



Process Technology | Catalytic Converter BEKOKAT®

Constant oil-free and germ-free compressed air by utilising certified catalytic converter technology: BEKOKAT®

Highest possible process safety

Would you like to eliminate compromises with regard to the compressed air quality in your production processes? Would you like to ensure that the compressed air complies with the ISO Class 1 or even better at all times, that it does not contain any oil or any germs? Then the TÜV certified and verified by neutral institutes BEKOKAT® catalytic converter is an interesting solution.

ISO 8573-1 Class 1 or even better

Conventional compressed air processing and treatment has technical and economical limits with highly sensitive applications. BEKOKAT® sets new standards here with pioneering catalytic converter technology. The unit fully converts hydrocarbons into carbon dioxide and water through total oxidation. The process hereby achieves constant oil-free compressed air with a maximum residual oil content of a barely measurable 0.001 milligrams per cubic metre. With this performance, the BEKOKAT® devices surpass even the most stringent specifications of ISO 8573-1, Class 1 with regard to oil content. A quality that is especially required in particularly demanding production processes e.g. in the foodstuff, pharmaceutical, automotive and electronics industries.

- › Highest possible process safety by utilising continuous process monitoring
- › Constant germ-free and oil-free compressed air in Class 1 or even better according to ISO 8573-1
- › Safe partial work load operation between 20 % to 100 %
- › Direct availability also after operational breaks via the stand-by function
- › Lower energy consumption by utilising efficient heat recovery
- › Simplified operation and unambiguous display for current operating statuses
- › Independent of ambient temperature, relative humidity and oil input concentration
- › Flexible installation in centralised processing or at the end position
- › Also retrofit capable in existing plants without exchanging the existing compressors



The efficiency of the catalytic converters from BEKOKAT® have been certified by TÜV and validated by neutral institutes

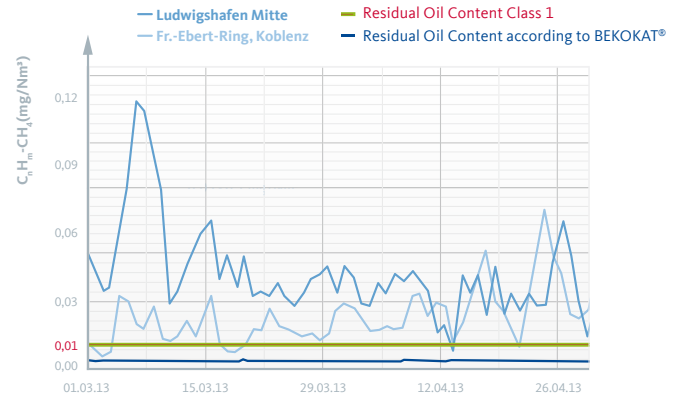
Better through Responsibility



BEKOKAT® - for constant oil-free and germ-free compressed air, independently of ambient conditions

The intake air for the compressed air generation is usually loaded with hydrocarbons. Even with oil-free compressed air generation, a processing and treatment solution is therefore required.

The BEKOKAT® provides constant oil-free compressed air which is better than Class 1 according to ISO 8573-1. The catalytic compressed air processing breaks down all hydrocarbons in the compressed air into carbon dioxide and water. It is therefore not important which origin they have.



An oil-free compressed air generation cannot solely ensure constant Class 1 or even better due to the ambient conditions.

Oil-free compressing as a guarantee for oil-free compressed air? Not necessarily

The main source of oil in the compressed air is the compressor: A proportion of the lubrication oil always enters the compressed air with oil-lubricated machinery. In order to prevent this, the installation of compressors with oil-free compression is a common procedure. Although this method does prevent the entry of additional lubricating oil shares into the compressed air, it is still not a guarantee for oil-free compressed air.

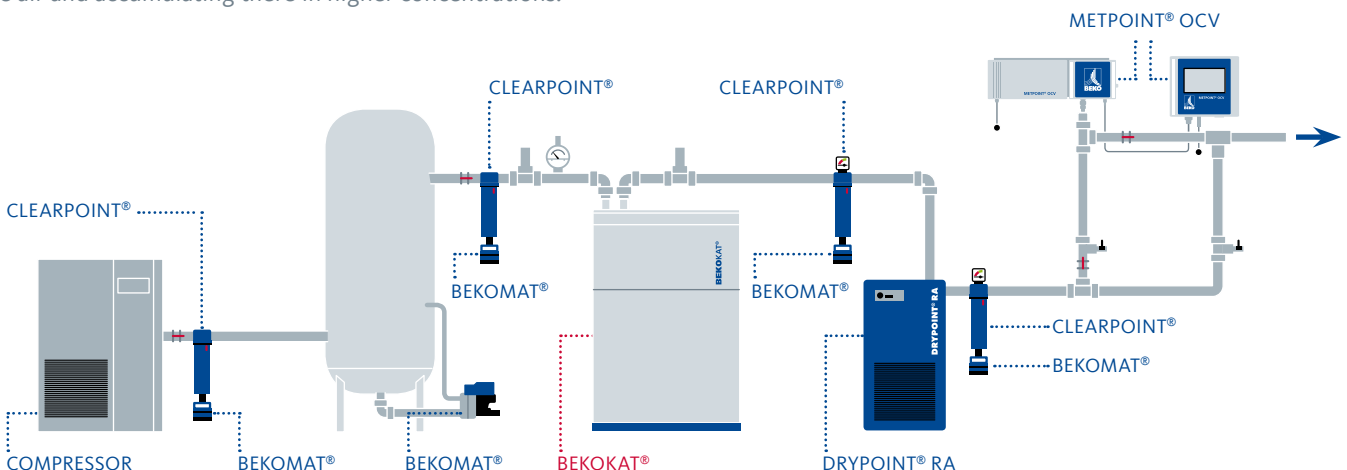
Pollutants in the intake air are the problem

The reason for this are pollutants in the ambient air which also contaminate the intake air in your plant. For example, hydrocarbons are released in combustion procedures for motorised vehicles or in industrial production processes. Although most of these chemical compounds are considered to be harmless, and there are no guidance values due to the different potential effects of the individual components. However, measurements have indicated that even in rural areas with low private car and industrial densities, the proportion of hydrocarbons in the air has considerably exceeded the limiting value of Class 1 of 0.01 mg/m³ in some areas. This means that: Anyone who exclusively relies on oil-free compression cannot prevent hydrocarbons from entering the compressed air from the intake air and accumulating there in higher concentrations.

Reliable ISO Class 1 or even better every time

Compressed air of the highest quality according to ISO 8573-1 can therefore only be guaranteed when, in addition to oil-free compressing, a corresponding treatment is also executed. An ideal system solution is hereby provided by the BEKOKAT® catalytic converter: It breaks down all hydrocarbons in the compressed air into carbon dioxide and water in a unique process stage. The residual oil content exceeds the requirements for Class 1 according to ISO 8573-1.

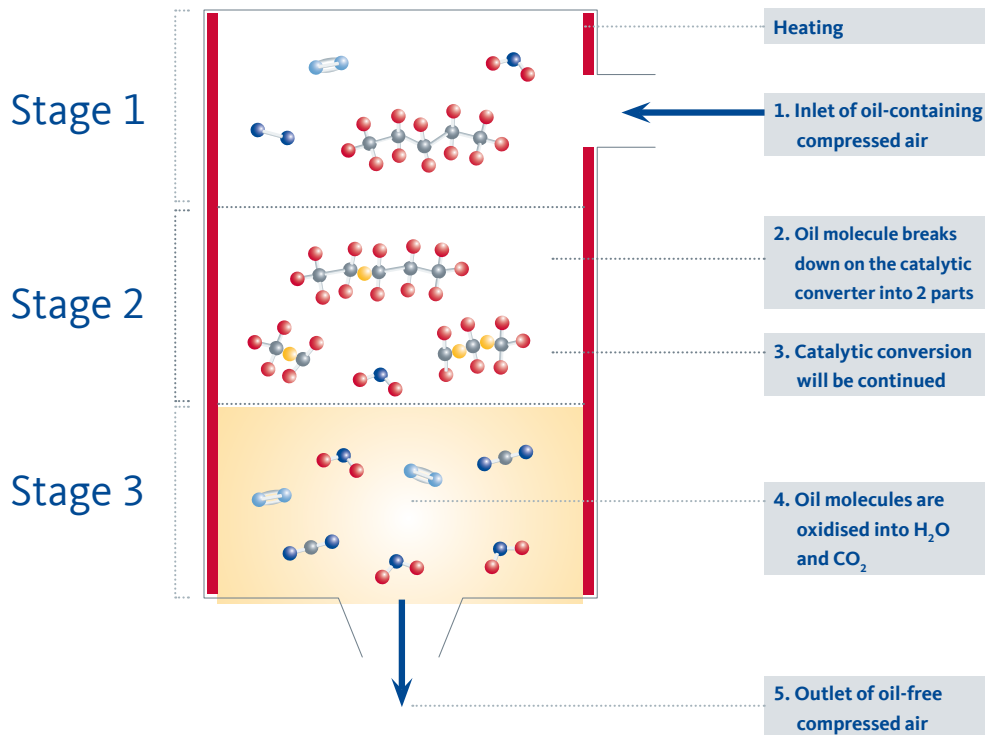
Moisture, humidity and particle content will also be specified in addition to the oil content. The required absence of particles is ensured by the appropriate filter stages (CLEARPOINT®) and the required relative humidity by means of coordinated dryers (DRYPOINT®). Utilising measuring technology (METPOINT®) enables continuous measuring for the current compressed air quality and documenting it. Alarms can be triggered automatically with any deviations. This creates real process safety in the whole compressed air supply system.

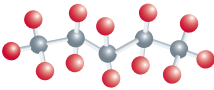







Operating principle of the BEKOKAT®

To treat compressed air with the BEKOKAT®, the specially developed granular material in the pressure vessel is heated up to a temperature of 150 °C. The oil molecules in the compressed air flowing through the heated up container in the catalytic converter (1) will be converted fully to water and carbon dioxide (3) on the surface in the catalytic converter granules (2). Completely oil-free, germ-free compressed air then exists the

container. The incidental condensate from the cooling of the compressed air is also oil-free and can be channelled into the sewage system without treatment. With the BEKOKAT®, the relevant parts are installed as maintenance friendly except for the container, which still functions without attachments which could have a negative effect on the flow behaviour. Everything is easily accessible in case of maintenance.



Oil molecule (hydrocarbon and hydrogen)	Catalytic converter	N ₂ -Nitrogen	O ₂ -Oxygen	CO ₂ -Carbon dioxide	H ₂ O- Water
					

Safety and cost efficiency from the start - and for years afterwards

The air/air heat exchanger in the BEKOKAT® retains the average power consumption to a very low level. This ensures energy saving and lack of oil with the best possible quality.

An especially economical benefit is also the enormous service life of the special granular material. An exchange is only necessary after 20,000 operational hours.

There is also the highest standard of process reliability, since the performance is provided completely independent of ambient temperature.

Even in partial work load operation down to 20 %, the catalyst technology of the BEKOKAT® reveals its effectiveness without restrictions. The BEKOKAT® impresses as extremely flexible in

the installation. It can be installed centrally in a compressed-air treatment unit and can process 100 % of the produced oil-free compressed air, or it can be installed in subsections or even in the direct vicinity of the compressed air consumer, whereby only the oil-free compressed air flow is treated, which is also required to be oil-free.

The BEKOKAT® therefore provides a solution that combines the advantages of oil-free and oil-lubricated compression: low investment through conventional, oil-lubricated compression and maximum safety through certified lack of oil with a value of up to 0.001 mg / m³. A price-performance ratio that cannot be exceeded with very high process safety and reliability.

Defined compressed air quality according to ISO 8571-3

The oil content is defined according to classes in accordance with ISO 8573 (compare figure on the right). All the oil will be reliably broken down by the catalytic converter splitting process in the BEKOKAT®. This will enable Class 1 or even better to be achieved. Should so much oil enter in the event of an accident which means that the compressed air can no longer be processed reliably, then close the precision valves and prevent any other oil leakage.

ISO 8573-1, 2010	Oil content : liquefied, aerosol, mist
Class	mg/m ³
0	User defined, but < Class 1
1	< 0.01
2	< 0.1
3	< 1
4	5

Certified safety and reliability for your processes by utilising oil-free and germ-free compressed air

The higher the demands on the quality of compressed air, the greater the demands on the documentation. Quality management requires the use of specific approved devices and a corresponding independent verification.

BEKO TECHNOLOGIES provides this verification by means of elaborate tests from independent institutes which confirm and certify the performance capability of the BEKOKAT®.

Together with TÜV Nord, verification has been provided under real operating conditions to confirm that compressed air, which is processed and treated with the BEKOKAT®, exceeds the specification according to Class 1 of the ISO 8573-1.

In a second series of trials with the Gesellschaft für Produktionshygiene und Sterilitätssicherung mbH (GfPS), it was confirmed that compressed air contaminated with bacteria was found

to be germ-free after being processed and treated in the BEKOKAT®. No living bacteria could be identified or verified in the compressed air flow after the treatment process. This is also confirmed independently by examination results from two renowned testing institutes which verify the high effectiveness of the innovative catalytic converter technology.

Both certificates provide you with the required safety and reliability in compressed air processing and treatment for your sensitive processes.

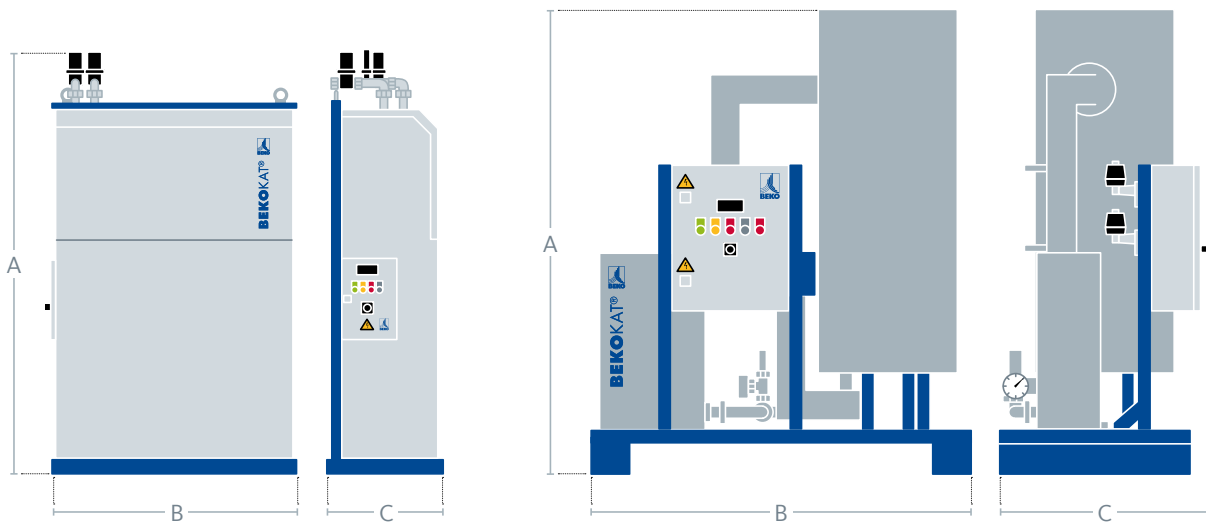
Oil-free compressed air supply also as retrofit capable – centralised or direct upstream of the application

The BEKOKAT® is also ideally suitable for retrofitting into existing compressor stations. Any station with existing oil-lubricated compressors can be easily turned into a supply system for oil-free compressed air.

Innovative technology with practice-oriented details



Technical data:



BEKOKAT®	CC - 060	CC - 120	CC - 180	CC - 360	CC - 720	CC - 1200
Volume flow rate (m³/minute) *	1	2	3	6	12	20
Pressure (bar [gauge])	16	16	16	16	16	11 **
Power supply	1 Ph. 230 V 50 Hz	1 Ph. 230 V 50 Hz	3 Ph. 400 V 50 Hz	3 Ph. 400 V 50 Hz	3 Ph. 400 V 50 Hz	3 Ph. 400 V 50 Hz
Install. Performance (kw)	1	1.64	2.6	5.1	8.7	13.8
Average Performance (kw)	0.52	0.86	1.33	2.17	3.26	3.75
Connection	1"	1"	1"	1½"	2"	2½"
Dimensions						
A (mm)	1734	1719	1440	1578	1747	2170
B (mm)	800	950	950	1300	1550	1650
C (mm)	420	450	525	650	850	1050
Weight (kg)	130	200	275	315	525	805
Order ref.	4009636	4010039	4010302	4010833	4011162	4015280

Flexible application

The details for technical data are stated for an operating pressure of 7 bar [g]. Pressures which deviate from this are quite possible. We would of course be pleased to design a plant individually tailored to your application case. Please contact us.

Cost-saving operation

The installed performance will mainly be required in the heating up stage after switching on the BEKOKAT®. The BEKOKAT® operates as a cost-saving and efficient device with low energy consumption during operation by utilising the integrated heat exchanger.

Other voltage ratings: on request. Other models on request. From model CC - 180 without housing casing.

* relates to +20 °C and 1 bar [abs.]

** 16 bar [g] version on request

BEKOKAT®: The solution for highly sensitive processes

The oil content is defined according to classes in accordance with ISO 8573. All the oil will be reliably broken down by the catalytic converter splitting process in the BEKOKAT. This will enable Class 1 or even better to be achieved. Should so much oil enter in

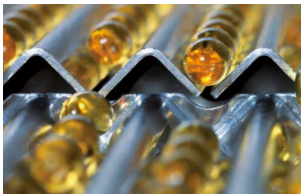
the event of an accident which means that the compressed air can no longer be processed reliably, then close the precision valves and prevent any other oil leakage.



Compressed air makes ice cream even creamier

The "bit extra" in ice cream production refers to the injection of compressed air into the basic ice cream mass in order to give it its cream-like, creamy consistency.

The compressed air comes into very intensive contact with the ice cream in this process. The smallest oil content or also some germs will make the ice cream uneatable.



Oil-free for successful recovery

The strictest hygiene measures apply in the production of medicines. This also of course applies for the compressed air required. This is utilised e.g. for producing

tablets. Compressed air is utilised to remove dust after the tablet press. Oil content in the compressed air is hereby not only a hygienic problem, rather more it can also lead to swelling of the pressed tablets.



Oil-free for a perfect paint finish

The automotive industry places extremely high demands on the quality of the compressed air in the paint shop.

The process air comes into intensive contact with the paint on the surface area. Every very small contamination can result in irregularities in the paint finish.



For technology which functions

The electronics industry utilises compressed air e.g. as a transport and cleaning medium or as an energy source for compressed air tools. Every application creates enormous requirements for the purity of the compressed air.

Even very small contaminations can result in faulty products when printed circuit boards are exposed to light. Absolutely oil-free compressed air is one of the most important prerequisites for fault-free production.

Do you have questions about the best way of processing your compressed air?

We have the answers! We offer efficient solutions for any type of processing chain. Please contact us with your queries. We would be delighted to tell you more about our condensate

treatment, filtration, drying, measuring and process technology, and our comprehensive services.

Visit us at



BEKO TECHNOLOGIES GMBH
Im Taubental 7 | D-41468 Neuss

Tel. +49 2131 988 - 1000
info@beko-technologies.com
www.beko-technologies.com

