

Adsorption dryers



ecodry
K-MT multitronic



Adsorption dryer ecodry K-MT multitronic

The little giant...

The new cold regenerated adsorption dryer made by ZANDER combines proven reliable elements of adsorption technology in a clear impressive concept. Outstanding features of the adsorption dryer Series K-MT such as:

- adsorber profiles manufactured in one piece
- directly controlled main and exhaust valves in leak free design
- compact non-return valve combination

ensure continuous operational safety with at the same time high availability.



All adsorption dryers of the Series K-MT have

- self-cleaning sieve screens on the wet side
- high quality desiccants

ensure constant quality of the pressure dew point for the application. The microprocessor control system *multitronic* as central switching system of the adsorption dryer provides a genuine image of the operating status of the adsorption dryer with LED indicators for:

- Operation
- Adsorption
- Regeneration and
- Pressure build-up

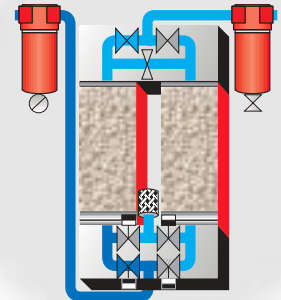
The combination of the Series K-MT dryer with pre-filter and after-filter of Series XP and ZP with advanced technology fulfils the most exacting requirements for compressed air purification

...adsorbs and regenerates...

adsorption the desiccant retains the moisture contained in the compressed air. ZANDER utilizes exclusively high capacity molecular sieve type desiccants. These desiccants have a long service life at high input temperatures or low pressure dew points.

Regeneration takes place in counterflow with respect to

adsorption. A fraction of the dried compressed air is decompressed to atmospheric pressure and passed through the desiccant bed which is to be regenerated. The moisture which was retained during the adsorption step is released into and removed with the stream of dry regenerating air.



...in the ZANDER 10 minute cycle

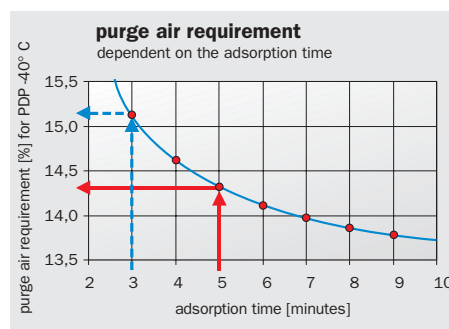
The regenerating air requirement of 14.3% for cold regenerated adsorption dryers is based on:

- Working pressure 7 bar
- Inlet temperature 35 °C
- Pressure dew point -40 °C

with a cycle of

- 5 minutes adsorption,
- 4 minutes desorption and
- 1 minute pressure build-up.

The ZANDER 10 minute cycle,



with 5 minutes adsorption, gives 12 load alternations per hour. The customary 6 minute cycle of market competitors, with 3 minutes adsorption, gives 20 load alternations per hour and thus necessarily requires 5.6% more regenerating air. ZANDER 10 minute cycle operation implies energy saving and less wear.

multitronic, the control system

with new trendsetting functions and new design, perfectly matched to cold regenerated adsorption dryers of the Series K-MT, but with consideration of highly effective adaptation of the adsorption dryer for utilisation also under extremely diversified operating conditions. From permanently visible status indication to pressure dew point control of the adsorption dryer with the multitronic system, the advantage for the operator is considerable.

The multitronic system, accommodated in a clearly designed

readily accessible switching cabinet:

- is a microprocessor control system for all ZANDER heatless dryer systems
- permits flexible adjustment of the drying times up to 240 h
- with LED's on the front side for the individual functions such as
 - Operation
 - Adsorption
 - Desorption
- Selector switch I-O-2 for fixed cycle or variable cycle for synchronisation with the compressor



and as option:

- direct pressure dew point measurement including digital display
- with floating output for pressure dew point limit value
- and possibility for the customer to set the desired dew point optionally in the range from -25°C to -40°C

...which pays off

The load situation for adsorption dryers is subject to continual fluctuation caused by pressure changes and changing input temperature with corresponding variable moisture load. The combination of the microprocessor control system multitronic with the dew point measuring device ZHM 100 from Zander makes it possible for the first time, as trendsetting and efficient unit, to control also smaller cold regenerated adsorption dryers in load-dependent manner.

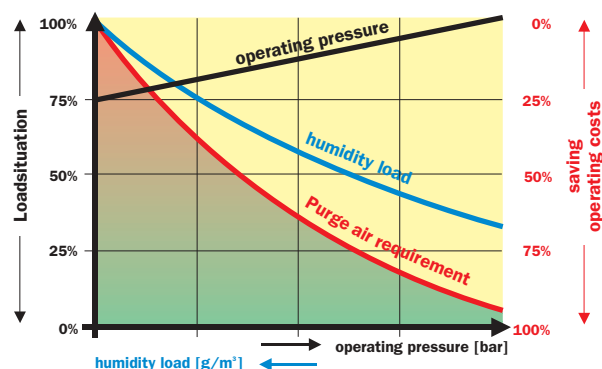
In principle, a change of the input variable affects the output variable, i.e. the load situation at the input of the dryer affects the pressure dew point at the output of the dryer in the course of time. The limit value pressure dew point for switchover can be set by the customer to any desired value in the range from -25°C to -40°C .

The adaptation of the required regeneration energy of the adsorption dryer to all conceivable load situations is performed continuously and automatically by the *multitronic* control system. Whereas the regeneration time is held constant, the adsorption time is varied exactly proportional to the load situation.

The signal „economy cycle“ indicates: This operating mode

saves energy and considerably reduces the operating costs. A special feature of the multitronic control system is the permanent adjustment with respect to the set limit value. Advantage: Only the actually required fraction of regenerating air is used, without the customary excess in other systems.

multitronic, an investment which pays off.



**multitronic,
an investment
that pays itself.**

Compressor-dryer-combination

Standard adsorption dryers of the Series K-MT including pre-filter and after-filter are ready for connecting up and operation. The installation on site is reduced to just connecting the compressed air line and the electric power supply. The condition is that the compressor continuously feeds compressed air into the pipe system. So much regarding the theoretical aspect. Practical experience has shown the discontinuous compressed air demand predominates on the

lower power rating sector. A characteristic feature is here the frequent switching of the compressors on and off. This in some cases strongly fluctuating compressed air demand considerably affects the economic efficiency of the adsorption drying plant.

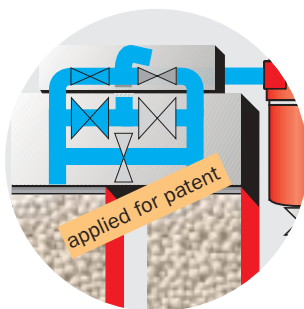
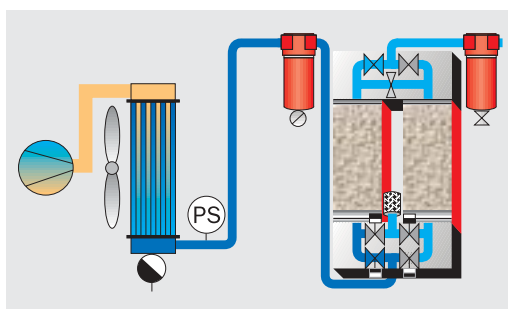
Using the on/off signal for the compressor at the same time as the input signal for the running time of the adsorption dryer is standard technical design practice, as is pressure

compensation for standby operation with a bypass in the form of a complicated expensive pipe system equipped with non-return valve.

New and unique for Zander adsorption dryers of the K-MT series is the amazing simplicity of the modular coupling of a pressure compensating plate in the system.

The pressure compensating plate with non-return valves exactly matched to the dryer size stabilises the pressure in the adsorption dryer in synchronism with the compressor, reduces the switching frequency in standby status and reduces the energy costs.

The complementary perfection is provided automatically by the multitronic system.



KA-MT, as unit with activated carbon stage

is the ideal system supplement, which is utilised whenever cleaning of the compressed air is necessary in addition to drying it.

Adsorption dryers of the Series K-MT and activated carbon dryers of the Series AK constitute a reliable purification unit which meets extreme requirements when the compressed air must not only be dried, but also be odourless and free from oil.

Dependable constant high quality in the course of time is achieved with careful process engineering design. Co-operation of the individual components such as the pre-filter of the Series XP, the adsorption dryer

of the Series K-MT, the activated carbon stage AK and the after-filter of the series ZP ensure maximum reduction of the concentrations:

- **residual moisture down to -70°C**
- **residual oil fraction down to 0.003 mg/m^3**

and corresponding to the highest quality grade DIN/ISO 8573-1. The purification unit KA-MT is predestined for utilisation in laboratory technology, in the foodstuffs industry, in the pharmaceutical industry, in semiconductor production, in painting shops and for integration in air conditioning systems.



Quality

ZANDER has decisively contributed to the market trend for adsorption dryers. The new generation of adsorption dryers revolutionises the cost-benefit ratio: Highest quality and safety with favourable operating costs.

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- 1 Vessel**
Drawn Alu-Profiles according to PED at least 1 000 000 load cycles at Δp 15 bar
> 10 years continuous operation
- 2 10 minute cycle**
with only 12 pressure changes per hour for max. 14.3% regenerating air requirement
= 5.6% energy saving
- 3 Wet area**
collecting space inside the humid zone protects the desiccant against concentrated moisture,
i.e. longer service time
- 4 Desiccant**
highly activated molecular sieve ensures stable pressure dew points of -25°C up to -70°C for
high process security
- 5 Valve block**
with directly controlled main and exhaust valves. Clearly defined valve setting, *stability in all operating situations*
- 6 Regeneration unit**
passive presetting of the regenerating air. *Matching via multitronic control system.*
- 7 multitronic**
microprocessor control system in clearly designed readily accessible housing.
Adjustable pressure dew point optionally possible.
- 8 Function indication**
with LEDs on the switching cabinet front for:
- Power
- Adsorption
- Regeneration
- Economy cycle
Permanently signalled status indication
- 9 Load-dependent control**
as pressure dew point measurement including digital display and floating output complete with dew point sensor, measuring chamber and spiral, *reduces the operating costs directly proportional to the partial load.*



Technical data

Type	Capacity*) m³/h	Dimensions mm			Connection mm	Pressure bar	Weight kg	electr. Connection Watt
		A	B	C				
K-MT 1	8	312	390	210	G 1/4	16	9	50
K-MT 2	15	312	565	210	G 1/4	16	13	50
K-MT 3	25	359	815	210	G 1/4	16	17	50
K-MT 4	35	359	1065	210	G 1/4	16	24	50
K-MT 6	56	436	1185	300	G 3/8	16	52	50
K-MT 7	72	436	1410	300	G 3/8	16	65	50
K-MT 8	86	436	1610	300	G 1/2	16	77	50

* calculated at 1 bar (abs) and 20°C

Type	Capacity*) m³/h	Dimensions mm			Connection mm	Pressure bar	Weight kg	electr. Connection Watt
		A	B	C				
KA-MT 1	8	445	390	210	G 1/4	16	12	50
KA-MT 2	15	445	565	210	G 1/4	16	17	50
KA-MT 3	25	492	815	210	G 1/4	16	24	50
KA-MT 4	35	492	1065	210	G 1/4	16	34	50
KA-MT 6	56	629	1185	300	G 3/8	16	72	50
KA-MT 7	72	629	1410	300	G 3/8	16	90	50
KA-MT 8	86	629	1610	300	G 1/2	16	107	50

* calculated at 1 bar (abs) and 20°C

Conversion factor pressure / Conversion factor temperature												
temperature °C	pressure bar(e)											
	5	6	7	8	9	10	11	12	13	14	15	16
35	0.75	0.89	1.00	1.08	1.26	1.31	1.36	1.49	1.62	1.71	1.79	1.90
40	0.64	0.78	0.91	1.00	1.08	1.16	1.24	1.36	1.47	1.57	1.67	1.77
45	0.61	0.73	0.82	0.94	1.03	1.07	1.10	1.23	1.35	1.46	1.57	1.66
50	0.59	0.67	0.79	0.86	0.99	1.03	1.07	1.18	1.29	1.38	1.46	1.55

Operating pressure <5 bar on request alternatively use heat regenerated dryers.

High inlet temperature on request.

Design example

Compressed air to be dried

flow rate 35 m³/h

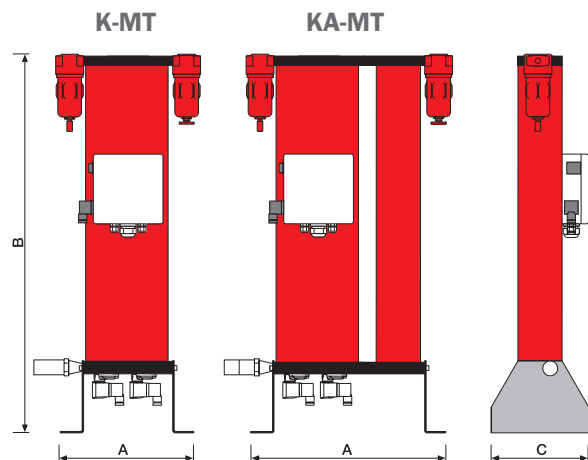
pressure 9 bar(e)

inlet temperature 35 °C

press. dew point -40 °C

$$\text{Dryer capacity} = \frac{35}{1.26} = 27.8 \text{ m}^3/\text{h}$$

Selected: K-MT 4



We reserve the right to change design and dimensions



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