BOGE AIR. THE AIR TO WORK.

BOGE DT refrigerant dryer "Best in Class" concerning efficiency and sustainability

Made in Germany since 1907

Benefits across the entire line

Carefully listening to your customers pays off. The latest DT refrigerant dryer generation sets new standards for all relevant criteria: Specifically designed and developed for BOGE, these dryers are characterised by the smallest CO_2 footprint and the lowest power consumption on the market! They are also future-orientated with their numerous interfaces.

Speed-controlled fan

The fan speed can be flexibly adapted to the actual cooling requirements. This systemises energy savings of up to 25%. In addition to the precise control of the cooling performance, speed control ensures more efficient, quiet operation and – because there is less wear – a longer fan service life.

Micro-channel aluminium capacitor

The significantly improved heat transfer with lower temperature differences and the higher corrosion resistance make the micro-channel aluminium capacitor highly efficient and durable.
Another advantage:
The lower internal volume of the micro-channels requires about 40 to 60% less refrigerant which significantly reduces operating costs and environmental impact.

Hermetically sealed cooling compressor

The hermetically sealed, highly efficient scroll compressor is not only particularly durable and reliable. But the hermetic seal also prevents dirt and impurities as well as leaks and delivers constant performance under various load conditions – with 20% less drive power. Fewer moveable parts improve energy efficiency, lower operating costs and ensure reliable, quiet operation with low vibrations.

Maintenance-friendly design

The clear and neat arrangement of the components creates a lot of space and allows ideal accessibility, which is also supported by panels on all sides that can be easily removed.

Frequency control

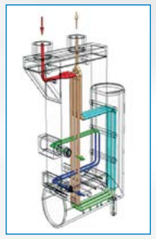
Frequency-controlled dryers require fewer start-up currents and automatically adapt to changing flow rates. Energy efficiency benefits from this – particularly in partial load – as does the stability of the pressure dew point, despite all load fluctuations. Furthermore, the variable speed technology reduces component wear. This will lower operating and maintenance costs and increase service life.

Touchscreen control

The intuitive user interface of the 4.3" touchscreen control allows constant monitoring of the pressure dew point. It also shows the utilisation of the cooling compressor, expansion valve and speed-controlled fan in per cent.

All-in-one aluminium heat exchanger

Thanks to the “all-in-one“ heat exchanger that combines the components air/air heat exchanger, evaporator and demister, the differential pressure is kept to a minimum. The reverse flow process ensures efficient heat transfer and efficiently keeps the pressure dew point low.



Electronic expansion valve

Regardless of the season and physical states, the expansion valve efficiently keeps the evaporation temperature and pressure constant because the fast and precise supply of hot gas prevents ice forming in the evaporator, it ensures a stable pressure dew point and minimises pressure variations.

Level-controlled condensate drain

The electronic level control of the BOGE CCD 100 guarantees that the condensate is only drained when a defined condensate level has been reached. This allows maximum efficiency because there is no pressure loss and energy is saved.

The key is flexible adjustment to requirements

The best energy balance of any refrigerant dryer series on the market – this positioning is not a matter of chance: Five different operating modes allow prioritisation of the lowest pressure dew point or maximum energy savings. Thanks to frequency control, the DT…F models are true “energy-saving dryers”!

Very discreet: the cooling compressor

The hermetic sealing of the cooling compressor and the speed control allow operation low in vibrations and noise, which is particularly welcome in environments that require low noise levels. Most of all, however, the frequency-controlled models will win you over with their requirement-dependent adjustment of free air delivery which – supported by reduced start-up currents – allows significant savings when it comes to power consumption.

Speed-controlled: the fan

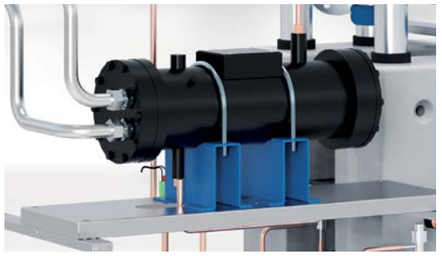
One result of the adjustable frequency control is the precise monitoring of the cooling performance which allows ideal temperature management and drying efficiency. In addition to more efficient heat dissipation in the housing, the adjustment of fan speed based on cooling air requirements also contributes to a reduction in noise level. From an economical perspective, energy savings are particularly noticeable because in all cases only the amounts of energy actually needed are consumed.

Climate-friendly: the refrigerant circuit

The climate-friendly, future-proof refrigerant R 513A is used as standard. Therefore, all models comply with the requirements of the F-Gas Regulation and are eligible for BAFA (in Germany). The practical use of a hermetically sealed refrigerant circuit – in connection with a low CO_2 equivalent value – is demonstrated by the omission of an annual leak tightness test! This means the new refrigerant dryers have a positive effect on the climate, environment and operating costs.

Optional: water cooling

Those who have to deal with high ambient temperatures or who have little space, may prefer a water-cooled model: The robust aluminium design is not just characterised by low power consumption and sound pressure levels. The high-quality tube bundle heat exchangers are also particularly maintenance-friendly because they are easy to clean. In addition, the compressor does not require further ventilation.

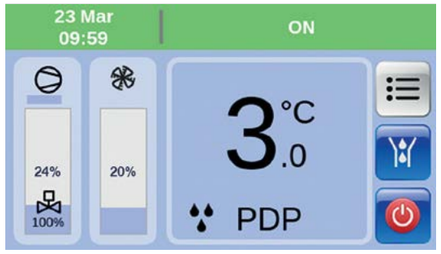


Flexibility that pays off

Saving energy is the priority of the new BOGE refrigerant dryers, even if they are optionally available as full-load dryers that stand out with their particularly cost-effective pricing. Where dryers are used in partial-load operation more often, it quickly becomes obvious that the frequency-controlled models cannot be beaten for price overall because of their significantly lower power consumption.
Even during lower full load operation, they will keep the pressure dew point constant. Often, however, the ideal fusion of efficiency and economy is based on the combination of rigid and frequency-controlled dryers ...

Particularly considerate display

At 4.3", the display is very large and provides the best overview (in %) of the rate of utilisation for the compressor, expansion valve and frequency-controlled fan. Using the touchscreen, all parameters can be continuously monitored and evaluated graphically via the relevant sensors (from build DT 180): Five sensors check the temperature, and whether evaporation pressure or condensing pressure – everything is documented precisely.



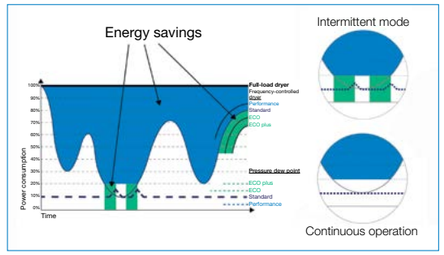
Maximum adaptability

Five operating modes allow adjustment based on the lowest pressure dew point or maximum energy savings. The design of a standard dryer is based on sophisticated operating conditions. The integrated frequency control ensures that, even when there is little demand, drying capacity is ideal, the pressure dew point is stable and the power consumption is as low as possible. Maximum flexibility that pays off ...

Operating mode	Dew Point (PDP)	Saving
Performance	+++++	+
Standard	+++	++
ECO	++	+++
ECO^{plus}	+	++++
AODM	Automatic Optimised Dewpoint Managment	

Consistently economical

With frequency-controlled dryers, energy savings are basically part of the programme because they flexibly adapt energy consumption to the heat load and flow rate of the refrigerant. If the flow rate drops below 20%, the cooling compressor can either continue in order to respond to the changing load conditions quickly or it can be turned off altogether. Then the cold is stored in the heat exchanger until the dew point increases again and the cooling compressor restarts.



Future-proof connection

Data collection is the basis of process optimisation, error indication and planning of maintenance cycles. To this end, DT refrigerant dryers are equipped with numerous interfaces that allow quick integration of an existing infrastructure. This means that data related to the dryer's running behaviour can be accessed remotely at any time e.g. to monitor temperature development, calculate energy costs etc.

Modbus RTU USB
Potential-free & digital inputs and outputs
Modbus TCP

Highly intelligent by design

What sets the refrigerant dryers from our new DT series apart is their outstanding efficiency: This starts with the innovative “all-in-one” aluminium heat exchanger that combines air/air heat exchanger, evaporator and condenser, it becomes obvious – thanks to the efficient reverse flow process in the air/air heat exchanger – in the maximum heat transfer and ends with the electronically level-controlled condensate drain that efficiently drains the condensate without differential pressure losses.

COMPRESSED AIR TREATMENT
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DT 4 – DT 7


DT 9 – DT 18


DT 26 – DT 40


DT 52 – DT 100


DT 120 – DT 140

Passionate about sustainability

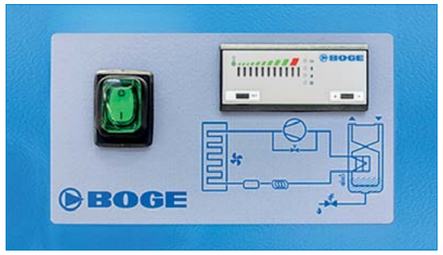
Even without the F-Gas Regulation (EU 517:2014), we would have chosen the climate-friendly and future-proof refrigerant R 513A. Thanks to their hermetically sealed refrigerant circuit, the low greenhouse gas potential of 631 and an exceptionally small CO_2 footprint, all DT dryer models easily comply with legal stipulations.

Conscientious in all conditions

What's the point of having the best refrigerant dryer if the dew point is not stable? It is the expansion valve in these models that keeps the evaporating temperature and pressure constant – no matter how high the mercury rises. The result: no more ice in the evaporator (the hot gas feed prevents this), but rather a stable pressure dew point in fluctuating environmental conditions.

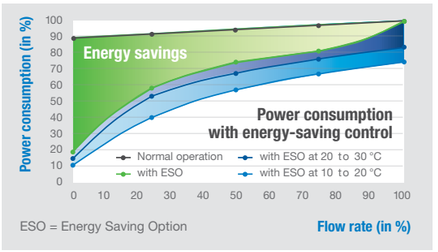
Transparent controls

All standard models (DT 4 to DT 140) feature an electronic control with LED status display for quickly checking the pressure dew point. The fan is intelligently controlled by temperature sensor (up to DT 52) or pressure sensor (from DT 62). A condensate drain with level control, a floating alarm contact and a Modbus RTU/RS 485 interface also feature as standard and offer external control and monitoring options.



Consistent energy savings

The energy savings can be even further optimised from model DT 52: the digital control takes charge with its energy-saving mode. The temperature of the dew point is continuously monitored and displayed. Once the pressure dew point is reached at low load, the electronic control switches off the compressor until the temperature of the dew point rises above the setpoint. This means that energy consumption is almost proportionally matched to the thermal load. This is the most consistent way of saving energy!



BOGE: tailor-made and exclusive

The new DT refrigerant dryers have been specifically designed and developed for BOGE. This explains the comprehensive choice of features and the exceptional range: The single-phase models up to DT 140 are optionally available with Energy Saving Option (ESO). The bigger, three-phase models are optionally available as full-load dryers or as energy-saving dryers (as a frequency-controlled model). The speed-controlled fan is integrated as standard in frequency-controlled models.

Conversion factors

Refrigerant dryers are designed in accordance with DIN ISO 7183 for 7 bar operating pressure, an ambient temperature of +25 °C and an inlet temperature of +35 °C. The max. operating pressure is 16 bar. The following conversion factors must be applied if the operating pressures or temperatures vary.

Ambient temperature	°C	**25**	30	35	40	45	50							
Factor	f_1	**1.00**	0.96	0.90	0.82	0.72	0.60							
Inlet temperature	°C	< 30	30	**35**	40	45	50	55	60	65	70			
Factor	f_2	1.20	1.12	**1.00**	0.83	0.69	0.59	0.50	0.44	0.39	0.37			
Intake pressure	bar	4	5	6	**7**	8	9	10	11	12	13	14	15	16
Factor	f_3	0.77	0.86	0.93	**1.00**	1.05	1.10	1.14	1.18	1.21	1.24	1.27	1.30	1.33
Pressure dew point	°C	**3**	5	7										
Factor	f_4	**1.00**	1.09	1.19										

Example: (for dew point 3 °C)

Volumetric flow rate	m^3/h	108		Factor
Ambient temperature (f_1)	°C	40	=	0.82
Inlet temperature (f_2)	°C	50	=	0.59
Intake pressure (f_3)	bar	8	=	1.05
Pressure dew point (f_4)	°C	3	=	1

$$= \frac{V}{f_1 \times f_2 \times f_3 \times f_4} = \frac{108}{0.82 \times 0.59 \times 1.05 \times 1} = 212 = \textbf{DT 40}$$

Technical data

BOGE model	Flow rate		Electrical power consumption*		Refrigerant R 513 A**	Greenhouse gas potential CO_2 equivalent	Hermetically sealed refrigerant circuit	Dimensions W x D x H	Weight	Compressed air connection
			50 Hz	60 Hz			within the meaning of the F-Gas Regulation			
	m^3/min	m^3/h	kW	kW	kg	t		mm	kg	
DT 4	0.4	24	0.11	0.12	0.12	0.08	•	350 x 450 x 490	19	1/2"
DT 7	0.7	42	0.18	0.19	0.17	0.11	•	350 x 450 x 490	21	1/2"
DT 9	0.9	54	0.21	0.23	0.20	0.13	•	350 x 450 x 490	24	1"
DT 14	1.4	84	0.30	0.34	0.19	0.12	•	350 x 450 x 490	27	1"
DT 18	1.8	108	0.30	0.36	0.20	0.13	•	350 x 450 x 490	28	1"
DT 26	2.6	156	0.65	0.73	0.23	0.15	•	450 x 600 x 550	39	1"
DT 32	3.2	192	0.55	0.60	0.30	0.19	•	450 x 600 x 550	44	1 1/2"
DT 40	4.0	240	0.80	0.75	0.35	0.22	•	450 x 600 x 550	45	1 1/2"
DT 52	5.2	312	0.95	0.95	0.40	0.25	•	510 x 790 x 860	62	1 1/2"
DT 62	6.2	372	0.90	0.90	0.50	0.32	•	510 x 790 x 860	64	1 1/2"
DT 80	8.0	480	1.40	1.25	0.74	0.47	•	510 x 790 x 860	75	1 1/2"
DT 100	10.0	600	1.50	1.60	0.90	0.57	•	510 x 790 x 860	83	1 1/2"
DT 120	12.0	720	1.80	2.00	1.40	0.88	•	580 x 790 x 880	106	2"
DT 140	14.0	840	2.10	2.20	1.56	0.95	•	580 x 790 x 880	109	2"
DT 180	18	1080	1.90	2.70	1.40	0.88	•	1390 x 740 x 1100	232	2 1/2"
DT 180 F	18	1080	1.30	1.30	1.35	0.85	•	1390 x 740 x 1100	255	2 1/2"
DT 220	22	1320	1.70	2.40	1.60	1.01	•	1390 x 740 x 1100	241	2 1/2"
DT 220 F	22	1320	1.60	1.60	1.35	0.85	•	1390 x 740 x 1100	265	2 1/2"
DT 260	26	1560	2.20	2.80	1.60	1.01	•	1390 x 740 x 1240	258	DN 80
DT 260 F	26	1560	1.90	1.90	1.70	1.07	•	1390 x 740 x 1240	258	DN 80
DT 300	30	1810	2.70	3.70	1.50	0.95	•	1390 x 740 x 1260	260	DN 80
DT 300 F	30	1810	2.40	2.40	1.70	1.07	•	1390 x 740 x 1260	283	DN 80
DT 350	35	2100	3.10	4.20	1.75	1.10	•	1390 x 740 x 1260	271	DN 80
DT 350 F	35	2100	3.30	3.30	1.90	1.20	•	1390 x 740 x 1260	298	DN 80
DT 460	46	2760	3.40	4.20	2.40	1.50	•	1590 x 980 x 1730	398	DN 100
DT 460 F	46	2760	3.60	3.60	2.50	1.58	•	1590 x 980 x 1730	438	DN 100
DT 520	52	3120	5.00	5.90	2.70	1.70	•	1590 x 980 x 1730	414	DN 100
DT 520 F	52	3120	3.80	3.80	3.00	1.89	•	1590 x 980 x 1730	455	DN 100
DT 630	63	3780	6.40	7.40	3.00	1.89	•	1590 x 980 x 1730	419	DN 100
DT 630 F	63	3780	4.80	4.80	3.00	1.89	•	1590 x 980 x 1730	460	DN 100
DT 750	75	4500	6.40	7.70	3.70	2.33	•	1590 x 980 x 1730	428	DN 100
DT 750 F	75	4500	6.50	6.50	3.50	2.21	•	1590 x 980 x 1730	471	DN 100

* All of the above details refer to DIN ISO 7183, at 25 °C ambient temperature, 35 °C inlet temperature and 7 bar operating pressure.
** GWP value for R 513 A (631) in accordance with CE 517/2014/ (AR4).

Additional comments:

1) For the protection of the heat exchanger, a pre-filter (F..-2 P) is absolutely necessary.
2) All models from build DT 180 are available as an air-cooled or a water-cooled version.
3) Anti-corrosion coating for aggressive environmental conditions is available on request.

BOGE AIR. THE AIR TO WORK.

BOGE

Best
Of
German
Engineering

Customers in more than 120 countries worldwide trust the BOGE brand. Already in its fourth generation, this family-run company directs all its experience into developing innovative solutions and exceptionally efficient products for the compressed air industry.

MANAGEMENT SYSTEM CERTIFICATION
DNV·GL
ISO 9001 = ISO 14001

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