

PRODUCT RANGE

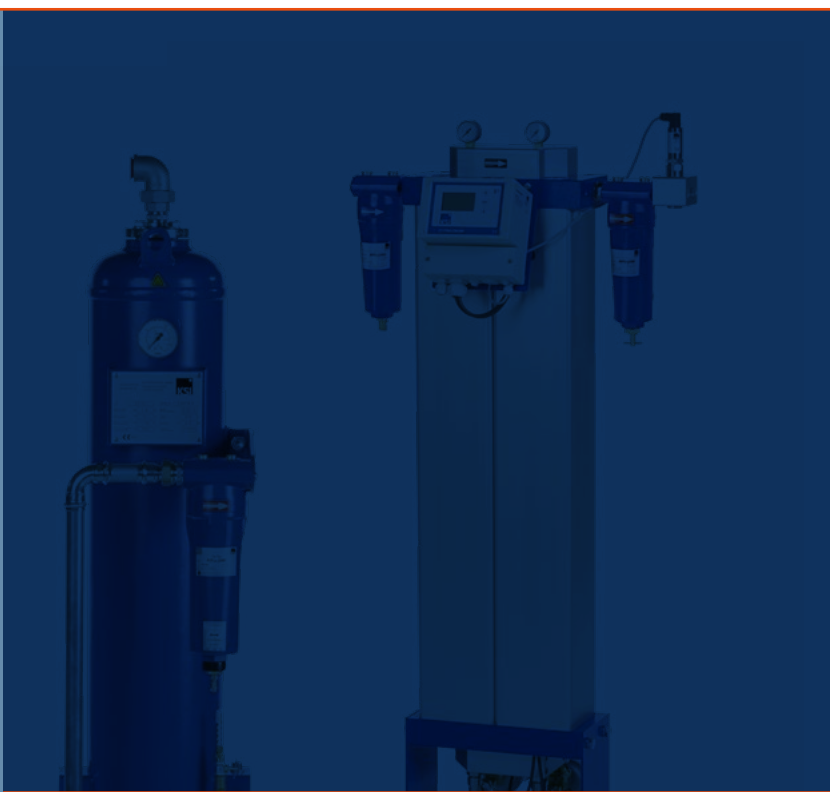


Filtration Technology
KSI ECOCLEAN®

Drying Technology
ECOTROC®

Condensate Technology
KONDRAIN® · KONTREC®

Online System Monitoring
KSI ECOCONTROL



www.ksi.eu

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EN

Aufbereitung der Druckluft | Compressed Air Purification

Spezifizierung der Luftqualität nach ISO 8573-1:2010 | Specifying air quality in accordance with ISO 8573-1:2010

Feststoffe/Staub Solid particles				Wasser Water		Öl Oil	
Klasse	max. Partikelzahl je m ³			Klasse	Drucktaupunkt	Klasse	Gesamtölkonzentration
	einer Partikelgröße mit d [µm]*			Class	Pressure dewpoint		(flüssig, aerosol & gasförmig) [mg/m ³]*
Class	Maximum number of particles per			0	strengere Anforderungen als Klasse 1 (definitionspflichtig)	Class	Total oil
m ³	with				more stringent requirements than class 1 (to be defined)		(liquid, aerosol & vapour) [mg/m ³]*
	a particle size of d [µm]*			1	≤ -70 °C	0	strengere Anforderungen als Klasse 1 (definitionspflichtig)
	0,1 ≤ d ≤ 0,5	0,5 ≤ d ≤ 1,0	1,0 ≤ d ≤ 5,0	2	≤ -40 °C		more stringent requirements than class 1 (to be defined)
0	strengere Anforderungen als Klasse 1 (definitionspflichtig)			3	≤ -20 °C	1	≤ 0,01
	more stringent requirements than class 1 (to be defined)			4	≤ +3 °C	2	≤ 0,1
1	≤ 20.000	≤ 400	≤ 10	5	≤ +7 °C	3	≤ 1,0
2	≤ 400.000	≤ 6.000	≤ 100	6	≤ +10 °C	4	≤ 5,0
3	–	≤ 90.000	≤ 1.000			X	> 5,0
4	–	–	≤ 10.000				
5	–	–	≤ 100.000				

*bei Referenzbedingungen 20°C,
1 bar(a), 0% Luftfeuchte

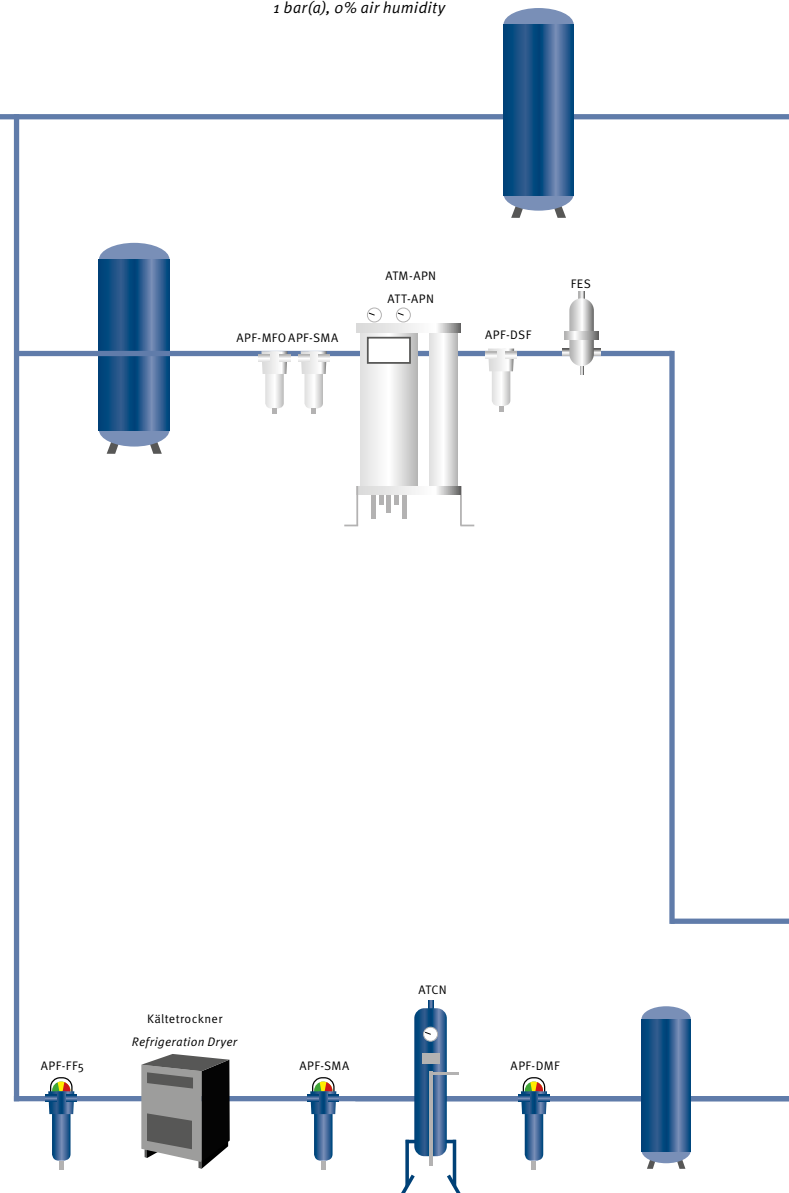
*at reference conditions 20°C,
1 bar(a), 0% air humidity

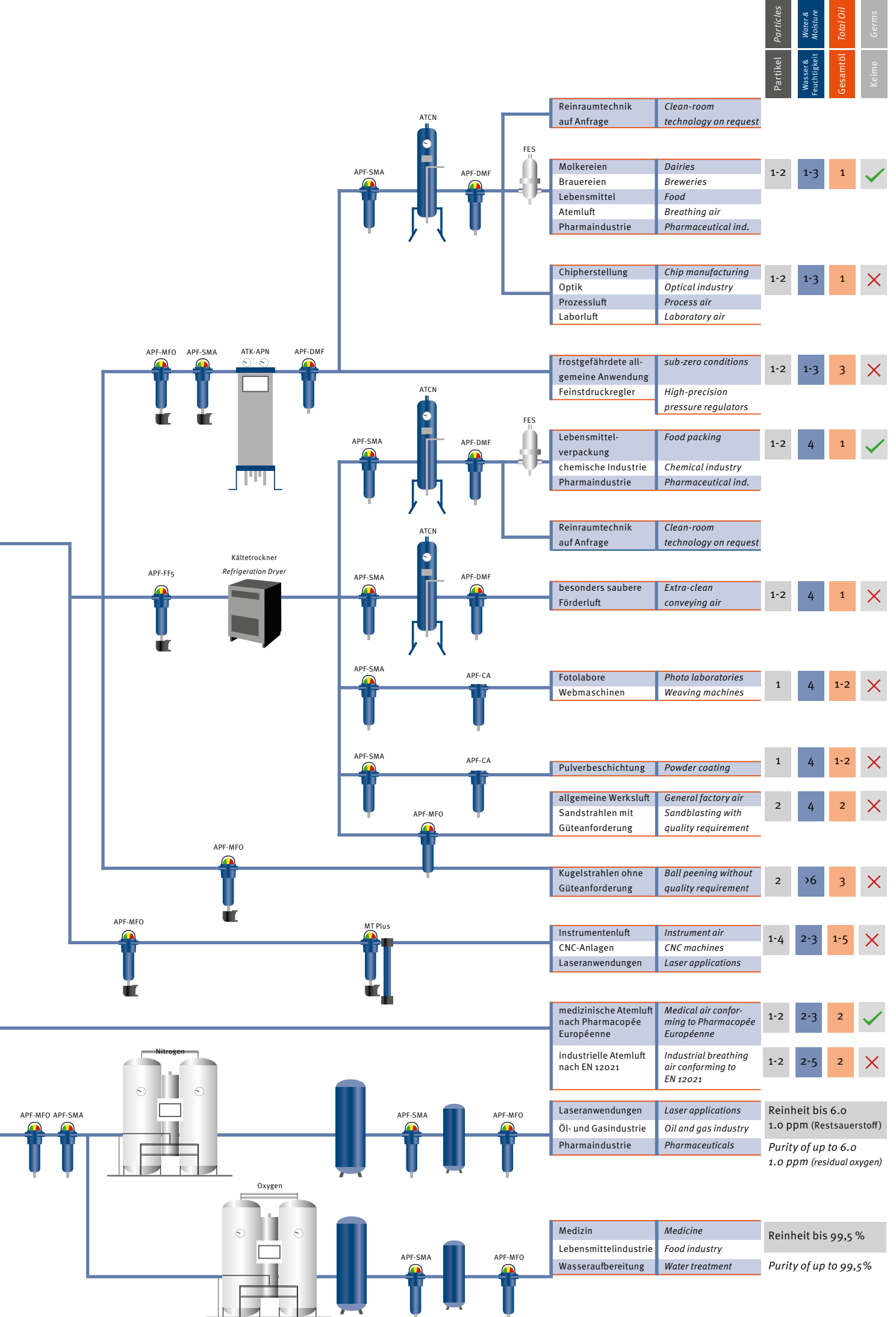
Produkte

APF-WS	Wasserabscheider
APF-VF25·FF5	Vorfilter · Feinfilter
APF-SMA-MF1·MFO	Mikrofilter
APF-DSF-DF1·DMF	Staubfilter
APF-CA	Aktivkohlefilter
APF-HC	Hopkalit-Kartusche
FES · FPF	Sterilfilter · Prozessfilter
ATK-APN	Adsorptionstrockner
ATCN	Aktivkohleabsorber
	Kältetrockner
MT	Membrantrockner
ATM-APN · ATT-APN Adsorptionstrockner Atemluft	

Products

APF-WS	Water separators
APF-VF25·FF5	Prefilters · Fine filters
APF-SMA-MF1·MFO	Micro filters
APF-DSF-DF1·DMF	Dust filters
APF-CA	Activated carbon filters
APF-HC	Hopcalite cartridges
FES · FPF	Sterile filters · Process filters
ATK-APN	Adsorption dryers
ATCN	Oil vapour adsorbers
	Refrigeration dryers
MT	Membrane dryers
ATM-APN · ATT-APN Adsorption dryers breathing air	





KSI PRODUCT RANGE

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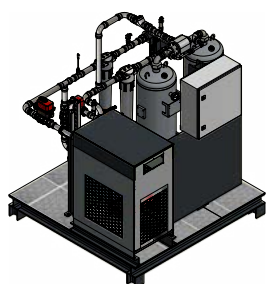
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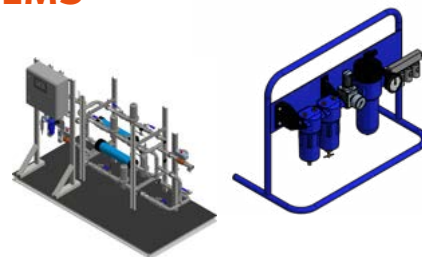
Combination of Refrigeration
and Adsorption Dryer



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KSI ECOCLEAN® compressed air filters meet the strictest quality requirements and are very economical in purchase price, operation and maintenance. The housing is made of die-cast aluminium, protected inside and outside with a cathodic dip coating (KTL) and powder-coated outside.

Further features are:

- optimized flow through: 75% less flow resistance due to the arched compressed air inlet
- prevention of corrosion and bacteria growth
- quick and comfortable maintenance by hexagonal head at the bottom of the filter housing
- tested quality: 100% leakage test of each **KSI ECOCLEAN®** filter
- standard equipped with automatic condensate drain
- lowest differential pressures of up to 110 mbar (SMA, saturated)



Other Filter Types



Cartridge Filters

Activated carbon cartridge
Molecular sieve cartridge
Catalyst cartridge



Flanged Filters

up to 14.000 m³/h, DN 200

Flanged Water Separators

up to 9.800 m³/h, DN 150



Water Separators

up to 2.200 m³/h, 3"



High-Pressure Filters

50 bar – 450 bar



Medical Sterile Filters

Up to 1.500 m³/h, 2 1/2"



Stainless Steel Filters

Sterile stainless steel filters and process filters



Vacuum Filters

Vacuum pump protection filters
Vacuum pump exhaust filters



Vacuum Filters

Medical vacuum filters

The KSI ECOCLEAN® APF Plus-effects +++

- + connection: 1/4" to 3"
- + capacity: 35 m³/h – 2.200 m³/h
- + protects production & processes extends machine & installation cycle time
- + minimizes operating costs saves energy
- + maximized operational reliability protection against production or machine downtime
- + best industrial equipment quality long lifetime
- + easy serviceability minimized service costs
- + quick and secure assembly quick installation
- + user-oriented filtration (25, 5, 1, 0,1 and 0,01 micron as well as activated carbon) optimum selection
- + activated carbon, molecular sieve & hopcalite cartridges can be combined individually

Standard Product Range

Threaded filters 15 types: APF23 with 35 m³/h and 1/4" connection to APF193 with 2.200 m³/h and 3" connection

Flanged filters 8 types: FF080-01 with 1.400 m³/h and DN80 connection to FF200-09 with 12.600 m³/h and DN 200 connection

**110
mbar**
SMA, saturated

Compressed Air Filter Elements KSI ECOCLEAN®



KSI ECOCLEAN® high-performance filter elements provide the perfect combination of operational safety and cost effectiveness.

- up to 45% less differential pressure by the constructional structure of the support frames on the inside and outside of the filter elements
- maximum filtration surface due to the optimized pleating -> for maximum surface filtration
- special component adhesive sticks the end caps securely
- plastic end caps prevent from corrosion ("blooming") and bacteria formation
- drainage layer made of special vlies stabilizes the filter medium and protects against swelling and cracking
- high-performance filter material provides chemical, mechanical and thermal durability (up to 120 °C) and is technically silicone-free
- volume of filter depth provides maximum dirt holding capacity at maximum filtration grades

Specifications | Separation Efficiency

Element type	VF25	FF5	MFO	MF1	SMA	CA
Particle filtration	25 microns	5 microns	1 micron	0,1 microns	0,01 microns	-
max. residual oil at 20°C	10 mg/m³	5 mg/m³	0,5 mg/m³	0,1 mg/m³	0,01 mg/m³	0,003 mg/m³
max. temperature	120°C	120°C	120°C	120°C	120°C	50°C (25°C recom.)
max. operating pressure	APF23 - APF163: 16 bar g APF173: 13,5 bar g APF193: 10,5 bar g					

Compressed air quality with KSI ECOCLEAN® filter elements according to ISO 8573.1*

Element type	SMA					MF1					MFO					FF5					VF25					CA				
max. particle Ø [micron]																														
Purity class	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
max. residual oil [mg/m³]																														

*KSI ECOCLEAN® high-performance filter elements exceed requirements of ISO 8573.1



**Cartridges for KSI
filter housings:**
CAK activated carbon
MSK molecular sieve
HC catalyst

Element SMA



APF high-performance filter element:
high-density deep bed pleating

Some advantages of KSI ECOCLEAN® filter elements are available not only when used in an KSI ECOCLEAN® compressed air filter but also with almost all the other filter housings on the market.

Filter combination PFU

KSI ECOCLEAN®

APF / ADVANCED
PREMIUM
FILTRATION

In order to achieve a perfect painting result, compressed air preparation is absolutely essential, as air drawn in via the compressor and then compressed is always contaminated, for example by oil components from the compressor as well as by condensate and dust particles.

In breathing air treatment with the **KSI ECOCLEAN®** PFU filter combination, the compressed air flows through three filtration stages after it has been dried using a refrigeration dryer or adsorption dryer. After the first filtration stage for particles down to 5 microns (incl. water separation function) and the second filtration stage with 0.01 microns, the air flows through an activated carbon filter: the end result is 100% technically particle-free and oil-free air.



PFU3 for breathing air systems

For breathing air systems¹ in critical environments
100% technically oil and particle free air

Fields of application

e.g. in the paint booth

- for water- and solvent-based coating systems
- for respirator hoods without activated carbon filter

Scope of supply

Ready-to-operate filter combination including:

- | | |
|-----------------|---|
| 1. stage | 5 microns filtration incl. water separation function and automatic condensate drain |
| 2. stage | 0,01 micron filtration and automatic condensate drain |
| 3. stage | Activated carbon filtration and manual drain |
| | <0,003 mg/m³ residual oil content |
| | Manometer for inlet pressure display |
| | Pressure regulator |
| | 2 outlet valves with safety clutch |
| | Wall mounting brackets |

PFU2 for paint works

For paint works
100% technically oil and particle free air

Fields of application

e.g. preparatory work in the paint booth

- for solvent-based coating systems
- for respirator hoods with activated carbon filter on the belt

Scope of supply

Ready-to-operate filter combination including:

- | | |
|-----------------|---|
| 1. stage | 5 microns filtration including automatic condensate drain |
| 2. stage | 0,01 micron filtration including automatic condensate drain |
| | Manometer for inlet pressure display |
| | Pressure regulator |
| | 2 outlet valves with safety clutch |
| | Wall mounting brackets |

Scope of supply

- | | |
|-------------|-----------------------------------|
| PFU3 | with 216 m³/h and 1/2" connection |
| PFU2 | with 216 m³/h and 1/2" connection |

Mobile Breathing Air System

KSI ECOCLEAN®



KSI Filtertechnik has mastered the two central challenges to mobile breathing air systems at **KSI ECOCLEAN®** MAK. The breathing air is not only provided in the required purity, but also exactly where the user needs it. Even hard-to-reach working environments with adverse conditions are made accessible and the user is safely supplied with breathing air. Cleaning of tank systems, painting work, construction sites, ... – no problem with the **KSI ECOCLEAN®** MAK.

Portable light weight with three-stage respiratory air preparation

With dimensions of 40 cm × 64,8 mm × 18.6 mm, the **MAK 63** is only slightly larger than a piece of air travel baggage for taking on board, and with its weight of 15 kg it is portable despite its sturdy construction.

Just as important as the compact exterior are the high-quality components installed inside: The core of the system is the three-stage processing unit, consisting of an MFO, an SMA and a CA filter. Water constituents and particles of 1 micron, 0.01 micron and in the CA filter element also oil aerosols down to a residual oil content of < 0.003 mg/m³ are separated in sequence.

Further advantages: Due to the clever arrangement of the APF filter elements in the filter bell of the housing, replacement is quick and inexpensive with KSI manufactured, comparatively inexpensive elements.



Scope of supply

Ready-to-operate filter combination including:

- 1. stage** APF63MFO with automatic condensate drain D150
- 2. stage** APF63SMA with automatic condensate drain D150
- 3. stage** APF63 CA with manual condensate drain HAM12

Manometer for displaying the operating pressure

Pressure regulator

Condensate collector

2 connections with safety couplings

2 connections for external oil-water-separators

Scope of supply

MAK63 with 60 m³/h

Heatless Regeneration Adsorption Dryer

ECOTROC® ATK | ATO

ECOTROC® AT adsorption dryers provide high reliability at an economic operation.

The features are:

- large pipe sizes inside the adsorption dryer, large diameters of valves and silencers
- highly-hygroscopic desiccant ensures stable pressure dew points of -20°C to -70°C (-40°C as standard)
- shuttle valves work completely without electric controls
- standardized exhaust valves of brand manufacturers ensure operating safety
- microprocessor control ensures an economical and material gentle 10-minute cycle
- integrated compressor synchronizing circuit as standard
- flow-optimized components such as **KSI ECOCLEAN®** compressed air filters, large pipings in the dryer and large dimensioned valves and silencers

HIGHER
CAPACITIES
UPON
REQUEST



**Adsorption Dryer
ATK-APN**

**Adsorption Dryer
ATKN**

**Adsorption Dryer
ATK**

Capacity up to 110 m³/h

Capacity up to 1.200 m³/h

Capacity up to 3.050 m³/h



System Solution

Adsorption Dryer ATO-APN

Adsorption Dryer ATON

Capacity up to 110 m³/h

Capacity up to 1.200 m³/h



**ECOTROC® ATK-APN | ATKN | ATK
ECOTROC® ATO-APN | ATON**

High-performance Adsorption Dryers

including:

- Pre-filter **KSI ECOCLEAN®** SMA (up to 1.200 m³/h)
- Post-filter **KSI ECOCLEAN®** DMF (up to 1.200 m³/h)
- **ECOMATIC** electronic control system

including compressor synchronizing circuit

Volume flow: up to 3.050 m³/h*

Pressure dew point performance: -40°C to -70°C

Maximum pressure: 16 bar g (all types)

ATO-APN and ATON: product lines

Residual oil content: $< 0,003 \text{ mg/m}^3$ at 20°C

Volume flow output: up to 1.200 m³/h*

* relative to 1 bar (abs.) 20°C at 7 bar g above operating pressure

The ECOTROC® ATK | ATO Plus-Effects ++

- + high-value desiccants constant pressure dew points, consistent air quality
- + minimized energy requirements lowers operating costs
- + maximized operating reliability protection against production and machine failure
- + long service cycles and lifetime
- + easy to programme and operate
- + easy serviceability
- + minimized service costs

Standard Product Range – Heatless Regeneration Adsorption Dryer

ATK-APN: 9 types from 5 m³/h to 110 m³/h

ATKN | ATK: 14 types from 150 m³/h to 3.050 m³/h

ATO-APN: 9 types from 5 m³/h to 110 m³/h

ATON: 9 types from 150 m³/h to 1.200 m³/h

Higher capacities upon request.

Activated Carbon Adsorbers

ECOTROC® ATC



For processes requiring maximum process safety, the activated carbon adsorption is a proven solution.

Features of the KSI **ECOTROC®** ATC-APN, ATCN and ATC are:

- optimal adsorption of oil vapour (hydrocarbons)
- high-active activated carbon for air and gases provides maximum efficiency
- optimized use of the entire activated carbon bed
- residual oil content up to a max. 0,003 mg/m³
- oil indicator for checking the saturation level, standard for models ATCN 15 and higher
- easy accessibility for uncomplicated and quick service
- 8,000 hours of activated carbon service life*

* The service life of the activated carbon depends on its quality and relative humidity and of the compressor type.

Activated Carbon Adsorber ATC-APN

Capacity up to 110 m³/h

Activated Carbon Adsorber ATCN

Capacity up to 1.200 m³/h

Activated Carbon Adsorber ATC

Capacity up to 3.050 m³/h



ECOTROC® ATC-APN | ATCN | ATC

Activated Carbon Adsorber

including:

- Post-filter **KSI ECOCLEAN®** DMF (up to 1.200 m³/h)

Volume flow: up to 3.050 m³/h*

Maximum pressure: 16 bar g (all types)

Residual oil content up to: < 0,003 mg/m³ at 20°C

* relative to 1 bar (abs.) 20°C at 7 bar g above operating pressure

Standard Product Range – Activated Carbon Adsorbers

ATC-APN: 9 types from 5 m³/h to 110 m³/h

ATCN | ATC: 14 types from 150 m³/h to 3.050 m³/h

Higher capacities upon request.

The Advantages at a Glance

ECOTROC® AT

Operational reliability

- Large dimensioned silencers avoid increase of the differential pressure.
- Two (ATK-APN | ATKN) or four (ATK) large dimensioned silencers provide further safety by eliminating the risk of any discharge of desiccant dust to the atmosphere.
- The exclusive use of quality desiccants from well-known manufacturers guarantees reliability.
- Pre- and post-filter (standard for models up to ATKN 110) bring system reliability.

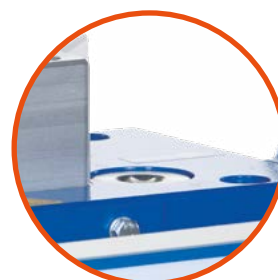


Service-friendly for professionals

- The desiccant is changed via filler and drain ports in all **ECOTROC®** AT models. No more awkward and time-consuming dismantling of the head and foot plates in the AT-APN compact series!
- At the ATKN series, just ease two flanged connections to remove the complete pipeline bridges. No more working directly at the already installed dryer.
- Simple and clear structured service packages simplify planning and implementation.
- The maintenance component kit for the **ECOTROC®** ATK-APN compact series consists of two Bürkert valves, two silencers, two pressure gauges, a set of replacement pistons, a set of o-rings and screws.
- The component kit for of the **ECOTROC®** ATKN series up to ATKN 110 for maintenance work after two years consists of two Bürkert blow-out valves, two silencers, two pressure gauges, a set of replacement pistons, o-rings and screws.



Large-dimensioned silencers on all ATK models



Filling ports on all ATKN and ATK-APN models
No dismantling of the plates and profiles is required for any of the AT-APN!

Features

- Regeneration gas recirculation is a standard design feature of all ATK dryers (excepted are ATO models, those with a downstream oil vapour adsorber, or if an oil vapour adsorber is used between the ATK and storage tank).
- The symmetric arrangement of the piping and components facilitates an assembly that is adapted to the room conditions (for example placing the piping and the pre- and post-filter on the backside of the dryer).
- Trouble-free installation due to delivery of units ready for connection (plug & play).
- Lifting lugs are provided on all vessels of the ATK | ATKN series for easier handling and installation.
- The models in the ATKN | ATK series have a transport frame (for e.g. pallet truck) as a base frame.
- Robust and solid construction of all models of the ECOTROC® ATK series.
- Easy floor mounting by predrilled holes in the base frame.
- ATK-APN 1 to ATK-APN 3 models can also be prepared for wall mounting, if requested.



Pipeline bridges can easily be removed if service is required



KSI service package for the two-year maintenance intervals of an ATK-APN

The Controls

ETC 4.0 | ETP 4.0 | ECOMATIC

NEW: Advanced dew point controls with intelligent functions (ETC 4.0 / ETP 4.0)

- wifi transmission / parameterization
- GSM module
- control as „master“ with touch display for connectable sensor boxes
- can be used as a master for internet-based monitoring and planning
- configurable inputs through selectable signal reception: potential-free or 4-20 mA (2-wire)
- 5 valves controllable

More information about the online system monitoring KSI ECCOCONTROL at en.ksi.eu/products

ECOTROCONOMY-Comfort (ETC 4.0)

- available for the entire **ECOTROC®** AT series
- sending of notification and alarm messages by email
- all **ECOTROC®** AT dryers can easily be upgraded (even older models and models from other manufacturers)
- dew point measurement and display up to -100°C
- demand-oriented regeneration control by measuring the operational conditions
- integrated load change counter (makes vessel inspections at a later time possible)
- saves the operating parameters in combination with date and time (still available after power failure)
- password protection on all levels (can be modified)
- connection for optical and acoustic signals (flashing light, horn etc.)
- automatic service indicator
- service interval display, adjustable intervals
- potential-free alarm output
- external 2-20mA-signal to transfer the displayed dew point value, i.e. to a master display or control room



ETP 4.0 (Premium)

Functions like ETC 4.0, plus:

- pressure measurement at the dryer inlet and indication on the control display
- temperature measurement at the dryer inlet and indicator in the control display
- safety shutdown in case of divergence from specified values is possible

Control with Fixed Cycle Times

ECOMATIC

Standard scope of supply with all **ECOTROC®** AT (heatless)

- display of the adsorption / regeneration cycle
- fully electronic microprocessor
- energy-saving compressor synchronizing circuit
- adjustable cycle times (selectable)
- status display and potential-free alarm signal for service requirements
- 24 V optional



ECOMATIC

High-pressure Adsorption Dryers and Activated Carbon Adsorbers

ECOTROC® ATK-HP | ATC-HP

Highest competence in engineering and KSI-quality „Made in Germany“ guarantee secure and reliable compressed air treatment from standard range of 50 bar up to 450 bar.

The **ECOTROC® ATK-HP** series is based on the worldwide well-known series of **ECOTROC® ATK** adsorption dryers. The high-pressure models benefit from the long-term experiences with ATK models.

High-pressure components designed for highest industrial requirements, make the ATK-HP dryers a safe and solid system solution, convincing by its KSI-like and attractive price-performance-ratio.



The ECOTROC® AT-HP Plus Effect +++

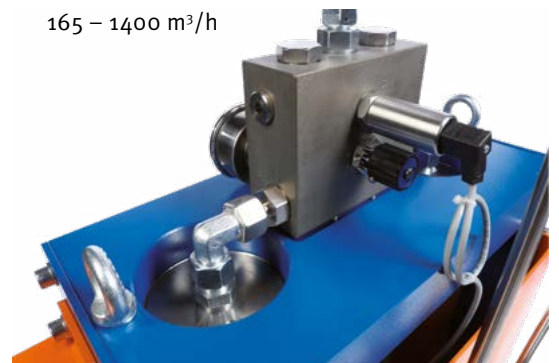
- + the new benchmark in the cost-benefit ratio
- + compact design
- + premium high-pressure fittings
- + weld seamless stainless steel containers
- + internal self-cleaning dust filter
- + stainless steel towers with 3-bed filling
- + preloaded desiccant bed
- + low-maintenance fittings
- + robust, torsion-resistant construction and design
- + high-quality components maximum endurance and operating life
- + intelligent control comfortable operability & operation
- + high service and maintenance friendliness minimized service costs
- + with compressor synchronisation control as standard reduced energy consumption and cost
- + upper valve unit incl. variable nozzle

Options

- ATK-HP heatless regenerated high-pressure adsorption dryers
- ATC-HP high-pressure activated carbon adsorbers
- ATO-HP heatless regeneration high-pressure adsorption dryers with activated carbon adsorber

designed for the following pressure classes and flow rates:

- | | |
|-----------|-----------------|
| • 50 bar | 40 – 1285 m³/h |
| • 250 bar | 85 – 820 m³/h |
| • 350 bar | 120 – 1120 m³/h |
| • 450 bar | 155 – 1380 m³/h |
| • 500 bar | 165 – 1400 m³/h |



Standard Product Range – High-Pressure Adsorption Dryers and Activated Carbon Adsorbers

ATK-HP ATC-HP	50 bar: 9 Typen from 10 m³/h to 640 m³/h
ATO-HP:	250, 350, 450 and 500 bar: 8 typen up to 1400 m³/h

Zero Purge
no loss of
purge air

Heat and Vacuum Regenerated Adsorption Dryers

ECOTROC® ATW-V | ATW-S



ECOTROC® ATW-V/-S sets standards by operating entirely free of purge air losses, in combination with a low regeneration temperature based on vacuum technology. In addition, it has a user-friendly and extensive control.

The adsorption dryer in complete convinces with optimum efficiency and top quality compressed air and compressed gas with constant supply at the highest level.

The System

- Regeneration by heated ambient air in parallel flow to adsorption (ATW-V) or counter-flow to adsorption (ATW-S)
- Cooling by ambient air in parallel flow to adsorption
- No need for purge air – Zero Purge
For maximum requirements even in critical environment

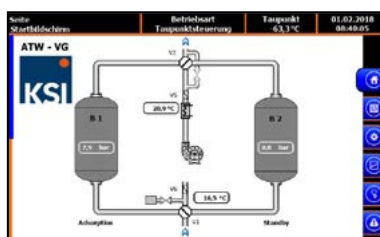
The ECOTROC® ATW-V/-S Plus Effects +++

- + high-end mechanical engineering high reserve capacities & safety
- + linear dew points constant compressed air quality
- + intelligent process solutions low energy costs
- + powerful, long-living desiccant constant and high compressed air quality
- + user-friendly design easy maintenance
- + brand-name components simplified maintenance & high operational reliability
- + modular design high price efficiency
- + optional dew point control provides more security and saves energy
- + special designs on request; i.e. made of stainless steel or with design approvals
- + even suitable for applications in critical environments
- + intelligent control plus process safety & linear dew point
- + lower energy costs, gained by switching system or loop cooler, on request
- + alternative powers such as hot steam optional + energy efficiency
- + thermal isolation of vessels on request



The Service Advantages

- vacuum blower at the height of workbench
- heater at comfortable working height
- low-maintenance plug valves
- special service kits for each dryer
- use of standardized parts; no special tools required
- controls are easy to use; simple menu guidance system



Touch-Screen EDC Steuerung

Touch-Screen EDC Control

(based on Siemens S7-1200)

- touchscreen for maximum user-friendliness
- intuitive menu guidance
- text messages provide quick and clear status information
- Optionally available **TPS** dewpoint control with dewpoint sensor

Standard Product Range – Heat and Vacuum Regenerated Adsorption Dryers

ATW-V and ATW-S:

types from 425 m³/h up to 15.000 m³/h.

Higher capacities on request.

Medical and Industrial Breathing Air

ECOTROC® ATM | ATT

Operational safety, air purity and reliability are most important when health and healthcare are in focus. The **ECOTROC®** ATM and ATT series fulfill the strong requirements for medical and technical breathing air while convincing with their very good price-performance-ratio. The KSI provides cleanest breathing air in a high-end system solution, according to following regulations and limit values:

ECOTROC® ATM (for medical breathing air):

- European Pharmacopoeia
- DIN EN ISO 7396-1

ECOTROC® ATT (for technical breathing air):

- EN 12021 | BS 4275 | ANSI/CGA | AS 1715



Medical breathing air

Adsorption dryers ATM-APN and ATM



ECOTROC® ATM-APN | ATM

Medical compressed air processing

including:

- pre-filter combination **KSI ECOCLEAN®** MFO / SMA
- **ECOTROC®** heatless adsorption dryer, fully automatic with special desiccant filling, including third vessel with activated carbon/HC filling
- **ECOMATIC** electronic control including compressor synchronizing control (option: dew point control)
- post-filter **KSI ECOCLEAN®** DMF (option: SE sterile filter)

Volume flow output: up to 732 m³/h*

Pressure dew point: -40°C

Max. pressure: 16 bar g (all types)

* relative to 1 bar (abs.) 20°C at 9 bar g above operating pressure

Technical breathing air

Adsorption dryers ATT-APN and ATT



ECOTROC® ATT-APN | ATT

Industrial compressed air processing

including:

- **KSI ECOCLEAN®** SMA pre-filter
- **ECOTROC®** heatless adsorption dryer, fully automatic with special desiccant filling, including third vessel with activated carbon/HC filling
- **ECOMATIC** electronic control system including compressor synchronizing control (dewpoint control optional)
- post-filter **KSI ECOCLEAN®** DMF (optional SE sterile filter)

Volume flow output: up to 600 m³/h*

Pressure dew point: -40°C

Max. pressure: 16 bar g (all types)

* relative to 1 bar (abs.) 20°C at 7 bar g above operating pressure

ATM-APN: 9 types from 6 m³/h to 134 m³/h

ATT-APN: 9 types from 5 m³/h to 110 m³/h

ATMN: 6 types from 183 m³/h to 732 m³/h

ATTN: 6 types from 150 m³/h to 600 m³/h



During pressure swing adsorption nitrogen molecules are separated from oxygen molecules. Pure nitrogen (**GEN2**) or pure oxygen (**GEO2**) is now to be used in various applications. Both series are available as **Comfort** and **Premium** type.

GEN2 Comfort and GEO2 Comfort

- plug and Play - simple and constant nitrogen (GEN2) / oxygen (GEO2) supply
- continuous measurement of nitrogen (GEN2) / oxygen (GEO2) purity
- savings from the first taking into operation
- low-maintenance and compact design
- option: inlet and outlet filtration
- nitrogen purity up to 99.9999 % (Class 6.0); delivery rate up to 1,425 Nm³/h
- oxygen purity up to 99.5 %; delivery rate up to 335 Nm³/h

Versions

GEN2 C & GEO2 C, fully automatic, including

- 4" DDC control (display of the current O₂/N₂ value)
- purity measurement with sensor and digital analysis
- pressure regulator for compressed air inlet
- pre-filtration through SMA ultra-fine filter (0.01 micron)
- and CA activated carbon filter

Options:

- 9" TPD Touch Premium Device
- Auto Pure
- afterfilter including needle valve
- compressed air and product vessel

Bitte fordern Sie unser ausführliches Informationsmaterial an.

Please ask for our detailed information material.

Quality, Certificates and Available Versions

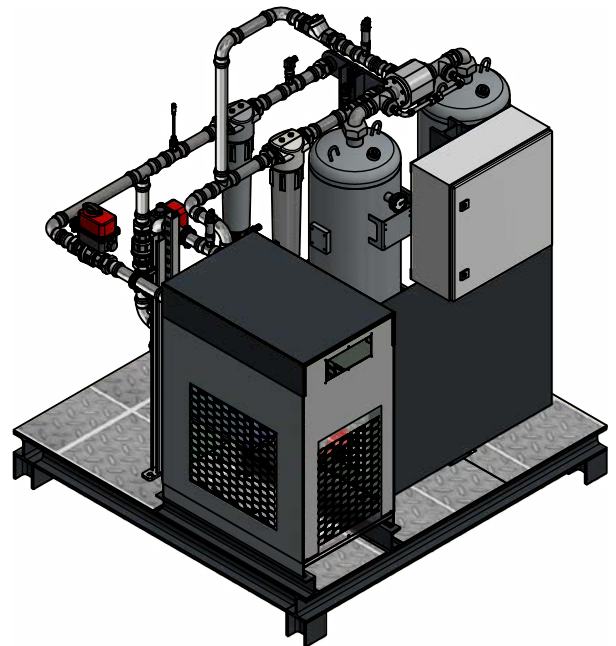
ISO 13485:2003 & ISO 10083:2008 . TÜV CERT

ASME . ATEX . GERMANISCHER LLOYD . Bureau Veritas . BRITISH STANDARD . TÜV CERT . Lloyd's Register

By introducing **DUOTROC** and the new service initiative **KSI SYSTEMS** the KSI company takes the cooperation with the retail partners to a completely new and higher level.

KSI manages this in two ways: First of all they meet the customers specifications by a very close and precise interplay at the stage of technical configuration and engineering. The engineering department puts the specialist retailers in the good position to offer technical security and reliability.

Second, the specialist retailers are from now on able to offer more complex solutions of processing compressed air. These combinations of processing with measurement and control technologies are delivered as „plug & play“ units, already assembled on a steel frame or in a container.



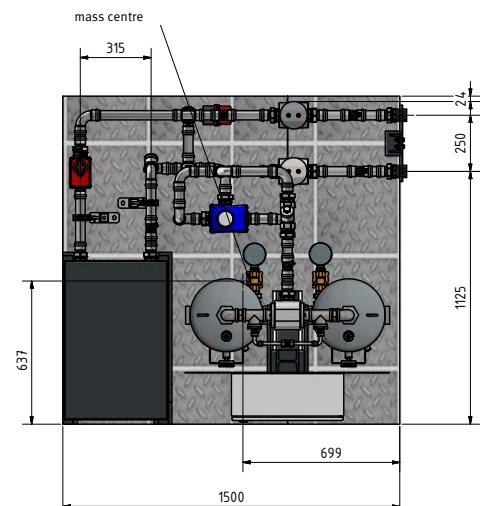
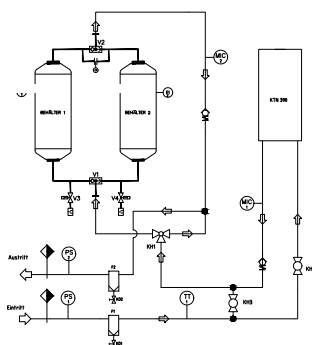
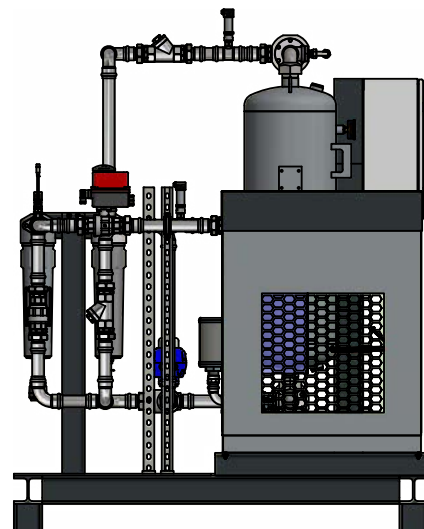
The Example: DUOTROC as a Clever Combination of Refrigeration and Adsorption Dryer

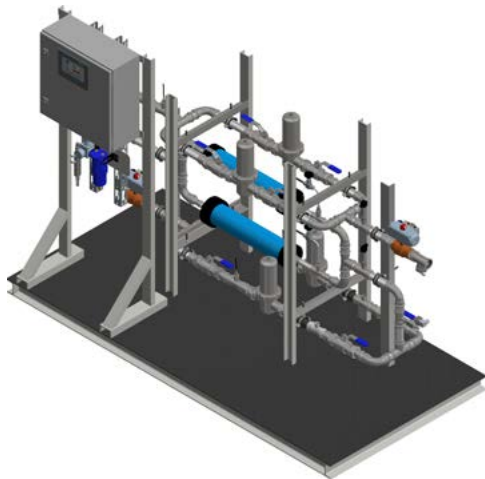
The **DUOTROC** is just one example standing for a variety of possibilities, that can be summarised under the same headline: **KSI SYSTEMS**. This special case deals with a combination of an **ECOTROC®** ATKN adsorption dryer with an

ECOTROC® KTN refrigeration dryer as well as the superior control and measurement technology.

The DUOTROC Advantages:

- The temperature sensor sends a signal to the control, which puts either the adsorption dryer or the refrigeration dryer into operation; it depends on the weather conditions.
- The control monitors all functions and provides the relevant data for running the unit. This includes temperature, pressure difference, the dew point as well as information about certain failures or dates for maintenance in the future.
- All parts of the DUOTROC are already built-in safely and solidly and mounted on a steel frame. The many components form a solid, connected unit. Ready for „plug & play“.





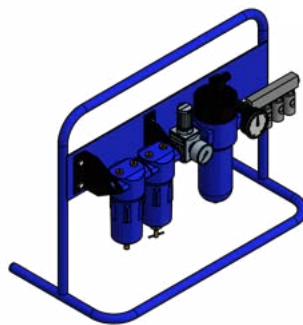
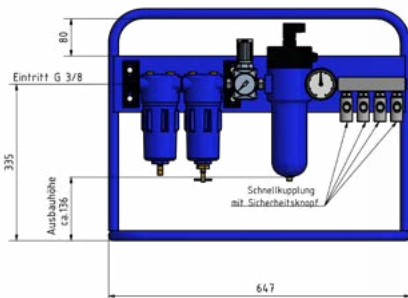
Example 1: Membrane Dryers + Sterile Filter

Most important components:

- MT3000 membrane with purge air stop
- FES080 sterile filter
- FPF080 process filter
- temperature control inlet
- dew point control inlet / outlet
- connections for vaporisation of the sterile filter
- inlet and outlet fittings automatically regulated
- pressure control inlet and outlet
- SPS control

Application:

- special solution for post-drying in medical technology



Example 2: Air Filter + Pressure Controller

Most important components:

- APF53SMA filter 0,01μ
- APF53CA activated carbon filter
- pressure regulator
- (optional) compressed air heater
- quadruple distributor with

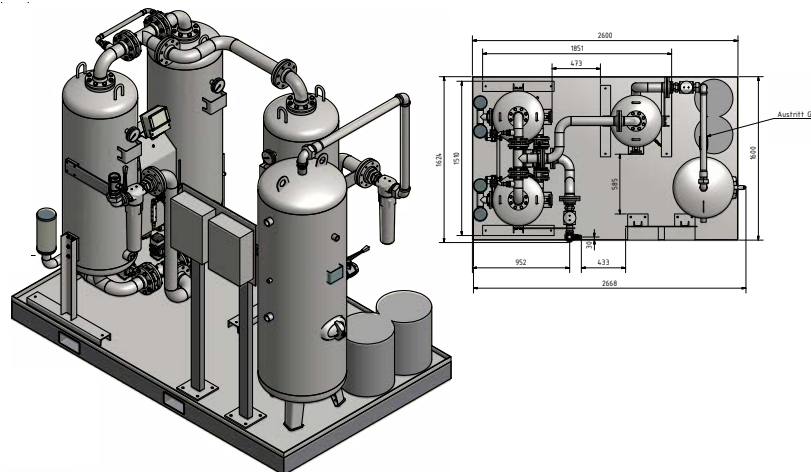
quick-clutch

Applications:

- in paint-spray-lines
- road / tunnel construction
- mobile applications with industrial breathing air

The KSI company sets standards in cooperation with specialist retailers and service technicians with the new service initiative **KSI SYSTEMS**. It provides ready-assembled and built-in system solutions for many various applications.

That eases the work for the specialist retailers as they get a system solution according to the specific customer requirement. No more difficult, time-consuming ordering of single parts, no assembly in the own workshop, no more tests of single components and complete installations. – KSI will do that for you.



Example 3: Adsorption Dryers ATKN + ATCN, Compressed Air Filter, Oil-Water-Separator

Most important components:

- APF163SMA pre-filter 0,01μ, with level-controlled condensate drain
- ATKN90 Adsorption Dryer
- APF163DMF post-filter
- ATCN90 oil vapour adsorber
- APF163DMF post-filter
- KON-C 15 oil-water-separator
- residual oil control / measurement technology
- SPS control / optional controls
- WK 500 L air vessel

Applications:

- special design for mobile applications

KSI – the Strong Partner for the Specialist Retailers

Engineering, Design, Manufacturing

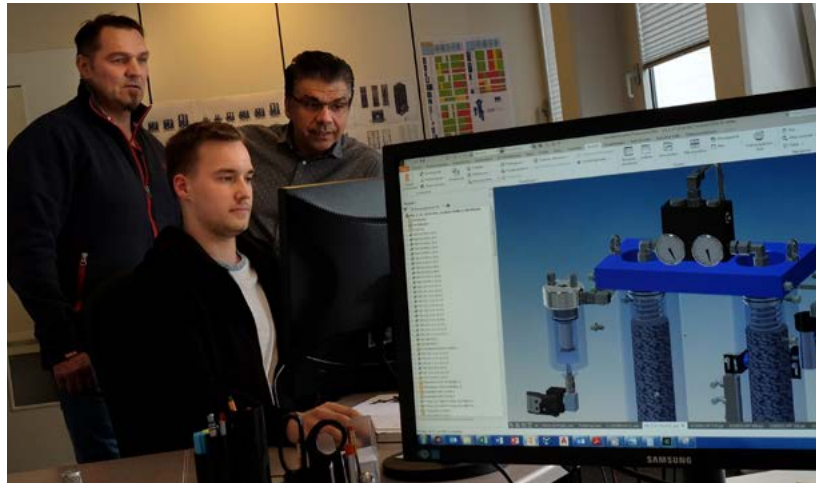
For more than 20 years KSI Filtertechnik is a strong and reliable partner for the specialist retailers: We develop, design and produce intelligent system solutions in premium quality.

Our core business includes four product lines:

- **KSI ECOCLEAN®** Filtration Technology
- **ECOTROC®** Adsorption Technology
- **KONDRAIN® & KONTREC®** Condensate Management
- **KSI ECOCONTROL** Online System Monitoring.

Since October of 2014, our headquarter is located in Willich in the Lower Rhine region, next to Duesseldorf and its international airport. At this site our design engineers, technicians and mechanics develop the complete product range, create the 3D-engineering, prepare the technical drawings, build and test prototypes, do the final assembly of our products carefully, control the quality of our goods and do the documentation. Everything in accordance to EN ISO 9001.

KSI is well-positioned, also in an international view. Four international sales agencies as well as the KSI-owned factories in the Czech Republic and in England, where important components of the product range are produced, take care for that. Always in the focus: the high quality of our goods, and the availability of the products for our partners.



KSI in brief:

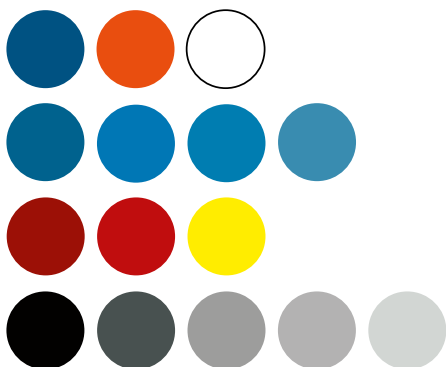
The KSI Filtertechnik GmbH, owner-operated since its foundation in 1996, has got a lot of strengths. And it follows some principles, all the same for specialist retailers, service companies and suppliers.

- + Being **loyal to retailers** means, that KSI cooperates only with specialist retailers and service companies.
- + **Everything downstream of the compressor** – the shortest and most striking summary of our extensive product range.
- + We live customer orientation and flexibility. We create sales concepts in cooperation with our partners and configure training sessions, optionally at our partners headquarter or in our training rooms in Willich.
- + **We are manufacturers!** At our plants in England, Czech Republic and in Willich.
- + **Customizing and Private Label:** We provide our filters and adsorption dryers also in customer's favourite colours – in addition you can get your own product labels with your company logo, your item numbers and product names.
- + **Availability:** We achieve a quick availability of our vast range of products by large warehousing facilities and clever logistics.
- + **Tested quality:** Many certificates prove the high quality of our products and services (DIN EN IS 9001).

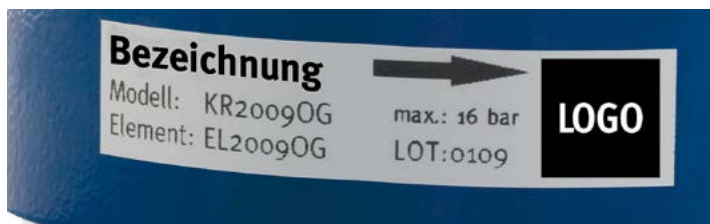


Individual colours and customer labels

Our products – with colour, logo and product information of the customer



These colours are available continuously.
Special colours are available on request!



Label and logo are
sticked to the product.
In addition, a label with
logo on the package
shows more
information and the part
number.



Our Production Facilities

KSI Filtertechnik GmbH, Willich | Germany

- design and engineering
- assembly adsorption dryers/compressed air filters
- final product control

KSI Technologies Ltd., Norwich | Great Britain

- manufacturing filter elements
- manufacturing special filters
- test laboratory filter elements

KSI Filtertechnik s.r.o., Rymarov | Czech Republic

- manufacturing dryer parts
- tank construction
- activated carbon filters for oil-water-separators

Headquarter	KSI Filtertechnik GmbH D-47877 Willich
Foundation	April 1996
Owner	Cremers – Krebs GbR
Managing Director	Holger Krebs
Number of Employees	168 (business group)
Turnover	33 Mio Euro (business group)
Subsidiary Companies	KSI Technologies Ltd., GB KSI Filtertechnik s.r.o., CZ KSI Benelux B.V., NL

Membrane Dryer

ECOTROC® MT

ECOTROC® MT is the most compact KSI solution for drying compressed air suitable to specific requirements. Membrane dryers do not require electric power and are almost entirely maintenance-free. In addition they only dry the compressed air when really needed. The compact design makes them appropriate for mobile use as well as for stationary applications at the “point of use”.

Further features of **ECOTROC® MT** are:

- easy & quick installation
- very cost-effective concept for lower volume flows
- no condensate drainage necessary
- no reduction of oxygen concentration
- also for explosion-proof areas
- no electric power needed
- continuous operation possible
- mounting in any direction

Suitable for various required dew points

- The dew point at the outlet of the membrane dryer can be adapted to the operator's specific requirements.

Dew point reduction

Dew point reduction	20°C	32°C	55°C	75°C
Use of purge air	10%	14%	21%	29%

ECOTROC® MT PLUS

Pre-filtration of 0,01 microns is mandatory!

The **ECOTROC® MT PLUS** model is our system solution: It combines a membrane dryer with the mandatory pre-filter **KSI ECOCLEAN® SMA** and wall mount brackets. For vertical and horizontal installation.



Applications:

- instrument air
- pneumatic controls
- laboratory air
- analysers
- ozone generators
- pneumatic precision instruments
- laser applications
- coating lines
- electric switch boxes and pipes
- packaging machines
- printing machines
- CNC installations
- robot technology
- electronics & telecommunications and many more



Standard Product Range – Membrane Dryers

ECOTROC® MT: 12 types: MT 50 with 50 l/min to MT 3000 with 3.000 l/min

ECOTROC® MT Plus: 12 types: MT 50 with 50 l/min to MT 3000 with 3.000 l/min

Higher capacities upon request.

Refrigeration Dryer

ECOTROC® KTD-BN



The new **ECOTROC® KTD-BN** refrigeration dryer series convinces with its solid design, high capacity and reliability. The newly integrated control makes processing of compressed air more efficient and safe. High-quality components and the new heat exchanger ensure economic efficiency and long lifetime of the units.

The result:

a powerful and solid refrigeration dryer.

also available
as high pressure
version

Features and Advantages:

- microprocessor control monitors the most important components and the quality of the compressed air
- simple and efficient installation, as the entrance and exit are at the same height
- external connection for level-controlled condensate drain available at the factory
- easy maintenance due to good accessibility of all components

Microprocessor control

- monitors important parts
- displays maintenance dates
- controls dew point
- prevents from dangerous conditions (2 temperature sensors)
- interface for external alarm



Standard Product Range – Refrigeration Dryers

ECOTROC® KTD-BN: 16 types from KTD-BN 23 at 23 m³/h up to KTD-BN 1800 at 1.800 m³/h

Condensate Drain

KONDRAIN®

Due to physical conditions, significant quantities of compressor condensate always occur in compressed air systems. In addition to water (condensed moisture), condensate also contains dirt, fine dust, particles, oil and microbes. The condensate must be completely removed from the compressed air system.

KONDRAIN® electric condensate drains guarantee a secure draining. They prevent condensate from entering the system and protect downstream devices.

The level-regulated condensate drains **KONDRAIN® N** ensure economical condensate draining by preventing any unnecessary loss of compressed air during the draining process.



KONDRAIN® N

level-controlled



Features:

- flexible connection, 90° rotatable flexible installation
- very durable Viton membrane more reliability and long service life
- maximum protection of the membrane and functions through integrated filter
- test button for functional tests at any time; can also be used for manual draining
- self-monitoring by using intelligent control
- additional protection by auto reset function
- status message in the case of alarm (except for N1 model)
- zero-voltage contact (except for N1 model)
- continuous performance level, ranging from 100% oil to 100% water
- just one service kit for the entire series
- also available for high-pressure applications: **KONDRAIN® KN-HP**

KONDRAIN® KMT

time-controlled



Features:

- very easy to use
- solid design
- adjustable interval time
- clear evident opening interval
- manual discharge at any time via test button
- highest reliability
- also available for high-pressure applications: **KONDRAIN® KMT-HP**

KONDRAIN® KMT-HP

Standard Product Range – Condensate Drains

KONDRAIN® N: 8 types KONDRAIN® N5 with 7.5 m³/min* to KONDRAIN® N300 with 300 m³/min*

KONDRAIN® KMT: 1 type KONDRAIN® KMT with up to 60 m³/min*

* compressor delivery rate

Oil-Water-Separators

KONTREC® PREMIUM & COMFORT



Discharging polluted condensate into the public sewer system violates law and regulations in most countries.

KONTREC® is not only a small and reliable local treatment unit but the ideal and simple solution to generate water that can be safely discharged in accordance to local regulations (<20 mg/l residual oil content).

The KONTREC® Plus Effect +++ Invest less, achieve more

KONTREC® helps in many ways to

- + reduce costs that arise with proper disposal
- + discharge condensate in accordance to regulations
- + avoid energy costs
- + save space with its compact construction
- + minimize operating costs and effort
- + amortize the investment by a long service lifetime
- + protect the environment.

Simple and brilliant

The physical properties of most compressor condensate allow cost effective treatment. Condensate consists primarily of an oil-water-mixture – and **KONTREC®** separates the oil from water quick and reliable. The water (about 99%) can be discharged into the public sewer system after treatment by the KSI oil-water-separator. **KONTREC®** separates synthetic oils and polyglycols as well as mineral oils. The special design and the use of high quality components makes **KONTREC®** the right solution for all types of condensate.

Options:



Condensate distributor KONTREC® KO-KVC

Connection inlet: 1 x 1/2"
Connection inlet: 3 x 1/2"



Condensate test kit KONTREC® KO-TK

For determining the correct special filter for particularly difficult condensate applications



Multi-inlet KONTREC® KO-ME

Connection inlet: 3 x 1/2"

KONTREC® Premium: 6 types: KON-P 3,5 with 3,5 m³/min* to KON-P 60 with 60 m³/min*

KONTREC® Comfort: 4 types: KON-C 2 with 2 m³/min* to KON-C 15 with 15 m³/min*

* Compressor delivery rate

Alternative Filter Elements for other Manufacturers Compressed Air Filters

KSI ECOCLEAN® AFE

KSI produces all filter elements for compressed air filters and all alternative filter elements and cartridges in-house. This ensures complete control for safeguarding our certified KSI industrial equipment quality. The combination of operational safety and cost effectiveness forms the basis for all **KSI ECOCLEAN®** filters and for all high-performance filter elements.

Simply the clever alternative!

Our customers benefit from many advantages of our **KSI ECOCLEAN®** filter elements not only when using **KSI ECOCLEAN®** compressed air filters! KSI's filter elements also fit to nearly *all available filter housings of nearly all international manufacturers*. A further important advantage: KSI offers these filter elements at the same quality as the competitors, but at up to 30% lower prices.



Filter Elements

Alternative filter elements for housings from other manufacturer-		Hankison
ABAC		Hankison · old range
ABAC · old range		Hi-line
Airfilter Engineering		Hiross
Almig		Hydrovane
Alup		Hitema
Atlas Copco		Ingersoll Rand
Babatz		Inmatec
Bea		Kaeser current range
Beko		Kaeser range up to 1991 and range 1991–2000
Boge		Mark
Compair		Mikropor
Deltech		MTA
Domnick Hunter · medical		Omega
Domnick Hunter		OMI
Donaldson Ultrafilter	90's range and cartridges	Renner
Donaldson Ultrafilter	Process- and sterile filters	SATA
Donaldson Ultrafilter	80's range	Schneider
Drytec		Walker
Fini		Worthington
Friulair		Zander FST Domnick Hunter Process and sterile elements
FST		Zander filter elements and cartridges

Catridges and Process Filter Elements



For competitor's filter housings:

- activated carbon, molecular sieve and catalyst cartridges
- process filter elements for housings of Zander, FST, Domnick Hunter and Donaldson (Ultrafilter)

(cartridges for housings of other competitors on request)

Alternative Activated Carbon Filters for Oil-Water-Separators

KONTREC® AKF



Since the company foundation in 1996, KSI produces activated carbon filters for oil-water-separators according to highest quality standards. Each year more than 28,000 KSI high-performance filters are produced and sold worldwide. This is equal to 100 tons of finest activated carbon.

KSI provides:

- process-induced high-performance best adsorption
- highest adsorption capacity maximum filter service life
- maximum cleaning safety for waste water discharge conforming with local directives
- absolute dimensional accuracy due to quality control maximum bypass safety
- 4-layer seam and tear resistant PE sleeve filter strength and dimensional stability
- quick delivery, best quality, good price

KONTREC® activated carbon filters are available for the following manufacturers of equipment:

OEM manufacturer	Device model	Device type
Alup	Aquamat	120 250 450 900 1800 3600 7200
Atlas Copco	OSW	5 11 30 55 110 315
Atlas Copco	OSC 35 - 2400*	35 95 145 355 600 825 1200 2400
Beko	Öwamat	1 2 3 4 5 5R 6 8 9 20
Boge	Öwamat	1 2 3 4 5 5R 6 8 9 20
Boge	Ökomat	5 10 15 30 60 120 240
Domnik Hunter	ES	36 90 125 250 500 1000 2100 2150 2200 2300 2400 2500 2600
Domnik Hunter	H2OIL-X	2010 2015 2030
Donaldson (Ultrafilter)	ultrasep P	7,5 15 30 60 120 240
Donaldson (Ultrafilter)	ultrasep SP	5 7,5 10 15 30 60 120 240
Donaldson (Ultrafilter)	ultrasep AS-P	N 5 10 N 15 N 30 N 60 N 120 N 240 N
Ecoair	TS	3 4 15 16 60
Hankison	HS	60 - 120 140 - 900 1800 3600
Jorc	Puro	Enviro Puro Mini Puro Puro Midi Puro Grand Puro Xtender
Kaeser	Aquamat	1 2 3 4 5 5R 6 8 9 20
Kaeser	WO	I - II III VI
Sabroe	Divisor	IE - IIE IIIE IVE
Sabroe	SAB	25 45 90 180 360 720
Schneider	Öwatec	10 40 130 175 250
Schneider	Öwatec (old series)	Typ 40 Typ 50 Typ 75 Typ 120
Wortmann	drukomat	1 2 - 15 30 60
Wortmann	drukosep	1 2 3 6 12 25 40
Wortmann	WO	I - II III IV
Zander	ecosep S	1 2 - 15 30 60
Zander	WT	1 - 2 3 4
Zander	ecosep SL	1 - 5 8 15 30 60

* Adsorption filters that match Atlas Copco OSC are supplied as a static (non-floating) element.

Alternative Filters for Compressors and Vacuum Pumps

ECOCOMP®

Since 1998 KSI quickly and reliably delivers filter and oil separators in OEM-quality for compressors. To make this possible, KSI uses a storage space of 2,500m² only for this one product group. The result: 96% of all orders leave our headquarters at the same day.

All filter products are designed for maximum performance and are subject of systematic further development. Our product range includes more than 7000 original references – you can find all of them in our price and product list.

Features:

- process-dependent best performance
- best materials, longest lifetime
- durable and solid industrial quality
- protects compressors, vacuum pumps and compressed air systems



Oil Separator Cartridges, Air Filters and Oil Filters

Available for the following manufacturers of compressors and vacuum pumps, or as a substitute for filters of other manufacturers:

Abac	Boge	Fiac	Mahle	Rotorcomp
Almig	Busch	Fleetguard	Mann & Hummel	Schneider
Alup	Ceccato	Flottmann	Mark	Sullair
Atlas Copco	Compair/Demag	Gardner Denver	Mattei	Tamrock
Atmos	Dominick Hunter	Hydrovane	Pneumofore	Worthington
Bauer	Donaldson	Ingersoll Rand	Power System	
Becker	Ecoair	Kaeser	Renner	
Blitz Schneider	Ekamak	Leybold	Rietschle	





ECOSERV is the KSI headline for intelligent maintenance packages and desiccant fillings for heatless and heat-regenerated adsorption dryers made by the competitors.

As one of the top addresses on the market for the supply and treatment of compressed air and in particular for filtration and drying, KSI is continually expanding its product portfolio on the field of service parts. For instance, the **ECOSERV** series contains all single components for the maintenance of other manufacturers heatless and heat regenerated adsorption dryers. In addition, KSI offers as well intelligent service packages. These contain all the necessary components for a regular maintenance date, similar to that of the original manufacturer.

ECOSERV High-Quality Parts and Desiccant Fillings

During the last few years, KSI has developed to one of the most competent partners on the field of adsorption drying. One key factor to that development was to create a special product line of spare parts and service packages for heatless & heat-regenerated adsorption dryers and activated carbon adsorbers from our competitors. Nice side effect was getting a closer tie to the specialist retailers and service companies. By creating the **ECOSERV** product line, we addressed one of our customers biggest wishes: The result are high-performance original parts, quality fillings and KSI's "intelligent packages". Especially the "**ECOSERV I**" service package makes the whole maintenance easier. Not only the 12 / 24 / 48-month service parts are included, but also components such as filter elements, silencers and condensate drains that usually have to be ordered separately.

Contents of ECOSERV:

- original parts of highest quality
- desiccant packages only from notable German suppliers
- „intelligent packages“ make the compilation of necessary spare parts much easier
- competent contact persons to find in the KSI competence team when dealing with maintenance at other manufacturers adsorption dryers





KSI Filtertechnik GmbH

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