

APN FILTER PRESS



LEADING FILTRATION TECHNOLOGY APPLICABLE ACROSS A WIDE RANGE OF INDUSTRIES & COMMODITIES

TH offers an extensive range of APN Family of Filter Presses comprises of heavy duty equipment with robust design and reliable operation, developed specifically to dewater product and tailings for coal, metal ores, industrial minerals, soil etc.

APN family Filter Presses come with numerous configurations. APN filter presses can be fitted with plates of

- › different sizes,
- › materials,
- › configurations (chamber or membrane) and
- › with a range of filter plate pack opening solutions

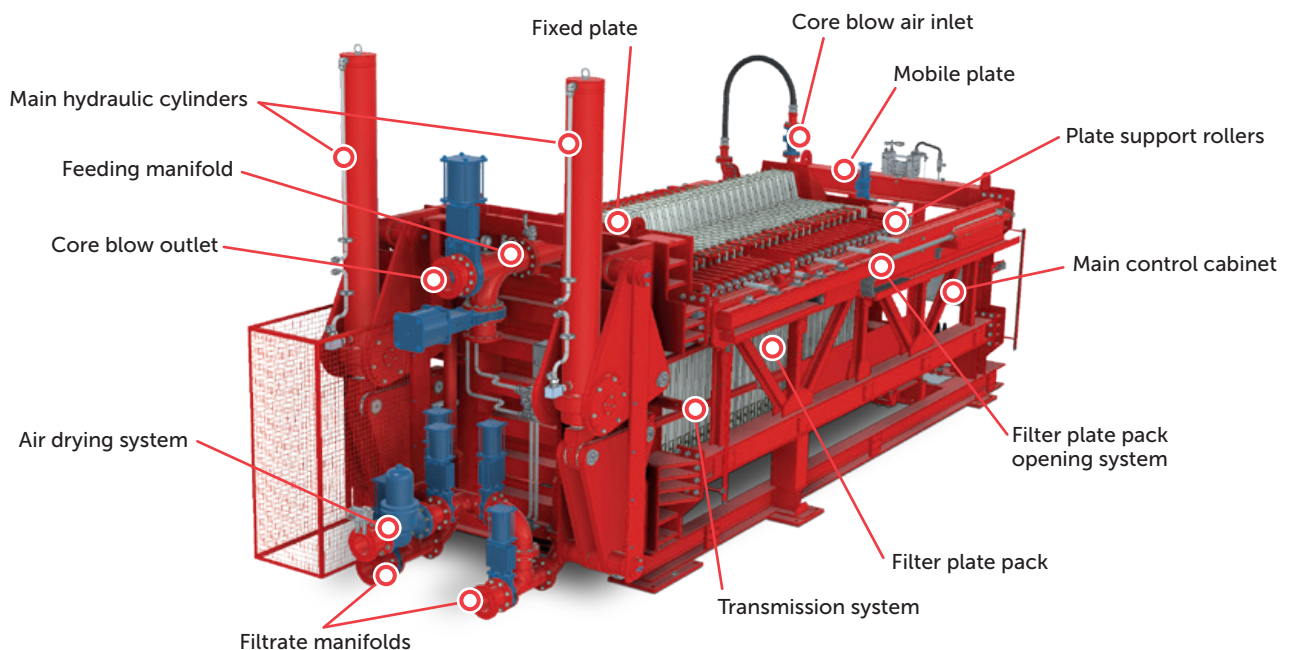
Their versatility means that they can be adapted to provide the best solution for each process, making equipment suitable for dewatering operations in processes in a broad range of industries.

APN filter presses are designed specifically for use with highly demanding heavy duty processes such as operations to dewater coal, mine tailings, industrial minerals, soil and mineral ore concentrates. Thanks to a combination of efficient drying, draining and squeezing operations, low moisture cakes are achieved.

APN filter press is the market leader in reliability and robustness, thanks to its exclusive TH filter plates and an advanced design based on mechanical simplicity and robustness.

Benefits:

- › Longer useful lifetime of the filters thanks to our exclusive pulling system, it reduces strain on structures and frames.
- › Exclusive design based on mechanical simplicity and robustness for easier use, maintenance, and transportation.
- › Smart and fully automatic control system.
- › High output, even in the toughest conditions.
- › High Water Recovery.
- › Easy replacement of wear parts.
- › Higher availability.
- › Low operating costs.
- › Low energy consumption thanks to the fully automatic pulling opening/closing system with the lowest installed power rating on the market.
- › Less space requirement.
- › Simple operation.
- › Increased safety.





Frame

The heavy duty frame comprises the fixed plate, the end frame and the side bar beams on which the mobile plate, pusher plate (only on APN16 Filter Press model) and the filter plate pack are supported. The whole assembly is highly robust and has a high load capacity.

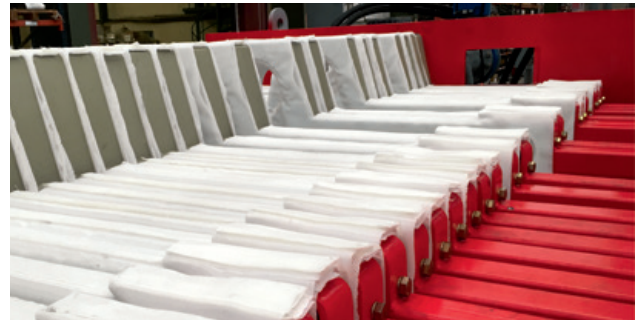
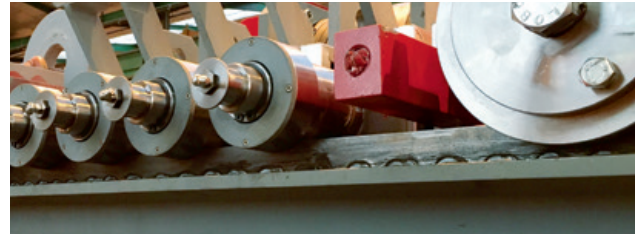
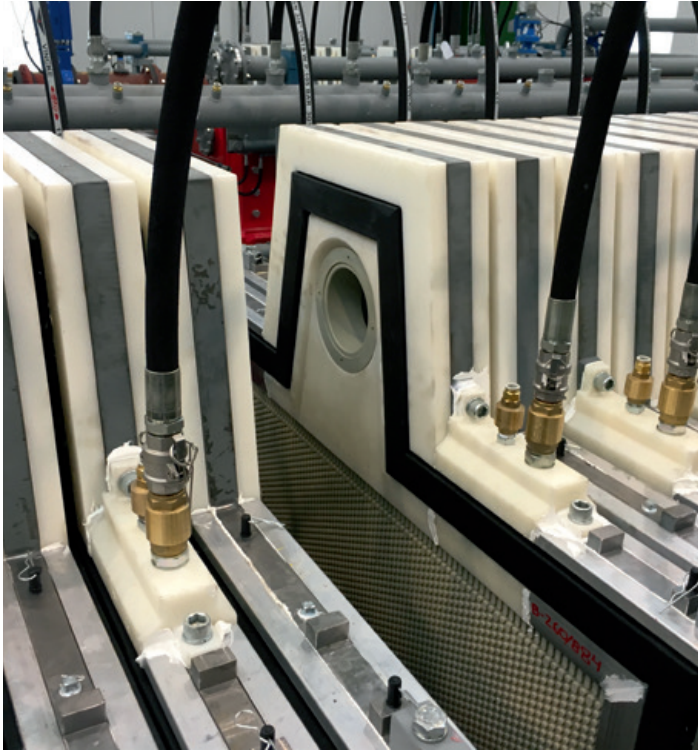
Plate opening and closing system

Hydraulic cylinders are used to open and close the filter press and provide the closing force required during filtration process:

- › one cylinder for APN16 filter press model and
- › two cylinders for APN18 and APN20 models.

The mobile plate runs along the side bar beams on guides and is connected to the hydraulic system via a transmission system for tie and con rods for model APN18 and APN20. On model APN16, the mobile plate and the pusher plate are supported on the stringers, where the pusher plate is moved via a single hydraulic cylinder using a connecting rod system. The pusher plate is attached to the frame via tie rods.

The advantage of this transmission system means that although the hydraulic cylinders work by compression, the filter package works by traction. This minimises the stresses transferred to the supporting elements of the assembly.



Filter plate pack

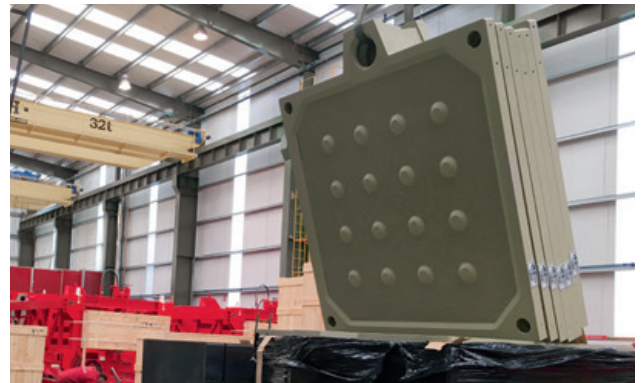
APN filter press are designed to fit various filter plate pack configurations depending on the applications for which they are required. The type of plates:

- › Polypropylene plates (PP) (Recessed)
- › Polypropylene plates with membrane (PPM) (Recessed + membrane)
- › Steel core plates (TH)

Different type of feeding system depending upon type of application:

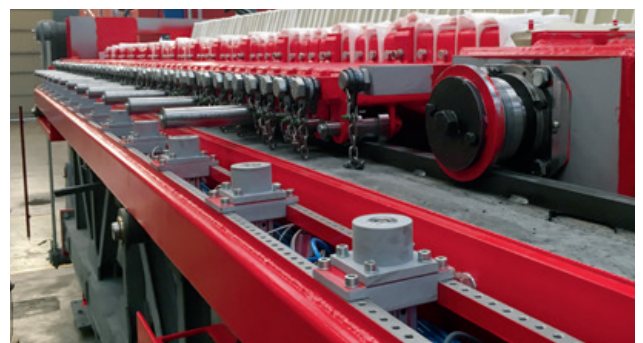
- › Top feeding (TF) (Internal or external)
- › Hose feeding (HF) into each plate (for low density applications) only for TH steel core plates

The plates are hung from the filter press frame on rollers. During the plate pack opening, the plates swing thus improving cake discharge.



Filter plate pack opening system

The filter plate pack opening system has been designed to ensure fast, effective, and complete automatic filter press cake discharge. Depending on the size of the filter press, the system may use auxiliary hydraulic cylinders or pneumatic modules that move together.





Operational versatility

APN filters versatility in terms of plate selection, feeding system choice and different discharge system allows it to be used in numerous operations depending on the requirement of each application and thereby offering tailor made solution for each case:

- › Top Feeding (TF) via a main manifold created on the top of the filter package when it is closed or through an external manifold and individual hoses that feed individual filter chambers in the filter plate pack (HF).
- › Slurry is flushed out of the feeding manifold with compressed air after each filter press cycle (Core blow).
- › Removal of filtrate via manifolds designed to optimise the dewatering capacity of the equipment, with hoses interlinking the chambers with the manifolds.
- › Optional cake drying by replacing residual liquid with compressed air, via inlet system.
- › Optional cake washing by replacing residual liquid, with washing liquid being run through them.
- › Cloth wash as back wash of the filter cloths by flushing wash water through the filtrate outlet manifolds. This system extends the useful lifetime of the filter cloth by reducing clogging and prevents damage during cleaning.



Hydraulic power unit (HPU)



HPU handles the various filter press hydraulic processes (main opening and closing, filter plate pack discharge systems, etc.). It uses a variable flow-rate pump that includes a load sensing system to optimise its performance and energy efficiency.

The same HPU is used in case TH SIX piston-membrane pumps are used for slurry feeding. There is only one motor for both the filter press and the slurry pump hence reducing the power consumption of the filtration plant.

Smart and fully automatic control system



APN filter press have two separate connection cabinets located on the rear gantry: one for connecting and powering all the pneumatic parts of the equipment and the other for connecting the electrics.

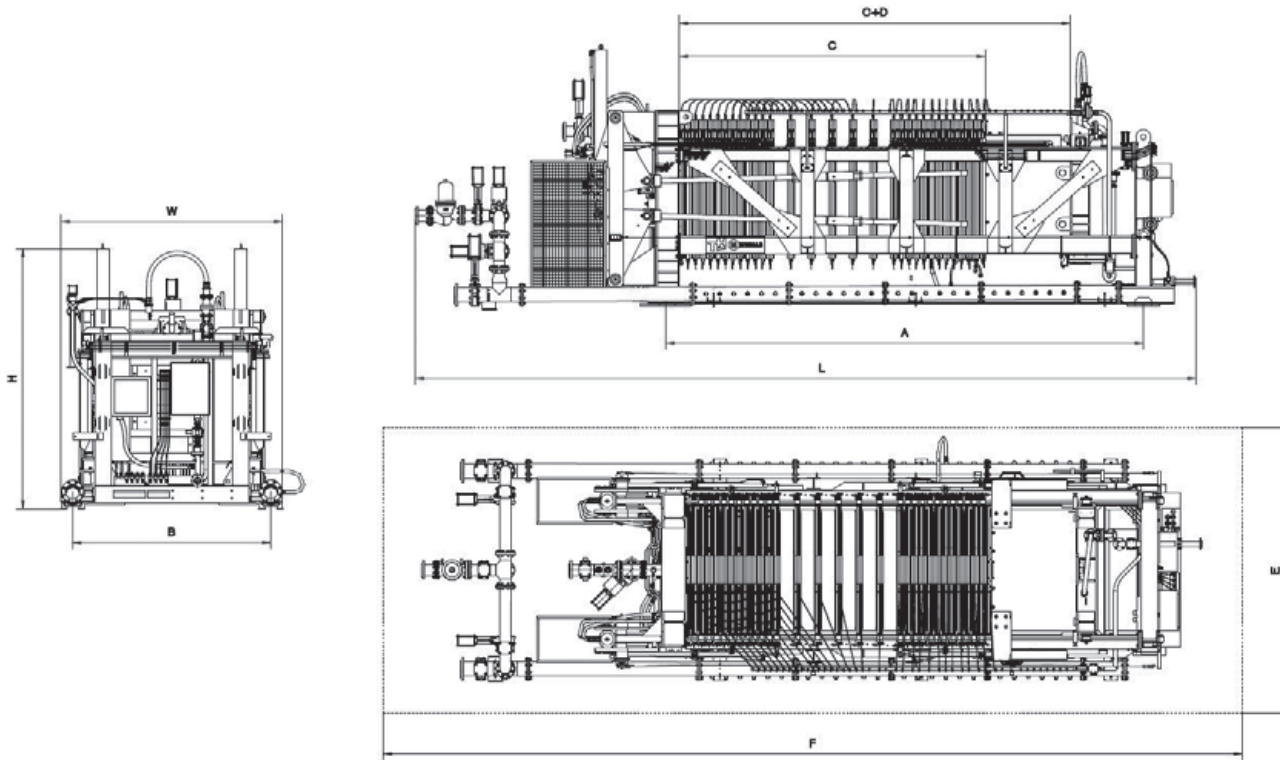
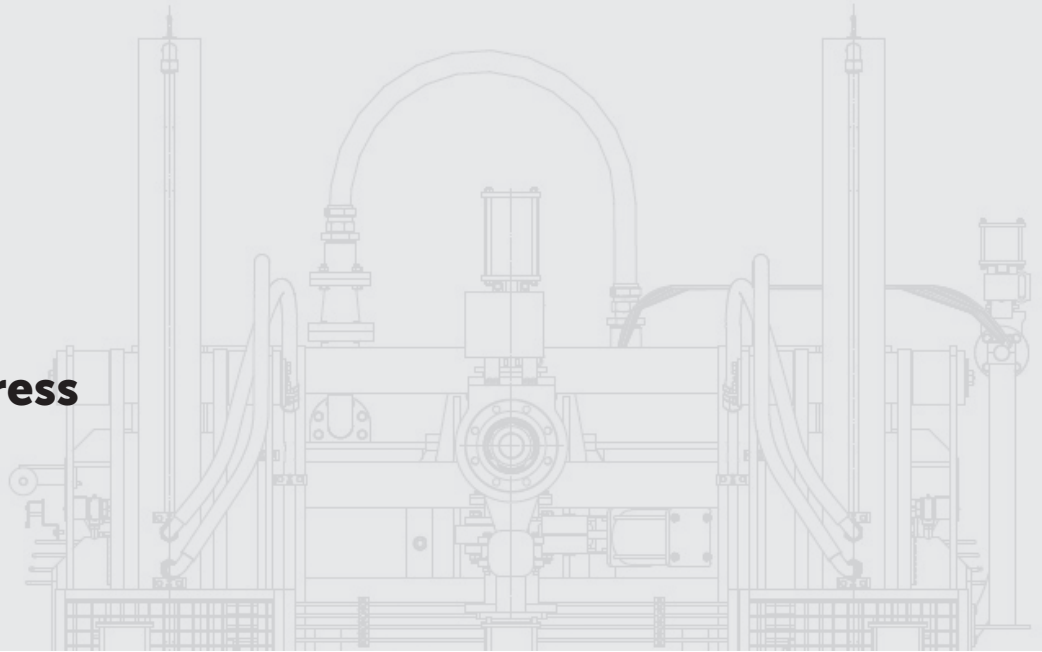
Filter operation is controlled via software developed by TH, run on a specific PLC which is built into an electrical cabinet along with the HMI screen for monitoring and parameterisation, designed to be located close to the equipment. If necessary, this PLC can be linked to the one in the general plant control room.

The system also includes controls for the hydraulic unit of the filter press, with an option to upgrade it if necessary, to incorporate other units and equipment used in processes at the plant, both upstream and downstream from dewatering.



APN Filter Press

Sizes



General Dimensions (mm)

MODEL / SIZE	L	H	W	A	B	E	F
APN 16 P	6280	3000	2820	3825	1800	4500	8500
APN 16 M	7160	3000	2820	4700	1800	4500	9500
APN 16 L	9520	3000	2820	6990	1800	4500	12000
APN 16 SL	14630	3000	2820	11280	1800	4500	17000
APN 18 M	8100	4970	3350	4490	2090	5500	10000
APN 18 L	11800	4970	3350	7270	3150	5500	13000
APN 18 SL	13900	4970	3350	9350	3020	5500	16000
APN 20 M	8500	5350	3400	5300	2280	5200	11000
APN 20 L	9950	5570	3400	6650	2280	5200	12000
APN 20 SL	12450	5570	3400	9350	2280	5200	16000





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