



VACUUM SOLUTIONS

Product range



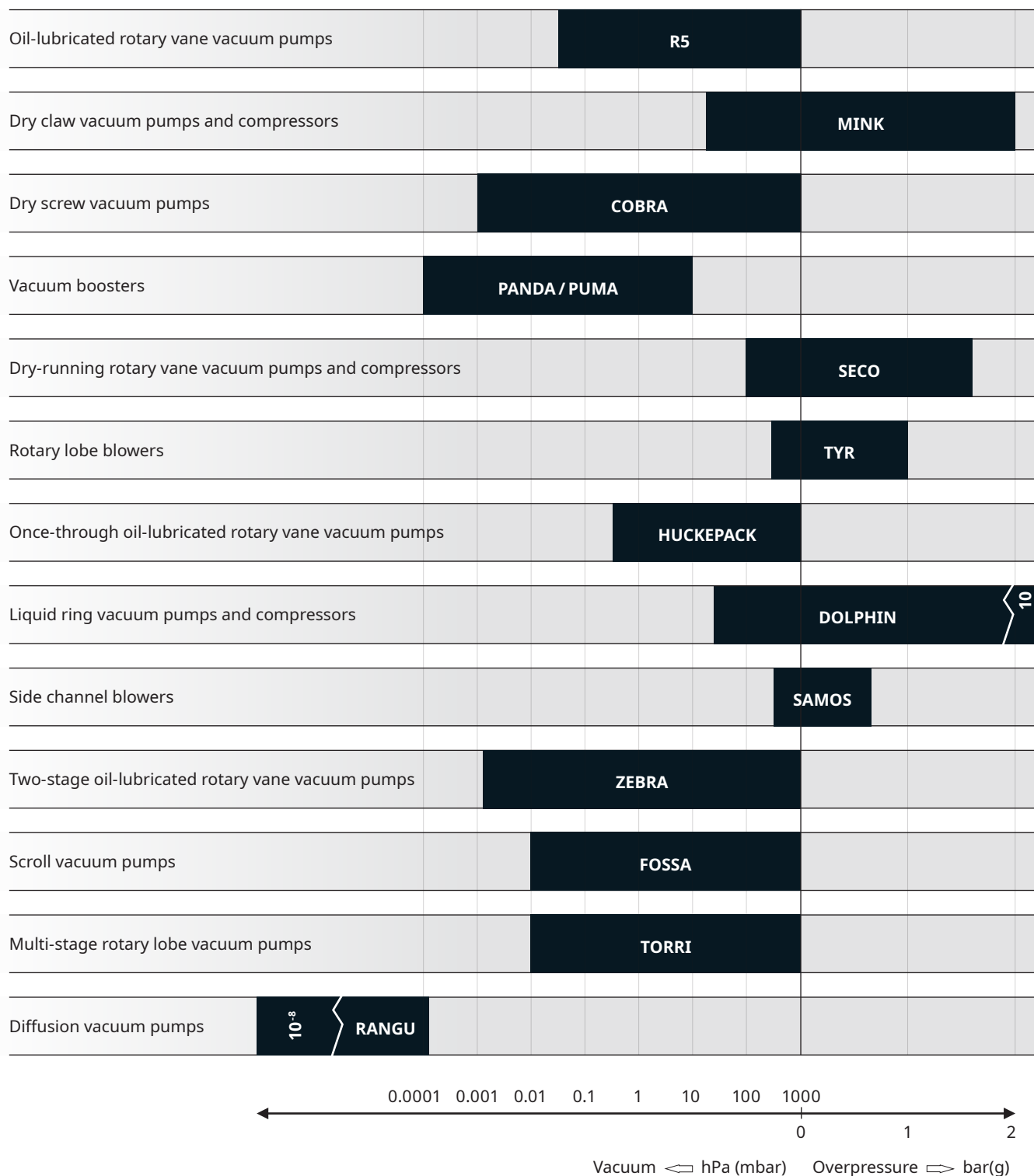
The future of vacuum. Since 1963. Busch Vacuum Solutions offers vacuum and overpressure solutions for all industries. From individual vacuum pumps, blowers, and compressors to tailor-made vacuum systems. More than 60 years ago, Dr.-Ing. Karl and Ayhan Busch developed the ideal vacuum pump for the food packaging industry. Today, the family

business from Maulburg in the Black Forest is the market leader in all areas of industrial vacuum. With over 3800 employees in more than 40 countries. Thanks to our great experience and highly qualified specialists, we are driving innovation. And working on the vacuum world of the future.



OVERVIEW

Vacuum and overpressure technologies



R5

OIL-LUBRICATED ROTARY VANE VACUUM PUMPS

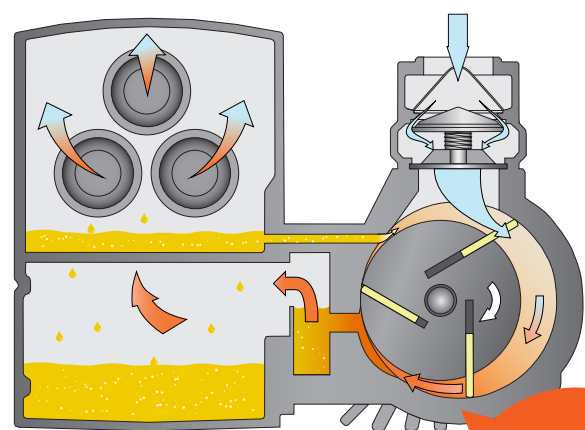
With the invention of the R5 oil-lubricated rotary vane vacuum pump, Dr.-Ing. Karl Busch has revolutionized food packaging. And today, we are the market leader in vacuum packaging. However, the R5 is not limited to this application but represents

the industry standard for a wide range of applications. Every day, over 3 million R5 vacuum pumps are in operation around the globe. In the course of over 50 years, we have continuously developed and optimized rotary vane technology. Always

with a strong focus on energy efficiency. Throughout the industry, the R5 is known for its robustness and reliability. You can always rely on the R5 – whether used intermittently or around the clock.

Operating principle

In a cylindrical housing, a rotor with three vanes is mounted eccentrically. Due to centrifugal force, these vanes slide out and form chambers between themselves and the housing. The pumped medium is trapped inside these three chambers. During further rotation, their volume is constantly reduced. Thereby, the pumped medium is compressed and transported to the outlet. R5 vacuum pumps operate with recirculating oil lubrication. A downstream oil separator segregates sealing oil and pumped medium for efficient reuse of oil.



Series types

- **R5 KB** high performance for confined spaces
- **R5 PB** the compact and flexible solution
- **R5 RA** the industrial standard for countless applications
- **R5 RB / RC** compact design for a variety of applications
- **R5 RD** the new generation for vacuum packaging
- **R5 RE** the robust and explosion-proofed solution
- **R5 RU** for many analytic applications



WATCH
THE VIDEO

R5 RA

Accessories and spare parts

- ① Filter pressure gauge
- ② Various inlet filters
- ③ Additional oil mist separator
- ④ Gas-ballast valve (single, double, controllable via solenoid valve)
- ⑤ Energy Recuperation Kit
 - Standard motors meeting IEC or NEMA criteria, IE3
 - Multi-voltage, multi-frequency motors
 - Adapter flange for vacuum boosters
 - Temperature sensors
 - Vacuum pump oils for all applications
 - Oil level switch
 - Starter units



Design options

ATEX certification

R5 RA rotary vane vacuum pumps are available in versions conforming to the EU guidelines for explosion hazard areas (ATEX). The R5 RA ATEX series can handle category 2 explosive gases.

Aqua version

The Aqua version may be ordered for applications transporting high quantities

of moist gases or condensable vapors. The water vapor tolerance of R5 RA Aqua vacuum pumps is three times higher than of a standard R5 RA vacuum pump due to their special design.

Oxygen version

The oxygen version is available for transporting gas mixtures with an oxygen content of over 21 % and up to 100 %.

This version conforms to all safety requirements to permit safe extraction of gases with elevated oxygen content.

Energy Recuperation Kit

In case of high ambient temperatures ($\geq 40^{\circ}\text{C}$) or in order to recuperate up to 60 % of the consumed energy an Energy Recuperation Kit is available.

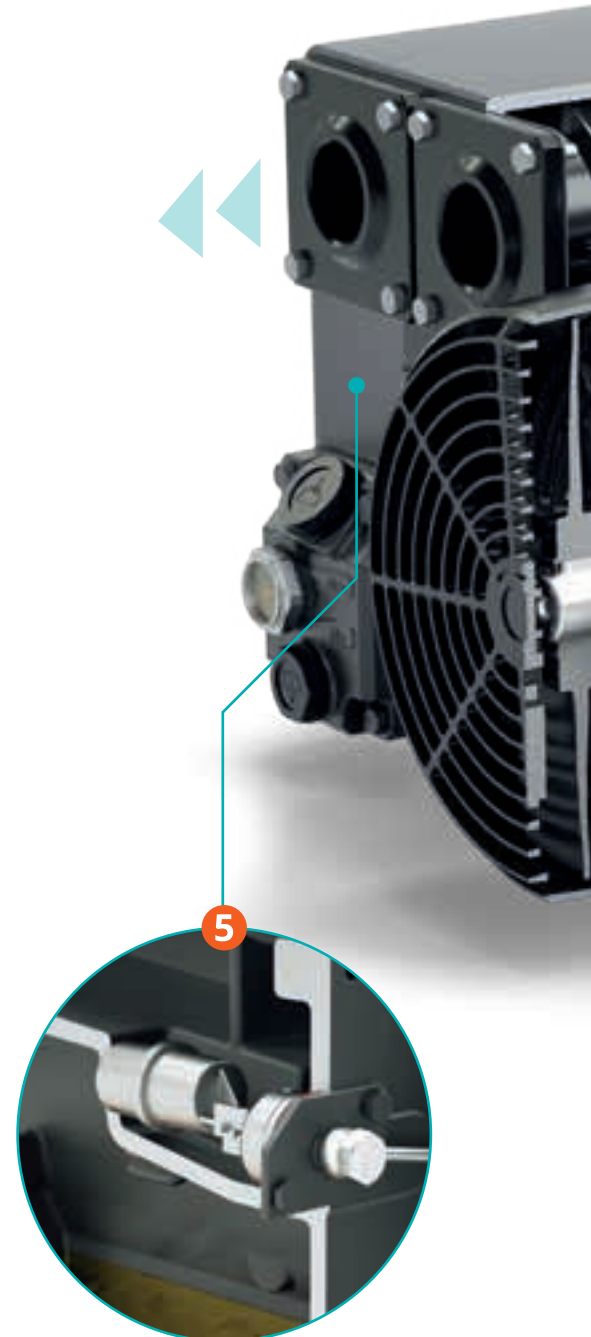
R5 RA

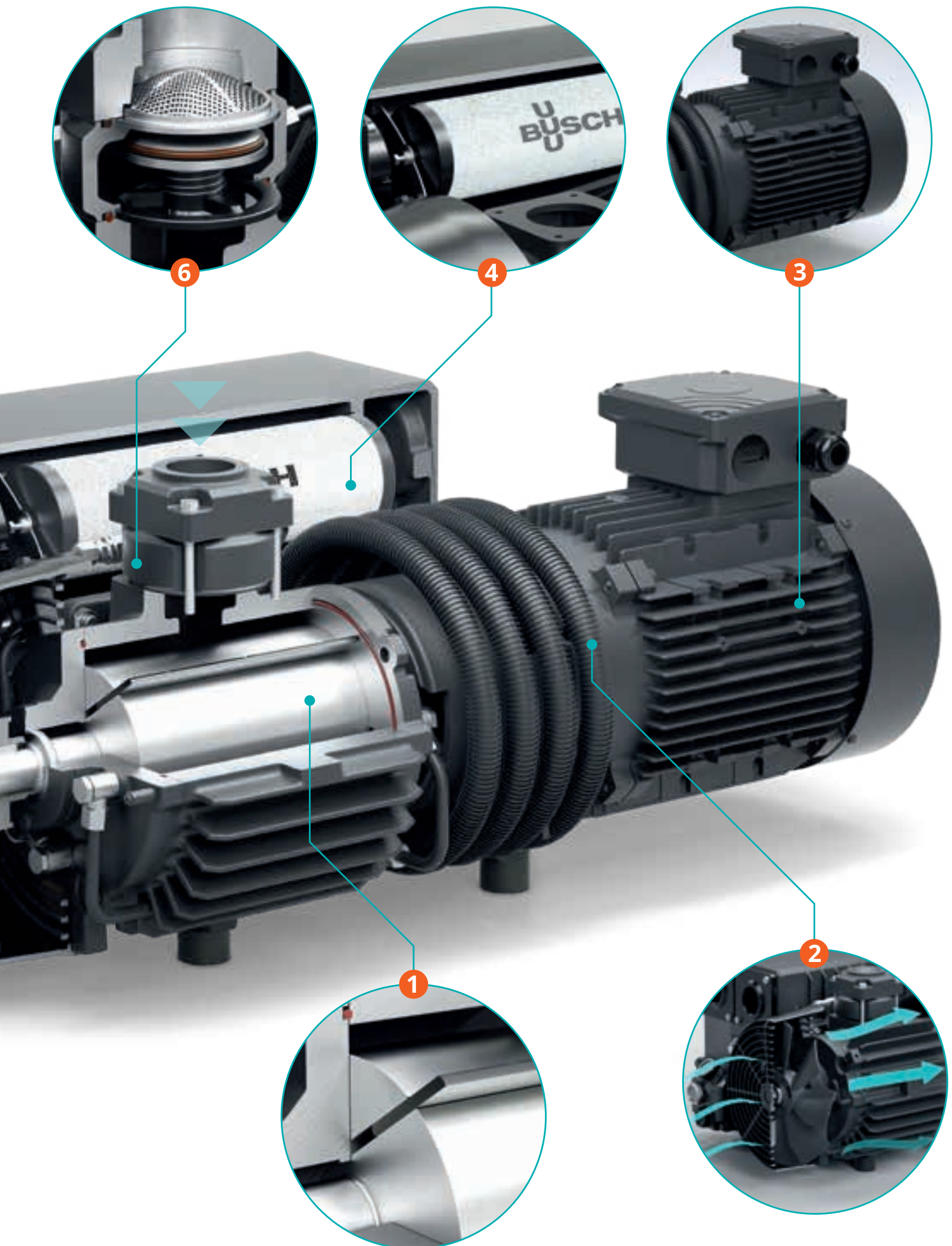
Technical features

R5 RA oil-lubricated rotary vane vacuum pumps are real all-rounders. They have been designed for a wide range of industrial applications, for example vacuum packaging, food processing, pneumatic conveying, plastics processing and many more. These vacuum pumps are characterized by high pumping speeds even in low pressure ranges and therefore rapid evacuation times. They feature highly

durable high performance vanes as standard, ensuring excellent performance and a long service life. R5 RA vacuum pumps are designed for continuous operation. An integrated float valve regulates the oil return depending on the oil level. Vacuum pumps of the RA series are ultimate pressure-proofed. They can be operated continuously at ultimate pressure without overheating.

- 1 Excellent performance**
Proven rotary vane technology
 - High pumping speeds even in low pressure ranges
 - Perfectly synchronized components and materials
 - Resilient composite vanes
- 2 Robust**
Durable construction
 - Functional modular design
 - Effective air cooling
 - High water vapor tolerance
- 3 Efficient**
IE3 standard motor
 - Only two motor references to cover the entire world
 - Low energy consumption
 - Low cost of ownership, optimum cost-benefit ratio
- 4 Oil-sealed**
Recirculating oil-lubrication
 - Advanced oil separator, best-in-class highly efficient exhaust filter
 - No additional oil circulation pump
 - Ultimate pressure proofed
 - Protection against corrosion
- 5 Continuous operation**
No shut-down necessary
 - Oil is suctioned back during operation
 - Integrated float valve controls the oil suction back depending on oil level
 - No impact on ultimate pressure
- 6 Sophisticated non-return valve**
Oil-back prevention
 - Maintaining vacuum in the system
 - Avoiding oil back-flow in the vacuum process

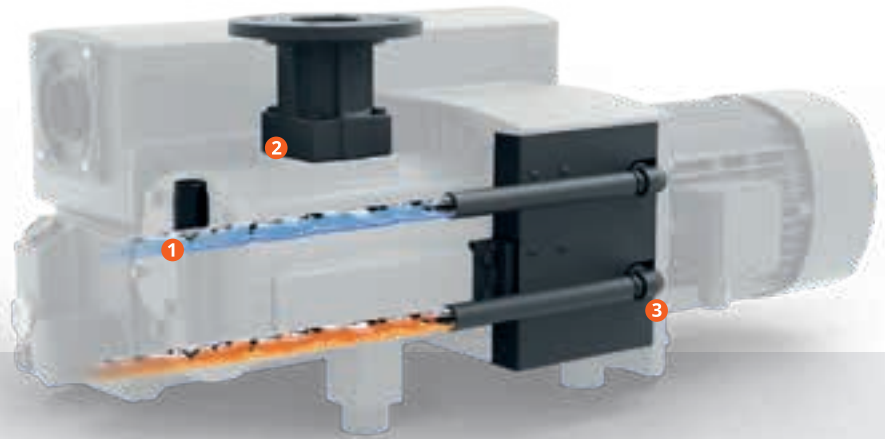




R5 RD

Accessories and spare parts

- ❶ Larger gas-ballast valve
- ❷ Adapter flange
- ❸ Energy Recuperation Kit
- Vertical inlet
- Standard motors meeting IEC or NEMA criteria, IE3
- Temperature switch
- Level switch
- Inlet filter
- Vacuum pump oils for all applications
- Filter pressure gauge
- Cooling air deflector
- G 2" exhaust connection flange



Design options

Larger gas-ballast valve

To deal with high vapor load, a larger gas-ballast valve is available.

Energy Recuperation Kit

In case of high ambient temperatures ($\geq 40^\circ\text{C}$) or in order to recuperate up to 60 % of the consumed energy an Energy Recuperation Kit is available.

Adapter flange for vacuum boosters

An optional adapter flange allows the R5 RD to be easily combined with a vacuum booster.

Vertical inlet

With the vertical inlet flange the R5 RD can be directly connected to the vacuum process.



20,000 HAMS EACH YEAR

When it comes to packaging, Henning Basedahl makes as few compromises as he does in the production of his ham.

To make sure he achieves the best packaging results, he was one of the first ever to have a new R5 RD 0360 A rotary vane vacuum pump from Busch Vacuum Solutions installed for his chamber vacuum machine.

The Basedahl ham factory produces around 20,000 hams each year. And as the “Manu-” aspect of its German name Manufaktur suggests, at Basedahl everything really is still made by hand. The recipe, according to the ham specialists from Hollenstedt, is simple: take the ingredients of salt, smoke, love and time and

mix them with stringent quality control and careful handcraft. Packaging takes place three days a week, for seven hours on each day.



Basedahl Schinkenmanufaktur GmbH
Meat processing, vacuum packaging
www.basedahl.de



Read the full story online
www.buschvacuum.com/basedahl

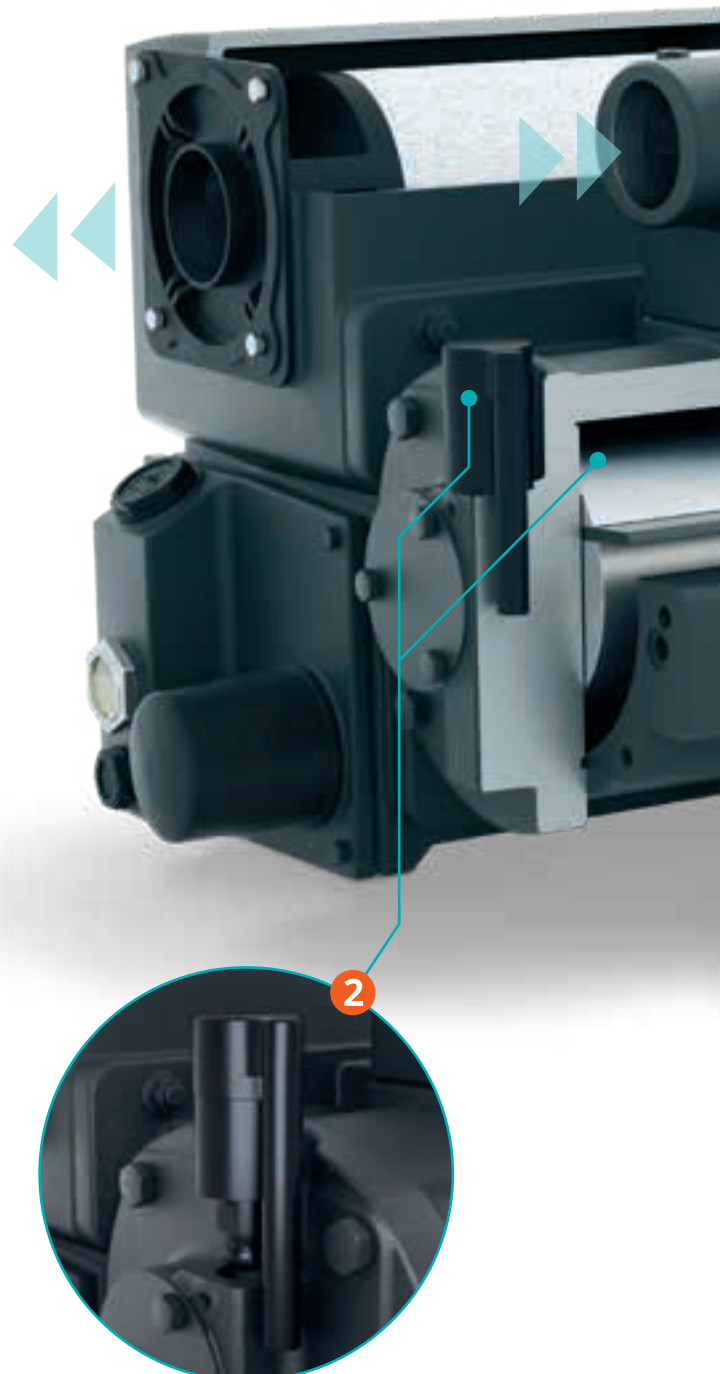
R5 RD

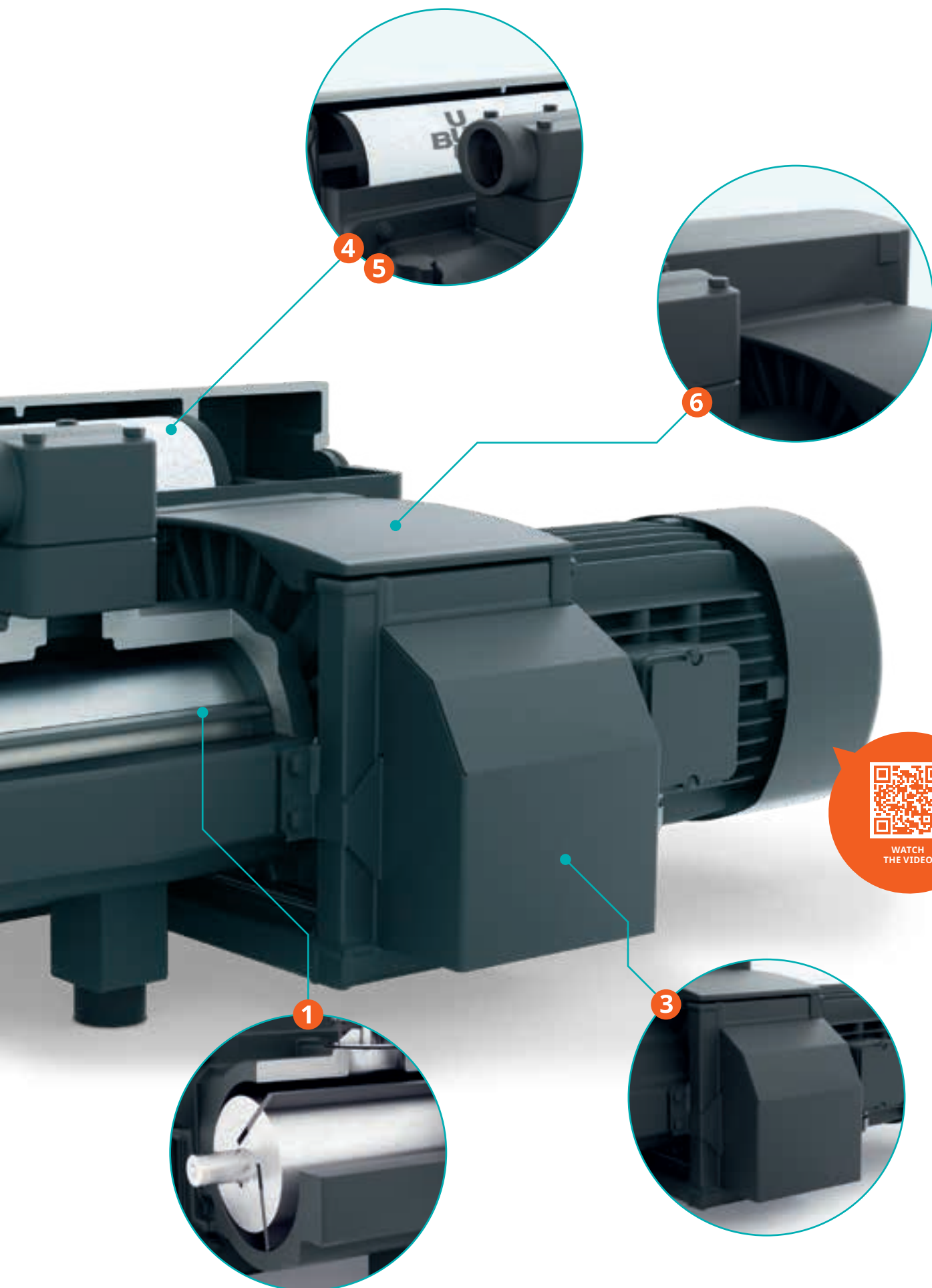
Technical features

R5 RD rotary vane vacuum pumps are the new standard for vacuum packaging. They are also well-established in a variety of other industrial applications. High efficiency is the outstanding quality of this series. With an up to 30% lower energy consumption compared to conventional rotary vane vacuum pumps. Heat emission has also been reduced thanks to an improved cooling air flow. Together with an optimized heat discharge, this contributes to a low ambient temperature. All service relevant components

are mounted on one side of the vacuum pump for easier access. Therefore, the service routine becomes significantly faster. And the smooth surface design facilitates cleaning. The single exhaust filter can be replaced in less than a minute. Moreover, it provides enhanced filtration performance for best-in-class oil separation. R5 RD vacuum pumps feature hard-wearing carbon fiber vanes as standard, ensuring excellent performance and a long service life.

- 1 Excellent performance**
Proven rotary vane technology
 - High pumping speeds even in low pressure ranges
 - Perfectly synchronized components and materials
 - Hard-wearing, highly resilient carbon fiber vanes
- 2 Efficient**
Reduced energy consumption
 - Optimized stage geometry and compression process
 - Flow-optimized gas-ballast valve
 - IE3 standard motor
- 3 Excellent cooling**
Reduced heat emission
 - Low ambient temperature, e.g. in packaging machine and production area
 - Newly developed cooling air deflector (option)
 - Optimized cooling air flow
- 4 Best-in-class oil separation**
Large single exhaust filter
 - Enhanced filtration performance due to reduced back pressure (patent pending)
 - Optimum gas flow
 - Improved oil life performance
- 5 Easy servicing**
Fast service routine
 - All components requiring maintenance mounted on one side
 - Single exhaust filter, which can be replaced in less than a minute
 - High uptime
- 6 Optimized exterior design**
Smooth surface for easy cleaning
 - No external oil tubing
 - Self-draining design
 - No cooling fins on cylinder





WATCH
THE VIDEO

MINK DRY CLAW VACUUM PUMPS AND COMPRESSORS

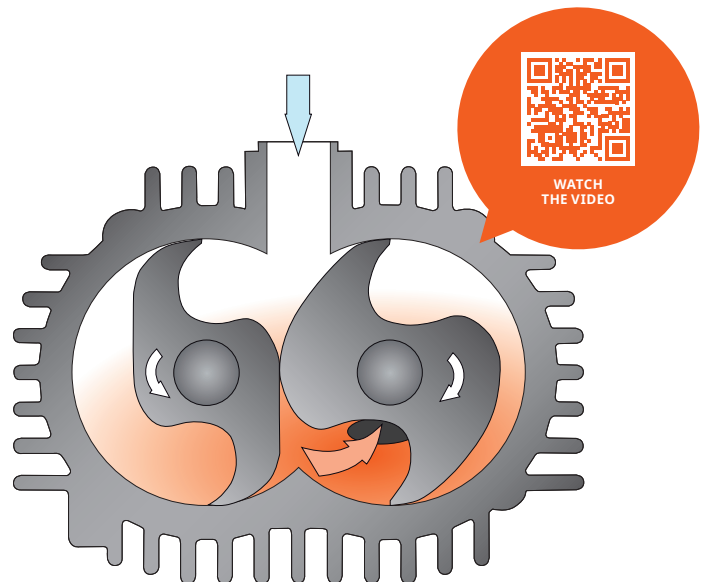
MINK dry claw vacuum pumps and compressors are the result of continuous development in claw technology. Decades of experience in countless applications have led to substantial improvements. MINK claw technology combines performance,

reliability and efficiency through an innovative design. It can be used for both, vacuum and compressed air generation. The dry and contact-free operating principle provides the benefit of nearly maintenance-free operation. MINK vacuum pumps

and compressors are perfectly suited for industrial applications, in which constant vacuum or overpressure and completely oil-free operation are essential.

Operating principle

MINK claw vacuum pumps and compressors feature two claw-shaped rotors. The rotors are mounted in a housing and move in opposite directions. The shape of these claw rotors extracts, compresses and expels the pumped medium. The minimal clearance between the rotors and the chamber housing optimizes the internal seal. So, no lubricants or operating fluids are required in the compression chamber.



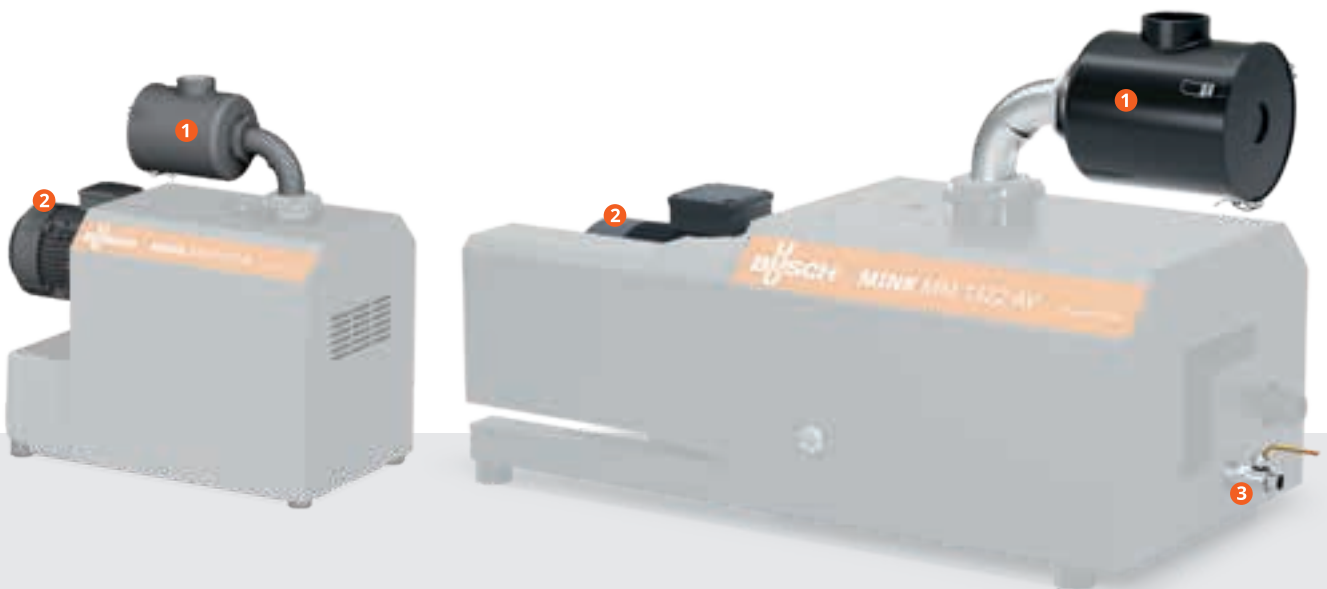
Series types

- **MINK MA** compressed air for mobile applications
- **MINK MB** vacuum for mobile applications
- **MINK MH** reliable hydrogen recirculation
- **MINK MI / MM** efficient and constant vacuum and overpressure generation
- **MINK MV** dry vacuum – quiet, efficient and compact
- **MINK MV Synchro** efficient and reliable vacuum generation, tailored to your process.

MINK MM / MV

Accessories and spare parts

- ① Inlet filter
- ② Standard motors meeting IEC or NEMA criteria, IE3
- ③ Drain valve
 - Filter for vacuum relief valve
 - Busch genuine gearbox oils



Design options

ATEX certification

MINK MM / MV claw vacuum pumps are also available in versions conforming to the EU guidelines for explosion hazard areas (ATEX).

Aqua version

The Aqua version may be ordered for applications transporting moist gases or vapors. This version features a special corrosion resistant coating.

Oxygen version

The Oxygen version is available for transporting gas mixtures with an oxygen content of over 21 %. This version conforms to all safety requirements to permit safe extraction of gases with elevated oxygen content.

Speed control

Versions with frequency converter are available for optimum response to

changing demand, allowing further energy savings to be achieved.

Gas-tight version

The gas-tight version for applications transporting critical (e.g. toxic) gases reduces the leak rate to an absolute minimum.

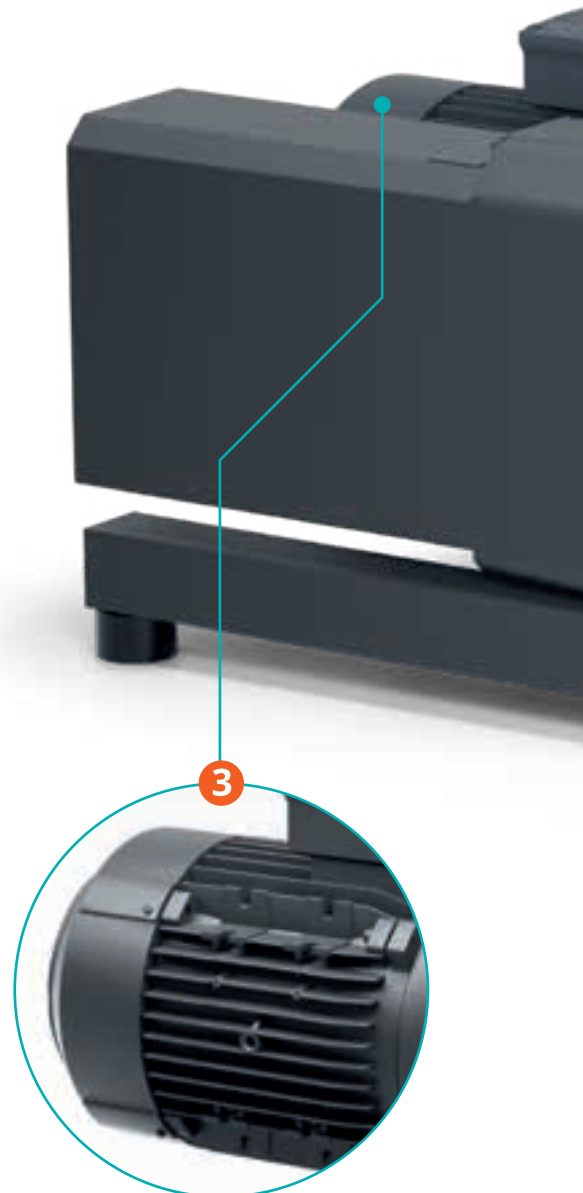
MINK MM

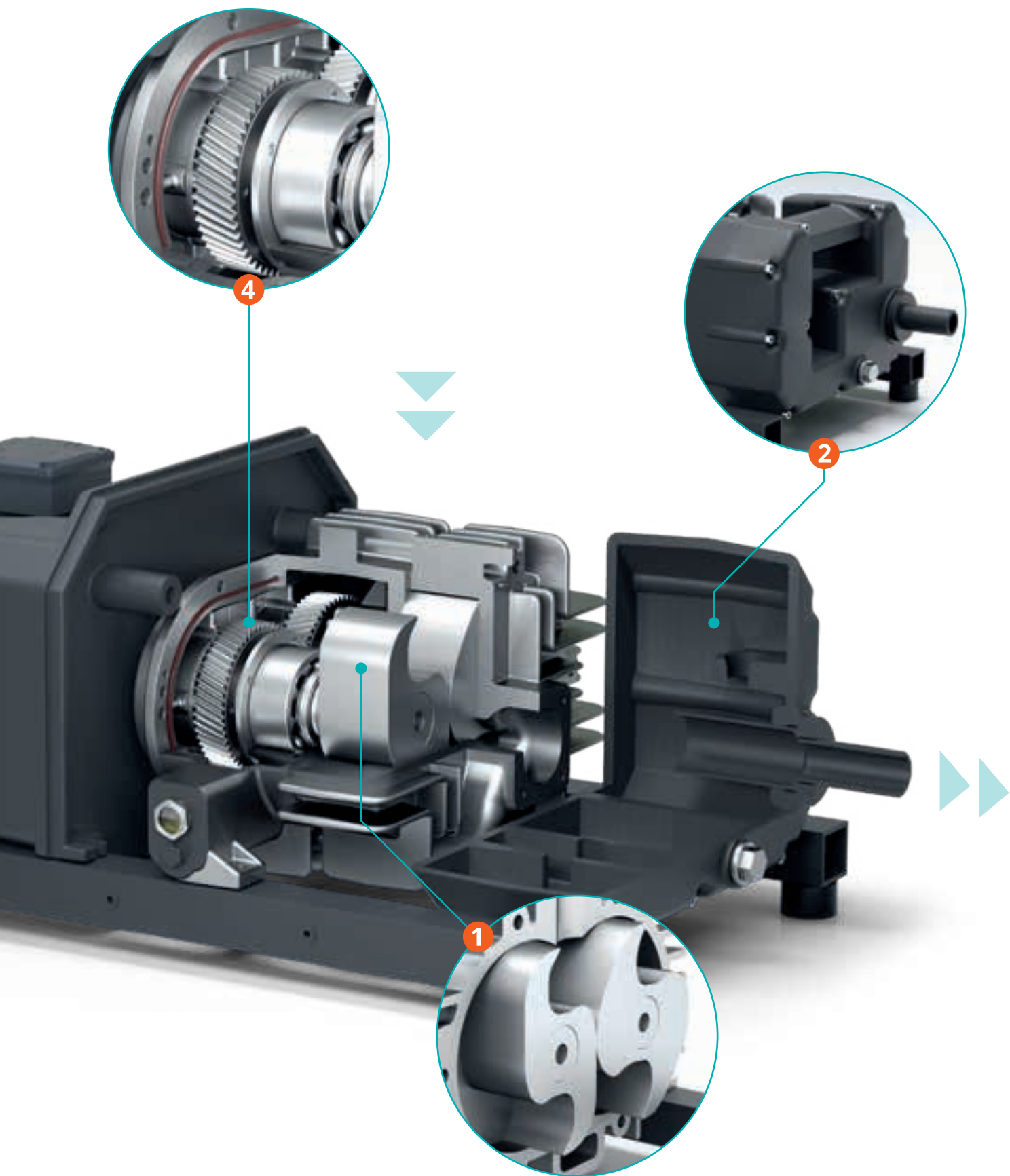
Technical features

MINK MM claw vacuum pumps have been specially designed for dependable industrial vacuum generation, for example for pneumatic conveying, thermoforming, plastics processing, woodworking. These vacuum pumps operate at very high efficiency levels. They deliver constantly high pumping speeds during their entire life cycle. With substantial lower energy consumption than conventional vacuum generators of the same output.

The contact-free operating principle provides the benefit of nearly maintenance-free operation. Components are not subject to wear and servicing tasks are reduced to a minimum. The proven, completely dry claw vacuum technology allows MINK MM to run without operating fluids in the compression chamber. An intelligent sound insulation design ensures quiet operation.

- 1 Excellent performance**
Dry claw vacuum technology
 - Constantly high pumping speed throughout the service life
 - Long service life due to robust construction and proven design
- 2 Efficient**
Low operating costs
 - No operating fluids, with no purchase, replacement or disposal costs
 - Low servicing costs, nearly maintenance-free
 - Highest efficiency factor
- 3 Adaptable**
Industry standard motor
 - No control electronics required, making installation easy
 - Variable speed drive (option) – further energy savings
 - Energy-saving motors of efficiency class IE3
- 4 Nearly maintenance-free**
Dry and contact-free compression
 - Internal moving parts do not come in contact with each other
 - Components not subject to wear
 - Only gearbox oil requires replacement





MINK MV

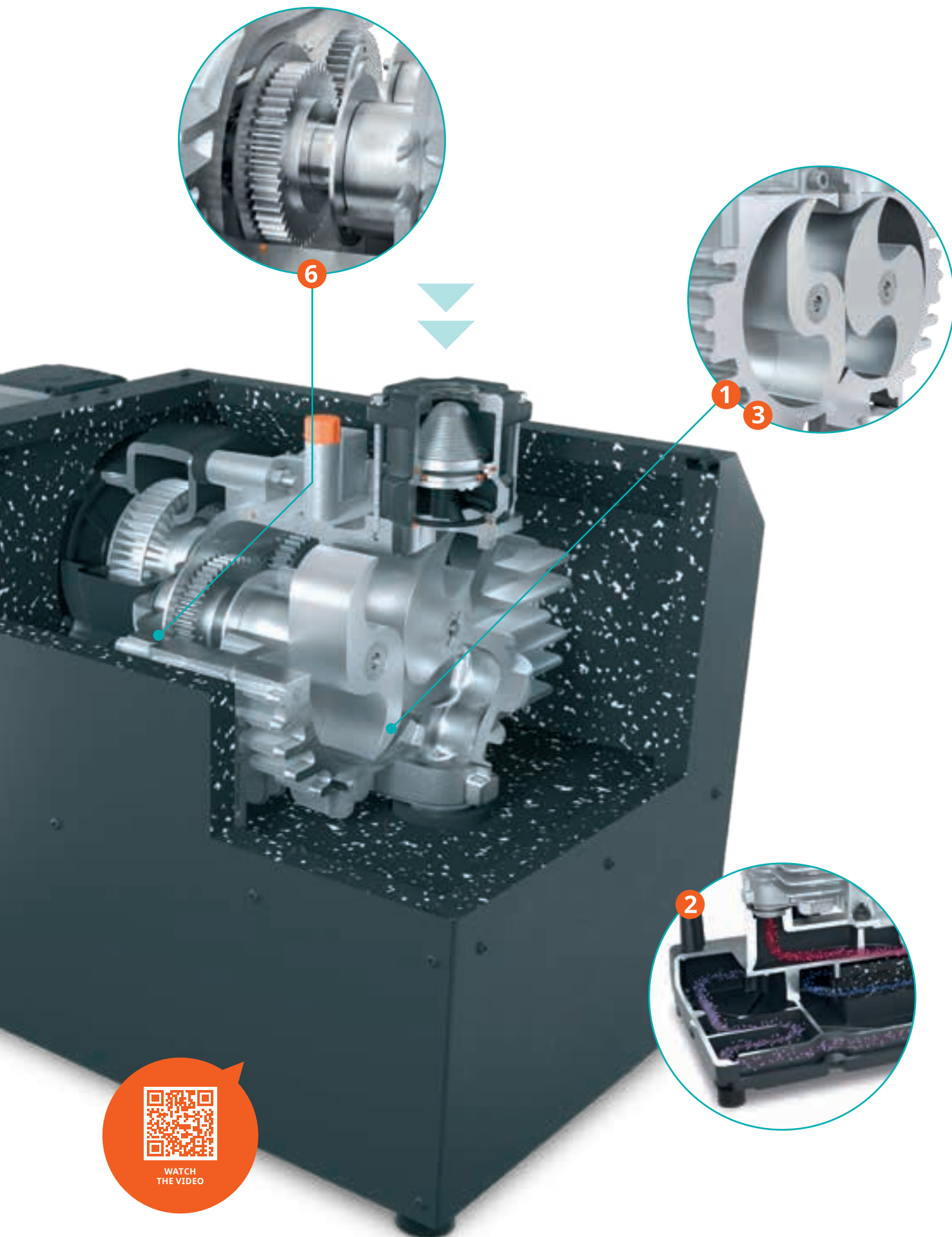
Technical features

MINK MV are three times better than comparable conventional vacuum generators: more quiet, more efficient, more compact. The optimized sound insulation is manufactured according to the latest developments in acoustic design. Thus, the low noise levels allow quiet operation in the immediate vicinity of workstations. Thanks to their sophisticated design MINK MV vacuum pumps achieve exceptionally high efficiency levels. They can reduce overall operating costs by up to 50 % in comparison to

conventional vacuum generators. With their compact dimensions, MINK MV vacuum pumps can be installed in the smallest of floor areas. The contact-free operating principle provides the benefit of a nearly maintenance-free operation. None of the internal moving parts come in contact with each other. The proven, dry claw vacuum technology allows MINK MV to run without operating fluids in the compression chamber.

- 1 Excellent performance**
Latest claw vacuum technology
 - Single-stage, two-shafted claw vacuum pump
 - Constantly high pumping speed throughout the service life
 - Long service life due to robust construction and proven design
- 2 Quiet**
State-of-the-art acoustic design
 - Low noise levels permit installation at workstations
 - No insulating materials used, so no particles in the exhaust air
 - Pulsation-free, optimized gas flow through silencer
- 3 Efficient**
Up to 50 % lower overall operating costs
 - No operating fluids, with no purchase, replacement or disposal costs
 - Low servicing costs, nearly maintenance-free
 - Highest efficiency factor
- 4 Compact**
Smallest footprint in its performance class
 - May be installed anywhere
 - Compact design
 - Silencer mounted underneath the pump body
- 5 Adaptable**
Industry standard motor
 - No control electronics required, making installation easy
 - Variable speed drive (option) – further energy savings
 - Energy-saving motors of efficiency class IE3
- 6 Nearly maintenance-free**
Dry and contact-free compression
 - Only gearbox oil requires replacement
 - Easy cleaning due to removable protective cover, deinstallation of vacuum pump not required
 - Components not subject to wear





COBRA INDUSTRY DRY SCREW VACUUM PUMPS

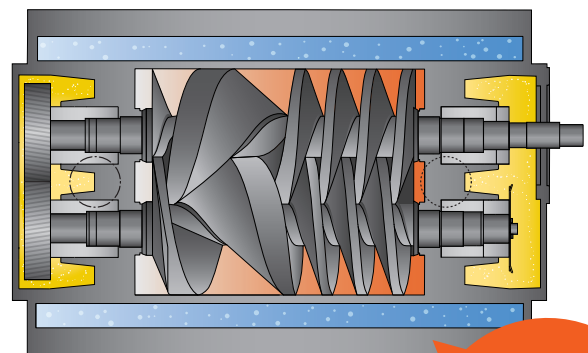
COBRA Industry dry screw vacuum pumps are ideally suited for industrial applications which require reliable and contaminant-free extraction of gases and vapors. The operating principle of COBRA Industry is based on our state-of-

the-art screw technology. With their patented self-balancing screws, they set new standards in terms of efficiency. COBRA vacuum pumps operate efficiently throughout their vacuum range and deliver constantly high pumping speeds,

oil- and contact-free. Particle-laden media can be evacuated without any problems. Optimum corrosion resistance is ensured by an even temperature distribution preventing condensation.

Operating principle

Inside COBRA Industry dry screw vacuum pumps, two screw rotors rotate in opposite directions. The pumped medium is trapped between the cylinder and the screw chambers. There, it is compressed, and transported to the outlet. During this process, the screw rotors do not come in contact with each other or the cylinder.



WATCH
THE VIDEO

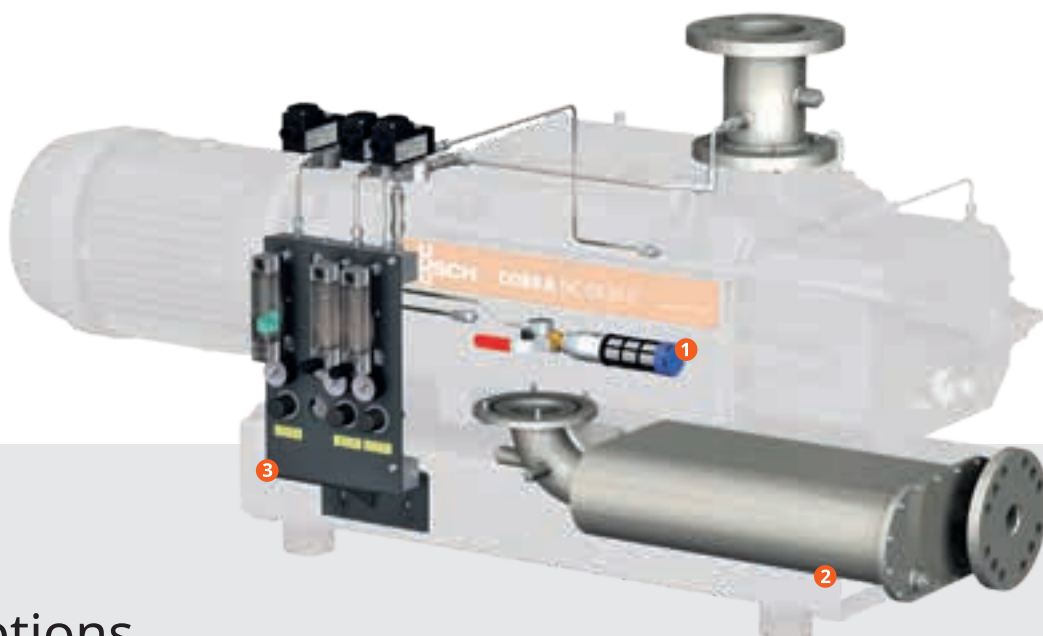
Series types

- **COBRA NC** the flexible solution for industrial vacuum applications
- **COBRA NF** the dry solution for vacuum packaging
- **COBRA NS** leak-tight vacuum generation for demanding processes
- **COBRA NX** the all-around solution for industrial vacuum applications

COBRA NC

Accessories and spare parts

- ① Gas-ballast valve for humid applications
- ② Exhaust silencer
- ③ Nitrogen control panel
- Adapters for vacuum boosters
- ATEX motors
- Seal gas system for harsh applications
- Standard motors meeting IEC or NEMA criteria, IE3
- Purge gas and liquid flushing system for vacuum pump cleaning and inertization
- Air-cooled version
- Anti-corrosion coatings
- Double and single mechanical seals for harsh or toxic processes
- Material and vacuum pump test certificates



Design options

ATEX certification

COBRA NC screw vacuum pumps are designed to comply with EU directives relating to explosion hazard areas (ATEX). COBRA NC models are available in different ATEX versions and temperature classes.



ATEX-1/2

Certification acc. to regulation 2014/34/EU:
Ex II 1(i)/2(o) G IIB3(i)/IIB(o)



ATEX-2/2

Certification acc. to regulation 2014/34/EU:
Ex II 2(i)/2(o) G IIB(i)/IIB(o)
Ex II 2(i)/2(o) G IIC(i)/IIC(o)



ATEX-3/3

Certification acc. to regulation 2014/34/EU:
Ex II 3(i)/3(o) G IIC(i)/IIB(o)

COBRA NC

Technical features

COBRA NC are high-performance dry screw vacuum pumps. They are perfectly suited for demanding applications with maximum flexibility and modularity for process changes. COBRA NC are in use wherever gases and vapors need to be pumped reliably. The patented self balancing screw design ensures lowest vibration levels and quiet operation. The screws of COBRA NC vacuum pumps are manufactured from a single-piece casting avoiding

any gaps. This makes an ingress of process fluids or particles impossible. Thus, corrosion and deposition are prevented. COBRA NC series vacuum pumps use efficient indirect water cooling. This results in an even temperature distribution throughout the pump body. Moreover, thermal stability is ensured throughout the process.

1 Excellent performance

Advanced screw design

- Single-stage, twin screw vacuum pumps
- Shorter evacuation time and high gas flow
- Robust construction – longer service life, lower life cycle costs
- High pumping speed with low energy and cooling water consumption
- No contamination of process medium or gear oil
- Unique patented Busch screw design
- Anti-corrosive coatings available

2 Adaptable

Industry standard motor

- No control electronics required, making installation easy
- Variable speed drive (option) – further energy savings
- Energy-saving motors of efficiency class IE3

3 Robust

Optimized gas flow

- Ideal for wet processes and particle handling
- Self-draining

4 Efficient

Reduced maintenance costs

- Only gear oil requires replacement
- Easy maintenance – lower life cycle costs

5 Optimal fit

Shaft seals

- Various sealing configurations to suit process requirements

6 Flexible

Cooling system

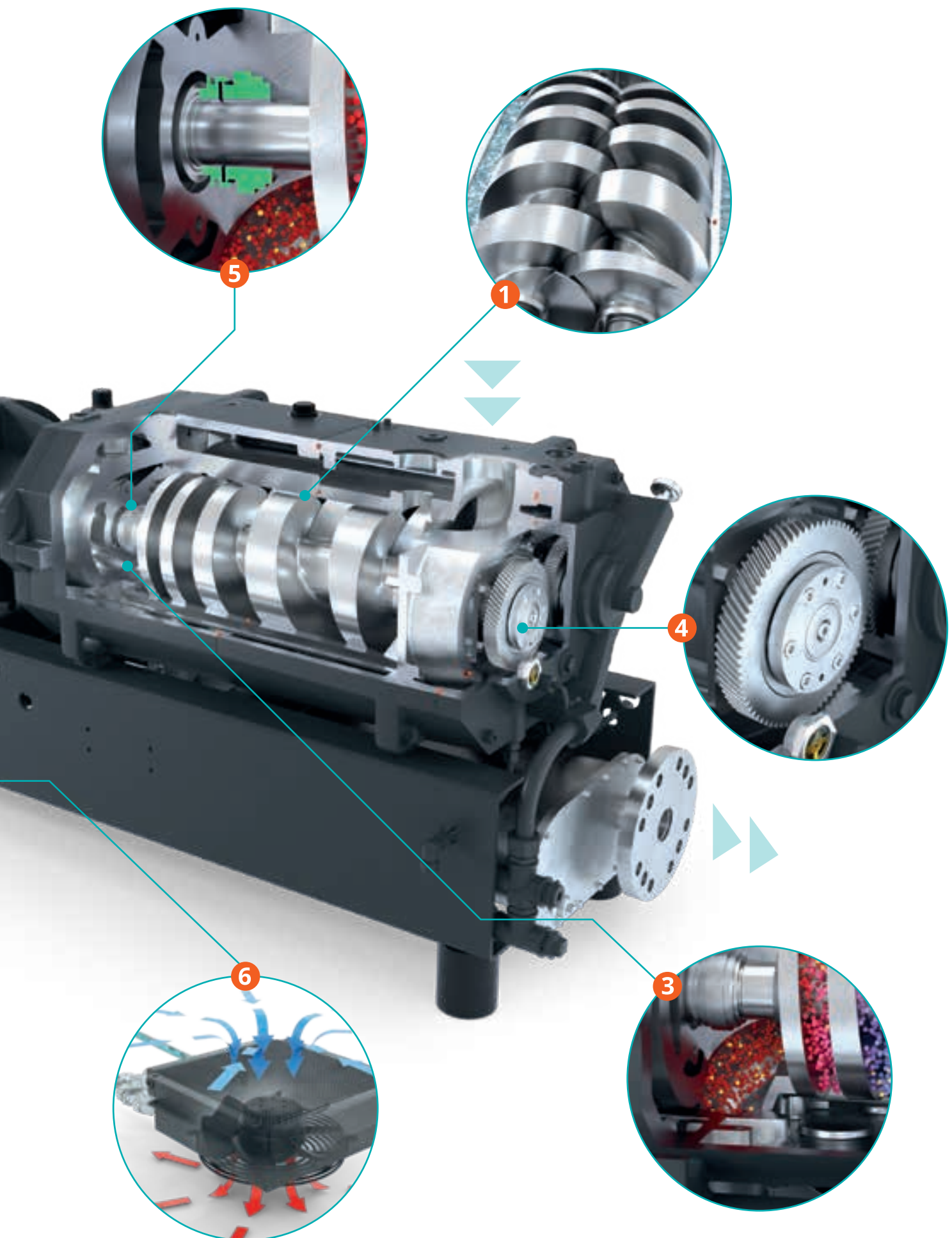
- Water or air cooling
- Precise temperature control by advanced cooling water system, including separate water recirculation pump
- High vapor tolerance



WATCH
THE VIDEO

2





COBRA NX

Accessories and spare parts

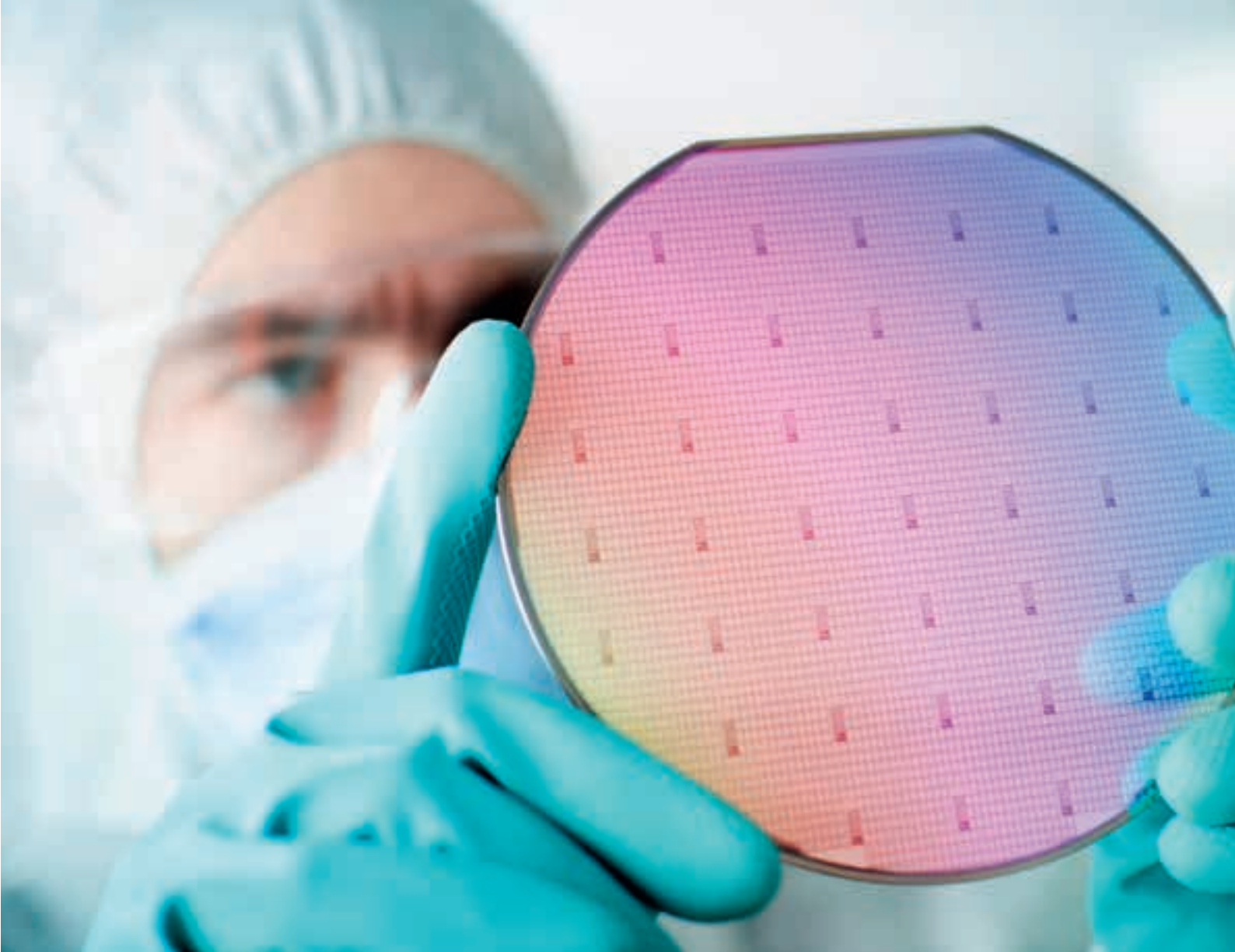
- ❶ Adapter flange
- ❷ Base frame
- ❸ Gas-ballast valve (air) for wet applications
- ❹ Seal gas system for wet applications
- Exhaust silencer
- COMBI Kit to add a vacuum booster
- Standard motors meeting IEC criteria, IE3
- Anti-corrosion coating



Configuration

COBRA NX screw vacuum pumps can be used as a module of standard or customized vacuum systems. Due to their modular and compact design, they can be easily combined with vacuum boosters.

Extended base frames are part of the COMBI Kit to increase physical stability. Installation is easy due to compact combination of COBRA NX with a vacuum booster.



40 PERCENT COST REDUCTION

The IHP – Innovations for High Performance Microelectronics, performs research and development in the fields of silicon-based systems, highest-frequency integrated circuits and technologies for wireless and broadband communication. A fully-automatic vacuum system supplies up to 80 vacuum consumers with the vacuum needed in the different departments to hold or handle wafers.

They selected a vacuum system with three COBRA NX screw vacuum pumps from Busch. This system was installed in a step-by-step process – pump by pump – while the system was in operation and the existing liquid ring vacuum pumps were

dismantled. The vacuum system operates around the clock all year long. After just the first few months, they already saw a 40 percent reduction in operating costs.



IHP GmbH

Semiconductor, wafer handling
www.ihp-microelectronics.com



Read the full story online

www.buschvacuum.com/ihp

COBRA NX

Technical features

COBRA NX are high-performance dry screw vacuum pumps for rough and medium vacuum applications. They are in use wherever gases and vapors need to be pumped reliably. The patented self balancing screw design ensures lowest vibration levels and quiet operation.

The screws of COBRA NX vacuum pumps are manufactured from a single-piece casting avoiding any gaps. This makes an

ingress of process fluids or particles impossible. Thus, corrosion and deposition are prevented.

COBRA NX series vacuum pumps use efficient water cooling. An even temperature distribution throughout the pump body is therefore maintained. Moreover, thermal stability during the process is ensured.

1 **Excellent performance**

Advanced screw design

- Single-stage, twin screw vacuum pumps
- Shorter evacuation time and high gas flow
- Robust construction – longer service life, lower life cycle costs
- High pumping speed with low energy and cooling water consumption
- No contamination of process medium or gear oil
- Unique patented Busch screw design

2 **Adaptable**

Industry standard motor

- No control electronics required, making installation easy
- Variable speed drive (option) – further energy savings
- Energy-saving motors of efficiency class IE3

3 **Robust**

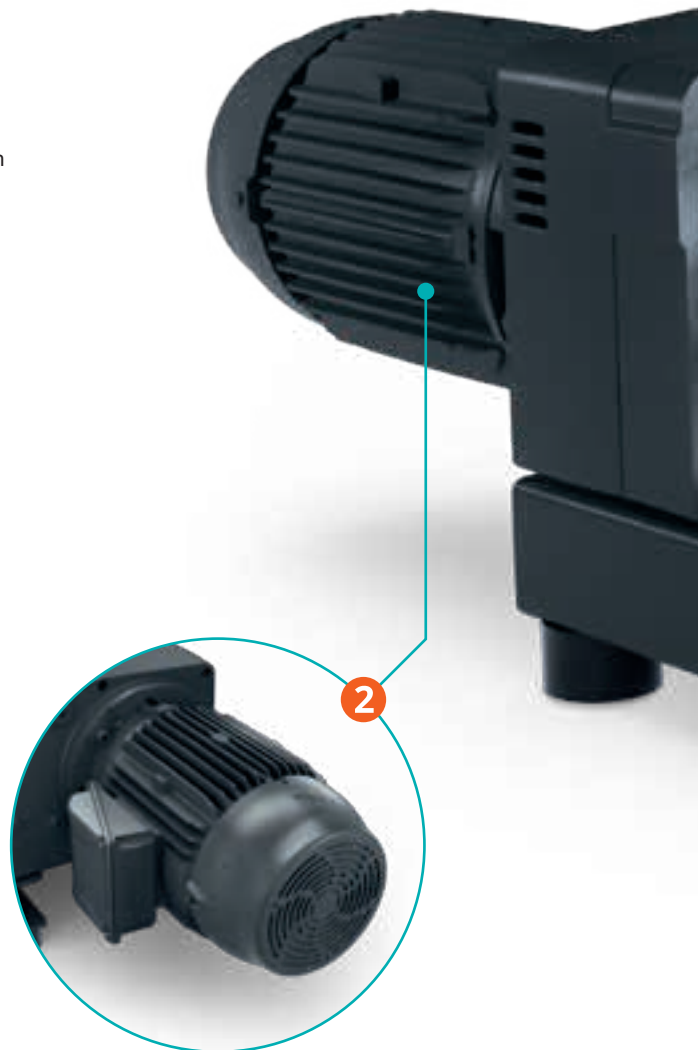
Optimized gas flow

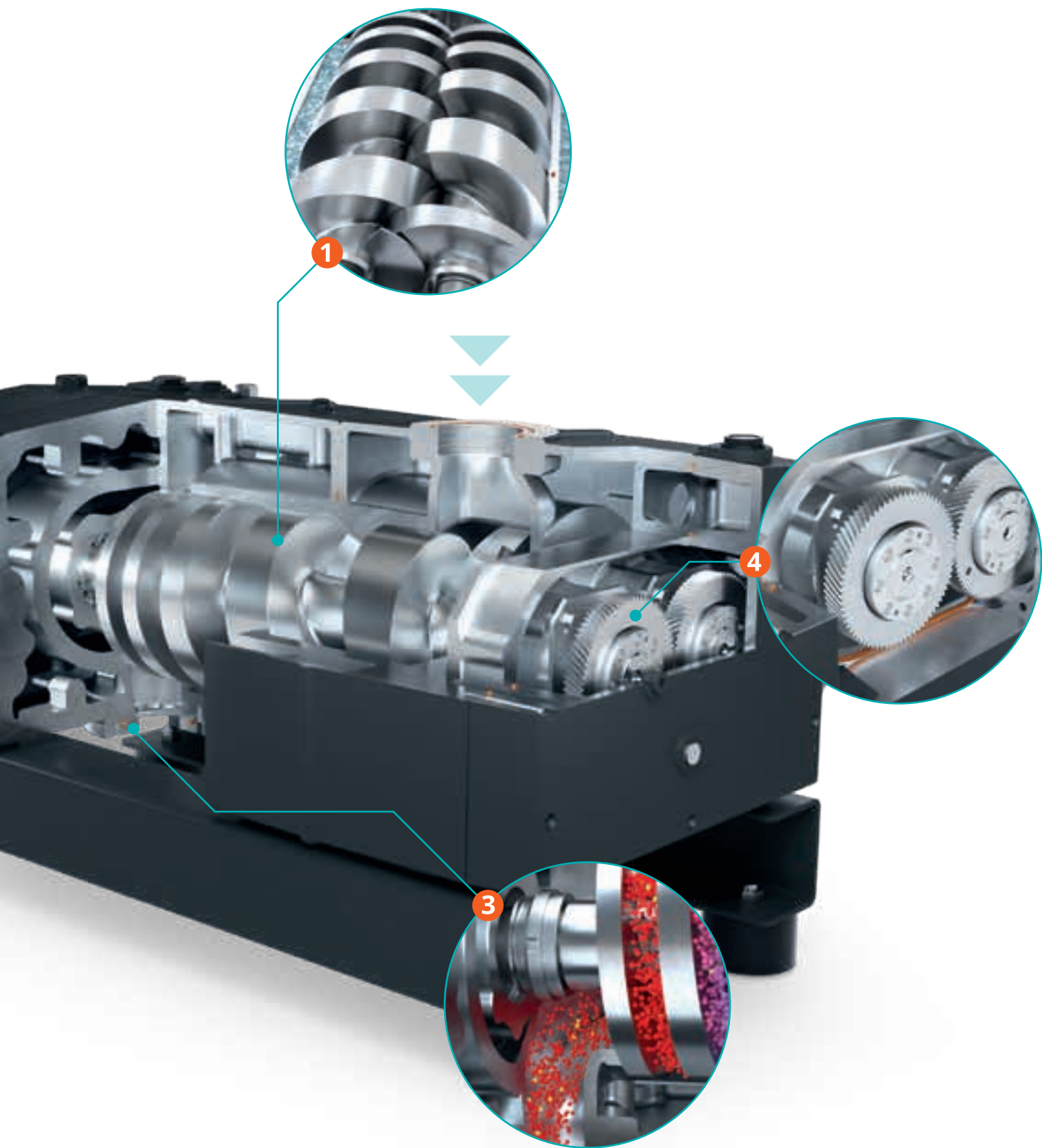
- Ideal for wet processes and particle handling
- Self-draining

4 **Efficient**

Reduced maintenance costs

- Only gear oil requires replacement
- Easy maintenance – lower life cycle costs





COBRA SEMICON DRY SCREW VACUUM PUMPS

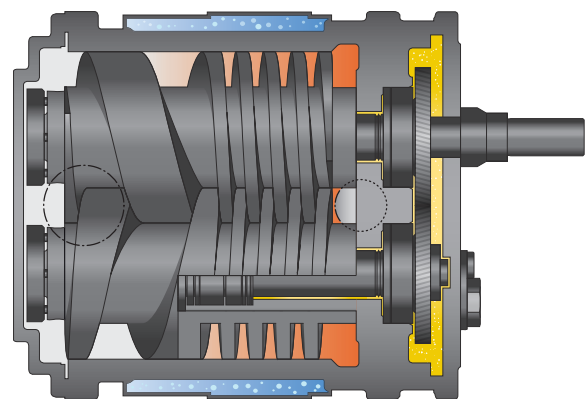
COBRA Semicon dry screw vacuum pumps are the ideal choice for all demanding processes in the production of photovoltaic cells, flat screens, semiconductors, and in numerous industrial coating applications. The operating principle of COBRA Semicon

is based on our state-of-the-art screw technology. With their patented self-balancing screws, they set new standards in terms of efficiency. COBRA Semicon combine large throughputs with high vapor and particle tolerance. Particle-laden

media can therefore be evacuated without any problems. The oil- and contact-free operating principle ensures low maintenance requirements, low operating costs and a long service life.

Operating principle

Inside COBRA Semicon dry screw vacuum pumps, two screw rotors rotate in opposite directions. The pumped medium is trapped between the cylinder and the screw chambers. There, it is compressed, and transported to the outlet. During this process, the screw rotors do not come in contact with each other or the cylinder.



Series types

- **COBRA BA** the air-cooled plug & pump solution
- **COBRA BC** the ideal solution for light to medium semiconductor applications
- **COBRA DS** the new generation of dry vacuum pumps for demanding processes

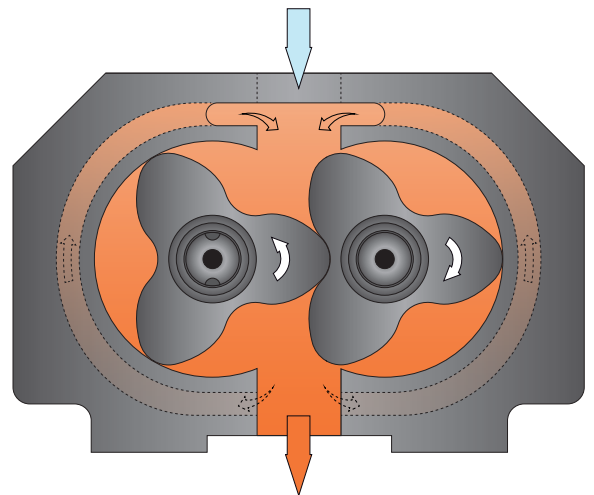
TORRI MULTI-STAGE ROTARY LOBE VACUUM PUMPS

TORRI multi-stage rotary lobe vacuum pumps are the compact and energy-efficient solution for pump-down of load lock chambers.

They are characterized by low ultimate pressure and best-in class chamber pump-down time.

Operating principle

TORRI vacuum pumps operate according to the proven rotary lobe principle. The rotation of the lobes traps the pumped medium, transports it from stage to stage and finally to the outlet. Due to the special profile of the lobes and their precise manufacturing, they do not come into contact with each other or the housing. In addition, no lubricants or operating fluids are required in the compression chamber. The lobes are driven by a directly coupled synchronous water-cooled electric motor.



Series types

- **TORRI BD** the compact and energy-efficient solution for load lock chambers

PANDA / PUMA

VACUUM BOOSTERS

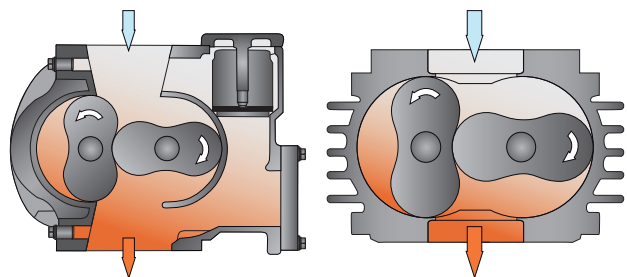
PANDA / PUMA vacuum boosters increase the pumping speed and ultimate pressure of vacuum pumps. They can boost the performance of vacuum systems by up to a factor of ten. In combination with backing pumps, PANDA / PUMA are perfectly

suited for all applications that require high pumping speeds at a defined working pressure. Busch vacuum boosters are available in a large number of sizes. This allows pumping speeds and ultimate pressures to be tailored exactly to the

process conditions. In contrast to PUMA vacuum boosters, PANDA boosters are coming with a bypass valve as standard.

Operating principle

Within the housing of PANDA / PUMA vacuum boosters, two lobes rotate synchronously. Due to the special profile of the lobes and their precise manufacturing, they do not come in contact with each other or the housing. Thus, no lubricants or operating fluids are required in the process chamber. During the rotation of the lobes, gas is transported between the lobes and the housing into the backing pump.



Series types

- **PUMA WP / WPA** the performance optimizers for industrial vacuum applications
- **PANDA WV** the performance optimizers for industrial applications with bypass valve
- **PUMA WY** the leak-tight performance optimizers for medium and high vacuum applications
- **PANDA WZ** the leak-tight performance optimizers for medium and high vacuum applications

SECO ROTARY VANE VACUUM PUMPS AND COMPRESSORS

Compact, reliable and extremely powerful – these are the stand-out features of SECO dry-running rotary vane vacuum pumps and compressors. Due to their lubricant-free operating principle, they can be used in many industrial applications where rapid,

clean vacuum or compressed air is required. The SECO family consists of vacuum pumps, compressors and combined vacuum pumps and compressors. High levels of availability and improved performance are the benefits of ongoing

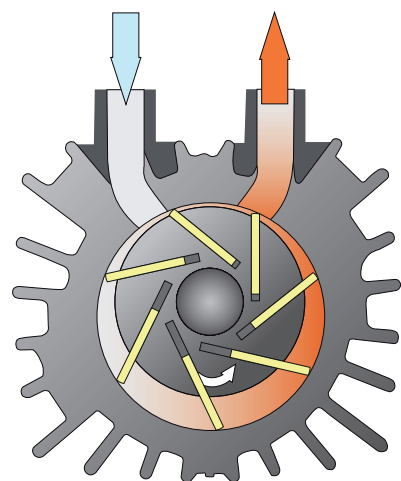
product advancement. SECO vacuum pumps and compressors are characterized by their robust construction and lifetime-lubricated bearings.

Operating principle

Inside a cylindrical housing, a rotor with multiple vanes is mounted eccentrically. As the rotor rotates constantly, the vanes slide out and form chambers between themselves and the housing. The pumped medium is suctioned in and trapped inside these chambers. It is compressed through the ongoing rotation and transported to the outlet. Sealing is achieved by self-lubricating high-performance vanes.

Series types

- **SECO SD** the reliable and oil-free compressor
- **SECO SV** the dry solution for handling applications



TYR

ROTARY LOBE BLOWERS

TYR rotary lobe blowers are our modern high-performance vacuum and overpressure generators. With the TYR family, we have set new standards in terms of efficiency and noise level. They are available in a vacuum or an overpressure version.

A conversion is possible at any time. TYR rotary lobe blowers provide constant pressure differentials. Therefore, they are the perfect choice for applications such as waste water treatment, pneumatic conveying or fish farming. The various

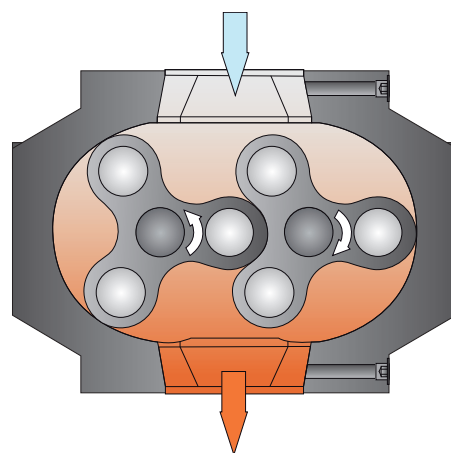
sizes of TYR blowers allow for the optimum configuration to match every process.

Operating principle

TYR rotary lobe blowers operate according to the proven Roots principle: Two rotary lobes are mounted in parallel within the housing. These three-bladed lobes operate in opposite directions. The rotation of the lobes traps the pumped medium and transports it to the outlet. There, it is discharged through an outlet silencer.

Series types

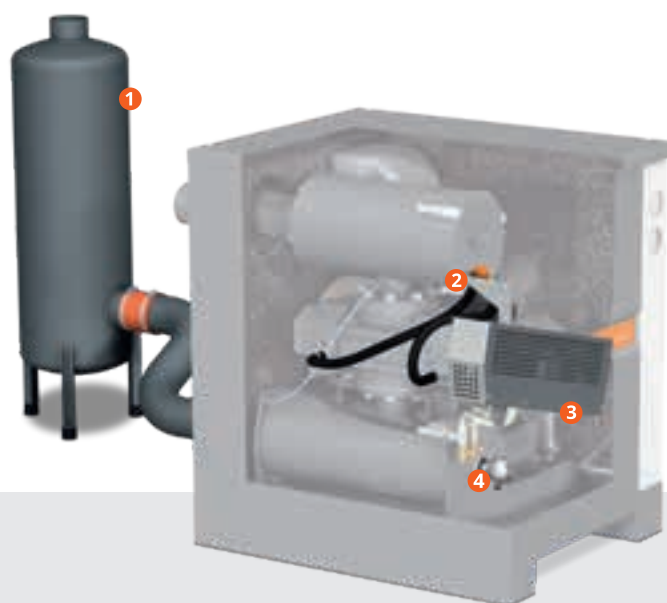
- **TYR WT** the quiet and robust vacuum and overpressure generator



TYR WT

Accessories and spare parts

- ① Resonant pulsation silencer
- ② Oil filler unit
- ③ V-belt guard for versions with acoustic enclosure
- ④ Temperature monitoring
 - Flame arresters
 - Non-return valve
 - Vacuum regulating valve (for vacuum version)
 - Rubber and stainless steel expansion joints
 - Electronic filter monitoring
 - Nickel coating of stage
 - Corrosion protection kit
 - Start-up relief valve
- High-performance filter for media with elevated dust content (for vacuum version)
- Water cooling system (water-air or water-water)
- Oil temperature sensors
- Temperature monitoring device



Design options

Even in the standard version, TYR WT rotary lobe blowers offer a high degree of flexibility. The V-belt drive and variable speed gearing, along with the choice of optimum motor for the required performance, allow TYR WT rotary lobe blowers to be configured to suit every application. Furthermore, special motors can be supplied whenever the customer requires this.

C4 corrosion protection version

A special acoustic enclosure with all-weather finish is available for outdoor applications.

Anti-corrosion coating for blower stage

An optional anti-corrosion coating for the blower stage offers optimum protection when aggressive substances are being handled.

Water cooling

The water cooling system helps to maintain low bearing temperatures and reduces the temperature of oil in the gearbox whenever the inlet gas is hot, improving the lubrication qualities of the oil.

Acoustic enclosure

The optional acoustic enclosure reduces noise levels by an additional 10 to 20 dB(A).

Pulsation silencer without absorption material

A pulsation silencer without absorption material is available for applications in which there is a need to avoid risk of absorption material particles entering the process.

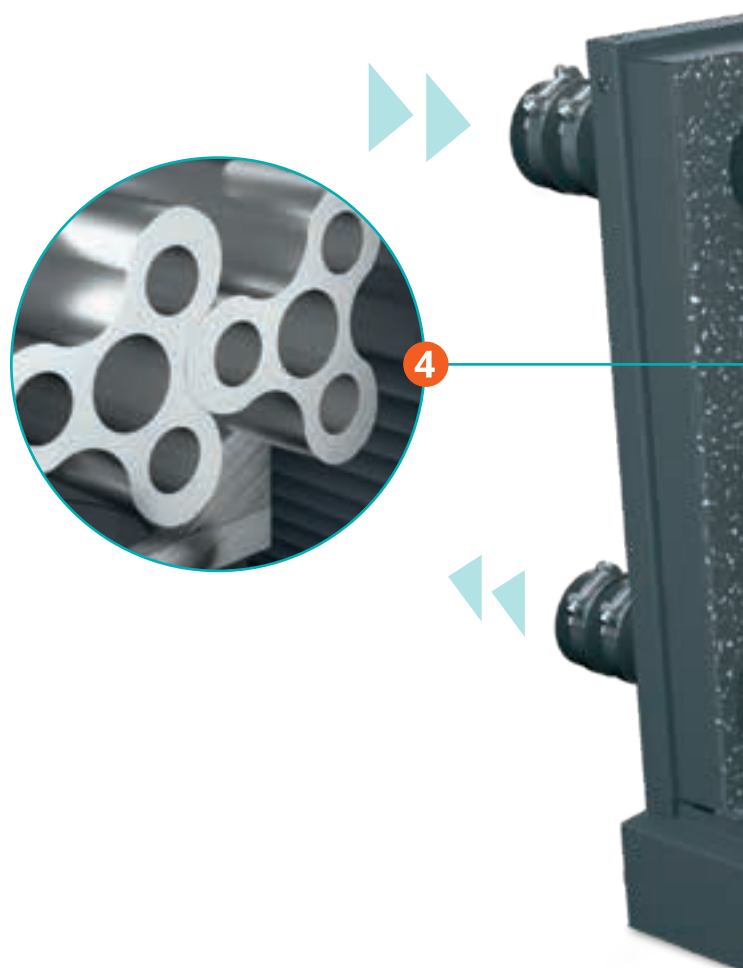
TYR WT

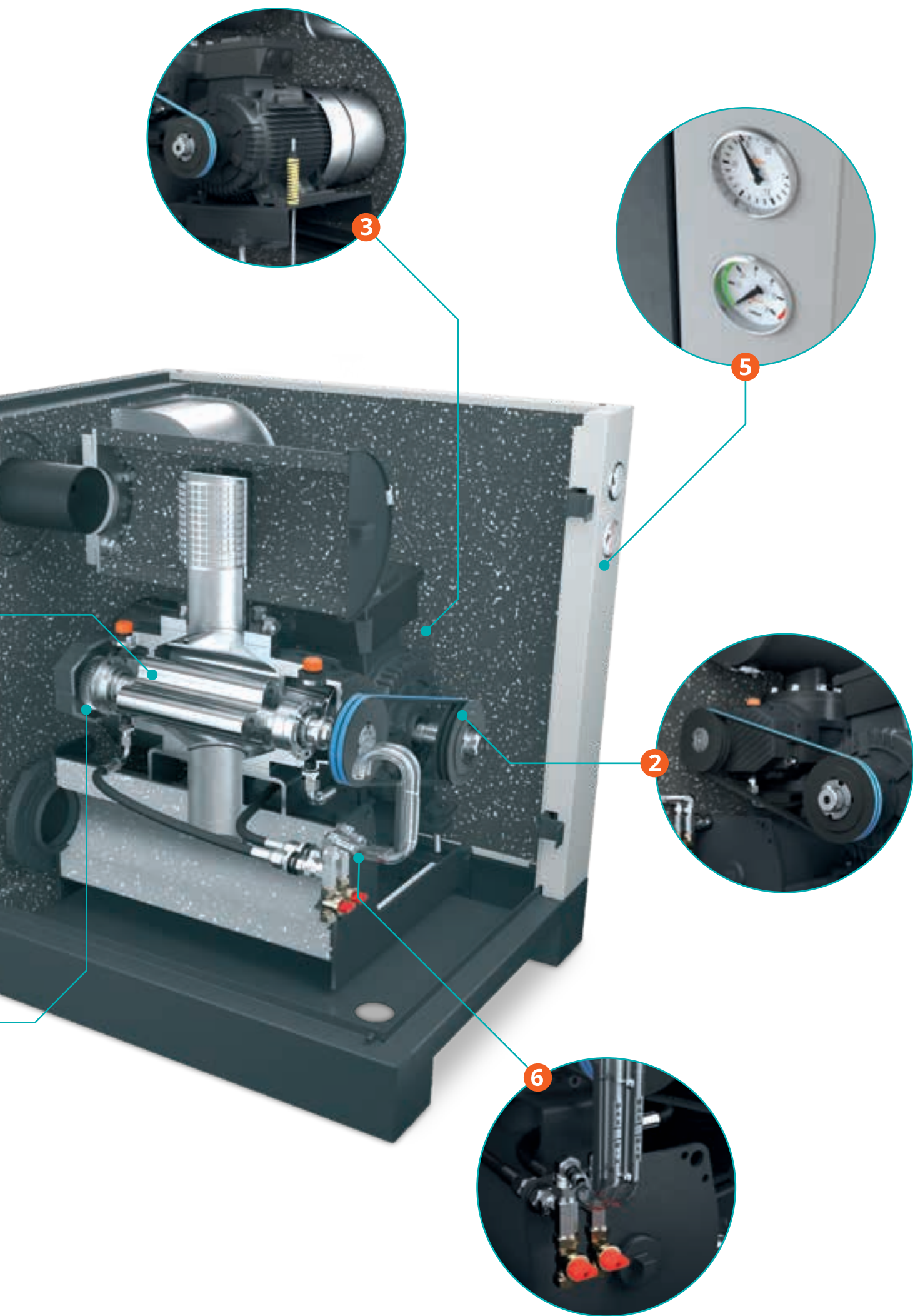
Technical features

The robust construction and high manufacturing quality of TYR WT rotary lobe blowers ensure outstanding reliability and durability. Thanks to their flow-optimized blower stages, they achieve high levels of efficiency. TYR WT blowers are driven by an electric motor with V-belt transmission. This transmission allows the blower speed to be regulated precisely. The tension of the drive belt

between the motor and blower stage is maintained automatically. Annual servicing is confined to the simple inspection of the V-belt tension and replacement of the filter and gear oil. TYR WT blowers have an innovative acoustic insulation with integrated inlet and outlet silencers. The optional acoustic enclosure reduces noise levels by up to additional 20 dB(A).

- 1 Quiet**
Innovative acoustic insulation concept
 - Helical cut high-precision gears
 - Inlet and outlet silencers
 - Efficient acoustic enclosure (option)
- 2 Robust**
Durable construction
 - Fixed bearings on the drive side, allowing perfect belt alignment
- 3 Efficient**
IE3 standard motor
 - Suitable for operation with frequency converter
 - Simple installation, no electronics required
- 4 Excellent performance**
Optimized rotary lobe profile
 - For effective compression and gas transport
 - Flow-optimized blower stages
- 5 Easy operation**
All parameters at a glance
 - Automatic display of inlet and discharge filter condition
 - Level indicators for gear oil A and B side
 - Safety valve easily accessible
- 6 Easy servicing**
Easy access to all components requiring maintenance
 - Easy oil draining via front-mounted ball valves
 - Front-mounted oil filler unit (accessory)
 - Belt drive, inlet / outlet filters easily accessible





HUCKEPACK

OIL-LUBRICATED ROTARY VANE VACUUM PUMPS

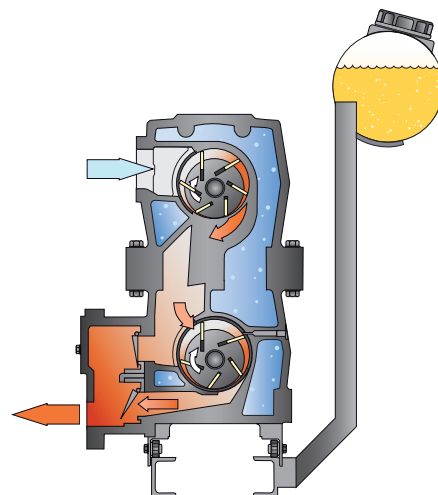
With the HUCKEPACK, Dr.-Ing. Karl Busch developed the first vacuum pump for the vacuum packaging of foodstuffs. This was a revolution for the packaging industry. Furthermore, HUCKEPACK once-through oil-lubricated rotary vane vacuum pumps

are the ideal choice for particularly complex processes. For decades, they have proven themselves in the toughest of applications. Where other technologies failed, the HUCKEPACK demonstrated its robustness and operational reliability. Depending on

process conditions, this vacuum pump can last for decades with only minimal maintenance.

Operating principle

HUCKEPACK is a series of two-stage rotary vane vacuum pumps. Both stages contain an eccentrically mounted rotor. Due to centrifugal force, each vane slides out and forms a chamber between the vane and the housing. The pumped medium is trapped inside these sickle-shaped chambers. During rotation, the volume of the chamber is constantly reduced. The pumped medium is compressed and transported to the high-pressure second stage, which operates on the same principle. HUCKEPACK rotary vane vacuum pumps use continuous fresh oil lubrication.



Series types

- **HUCKEPACK HO** the unbreakable vacuum solution for the toughest of applications

HUCKEPACK HO

Accessories and spare parts

- ① Oil mist separator
- ② Various inlet filters
 - Flushing device, manual and automatic
 - Monitoring and safety devices
 - Level switch
 - Temperature switch
 - Temperature control valve
 - Large choice of vanes
 - Large choice of lubricants and flushing liquids
 - Radiator cooling system
 - Duosec safety knock-out separator
 - Direct or star / delta switching devices
 - Exhaust silencer
 - Gas-ballast valve



Design options

ATEX certification

HUCKEPACK oil-lubricated rotary vacuum pumps are designed to comply with European directive 2014/34/EU (ATEX) and have been configured for safe use in hazardous areas to provide extra protection in explosive environment (Ex II 2(i)/2(o) G IIB(i)/IIB (o) T3(i) T4(o)).

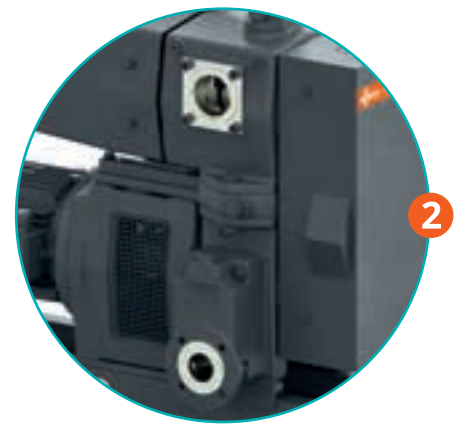
HUCKEPACK HO

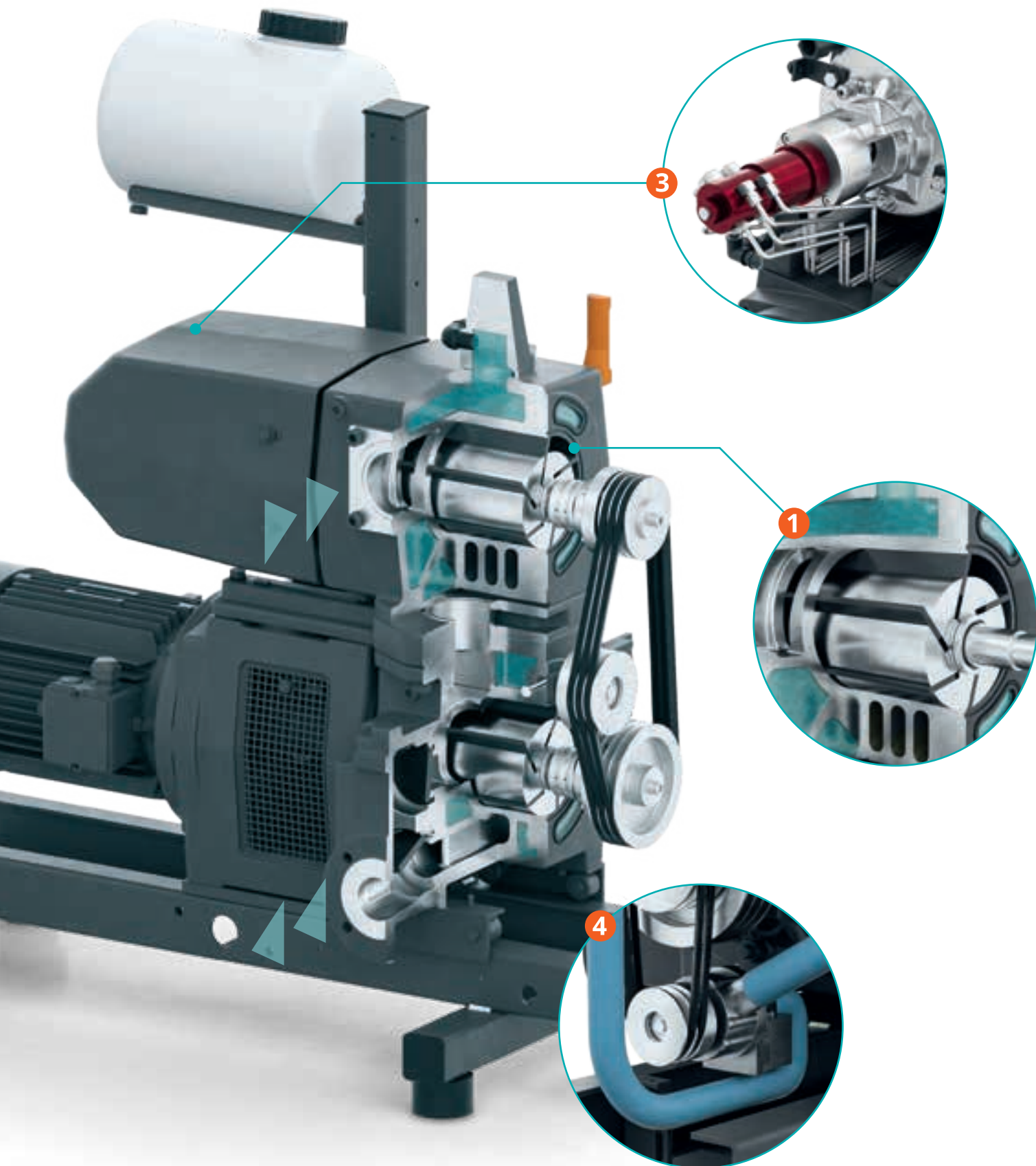
Technical features

HUCKEPACK HO once-through oil-lubricated rotary vane vacuum pumps are the most rugged and reliable vacuum pumps. They have proven their reliability and adaptability for years in food processing, chemical and pharmaceutical processes, plastics processing and many other industrial applications. Their durable construction makes HUCKEPACK HO vacuum pumps extremely

vapor- and particle-tolerant. Thus, they are suited for harsh process conditions including aggressive substances. The carbon fiber composite vanes specially developed and produced by Busch have emergency running properties. HUCKEPACK HO vacuum pumps are equipped with a recirculated water cooling system as standard.

- 1 Excellent performance**
Proven rotary vane technology
 - High pumping speeds even in low pressure ranges
 - Perfectly synchronized components and materials
 - Various hard-wearing, highly resilient vanes for every application
 - Long service life
- 2 Robust**
Durable construction
 - Forgiving vacuum pump for arduous process conditions
 - Proven legendary longevity even in aggressive applications
 - High vapor and particle tolerance
- 3 Improved sealing**
Reliable oil lubrication system
 - Multiple efficient lubrication spots
 - Scavenging aggressive and corrosive substances
 - Protection of the internal metal surfaces
 - Protection against corrosion
- 4 Effective cooling**
Flexible cooling system
 - Once-through or recirculating mechanical water pump system
 - Air cooling system available
 - Precise thermostatic valve controlled cooling water temperature
 - Adaptable temperature control to suit process conditions
- 5 Easy servicing**
Minimal maintenance
 - Maintenance only at regular service intervals
 - Maintenance can easily be carried out on-site by the operator
 - Modular design for rapid exchange of stages





DOLPHIN LIQUID RING VACUUM PUMPS AND COMPRESSORS

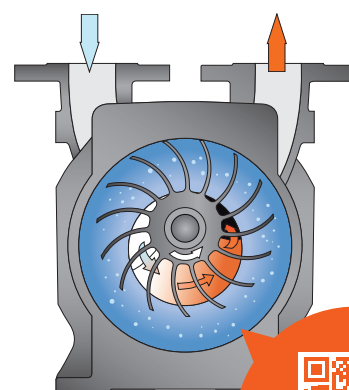
DOLPHIN are the robust liquid ring vacuum pumps and compressors from Busch. This series encompasses decades of experience in the use and further development of liquid ring technology. Their proven operating principle provides virtually isothermal

(cold) compression. Especially useful for sensitive or hazardous gases. They are the perfect solution for demanding applications. For example, the evacuation of saturated gases and vapors. The DOLPHIN series comprises a large variety of sizes

and assemblies: single- or two-stage, with a directly flange-mounted motor, or assembled on a base plate, vacuum pumps and compressors.

Operating principle

An eccentrically mounted impeller rotates in a housing partially filled with operating fluid. The impeller blades dip into the fluid, and the centrifugal force exerted by their rotation forms a so-called liquid ring. The pumped medium is transported in the spaces between the blades and the liquid ring. The eccentric rotation of the impeller alters the volume of these spaces. Thereby, the gas is drawn in, compressed and expelled. Operation as a compressor is possible up to 10 bar(g).



WATCH
THE VIDEO

Series types

- **DOLPHIN LA / LB** reliable vacuum for a variety of chemical processes
- **DOLPHIN LG / LR** our largest liquid ring vacuum pumps
- **DOLPHIN LM / LT** robust principle, modern design
- **DOLPHIN LN** the perfect solution for flare gas recovery
- **DOLPHIN LX** the compact solution for challenging environments
- **DOLPHIN VL** the complete solution

DOLPHIN LM / LT

Accessories and spare parts

① Liquid separator

② Heat exchanger

③ Non-return valves

• Standard motors meeting IEC and NEMA criteria, IE3

• ATEX motors

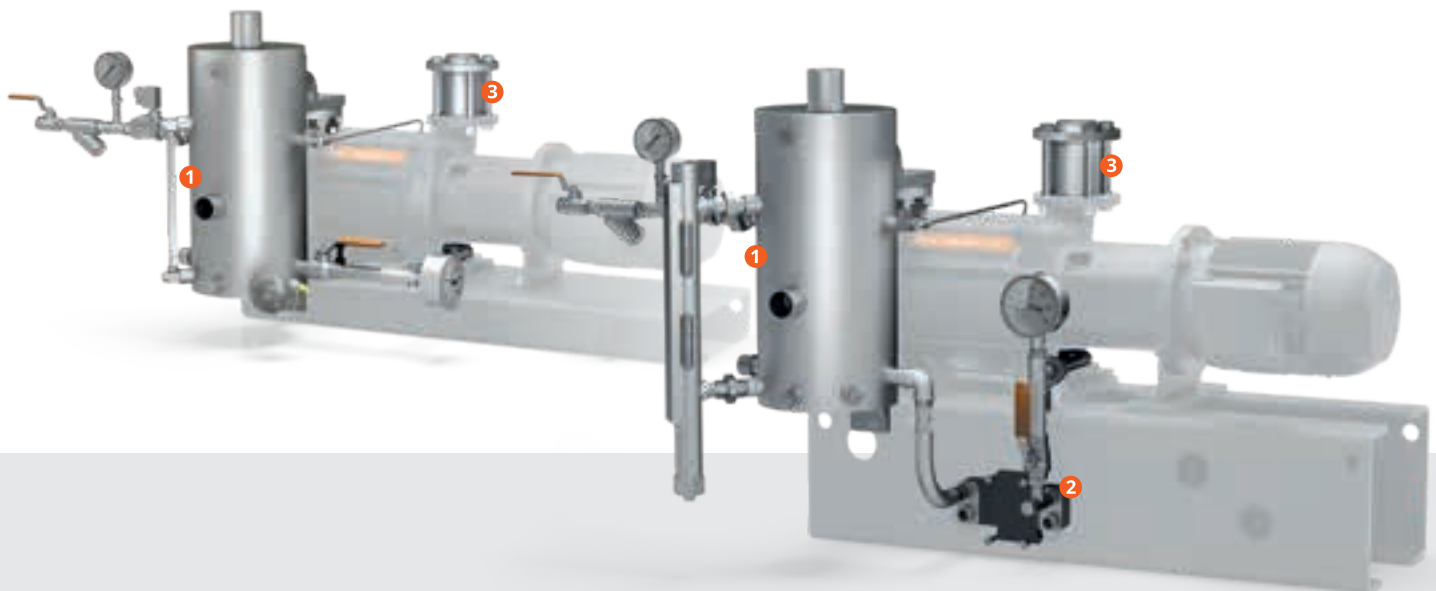
• Cavitation protection

• Gas ejector

• Drain valves

• Vacuum relief valves

• Base frame mounted pumpset



Design options

Housing materials

Cast iron, EN-GJL-200 (standard)
Stainless steel, 316 grade (option)

Impeller materials

Stainless steel, 316 grade (standard)

Shaft seal elastomer materials

Viton (standard)
FFKM (option)

Operating liquid system

Continuous flow system
Partial recirculation system (open circuit)
Total recirculation system (closed circuit)

O-Ring materials

Viton (standard)
PTFE (option)

ATEX certification

DOLPHIN LM / LT liquid ring vacuum pumps are available in different ATEX versions and temperature classes.



ATEX-1/2

Certification acc. to regulation 2014/34/EU:
Ex II 1(i)/2(o) G IIB3(i)/IIB(o)



ATEX-3/3

Certification acc. to regulation 2014/34/EU:
Ex II 3(i)/3(o) G IIC(i)/IIB(o)



ATEX-2/2

Certification acc. to regulation 2014/34/EU:
Ex II 2(i)/2(o) G IIB(i)/IIB(o)
Ex II 2(i)/2(o) G IIC(i)/IIC(o)

DOLPHIN LM / LT

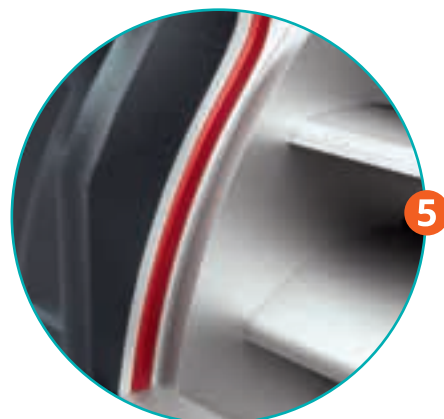
Technical features

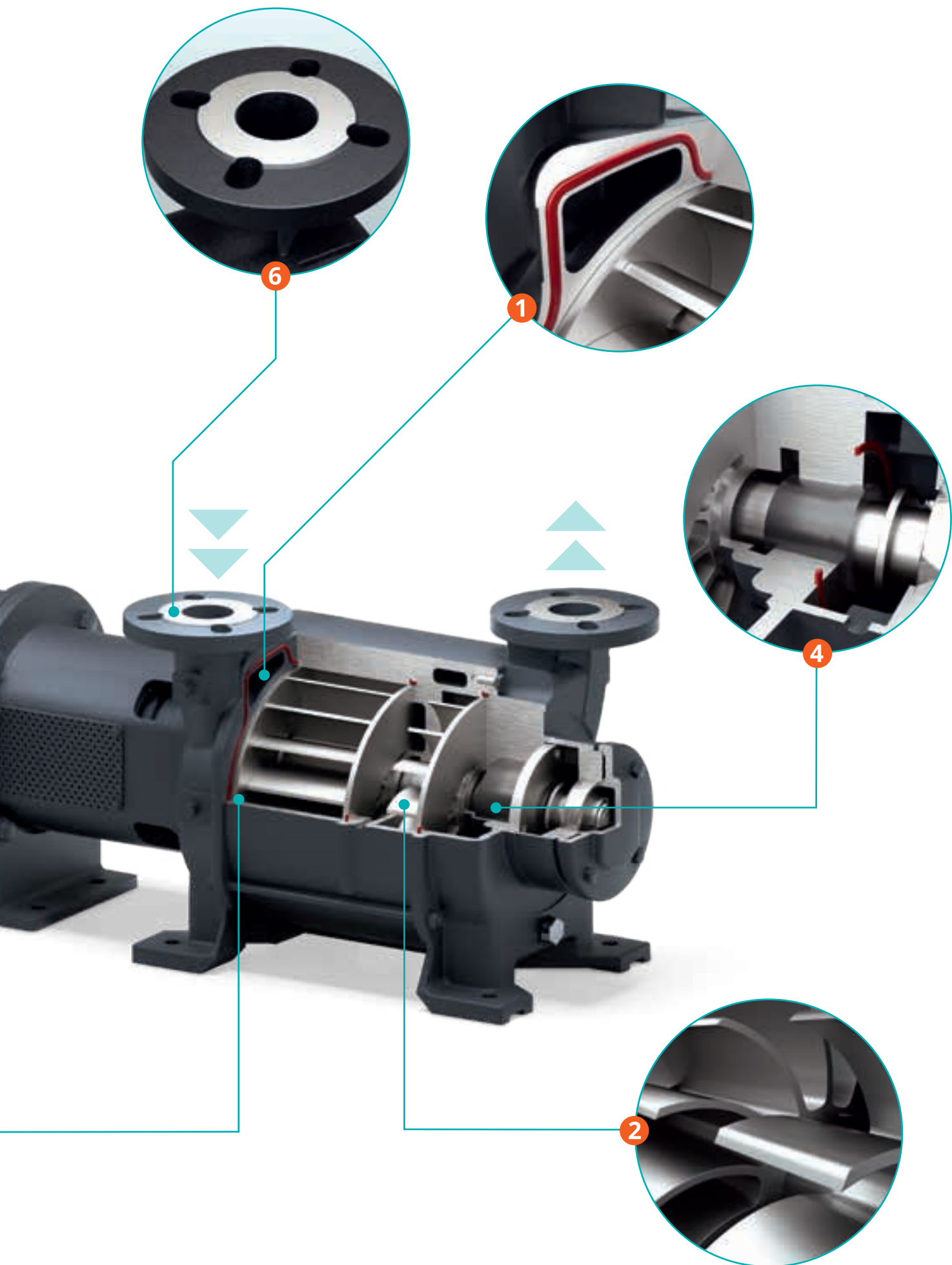
The DOLPHIN LM / LT series is the latest generation of liquid ring vacuum pumps from Busch. It combines all the advantages of proven technology with additional refinements. Even demanding applications such as evacuating saturated gases and vapors are possible without problems. Their operating fluid is usually water, but other liquids may be used if required by the process conditions.

Their new sealing concept with optimized Viton or FFKM seals makes them suitable for most applications. Universal flanges allow for simple fitting or replacement of existing vacuum pumps.

The precisely dimensioned range of sizes and the choice of accessories and construction materials allows you to find the perfect DOLPHIN LM / LT for your process. DOLPHIN LM are single-stage vacuum pumps whereas DOLPHIN LT have two stages for a higher vacuum.

- 1 Compact**
Integrated flow channel and modular construction
 - Optimized gas flow
 - No base frame required
 - Motor connected directly by flange
 - Small number of components
 - Ideal for use in vacuum systems
- 2 Corrosion protected**
Stainless steel impeller
 - Resistant to many different pumped media
 - Stainless steel housing (option)
- 3 Efficient**
IE3 standard motor
 - Low costs per m³/h
 - No electronic components
 - No special motors required
 - Easy replacement
- 4 Absolutely leak-tight**
New sealing concept
 - Optimized mechanical Viton or FFKM shaft seals
 - Long service life
- 5 Easy servicing**
O-ring seals
 - Made of Viton or PTFE according to pumped medium
 - Rapid and easy replacement
- 6 Compatible**
Universal flanges
 - Inlet and outlet flange connections according to ISO, ANSI and JIS
 - Simple fitting or replacement of vacuum pumps
 - May be installed worldwide





ZEBRA

OIL-LUBRICATED ROTARY VANE VACUUM PUMPS

With the ZEBRA series, we offer two-stage rotary vane vacuum pumps for industrial and analytical processes. These vacuum pumps have been designed to meet the requirements of a wide range of applications,

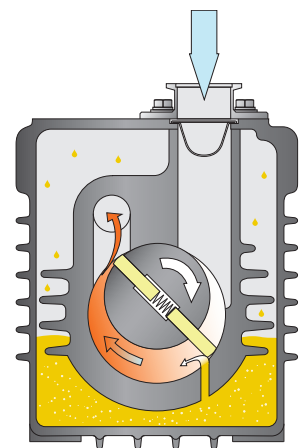
from research labs to production lines. ZEBRA vacuum pumps are characterized by their robustness and reliability. Due to their quiet operation, they are perfectly suited for applications where a low noise level is essential.

Operating principle

ZEBRA are two-stage oil-lubricated rotary vane vacuum pumps. Both stages contain an eccentrically mounted rotor, with two vanes each. Due to centrifugal force, each vane slides out and forms a chamber between the vane and the housing. The pumped medium is trapped inside these sickle-shaped chambers. During rotation, the volume of the chamber is constantly reduced. Thereby, the pumped medium is compressed and transported to the second stage, which operates on the same principle. Afterwards the pumped medium is discharged to the outlet. Forced oil lubrication is ensured by an advanced oil circulation pump.

Series types

- **ZEBRA RH** reliable medium vacuum for demanding applications in research and industry

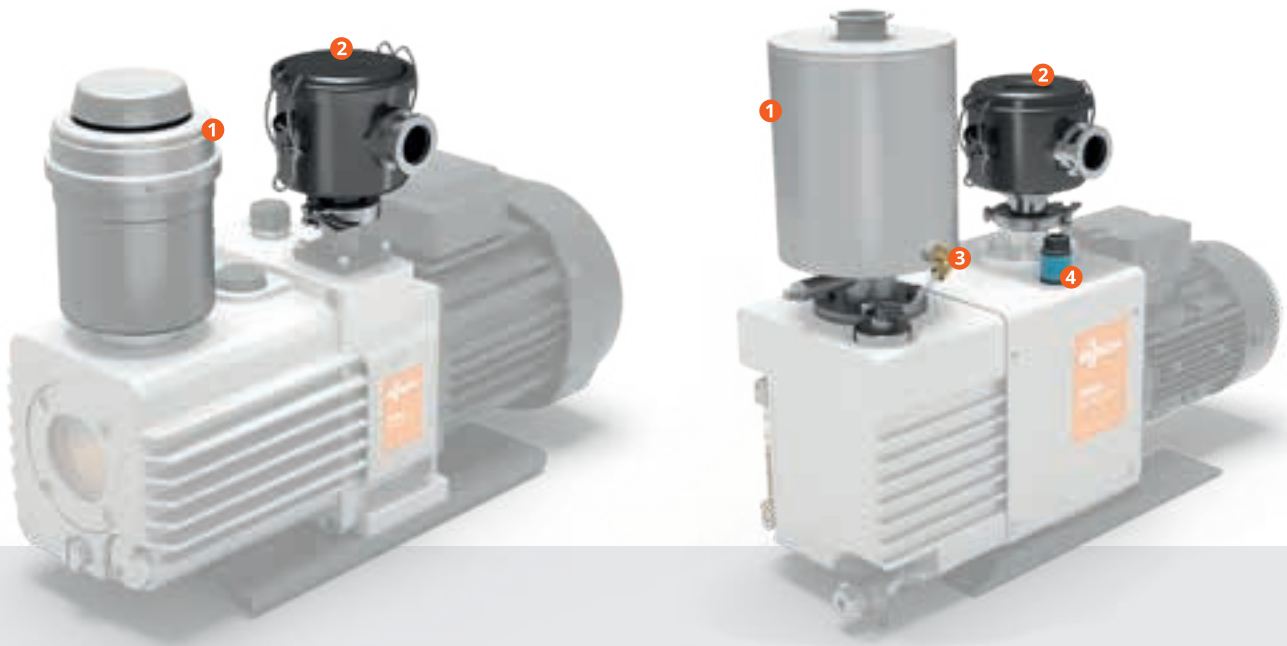


ZEBRA RH

Accessories and spare parts

- ① Oil mist separator
- ② Inlet filter with clamp
- ③ Oil return line
- ④ Gas-ballast valve

- Vacuum pump oils
- Filter elements
- Maintenance kits



Design options

Oil return line

The oil return line retrieves the oil collected by the oil mist separator.

Oil mist separator

When operating in high-pressure ranges, it is recommended that an oil mist separator is fitted at the discharge connection to reduce the oil consumption and trap any oil mist. Furthermore, the oil mist separator ensures clean exhaust air and reduces noise emissions.

Inlet filter

The inlet filter protects the vacuum pump against dust and other solid particles in the pumped medium. It is available as standard with a polyester cartridge and vacuum pump connection set.

Gas-ballast valve

To counteract the condensation of vapor inside the vacuum pump, the gas-ballast valve mixes the pumped medium with a limited quantity of ambient air.

Thus, it allows condensable vapors to be pumped.

ZEBRA RH

Technical features

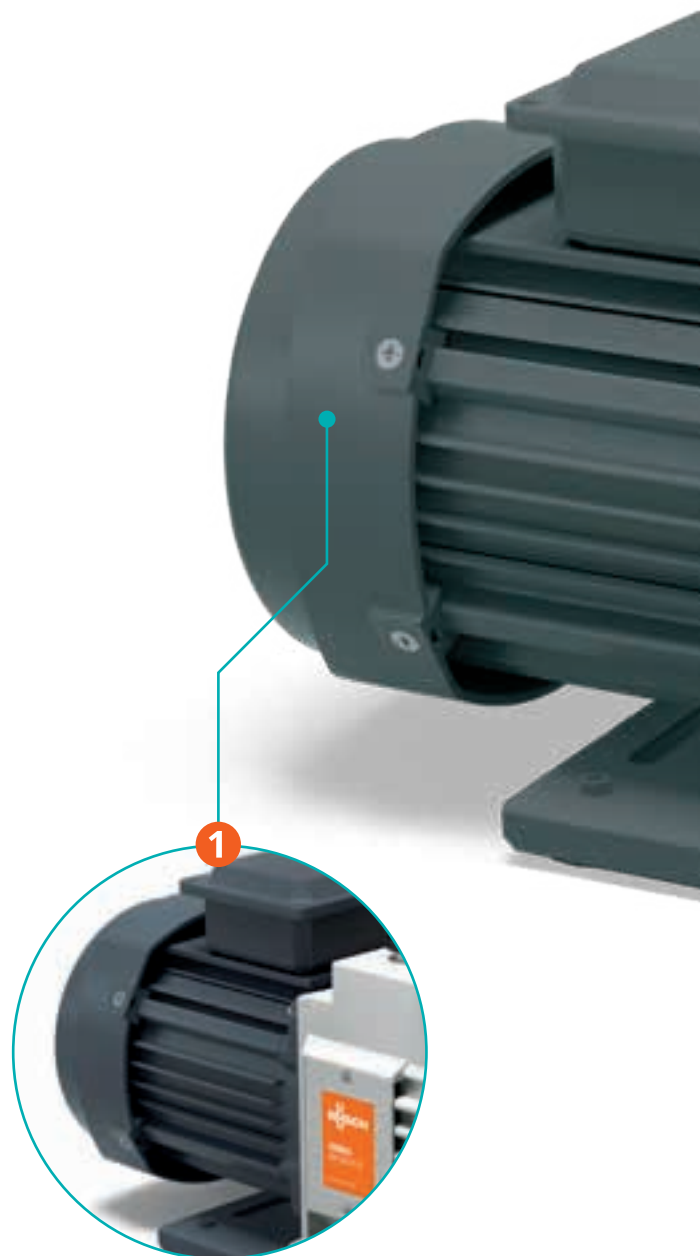
ZEBRA RH two-stage rotary vane vacuum pumps are the proven solution for industrial and analytical applications in the medium vacuum range. These vacuum pumps can be used for example for leak detection, heat treatment and plasma treatment.

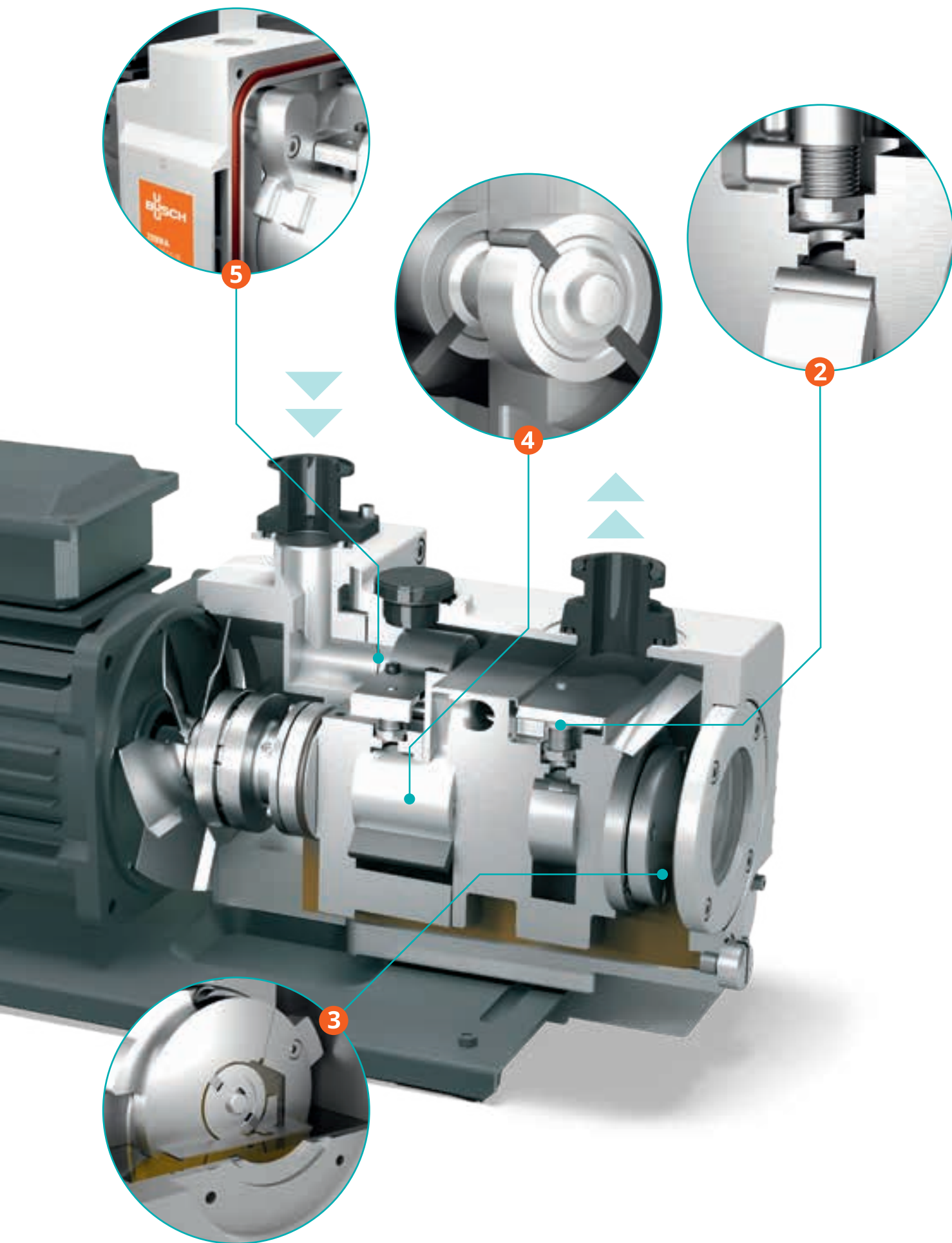
They feature a multi-frequency motor which can be used in every country of the world without any restrictions. The constantly high vacuum level in continuous operation is ensured by forced

oil lubrication, perfectly coordinated materials as well as state-of-the-art precision manufacturing.

ZEBRA RH vacuum pumps are equipped with a sophisticated oil circulation pump. It ensures outstanding running qualities and excellent chamber sealing. The non-return valve at the exhaust prevents oil from flowing back into the compression chamber after the vacuum pump is switched off.

- 1 Efficient**
Worldwide motor
 - Multi-frequency (50 / 60 Hz)
 - Multi-voltage
 - Single-phase and three-phase motors available depending on size
 - Optimum and consistent performance
- 2 Sophisticated non-return valve**
Oil-back prevention
 - Maintaining vacuum in the system
 - Avoiding oil back-flow in the vacuum process
- 3 Advanced oil circulation pump**
Forced oil lubrication
 - Optimum lubrication during pump-down
- 4 Excellent performance**
Two-stage rotary vane technology
 - High quality – long lifetime
 - Excellent pumping speed
 - Low ultimate pressure
 - Air-cooled
- 5 Improved sealing**
O-ring seals
 - Finest static seal
 - Protection against oil leaks





SAMOS

SIDE CHANNEL

BLOWERS

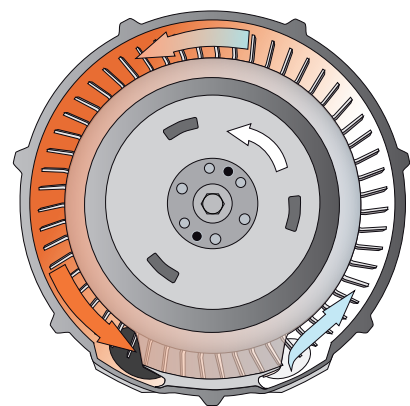
SAMOS side channel blowers are the ideal choice for all applications, where a pulsation-free volume flow is required. They can be used to generate vacuum and overpressure. These side channel blowers are available as single- and two-

stage versions. Their die-cast aluminum or cast-iron construction makes them very robust. SAMOS side channel blowers have a dynamically balanced impeller made of aluminum alloy. Thus, they generate very low vibrations and a low noise level.

The large variety of sizes gives you the opportunity to choose the perfect SAMOS for any application, both technically and economically.

Operating principle

SAMOS side channel blowers transfer kinetic energy of a rotating impeller to the pumped medium and convert it into pressure. The impeller is mounted directly on the shaft of the motor. Together with the specially shaped housing it forms the side channel. The pumped medium is suctioned in and compressed in the side channel. Two-stage SAMOS convey it to the second stage after one rotation. Here, it is compressed again. This leads to higher differential pressures.



Series types

- **SAMOS SB** the smooth-running vacuum and overpressure generator
- **SAMOS SI** the easy vacuum and overpressure generator

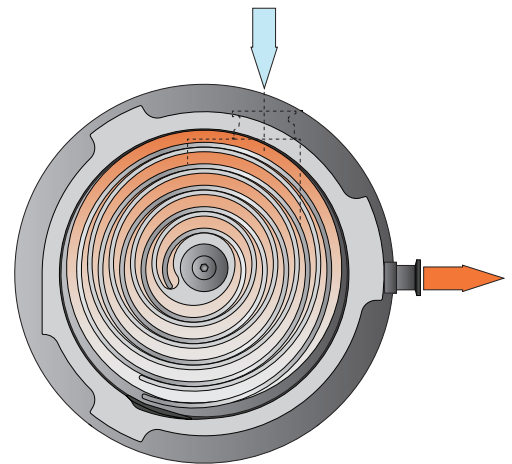
FOSSA SCROLL VACUUM PUMPS

FOSSA scroll vacuum pumps have been designed according to the latest single-sided scroll technology. They combine dry compression with a fully hermetic construction. With their low noise and vibration levels, these vacuum pumps

are the ideal solution for analytical and scientific applications in the medium vacuum range. They have proven themselves in this sector for years.

Operating principle

FOSSA scroll vacuum pumps consist of one fixed and one orbiting scroll. The orbiting scroll moves within the fixed scroll. As the orbiting scroll moves, voids occur at the inlet of the vacuum pump. Thus, the pumped medium is continuously conveyed from the outside through the spaces between the two scrolls. Finally, it is discharged at the exhaust in the center of the two scrolls.



Series types

- **FOSSA FO** hermetically sealed for analytical and scientific applications

RANGU DIFFUSION VACUUM PUMPS

RANGU are our series of diffusion vacuum pumps. They have been specially designed for industrial high vacuum applications. These include glass coating units, vacuum furnaces, metal coatings, physical vapor deposition (PVD), surface

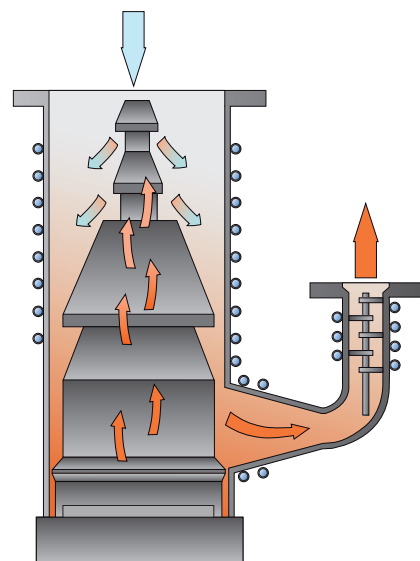
treatments or thin film coating. RANGU diffusion vacuum pumps work according to the proven vapor steam principle. And are characterized by their outstanding reliability even under harsh conditions.

Operating principle

Oil is used as a fluid and is heated up. The vapor from this oil rises into the nozzle system. It then passes through several vapor steam stages and out of this system under high pressure. The molecules in the process gas are caught by these vapor steams and carried downwards, towards the outlet of the backing pump. The oil vapor condenses on the inner surface of the water-cooled pump unit and is directed back to the bottom.

Series types

- **RANGU DF** diffusion vacuum pumps for high vacuum applications



PLUS INTELLIGENCE FOR INDUSTRY 4.0

The PLUS in the name makes the difference and indicates: PLUS units are more than just ordinary vacuum pumps. They bring proven Busch vacuum technology to the next level. Combining it with cutting-edge features for Industry 4.0. That gives you

easy control of the operating mode and parameter settings. Intelligent sensors let you collect and monitor all relevant data. Uploaded to the cloud, they are available around the globe. Save money with predictive maintenance, extended service

intervals, higher uptime and minimized energy consumption. Everything you need. In one unit.

Vacuum 4.0

With the PLUS technology you get proven Busch R5 oil-lubricated rotary vane or COBRA dry screw vacuum technology. With your PLUS of possibilities:

- fully connected
- advanced control functionalities

- PLUS Master Control option
- condition monitoring
- integration to any standard control system
- two operating modes: pressure control and constant speed
- large touch screen
- intuitive menu navigation



Series types

- **R5 PLUS** proven rotary vane vacuum technology for Industry 4.0
- **COBRA PLUS** proven screw vacuum technology for Industry 4.0



GABA

GAS ABATEMENT

SYSTEMS

The semiconductor industry uses gases that are toxic, flammable and even harmful for the environment, but also for humans. For example in the production of microchips. According to national legislation, these gases have to be abated.

This means that they are brought below the respective threshold limit value (TLV). Different gases require different treatment technologies, such as thermal, wet or even a combination of both technologies. The process exhaust gases can then

be released into the atmosphere. Without harming nature. For a greener world.

Operating principle

Flameless catalytic systems combine flameless catalytic thermal oxidation and wet treatment technology to abate flammable, water-soluble gases and NF_3 . Electric heat and wet treatment technology are combined in a thermal wet system to abate hydride-based gases, such as NH_3 , SiH_4 but also NF_3 . In the burn chamber, the chemistry of flammable and pyrophoric process gases is changed via thermal oxidation. In four individual reaction chambers of a wet scrubber system, the exhaust gas stream,

especially from epitaxy processes, is sprayed with water. Solid by-products are captured in water droplets and are dissolved.

Series types

- **GABA AFC** flameless catalytic gas abatement
- **GABA ATW** thermal-wet gas abatement
- **GABA AWE** wet scrubber gas abatement



TAPIR LEAK DETECTORS

Leaks in vacuum systems can cause considerable damage in sensitive industrial processes. Vacuum pumps may fail or require more frequent service. The output quality can suffer, and losses in energy efficiency can occur. As a result,

energy costs and overall operating costs increase drastically.

Our TAPIR leak detectors have been specially designed to avoid all these problems. They can locate and quantify

leaks precisely. Thus, improving the output quality, efficiency and reliability of the entire process. In almost every industry. From automotive to oil and gas.

Operating principle

TAPIR HL are the new leak detectors from Busch. All models have been specially designed for spray and sniffing leak detection in almost all applications. These leak detectors are characterized by their fast response time, short start-up times and accurate measurement results. TAPIR HL are available in two different versions. In a small, ultra-lightweight portable version with an integrated dry diaphragm vacuum pump. It can be operated at any orientation making it the ideal choice for sniffing around

large equipment and pipelines. The multipurpose version includes a high capacity oil-lubricated rotary vane vacuum pump for extremely fast pump-down times.

Series types

- **TAPIR HL** the powerful detection devices for all applications



WATCH
THE VIDEO

VACTEST MEASUREMENT EQUIPMENT

Busch VACTEST is the new shape of vacuum measurement equipment. Designed to combine the latest advances in vacuum metrology with exceptional manufacturing quality, it provides an innovative and comprehensive portfolio of active vacuum

gauges and controllers. Robust construction, reliability and measurement accuracy are key features of these devices, making them the ideal choice to monitor and control your vacuum process, whether it is in industry or research. Several state-of-

the-art technologies allow a wide measurement range from 1600 to $5 \cdot 10^{-10}$ mbar covering all vacuum levels with accuracy.

Operating principle

VACTEST Digital Transmitters are high-end gauges coming with a full range of options as standard. Their smart micro-controller architecture allows an optimal sensor control as well as many setting possibilities making them the ideal solution for many applications.

VACTEST Analog Transmitters feature a compact, rugged and functional design. Thanks to their excellent measurement accuracy and stability, these transmitters are ideal for centralized monitoring and control systems.

VACTEST Mobile Gauges are the perfect handheld solution for service or vacuum process quality assurance. These battery-operated gauges offer various functions such as an USB interface for data export and visualization, a data logger and can even be used under vacuum.

Series types

- **VACTEST** the best choice to monitor and control your vacuum process



WATCH
THE VIDEO



VACUUM SYSTEMS TAILORED TO YOUR NEEDS

Busch is the number 1 worldwide for innovative vacuum systems in all areas of industry. Every new project incorporates more than 50 years of experience in the design and construction of tailor-made systems. Experts from different fields work

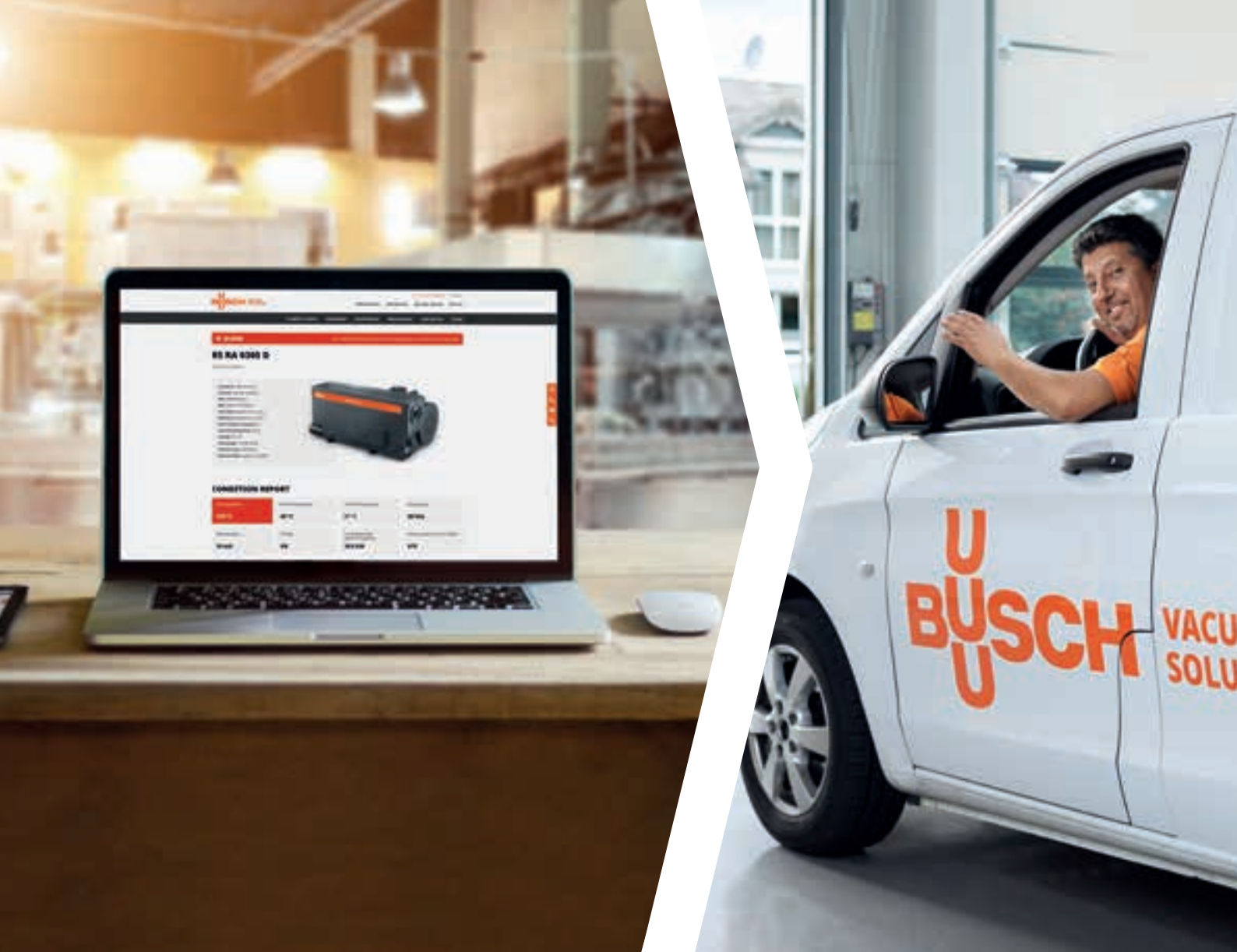
together to provide each customer with the best possible solution. All systems are manufactured in dedicated Busch systems building centers located around the world. We provide turnkey systems, including installation of pipework and

control units. Start-up service and training for the operating team are also on offer.

Pre-configured or custom-built

Selecting the right vacuum supply for your production has a significant influence on the operational safety and economic efficiency of the whole process. Busch ensures perfect vacuum generation. From out of the box systems to tailored large-scale central systems. Standard systems can be a cost-effective solution for common processes. A combination of vacuum pumps, vacuum boosters and control, designed for a specific application. For more complex processes, our systems building departments offer tailor-made solutions. Supplying individual production lines with vacuum, or even an entire factory. No matter what you choose. You will get the perfect solution for your process from Busch.





OTTO DIGITAL SERVICES

24/7 condition monitoring of your vacuum pump. Get notified about any issue before it becomes a problem. Anywhere, anytime. Your insurance for higher uptime.

HOW DOES IT WORK? *

- 1** The OTTO conversion kit is installed on your vacuum pump.
- 2** Your data is interpreted in the Busch cloud.
- 3** The analysis results are displayed on the dashboard and in the app.
- 4** You receive a notification when an issue arises.
- 5** A Busch service technician will come to you, before a failure occurs.

* OTTO Standard together with standard service contract.



WHAT'S IN IT FOR YOU?

+ PEACE OF MIND

We take care of your vacuum pump's health.
You can concentrate on your core business.

+ HIGHER UPTIME

Less breakdowns, more productivity.

+ EFFICIENCY

Optimized maintenance costs and total cost of ownership.

CHOOSE YOUR PERFECT OTTO

OTTO comes in three different packages tailored to your needs. Whether you want to take care of the monitoring yourself or want Busch to take the lead. Let the right OTTO become a team member and improve your service operations.

- **OTTO Starter** The self-service solution
- **OTTO Standard** The comfort solution
- **OTTO Advanced** The all-inclusive solution



All OTTO packages in comparison
www.buschvacuum.com/otto



DISCOVER THE BUSCH
VACUUM APP



SERVICE AROUND THE GLOBE. AT ANY TIME.

Optimize the performance, efficiency and availability of your vacuum and overpressure equipment.

We have service teams with their own service centers or mobile service units in more than 40 countries worldwide. Giving you access to the industry's most extensive global service network. Our service technicians receive regular training on new systems and applications. And can therefore service all vacuum and overpressure solutions on the market. From Busch and other brands. Either on-site or at one of our service centers.

Various production plants in different time zones, manufacturing in multiple shifts demand the security of knowing that you can reach a service technician around the clock. We at Busch guarantee a 24-hour availability. Seven days a week. 365 days a year. If service needs to be synchronized with production or general maintenance schedules we can offer the appropriate service package at the right time. Whatever the problem, you can always rely on us.



- Busch companies and employees
- Local representatives and distributors
- Busch production sites

SERVICE CONTRACTS

Extensive service agreements. For highest operational reliability.

Maximum uptime, minimum concerns. With our service agreements, you can concentrate on your core business, knowing that your vacuum supply is in good hands with us. We take full responsibility for the trouble-free operation of your systems. Including all necessary maintenance work. For a fixed rate, you ensure your equipment is available when you need it. All necessary genuine spare parts are included, of course.



Discover our services

Demand the service you need. Fast, reliable and anywhere in the world.

www.buschvacuum.com/services



SEMICONDUCTOR SERVICES

FULL SUB FAB MANAGEMENT

Holistic on-site service. For a safe and stable production.

Busch offers full sub fab management concepts, or any on-site service solution tailored to your specific requirements. To support you the way you need it. All our on-site service teams are certified according to ISO9001:2016, ISO14001:2016, and ISO45001:2018 standards. More than 100 employees are permanently based at customer sites. Providing leading edge on-site service and fast support. Wherever you are.

ARPQP

Our remanufacturing service. For the semicon and flat panel market.

Only Busch remanufactures vacuum pumps to the IATF 16949:2016 (International Automotive Task Force) automotive quality standard. With our unique vacuum pump remanufacturing service ARPQP (Advanced Remanufacture Product Quality Planning), we introduce the automotive world class standards of APQP in the world of remanufacturing vacuum pumps. This ensures the same excellent quality, pump after pump after pump.



GENUINE SPARE PARTS AND ACCESSORIES

To complete our product portfolio, we offer a wide range of genuine spare parts and accessories for your vacuum pumps, blowers and compressors.

From air and oil filters to gauges and valves as well as high quality lubricants, oils and service kits that are perfectly tailored to your Busch solution. We are able to supply genuine accessories and spare parts for almost every possible application requirement.

Anywhere in the world. Take advantage of our expertise. Preserve your warranty. We will support you in selecting the right part.

OPTIMUM PERFORMANCE AND RELIABILITY

Quality matters, especially in terms of accessories and spare parts. Busch genuine accessories are individually adapted to match each particular product. Like Busch genuine spare parts they are perfectly tailored to your vacuum pumps, blowers, and compressors ensuring optimum performance, operational security and warranty. Our convenient service kits, for example, contain all parts you need to minimize maintenance time and reduce downtime.

Busch is your one-stop supplier. Even after purchase. Our well-organized spare parts depot always provides you with the Busch genuine spare parts you are looking for. If necessary, we also supply third party original spare parts. Moreover, we stock vacuum pump oils and other maintenance tools that are specially designed for our products. All parts and consumables ordered are usually ready for dispatch within a day, and can be delivered anywhere in the world.



MORE INFO
ONLINE



Argentina

info@busch.com.ar

Australia

sales@busch.com.au

Austria

busch@busch.at

Bangladesh

sales@busch.com.bd

Belgium

info@busch.be

Bolivia

info@busch.cl

Brazil

ventas@buschdobrasil.com.br

Canada

info@busch.ca

Chile

info@busch.cl

China

info@busch-china.com

Colombia

info@buschvacuum.co

Czech Republic

info@buschvacuum.cz

Denmark

info@busch.dk

Estonia

info@busch.ee

Finland

info@busch.fi

France

busch@busch.fr

Germany

info@busch.de

Hungary

busch@buschvacuum.hu

India

sales@buschindia.com

Ireland

sales@busch.ie

Israel

service_sales@busch.co.il

Italy

info@busch.it

Japan

info@busch.co.jp

Korea

busch@busch.co.kr

Malaysia

busch@busch.com.my

Mexico

info@busch.com.mx

Netherlands

info@busch.nl

New Zealand

sales@busch.co.nz

Norway

post@busch.no

Peru

info@busch.com.pe

Poland

busch@busch.com.pl

Portugal

busch@busch.pt

Romania

office@buschvacuum.ro

Russia

info@busch.ru

Singapore

sales@busch.com.sg

South Africa

info@busch.co.za

Spain

busch@buschiberica.es

Sweden

info@busch.se

Switzerland

info@buschag.ch

Taiwan

info@busch.com.tw

Thailand

info@busch.co.th

Turkey

info@vakutek.com.tr

United Arab Emirates

sales@busch.ae

United Kingdom

sales@buschgvt.co.uk

USA

info@buschusa.com

www.buschvacuum.com

Technical data subject to change. Created in Germany. RCLen 01/2023 V5

 **Carbon neutral**
Print product
ClimatePartner.com/17551-2212-1001

