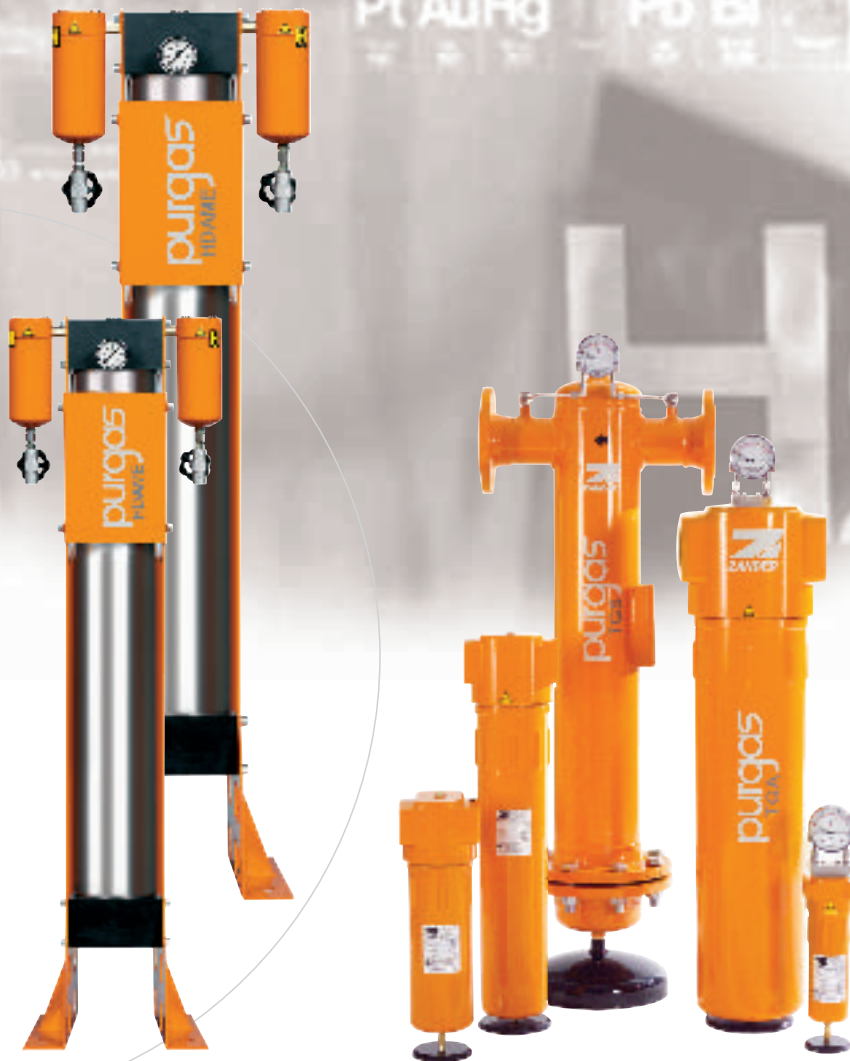


Technical gases



purgas Series TG
Series STV
Series HDAM/HDAME



Adsorbers for natural gas fuelling stations

Natural gas cars – economic, clean, quiet

Why are natural gas adsorbers required for today's natural gas vehicle (NGV) fuelling stations?

Gases from natural resources are a "clean burning" energy source that will remain available for a longer period than petroleum resources. For example, 20% of the world-wide primary energy requirements are already met with natural gas.

Internal combustion engines have also been operated with natural gas and other gaseous fuels for many years. Many EU governments financially promote the use of this energy source owing to its environmental benefits and to achieve the goals for emission reduction defined within the scope of the Kyoto Protocol. Further advantages are the reduction of the CO₂ burden (greenhouse gas) and the pollutant levels of soot particles and nitrogen oxides, which may be as much as 80% less than the corresponding values for vehicles operated with standard fuels.

In Germany, tax-relief up to the year 2020 on CNG and motor vehicle tax is granted for users of natural gas. Fleet operators are increasingly converting their vehicles to alternative fuels. They see distinct economic advantages, especially as these gaseous fuels are now becoming more readily available as the geographic density of gas fuelling-stations increases.



Safety requirements standard ISO 15403:2000(E):

"To explain why preparation of natural gas and other alternative fuels is necessary for fuelling motor vehicles, it is necessary to take note of the contents of the relevant standards, e.g. the ISO Standard 15403:

"The single most important safety requirement for compressed natural gas (CNG) is a very low water dew-point temperature to preclude the condensation of water under all circumstances. Liquid water is the prerequisite for the formation of corrosive substances on account of its chemical reaction with components of natural gas, namely carbon dioxide and hydrogen sulphide.

The combination of corrosive agents and pressure cycling caused by fuel consumption and subsequent refilling of the fuel supply container can result in cracking of the metal structure, ultimately leading to damage and its

failure. Furthermore, liquid water can be detrimental on its own because it may cause liquid or solid blockages in the fuel system. Therefore, the pressure dew-point of the fuel gas at the natural gas fuelling station outlet must lie sufficiently below the lowest local ambient temperature".

These statements also apply to all other gas fuels for motor vehicle engines.

The terms and definitions taken from the standard ISO 15403: 2000(E) are used with the approval of the International Organisation of Standardisation (ISO). This standard publication is available from all ISO members and on the website of the ISO central secretariat, www.iso.org. Copyright remains with the ISO.



Particulate and micro-filtration

Why do technical gases have to be filtered ?

Filters are common place in almost all technical gas systems. There is seldom an application for technical gases in a production process where the quality of untreated gas would be acceptable.

This applies not only to process gases that come into contact with the final product and which must therefore be especially pure, but also to the industrial utilisation of gases.

For example, high quality is required to protect downstream components against corrosion. This enhances operational safety, reliability and the service life of the particular plant.

This means that technical gases must comply with the defined requirements with regard to their purity. This applies, in particular, to removing dirt particles and oil mists. Increasing demands are being placed on the effective removal of oil droplets which are re-circulated back into the compressor as a coolant and a lubricant. This recovery method is not only cost effective but also serves to protect the environment.

ZANDER is one of the market leaders in this field and is a reliable partner for many industrial customers and users world-wide.



Our decades of know-how in the development and production of filters and filter elements for technical gases provides the basis for developing high-quality products and system solutions.

It must be pointed out that filters are not all alike: there are significant technical and qualitative differences that have a considerable effect on the operating costs and the service life.

The filters of the ZANDER purgas® series TG were specially adapted by ZANDER to fulfil the requirements for technical gas filtration.

The chemical resistance with respect to the medium is considered individually for each application.

To make quite sure that foreign contaminants are precluded, ZANDER has installed a dedicated line for gas filter production that includes special manufacturing and testing methods.

ZANDER is a
member of
the ENGVA





Filters for purifying technical gases

Gas filters - technically and economically convincing

ZANDER gas filters are available in a wide range of product configurations – from an impaction separator for pre-filtration duties, containing an insert which can be installed in the same manner as a conventional filter element to all housings in the TG-range, to filters manufactured from pleated mesh, available in various filtration grades for coarse pre-filtration applications. The design of all of these filters enables filtration to be performed at low pressure drops, with the added feature of filter-regeneration via back-washing.

The micro-filtration media exhibits oleophobic and hydrophobic properties and its pleated construction, up to 4 times greater than comparable competitive filters, enables high throughputs at low differential pressures. They also have a long service life because

of their greater contaminant retention capacity. High retention performance is achieved, even for very fine particle sizes as low as 0.01 µm.

Electrically conductive, earthed, certified filter housings and elements in conformance with

ATEX regulations are available. Improved thermal stability also permits utilisation with gases at elevated temperatures. The sealing-materials on the filter housing and filter element are specific to the gas being filtered and are supplied at no extra cost.

A well-devised design developed for technical gas applications also includes a special chemically and thermally stable adhesive to attach the end cap to the filter cylinder.



purgas TGA filter series

*from PN 16 to PN 350,
threaded connections G1/4-G2*

The filter housings of the TGA series are available in aluminium and steel, and are designed for a housing temperature of up to 120°C.

The interior of the housing has an chromate coating to protect against efflorescence and corrosion. The external surfaces are protected with an impact-resistant powder coating. The housing is electrically conductive and exhibits an

additional earthing feature. It is constructed in two parts so that even the larger housings can be opened without difficulty by a single person.

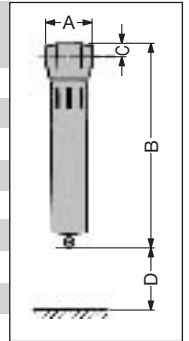
All materials utilised in construction have been individually examined for their suitability in gas systems and have been subjected to a special multi-stage cleaning procedure. The positive location of the filter element into the hou-

sing is achieved by a threaded stainless-steel tie-rod which ensures stability at varying pressures.

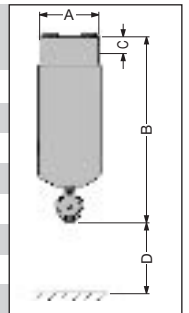
An extensive range of threaded connectors, including screw-in flanges or BSP and NPT thread connections are available on request.

Technical data

Filter type	Rating* m ³ /h	Connection G/DN	Pressure bar g	Dimensions				Element type
				A	B	C	D	
TGA 102	30	G 1/4	16 - 50	61	156	14	60	TA 30_
TGA 104	50	G 1/4	16 - 50	87	201	21	75	TA 50_
TGA 106	70	G 3/8	16 - 50	87	201	21	90	TA 70_
TGA 108	100	G 1/2	16 - 50	87	271	21	160	TA 90_
TGA 110	180	G 3/4	16 - 50	130	306	43	135	TB 10_
TGA 112	300	G 1	16 - 50	130	406	43	235	TB 20_
TGA 114	470	G 1 1/2	16 - 50	130	506	43	335	TB 30_
TGA 116	700	G 1 1/2	16 - 50	130	706	43	525	TB 50_
TGA 118	940	G 2	16 - 50	164	751	48	520	TC 50_



Filter type	Rating* m ³ /h	Connection G/DN	Pressure bar g	Dimensions				Element type
				A	B	C	D	
TGA 104	50	G 1/4	100 - 350	85	330	25	100	TA 50_
TGA 106	70	G 3/8	100 - 350	85	330	25	115	TA 70_
TGA 108	100	G 1/2	100 - 350	85	395	25	185	TA 90_
TGA 110	180	G 3/4	100 - 350	116	445	25	170	TB 10_
TGA 112	300	G 1	100 - 350	116	530	25	270	TB 20_
TGA 114	470	G 1 1/2	100 - 350	125	640	33	335	TB 30_
TGA 116	700	G 1 1/2	100 - 350	125	900	33	560	TB 50_
TGA 118	940	G 2	100 - 350	155	925	45	565	TC 50_



* for a medium with mixture density of 9.56 kg/m³. With respect to 1 bar (abs) and 20 °C at 7 bar g operating pressure.
Larger flow rates or operating pressures available on request. Individual calculations are required for the different types of gases to be filtered.

Specification of filter element(s)				
Filtration Grade	Filter type	Filtration efficiency*	Temperature	Application range
Coarse separation	S	95% (≥ 1µm)	1°C - 120°C	Coarse separation of liquids (e.g. water, oil) and solid impurities
Coarse filters	P	99.99% (3µm)	1°C - 60°C	Particle filtration to separate solid impurities down to a particle size of 3µm
	PL12 PL25	>99 % (12/25µm)	1°C - 120°C	Coarse filter to separate solid contaminants down to a particle size of 12µm/25µm
	PL12-HTCR PL25-HTCR	>99 % (12/25µm)	1°C - 120°C	Coarse filter to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 12/25µm
	PL1	>99 % (1 µm)	1°C - 120°C	Coarse filter to separate solid impurities down to a particle size of 1µm
Microfilters	C	99.9999% (1µm) ≤ 0.5 mg/m ³	1°C - 80°C	Micro-filtration to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 1µm
Fine filters	CF	99.99999% (0.01µm) ≤ 0.01 mg/m ³	1°C - 80°C	Micro-filtration to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 0.01µm
Super-fine filters	CSF	≥99.99999% (0.01µm) ≤ 0.001 mg/m ³	1°C - 80°C	Micro-filtration to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 0.01µm
HTNX	C / CF / CSF		1°C - 120°C	Micro-filtration to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 0.01µm, with increased inlet temperature up to max. 120°C
HTCR	C / CF / CSF		1°C - 120°C	Micro-filtration to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 0.01µm with increased inlet temperature up to max. 120°C
Cartridge	M	Molecular sieve, loose	1°C - 55°C	Adsorption of water vapour
	A	Active charcoal, loose	1°C - 40°C	Absorption of oil vapours

* for a medium with mixture density of 9.56 kg/m³, flow rate < 0.5 m/s, mineral oil.



Filters for purifying technical gases

purgas TGS filter series

*Flange connection
DN 50 to DN 200, PN16*

The steel housings of the TGS series are designed for temperatures of up to 120°C and the internal surfaces are protected against corrosion. The external surfaces are coated with a synthetic resin coating. The housing is electrically conductive for explosion proof areas and has the additional feature of being earthed.

Only the base of the two-part filter housing must be removed in order to replace the filter element. This means that even large housings can easily be opened by a single person.



Similar to the TGA series, all materials of construction are examined in accordance with the requirements of the individual gas application and subjected to a multi-stage cleaning process.

The positive location of the filter element into the housing is achieved by a threaded stainless-steel tie-rod which ensures stability at varying pressures. Numerous flange-variations are available for ease of installation into existing plant facilities.

purgas TGE filter series

Connection size G 3/4 threaded to DN100, PN16 flanged

The filter housings in the purgas TGE range are made of stainless steel 1.4301 (AISI 304). Other high quality materials are available as an option. The housings are electrically conductive and suitable for installation in explosion-proof areas. They also exhibit an earthing feature. The filter housings are designed for a maximum operating temperature of 120°C.

The housing comprises three parts, a head, a bowl and a locking ring. Removal of the filter bowl enables access for filter element replace-

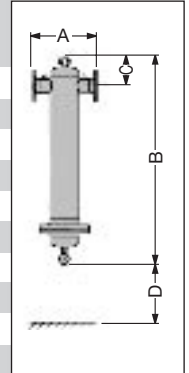
ment and ease of servicing. The stainless steel click-lock sealing mechanism of the filter element end-cap ensures simple, secure anchorage into the filter housing, even in the presence of pressure variation.

All materials are examined in accordance with the individual application and have been subjected to a special cleaning procedure during the production process. Numerous connection sizes are available from DIN/ISO threaded to flanges and weld-prepared-ends.

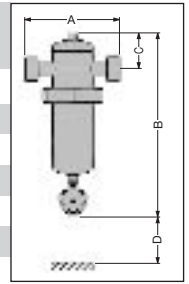


Technical data

Filter type	Rating* m ³ /h	Connection G/DN	Pressure bar g	Dimensions				kg	Element type
				A	B	C	D		
TGS 214	1450	DN 50	16	380	931	167	315	31.0	1/TC 50_
TGS 216	1950	DN 65	16	380	1180	175	530	38.0	1/TC 75_
TGS 218	2290	DN 80	16	420	1180	175	530	42.0	1/TD 60_
TGS 220	2920	DN 80	16	440	1320	205	530	44.0	1/TD 75_
TGS 222	3700	DN 100	16	500	1440	230	550	101.0	2/TC 75_
TGS 224	5500	DN 100	16	500	1440	230	550	102.0	3/TC 75_
TGS 226	7400	DN 150	16	640	1590	280	550	136.0	4/TC 75_
TGS 228	11100	DN 150	16	790	1650	300	550	220.0	6/TC 75_
TGS 230	14800	DN 200	16	790	1730	340	550	252.0	8/TC 75_
TGS 232	18500	DN 200	16	840	1780	360	550	353.0	10/TC 75_



Filter type	Rating* m ³ /h	Connection G/DN	Pressure bar g	Dimensions				kg	Element type
				A	B	C	D		
TGE 308	67	G 3/4	16	151	300	55	85	3.0	TE 09_
TGE 314	175	G 1 1/2	16	198	400	75	140	4.2	TE 13_
TGE 316	352	G 2	16	233	570	80	280	7.1	TE 14_
TGE 320	683	G 2 1/2	16	275	875	110	530	12.5	TE 18_
TGE 322	1013	G 3	16	289	1135	110	780	13.9	TE 19_
TGE 324	683	DN 80	16	350	739	145	410	32.6	TEL 19_
TGE 326	1450	DN 100	16	430	742	198	490	45.0	TEL 20_



* for a medium with mixture density of 9.56 kg/m³. With respect to 1 bar (abs) and 20 °C at 7 bar g operating pressure.
Larger flow rates or operating pressures available on request. Individual calculations are required for the different types of gases to be filtered.

Specification of filter element(s)				
Filtration Grade	Filter type	Filtration efficiency*	Temperature	Application range
Coarse separation	S	95% (≥ 1µm)	1°C - 120°C	Coarse separation of liquids (e.g. water, oil) and solid impurities
Coarse filters	P	99.99% (3µm)	1°C - 60°C	Particle filtration to separate solid impurities down to a particle size of 3µm
	PL12 PL25	>99 % (12/25µm)	1°C - 120°C	Coarse filter to separate solid contaminants down to a particle size of 12µm/25µm
	PL12-HTCR PL25-HTCR	>99 % (12/25µm)	1°C - 120°C	Coarse filter to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 12/25µm
	PL1	>99 % (1 µm)	1°C - 120°C	Coarse filter to separate solid impurities down to a particle size of 1µm
Microfilters	C	99.9999% (1µm) ≤ 0.5 mg/m ³	1°C - 80°C	Micro-filtration to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 1µm
Fine filters	CF	99.99999% (0.01µm) ≤ 0.01 mg/m ³	1°C - 80°C	Micro-filtration to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 0.01µm
Super-fine filters	CSF	≥99.99999% (0.01µm) ≤ 0.001 mg/m ³	1°C - 80°C	Micro-filtration to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 0.01µm
HTNX	C / CF / CSF		1°C - 120°C	Micro-filtration to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 0.01 µm, with increased inlet temperature up to max. 120°C
HTCR	C / CF / CSF		1°C - 120°C	Micro-filtration to separate liquid (e.g. water, oil) and solid impurities down to a particle size of 0.01 µm with increased inlet temperature up to max. 120°C
Cartridge**	M A	Molecular sieve, loose Active charcoal, loose	1°C - 55°C 1°C - 40°C	Adsorption of water vapour Absorption of oil vapours

* for a medium with mixture density of 9.56 kg/m³, flow rate < 0.5 m/s, mineral oil.

** only for series TGS



purgas STV adsorber series - high performance, high standard of quality

ZANDER purgas STV – adsorbers are designed to be installed at the suction side of the compressor and in low pressure applications. The unique desiccants employed in the adsorber exhibit high adsorption/absorption capacity and have been specially developed for gas applications. By virtue of the physical properties and very high bulk-density, this material fulfils the pre-requisites of high-loading capacity for a maximum economic period of operation.

The adsorbers are sized to achieve long periods of adsorption and optimise the length of time to the next regeneration cycle. This means that the adsorption media is subjected to minimum thermal stress which prolongs its useful lifetime before replacement.

The STV adsorber series is manufactured by ZANDER in accordance with ISO 9001 and ISO 14000 quality standards. All models are electrically conductive and equipped with stainless steel wedges wire desiccant supports. These



supports ensure excellent flow distribution, thus fully utilising the surface area of the desiccant and avoiding dead spaces.

Various types of desiccant adsorption material are available for the removal of different types of contamination from gas streams. All adsorbers are equipped with flanged connections as standard, if necessary screw connections can be provided. All external surfaces are protected with an anti-corrosion resin coating.

The scope of delivery also includes a pre-filter and an after-filter from the ZANDER purgas TGA or TGS series, which are also electrically conductive and can be further protected by an earthing feature mounted to the housing.

Each purgas STV adsorber...

...requires a desiccant or adsorption material replacement after a certain period of operation. This is dependant on the moisture levels experienced, the number of hours of operation and the frequency of regeneration. Alternatively, the desiccant can be regenerated externally on reaching the maximum adsorption capacity. To enable this task to be carried out, ZANDER supply a portable or fixed regeneration unit for all STV adsorbers (Please refer to the flow-schematic on the next page). All models are regenerated in the same way by passing nitrogen through the desiccant.

...permits the installation of several individual adsorbers as an integrated system. This reduces the downtime for regeneration.

... can be fitted with an optional, portable dew-point meter, (ZHM 100 TTP-Eex) or with a stationary dew-point meter (ZHM 100 TT-Eex). This enables the user to fully utilise the adsorption capacity of the desiccant and thus determine the optimum moment for regeneration or replacement of the same.

...can be equipped with a visual dewpoint indicator. The colour change of the indicator provides

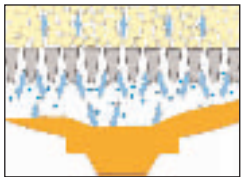
the user with a visual signal that the desiccant requires regeneration (Please refer to the flow-schematic on the next page)

... .can be equipped with an optional automatic condensate drain, mounted to the pre-filter, thus ensuring reliable discharge of excess liquid and increasing the adsorption capacity of the desiccant. A differential pressure gauge can also be installed to the pre-filter as an indicator for timely replacement of the filter element.

Technical data

Type	Performance* m³/h	Dimensions mm			Connection DN	Pressure bar g	Weight kg Adsorber without filter	Suitable	
		Width	Height	Depth				pre-filter Type	after-filter Type
STV 200-NGZ	35	255	1670	280	G 1	16	62	TGA112/16CSF-B/A	TGA112/16C-B/A
STV 300-NGZ	50	290	1690	280	G 1	16	75	TGA112/16CSF-B/A	TGA112/16C-B/A
STV 400-NGZ	65	330	1650	340	G 1	16	103	TGA112/16CSF-B/A	TGA112/16C-B/A
STV 500-NGZ	85	360	1670	340	G 1	16	126	TGA112/16CSF-B/A	TGA112/16C-B/A
STV 600-NGZ	105	385	1780	420	G 1 1/2	16	144	TGA116/16CSF-B/A	TGA116/16C-B/A
STV 800-NGZ	150	445	1800	420	G 1 1/2	16	193	TGA116/16CSF-B/A	TGA116/16C-B/A
STV 1150-NGZ	200	475	1910	500	G 1 1/2	16	253	TGA116/16CSF-B/A	TGA116/16C-B/A
STV 1400-NGZ	260	525	1930	500	G 2	16	309	TGA118/16CSF-B/A	TGA118/16C-B/A
STV 2000-NGZ	325	500	2070	840	50	16	350	TGS214/16CSF-F/A	TGS214/16C-F/A
STV 2600-NGZ	400	500	2110	900	65	16	401	TGS216/16CSF-F/A	TGS216/16C-F/A
STV 3100-NGZ	560	650	2150	990	65	16	537	TGS216/16CSF-F/A	TGS216/16C-F/A
STV 3800-NGZ	650	660	2210	1040	65	16	606	TGS216/16CSF-F/A	TGS216/16C-F/A
STV 5000-NGZ	790	750	2255	1100	80	16	691	TGS218/16CSF-F/A	TGS218/16C-F/A
STV 6000-NGZ	1000	850	2385	1200	80	16	845	TGS218/16CSF-F/A	TGS218/16C-F/A
STV 8000-NGZ	1360	860	2660	1250	80	16	1113	TGS218/16CSF-F/A	TGS218/16C-F/A
STV 10000-NGZ	1700	960	2820	1150	80	16	1551	TGS218/16CSF-F/A	TGS218/16C-F/A
STV 12000-NGZ	2500	1155	2865	1400	100	16	2780	TGS222/16CSF-F/A	TGS222/16C-F/A

* Individual calculations are required for the different types of gases. The reference taken here is natural gas at 1 bar (abs) and 20°C at operating pressure. Larger flow rates or operating pressures available on request.

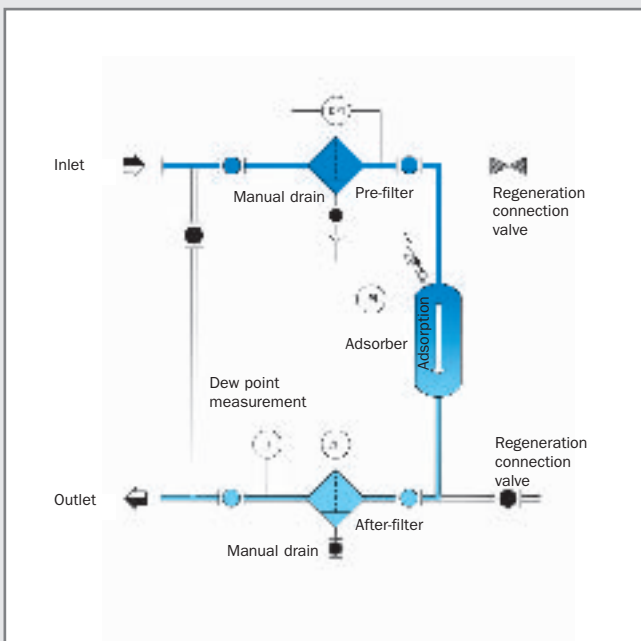


Wedges wire desiccant support

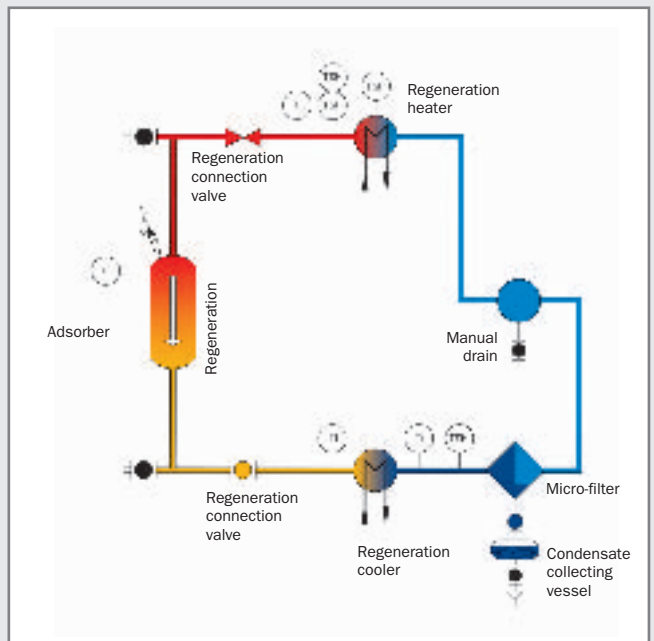
Series STV



Adsorption cycle



Regeneration cycle, heating phase





purgas adsorber series HDAM and HDAME

Gases cleaned under high pressure

ZANDER HDAM and HDAME gas adsorbers are designed for installation after the compressor at the high-pressure side. Various pressure ratings are available from PN100 to PN250 and PN350.

Both adsorber ranges are manufactured by ZANDER in accordance with ISO 9001 and ISO 14000 quality standards. Various types of desiccant adsorption/absorption material are available for the removal of different types of contamination from gas streams.

Adsorbers in the HDAM and HDAME range are supplied complete with pre- and after-filtration. All sealing materials are chosen individually for the type of gas to be treated. (Ref; PED fluid group 1). Vessel approval of the adsorber and filters is carried out in accordance with the European Pressure Equipment Directive (DGRL/PED; 97/23/EC) and affirmed by a declaration of conformity.

Furthermore, conformance with the European Explosion Protection Directive (ATEX 95; 94/9/EC) is also available for the entire product range and includes compliance with ATEX mechanical stipulations.

Adsorbers can be supplied with an optional, portable dew-point meter (ZHM 100 TTP-Eex) or with a stationary dew-point meter (ZHM 100 TT-Eex). This enables the user to fully utilise the adsorption capacity of the desiccant and thus determine the optimum moment for regeneration or replacement of the same.



Construction features of the purgas HDAM series

The vessels of the HDAM series are made of standard steel and are welded as compact unit.

The internal surfaces of the vessels are protected against corrosion with rust protection coating. The external surfaces are protected with a synthetic resin coating.

Flow distributors are mounted at the inlet and outlet of the vessel for uniform distribution of the gas stream inside the adsorber.

purgas HDAME series

The HDAME vessel series is made of stainless steel ensuring high resistance to aggressive chemicals with respect to the impurities contained within the gas stream to be treated. A patented closure system provides easy access to the entire cross-section of the vessel. This simplifies servicing.

The granulate adsorption bed is tensioned to efficiently compensate for any pressure surges, thus protecting the desiccant adsorption material from excessive wear and damage.



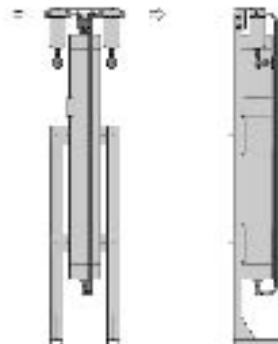
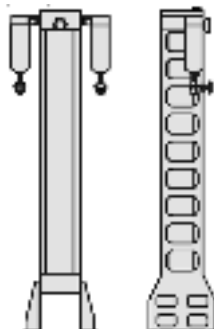
Technical data

Type	Performance* m ³ /h	Dimensions mm			Connection mm	max. Pressure bar g	Weight kg Adsorber without filter	including	
		Width	Height	Depth				pre-filter Type	after-filter Type
HDAM 140/ 350-NGZ	45	380	1530	280	16	100-350	124	TGA104/350CSF-B/A	TGA104/350C-B/A
HDAM 250/ 350-NGZ	95	380	1650	280	16	100-350	157	TGA104/350CSF-B/A	TGA104/350C-B/A
HDAM 400/ 350-NGZ	140	380	1890	280	16	100-350	210	TGA104/350CSF-B/A	TGA104/350C-B/A
HDAM 600/ 350-NGZ	205	415	1950	400	16	100-350	277	TGA108/350CSF-B/A	TGA108/350C-B/A
HDAM 800/ 350-NGZ	380	485	2180	400	16	100-350	322	TGA108/350CSF-B/A	TGA108/350C-B/A
HDAM 1200/ 350-NGZ	600	485	2275	400	16	100-350	485	TGA108/350CSF-B/A	TGA108/350C-B/A
HDAM 2000/ 350-NGZ	900	485	2275	400	16	100-350	648	TGA108/350CSF-B/A	TGA108/350C-B/A
HDAM 2500/ 350-NGZ	1200	485	2275	400	16	100-350	771	TGA108/350CSF-B/A	TGA108/350C-B/A

Type	Performance* m ³ /h	Dimensions mm			Connection mm	max. Pressure bar g	Weight kg Adsorber without filter	including	
		Width	Height	Depth				pre-filter Type	after-filter Type
HDAME 160/ 350-NGZ	60	495	1444	340	16	100-350	101	TGA104/350CSF-B/A	TGA104/350CSF-B/A
HDAME 180/ 350-NGZ	75	495	1645	340	16	100-350	117	TGA104/350CSF-B/A	TGA104/350CSF-B/A
HDAME 420/ 350-NGZ	140	495	1845	340	16	100-350	157	TGA104/350CSF-B/A	TGA104/350CSF-B/A
HDAME 500/ 350-NGZ	175	495	2144	340	16	100-350	200	TGA108/350CSF-B/A	TGA104/350CSF-B/A

* Individual calculations are required for the different types of gases. The reference taken here is natural gas at 1 bar (abs) and 20 °C at operating pressure. Larger flow rates or operating pressures available on request.

**Series
HDAME**



**Series HDAM
Option:
Frame mounted**

Precise dew-point measuring unit ZHM

The system from ZANDER is designed such that it continually monitors and displays the pressure dew point. Furthermore, it provides comprehensive functionality:

- Protocol function
- Alarm message
- mA signalling outputs

The point at which it is necessary to regenerate or replace the desiccant adsorption material depends on the actual flow rate at the inlet, the pressure and the degree of moisture saturation, which can change daily when the gas drying system is operating. This means that desiccant replacement at fixed, pre-determined intervals is a waste of valuable energy.

The ZHM measuring units from ZANDER continually measure the pressure dew-point at the outlet of the adsorber and provide information regarding the condition of the desiccant. The operating costs of the adsorber are reduced significantly by avoiding unnecessary replacement of the adsorption material.



Display of the stationary dew point
Measuring unit ZHM 100 TT-Eex



Measuring chamber for the ZHM 100 TT-Eex
for pressure dew point measurement and (optionally) temperature and pressure measurement



Dew point sensor ZHM



ZHM 100 TTP-Eex =
Portable dew point measuring unit