

# ECOTROC® ATK | ATO

## Heatless-regenerated Adsorption Dryers



System solutions for compressed air and gases –  
reliable and safe reprocessing



### Stable and safe achievement of the pressure dew point is guaranteed

Adsorption dryers are used in environments where a specified pressure dew point of  $-40^{\circ}\text{C}$  to  $-70^{\circ}\text{C}$  must be stable and safe. Dryers of the **ECOTROC®** ATK series are available in three versions: as a compact aluminium series (APN) for volume flows up to  $220\text{ m}^3/\text{h}^*$ , with welded vessels and innovative pipe bridges (ATKN) for volume flows up to  $1200\text{ m}^3/\text{h}$  as well as in the large version up to  $3050\text{ m}^3/\text{h}^*$ . Higher volume flows are available on request.

\*based on standard conditions - higher capacities on request

### The oil-free system solution: ATO

In addition, KSI combines a heatless-regenerated adsorption dryer ATK with an activated carbon adsorber ATC to the high-performance unit ATO with a residual oil content of  $< 0.003\text{ mg}/\text{m}^3$  (at  $20^{\circ}\text{C}$  inlet temperature).

### The ECOTROC® AT Plus-Effects +++

- + three or two (ATK-/ATO-APN) large dimensioned silencers ▶ clogging with desiccant dust almost impossible
- + use of quality drying agents
  - ▶ more safety in performance
- + standard pre and post filtration (up to ATKN 110)
  - ▶ system security
- + regeneration gas recirculation included as standard (up to ATKN 110)
- + design adapted to room conditions possible due to symmetry of piping and components
- + delivery of ready-to-connect units
- + robust and solid construction
- + floor fixation possible
- + modular concept allows individualized designs

**Models and capacity ranges**



**ATK-APN 1 - 10**

Volume flow: up to 110 m<sup>3</sup>/h\*  
Dew point: -40°C up to -70°C

\*calculated at 1 bar (abs.) and 20°C at 7 bar g working pressure



**ATK-APN 11 - 13**

Volume flow: up to 220 m<sup>3</sup>/h\*  
Dew point: -40°C up to -70°C

\*calculated at 1 bar (abs.) and 20°C at 7 bar g working pressure



**ATKN 15 - 110**

Volume flow: up to 1200 m<sup>3</sup>/h\*  
Dew point: -40°C up to -70°C

\*calculated at 1 bar (abs.) and 20°C at 7 bar g working pressure



**ATK 155 - 305**

Volume flow: up to 3050 m<sup>3</sup>/h\*  
Dew point: -40°C up to -70°C

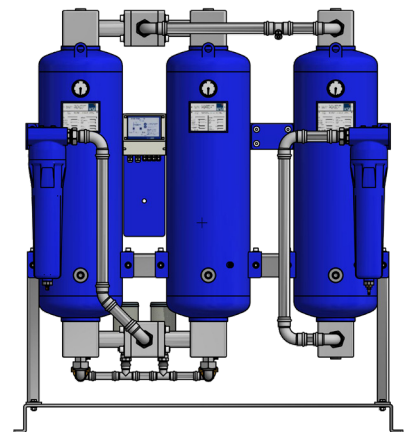
\*calculated at 1 bar (abs.) and 20°C at 7 bar g working pressure



**ATO-APN 1 - 10**

Volume flow: up to 110 m<sup>3</sup>/h\*  
Dew point: -40°C up to -70°C

\*calculated at 1 bar (abs.) and 20°C at 7 bar g working pressure



**ATON 15 - 110**

Volume flow: up to 1200 m<sup>3</sup>/h\*  
Dew point: -40°C up to -70°C

\*calculated at 1 bar (abs.) and 20°C at 7 bar g working pressure

**Further versions and options at a glance:**

- **ECOTROC® ATC-APN, ECOTROC® ATCN and ECOTROC® ATC:** system solution für oil-free compressed air (see additional product information)
- **ECOTROC® ATK-HP** for operating pressures up to 500 bar g and volume flows from 10 to 1000 m<sup>3</sup>/h
- further special versions on request
- standard control included; optional available are dew point controls **ETC 4.0** and **ETP 4.0**

### Constantly high compressed air quality

KSI compressed air system manufacturing provides optimal solutions for specific applications. Dryers of the **ECOTROC® ATK** series are offered in three variants: as a compact aluminium series (APN) for volume flows up to 220 m<sup>3</sup>/h\*, with welded vessels and innovative pipe bridges for volume flows up to 1200 m<sup>3</sup>/h and in the large version up to 3050 m<sup>3</sup>/h\*. Higher volume flows are available on request. KSI produces long-lasting **ECOTROC® ATK** adsorption dryers in high-end industrial quality using first-class materials. The use of quality desiccants in combination with intelligent control systems ensures constant compressed air or compressed gas qualities and stable pressure dew points (from -40°C to -70°C). Flow-independent shuttle valves ensure reliable and risk-free operation. Standardised brand name blow-off valves extend operating life, minimise service times and significantly simplify maintenance and service. The excellent price/performance ratio is complemented by economical operation and functionality.

### The functional principle

#### Prefiltration

In the flow-optimized **KSI ECOCLEAN®** SMA pre-filter, solid and liquid components are already simply separated from the saturated compressed air. Compressor condensate is reliably discharged via the electronic, level-controlled **KONDRAIN® N** condensate drain (optional) without pressure losses.

#### Adsorption

The pre-cleaned compressed air is distributed through the flow distributor from the lower end of the adsorption vessel via the desiccant bed for predrying in the so-called „wet zone“. Then the actual adsorption takes place: by adsorption of water molecules on the large inner surface of the desiccant.

#### Postfiltration

The strongly dried compressed air flows through the entire desiccant bed at the upper end of the adsorption vessel via flow optimizer and a shuttle valve into the **KSI ECOCLEAN® DMF** for the final dust filtration. Now the high-purity compressed air is available.

The intelligent 10-minute **ECOMATIC** cycle (control cycle for adsorption, regeneration and pressure build-up) requires less regeneration energy than dryers with shorter cycles and protects the adsorbents due to the lower number of load cycles. The possibility of individual time setting creates further savings potential.

The standard integrated compressor synchronisation circuit in the **ECOMATIC** control enables further regeneration energy savings, as the **ECOTROC® ATK** only works when the compressor is running. In this way, no purge air escapes during standstill periods. Highly streamlined compressed air and compressed gas ducts are achieved by design features such as consistently large free flow cross-sections at the inlet and outlet, in internal and external pipelines as well as valves and silencers. Coordinated integrated solutions such as **KSI ECOCLEAN®** compressed air filters and **KONDRAIN®** condensate drains open up further savings potential and increase operational reliability.

#### Regeneration / Desorption

Parallel to adsorption in the first adsorption vessel the desiccant is regenerated in the second vessel. For this purpose, a small partial flow of the already dried compressed air from adsorption vessel one is passed through a rinsing air nozzle in countercurrent through the desiccant from vessel two. By using the physical effect of pressure relief at atmospheric pressure, the regeneration rinsing air dries the moisturized desiccant particularly effectively.

The moisture is released into the atmosphere via the blow-out valve and silencer.

#### Switching

When regeneration is complete, the pressure build-up begins in the vessel. Once the operating pressure has been reached, the system switches from the adsorbing container to the regenerated container. Now the freshly regenerated vessel starts adsorption, while the other vessel starts its regeneration cycle.

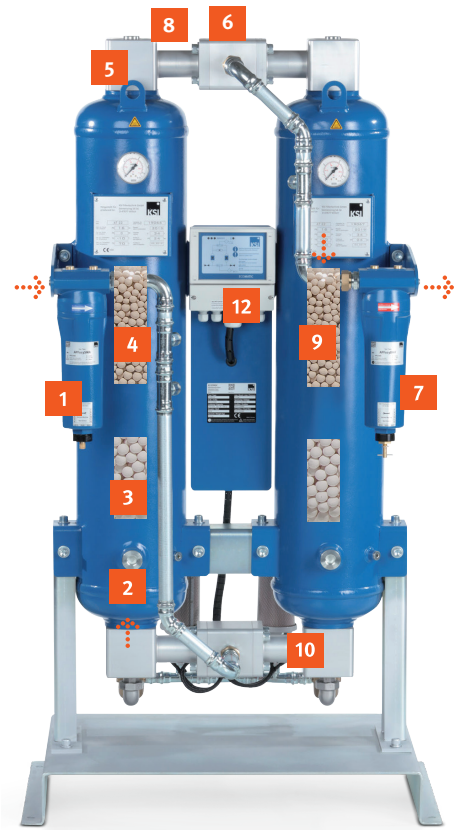
- 1 flow-optimised pre-filter **KSI ECOCLEAN® SMA**
- 2 entrance diffuser
- 3 wet zone for predrying
- 4 desiccant vessel adsorption phase
- 5 outlet diffuser
- 6 shuttle valve
- 7 flow-optimised afterfilter **KSI ECOCLEAN® DMF**
- 8 purge air nozzle
- 9 desiccant vessel regeneration phase
- 10 blow-off valve
- 11 silencer
- 12 electronic control **ECOMATIC**



various desiccants



silencer,  
blow-off valves ATKN



silencer,  
blow-off valves ATK-APN



# ECOTROC® ATK-APN

## Heatless-regenerated Adsorption Dryers – Compact Series up to 220 m<sup>3</sup>/h



### Aluminum profile series at the highest level

The solid and rugged construction provides long uptime, low susceptibility and trouble-free installation. All sizes can be fixed to the floor.

An aluminum profile developed by KSI together with the globally active SAPA Group offers optimum flow conditions in the adsorber bed and ensures a safe pressure dew point even due to an oversized desiccant volume. In the standard version, the ATK-APN units achieve a safe pressure dew point of -40°C. In the optional ATK-APN -70 version, they achieve a pressure dew point of -70°C and thus offer maximum operational and process reliability.

### Simple and fast service

The ATK-APN adsorption dryers are designed to offer several advantages over competitive products. For example, for the desiccant change neither an overpriced cartridge has to be changed nor the upper and bottom plates of the dryers have to be dismantled. This work is very time-consuming for dryers from other manufacturers and always involves a risk in the event of servicing. The generously dimensioned emptying openings in the lower plate and the filling openings in the upper plate offer the advantage of safe and quick emptying (possible with a vacuum cleaner) as well as quick filling with new desiccant.

The two service blocks on the upper and lower plate contain all the parts required for service. After simple disassembly, all service work is carried out in a relaxed posture, eliminating the need for laborious work directly on the dryer. Important: The dryer remains fixed in the overall installation.



ATK-APN 11 - 13



ATK-APN

### Operational safety in the sense of the specialist company

Two large silencers offer considerably more safety than most devices on the market, both for expansion when switching the flow direction and when discharging the regeneration air. They increase the risk of clogging with desiccant dust by using only one small silencer. KSI is convinced that this system offers more safety, as backflow into the dryer is hardly possible due to the large silencer surface.

KSI pre- and after-filters **KSI ECOCLEAN®** SMA and DMF are of course included in the standard scope of delivery and offer an optimal pre-filtration of incoming particles and water or oil droplets. This significantly increases the operational reliability and service life of the ATK-APN units.

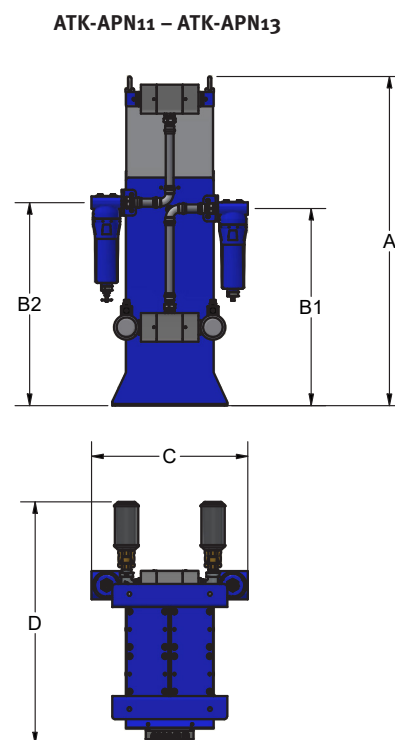
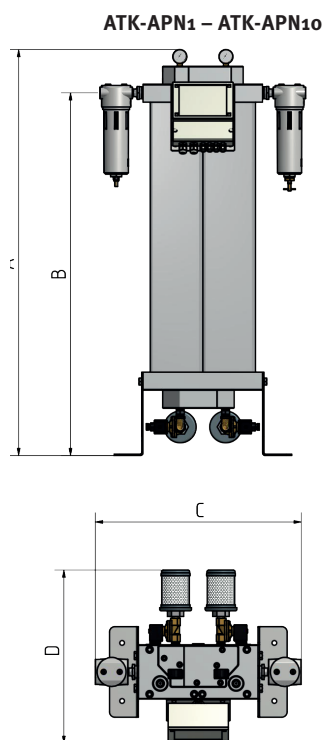
### More volume by profile construction

For the ATK-APN 11 - 13 models, KSI has not only doubled the number of containers from two to four. In this way, the service advantages of the ATK-APN series in profile design can now also be offered for higher volumes of up to 220 m<sup>3</sup>/h. This design also eliminates the need for recurring container inspections.

### Performance data and dimensions

Type	Capacity*		Dimensions (mm)					Connection		Weight kg	Installed power W	Electric voltage V	Frequen- cy Hz
	m <sup>3</sup> /h	cfm	A	B1	B2	C	D	Inlet	Outlet				
ATK-APN 1	5	3	623	535	535	373	306	3/8"	3/8"	16	32	230	50 / 60
ATK-APN 2	10	6	723	635	635	373	306	3/8"	3/8"	18	32	230	50 / 60
ATK-APN 3	20	12	823	735	735	373	316	3/8"	3/8"	20	32	230	50 / 60
ATK-APN 4	35	21	872	767	767	464	419	3/8"	3/8"	36	32	230	50 / 60
ATK-APN 6	50	29	972	867	867	464	419	3/8"	3/8"	40	32	230	50 / 60
ATK-APN 7	60	35	1072	967	967	464	419	1/2"	1/2"	43	32	230	50 / 60
ATK-APN 8	70	41	979	860	860	536	442	1/2"	1/2"	58	32	230	50 / 60
ATK-APN 9	90	53	1119	1000	1000	534	442	1/2"	1/2"	65	32	230	50 / 60
ATK-APN 10	110	65	1299	1180	1180	582	442	1/2"	1/2"	73	32	230	50 / 60
ATK-APN 11	140	80	1005	686	706	543	842	1"	1"	135	32	230	50 / 60
ATK-APN 12	180	110	1145	686	706	543	842	1"	1"	149	32	230	50 / 60
ATK-APN 13	220	130	1328	686	706	543	842	1"	1"	166	32	230	50 / 60

\*calculated at 1 bar (abs.) and 20°C at 7bar g working pressure



### Correction factors

Correction factors working pressure																									
bar g	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10	10,5	11	11,5	12	12,5	13	13,5	14	14,5	15	15,5	16
F(p)	0,6	0,7	0,74	0,82	0,89	0,97	1	1,08	1,11	1,16	1,22	1,29	1,36	1,42	1,5	1,57	1,63	1,69	1,75	1,83	1,9	1,96	2,03	2,1	2,14

Correction factors inlet temperature									
°C	<25	25	30	35	38	40	45	48	50
F(t)	1,2	1,1	1,09	1	0,84	0,78	0,72	0,65	0,58

Multiply the power of the dryer by the correction factor in the table above and you will get the corrected power.

Higher inlet temperatures on request.

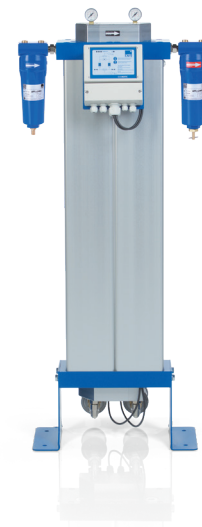
### Range of application

<b>installation site</b>	inside in non-aggressive atmosphere				
<b>ambient humidity max.</b>	25% r.h. at 40°C	37% r.h. at 35°C	50% r.h. at 30°C	70% r.h. at 25°C	90% r.h. at 20°C
<b>ambient temperature max.</b>	50°C				
<b>ambient temperature min.</b>	+2°C				
<b>operating pressure</b>	4 up to 16 bar g (ATK-APN 10 + 13 : up to bis 13,5 bar g)				
<b>flow medium</b>	compressed air and gases				
<b>pressure dew point</b>	-40°C*				

\* related to 1 bar (abs.) 20°C at 7 bar operating pressure

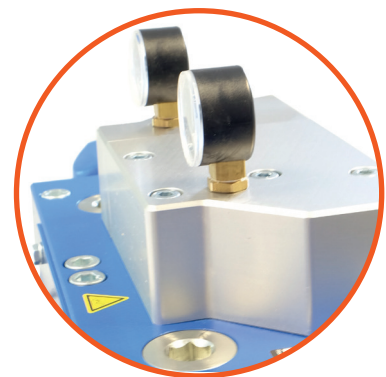
### The ECOTROC® ATK-APN Plus-Effects +++

- + two large-dimensioned silencers ▶ risk of clogging with desiccant dust virtually eliminated
- + use of quality drying agents ▶ more safety in performance
- + standard pre and post filtration ▶ system safety
- + regeneration gas recirculation included as standard
- + delivery of ready-to-connect units
- + robust and solid construction
- + floor fixation possible
- + modular approach



### The service advantages: less effort, much time saved

- change of desiccant via filling and emptying openings
- filling nozzles eliminate the need for laborious removal of the plates
- simple and clear service packages
- easy to understand control, simple menu navigation (with ETC 4.0)
- the two service blocks on the upper and lower plate contain all the parts required for service. After simple disassembly, all service work is carried out in a relaxed posture, eliminating the need for laborious work directly on the dryer. Important: The dryer remains fixed in the overall installation.



Upper service block with easily accessible filling nozzle

## Heatless-regenerated Adsorption Dryers – Compact Series up to 220 m<sup>3</sup>/h

### Technical features

Regeneration by means of purge air in countercurrent to adsorption

Low purge air requirement thanks to shorter cycles and optimised compressed air or compressed gas ducts

According to the guidelines 87/404/EWG about simple pressure vessels and the guideline 2014/68/EU about pressure equipment devices. The dryers of the ECOTROC® ATK series have been audited regarding the conformity of the design according attachment III Modul B + D.

The following standards and manufacturing processes have been applied in the production process:

DIN EN ISO 12100, DIN EN 1050, DIN EN 50081, DIN EN 50082, DIN EN 60204, DIN EN ISO 9001:2008 (Comprehensive Quality Management), 87/404/EEC (simple pressure vessels), 2014/68/EU (Pressure Equipment Directive), TR B'en (Technical Pressure Vessels Directive), GSG (Equipment Safety Act), 9th GSGV (9th Regulation on Equipment Safety), 2006/42/EC

### Approvals for pressure equipment

<b>EU</b>	<b>approval for fluid group 2 according to Pressure Equipment Directive 2014/68/EU, module A (category I)</b>
<b>Classifikation acc.</b>	<b>ATK-APN 1 to 3 paragraph 3 article 4</b>
<b>DGRL 2014/68/EU</b>	<b>ATK-APN 4 to 13 category I</b>
<b>Fluid group</b>	<b>2</b>

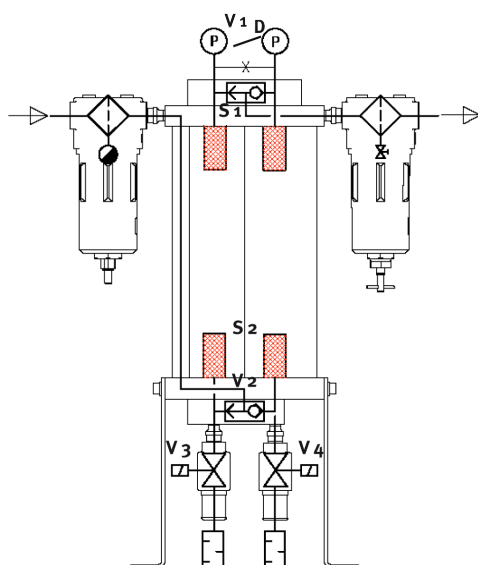
### Quality assurance

<b>Development/production</b>	<b>DIN EN ISO 9001</b>
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### Air purity class according to ISO 8573-1:2010

<b>Solid particles</b>	<b>class 2 (by postfiltration, standard scope of supply)</b>
<b>Humidity (gaseous)</b>	<b>class 3 (DTP -20°C), class 2 (DTP -40°C), opt. class 1 (DTP -70°C)</b>
<b>Total oil</b>	<b>-</b>

### R&I scheme



<b>P 1</b>	pressure gauge vessel 1
<b>P 2</b>	pressure gauge vessel 2
<b>V 1</b>	upper shuttle valve
<b>V 2</b>	lower shuttle valve
<b>S 1</b>	upper flow optimizer
<b>S 2</b>	lower flow optimizer
<b>V 3</b>	blow-off valve vessel 1
<b>V 4</b>	blow-off valve vessel 2
<b>D</b>	nozzle

## Heatless-regenerated Adsorption Dryers – Series up to 3050 m<sup>3</sup>/h

### Operational reliability and long service life

With the ATK series, KSI offers heatless-regenerated adsorption dryers in connection sizes from 1" to DN 150 as well as volume flows from 150 - 3050 m<sup>3</sup>/h.

### Best materials for a premium product

All vessels of the ECOTROC® ATKN series up to and including ATKN 110 (1,200 m<sup>3</sup>/h) are designed and manufactured for an operating pressure of up to 16 bar, naturally in compliance with the valid Pressure Vessel Ordinance (PED). Other approvals such as ASME, BS 5500, ANCC are also available.

As in the ECOTROC® ATK-APN compact series, the KSI also offers a very robust design in the ATK series, an easily accessible design for service and an oversized desiccant volume for safe pressure dew points.

### Operational reliability and service benefits

The ECOTROC® ATK models ATKN and ATK have two large silencers on the downstream side which ensure safe and carefree operation, as the large silencer surface virtually eliminates the risk of clogging with desiccant dust and the associated backwater. Lifting lugs on the vessels, easily accessible emptying and filling nozzles on the vessels, easily dismantled pipe bridges at the top and bottom are just some of the many advantages.

As always with KSI: Service made easy and without potential risk for the specialist company.

### Damper-controlled: full passage in the adsorption and expansion path

The KSI adsorption dryers ECOTROC® from ATK 155 are characterised by the following properties, which in this performance range from 1550 m<sup>3</sup>/h ensure an optimisation of economic efficiency and operational safety:

- particularly large cross-sections in the main and expansion lines
- air distribution at the inlet via individually controlled shut-off dampers
- optimized flow velocity and dwell time of the air in the container
- check valves with enlarged inner diameter (compared to a standard valve) at the outlet
- expansion line via butterfly valves, therefore less back pressure than with a valve



ATKN



ATK

### Performance data and dimensions

Type	Capacity*		Dimensions (mm)				Connection	Weight	Installed power	Electric voltage	Frequency
	m <sup>3</sup> /h	cfm	A	B	C	D					
ATKN 15	150	88	1304	853	745	650	1"	158	32	230	50 / 60
ATKN 18	180	106	1363	911	810	575	1"	181	32	230	50 / 60
ATKN 25	250	148	1788	1335	810	575	1"	196	32	230	50 / 60
ATKN 34	340	200	1531	1008	954	715	1 1/2"	323	32	230	50 / 60
ATKN 45	480	283	1630	1008	954	715	1 1/2"	392	32	230	50 / 60
ATKN 55	600	353	2090	1008	954	715	1 1/2"	494	32	230	50 / 60
ATKN 75	820	483	1898	1173	1243	900	2"	783	32	230	50 / 60
ATKN 90	1000	589	2198	1173	1243	900	2"	911	32	230	50 / 60
ATKN 110	1200	706	2298	1173	1243	900	2"	957	32	230	50 / 60
ATK 155	1550	912	2115	2012	1510	776	DN 80	825	32	230	50 / 60
ATK 185	1850	1089	2122	2022	1561	794	DN 80	930	32	230	50 / 60
ATK 205	2050	1207	2133	2033	1612	817	DN 80	1050	32	230	50 / 60
ATK 245	2450	1442	2328	2218	1835	898	DN 100	1260	32	230	50 / 60
ATK 305	3050	1795	2340	2230	1896	850	DN 100	1460	32	230	50 / 60

\*calculated at 1 bar (abs.) and 20°C at 7bar g working pressure

### Correction factors

#### Correction factors working pressure

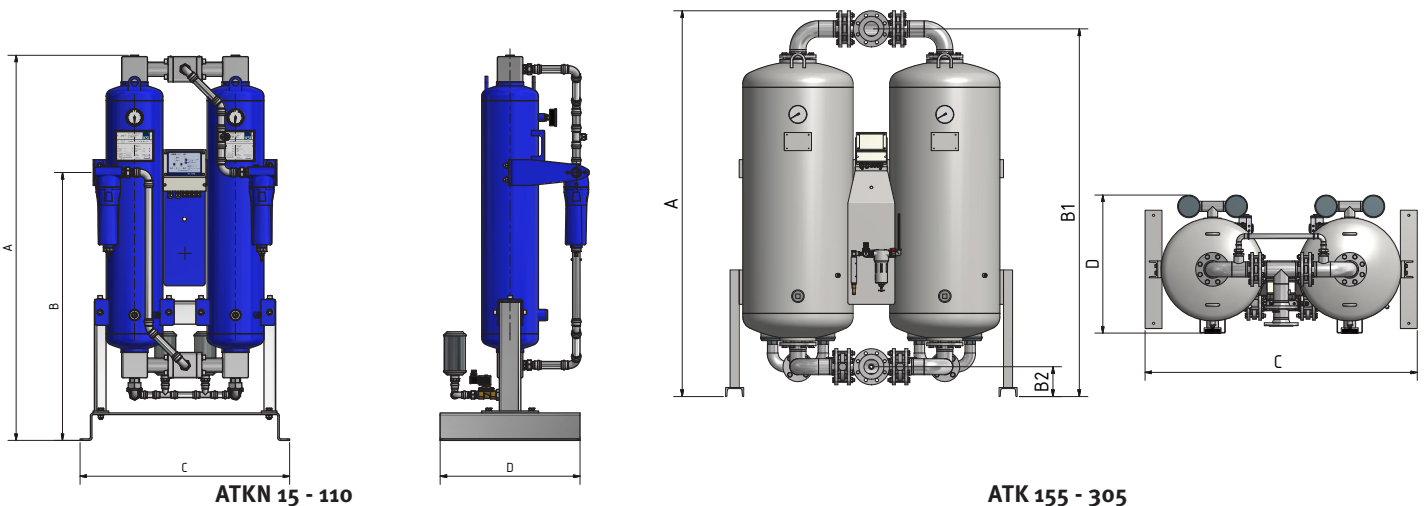
bar g	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10	10,5	11	11,5	12	12,5	13	13,5	14	14,5	15	15,5	16
F(p)	0,6	0,7	0,74	0,82	0,89	0,97	1	1,08	1,11	1,16	1,22	1,29	1,36	1,42	1,5	1,57	1,63	1,69	1,75	1,83	1,9	1,96	2,03	2,1	2,14

#### Correction factors inlet temperature

°C	<25	25	30	35	38	40	45	48	50
F(t)	1,2	1,1	1,09	1	0,84	0,78	0,72	0,65	0,58

Multiply the power of the dryer by the correction factor in the table above and you will get the corrected power.

Higher inlet temperatures on request.



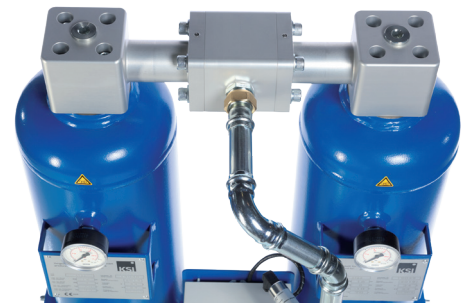
### Range of application

<b>installation site</b>	inside in non-aggressive atmosphere				
<b>ambient humidity max.</b>	25% r.h. at 40°C	37% r.h. at 35°C	50% r.h. at 30°C	70% r.h. at 25°C	90% r.h. at 20°C
<b>ambient temperature max.</b>	50°C				
<b>ambient temperature min.</b>	+2°C				
<b>operating pressure</b>	4 up to 11 bar g				
<b>flow medium</b>	compressed air and gases				
<b>pressure dew point</b>	-40°C*				

\* related to 1 bar (abs.) 20°C at 7 bar operating pressure

### The ECOTROC® ATK-APN Plus-Effects +++

- + two large-dimensioned silencers ▶ risk of clogging with desiccant dust virtually eliminated
- + use of quality drying agents ▶ more safety in performance
- + standard pre and post filtration (up to ATKN 110) ▶ system safety
- + regeneration gas recirculation included as standard (up to ATKN 110)
- + design especially to circumstances at the operation site
- + delivery of ready-to-connect units
- + lifting lugs at all vessels make the installation into an existing system easier
- + robust and solid construction
- + floor fixation possible
- + modular approach ▶ many individual solutions possible



### The service advantages

- change of desiccant via filling and emptying openings
- de-assembly of the complete pipe bridges by loosening just three screws ▶ comfortable and fast service work
- simple and clear service packages
- easy to understand control, simple menu navigation (with ETC 4.0)



## Heatless-regenerated Adsorption Dryers – Series up to 3050 m<sup>3</sup>/h

### Technical features

Regeneration by means of purge air in countercurrent to adsorption

Low purge air requirement thanks to shorter cycles and optimised compressed air or compressed gas ducts

According to the guidelines 87/404/EWG about simple pressure vessels and the guideline 2014/68/EU about pressure equipment devices. The dryers of the ECOTROC® ATK series have been audited regarding the conformity of the design according attachment III Modul B + D.

The following standards and manufacturing processes have been applied in the production process:

DIN EN ISO 12100, DIN EN 1050, DIN EN 50081, DIN EN 50082, DIN EN 60204, DIN EN ISO 9001:2008 (Comprehensive Quality Management), 87/404/EEC (simple pressure vessels), 2014/68/EU (Pressure Equipment Directive), TR B'en (Technical Pressure Vessels Directive), GSG (Equipment Safety Act), 9th GSGV (9th Regulation on Equipment Safety), 2006/42/EC

### Approvals for pressure equipment

**EU** approval for fluid group 2 according to Pressure Equipment Directive 2014/68/EU, module B+D (category IV)  
**Other** ASME

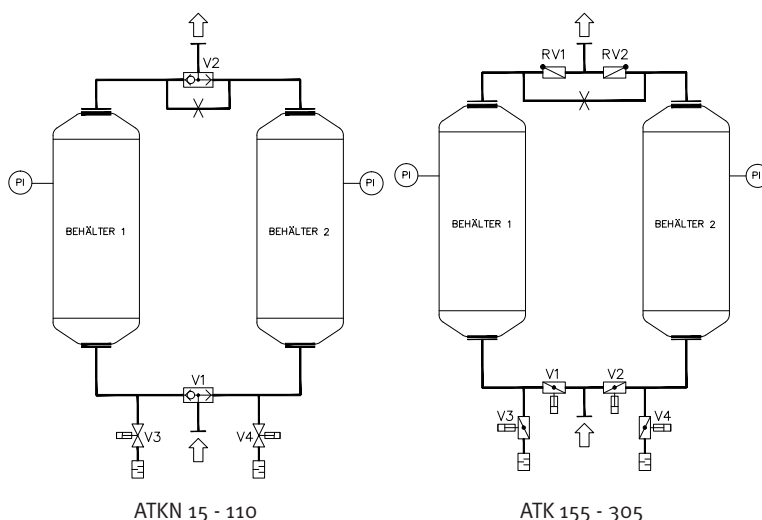
### Quality assurance

**Development/production** DIN EN ISO 9001

### Air purity class according to ISO 8573-1:2010

**Solid particles** class 2 (by postfiltration, standard up to ATKN 110)  
**Humidity (gaseous)** class 3 (DTP -20°C), class 2 (DTP -40°C), opt. class 1 (DTP -70°C)  
**Total oil** -

## R&I scheme



### ATKN 15 - 110

- PI 1** pressure gauge vessel 1
- PI 2** pressure gauge vessel 2
- V 1** shuttle valve inlet
- V 2** shuttle valve outlet
- V 3** blow-off valve vessel 1
- V 4** blow-off valve vessel 2

### ATK 155 - 305

- PI 1** Pressure gauge vessel 1
- PI 2** Pressure gauge vessel 2
- V 1** Control valve inlet 1
- V 2** Control valve inlet 2
- V 3** blow-off valve vessel 1
- V 4** blow-off valve vessel 2
- RV 1** non-return valve vessel 1
- RV 2** non-return valve vessel 2

## Heatless-regenerated Adsorption Dryers – with Activated Carbon Adsorber up to 110 m<sup>3</sup>/h

### The oil-free system solution: ATO-APN

In addition, KSI combines a heatless-regenerated adsorption dryer ATK with an activated carbon adsorber ATC to the high-performance unit ATO with a residual oil content of < 0.003 mg/m<sup>3</sup> (at 20°C inlet temperature).



### Performance data and dimensions

Type	Capacity*		Dimensions (mm)				Connection	Weight	Installed power	Electric voltage	Frequency
	m <sup>3</sup> /h	cfm	A	B	C	D					
ATO-APN 1	5	3	622	535	492	306	3/8"	23	32	230	50 / 60
ATO-APN 2	10	6	722	635	492	306	3/8"	26	32	230	50 / 60
ATO-APN 3	20	12	822	735	492	306	3/8"	29	32	230	50 / 60
ATO-APN 4	35	21	871	767	619	419	3/8"	52	32	230	50 / 60
ATO-APN 6	50	29	971	867	619	419	3/8"	57	32	230	50 / 60
ATO-APN 7	60	35	1071	967	619	419	1/2"	62	32	230	50 / 60
ATO-APN 8	70	41	979	860	732	443	1/2"	82	32	230	50 / 60
ATO-APN 9	90	53	1119	1000	732	443	1/2"	92	32	230	50 / 60
ATO-APN 10	110	65	1299	1180	732	443	1/2"	105	32	230	50 / 60

\*calculated at 1 bar (abs.) and 20°C at 7bar g working pressure

### Correction factors

#### Correction factors working pressure

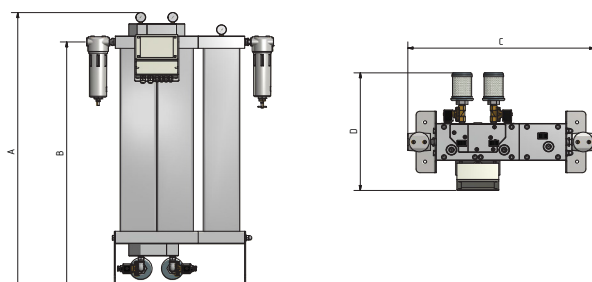
bar g	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10	10,5	11	11,5	12	12,5	13	13,5	14	14,5	15	15,5	16
F(p)	0,6	0,7	0,74	0,82	0,89	0,97	1	1,08	1,11	1,16	1,22	1,29	1,36	1,42	1,5	1,57	1,63	1,69	1,75	1,83	1,9	1,96	2,03	2,1	2,14

#### Correction factors inlet temperature

°C	<25	25	30	35	38	40	45	48	50
F(t)	1,2	1,1	1,09	1	0,84	0,78	0,72	0,65	0,58

Multiply the power of the dryer by the correction factor in the table above and you will get the corrected power.

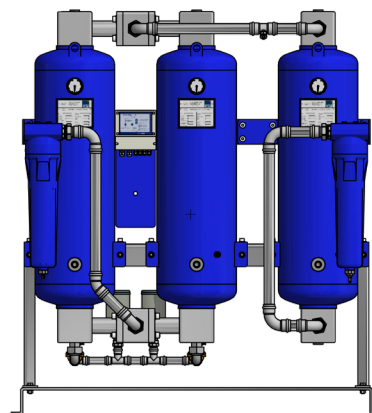
Higher inlet temperatures on request.



## Heatless-regenerated Adsorption Dryers – with Activated Carbon Adsorber up to 1200 m<sup>3</sup>/h

### The oil-free system solution: ATO-APN

In addition, KSI combines a heatless-regenerated adsorption dryer ATK with an activated carbon adsorber ATC to the high-performance unit ATO with a residual oil content of < 0.003 mg/m<sup>3</sup> (at 20°C inlet temperature).



### Performance data and dimensions

Type	Capacity*		Dimensions (mm)				Connection	Weight	Installed power	Electric voltage	Frequency
	m <sup>3</sup> /h	cfm	A	B	C	D					
ATON 15	150	88	1305	853	1100	650	1"	247	32	230	50 / 60
ATON 18	180	106	1420	853	1100	650	1"	277	32	230	50 / 60
ATON 22	210	124	1544	853	1100	650	1"	298	32	230	50 / 60
ATON 34	340	200	1531	1008	1414	716	1 1/2"	524	32	230	50 / 60
ATON 45	480	283	1630	1008	1414	716	1 1/2"	558	32	230	50 / 60
ATON 55	600	353	2090	1008	1414	716	1 1/2"	716	32	230	50 / 60
ATON 75	820	483	1898	1173	1846	900	2"	1083	32	230	50 / 60
ATON 90	1000	589	2198	1173	1846	900	2"	1289	32	230	50 / 60
ATON 110	1200	706	2298	1173	1846	900	2"	1358	32	230	50 / 60

\*calculated at 1 bar (abs.) and 20°C at 7bar g working pressure

### Correction factors

#### Correction factors working pressure

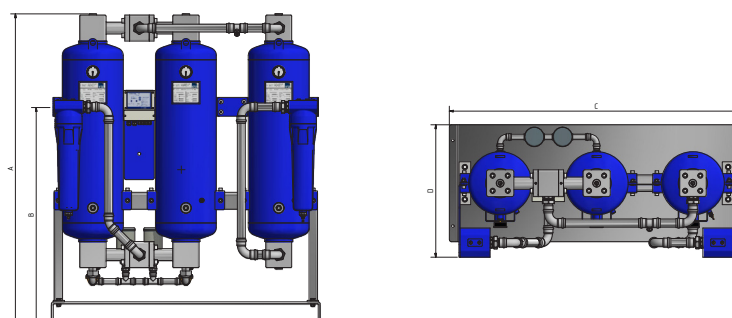
bar g	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10	10,5	11	11,5	12	12,5	13	13,5	14	14,5	15	15,5	16
F(p)	0,6	0,7	0,74	0,82	0,89	0,97	1	1,08	1,11	1,16	1,22	1,29	1,36	1,42	1,5	1,57	1,63	1,69	1,75	1,83	1,9	1,96	2,03	2,1	2,14

#### Correction factors inlet temperature

°C	<25	25	30	35	38	40	45	48	50
F(t)	1,2	1,1	1,09	1	0,84	0,78	0,72	0,65	0,58

Multiply the power of the dryer by the correction factor in the table above and you will get the corrected power.

Higher inlet temperatures on request.



# ECOTROC® ATK

## Heatless-regenerated Adsorption Dryers



### Service instructions

The following maintenance rules ensure safe and trouble-free operation. These should be observed by the operator.

<b>daily</b>	Pressure gauge + control:	visual and functional check
<b>annually</b>	Control box + silencer:	check cable and terminals for seat and stop, clean
	Pre-filter & after-filter element:	replace
<b>2 years</b>	Silencer:	replace
	Sieves/diffuser:	clean, replace if necessary
	O-rings of the filter housing:	replace
	Piston shuttle valves:	replace
	Solenoid valves:	replace
	pressure dew point sensor (opt.):	recalibrate
<b>4 years</b>	Desiccant:	replace

### The controls

#### Control with fixed cycle times

##### ECOMATIC

Standard scope of delivery in all **ECOTROC®** ATK dryer units

- display of adsorption/regeneration cycle
- microprocessor fully electronic
- energy saving compressor synchronism control
- cycle times variably adjustable (selectable)
- status display and potential-free alarm signal for service
- 24 V optional possible
- can also be used for adsorption dryers of other manufacturers (after configuration by KSI)



### 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 ECOCONTROL at  
[www.ksi.eu!](http://www.ksi.eu)

### 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 4-20mA-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

