BEKO products

DRYPOINT® RA

Drying

The concept determines the efficiency

DRYPOINT® RA, the most economic way to dry compressed air

BEKO

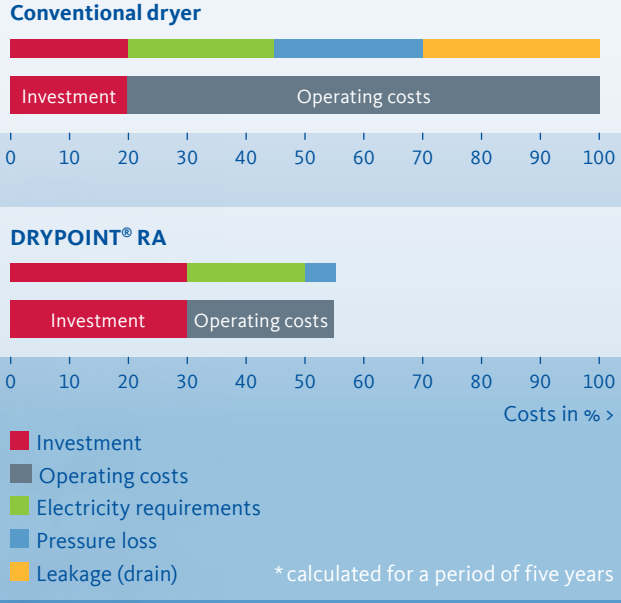
DRYPOINT® RA:
An investment that pays off

It is not the investment costs that determine the cost efficiency calculation regarding refrigeration dryers – but the operating costs. Considering an operating period of five years, only between 20 and 30 per cent of the total costs are allotted to the pure investment, while 70 to 80 per cent are allotted to the ongoing operating costs. These costs are split equally between electricity costs, flow resistances in the system and compressed air losses through leaks. Pressure drop at critical spots must be compensated by enhanced compressor performance and the resulting additional energy demand.

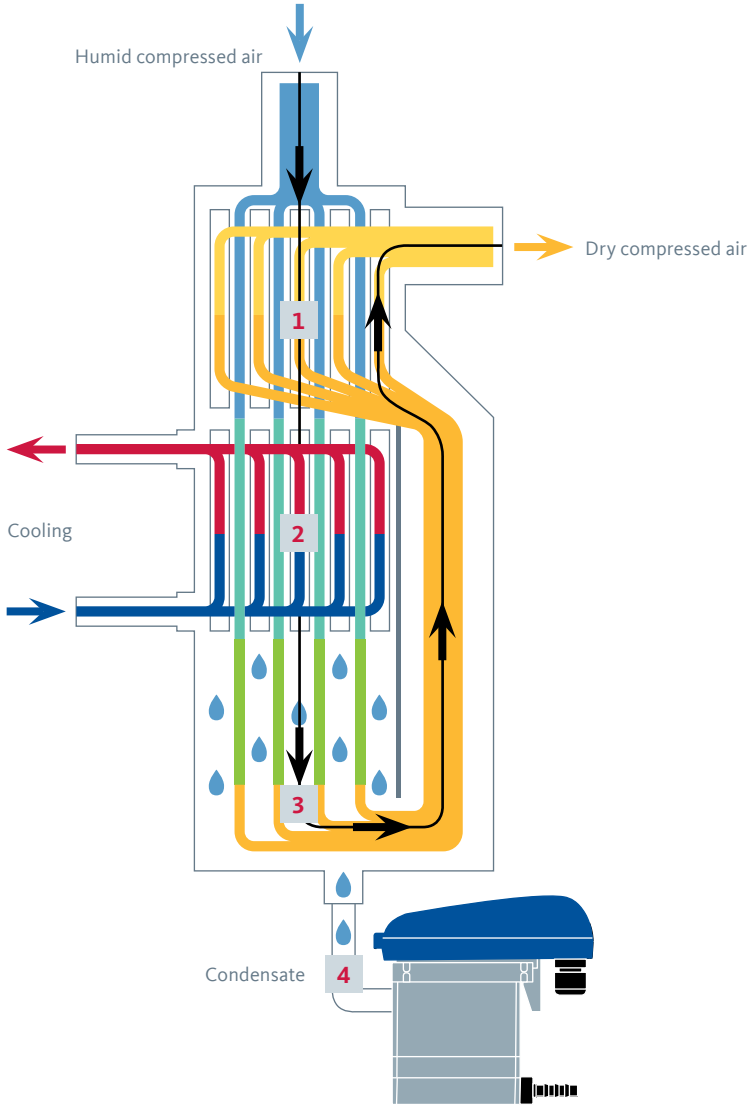
With DRYPOINT® RA, these operating costs can be reduced by almost half, considering a period of time of five years. In the return-on-investment calculation, the full potential of the new refrigeration-dryer generation is proven: the dryers pay off within an operation time of only six months.

Convincingly Economical

The life-cycle costs of the DRYPOINT® RA in comparison*



* calculated for a period of five years



Drying according to the efficiency principle: The operating principle of DRYPOINT® RA

In the DRYPOINT® RA, compressed air drying takes place via an optimum heat exchange through a counter-flow process over the cooling surface; the air flows constantly in a downward movement without turbulence.

This generously dimensioned counter-flow heat exchanger, which includes an air/air and an air/refrigerant heat exchanger, cools the compressed air down to a temperature of +3°C. The size of the heat exchanger not only supports a particularly effective cooling, but also reduces the flow resistance to an absolute minimum. Warm compressed air, saturated with water vapour, is precooled in the air/air heat exchanger **(1)** when entering the refrigeration dryer.
The required cooling capacity of the refrigerant in the downstream air/refrigerant heat exchanger **(2)** is reduced by this action and the system becomes more energy-efficient.

The gravitational force sustains a particularly high droplet separation of nearly 99%. In the very large condensate collection chamber with subsequent recirculation, the flow velocity is significantly reduced. Re-entrainment of already separated droplets is reliably prevented in this manner **(3)**.

The accumulated condensate is discharged from the DRYPOINT® RA via the level-controlled BEKOMAT® condensate drain avoiding any compressed air losses, and can be processed reliably using processing systems such as the ÖWAMAT® oil-water separation system or the BEKOSPLIT® emulsion-splitting plant **(4)**.

Prior to leaving the DRYPOINT®, the dried and cold compressed air is reheated in the air/air heat exchanger. Through this process, the relative air humidity is significantly reduced and the cooling capacity employed is recovered by up to 60% **(1)**.

Intelligent construction, efficient control, energy-saving components

The intelligent construction of the compressed air refrigeration dryers not only allows highest functionality but also reliable and cost-effective operation. In this respect, the fundamental elements are the vertical design of the heat exchanger in accordance with physical principles (top-down condensate flow), a stainless steel demister for safe separation and a large settling chamber preventing the re-entrainment of the condensate.

The DRYPOINT® RA is particularly energy-efficient because of the avoidance of compressed air path deflections which are unfavourable to the flow and of additional flow resistances. A constantly low pressure dew point, droplet separation of nearly 99%, scarcely any compressed air loss, low maintenance requirements and low operating costs are further advantages.

Condensate drainage and drying centrally controlled

For the DRYPOINT® RA, the condensate drainage was integrated in the device concept: the refrigeration dryers are equipped with a BEKOMAT® as standard. Besides the functional control of the dryer, the DMC18 system control also takes over the control and supervision of the level-controlled condensate drain, including the indication of any service messages. In the DMC24 control, an Advanced Draining System (ADS) records the status indications of the condensate drain and activates a corresponding alarm. Even the test function of the drain can be triggered centrally via the control.

Optimised compression concept

From model DRYPOINT® RA 1080 onwards, scroll compressors operate in lieu of the standard piston compressors. Therefore, vibration during compression is significantly reduced at a lower noise level. In addition, the power consumption is considerably reduced.

Environmentally compatible and easy to maintain

The environmentally friendly refrigerants R134a (up to model RA 135) and R407C (from model RA 190 onwards) boast a particularly favourable GWP value (Global Warming Potential) and preserve the ozone layer. Moreover, thanks to the intelligent construction, maintenance for the DRYPOINT® RA is fast, easy and cost effective.

DMC 18

DMC 24

Control DMC18 (DRYPOINT® RA 20 to 960):

- Three digit display
- Display pressure dew point (°C or °F)
- Control BEKOMAT via DMC18
- Alarm indication in the event of a failure at the BEKOMAT
- Operation of the external test button via the control
- Potential-free alarm contact
- LED for the alarm indication
- Operating-hour meter
- Maintenance reminder (adjustable based on time)
- Different voltages (100...240 V, 50-60 Hz)

Control DMC24 (DRYPOINT® RA 1080 to 8800):

- Advanced fan control AFC
- Interconnection with BEKOMAT ADS
- Advanced service warning ASW
- Recording of alarm situations (AAL = Advanced Alarm Log)
- RS485 serial interface for the connection with the PC and/or control system
- Auto-restart after short-term power outage
- Potential-free alarm contact
- Display indication: PDP, inlet temperature, ambient temperature, compressor outlet temperature (°C or °F for each parameter), condensation pressure (bar or psi), total working hours

R407C
OZONE-FRIENDLY

The DRYPOINT® advantages at a glance

Best drying through highly efficient heat exchanger combination	Lowest pressure loss, even with varying loads	Outstanding price-performance ratio
Highest cost effectiveness, lowest energy consumption	BEKOMAT® inside	Environmentally friendly refrigerant

Condensate drainage without compressed air losses
DRYPOINT® RA refrigeration dryers are equipped as standard with the electronically level controlled BEKOMAT® condensate drain.

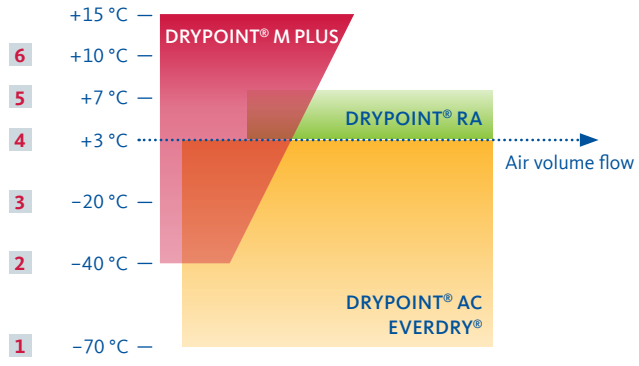
Always in view: The display of the service programme
Via the RS485 serial interface, a connection with the PC and/or control system can be established.

In use everywhere: DRYPOINT® RA types and applications

The air-cooled DRYPOINT® RA compressed air refrigeration dryers complement the BEKO dryer programme with another cost effective alternative. The comprehensive RA model range of products allows optimum adaptation of the compressed air processing to individual operating conditions.

All models excel in minimum pressure loss even with varying work loads and in their low energy consumption. The standard series comprises refrigeration dryers with performances from 20 to 8800 m^3/h.

Highest-quality compressed air – the dryer programme from BEKO



Pressure dew point 1–6 = quality class in accordance with ISO 8573-1

For special applications:

DRYPOINT® RA TAC:
RA standard device with anti-corrosion coating

DRYPOINT® RA WC:
Water-cooled compressed air refrigeration dryer

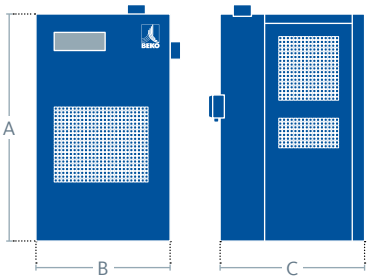
DRYPOINT® RA TBH:
Water-cooled with shell and tube heat exchanger

DRYPOINT® RS HP:
For high-pressure applications up to 50 bar

DRYPOINT® RA HT:
For a compressed air inlet temperature up to 80°C

DRYPOINT® RA

Model	Air volume flow m³/h, 3 °C	Electr. connec-tion	Power con-sumption kW	Pressure loss bar	Air connection	A mm	B mm	C mm	Weight kg
RA 20	21	230 VAC 50 Hz 1 Ph	0,16	0,02	G ½ BSP-F	740	345	420	28
RA 35	33		0,18	0,03	G ½ BSP-F	740	345	420	29
RA 50	51		0,22	0,08	G ½ BSP-F	740	345	420	31
RA 70	72		0,23	0,11	G ½ BSP-F	740	345	420	34
RA 110	108		0,31	0,13	G 1 BSP-F	740	345	420	36
RA 135	138		0,46	0,17	G 1 BSP-F	740	345	420	37
RA 190	186	230 VAC 50 Hz 1 Ph	0,69	0,15	G 1¼ BSP-F	825	485	455	46
RA 240	240		0,75	0,20	G 1¼ BSP-F	825	485	455	50
RA 330	330		0,70	0,15	G 1½ BSP-F	885	555	580	55
RA 370	372		0,84	0,18	G 1 ½ BSP-F	885	555	580	63
RA 490	486		0,98	0,09	G 2 BSP-F	975	555	625	92
RA 630	630		1,10	0,13	G 2 BSP-F	975	555	625	94
RA 750	750		1,45	0,07	G 2½ BSP-F	1105	665	725	141
RA 870	870		1,52	0,13	G 2½ BSP-F	1105	665	725	150
RA 960	960		1,73	0,15	G 2 ½ BSP-F	1105	665	725	161
RA 1080	1080	400 VAC 50 Hz 3 Ph	2,10	0,17	DN80 - PN16	1465	790	1000	240
RA 1300	1260		2,55	0,21	DN80 - PN16	1465	790	1000	242
RA 1490	1500		2,85	0,13	DN80 - PN16	1465	790	1000	275
RA 1800	1800		3,10	0,19	DN80 - PN16	1465	790	1000	276
RA 2200	2208		3,50	0,26	DN80 - PN16	1465	790	1000	311
RA 2400	2400	400 VAC 50 Hz 3 Ph	4,30	0,21	DN100 - PN16	1750	1135	1205	463
RA 3000	3000		4,80	0,14	DN100 - PN16	1750	1135	1205	538
RA 3600	3600		5,60	0,20	DN100 - PN16	1750	1135	1205	540
RA 4400	4416		6,40	0,26	DN100 - PN16	1750	1135	1205	612
RA 5400	5400		8,40	0,20	DN150 - PN16	1810	1300	1750	830
RA 6600	6624		10,80	0,26	DN150 - PN16	1810	1300	1750	940
RA 7200	7200		11,30	0,20	DN200 - PN16	1870	1400	2200	1055
RA 8800	8832		16,80	0,26	DN200 - PN16	1870	1400	2200	1200



Reference conditions in accordance with DIN/ISO 7183

- Volume flow based on 20°C at 1 bar
- Operating pressure 7 bar
- Compressed-air inlet temperature 35°C
- Cooling air temperature 25°C
- Pressure dew point 3°C
- All models equipped as standard with a BEKOMAT® condensate drain
- Water cooled versions
  A 330 – RA 7200 upon request

Electrical connection:
other versions upon request

Operating pressure (bar)	4	5	6	7	8	10	12	14
Correction factor	0,77	0,86	0,93	1,00	1,05	1,14	1,21	1,27

Compressed air inlet temperature (°C)	25	30	35	40	45	50	55	60	65	70
RA 20 – RA 960	1,27	1,21	1,00	0,84	0,70	0,57	0,48	0,42	upon request	
RA 1080 – RA 8800	1,26	1,20	1,00	0,81	0,68	0,57	0,46	0,38	upon request	

Cooling-medium temperature (°C)	25	30	35	40	45	50
RA 20 – RA 960	1,00	0,96	0,91	0,85	0,76	0,64
RA 1080 – RA 8800	1,00	0,95	0,93	0,85	0,73	0,58

Example: Free air delivery volume flow: 2500 m³/h relating to the following operation parameters

Operating pressure	10 bar, g	Correction factor 1 = 1,14
Compressed air inlet temperature	40 °C	Correction factor 2 = 0,81
Ambient temperature	30 °C	Correction factor 3 = 0,95

Minimum volume flow = nominal volume flow / (F1*F2*F3) => 2500 m³/h / (1,14*0,81*0,95) = 2850 m³/h
Chosen dryer RA 3000 with 3000 m³/h

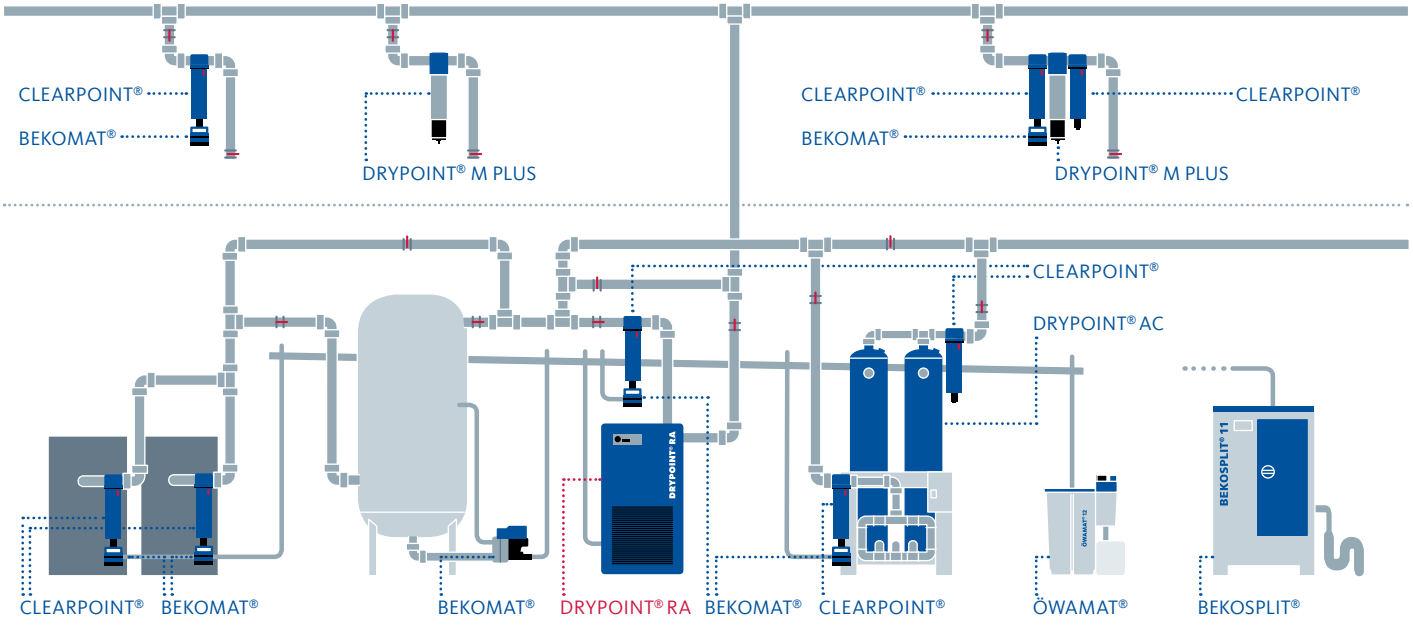
The air volume flows from 21 up to 8832 m³/h listed in the table above relate to the reference conditions described in DIN ISO7183.

Should operation conditions differ, please apply correction factors.

Quality with a system. Worldwide

We at **BEKO** TECHNOLOGIES develop, manufacture and distribute products and systems for an optimised compressed air and compressed gas quality throughout the world. From the processing of compressed air and compressed gas through filtration and drying, via the proven condensate technology to instruments for the quality supervision and measurement. From the small compressed air application to demanding process technology.

Since its founding, **BEKO** has continuously given decisive input to compressed air technology. Our groundbreaking ideas have exerted considerable influence on the development of the compressed air industry. In order to keep this going, more than 10% of our employees work in research and development. With this potential and with our personal commitment, we at **BEKO** stand for trend-setting technologies, products and services.



The product categories

Drying | DRYPOINT® | EVERDRY®

The comprehensive compressed air dryer programme from BEKO comprises membrane dryers, refrigeration dryers, adsorption dryers (heat-regenerated and cold-regenerated) made of stainless steel and aluminium, high-pressure and high-temperature versions.

Condensate drainage | BEKOMAT®

Condensate processing
ÖWAMAT® | BEKOSPLIT®

Filtration | CLEARPOINT®

Compressed-air distribution
BEKOFLOW®

Measurement technology
METPOINT®

Process technology
BEKOBLIZZ® | BEKOKAT®

BEKO TECHNOLOGIES GmbH
Im Taubental 7
41468 Neuss | Germany

Phone +49 2131 988-0
Fax +49 2131 988-900

beko@beko.de
www.beko-technologies.de

DNV Certified Company