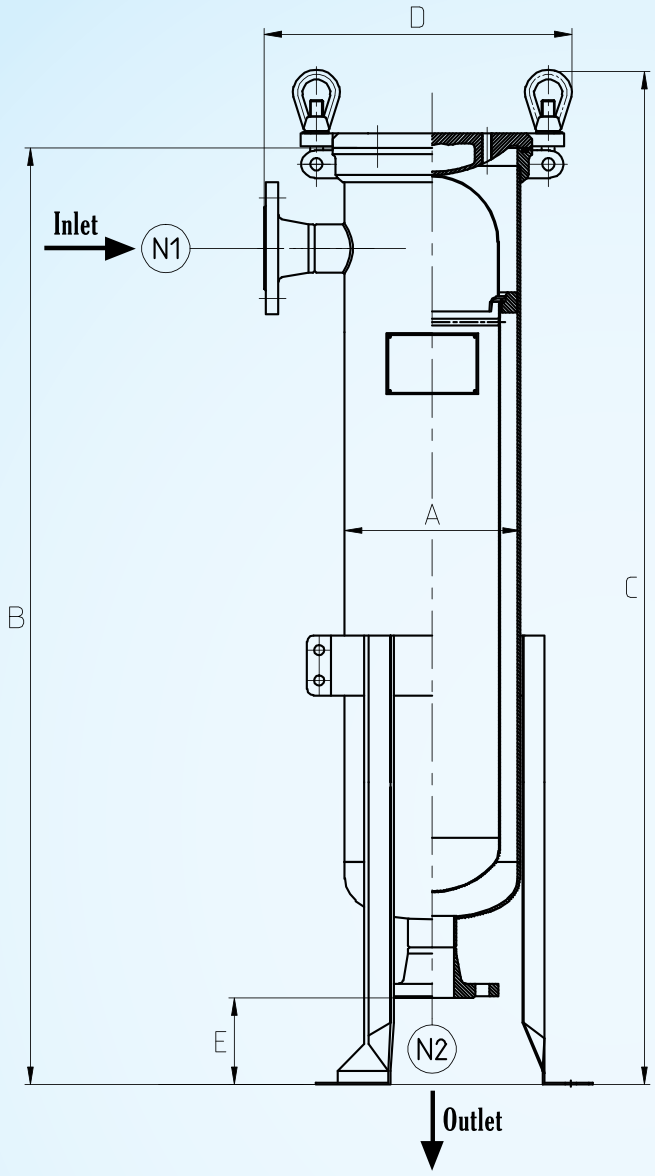
YOUR SOLUTION PARTNER FOR SOLID/LIQUID FILTRATION TECHNOLOGY

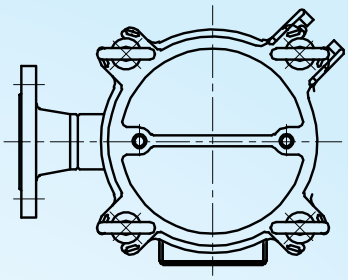
- High flow rates & minimal fluid loss
- Leak proof positive sealing & easy access design
- Added features available for special processes

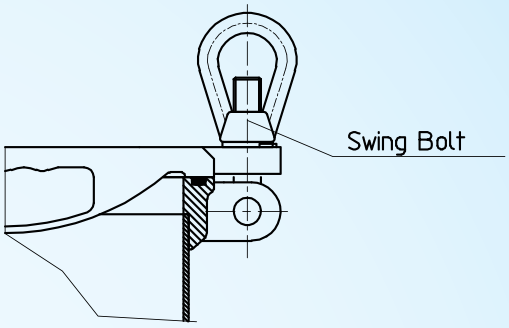


# Single, Duplex and Multi Bag Filter

## Single Bag Filter





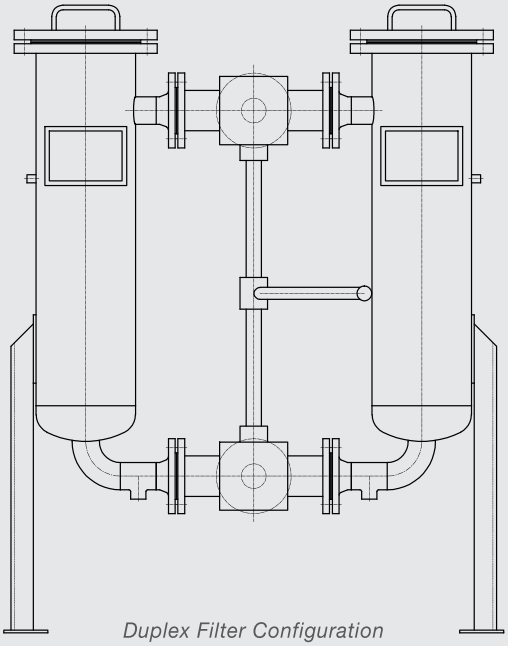

Our single bag filters are manufactured only in stainless steel and equipped with a rigid stainless steel perforated plate basket for excellent support of the filter bag during operation.

Special features including threaded, flanged or sanitary connections, steam jacketed for elevated temperature filtration, adjustable legs, hazardous processes and other features are available upon request.

## Comparison of Different Materials

| Material | Resistance to | | | | | Temp. Limit |
|---|---|---|---|---|---|---|
| | Abrasion | Acids | Alkaline | Fats and Oils | | |
| | | | | Animal | Vegetable | |
| Polypropylene | Excellent | Excellent | Excellent | Good | Excellent | 75°C |
| Polyester | Excellent | Fair | Fair | Excellent | Excellent | 130°C |
| Nylon | Excellent | Poor | Good | Good | Good | 105°C |
| Wool | Good | Fair | Poor | Good | Good | 93°C |
| Cotton | Average | Poor | Excellent | Good | Good | 75°C |
| Viscose rayon | Good | Fair | Poor | Good | Good | 130°C |
| P.T.F.E | Fair | Excellent | Excellent | Good | Good | 250°C |

## Duplex and Twin Filter



*Duplex Filter Configuration*

For continuous operation, Duplex Filter consisting of 2 single bag filters are connected together with a 3-way influent and effluent valve. Each single bag filter can be operated on alternate basis and bag change done during the filter on stand-by for continuous production flow.

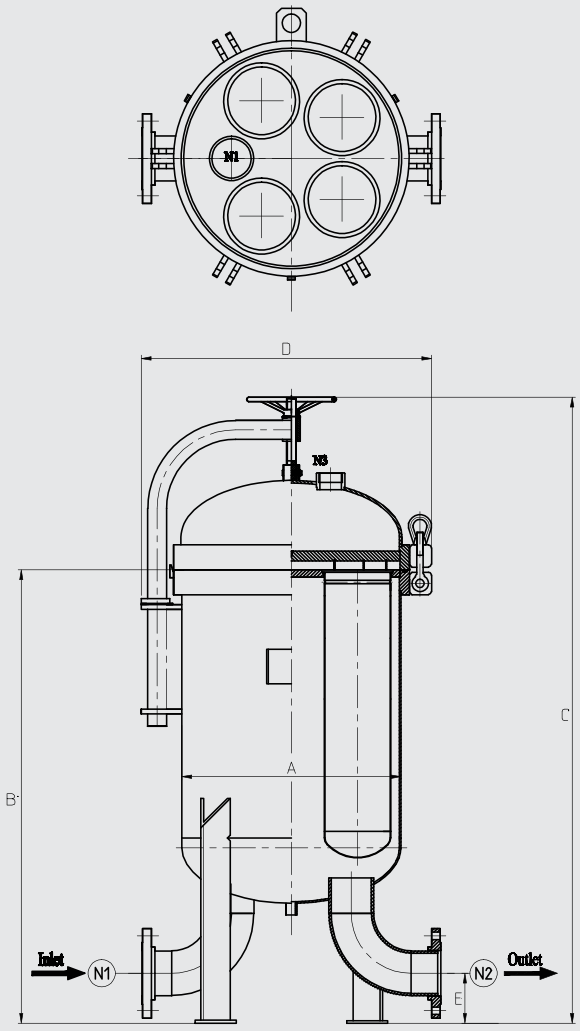
For increase flow rates, Twin Filter configuration can be adopted. 2 single bag filters are connected together with Tee sections at the inlet and outlet nozzles. Both filters are operated simultaneously.

## Multi Bag Filter

For batch or continuous operation at high production rates, our Multi Bag Filters are proven construction which accept multiple filter bags in one housing.

Each slot is equipped with a rigid stainless steel basket with the same operation features as the Single Bag or Duplex Filter.

Due to its compact design, our Multi Bag Filter requires minimal floor space and minimizes downtime for multiple bags change.



PMI-Technology Sdn Bhd

YOUR SOLUTION PARTNER FOR SOLID/LIQUID FILTRATION TECHNOLOGY

- Robust construction
- Suitable for many applications
- Available in a range of sizes

# Agitators

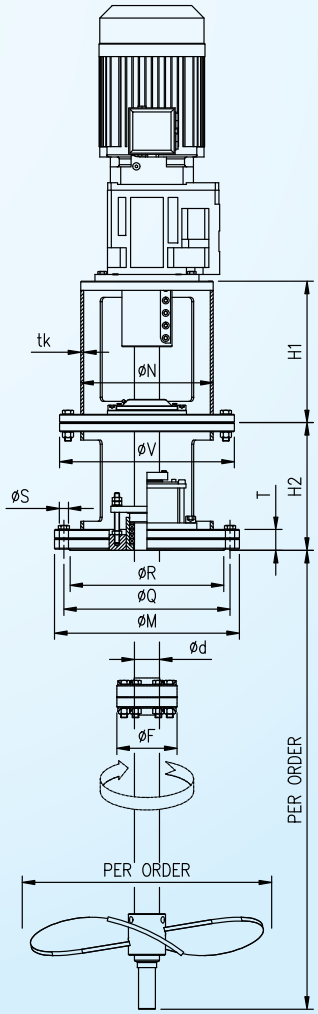
## PMI Agitator

PMI Standard Vertical Series Type D, G500 – G2000 agitators are robustly constructed to suit large numbers of tank sizes and applications.

Heavy duty gear boxes are used, with additional anti-friction bearings to prevent bending movement which causes excessive wear on the gear tooth.

The Agitator dimensioning and selection of impeller, speed, Shaft sealing for example stuffing boxes as well as single-acting or double-acting Mechanical Seal and Drive power are made in accordance with the operating conditions.

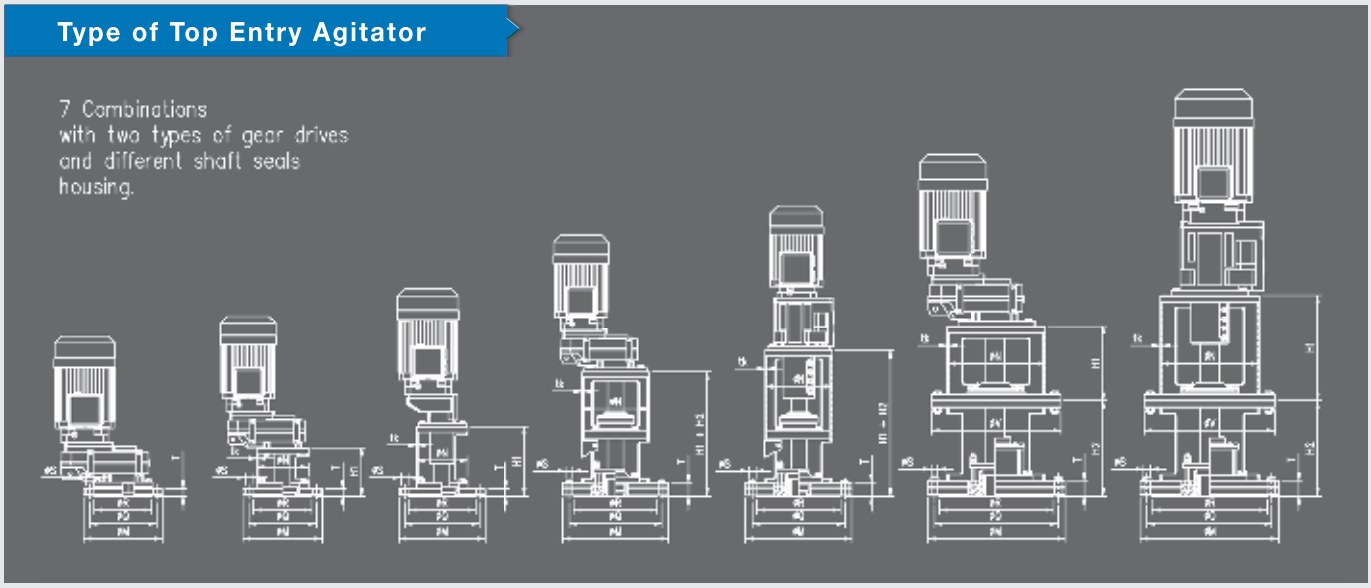
The Agitator shaft is mainly mounted in an overhung arrangement. For a shaft longer than 6 meters, it will consist of multiple parts, connected by rigid flange coupling according to DIN 28155 standard. This facilitates transport and assembling. The dimension of the mounting flange in accordance with DIN or ASME is determined by the connection nozzle, in consideration of process temperature and vessel pressure. For mounting on a sectional cross beam, the base plates are square or rectangular.

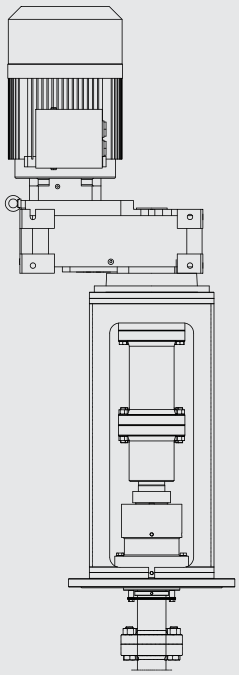


## Standard D/G Series (mm)

| Model | Ød | ØN (OD) | tk | T | H1 | H2 | ØF | ØV | ØM | ØQ | ØR | ØS | No. of Bolts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | 25 | - | - | 18 | - | - | - | - | 285 | 240 | 212 | 22 | 8 |
| | 30 | - | - | 20 | - | - | 110 | - | 285 | 240 | 212 | 22 | 8 |
| | 40 | - | - | 25 | - | - | 110 | - | 285 | 240 | 212 | 22 | 8 |
| G500 | 30 | 140 | 4.5 | 28 | 190 | - | 110 | - | 250 | 210 | 188 | 18 | 8 |
| | 40 | 140 | 4.5 | 28 | 210 | - | 110 | - | 250 | 210 | 188 | 18 | 8 |
| G600 | 30 | 165 | 5 | 30 | 200 | - | 110 | 245 | 285 | 240 | 212 | 22 | 8 |
| | 40 | 165 | 5 | 40 | 215 | 160 | 110 | 245 | 285 | 240 | 212 | 22 | 8 |
| | 50 | 165 | 5 | 45 | 250 | 200 | 110 | 245 | 285 | 240 | 212 | 22 | 8 |
| G800 | 40 | 216 | 5.8 | 30 | 330 | - | 110 | 300 | 340 | 295 | 268 | 22 | 12 |
| | 50 | 216 | 5.8 | 45 | 280 | 200 | 110 | 300 | 340 | 295 | 268 | 22 | 12 |
| | 60 | 216 | 5.8 | 50 | 315 | 265 | 145 | 300 | 340 | 295 | 268 | 22 | 12 |
| G1000 | 50 | 267 | 6.6 | 45 | 280 | 200 | 110 | 365 | 405 | 355 | 320 | 25 | 12 |
| | 60 | 267 | 6.6 | 50 | 315 | 265 | 145 | 365 | 405 | 355 | 320 | 25 | 12 |
| | 70 | 267 | 6.6 | 50 | 340 | 295 | 185 | 365 | 405 | 355 | 320 | 25 | 12 |
| G1200 | 60 | 319 | 6.9 | 50 | 315 | 265 | 145 | 420 | 460 | 410 | 378 | 25 | 12 |
| | 70 | 319 | 6.9 | 50 | 340 | 295 | 185 | 420 | 460 | 410 | 378 | 25 | 12 |
| | 75 | 319 | 6.9 | 65 | 375 | 330 | 185 | 420 | 460 | 410 | 378 | 25 | 12 |
| G1400 | 70 | 356 | 7.9 | 50 | 340 | 295 | 185 | 495 | 520 | 470 | 438 | 25 | 16 |
| | 75 | 356 | 7.9 | 65 | 375 | 330 | 185 | 495 | 520 | 470 | 438 | 25 | 16 |
| | 80 | 356 | 7.9 | 65 | 390 | 350 | 185 | 495 | 520 | 470 | 438 | 25 | 16 |
| G1600 | 75 | 406 | 7.9 | 65 | 375 | 330 | 185 | 545 | 580 | 525 | 490 | 30 | 16 |
| | 80 | 406 | 7.9 | 65 | 390 | 350 | 185 | 545 | 580 | 525 | 490 | 30 | 16 |
| | 90 | 406 | 7.9 | 70 | 430 | 390 | 100 | 545 | 580 | 525 | 490 | 30 | 16 |
| G1800 | 80 | 457 | 7.9 | 65 | 390 | 350 | 185 | 595 | 640 | 585 | 550 | 30 | 20 |
| | 90 | 457 | 7.9 | 70 | 430 | 390 | 100 | 595 | 640 | 585 | 550 | 30 | 20 |
| | 100 | 457 | 7.9 | 70 | 490 | 450 | 100 | 595 | 640 | 585 | 550 | 30 | 20 |
| G2000 | 90 | 508 | 7.9 | 70 | 430 | 390 | 100 | 650 | 715 | 650 | 610 | 33 | 20 |
| | 100 | 508 | 7.9 | 70 | 490 | 450 | 100 | 650 | 715 | 650 | 610 | 33 | 20 |
| | 120 | 508 | 7.9 | 85 | 550 | 500 | 210 | 650 | 715 | 650 | 610 | 33 | 20 |

## Type of Top Entry Agitator



Our well-proven RG Series Agitators allows for quick exchange of mechanical seal.

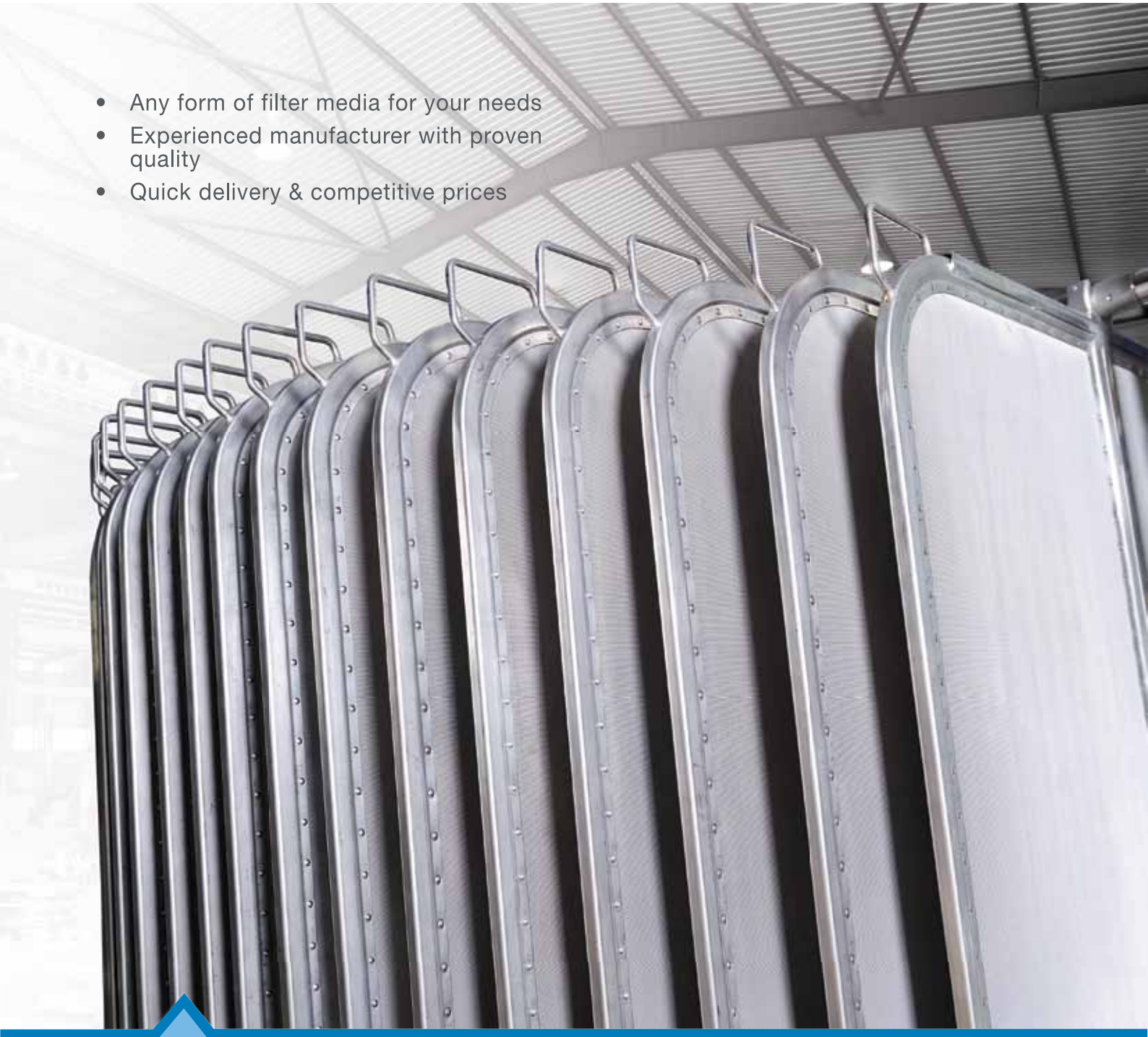
After the removal of the intermediate shaft and coupling, the complete mechanical seal with anti-friction bearings can be removed without dissembling the gear unit. With wide lantern openings to facilitate disassembly, all components are easily accessible.

A free-hanging device below the base plate supports the whole Agitator shaft. A mechanical seal lifting device with built-in roller bearings (without gear removal by using an intermediate shaft) is available upon request.

PMI-Technology Sdn Bhd

YOUR SOLUTION PARTNER FOR SOLID/LIQUID FILTRATION TECHNOLOGY

- Any form of filter media for your needs
- Experienced manufacturer with proven quality
- Quick delivery & competitive prices



# Filter Leaves, Cloths, Cartridges & Elements

## Filter Leaves

*5-ply filter leaves construction for optimum filter screen support resulting in stronger rigidity and longer lifetime.*

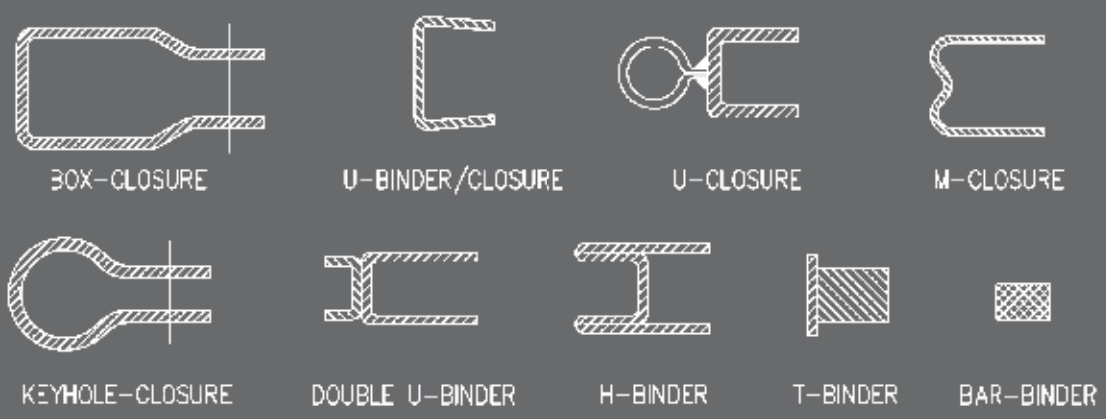
We manufacture a wide range of filter leaves in different designs, shapes and filter screen materials. The performance of any filter highly depends on the proper design and construction of the filter leaves.

With our many years of experience in solid/liquid filtration technology, we are a proven and leading supplier in this field. We can also re-build and repair filter leaves, using your original binders and closures.

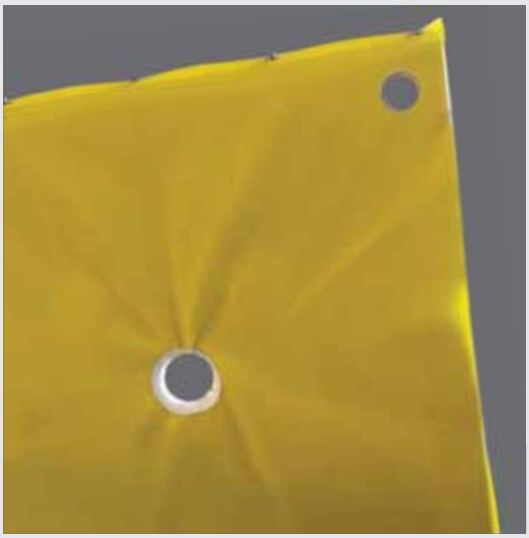
## Filter Elements

*Tubular filter element, designed with cake breakers and fitted with seamless filter sleeves of different material types & micron rating to suit your process.*

## Popular Binders and Closures



## Filter Cloths




We have a wide selection of filter press cloths, selected and tailored to suit your equipment and every process.

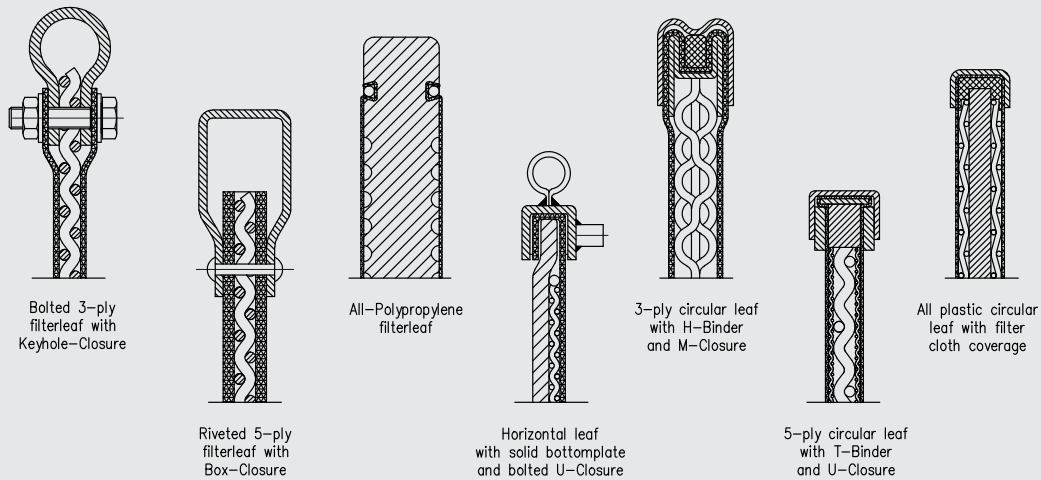
We are also a reputable supplier of Filter Presses, delivered to every continent of the world.

## Filter Cartridges

We offer a complete range of filter cartridges and filter media for use in oil and fats industry, food & beverage, chemicals & water, pharmaceutical, polymers, electronics and many other applications.

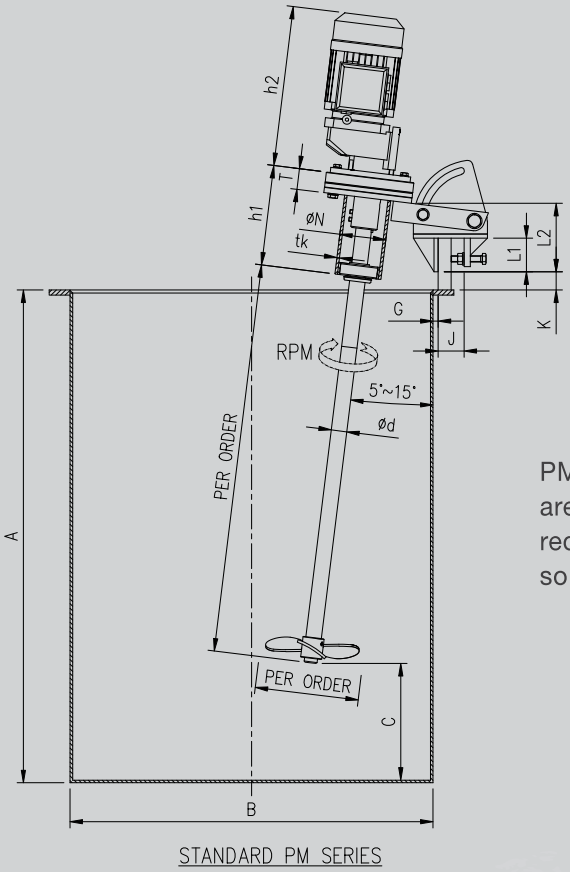
**Contact us for your needs and our team of experienced sales staff will be more than happy to extend our advice and services to you to fulfil your requirements.**

## Popular Leaf Constructions



## Standard PM Series (mm)

| Model | Drive Power | Speed (RPM) | No. of Impellers | ØW | ØN (OD) | tk | T | h1 | h2 | C | G | J | K | L1 | L2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM25 - 0.18 | 0.18kW | 325 | 1 | 25 | 89 | 5 | 40 | 195 | 300 | 200 | 10 | 50 | 35 | 65 | 135 |
| PM30 - 0.37 | 0.37kW | 330 | 1 | 30 | 89 | 5 | 40 | 195 | 310 | 250 | 10 | 50 | 35 | 65 | 135 |
| PM30 - 0.75 | 0.75kW | 336 | 1 | 30 | 89 | 5 | 40 | 195 | 350 | 300 | 10 | 50 | 35 | 65 | 135 |




STANDARD PM SERIES

PMI Portable Mixers Standard PM Series are ideal for small mixing applications that require a flexible and cost-effective solution.

## PMI offers a wide range of products, which include:

- Filter Presses, Pressure Leaf Filters, Reverse Pulse Filter, Cartridge Filters, Bag Filters, Nutsch Filters, Centri Filters, Tilting Filters, Level Leaf Filters, Agitators, Static Mixers.
- Pressure Vessels, Tanks and Silos, Columns, Towers, Dryers, Shell & Tube Heat Exchangers, Condensors, Heaters, Coolers, Reboilers, and General Steel & Stainless Steel Fabrication & Site Erection Works.


PMI-Technology Sdn Bhd
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*Agent's Contact / Sales Person*


One of our manufacturing plants in Ipoh, Malaysia

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