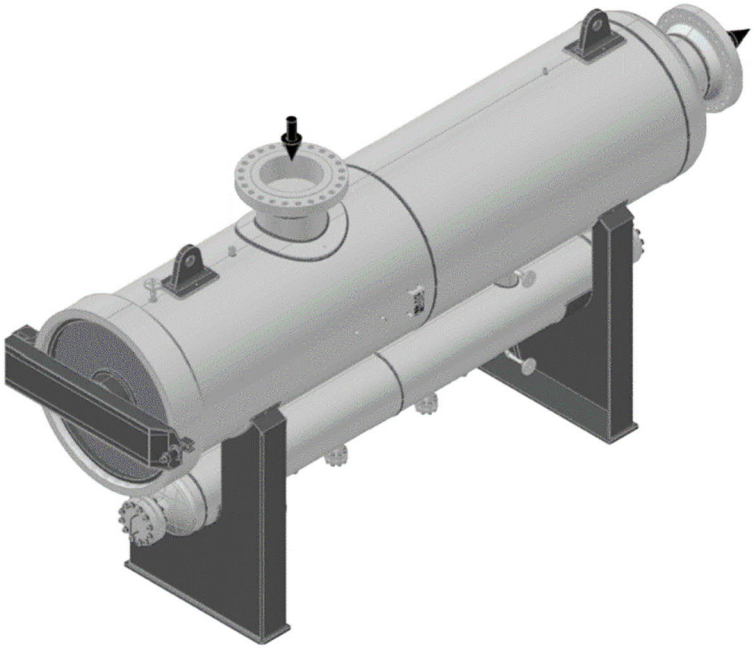


DUST-LIQUID-SEPARATOR

TYPE VSFA

adequate for all gases acc. to “DVGW Arbeitsblatt” (work sheet) G260 and for all non-aggressive special gases.

DUST-LIQUID-SEPARATOR

CHARACTERISTICS

» high efficient dust and liquid separation
» proofed cartridge efficiency and performance
» high lifetime of standard cartridges

OPTIONS

» custom-specific design acc. to various design codes (ASME, EN 13445, SVTI, AS1210, PD5500, etc.)
» custom specific TPI approvals
» custom specific testing
» sour gas application - NACE
» low temperature application up to -50°C
» high pressure application up to 300 bar
» high temperature application up to 250°C
» custom specific nozzle arrangement

ACCESSORIES:

» quick closure (QC), type VSV
» davit for QC
» rain cap/ weather protection for QC
» differential pressure reading
» misc. instrumentation
» maintenance cart for cartridge replacement
» access eye for condensate tank
» hydraulic opening aid for VSV

GENERAL

Dust-liquid-separators are designed for cleaning gas from dust and liquid particles or oil mist.

The vessel make occurs as an all steel welded construction. The vessel design will be horizontal or vertical according to the customer demands.

QUALITY MANAGEMENT

» DIN EN ISO 9001

» Our standard vessel design acc. to AD 2000 are third party approved by TÜV or other TPI and CE certified according to the pressure equipment directive EG/PED 2014/68/EU.

» Test- and material-certificates are been issued by an authorized person according to the code requirements.

FUNCTION

The gas enters the separation section via the inlet nozzle. In the first stage of filtration, gravity or centrifugal working internals separate coarse particles. These slush particles are been collected in the first collecting chamber.

Capillary fine particles (or oil mist – on demand) are been separated in the second filtration stage with dust- or coalescing cartridges. The customer demand defines the filter material. These requirements are defining the type of separation stages and the necessity of a second collecting chamber.

Depending on the application, the various mechanical separation methods are been combined to get the most efficient effect of filtering. The standard and established variants are been shown following.

The clean gas flows off the separator via the outlet nozzle.

A differential pressure gauge shall monitor the material pollution.

STANDARD DESIGN DATA

Design Code	AD 2000 + CE	**Radiography Test**	according code
Design Pressure	custom specific	**Dye Penetrant Test**	according code
Design Temperature	-10 / +50°C	**US-Test**	on demand
Body Material	Carbon Steel	**Hydrostatic Pressure Test**	p x 1,43
Design Approval	Third Party Inspector	**Leak Test**	workshop test 6 barg
Material Certificates	EN 10204/3.1	**EG/PED 2014/68/EU**	CE-certified
		Corrosion Allowance	1 mm

TECHNICAL DATA FOR CUSTOM-SPECIFIC INQUIRY/ORDER:

Design Data:									
Design Code		☐ AD 2000	☐ ASME	☐ EN 13445	☐ Bitte angeben				
Tests / Options		☐ CE / PED	☐ U-Stamp	☐ NACE	☐ Bitte angeben				
Design Pressure	PN		bar	corrosion allowance	c_2		mm		
Design Temperture	DT	min. / max.	°C	design orientation	☐ vertical	☐ horizontal			
Nozzles / Connections:		Bitte angeben		flow direction	☐ li / re	☐ re / li			
Nozzle DN Please, announce on demand		☒ inlet	☒ outlet	☒ drainage	☒ vent	☒ DP			
Nozzle DN, additional		☐ PI	☐ TI	☐ purge	☐ Please, announce				
Berechnungsdaten:									
Medium		☐ Natural Gas	☐ Biogas	☐ Sour Gas	☐ Please, announce				
Density (Gas Analysis)	ρ_{ni}		kg/m³	Efficiency Dust		% ≥	µm		
flow rate, nominal	V_n		Nm³/h / SCFM	Efficiency Droplets/Fluids		% ≥	µm		
Operational Pressure	P_i	min. / max.	bar	Efficiency Oil Mist		% ≥	µm		
Operational Temperature	ϑ_i	min. / max.	°C	Material Contaminations	Please, announce - as far as known				

STANDARD DESIGN:

The standard design of each separator includes 2 connectors for differential pressure and 1 for vent. The connectors are been installed on the front side. Each collecting chamber is equipped with 2 nozzles for a level indicator. The bottom collecting chamber considers an inspection hole according the design code requirements. On the sump bottom a drainage nozzle is included, which is closed with a blind flange or plug by default.

Type Name, Sample:

VSFA – V – AZ 1. 400 . 16 . 100 . 1

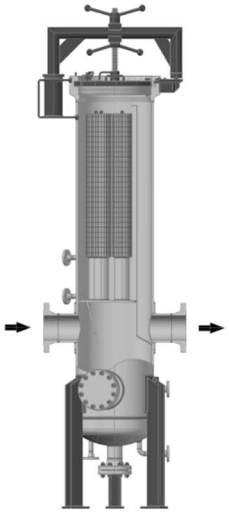
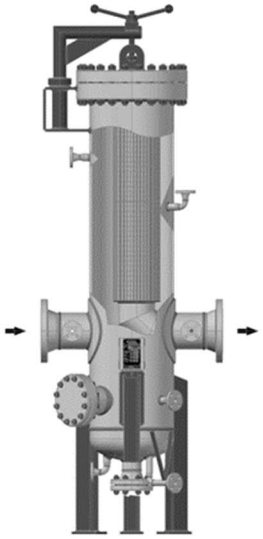
Filter Typ / Type	Durchflussrichtung / Flow Direction
Design (vertikal / horizontal)	DN Stutzen / DN Nozzle
Abscheideverfahren / Separation Stages	PN Designdruck / PN Design Pressure
Anzahl Filterelemente / Qty. Cartridges	DN Apparat / DN vessel

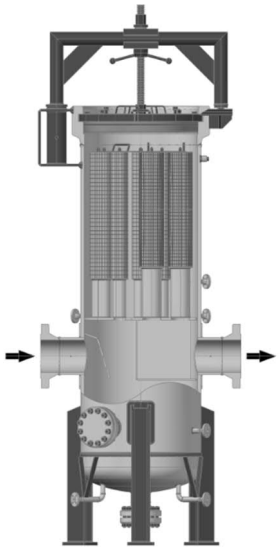
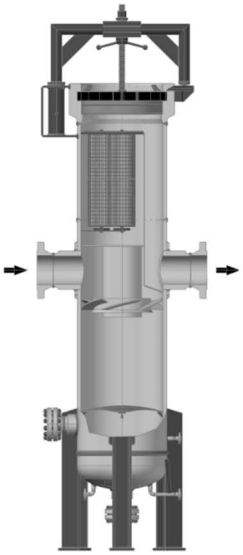
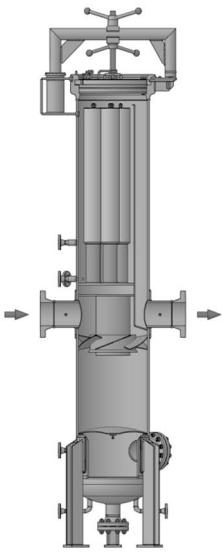
SEPARATOR VARIANTS:

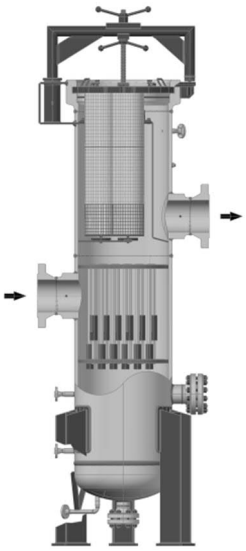
Vertikal / vertical:
- VSFA-V-PC
- VSFA-V-PZ Finalfilter 240°C
- VSFA-V-CZ
- VSFA-V-AZ
- VSFA-V-AC
- VSFA-V-MZ
- VSFA-V-MC
- VSFA-V-C Propane Gas

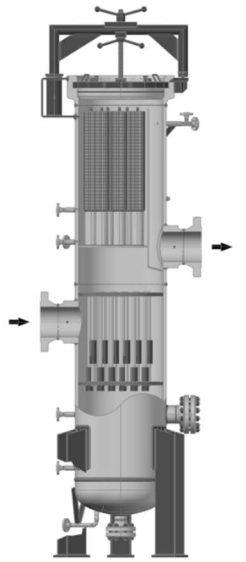
horizontal:
- VSFA-H-PC
- VSFA-H-CV
- VSFA-H-CD
- VSFA-H-ZC

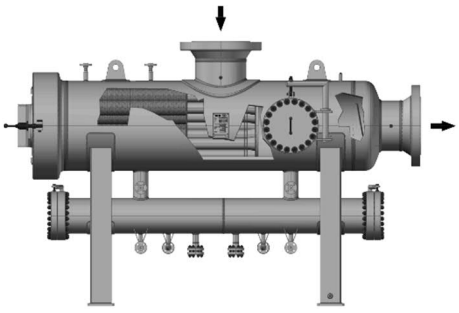
More variants on demand.

Typ / Type	Technische Daten / Technical Data		Skizze / Sketch
VSFA-V-PC	**2-stufig, vertikal** **Prallblech, Coalescer**		
	Abscheiderate Staub	99,9 % ≥ 1 µm	
	Abscheiderate Flüssigkeiten	99,9 % ≥ 1 µm	
	Differenzdruck im Neuzustand	max. 150 mbar	
	Berstdruck Filterelemente	5 bar	
	max. Einsatztemperatur Filterelemente	80°C	
	Leistungsbereich	0 – 100%	
	Flüssigkeits-Sammelräume	2x	
	2-stage, vertical **Baffle Plate, Coalescer**		
	Efficiency Dust	99,9 % ≥ 1 µm	
	Efficiency Liquids	99,9 % ≥ 1 µm	
	Differential Pressure @ new condition	max. 150 mbar	
	Burst Pressure Cartridges	5 bar	
	Max. allow. Temperature Cartridges	80°C	
	Load Range	0 – 100%	
	Droplets Collecting Chambers	2x	
Typ / Type	**Technische Daten / Technical Data**		**Skizze / Sketch**
VSFA-V-PZ FINALFILTER 240°C	**2-stufig, vertikal** **Prallblech, Hochtemperatur Filterelement**		
	Abscheiderate Staub	99,9 % ≥ 1 µm	
	Abscheiderate Flüssigkeiten	99,9 % ≥ 1 µm	
	Differenzdruck im Neuzustand	max. 150 mbar	
	Berstdruck Filterelemente	5 bar	
	max. Einsatztemperatur Filterelemente	240 °C	
	Leistungsbereich	0 – 100%	
	Flüssigkeits-Sammelräume	1x	
	2-stage, vertical **Baffle Plate, High-Temp. Cartridge**		
	Efficiency Dust	99,9 % ≥ 1 µm	
	Efficiency Liquids	99,9 % ≥ 1 µm	
	Differential Pressure @ new condition	max. 150 mbar	
	Burst Pressure Cartridges	5 bar	
	Max. allow. Temperature Cartridges	240°C	
	Load Range	0 – 100%	

	Droplets Collecting Chambers	1x	
Typ / Type	**Technische Daten / Technical Data**		**Skizze / Sketch**
VSFA-V-CZ	**3-stufig, vertikal** **Prallblech, Coalescer, Zellulose**		
	Abscheiderate Staub	99,9 % ≥ 1 µm	
	Abscheiderate Flüssigkeiten	99,9 % ≥ 1 µm	
	Differenzdruck im Neuzustand	max. 150 mbar	
	Berstdruck Filterelemente	5 bar / 2 bar	
	max. Einsatztemperatur Filterelemente	80°C	
	Leistungsbereich	0 – 100%	
	Flüssigkeits-Sammelräume	2x	
	3-stage, vertical **Baffle Plate, Coalescer, Cellulose**		
	Efficiency Dust	99,9 % ≥ 1 µm	
	Efficiency Liquids	99,9 % ≥ 1 µm	
	Differential Pressure @ new condition	max. 150 mbar	
	Burst Pressure Cartridges	5 bar / 2 bar	
	Max. allow. Temperature Cartridges	80°C	
	Load Range	0 – 100%	
	Droplets Collecting Chambers	2x	
Typ / Type	**Technische Daten / Technical Data**		**Skizze / Sketch**
VSFA-V-AZ	**2-stufig, vertikal** **Axialzyklon, Zellulose**		
	Abscheiderate Staub	99,8 % ≥ 2 µm	
	Abscheiderate Flüssigkeiten	99,5 % ≥ 10 µm	
	Differenzdruck im Neuzustand	max. 450 mbar	
	Berstdruck Filterelemente	2 bar	
	max. Einsatztemperatur Filterelemente	80°C	
	Leistungsbereich	15 – 110%	
	Flüssigkeits-Sammelräume	1x	
	2-stage, vertical **Single Cyclone, Cellulose**		
	Efficiency Dust	99,8 % ≥ 2 µm	
	Efficiency Liquids	99,5 % ≥ 10 µm	
	Differential Pressure @ new condition	max. 450 mbar	
	Burst Pressure Cartridges	2 bar	
	Max. allow. Temperature Cartridges	80°C	
	Load Range	15 – 110%	
	Droplets Collecting Chambers	1x	
Typ / Type	**Technische Daten / Technical Data**		**Skizze / Sketch**
VSFA-V-AC	**2-stufig, vertikal** **Axialzyklon, Coalescer**		
	Abscheiderate Staub	99,9 % ≥ 1 µm	
	Abscheiderate Flüssigkeiten	99,9 % ≥ 1 µm	
	Differenzdruck im Neuzustand	max. 450 mbar	
	Berstdruck Filterelemente	5 bar	
	max. Einsatztemperatur Filterelemente	80°C	
	Leistungsbereich	15 – 100%	
	Flüssigkeits-Sammelräume	2x	
	2-stage, vertical **Single Cyclone, Coalescer**		
	Efficiency Dust	99,9 % ≥ 1 µm	
	Efficiency Liquids	99,9 % ≥ 1 µm	
	Differential Pressure @ new condition	max. 450 mbar	
	Burst Pressure Cartridges	5 bar	
	Max. allow. Temperature Cartridges	80°C	
	Load Range	15 – 100%	
	Droplets Collecting Chambers	2x	

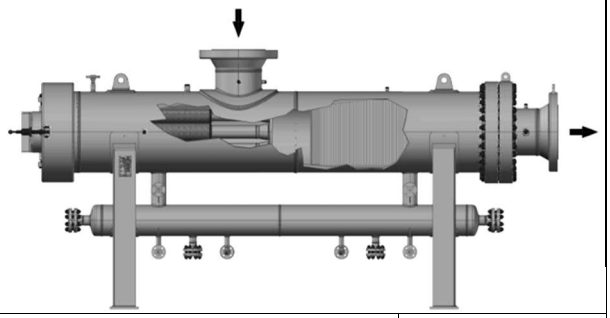
Typ / Type	Technische Daten / Technical Data		Skizze / Sketch
VSFA-V-MZ	**2-stufig, vertikal** **Multizyklone, Zellulose**		
	Abscheiderate Staub	99,8 % ≥ 2 µm	
	Abscheiderate Flüssigkeiten	99,5 % ≥ 10 µm	
	Differenzdruck im Neuzustand	max. 350 mbar	
	Berstdruck Filterelemente	2 bar	
	max. Einsatztemperatur Filterelemente	80°C	
	Leistungsbereich	15 – 100%	
	Flüssigkeits-Sammelräume	1x	
	2-stage, vertical **Multi Cyclones, Cellulose**		
	Efficiency Dust	99,8 % ≥ 2 µm	
	Efficiency Liquids	99,5 % ≥ 10 µm	
	Differential Pressure @ new condition	max. 350 mbar	
	Burst Pressure Cartridges	2 bar	
	Max. allow. Temperature Cartridges	80°C	
	Load Range	15 – 100%	
	Droplets Collecting Chambers	1x	

Typ / Type	Technische Daten / Technical Data		Skizze / Sketch
VSFA-V-MC	**2-stufig, vertikal** **Multizyklone, Coalescer**		
	Abscheiderate Staub	99,9 % ≥ 1 µm	
	Abscheiderate Flüssigkeiten	99,9 % ≥ 1 µm	
	Differenzdruck im Neuzustand	max. 350 mbar	
	Berstdruck Filterelemente	5 bar	
	max. Einsatztemperatur Filterelemente	80°C	
	Leistungsbereich	15 – 100%	
	Flüssigkeits-Sammelräume	2x	
	2-stage, vertical **Mulit Cyclones, Coalescer**		
	Efficiency Dust	99,9 % ≥ 1 µm	
	Efficiency Liquids	99,9 % ≥ 1 µm	
	Differential Pressure @ new condition	max. 350 mbar	
	Burst Pressure Cartridges	5 bar	
	Max. allow. Temperature Cartridges	80°C	
	Load Range	15 – 100%	
	Droplets Collecting Chambers	2x	

Typ / Type	
VSFA-H-PC	

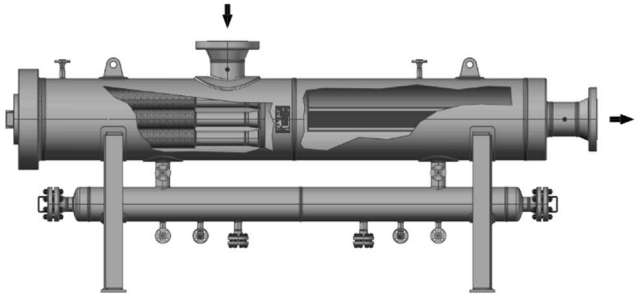
Technische Daten / Technical Data

2-stufig, horizontal **Prallrohre, Coalescer**		**2-stage, horizontal** **Baffle Tubes, Coalescer**	
Abscheiderate Staub	99,9 % ≥ 1 µm	Abscheiderate Staub	99,9 % ≥ 1 µm
Abscheiderate Flüssigkeiten	99,0 % ≥ 10 µm	Abscheiderate Flüssigkeiten	99,0 % ≥ 10 µm
Differenzdruck im Neuzustand	max. 150 mbar	Differenzdruck im Neuzustand	max. 150 mbar
Berstdruck Filterelemente	5 bar	Berstdruck Filterelemente	5 bar
max. Einsatztemperatur Filterelemente	80°C	max. Einsatztemperatur Filterelemente	80°C
Leistungsbereich	0 – 100%	Leistungsbereich	0 – 100%
Flüssigkeits-Sammelräume	2x	Flüssigkeits-Sammelräume	2x

Typ / Type	
VSFA-H-CV	

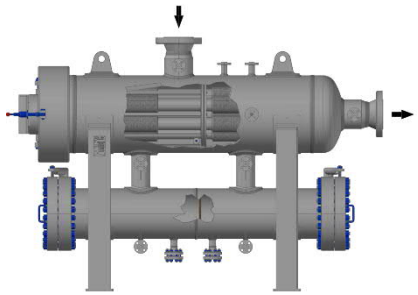
Technische Daten / Technical Data

3-stufig, horizontal **Prallrohre, Coalescer, Vane** **Optional: Agglomerator / Vane**		**3-stage, horizontal** **Baffle Tubes, Coalescer, Vane** **Optional: Agglomerator / Vane**	
Abscheiderate Staub	99,9 % ≥ 1 µm	Abscheiderate Staub	99,9 % ≥ 1 µm
Abscheiderate Flüssigkeiten	99,5 % ≥ 8 µm	Abscheiderate Flüssigkeiten	99,5 % ≥ 8 µm
Differenzdruck im Neuzustand	max. 150 mbar	Differenzdruck im Neuzustand	max. 150 mbar
Berstdruck Filterelemente	5 bar	Berstdruck Filterelemente	5 bar
max. Einsatztemperatur Filterelemente	80°C	max. Einsatztemperatur Filterelemente	80°C
Leistungsbereich	0 – 100%	Leistungsbereich	0 – 100%
Flüssigkeits-Sammelräume	2x	Flüssigkeits-Sammelräume	2x

Typ / Type	
VSFA-H-CD	

Technische Daten / Technical Data

3-stufig, horizontal **Prallrohre, Coalescer, Demister**		**3-stage, horizontal** **Baffle Tubes, Coalescer, Wire Mesh**	
Abscheiderate Staub	99,9 % ≥ 1 µm	Abscheiderate Staub	99,9 % ≥ 1 µm
Abscheiderate Flüssigkeiten	99,0 % ≥ 10 µm	Abscheiderate Flüssigkeiten	99,0 % ≥ 10 µm
Differenzdruck im Neuzustand	max. 150 mbar	Differenzdruck im Neuzustand	max. 150 mbar
Berstdruck Filterelemente	5 bar	Berstdruck Filterelemente	5 bar
max. Einsatztemperatur Filterelemente	80°C	max. Einsatztemperatur Filterelemente	80°C
Leistungsbereich	0 – 100%	Leistungsbereich	0 – 100%
Flüssigkeits-Sammelräume	2x	Flüssigkeits-Sammelräume	2x

Typ / Type	
VSFA-H-ZC	

Technische Daten / Technical Data

3-stufig, horizontal **Prallrohre, Zellulose, Coalescer**		**3-stage, horizontal** **Baffle Tubes, Cellulose, Coalescer**	
Abscheiderate Staub	99,9 % ≥ 1 µm	Abscheiderate Staub	99,9 % ≥ 1 µm
Abscheiderate Flüssigkeiten	99,0 % ≥ 10 µm	Abscheiderate Flüssigkeiten	99,0 % ≥ 10 µm
Differenzdruck im Neuzustand	max. 150 mbar	Differenzdruck im Neuzustand	max. 150 mbar
Berstdruck Filterelemente	5 bar	Berstdruck Filterelemente	5 bar
max. Einsatztemperatur Filterelemente	80°C	max. Einsatztemperatur Filterelemente	80°C
Leistungsbereich	0 – 100%	Leistungsbereich	0 – 100%
Flüssigkeits-Sammelräume	2x	Flüssigkeits-Sammelräume	2x

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