

BB - HB Series

Flow capacities from 1.5 to 160 m³/min
Gauge pressure up to 1000 mbar, vacuum down to 500 mbar

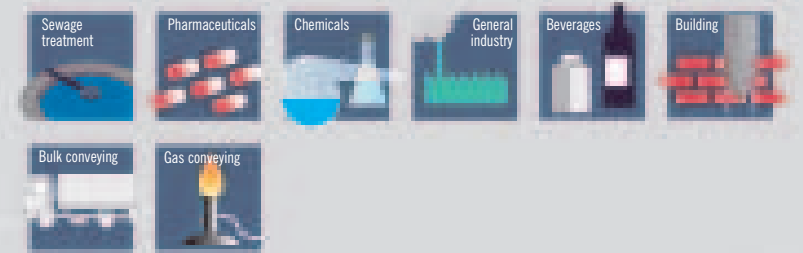


KAESER – the blower maker with a worldwide reputation

Kaeser was established in 1919 as an engineering workshop. The foundation for the rise to a compressor maker of worldwide fame was laid by the Company's founder, Carl Kaeser Sr. in 1948 when he decided to embark upon producing reciprocating compressors. The beginning of the 70s saw the breakthrough on the road to today's market-leading position, when KAESER developed the screw compressor airend featuring the SIGMA PROFILE. In 1991, KAESER took over Gera Kompressorenwerke, a company with a century of tradition in building compressors and blowers. In 1993, the modernised production facility began delivering the newly developed range of 'OMEGA' blowers that are now famous throughout the world.



A multitude of applications such as oil-free conveying of gases and bulk materials, sewage treatment (aeration and filter cleaning), liquid homogenising and forced air for combustion equipment illustrate the advantages of KAESER blowers.



Blower production at Gera

The Gera plant occupies a 60,000 square metre site and employs a workforce of 300 producing the complete range of blowers. Modern networking techniques link the whole of the KAESER group.

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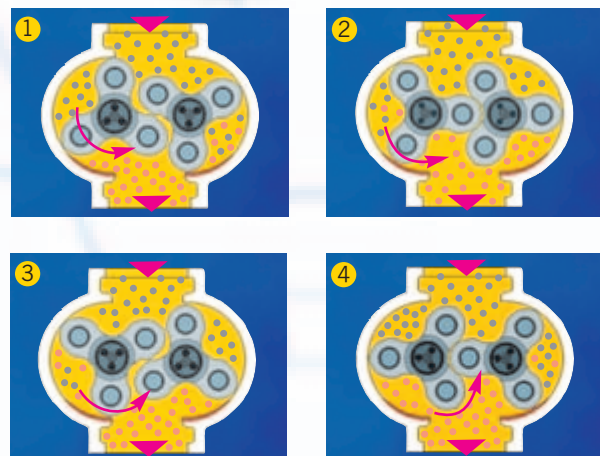
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OMEGA PROFILE - blower concept with a future

Function of KAESER blowers

Air (or any other gas) in the inlet port is trapped between the rotor lobes and the casing (left rotor in fig. 1) and carried round to the discharge port without being compressed on the way. There is a definite but minimal clearance between the rotors and the casing so oil is not needed as a lubricant or to form a seal. The more precise the machining of the rotors and the casing the smaller is the clearance between them and the better is the sealing effect. This gives greater volumetric efficiency and less temperature rise in the discharged air, both of which contribute to extended blower life. The casing bore near the discharge opening is machined slightly eccentric so that as a rotor lobe approaches the port the gap between it and the casing begins to widen (left rotor in figs. 2 and 3). This allows a gradual equalisation of pressure between the air in the discharge port and that in the chamber behind the advancing lobe and is the main reason why three-lobe rotors are less inclined to pulsation problems than two-lobe. In two-lobe rotors, pressure equalisation happens abruptly as the advancing lobe crosses the lip of the discharge port. Figure 4 shows the final phase in the sequence as the leading lobe of the left rotor crosses the lip of the discharge port and the entrapped air is pushed out against whatever resistance there may be in the pipework.

*Saving energy = saving money
with OMEGA*



Three-lobe block

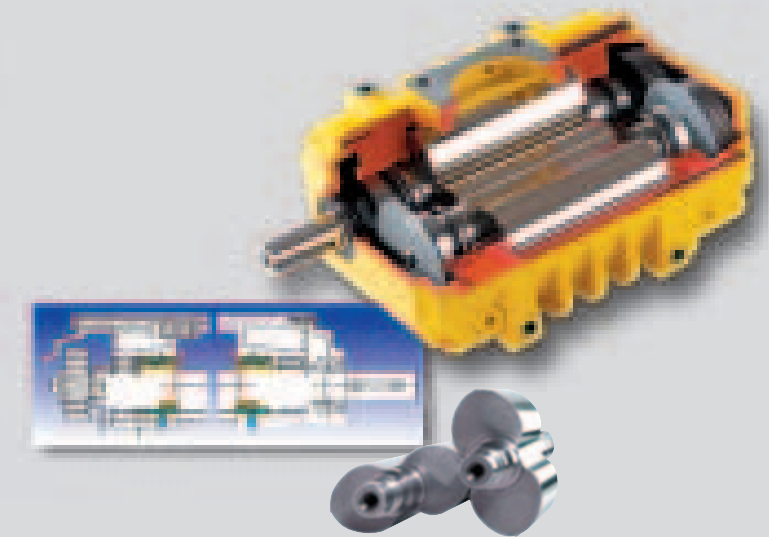


The negligible pulsation of the three-lobe block makes it the right choice for applications where thin-wall piping or ducting is used, for example, and where the avoidance of resonance or minimisation of discharge noise is essential. The precision-machined OMEGA rotor profile gives outstanding energy-efficiency.

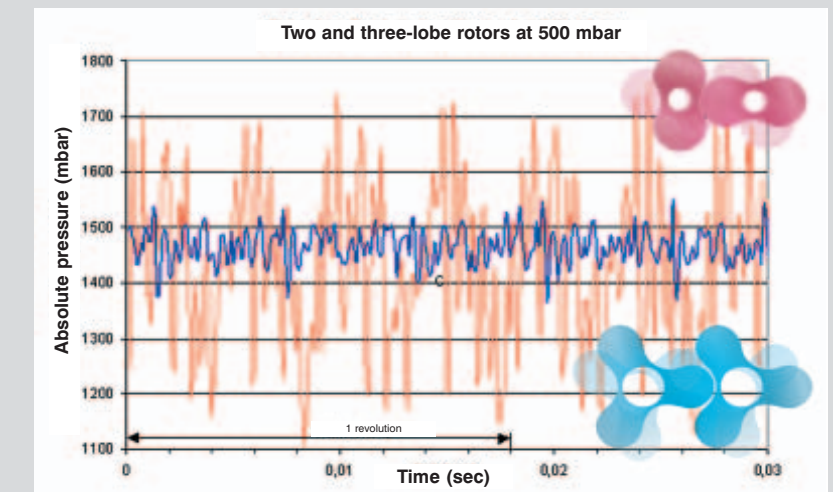
Two-lobe block



The power consumption of the two-lobe block is even less than the efficient three-lobe design. The two-lobe blower comes into its own where economy of operation is of primary concern and the possibility of pulsations less important. The two-lobe design is also less sensitive to particle contamination in the air.



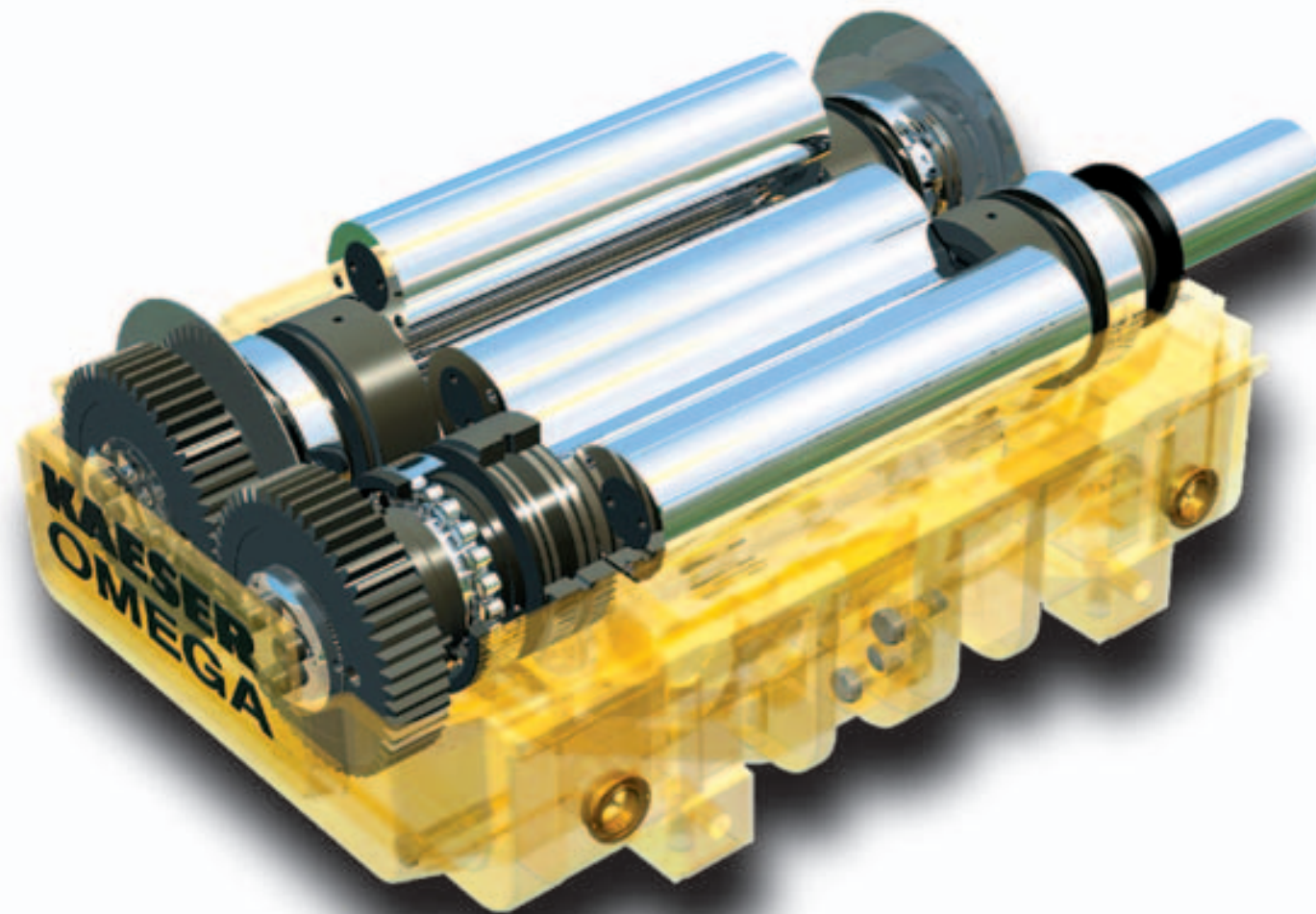
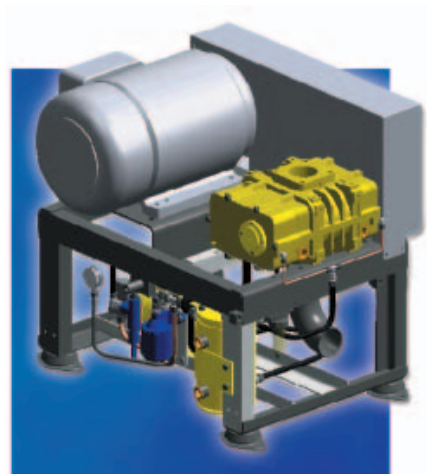
OMEGA PROFILE pulsation graph



Durability through intelligent attention to detail

Rugged design

Decades of experience in blower manufacture together with intensive research have culminated in the compact design of the KAESER blower blocks whose main characteristics are high efficiency and long life. All blocks are available in two or three-lobe design and all are suitable for operation up to 1000 mbar pressure. This means that for any particular application, the smallest suitable block can be chosen as small, fast-turning blocks are more energy-efficient. This is not just an advantage in terms of purchase price but also in operating costs. Furthermore, the faster airflow of the smaller blocks provides more effective cooling, adding to durability.

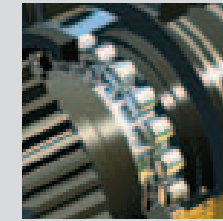


Super-precision machining

Modern CNC machines grind the profiles of the rotors and timing gears to micron-accuracy. Only this ultra-high precision enables the running clearance between the rotors and the casing to be set at its absolute minimum, improving volumetric efficiency and minimising block heating. Every single rotor and block is dimensionally inspected to ensure compliance with the tight tolerances that mark KAESER's high quality standards.

Special designs

Many special block designs are available to suit uncommon applications such as a gas version for conveying nitrogen, blocks in nickel-chrome steel for corrosive substances and other non-standard versions.



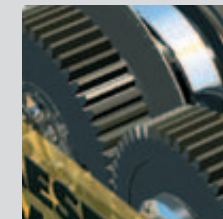
Heavy duty bearings

Cylindrical roller bearings are able to take up 100 percent of the widely varying radial forces generated. Operational life up to 100,000 hours is achieved.



Non-wearing seals

The well-proven labyrinth seals with pressure equalizing channels are fitted as standard but other types of shaft seals are available on request.



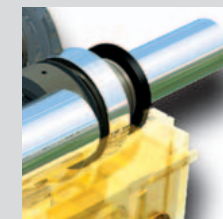
Precise synchronisation

Spur-ground timing gears are finished to the highest tolerance 5f 21 with minimum backlash. Their precision is a major factor in the block's volumetric efficiency.



Best possible lubrication

Oil slinger discs mounted on each end of the secondary rotor shaft throw lubricating oil onto the bearings. The method is foolproof and ensures perfect, lifelong lubrication.



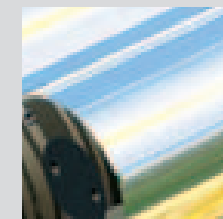
Rigid rotors

The rotors and shafts are formed in one piece and dynamically balanced to Q 2.5 for smooth, trouble-free running.



Tough casing

The distinctive ribbed form of the casing gives strength and rigidity exactly where needed and also ensures adequate cooling. Air chamber and bearing supports are cast in one piece for strength and alignment.



Lobes with sealing strip

The special form of the rotor lobes with machined sealing strip reduces sensitivity to contaminated air and brief thermal overloading.

Quiet and economical

Universal concept

Any of the KAESER range of rotary blowers can be supplied with a two-lobe or a three-lobe block. Blowers can be used for either pressure or vacuum applications and can be changed on site from one to the other without difficulty. The inlet and discharge silencers are designed to be effective at all frequencies and are even suitable for variable speed machines. Further sound reduction measures or tuning for specific frequencies are not generally necessary.

If required, the blower package with sound enclosure can be delivered ready mounted on a skid suitable for fork truck lifting.

General design features

- 1 washable inlet filter
- 2 highly effective sound adsorbing inlet silencer
- 3 rotary blower block
- 4 base frame
- 5 discharge silencer
- 6 anti-vibration mountings
- 7 motor swing plate
- 8 pipe connections by flange or axial compensator
- 9 automatic belt tensioner
- 10 high efficiency motor



Easy maintenance

Wide-opening doors in the sound enclosure give ready access for all maintenance tasks such as checking and changing filters and oil. If there is insufficient room for opening doors they can be replaced with removable panels. The blower package can be mounted on skids suitable for fork truck lifting if desired.



Premium-efficiency, energy-saving motors

Drive motors are protected to IP 54 or 55 with insulation class F and are exclusively of European origin. Motor efficiency is high and contributes towards economical operation of the package.



Automatic belt tensioning

The motor is mounted on a hinged plate operated by a spring device that automatically applies correct tension to the drive belts and maintains transmission efficiency. Under correct tension the belts last longer and operating costs are reduced.



Simple oil changing

An oil drain point is positioned conveniently just inside the access door so no dismantling of the enclosure is needed when this task becomes due.



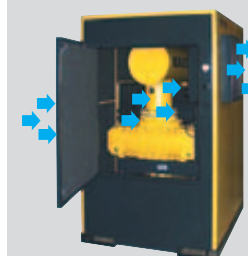
Low noise emission

The inlet and discharge silencers operate on absorption principles and are highly effective over the whole range of frequencies encountered. This is of particular importance on variable speed blowers.



Separate fan motor

An independently driven fan ventilates the sound enclosure, ensuring adequate cooling under all conditions including low speeds and extending the life and efficiency of all components.



Good cooling-air flow

The cooling air inlet opening is directly adjacent to the motor, giving most effective cooling and maintaining efficiency even under maximum loading. Inlet and discharge apertures are fitted with sound damping louvers.

Compact blowers with small footprint

Plug and blow

KAESER's *COMPACT* blowers occupy the minimum of valuable floor space.

Standard equipment includes the energy-saving three-lobe blower block with OMEGA-PLUS PROFILE, wide-band inlet and discharge silencers, and a secure belt guard. Available as options are an inlet filter (for vacuum use), a type-approved pressure relief valve and an unloaded start valve.

Up-front maintenance

An innovative concept of the *COMPACT* models is the ability to carry out all maintenance and adjustments from the front of the machine.

Gas springs are used to support the lift-up cover.



EB, BB and DB *COMPACT* blowers

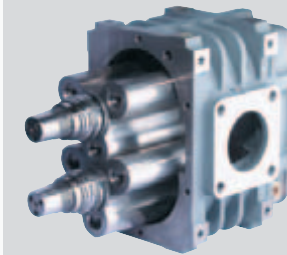
Small footprint

Intelligent component layout gives KAESER's *COMPACT* blower its name. All valves are mounted directly on the blower unit. Pipe connections and cooling air apertures are on the rear side so that blower packages can be placed adjacent to each other.

Versatile



Additional sound enclosures are available for noise-sensitive applications. Blowers can also be equipped for outdoor installation. *COMPACT* blowers can be supplied with thermometer, pressure gauge and pressure differential indicator for the inlet filter on request.



Three-lobe OMEGA block

The low power requirement of the blower block is mainly due to the extremely small clearance between the two rotors and between the lobes and the casing wall. Such minimal clearance is only possible by virtue of the extreme rotor stiffness and spur-ground timing gears that impose no axial load. Heavy-duty roller bearings comfortably take up all radial loads and ensure the reliability of the block.



Automatic belt tensioning

Keeping the V-belts automatically at the right tension minimizes transmission losses and extends belt life, thereby reducing maintenance costs.



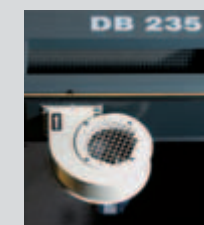
Safer operation

Protruding, high-visibility oil sight glasses greatly simplify oil level checking.



Easy oil change

Drain and fill points with taps extended to the front of the machine make for clean and simple oil changing.



Effective cooling

Ventilating ducts carefully located in the enclosure and an independently driven radial fan ensure that all components are kept at their correct operating temperature.

Modern manufacturing produces highest quality



Precision at every stage

The accuracy of the CNC machines that grind the rotor profiles can be measured in 1/1000 mm.



Total quality control

Every block and rotor is dimensionally checked to ensure no deviation from permissible tolerances.



Conscientious assembly

Highly trained experts carefully assemble blocks and complete packages to the most stringent standards.



Innovative, quality products

Continuous research and development keep KAESER products at the forefront of technology and give their blowers a reputation for economy of operation, ease of maintenance and utmost reliability.



Flexible machining

Blower rotors and block casings are finished on ultra modern CNC machining centres in climate-controlled atmospheres. Quality management is certified to ISO 9001.



Environmentally compatible powder-coating

Sound enclosure panels are given their super-fine finish by a powder-coating process in which the epoxy finish is baked on at 180° C. The corrosion and scratch-resistant surface meets the highest standards.



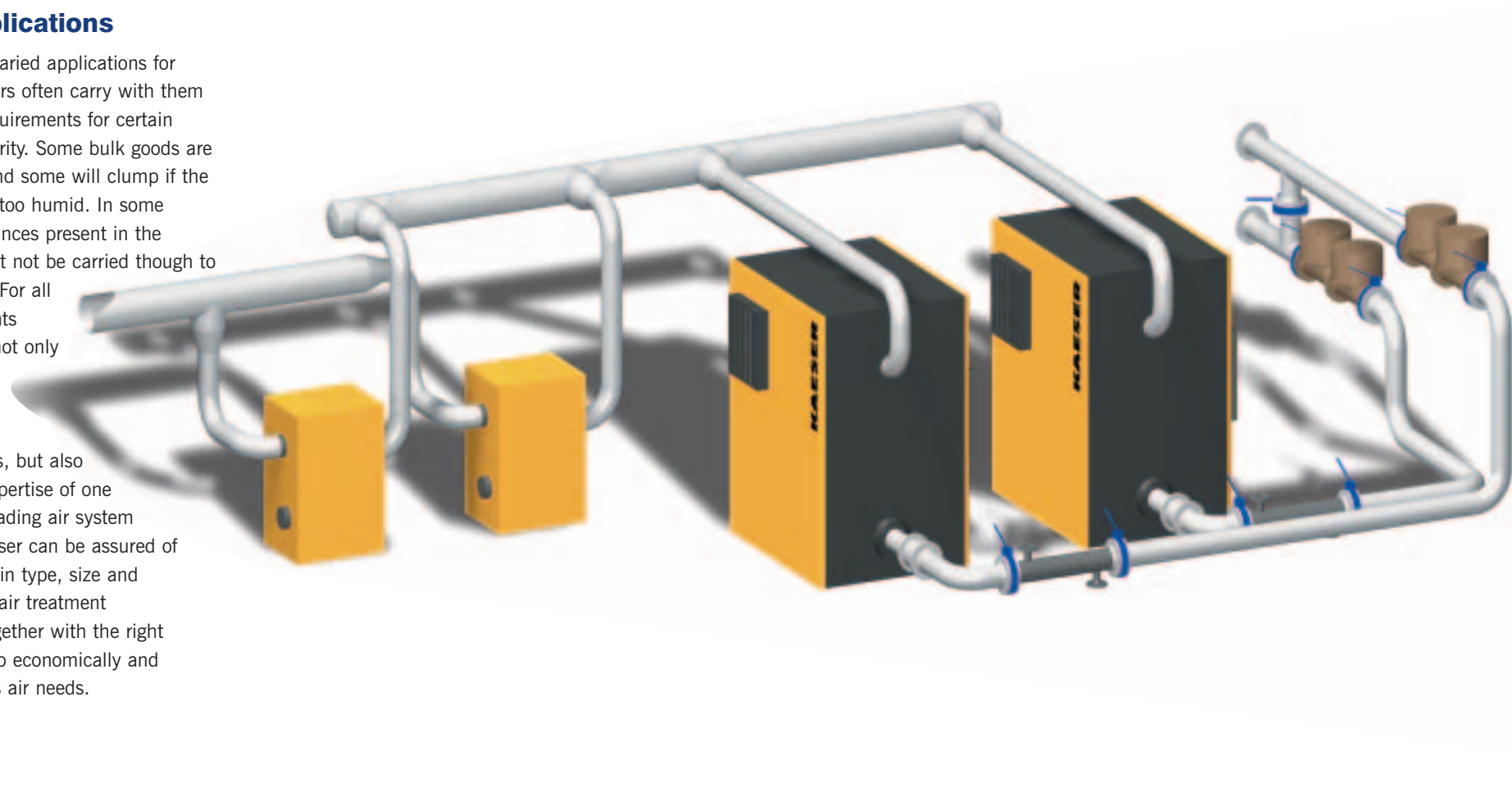
Full function check

Every blower undergoes a test run under maximum load conditions. All adjustments are made during this run and measured performance recorded in the machine's documentation. Every package is delivered in a fully setup condition, filled with oil and ready to run.

Comprehensive range of accessories

For all applications

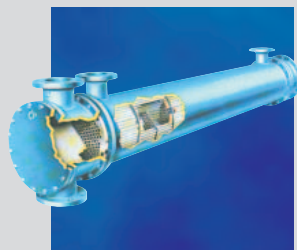
The many and varied applications for KAESER's blowers often carry with them very specific requirements for certain classes of air purity. Some bulk goods are heat sensitive and some will clump if the conveying air is too humid. In some instances substances present in the ambient air must not be carried though to the working air. For all such requirements KAESER offers not only a full and comprehensive range of coolers, dryers and filters, but also the wealth of expertise of one of the world's leading air system suppliers. The user can be assured of the right choice in type, size and compatibility of air treatment components, together with the right control system to economically and reliably meet his air needs.



Drying

From the wide range of desiccant and refrigeration dryers available

the right machine, or combination of machines, can be found to reduce any level of ambient humidity to whatever level the application demands from the blown air.



Aftercooling

The temperature of the air leaving the blower is cooled in an aftercooler that has either an

air/air or air/water heat exchanger.



Filtration

The required class of air purity can be reached by filters on the blower inlet and/or outlet using filter elements

appropriate to the conditions and of a design that do not swell when filtering humid air. Air that is too heavily loaded with moisture should be first passed through a centrifugal separator.



Connections

Inlet and outlet silencers are already provided with facilities for connecting pipework, either with axial

compensators or direct flange fittings in DIN and ANSI standards. Suitable axial compensators are available from KAESER.



Control of up to 16 blowers

The master controllers MAC 41, MVS and VESIS are able to take overall control of four, eight or sixteen blowers respectively, sequencing them to meet varying demand and to ensure equal wear of individual machines. A common pressure sensor ensures minimum switching differential. The MVS and VESIS controllers operate on a pressure band principle for even greater efficiency.



Three-phase control cabinet

The star/delta starting relays in the control cabinet have the facility for remote operation. The cabinet also houses the control gear for the enclosure ventilating fan, the operating hours counter, the KAESER CONTROL unit and service interfaces by which alarms, for example, can be signalled.



Variable speed drive

A frequency converter gives stepless control of the blower motor speed in order to regulate air delivery, or pressure when used in conjunction with a pressure transducer.

The KAESER CONTROL unit regulates both frequency converter and blower package. Further signal inputs and outputs increase the versatility of the system and make it suitable for connecting to master controllers.



Control valve

If the blower is operated only for short periods, the control valve can keep pressure or delivery constant in both pressure and vacuum ranges.

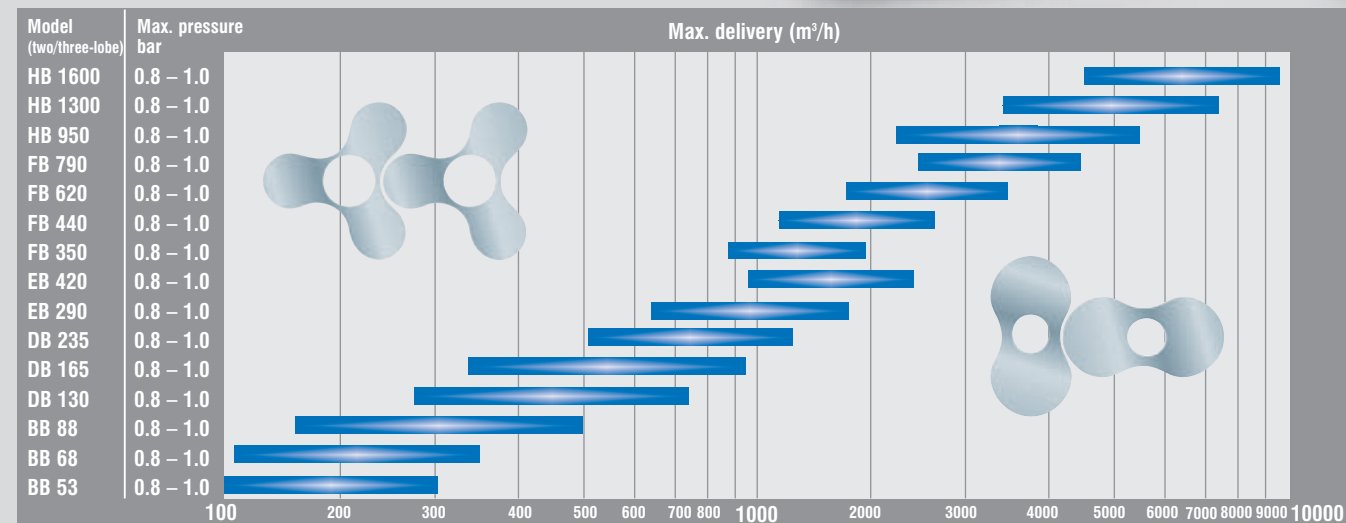
The right size of blower for every application



Planning with the aid of a PC

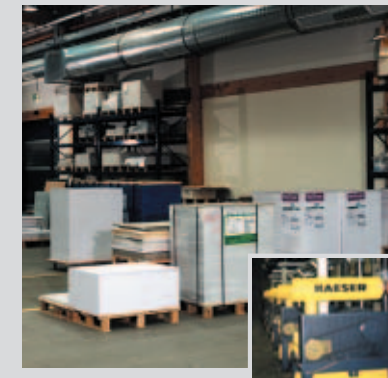
For any particular delivery requirement there are a number of blowers to choose from that would have the performance needed (see performance diagram below). The wise choice, however, would be the smallest machine as this not only minimises investment but maximises economy because the blower block is at its most efficient when running at high speed. The faster airflow provides better cooling, which not only contributes to durability of the blower but is also useful when heat-sensitive goods are to be conveyed, as less elaborate aftercooling arrangements are needed. KAESER has developed some PC software to help the customer and planning engineer in selecting the right blower model for any application.

Performance



Sewage treatment

Aeration of sewage tanks and filter clearance are typical applications for three-lobe blowers. Thin-walled pressure pipes are generally installed and the characteristics of a three-lobe blower that produces little noise or pulsations are highly valued.



Printing works

Rotary blowers are frequently used in printing works to provide a central air supply for paper transport and handling. KAESER controllers coordinate the working of numerous blowers in one air supply system.



Thermal water treatment

When treating watery liquids by evaporation, vacuum inlet temperatures of around 80 °C are common. Normal steel under such conditions is highly susceptible to corrosion and so KAESER blowers are offered with optional stainless steel blocks for these applications.



Bulk conveying

Rotary blowers are commonly used to convey powder or granulate bulk goods in the pressure or vacuum range. In most instances the goods are not temperature sensitive and sturdy pipework is used that allows the installation of the particularly energy-efficient two-lobe blowers.

Worldwide sales and service network



Main plant, Coburg

The international headquarters of the Kaeser group occupies a 120,000 square metre industrial site in Coburg, Northern Bavaria, and employs more than 1,500 people.

Worldwide coverage

In all our subsidiaries and branches around the world experienced specialists and engineers stand by to offer comprehensive advice and solutions in all aspects of compressed air engineering. A well-organised service network ensures maximum availability of all KAESER products.



A KAESER subsidiary, authorised agent or service depot is never far away. Further information can be found on the Internet at:



<http://www.kaeser.com>