

Adsorption dryer

ecodry KE-MT multitronic

The safe base ...

Parker Zander cold-regenerating adsorption dryers are based on a long-standing, well-proven design following a clear concept.

Characteristic features of the KE-MT series adsorption dryers:

- stainless steel wedge wire screens on the wet side
- separately activated main and exhaust valves screens on the wet side
- high quality desiccants
- generously dimensioned and tightly closing non-return valves ensure continuous operating safety with at the same time high reliability.



The multitronic microprocessor control is the control centre of the KE-MT series adsorption dryers.

In connection with the ZHM 100 pressure dew-point sensor, it precisely and continuously detects the relevant operating and loading state of the desiccant.

This is a prerequisite for the optimal utilisation of the available adsorber capacity with highest economic benefit.

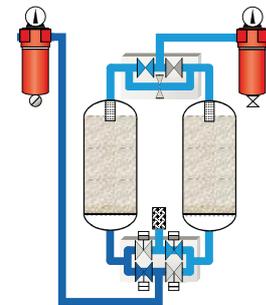
The combination of a KE-MT series dryer with pre-and after-filters of the XP and V series of the “Advanced Technology” product line fulfils even very high requirements on the compressed air quality.

... adsorbs and regenerates ...

During adsorption the desiccant accumulates the moisture contained in the compressed air. Parker Zander is using only desiccants of the molecular sieve type or similar adsorbents with high adsorption capacity. These desiccants are distinguished by a long service life even at high inlet temperatures and low pressure dew-points. Regene-

ration is carried out in counterflow with respect to the adsorption flow direction. A partial flow of the dried compressed air is depressurised to atmospheric pressure and then passed through the desiccant bed which is to be regenerated.

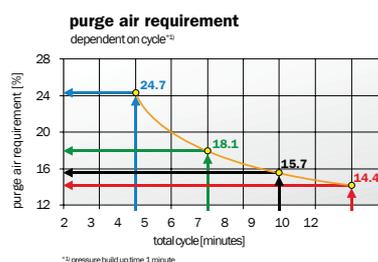
The moisture retained during the adsorption phase is removed with the partial flow of dry purge air.



... in the Parker 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 at a cycle of
 - 5 minutes adsorption,
 - 4 minutes desorption and
 - 1 minute pressure build-up.



The Parker Zander 10-minute cycle with an adsorption time of 5 minutes leads to 12 load alternations per hour. The customary 6-minute cycle with an adsorption time of only 3 minutes requires 20 load alternations per hour. The consequence: Parker Zander dryers save 5.6 % of regeneration energy.

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multitronic, the control system ...

... with new trendsetting functions and new design, perfectly matched to cold regenerated adsorption dryers of the series KE-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 Parker Zander heatless dryer systems.
- permits flexible adjustment of the drying times.
- with LEDs on the front side for the individual functions such as
 - operation
 - adsorption
 - desorption
- Selector switch I-0-2 for fixed cycle or variable cycle for synchronisation with the compressor



and as options:

- 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 -70°C .

... which pays off

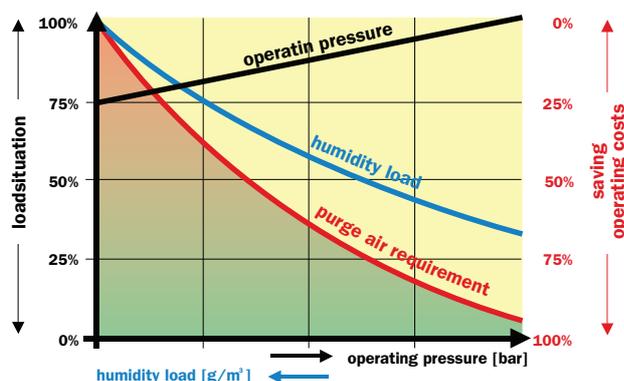
The load situation for adsorption dryers is subject to continual fluctuation caused by pressure changes and changing inlet temperatures with corresponding variable moisture loads. The combination of the microprocessor control system multitronic with the dew point measuring device ZHM 100 from Parker Zander makes it possible for the first time, as a 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 inlet of the dryer affects the pressure dew point at the outlet 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 -70°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.



Adsorption dryer

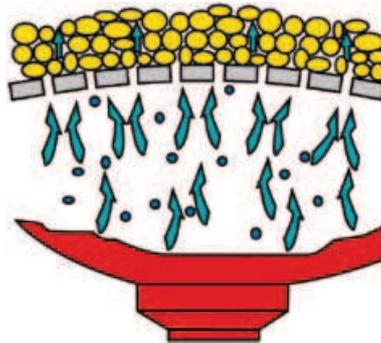
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Seen from close up ...

... the dehumidification of the compressed air for pressure dew points of -25°C or higher is reserved to adsorption drying. Two vessels for adsorbent filled with desiccant are alternately adsorbed and regenerated at continuous operation.

All adsorption dryers are operating according to the same principle – there are, however, design details which make the difference and lead to an extraordinarily effective dryer operation.

The KE-MT series, for example, has on the inlet side of the adsorbers special self-cleaning wedge wire screen of stainless steel with water-separating effect, offering several advantages:



- transition from the smaller pipe cross-section to the wider adsorber reduces the flow velocity
- desiccant remains free from entrained condensate
- stainless steel wedge wire screen guarantees a smooth compressed-air flow through the desiccant bed.

This ensures: only water vapour can get into the desiccant bed which at the same time increases the service life of the high-grade desiccant. The consequences of these design features: A compact design is able to provide a maximum drying capacity.

The vessels are manufactured according to the present state of the art and following the applicable European and international directives.

The KE-MT series adsorption dryers can optionally be supplied with special test and acceptance certificates, e.g. in accordance with ASME, China Stamp, ASME_U-Stamp, GOST, AS1210, DNV and many more.

KEA-MT, unit with an activated carbon stage ...

... is the ideal complement for the system. It is utilised whenever it is necessary to clean and dry the compressed air or to remove odorous substances. Adsorption dryers of the KE-MT series and activated carbon adsorbers of the AK series constitute a dependable preparation unit which can cope with extreme requirements where the compressed air must be dry as well as free from oil and odours. The constant high quality throughout the operating time is achieved with a careful process engineering design. Co-operation of the individual components such as the pre-filter of the XP series, KE-MT adsorption dryers,



the activated carbon stage AK and the after-filter of the V series ensure maximum purity:

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

and are corresponding to highest quality grades according to DIN/ISO 8573-1. The preparation unit KEA-MT is predestined for utilisation in laboratories technology, in the foodstuffs industry, for pharmaceutical applications, in semiconductor production, in painting shops or within air conditioning systems.

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Quality

Parker Zander has decisively contributed to the market trend for adsorption dryers.

The adsorption dryer KE-MT redefines the cost/benefit ratio: highest quality and safety with very reasonable operating costs.



1 Vessel

Welded design in acc. with PED, minimum alternations of load, 1,000,000 at max.:

Δp 15 bar KE-MT 10 to 95

Δp 9 bar KE-MT 120 to 600

19 years continuous operation.

2 10 minute cycle

Only 12 load alternations per hour

= 5.6% energy saving

3 Wet area in receiver

self-cleaning wedge wire desiccant support screen, located at the inlet of each vessel protects the desiccant against extensive moisture loading
i.e. extended service time.

4 Desiccants

highly activated desiccant ensures stable pressure dew-points of -25°C up to -70°C
for high process security.

5 Valve design

with directly controlled main and exhaust valves. Clearly defined valve positioning - even during standby operation. **Stability in all operating situations.**

6 Regeneration unit

passive presetting of the purge air. **Matching via multitronic control system.**

7 multitronic

microprocessor control system in aesthetic, easily accessible enclosure.

Adjustable pressure dew-point option.

8 Function indication

with LEDs on the covering:

- Power
- Adsorption
- Regeneration
- Economy cycle

Permanently signalled status indication.

9 Load-dependent control

as pressure dew-point control including digital display and potential free output, complete with dew-point sensor, measurement chamber and spiral, **reduces the operating costs directly proportional to the partial load.**

Technical data

Type	Order no.	Capacity*) m³/h	Dimensions in mm			Connection	Pressure bar	Weight Kg
			A	B	C			
KE-MT 10	K10/16D1-G230M	105	650	1410	460	G 1	16	125
KE-MT 15	K15/16D1-G230M	145	650	1655	475	G 1	16	145
KE-MT 20	K20/16D1-G230M	200	650	1680	485	G 1	16	180
KE-MT 25	K25/16D1-G230M	255	690	1740	505	G 1	16	215
KE-MT 35	K35/16D1-G230M	350	825	1790	570	G 1 1/2	16	250
KE-MT 45	K45/16D1-G230M	420	825	1815	570	G 1 1/2	16	285
KE-MT 60	K60/16D1-G230M	620	825	1845	595	G 1 1/2	16	375
KE-MT 75	K75/16D1-G230M	750	1010	1980	610	G 2	16	435
KE-MT 95	K95/16D1-G230M	940	1010	2000	630	G 2	16	550
KE-MT 120	K120/16D1-G230M	1200	1060	2080	840	50	10	640
KE-MT 150	K150/16D1-G230M	1550	1270	2120	900	65	10	770
KE-MT 200	K200/16D1-G230M	2000	1350	2160	990	65	10	955
KE-MT 250	K250/16D1-G230M	2500	1530	2210	1040	80	10	1075
KE-MT 300	K300/16D1-G230M	3000	1600	2255	1100	80	10	1500
KE-MT 380	K380/16D1-G230M	3800	1875	2385	1200	100	10	1990
KE-MT 500	K500/16D1-G230M	4850	1925	2660	1250	100	10	2410
KE-MT 600	K600/16D1-G230M	6100	2160	2820	1565	125	10	2850
KEA-MT 10	K10/16DA1-G230M	105	850	1410	460	G 1	16	160
KEA-MT 15	K15/16DA1-G230M	145	850	1655	475	G 1	16	185
KEA-MT 20	K20/16DA1-G230M	200	875	1680	485	G 1	16	235
KEA-MT 25	K25/16DA1-G230M	255	940	1740	505	G 1	16	295
KEA-MT 35	K35/16DA1-G230M	350	1100	1790	570	G 1 1/2	16	340
KEA-MT 45	K45/16DA1-G230M	420	1145	1815	570	G 1 1/2	16	390
KEA-MT 60	K60/16DA1-G230M	620	1190	1845	590	G 1 1/2	16	525
KEA-MT 75	K75/16DA1-G230M	750	1610	1980	610	G 2	16	570
KEA-MT 95	K95/16DA1-G230M	940	1650	2000	630	G 2	16	685

* calculated at 1 bar (abs) and 20°C. KE-MT 10 - KE-MT 95 including pre- and afterfilter. KE-MT 10 - KE-MT 95 following PED 97/23EC Cat. II-III

KE-MT 120 - KE-MT 600 excluding pre- and after-filter. KE-MT 120 - KE-MT 600 following PED 97/23EC Cat. IV

KEA-MT 10 - KEA-MT 95 including pre- and after-filter. KEA-MT 10 - KEA-MT 95 following PED 97/23EC Cat. II-III.

Electrical power supply: 230 VAC, 115 VAC or 24 VDC. Power consumption: 40 Watt

Conversion factor pressure / 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 smaller than 5 bar (e) on request or alternatively heat-regenerating adsorption dryers. Higher inlet temperatures on request.

Design example

Compressed air to be dried

flow rate **350 m³/h**

pressure **9 bar(g)**

inlet temperature **35°C**

press. dew point **-40°C**

$$\text{Dryer capacity} = \frac{350}{1,26} = 278 \text{ m}^3/\text{h}$$

Selected: KE-MT 35

