Viledon Air Intake Filter Concepts for Offshore, Coastal and Marine Applications – Doing the Turbines a Good Turn!

Freudenberg
Filtration Technologies

Our optimum filter concept for your application – a short filter selection guide

T 60
F 6
EN
779

T 90 + MX 85
F 7
EN
779

MX 95
F 8
EN
779

MX 98
F 9
EN
779

MX 100
H 11
EN
779

MX 120
H 12
EN
779

Fine filtration

Seafox platform, Indonesia, operated by the Chinese National Offshore Oil Cooperation, equipped with Viledon T 60 and T 90 pocket filters in the air intakes of gas turbines

The Freudenberg Group is the world's largest and most versatile producer of nonwovens, and has been specialising in air filtration for over 40 years. The filtration division, operating under the brand name Viledon, has the expertise and products needed to meet the demanding requirements applying for turbomachinery in offshore, coastal and marine applications.

Pocket filters T 60/T 90 for pre- and final filtration

Viledon T 60/T 90 Compact pocket filters are used for intake air filtration of gas turbines, compressors and other mechanical equipment, especially where high velocity systems operate or are required. In vane-coalescer/filter-vane systems they efficiently collect dust particles and coalesce salt aerosols into droplets for capture by the vanes, operating at up to 7 m/sec.

MaxiPleat filters for final filtration

When higher efficiency filtration is required, MaxiPleat filters offer the ideal solution with their innovative, patented design features. They are available up to HEPA* levels of filtration (Filter Classes H 11/H 12).

Multistage filter concepts for optimum efficiency

With the combination of pocket and MaxiPleat filters in a multistage air inlet (consisting of vane + coalescer/pocket filter + vane + MaxiPleat filter) full and effective system optimisation can be achieved, especially when filters of HEPA* level are installed in the final filter stage. On-line and off-line-washing can be virtually eliminated, and this will maximise availability of the gas turbine, with correspondingly enhanced profitability in this demanding environment.

Filter cartridges for humid climates

With their fully synthetic nonwoven media the two Viledon cartridge types make ideal partners when cartridges are required in climates or locations with high relative humidity or wet conditions.

- TFP depth-loading filter cartridges which operate as static filters are tried-and-tested choices in moderate climate zones with low dust concentrations and/or sticky dusts.
- GTC surface-loading filter cartridges, with their patented, corrugated high performance filter medium are an ideal solution for pulse-jet systems in which very high dust concentrations and/or fine, pourable dusts are encountered.

Ship shape servants in marine applications

Another field of application can be found on ships or cruiseliners, where Viledon filters efficiently handle intake air filtration of turbomachinery and diesel engines with turbo chargers, or filtration tasks in on-board ventilation systems.

*HEPA = High Efficiency Particulate Air Filter

Viledon filters keep the turbines ship-shape … on RCCL.

Compact pocket filters T 60 and T 90 – thrift performers for optimum efficiency

T 60

T 90

Positive clip fitting system of Viledon mounting frames

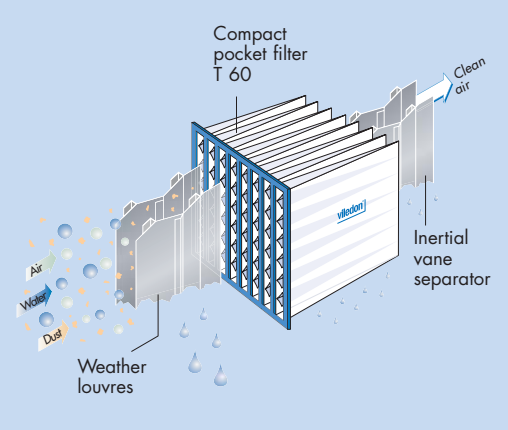
The special features

As prefilters or final filters our "thrift performers" T 60 and T 90 (of Filter Classes F6/F7) have been continually design-enhanced to offer the important prerequisites so essential for optimum efficiency and availability of turbomachinery: very low pressure drop, high dust holding capacity, and long operational lifetime, plus the ability to withstand extreme loadings like pump surges. They can be relied upon to arrest aggressive, abrasive particles as well as industrial contaminants such as hydrocarbons, cement, shot-blasting sand, drilling mud, etc., thus minimising blade fouling and erosion.

Particularly under the extremely adverse weather conditions associated with offshore and coastal regions, a critical concern is the removal of salt to avoid corrosion and power loss. To understand these complex factors for salt removal, Freudenberg has undertaken extensive test work with suppliers and customers to define the ideal solution, utilising the T 60 or T 90 in vane-coalescer-vane systems, where they have excelled in terms of optimal coalescent and particle capture.

The filter media and the design

Progressively structured **high-performance nonwovens made of break-resistant synthetic organic fibers** are used as filter media. The T 90 filter medium has a triple-layered progressive structure with a high-arrestance microfiber layer.



Viledon T 60 pocket filter in a vane-coalescer-vane system

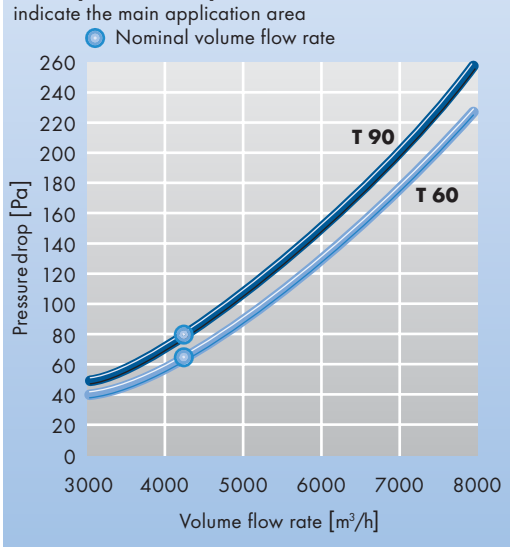
- The filters are **glassfiber-free, non-corroding, and moisture-resistant up to 100% rel. humidity.**
- **Self-extinguishing** to DIN 53438 (Fire Class F1).
- **Maximized functional reliability** thanks to the leak-proof welded configuration of the filter pockets, foamed into the polyurethane front frame, aerodynamically optimized welded-in spacers, and dimensionally stable construction of the filter element as a whole.
- Viledon Compact pocket filters offer reliable and dependable operation geared to maximised cost-efficiency.

Technical data T 60 and T 90 at nominal volume flow rate for 1/1 element*

		T 60	T 90
Weight approx.	kg	3.0	3.3
Dimensions L x W x D	mm	592 x 592 x 650	592 x 592 x 650
Average efficiency E_a	%	63	85
Nominal volume flow rate	m^3/h	4.250	4.250
Maximum volume flow rate	m^3/h	8.000	8.000
Initial pressure drop	Pa	65	80
Permissible final pressure drop**	Pa	800	800
Bursting strength	Pa	> 3000	> 3000

* T 60 in undersizes 5/6, 1/2, 1/4 available; T 90 in undersize 1/2 available
** This figure can be exceeded in certain applications

T 60 and T 90 high velocity Initial pressure drop curves
indicate the main application area



MaxiPleat filters MX 85 to MX 120 series – designed and patented for today's offshore environment

MaxiPleat filter

MaxiPleat Modular Filter System

The special features

Thanks to their patented construction and numerous design attributes the MaxiPleat Filters MX 85 to MX 120 series (from Filter Classes F7 to H12) ensure a performance profile that optimises turbomachinery operation in standard velocity systems from 2.5 to 4.25 m/s. They meet the gas turbine manufacturers' stringent requirements for clean air quality while at the same time offering flexible solutions for overall size and depth, facilitating their installation in confined spaces.

The filter media and the design

- For all MaxiPleat filters **high strength glass-fiber papers with a special thermoplastic bonding system** and a water-resistant coating are used.
- A **patented embossing process** provides optimum pleat geometry and equidistant folds plus homogeneous air flow coupled with a low pressure drop. The **patented construction** results in **outstanding distortion resistance** and **bursting strength** as well as **high security against dust penetration.**

Gripping lugs facilitate mounting, and flow-favourable **protection grids** minimize the risk of damage to the filter medium. An optional water barrier prevents intaken water from reaching the clean-air side.

The entire filter element is free of metal parts and thus **non-corroding and fully incinerable.**

Viledon MaxiPleat filters in operation: Petrobras, Brazil

- All MaxiPleat filters are **moisture-resistant** up to 100% relative humidity.
- The frame and filter media are **self-extinguishing** to DIN 53438 (Fire Class F1).
- Option for combining two MaxiPleat filters in one mounting frame by simple plug-on **(modular system)**.
- Viledon MaxiPleat filters offer reliable and dependable operation geared to maximized cost-efficiency.

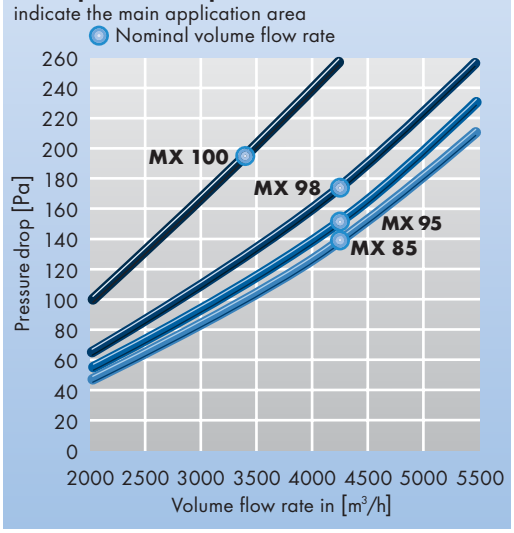
Contact your Viledon partner for a comprehensive air filtration analysis to help improve operational reliability and reduce life cycle costs.

Technical data MX 85 to MX 120 series at nominal volume flow rate for 1/1 element*

		MX 85/ MX 95/MX 98	MX 100/ MX 120
Weight approx.	kg	7	7.5
Dimensions L x W x D	mm	592 x 592 x 292	592 x 592 x 292
Average efficiency E_a	%	86/92/96	> 99
Nominal volume flow rate	m^3/h	4.250	3.400
Maximum volume flow rate	m^3/h	5.500	4.250
Initial pressure drop	Pa	140/150/175	195/320
Permissible final pressure drop**	Pa	800	800
Bursting strength	Pa	> 6000	> 6000

*Undersizes 5/6 and 1/2 available **This figure can be exceeded in certain applications

MX 85/MX 95/MX 98/MX 100 standard velocity Initial pressure drop curves
indicate the main application area



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