

All Over the World in Industry



BUSCH

Vacuum Pumps and Systems

Our Mission



One Team Around the World



Providing leading-edge vacuum and overpressure technology worldwide

- We seek prosperity and growth by creating the highest value for our customers
- We employ the best people and challenge them
- We constantly evaluate our activities in order to maintain the highest standards

MG CB DEen S2 04/2017 6.7 16.9 ©Busch Group

Built on Reliability

Sustainable Business Development Since 1963

Busch – a family business

- › Long-term customer relationships
- › Committed to customer satisfaction
- › Management continuity
- › Long-term business perspective
- › Long-term employee commitment



MG CB DEen S3 04/2017 6.7 16.9 ©Busch Group

Global and Always Near You

Benefit from Our Global Network

- › Headquarters Maulburg, Germany
- › 3000 employees worldwide
- › 6 Busch production sites
- › 61 Busch companies located in 43 countries



MG CB DEen S4 04/2017 6.7 16.9 ©Busch Group

Busch Headquarters



Maulburg, Germany

> Busch SE

Coordination of the global Busch companies

> Busch Dienste GmbH

Provision of global services

> Busch Produktions GmbH

Production, research and development

> Dr.-Ing. K. Busch GmbH

German sales organization



MG CB DE/en SS 04/2017 6.7 16.9 ©Busch Group

Always Near You

Benefit from Our Customer Proximity

Dr.-Ing. K. Busch GmbH

- › Vacuum consulting
- › Component and system sales
- › Systems building
- › Maintenance and commissioning



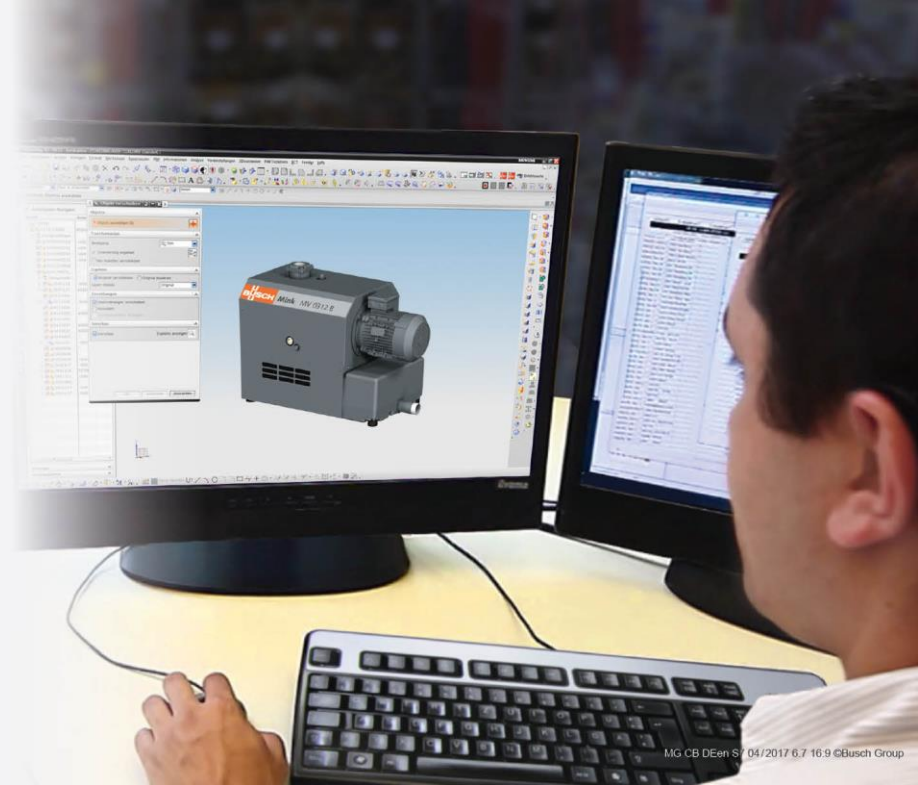
MIS-CP-DE-en-56-04-2017-0-7-10-9 © Busch Group

Dedicated to Quality

Benefit from Vacuum and Overpressure Experience

For your needs, worldwide

- › More than 100 development engineers
- › More than 500 vacuum and overpressure project engineers
- › From tailored development to standardized industry solutions



MG CB DEen S 04/2017 6,7 16.9 ©Busch Group

All Over the World in Industry

Benefit from Broad Experience



Chemical



Ceramics and Glass



Electrical Engineering



Electronics



Environmental



Lifting and Handling



Medical and Hospitals



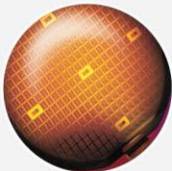
Metallurgy



Oil and Gas



Packaging



Semiconductor
and Flat Panel



Solar



Vacuum Packaging



Wood



Waste Management

Others:

Analytics and Laboratory,
Automotive and Transport,
Construction and Mining,
Food and Beverage,
Machine Building,
Pharmaceuticals,
Plastics and Rubber,
Pneumatic Conveying,
Printing,
Surface Technology,
Wind Energy, ...

... and many more!

Widest Range of Vacuum Technologies

Benefit from Options



Oil-Lubricated Rotary Vane Vacuum Pumps

- > R 5
- > Huckepack
- > Zebra



Dry Claw Vacuum Pumps and Compressors

- > Mink



Dry Screw Vacuum Pumps

- > COBRA Industry
- > COBRA Semicon



Vacuum Boosters

- > Panda / Puma



Dry-Running Rotary Vane Vacuum Pumps and Compressors

- > Seco



Rotary Lobe Blowers

- > Tyr



Liquid Ring Vacuum Pumps and Compressors

- > Dolphin



Side Channel Blowers

- > Samos



Scroll Vacuum Pumps

- > Fossa



Turbomolecular Vacuum Pumps

- > Turbo

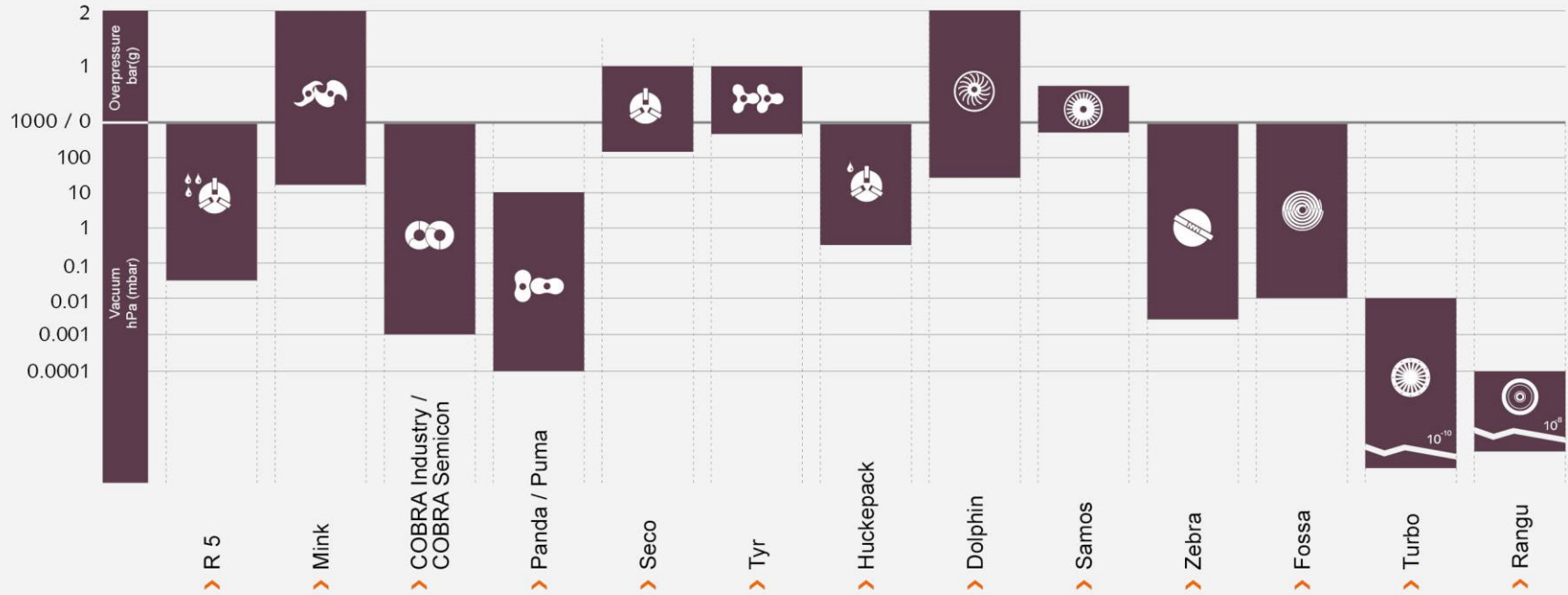


Diffusion Vacuum Pumps

- > Rangu

Flexibility for Any Application

Benefit from a Large Range of Solutions



MG CB DEen S10 04/2017 6.7 16.9 ©Busch Group

Meeting All Your Needs

Vacuum Pumps, Blowers and Compressors

R5

- › Oil-Lubricated Rotary Vane Vacuum Pumps

Ultimate pressure: 0.05–20 hPa (mbar)

Nominal pumping speed 50 Hz: 4–1,600 m³/h

Nominal pumping speed 60 Hz: 4.8–1,800 m³/h



Mink

- › Dry Claw Vacuum Pumps and Compressors

Ultimate pressure: 20–200 hPa (mbar)

Overpressure: 2 bar(g)

Nominal pumping speed 50 Hz: 40–950 m³/h

Nominal pumping speed 60 Hz: 40–1,150 m³/h



COBRA Industry

- › Dry Screw Vacuum Pumps

Ultimate pressure: 0.01–1 hPa (mbar)

Nominal pumping speed 50 Hz: 110–2,000 m³/h

Nominal pumping speed 60 Hz: 130–2,500 m³/h



COBRA Semicon

- › Dry Screw Vacuum Pumps

Ultimate pressure: 0.001–0.03 hPa (mbar)

Nominal pumping speed 50 Hz: 70–7,385 m³/h

Nominal pumping speed 60 Hz: 85–7,385 m³/h



Meeting All Your Needs

Vacuum Pumps, Blowers and Compressors

Panda / Puma

> Vacuum Boosters

Pressure differential: Δp max. 100 hPa (mbar)
Nominal pumping speed 50 Hz: 250–9,535 m³/h
Nominal pumping speed 60 Hz: 280–11,600 m³/h



Tyr

> Rotary Lobe Blowers

Pressure differential: Δp max.
Vacuum: -500 hPa (mbar)
Overpressure: +1,000 hPa (mbar)
Volume flow: 150–4,380 m³/h



Seco

> Dry-Running Rotary Vane Vacuum Pumps and Compressors

Ultimate pressure: 100–150 hPa (mbar)
Overpressure: 0.6–1.5 bar(g)
Nominal pumping speed 50 Hz: 3–140 m³/h
Nominal pumping speed 60 Hz: 3.6–168 m³/h



Huckepack

> Once-Through Oil-Lubricated Rotary Vane Vacuum Pumps

Ultimate pressure: 0.5 hPa (mbar)
Nominal pumping speed 50 Hz: 160–630 m³/h
Nominal pumping speed 60 Hz: 190–760 m³/h



Meeting All Your Needs

Vacuum Pumps, Blowers and Compressors

Dolphin

- › Liquid Ring Vacuum Pumps and Compressors

Ultimate pressure: 33–130 hPa (mbar)

Overpressure: 2 bar(g)

Nominal pumping speed 50 Hz: 25–10,900 m³/h

Nominal pumping speed 60 Hz: 31–10,900 m³/h



Samos

- › Side Channel Blowers

Pressure differential: Δp max.

Vacuum: -500 hPa (mbar)

Overpressure: +600 hPa (mbar)

Volume flow: 40–2,640 m³/h



Zebra

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

Ultimate pressure: $6.7 \cdot 10^{-3}$ hPa (mbar)

Nominal pumping speed 50 Hz: 2.9–90 m³/h

Nominal pumping speed 60 Hz: 3.5–108 m³/h



Fossa

- › Scroll Vacuum Pumps

Ultimate pressure: 0.01–0.025 hPa (mbar)

Nominal pumping speed 50 Hz: 15–35 m³/h

Nominal pumping speed 60 Hz: 18–42 m³/h



Meeting All Your Needs

Vacuum Pumps, Blowers and Compressors

Turbo

> Turbomolecular Vacuum Pumps

Ultimate pressure: $< 1 \cdot 10^{-10} - 1 \cdot 10^{-8}$ hPa (mbar)

Nominal pumping speed N_2 : 1.080–2.200 l/s



Rangu

> Diffusion Vacuum Pumps

Ultimate pressure: $< 7 \cdot 10^{-8}$ hPa (mbar)

Nominal pumping speed: 10.000–28.000 l/s



Vacuum Systems Solutions



Benefit from Systems Building Experience

Engineered to your advantage

- › 200 systems building specialists
- › Dedicated systems building centres worldwide

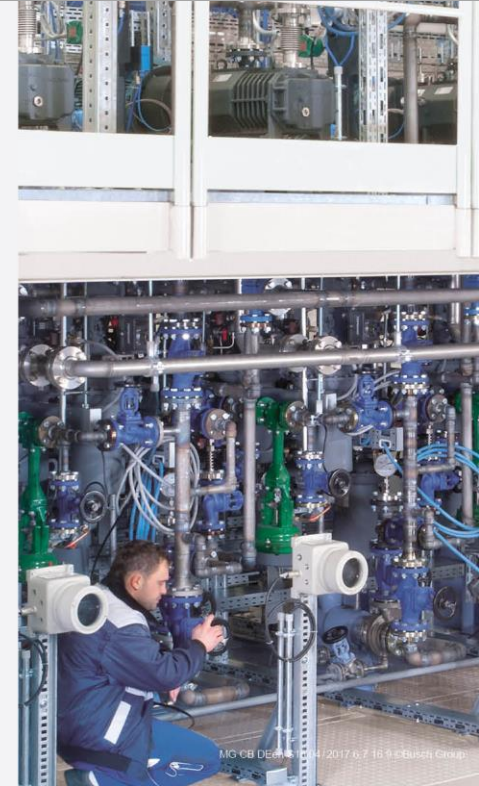
MG CB DEen S15 04/2017 6.7 16.9 ©Busch Group

Vacuum Systems Solutions

Benefit from Customized Solutions

Tailored to your needs

- › Complete vacuum systems, ready for operation (including installation and start-up service)
- › Accumulated knowledge from over 50 years' experience of thousands of installations in diverse applications
- › Custom solutions designed to meet the latest technical standards and process developments



Benefit from Standardized Systems Solutions

Standard vacuum systems

- › Variety of options adaptable to specific requirements
- › Economical and time-saving alternative to custom-built solutions
- › Oil-lubricated and dry vacuum technologies
- › Large selection of sizes
- › Maintenance optimized through the use of standard components














MG CB DEen S17 04/2017 6.7 16.9 ©Busch Group

Professional. Fast. Reliable.

Optimize your performance ...

- › by choosing the right services for your vacuum pumps, blowers and compressors
- › through customized service – from regular maintenance to the supply of spare parts
- › through a leading vacuum service network in more than 40 countries worldwide

-  Installation and Start-up Service
-  Warranty Plus
-  Active Service Contract
-  Field Service
-  Service Exchange
-  Rental Service
-  Repair Service
-  Remanufacture
-  Genuine Spare Parts
-  Decontamination
-  Training



MG-GB DEen S18 04/2017 0.7 16/9 ©Busch Group

No Compromise on Quality

Benefit from Worldwide Spare Parts Quality and Supply

Genuine Spare Parts and Accessories

Quality matters, especially in terms of spare parts. Only Busch Genuine Spare Parts guarantee the optimum performance, operational security and continued warranty of your vacuum pumps, blowers and compressors.



MG-GB DE/en S19 04/2017 6.7 16.9 ©Busch Group

Vacuum Packaging

Feeding the world is one of the biggest challenges of our time.

With Vacuum technology, food can be preserved longer and stays fresh and nutritious.

- › Less food is lost from field to table
- › More food can be stored safely

With our technology we contribute to providing healthier food to more people, fighting malnutrition and hunger in the world.



Applications

Water Treatment

Providing fresh, unpolluted drinking water is a worldwide challenge.

Vacuum technology helps to purify water, convert sea water to potable water and collect sewage for processing and reuse.

Our technologies are used in all steps of this process. Supporting desalination plants, water distribution networks, beverage production, industrial water stations, waste water collection systems, waste water treatment plants, etc.



Forming, Pressing and Laminating

To reduce global warming and avoid harmful effects, a rapid change from fossil fuel to renewable energy is necessary.

Vacuum technology helps, for example, to increase the durability of rotor blades for wind turbines or increase the performance of solar heat collectors.

When solar cells are produced, vacuum plays a key role, from growing the silicon crystals to laminating the cell elements.



Applications

Medical Vacuum

Pathogens, especially multi-resistant bacteria, are a constant threat to humankind.

Vacuum helps to remove and neutralize these in healthcare facilities and in any area where a high hygienic standard is required.

For example with plasma sterilization under vacuum, even the most dangerous pathogens can be removed, making all instruments and devices safe to use especially when they cannot withstand high temperatures.



Vacuum Lifting and Holding

Logistics is key to supplying human beings with all that is required in a complex world.

During transport of goods from A to B, the goods need to be lifted, held and released, very many times in virtually any logistic or production process.

Vacuum technology enables easy lifting and holding of heavy weights or ultra-fast precision placement of the lightest parts.

For example mooring ships with vacuum reduces the accident rate for dock workers and also reduces time spent in the harbor.



Applications

Coating under Vacuum

When sunglasses protect the eyes from UV light, when watch glasses do not get scratched in daily use, when buildings with glass facades do not overheat, or metalized packages protect food from spoiling, then they have almost always been treated under vacuum.

Through coating, the basic properties of materials can be altered, allowing a combination of properties, for example low weight and hardness for glasses.



Applications

Degassing

By degassing metal or plastic moulds during production, products become more stable and durable.

High-quality metals are used, in example, for lighter aircraft, requiring less kerosene, and thus safeguarde the environment.

Plastics are often used for toys and must be extremely safe. With our technology we help that there are no blowy parts which can be broken and swallowed by children.

