


INOVANE® WATER



AIR INTAKE FILTRATION

PROTECTING FROM: Water, Ice, Particles, Gas & Noise

A large, semi-transparent compass rose graphic is overlaid on the lower half of the image, centered behind the table. It has eight points and is labeled with 'N', 'E', 'S', and 'W' at the cardinal directions.

IV	INOVANE® SEPARATOR
IV-H	+ ANTI ICING
IV-IFS	+ DUST FILTRATION
IV-IFCS	+ GAS ADSORPTION
IV-INR	+ NOISE REDUCTION

INOVANE® WATER

Air intake with Droplet separation for tough conditions



SYSTEMS FOR ALL NEEDS

PROTECTING

Your equipment is under constant attack by a wide range of airborne contaminants, many of them invisible to the human eye. Once inside a compressor or blower, they corrode and erode internals and foul up processes. 7 Way air intake systems reduce energy costs and protect your compression equipment from unnecessary downtime. Clean intake air is therefore one of the most effective ways to save energy and control escalating maintenance costs. The inertial chevron type weather louvres will be your air intake guard.

7 WAY SOLUTIONS

Perhaps, you are not sure how to best protect your investment. Count on 7 Way to do more than just sell you a filter. 7 Way will carefully evaluate your specific need, situation and possibilities at your site. We will then recommend the most effective combination of filter design and element efficiency to save you money. Our offshore weather louvres will save you.

SYSTEMS

7 Way design and manufacture InoVane® modules with capacities for all types of needs. Standard flanges and with bespoke connections on demand. Custom engineered chevron type air intake systems are available for applications with higher flow rates, requiring acid gas removal, and to adapt to hostile environments - to name a few.



Air intakes with Integrated Functionality, Helping Your Equipment Breathe Easy

- Anti Icing solutions
- Heating
- Flow control
- Filter solutions
- Carbon filtration
- Silencer / Noise reduction
- Special Solution Functionalities

7 WAY manufactures custom designed systems that are both cost-effective and offer the necessary level of protection for your equipment.

The InoVane® systems high efficiency droplet separators are designed for demanding applications such as offshore marine, oil & gas, chemical, energy industries, where reliability, easy installation and special design play an important role. Droplet separators operate on the principles of chevron type inertial vane separation and are designed to restrict the penetration of moisture, salt spray, rainwater and airborne aerosol particles into HVAC systems, engine room intakes, machinery spaces, diesel and gas turbine engine air intakes.

Three configurations are commonly used according to the level of droplet removal efficiency required, single stage, two stage, and three stage, but special configurations are available. Two and three stage units will include a coalescing and particulate filter. 7 Way are happy to assist you in the design and selection of the droplet separator according to the application with special consideration to the pressure drop, velocity, wind speed and direction, turbulence, and drainage.

INOVANE® WATER

Air intakes with Robust & Flexible Design for Challenging Applications



SYSTEMS FOR ALL NEEDS

InoVane® Water.

Aggregates that separate and removes:

- + Ice
- + Water
- + Salt & dust particles
- + Gasses
- + Vapours
- + Odours

Codes – Combinations

- + H = Heated Anti Icing Vanes
- + IFS = Integrated Filter Solutions
- + ICFS = Integrated Carbon Filtration
- + INR = Integrated Noise Reduction
- + C = Cover doors
- + AD = Adapted Design

Service - The aggregates may be serviced from:

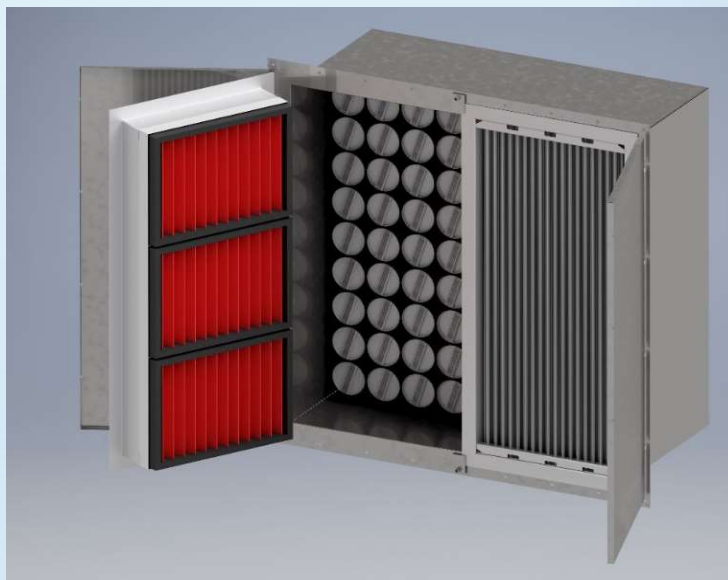
- + DS = Downstream Service side, the filters are to be removed from downstream inside the boat.
- + FS = Front Service side, the vane modules are possible to open as doors.
- + IS = In-line Service, the filters are accessed from a side mounted service door.

Enclosure / Casing

- + Galvanized steel
- + Stainless steel
- + Marine aluminum.

InoVane® Water Vane profiles

- + High density PP
- + Stainless steel
- + Marine aluminum



Code & Description for the above aggregate: IV+ICFS+C

Front Serviced Solution with InoVane® Inertial droplet separator, Air Coalescor/Filter, InoCarb Carbon Filter & lockable Cover doors.

Helping Your Equipment Breath Easy

Contaminants at the intake of compressors, blowers and turbines dramatically affect the cost of supplying compressed air. Inefficient intake filtration permits contaminants to corrode, erode and foul internals. 7 Way air intake filters will deliver optimum performance, energy savings and protection to gain long component service life

Air intakes with Integration
+Anti Icing +Filter +Carbon +Silencer
&
+ Special Solutions based upon your need

INOVANE® WATER

Air intakes for all emissions

Protecting from Noise, Dust & Smell



FILTRATION FOR ALL NEEDS

Coalescor - Barrier / Pre Filtration

Hydrophobic media allows free-running moisture to form large droplets on the intake side of the media, which then fall out of the airstream to the bottom of the filter.

Our filters are specifically designed for the rigorous environments of Marine inlet applications, these filters offer an outstanding combination of advanced technology and coalescing performance in a rugged, high-impact frame.

Optimized technique allows the filter media to load evenly throughout its depth and maintain a low resistance to airflow, while also serving to maximize filter life.

Rigid Pocket Filter - Pre & Fine Filtration

Designed for high performance in demanding operating conditions, 7 Way's rigid pocket filters can function as either prefilters or final filters, where clean air is a necessity.

Highest Dust Holding Capacity with Optimized Pressure Drop.

Designed for the use in applications where a high dust holding capacity is crucial, our filters are ideal for marine, power generation, and a variety of industrial and HVAC applications.

InoCarb - Gas adsorption Filtration

InoCarb is a modular adsorption filter with Cylinders. The cylinders are packed with granulate of chosen quality and type, designed and carefully calculated / selected for each application.

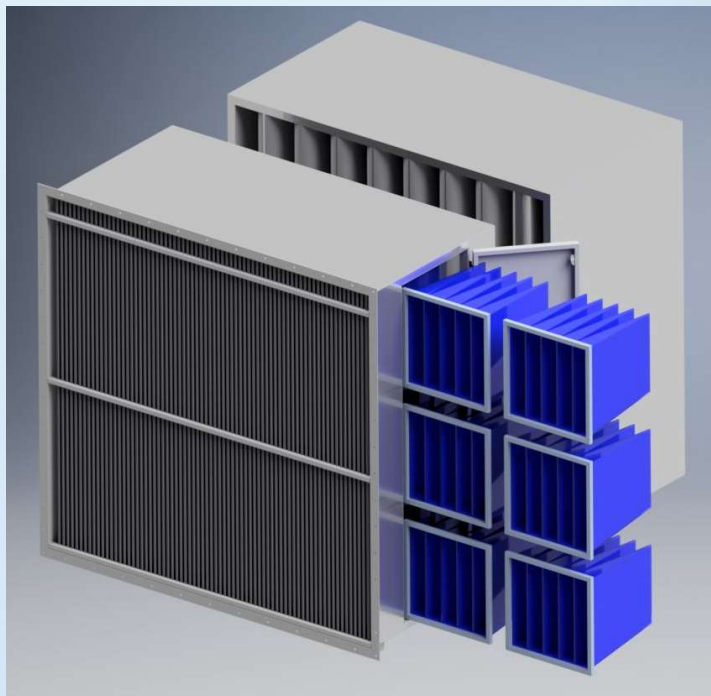
With activated carbon virtually all organic substances and thus all solvents in the air may be filtered off. Organic substances such as sulfur dioxide (SO₂) and hydrogen sulphide (H₂S) can also be removed with activated carbon which is specially impregnated with different metal salts so that the gas molecules bind chemically. Note, however, that adsorption is only suitable for the concentrations of gaseous or vaporous contaminants present in ventilation air (air).

Purification of polluted air from a manufacturing process is usually excluded. Higher concentrations than 5 PPM are usually uneconomical to handle by adsorption with conventional carbon filter cartridges. Here, deep-bed filters or regenerable filters can be an option

Certification / ATEX

Our filters are certified according to ISO9001 and ISO 14001 quality and environmental standards, also according to Eurovent EN779 alt. ISO 16890/EN13779 classifications.

7 Way offers ATEX approved filters for hazardous environment



Code & Description for the above aggregate: IV+IFS+INR

In-Line Serviced Solution with InoVane® Inertial droplet separator, G4-F8 Air Filter, lockable service door & Silencer

InoMute - Noise adsorption Silencer

Our silencers are always calculated to meet customer requirements for noise reduction, pressure drop and other site-specific requirements. The combination of production methods as-well as chosen materials and components may deviate depending on the customer needs.

INOVANE® WATER

PERFORMANCE DATA – Pressure Drop

Pressure Drop vs Air Inlet Air Velocity:

Pressure Drop through the InoVane® Water is low due to its airfoil design.

Pressure Drop is based upon laminar air flow in the units, other pressure drops caused by shape of aggregates, frames also is not taken into consideration.

This is valid for the system water / Air @ 20°C and 1 bar. Data achieved with uniform load and flow.

Air intake with combinations of Vane droplet separator & Air filters called "IFS" Integrated Filter Solution.

Below diagram describe initial pressure drops for IFS basic combinations only, please advice with us and we will assist with more specific and precise information based upon your demands.

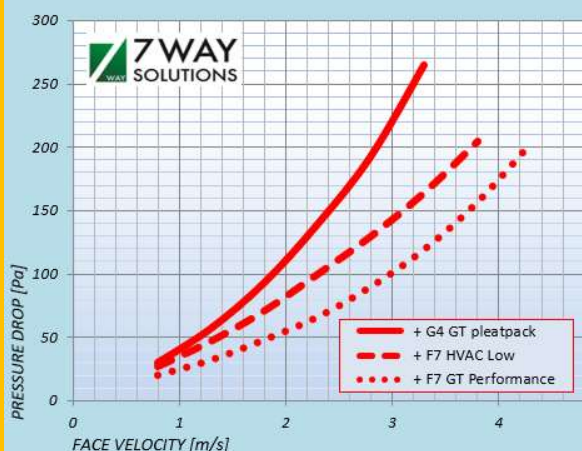
Air intake may also be added with anti ice heating system where the Vanes are heated by heat tracing cables for arctic and cold climates

InoVane® Vane Droplet Separator



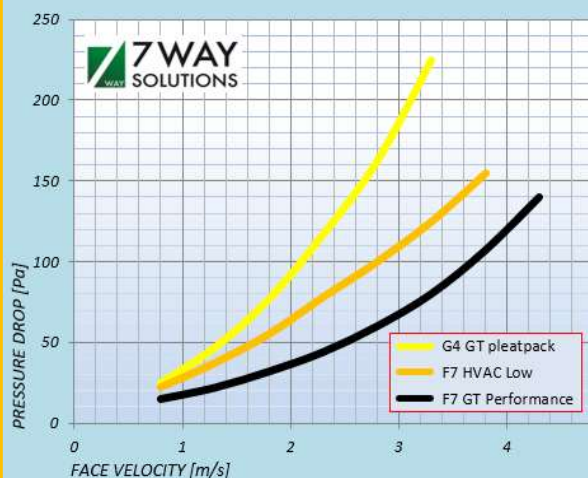
Single / 1:st Stage; InoVane® Vane Droplet Separator

InoVane® IFS "S100 33 + Filter"



Double / 2 Stage;
InoVane® Vane Droplet Separator with G4/F7 Filter.

Air filter G4 & F7



Air Filtration / Coaleser / Pre-filter / Fine-filter
Above curves display basic types of filters only.

Note: Carbon filtration and a wide range of other filters are available on request. Metal mesh filter, Hepa-filter, Cartridge-filter, Flat pad-filters as Coaleser Micro-glas alt. Synthetic pad-filters.

INOVANE® WATER

PERFORMANCE DATA – Separation Efficiency

Limit Droplet Size vs Air Inlet Air Velocity:

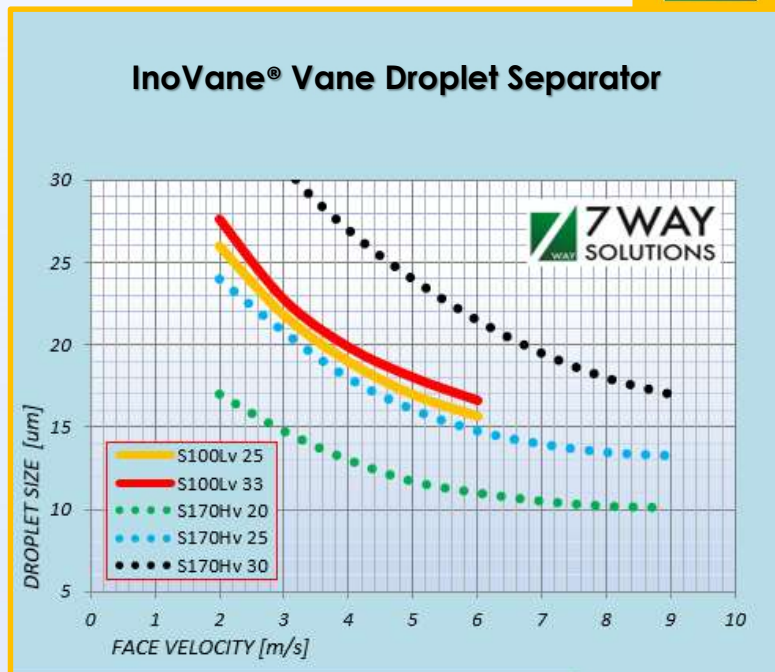
The InoVane® Water separator has a droplet removal efficiency (LDS) of 100% for water droplets 12-17 μm “microns” and larger.

The limitation to drop size means the smallest drop which is completely separated by the system. The limit drop size is measured in μm “microns” ($0,001 \text{ mm} = 1/1000 \text{ mm}$).

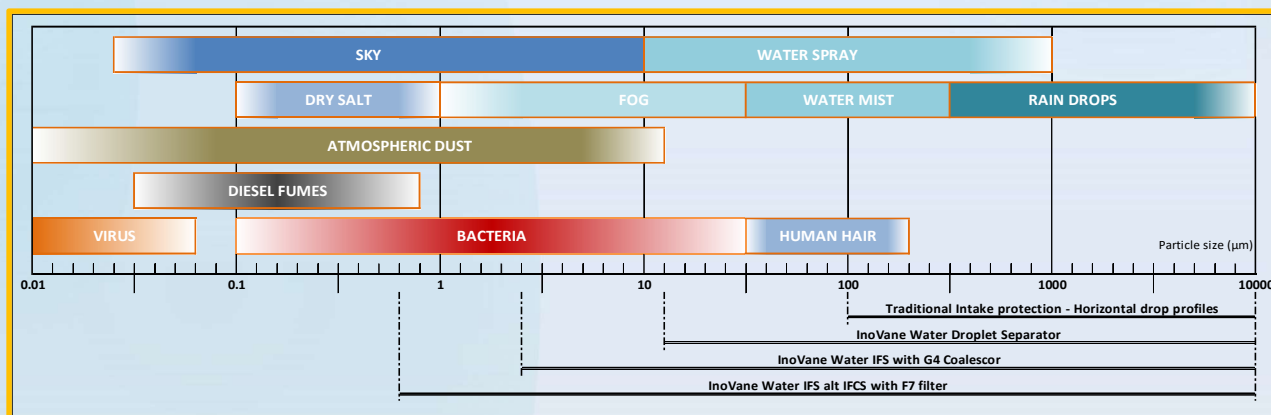
As example a normal human hair is 75-200 μm . Rain drop appr. 200-10,000 μm . Mist appr. 80 - 200 μm .

High End Filtration

In addition our IFS Solutions with 2-3 stage filtration will give a notable efficiency in separation of water droplets and particles down to size 0,3 μm . 2-stages in combination with InoVane® + G4 filter results in $\approx 100\%$ separation @ 10 μm and larger.

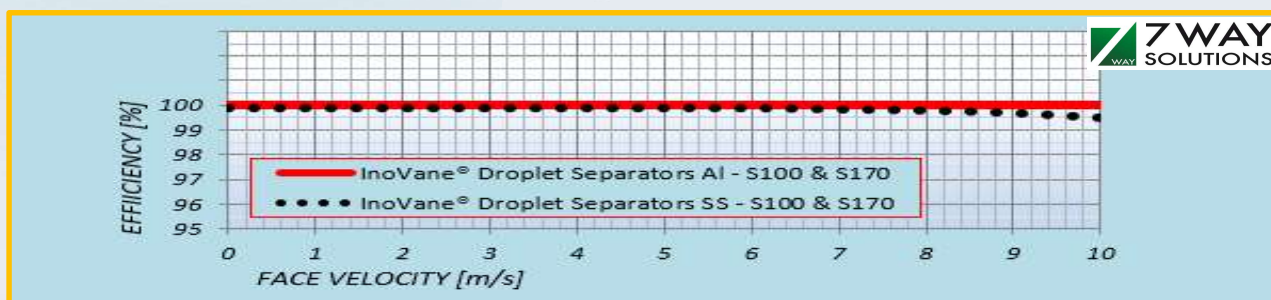


RELATIONS OF PARTICLE SIZES IN REAL WORLD



RAIN WATER SEPARATION

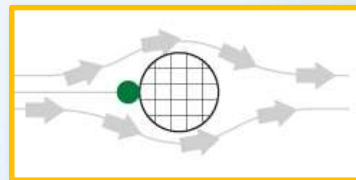
Removal of simulated rain according EN 13030:2001



SEPARATION & COLLECTION MECHANISMS

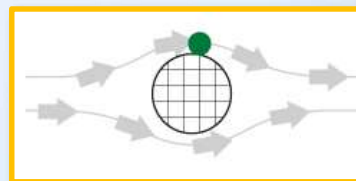
► Interception

Collection is achieved by trapping the droplet between two adjacent filaments or fiber. The finer the filaments, the more there can be in a filter with less space between them, which increases the rate of interception of finer mists. At higher velocities interception is a mechanism of coalescence, but at lower velocities it aids collection. Normal velocity range for Interception is 0.2 to 0.8 m/Sec.



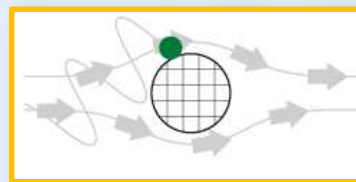
► Impaction

The mechanism whereby a particle or a droplet cannot avoid hitting a plate surface or one of the fiber / wires or Vanes randomly arrayed in the path of the gas, even though the fast flowing gas tries to 'streamline' past. There is a relationship between the blade design and spacing or diameter of wire and the size of collected droplet. The range of velocities is broad (1 to 10m/Sec) without affecting efficiency.



► Brownian Diffusion

At low velocities (usually below 0.2 m/Sec but maximum 0.25 m/Sec), as the gas passes horizontally through a bed of very fine fibers, the fine mist particles are bombarded by the gas molecules surrounding them, causing the particles to move in various directions, both towards and away from the fibers. The high number of fibers means, however, that the mist is virtually certain to be collected on the fiber. The smaller the fiber diameter, the finer the mist size that can be collected.



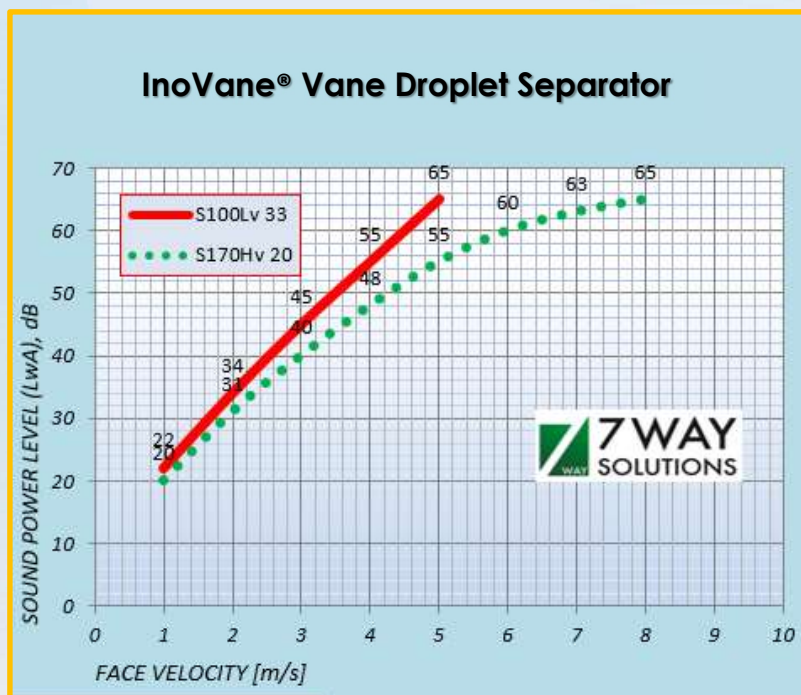
Sound Data - Self Generated Noise "SGN"

Sound Power Levels vs Air Inlet Air Flow:

Sound Power Levels (Lw) are based upon laminar air flow through the InoVane® units, deviated noise caused by shape of aggregates, frames, distance, size, Q Factors a.s.o are not taken into consideration.

Acoustic noise muting intakes.

InoVane® may also be designed as combined units with intake and silencers. Please request.



Please visit our website for more information: www.7way.se

Contact: info@7way.se



InoVane® Intake Filter Systems & Vane Droplet Separator

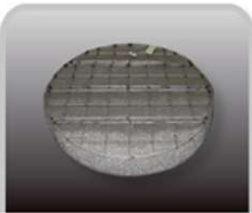
For all needs: Marine, On & Off shore, Tropical, Industrial & Power Generation

New & Retrofit



OIL MIST ELIMINATORS

Fiber Bed Candle Filter
For Turbines & Engines
Lube Oil Ventilation



DE-MISTING SEPARATORS

Knitted Mesh Pad
For Air Intakes & Process
Droplet Separation



AIR FILTERS

Static & Carbon Filters
HVAC & Industrial applications
Dust & Gas filtration



WATER DROPLET SEPARATORS

Vertical Vane Filtration
For Air Intakes & Process
Water Separation



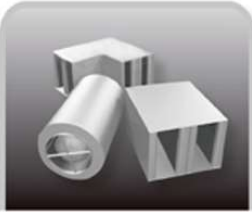
DUST STORM SEPARATORS

Inertial Filtration
For Air Intakes & Process
Sand Separation



RAIN & SNOW PROTECTION

Hood Solutions
For Air Intakes & Exhaust
Water & Snow Protection



SILENCERS

Intakes & Exhaust Duct type
HVAC & Industrial applications
Noise Reduction



FILTER HOUSINGS

For Air & Carbon Filters
HVAC & Industrial applications
Dust & Gas filtration



AIR & ANTI ICING HEATERS

Electrical & Liquid heaters
HVAC & Industrial applications
For Safe & Ex areas



SYSTEM & SOLUTIONS

Integrations for total functionality
HVAC & Industrial applications
For Safe & Ex areas