

**Busch Technology**  
**Vacuum and Pressure Solutions**

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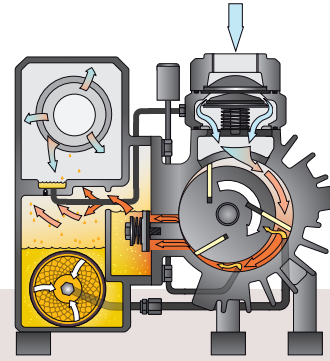
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# R 5

## › Oil-Lubricated Rotary Vane Vacuum Pumps

*Pumping Speed 60 Hz: 2.8 - 1,030 ACFM*

*Ultimate Pressure: 0.075 - 15 Torr*



R 5 oil-lubricated rotary vane vacuum pumps have long been the industry standard due to their robustness and operational reliability. Over 2.5 million of these vacuum pumps are used worldwide every day in tough industrial applications.

### Safe and cost-effective

Rotary vane technology has been continuously developed and optimized by Busch for decades, with the emphasis on operational reliability and economic efficiency. R 5 rotary vane vacuum pumps are known throughout the industry for their modern and energy-efficient vacuum generation — whether being used intermittently or around the clock, you can rely on the R 5.

### Proven reliable

These compact R 5 vacuum pumps owe their robustness to proven rotary vane technology with recirculating oil lubrication. This design provides a constant high vacuum level which can handle the toughest operating conditions. When fitted with an optional gas ballast valve, vapors can be pumped without condensing.



**R 5 — proven and reliable.  
Over 2.5 million pumps in  
operation worldwide.**

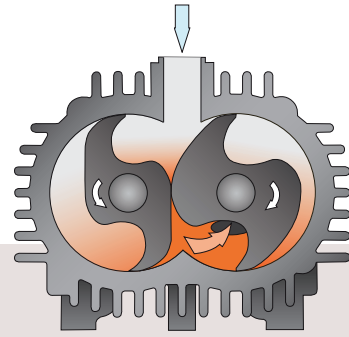
# Mink

## › Dry Claw Vacuum Pumps and Compressors

*Pumping Speed 60 Hz: 30-677 ACFM*

*Pressure: 31 psig*

*Ultimate Pressure: 37.5 - 150 Torr*



Mink dry claw vacuum pumps and compressors have been developed for use in industrial applications where constant vacuum, high suction capacity and totally oil-free compression are essential. Mink dry claw vacuum pumps and compressors are non-contacting: neither oil or any other operating fluids are required during the compression process.

### Highly economical

The rotary claw operating principle of Mink dry claw vacuum pumps and compressors reduce their energy consumption considerably in comparison with conventional vacuum pumps, lowering energy costs. Due to their near maintenance-free operation, a decrease in operating costs adds to the savings. No maintenance downtime occurs and no wearing parts or operating fluids need to be changed — only a gear box oil change is recommended every 20,000 hours. When compared to conventional vacuum pump solutions, Mink claw vacuum pumps can save up to 25% on energy and operating costs.

The claw technology is also used for Mink compressors. They provide oil-free low pressure up to 31 psig and volume flows up to 325 ACFM.

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**Mink — efficient and reliable vacuum and compressed air generation.**

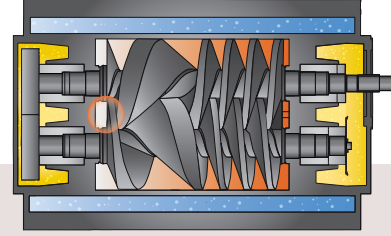


# COBRA Industrial

## › Dry Screw Vacuum Pumps

*Pumping Speed 60 Hz: 50 - 1,471 ACFM*

*Ultimate Pressure: 0.0075 - 0.75 Torr*



**COBRA Industrial** dry screw vacuum pumps are highly efficient in many industrial applications, including process applications. These models represent many years of experience in dry vacuum technology and offer key design benefits.

### Reliable and robust

The variable pitch and free gas outlet greatly improve the pump's ability to handle liquid and dust carryover. The unique temperature distribution offers resistance to corrosion. The optimized efficiency reduces the thermal load, thus increasing pump service life.

### Easy to service

A simple, robust design and the ability to handle the vast majority of process gases ensures long service intervals and minimal maintenance downtime.

### Application-oriented

COBRA dry screw vacuum pumps can accommodate a number of applications due to the different models and sizes offered. Both water-cooled and radiator-cooled versions are available.

**COBRA Industrial — the robust and reliable dry solution for difficult applications.**



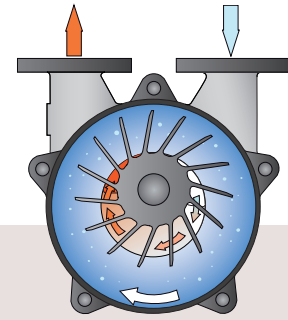
# Dolphin

## › Liquid Ring Vacuum Pumps and Compressors

*Pumping Speed 60 Hz: 18 - 6,415 ACFM*

*Pressure: 30 psig*

*Ultimate Pressure: 25 - 100 Torr*



**Dolphin** liquid ring vacuum pumps are available as single- or two-stage pumps in both close-coupled and base-plated versions. The proven compression principle allows them to be adapted to applications in all industrial sectors. Ideally suited for wet or corrosive applications, our liquid ring vacuum pumps easily handle critical processes such as evacuating saturated gases and vapors.

### Application-oriented

Dolphin liquid ring vacuum pumps are designed for continuous operation. The number of different designs, sizes, accessories and material options allow them to be optimized for many processes. Dolphin liquid ring technology can also be used for pressure generation up to 30 psig.

### Reliable

Dolphin vacuum pumps are robustly designed with application-oriented materials of construction and operate with only one moving part. The modular design of the base-plated version allows various assemblies to suit many different processes.

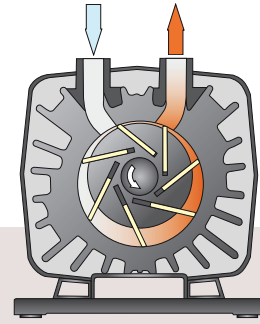
**Dolphin — robust and compact.  
Ideal for difficult applications.**



# Seco

## › Dry Running Rotary Vane Vacuum Pumps and Compressors

*Pumping Speed 60 Hz: 2 - 28.3 ACFM  
Pressure: 8.7 - 15 psig  
Ultimate Pressure: 90 - 112.5 Torr*



Seco rotary vane vacuum pumps operate without oil using self-lubricating carbon vanes. They are ideally suited for applications requiring an oil-free operation. A compressor version of the pump, the Seco SD, is also available.

### **Economical and environmentally-friendly**

Seco rotary vane vacuum pumps stand out due to their low energy consumption. They are quiet and environmentally-friendly as a result of oil-free compression.

### **Compact design**

The motor is flange-mounted directly to the pump, making it ideal for installation inside machinery.

### **Low maintenance**

Robust design, lifetime-lubricated bearings and a surface-cooled motor provide a long service life for the pump.

The rotary vane technology of Seco is also used for compressors. Seco SD compressors provide oil-free pressure generation up to 15 psig (optional).

**Seco — the dry solution.  
Compact and powerful.**

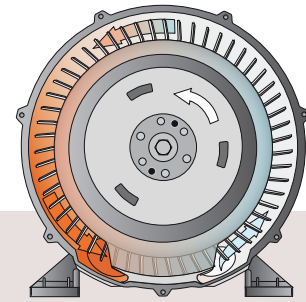




# Samos

## › Side-Channel Blowers

*Pumping Speed 60 Hz: 18 - 6,415 ACFM*  
*Differential Pressure (Vacuum):  $\Delta p$  max. 2.3 - 13.1" HgV*  
*Differential Pressure (Pressure):  $\Delta p$  max. 0.9 - 6.5 psig*



**Samos** side-channel blowers are available in single- and two-stage versions, and are generally suitable for vacuum and pressure operation. They are ideally suited for applications where a pulsation-free flow is required. Units can be mounted in a horizontal or vertical configuration. Die cast aluminum makes this a very robustly constructed product.

### Maintenance free

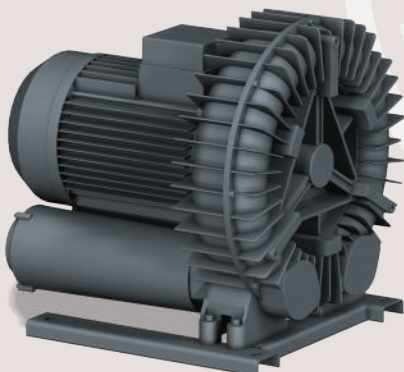
Sealed-for-life bearings, a fan-cooled motor and a non-contacting impeller all ensure maintenance-free operation.

### Environmentally-safe

Oil-free compression and an internal silencer allow the Samos side-channel blower to run very quietly with low power consumption.

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**Samos — the economic solution for pressure and vacuum operation.**

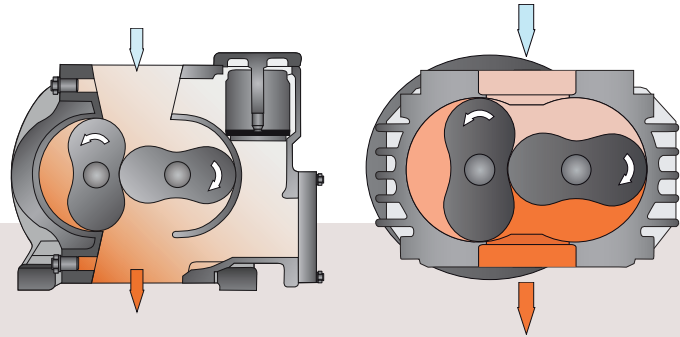




# Panda/Puma

## › Rotary Lobe Vacuum Boosters

*Pumping Speed 60 Hz: 165 - 6,832 ACFM  
Differential Pressure:  $\Delta p$  max. 25 - 60 Torr*



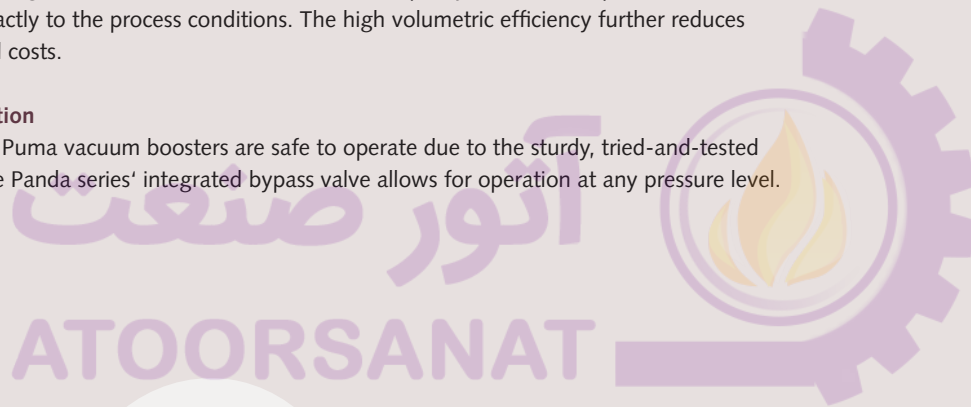
**Panda and Puma** rotary lobe vacuum boosters are dry-running vacuum pumps that are used together with backing pumps in all rough and high vacuum applications where large suction volumes are required. Rotary lobe vacuum boosters have a non-contacting design and operate without sealing fluids such as oil or water in the pumping chamber. Panda vacuum boosters are equipped with a bypass valve.

### Economical

Due to the large number of available sizes, suction capacity and ultimate pressure can be tailored exactly to the process conditions. The high volumetric efficiency further reduces operational costs.

### Safe operation

Panda and Puma vacuum boosters are safe to operate due to the sturdy, tried-and-tested design. The Panda series' integrated bypass valve allows for operation at any pressure level.



**Panda/Puma — the economical performance optimizers.**

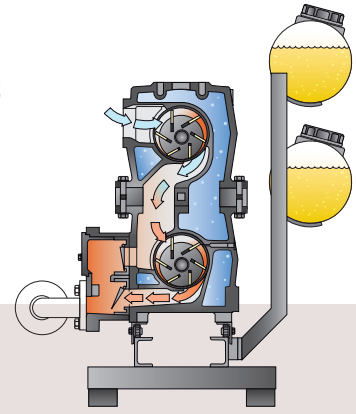


# Huckepack

## › Once-Through Oil-Lubricated Rotary Vane Vacuum Pumps

*Pumping Speed 60 Hz: 112 - 448 ACFM*

*Ultimate Pressure: 0.375 Torr*



**Huckepack** once-through oil-lubricated rotary vane vacuum pumps are oil-lubricated with double-staged compression. These pumps are perfectly suited to handle solvents and condensable gases due to their high water vapor tolerance. They are ideal for harsh applications.

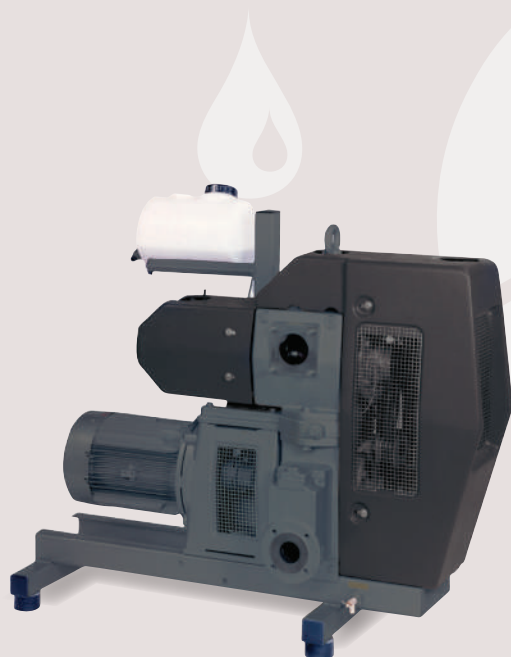
### Application-orientated

Huckepack rotary vane vacuum pumps can be adapted to suit any process by choosing between radiator cooling (air-cooled heat exchangers) or circuit cooling. Oil lubrication allows corrosive process gases and vapors to be pumped without problems.

### Easy to service

Huckepack rotary vane vacuum pumps are designed in modular form and the stages can be exchanged quickly minimizing downtime.

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**Huckepack — the robust and proven solution for difficult applications.**

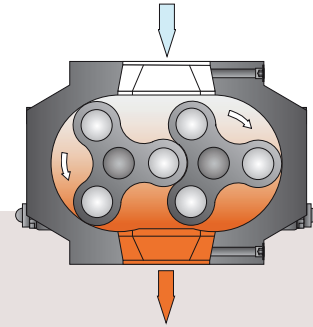
# Tyr

## › Rotary Lobe Blowers

*Pumping Speed 60 Hz: 88 - 2,577 ACFM*

*Ultimate Pressure: 14.75" HgV*

*Pressure: 15 psig*



Tyr rotary lobe blowers are high-performance generators for vacuum and low pressure, which set new benchmarks in terms of performance, compactness and noise reduction.

### Operational reliability

Tyr blowers are extremely reliable due to their robust design and high level of precision during manufacturing. Piston ring seals ensure a long, fault-free service life with automatic belt tensioning. Busch blowers are extremely energy-efficient due to three factors: the energy-saving motor, the option to choose the motor size depending on requirements, and the highly efficient blower stage.

### Application-orientated

Tyr rotary lobe blowers are in vacuum and low pressure versions. The six different sizes can be individually adapted to suit any application by selecting the drive and varying the speed.

Depending on the version, the innovative noise insulation reduces noise by 4 to 5 dB(A) compared to similar blowers. The acoustic cabinet (accessory) enables the sound level to be reduced even further by 15 to 20 dB(A).

### Easy to service

Due to the non-contacting operating principle, operating fluid is not required in the compression chamber. The operating pressure, filter and gear oil level can be monitored easily via displays on the housing/acoustic cabinet. Belt tensioning between the drive and the blower stage is performed automatically, eliminating the need for inconvenient checks and adjustment of v-belts.

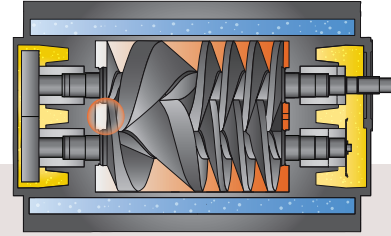


**Tyr — powerful and quiet vacuum and pressure generator.**

# COBRA Semicon

## › Dry Screw Vacuum Pumps

Pumping Speed 60 Hz: 59 - 4,241 ACFM  
 Ultimate Pressure:  $7.5 \cdot 10^{-4}$  -  $2 \cdot 10^{-3}$  Torr



**COBRA Semicon** dry screw vacuum pumps consist of the COBRA DS, COBRA BA and COBRA BC series. They offer state-of-the-art harsh duty process and high capacity solutions for the most demanding solar, flat panel, semiconductor or coating applications. These vacuum pumps have best-in-class pumping speed combined with superior hydrogen throughput and excellent powder handling capabilities resulting from their unique screw pump design.

### Efficient

Equipped with high-efficiency motors and state-of-the-art idle mode capabilities, the COBRA series offers excellent energy savings potential.

### Easy to service

The compact design, with its separate booster and screw pump frames, allows for easy installation and maintenance.

### Optimal cost-of-ownership

Due to their optimized space-saving design and energy savings potential, overall cost-of-ownership for these COBRA series vacuum pumps is low.

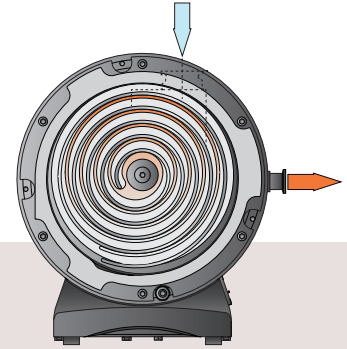
**COBRA Semicon — the next level of high capacity harsh duty vacuum pumps.**



# Fossa

## › Scroll Vacuum Pumps

Pumping Speed 60 Hz: 10.6 - 24.7 ACFM  
Ultimate Pressure:  $1.9 \cdot 10^{-2}$  -  $7.5 \cdot 10^{-3}$  Torr



Fossa scroll vacuum pumps are hermetically-sealed, 100% oil-free and ideal for pumping air or conveying gases without leakage or ambient air contamination.

### Application-oriented

Featuring consistently high vacuum levels and very low sound and vibration levels, these pumps are ideal for today's analytical and scientific applications. Due to its compact design, the Fossa scroll vacuum pump requires no special mounting. This allows for quick and easy setup and provides a high degree of pump mobility.

### Economical

The low sound and vibration levels make the Fossa vacuum pumps suitable for use in areas such as laboratories. Without shaft seals and with lifetime-lubricated bearings, Fossa scroll vacuum pumps require very little maintenance. Their high level of efficiency ensures maximum suction capacity with low energy consumption. The standard gas-ballast valve enables pumping of vapors.



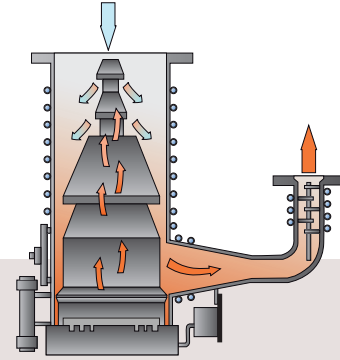
**Fossa — hermetically sealed.  
Quiet and low vibration levels.**

# Rangu

## > Diffusion Vacuum Pumps

*Pumping Speed: 10,000 - 28,000 l/s*

*Ultimate Pressure:  $< 1 \cdot 10^{-7}$  hPa (mbar)*



**Rangu** vacuum pumps have an innovative multi-stage jet design resulting in the utmost stability of pumping operation. The Rangu vacuum pump series is used in a wide variety of industries where high pumping speeds or gas throughputs are required.

### Multi-stage jet design

The Rangu's innovative multi-stage jet design provides stable vacuum performance even under difficult flow conditions. It also provides industry-leading performance in reducing the potential for oil backstreaming to prevent process contamination.

### Reliable performance

All Rangu diffusion vacuum pumps benefit from a robust, long-life heater design. This ensures stable and reliable performance under widely varying operating conditions. They have no moving parts, and are therefore virtually maintenance-free. They work silently and without vibration.

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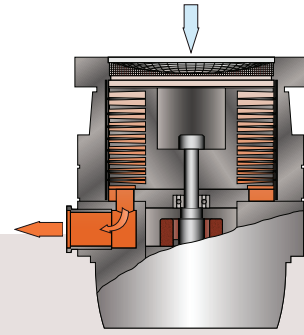
**Rangu — stable and reliable for demanding processes.**

# Turbo

## › Turbomolecular Vacuum Pumps

*Pumping Speed: 1,080 - 2,200 l/s*

*Ultimate Pressure:  $> 1 \cdot 10^{-10}$  -  $1 \cdot 10^{-8}$  hPa (mbar)*



**Turbo** vacuum pumps are designed for use in industrial high vacuum applications with a need for robust and reliable production-friendly technology. Busch turbomolecular technology maximizes performance, tolerates varying operating conditions and simplifies maintenance.

### Innovative design

Turbo vacuum pumps have a ceramic bearing design that is oil free, contamination free and requires no preventative maintenance. The bearing design also allows the pump to be mounted in any position and maintain its vacuum performance. The drive and control unit is fully integrated into the pump housing, and features flush connecting gas seals.

### Efficient and compact

The Turbo compact rotor design has the highest performance and throughput combined with a small footprint. The integrated molecular drag technology allows higher foreline pressures resulting in high system efficiency.



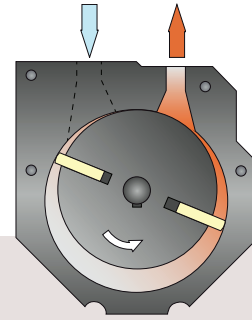
**Turbo — for maximum power in industrial high vacuum processes.**



# Zebra

## › Two-Stage Oil-Lubricated Rotary Vane Vacuum Pumps

Pumping Speed 60 Hz: 3.5 - 108 m<sup>3</sup>/h  
 Ultimate Pressure: 6.7 · 10<sup>-3</sup> hPa (mbar)



**Zebra** oil-lubricated rotary vane vacuum pumps offer reliability and two-stage operation for applications in the medium vacuum range. This proven technology is also available for higher vacuum levels.

### Reliable and cost-effective

Rotary vane technology has been continuously developed and optimized by Busch for decades, with the emphasis on operational reliability and economic efficiency. High pumping speeds and energy-efficient operation are the positive result of this development. Aside from scheduled oil changes, additional maintenance is not required.

### Application-oriented

Zebra rotary vane vacuum pumps are distinguished by a high pumping speed in the low-pressure ranges resulting in quick pump-down times. Model specific vanes are designed to provide long uptimes and the built-in oil shield ensures excellent oil separation for clean exhaust air.



**Zebra — operational reliability  
 and economic efficiency for  
 demanding applications.**

# Vacuum Systems

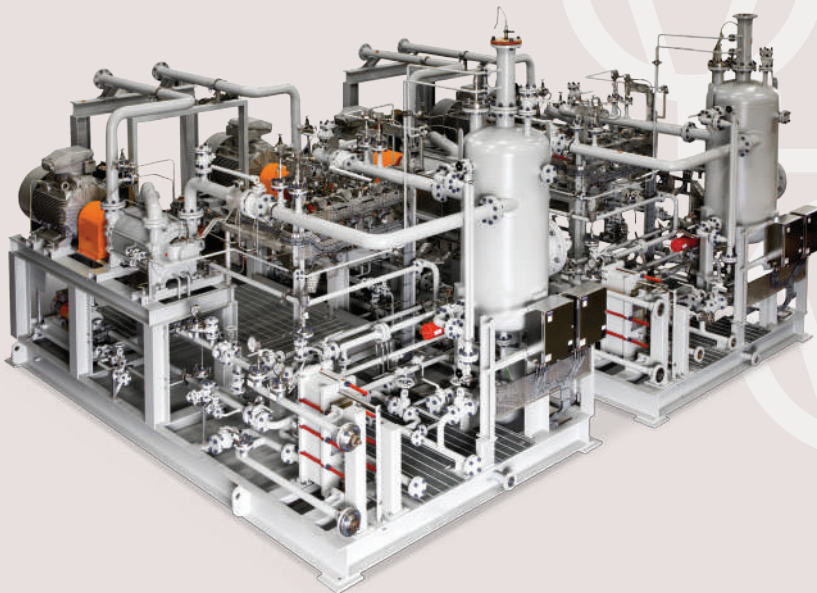
› Tailored to Your Needs

## Innovations for tomorrow

With 50 years of experience and the knowledge from thousands of installations in various applications, we are able to provide our customers with the best vacuum solution that suits their requirements. Close collaboration between the design teams throughout the global Busch network guarantees that your solution will be designed and built according to the latest technical standards. Take advantage of our skill and experience to significantly boost your performance.

## Planning and coordination

Busch systems are built by assigned teams to ensure that the design and implementation happens as quickly as possible, while meeting customer needs. Busch project management is a key part of our systems capability in planning, coordinating and controlling the diverse activities of our engineering and manufacturing processes. Every vacuum system we build has a dedicated project manager who works to ensure that the system concept, design and performance fit the purpose.



# Genuine Spare Parts

➤ For Optimal Performance



**Quality matters**, especially when it comes to spare parts. Only Busch genuine spare parts provide the optimal performance and operation of your vacuum pumps, low-pressure compressors and blowers.

We supply Busch genuine spare parts, as well as all other needed third-party original spare parts, usually available for shipment in just one day. We also stock vacuum oils and other maintenance materials that are especially designed for our products. Busch Service provides a worldwide supply of spare parts when you need them.

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# Service

- › Optimize the Performance of Your Vacuum Pumps, Systems, Compressors and Blowers

## Professional, Fast, Reliable

Vacuum pumps and systems, as well as low pressure compressors and blowers, are important components in many production processes. That's why availability, reliability and efficient operation are so important. Busch designs products to meet these needs and further ensures they are met with our wide range of services Customized service and maintenance plans provide reliable and efficient operation based on your specific production process. Busch offers the following services to meet your needs:

- › Field Service
- › Active Service Contract
- › Service Exchange
- › Vacuum Consultancy
- › Remanufacture of Vacuum Pumps and Blowers
- › Training
- › Genuine Spare Parts



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