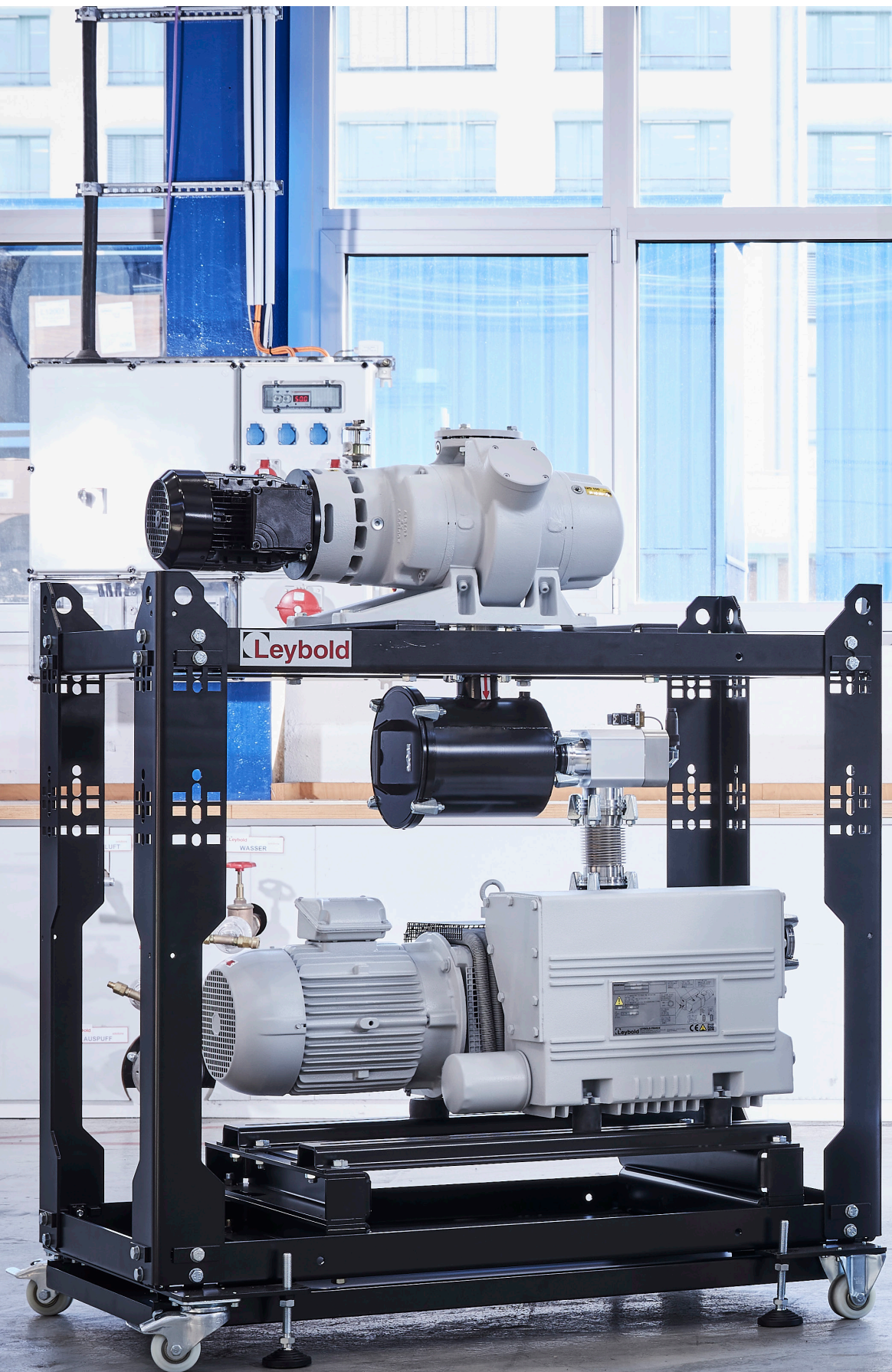


PRODUCT OVERVIEW 2021

Innovative Vacuum Pumps, Systems and Components for Diverse Applications







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Oil Sealed Vacuum Pumps

SOGEVAC B/BI/D/DI

Single-stage rotary vane pumps

- ✓ **Effective investment, long service life**
- ✓ **No oil loss, low power consumption**

Your Expectations:

- Industrial rough vacuum generator
- Favorable price-to-performance ratio
- High reliability
- ATEX or O₂ applications
- Low noise and clean operation

Our Solution:

- Pumping speed 10 to 840 m³/h
- Ultimate pressure $\leq 5 \cdot 10^{-2}$ mbar
- O₂-compatible versions
- Separate standard product line for the food and packaging applications
- Flexible pump design
- Quietest pumps on the market and oil loss below 1 ppm
- Certified according to ATEX directive 2014/34/EU
- Direct connection of RUVAC Roots pumps via adapter



SOGEVAC NEO D

Medium vacuum rotary vane pumps

- ✓ **No oil loss thanks to integrated exhaust filter**
- ✓ **Effective investment**
- ✓ **Maintenance free, up to 3 years in clean applications**

Your Expectations:

- Affordable cost medium vacuum pumps
- No oil loss at exhaust
- Longest possible maintenance intervals
- Monitoring possibilities
- Broad portfolio, also for special demands (e.g. O₂, ATEX)

Our Solution:

- Pumping speed 16 to 76 m³/h, all sizes available for single or 3 phase power supply
- Ultimate pressure $\leq 8 \times 10^{-3}$ mbar
- Integrated exhaust filtration. Oil loss below 1 ppm.
- Use of long lifetime oils and dynamic shaft seals
- O₂-compatible versions
- Certified according to ATEX 2014/34/EU versions Cat 3
- Flexible pump design for accessories retrofit or dedicated customer variants



TRIVAC B, E and T

Dual-stage rotary vane pumps

- ✓ **A well-proven vacuum pump for long-term operation lasting for years**
- ✓ **Broad range of accessories**

Your Expectations:

- Rugged vacuum generator
- High reliability
- ATEX explosion protection, optional

Our Solution:

- Pumping speed
 - TRIVAC B: 4 to 65 m³/h
 - TRIVAC E: 2.5 m³/h
 - TRIVAC T: 4 to 30 m³/h
- Ultimate pressure
 - TRIVAC B: 10⁻⁴ mbar
 - TRIVAC E: 2 x 10⁻³ mbar
 - TRIVAC T: 5 x 10⁻³ mbar
- For medium and high vacuum applications
- Economic OEM product range (TRIVAC T)
- Certified according to ATEX directive 2014/34/EU (TRIVAC B)
- Direct connection of RUVAC Roots pumps via adapter



VACUBE

Complete rough vacuum solution with oil sealed screw pumps

- ✓ **Compact systems for vacuum generation on demand in industrial rough vacuum applications**
- ✓ **Efficient and productive with long maintenance intervals**



Your Expectations:

- Industrial grade vacuum generator
- System solutions to cover varying vacuum demands
- Set point operation
- Simple operation

Our Solution:

- Highly efficient oil-sealed rotary screw technology
- Variable pumping speed, up to a maximum of 4,980 m³/h
- Ultimate pressure of 0.35 mbar
- Integrated frequency inverter for load depending speed control
- Sustainable power saving due to on-demand vacuum generation
- Controller with intuitive menu navigation for configuration and control
- Small footprint
- Programmable operation modes
- Plug and play system set up
- Long maintenance intervals

Dry Compressing Vacuum Pumps

SCROLLVAC plus

Oil-free scroll pumps

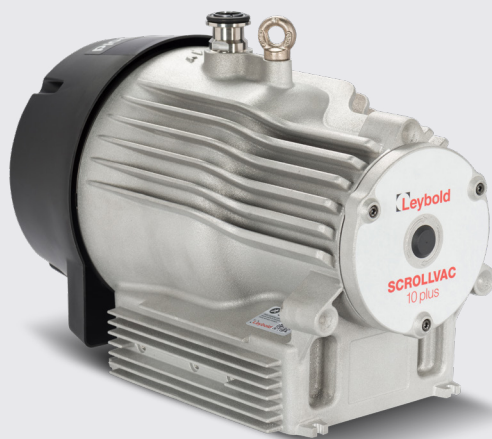
✓ **Dry, universal solution, low operating costs**

Your Expectations:

- Oil-free vacuum pump
- Quiet, low vibration operation
- Long maintenance intervals

Our Solution:

- 4 speed variants SCROLLVAC 7, 10, 15 and 18 plus
- Single phase and three phase available
- Robust, low-maintenance design



ECODRY plus

Dry compressing multi-stage roots pumps

✓ **Compact vacuum pumps with low noise emission for clean applications**

Your Expectations:

- Noise-free and clean environment
- Easy handling
- High energy-efficiency
- Maintenance-free pump

Our Solution:

- Pumping speed up to 65 m³/h
- Lowest noise level in class
- Air-cooled pump
- Oil and particle-free operation
- Adaptive speed control via Leybold vacuum gauge

VARODRY

Dry compressing screw pumps

✓ **Compact, rugged oil-free vacuum pumps for general industrial applications**

Your Expectations:

- Industrial vacuum generator
- Low investment and operating costs
- High reliability and long system uptimes

Our Solution:

- Pumping speed 65, 100, 140 and 180 m³/h
- Ultimate pressure $\leq 1 \cdot 10^{-2}$ mbar
- Fully air-cooled design, no need for water cooling
- Minimum maintenance demands
- Most robust pump design
- HD/O₂ variant can handle up to 100% O₂ and more harsh applications



CLAWVAC

Oil free claw pumps

- ✓ **Compact rough vacuum pump for demanding industrial applications including handling of particle and vapor contaminated gases**
- ✓ **Trouble-free and cost-saving**



Your Expectations:

- Robust, oil-free vacuum pump for rough vacuum generation
- Long maintenance intervals

Our Solution:

- Pumping speed 65 to 300 m³/h
- No oil migration into process, no oil contamination to the environment
- Extremely efficient air cooling, low heat emission. No cooling water required.
- Corrosion resistant pump chamber and stainless steel claws
- Simple and easy to clean on-site
- Up to 50% energy saving by operation with variable speed drive
- A special Oxygen variant will be released in 2021, which can handle up to 100% O₂

CLAWVAC System

Rough vacuum system

- ✓ **The new benchmark in rough vacuum systems**
- ✓ **CLAWVAC systems are ideal, if the application requires a high level of redundancy and robustness controlled on a smart way**

Your Expectations:

- High and oil free vacuum demand, on all pressures
- Robust and redundant solution
- Long maintenance intervals

Our Solution:

- Varying pumping speed, up to maximally 1,144 m³/h
- Ultimate pressure of 150 mbar
- Smartly and redundant controlled
- Corrosion resistant pumping chamber with stainless steel claws
- Simple and easy to clean on-site
- No oil migration into the process, no oil contamination to the environment



Dry Compressing Vacuum Pumps

LEYVAC

Dry compressing screw pumps

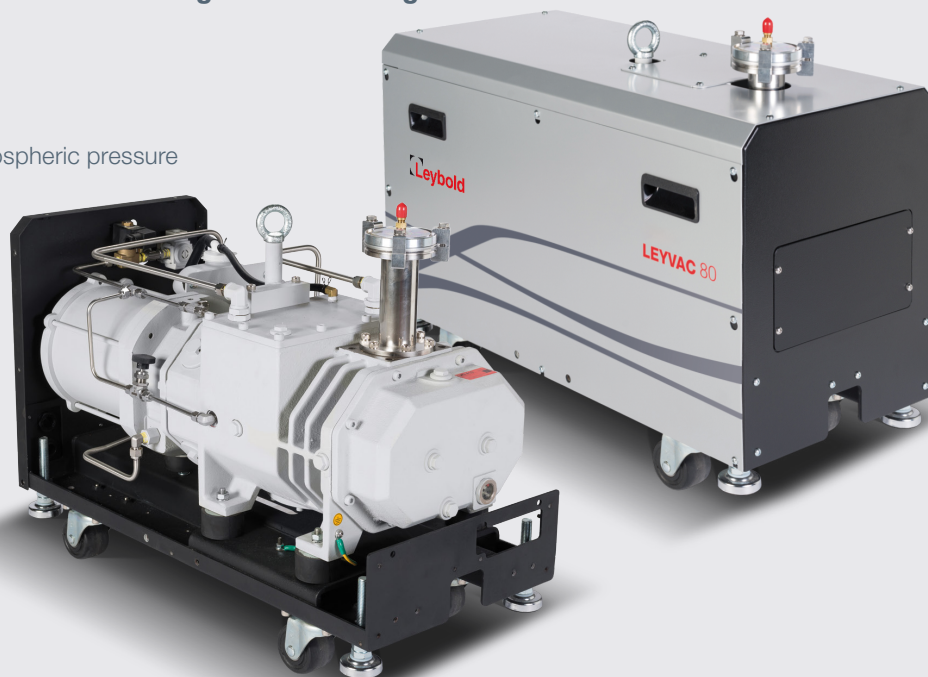
- ✓ Rugged vacuum pumps for industrial applications and high process throughputs
- ✓ Hermetical sealed design for safe handling of hazardous gases

Your Expectations:

- Industrial vacuum generator
- Long system uptimes
- High pumping speed already at atmospheric pressure

Our Solution:

- Pumping speed 80 to 160 m³/h
- Ultimate pressure $\leq 1 \cdot 10^{-2}$ mbar
- Hermetically sealed pump
- Direct connection of RUVAC Roots pumps via adapter



SCREWLINE

Dry compressing screw pumps

- ✓ Extremely robust for harshest industrial applications, simple on-site maintenance

Your Expectations:

- High pumping speed
- Easy to clean
- Air cooled
- ATEX explosion protection (Cat. 2i)

Our Solution:

- Pumping speed 250 and 630 m³/h
- Ultimate pressure $\leq 1 \cdot 10^{-2}$ mbar
- Expandable to pump systems by adding Roots pumps
- Monitoring system
- Easy to disassemble pump chamber for rapid cleaning
- Certified according to ATEX directive 2014/34/EU
- Direct connection of RUVAC Roots pumps via adapter



DRYVAC

Dry compressing screw pumps

- ✓ **Rugged, compact vacuum solutions with smart monitoring and control system for coating, photovoltaic and process industry applications**

Your Expectations:

- Maximum system availability
- Low cost of ownership
- Minimum footprint
- Self protection of the pump and easy communication

Our Solution:

- Pumping speed 200 to 800 m³/h
- Guarantees highest uptime by robust and proven design
- Proven in harsh applications
- Higher production yield and longterm stable pumping speed
- Benchmarking energy savings by sophisticated rotor design
- Easy installation by most compact design
- Quiet - less noise load at production
- Intelligence on board - easy control and self monitoring by integrated FC
- Dry solution for every application
- Direct connection of RUVAC Roots pumps via adapter

DRYVAC Energy Saver

Power saving unit for DRYVAC and DRYVAC System

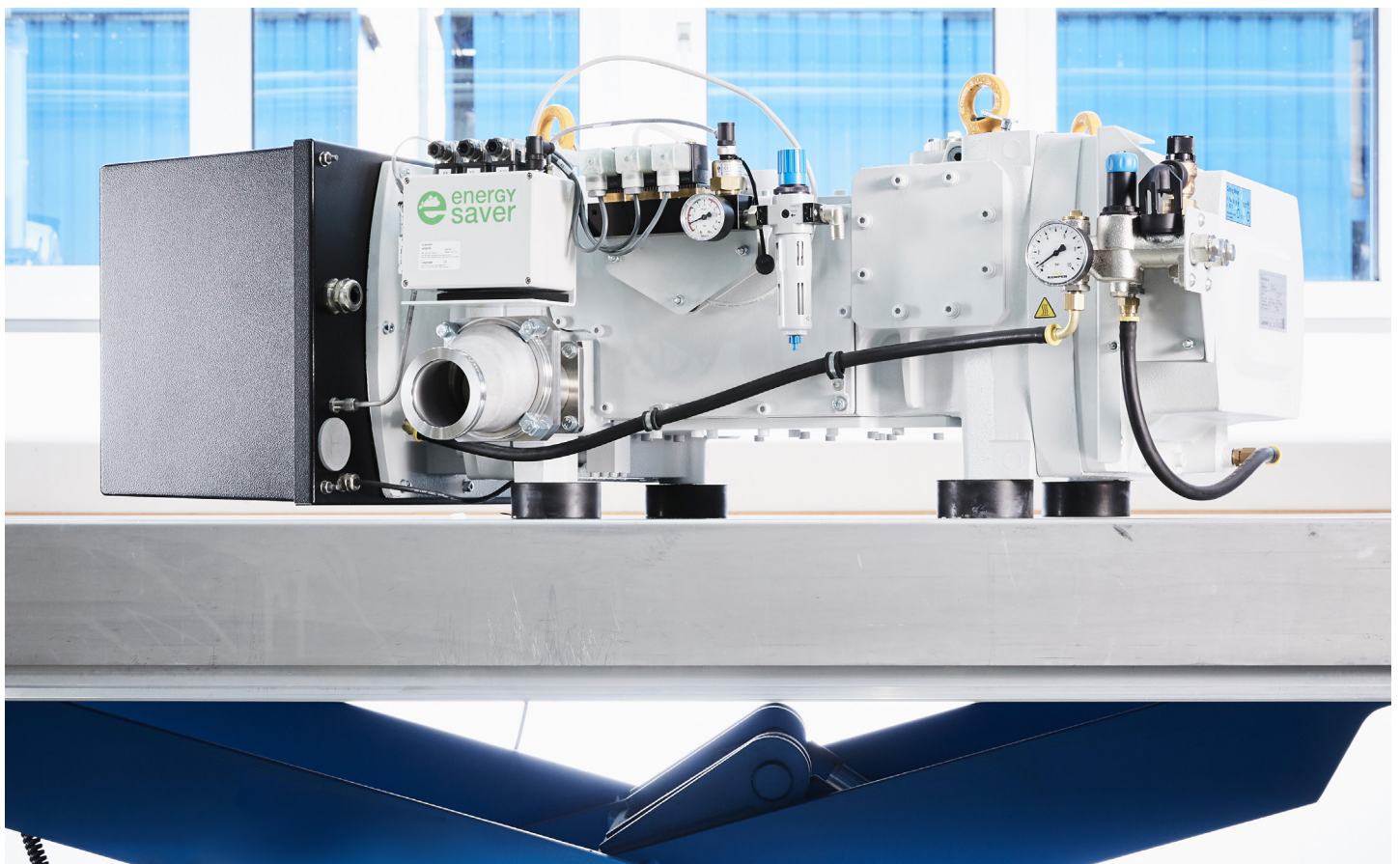
- ✓ **Fast ROI (approx. 1 year) with power savings up to 50%**

Your Expectations:

- Cost savings through reduction of energy consumption
- Improved ultimate pressure

Our Solution:

- Power savings up to 50% at inlet pressures < 5 mbar
- Ultimate pressure improvements by 1 decade
- For all pumps and systems with LEYBONOL LVO 210
- To be used in applications with non-flammable gases or oxygen concentrations ≤ 21%



Dry Compressing Vacuum Pumps

NOVADRY

Dry compressing screw pumps

- ✓ **Robust 100% oil-free, air-cooled design with simple on-site maintenance**
- ✓ **Specially designed for usage in sensitive applications as food processing and packaging**

Your Expectations:

- Zero oil emission to avoid oil contamination of products
- Lowest maintenance demand
- Simple plug & play installation without complicated control and need for utilities
- Lowest Cost of Ownership
- No need for expensive PFPE

Our Solution:

- 100% oil-free design
- Fully air-cooled design, following hygienic principles
- Standard pump released for MAP with O₂
- Maximum robustness and extended uptime
- Low noise level
- Lowest operation costs



Hygienic Enclosure

Enables wash down cleaning of pumps installed inside food processing area

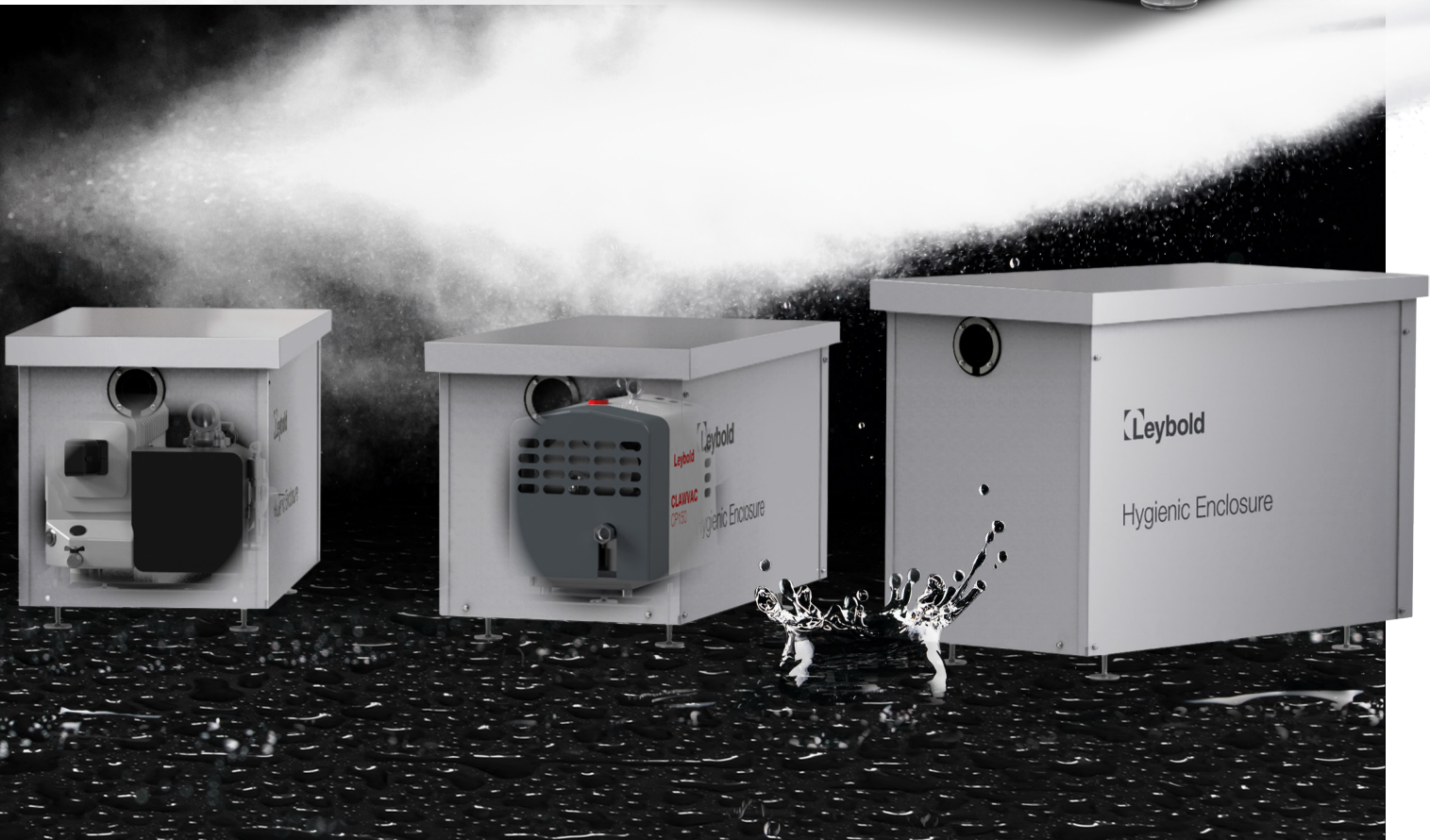
- ✔ **Protects pump against contamination (e.g. during food processing) or aggressive wash-down agents**
- ✔ **Standardized design, available for all Leybold's industrial food pumps**

Your Expectations:

- Full hygienic operation of vacuum pumps inside the food processing area
- No pump corrosion by aggressive cleaning agents
- Cost effective solution which avoid pumping speed losses over long piping
- No pump overheating by unqualified enclosure design
- Easy integration

Our Solution:

- Corrosion resistant stainless-steel materials resistant against aggressive wash down cleaning agents
- Hygienic design with declining surfaces – no accumulation of wash-down liquids at the surface
- Prevents contact of pump surfaces with food or wash-down media
- Fast & easy assembly on site
- Qualified design preventing pump overheating by enclosure



Rough Vacuum Electronics

EControl

Smart rough vacuum control

- ✓ **EControl creates an interconnected system of multiple pumps, ideally with Variable Speed Driven pumps but also Fix Speed or even competitor pumps could be controlled**

Your Expectations:

- Cost optimizations via energy savings
- An intelligent pump control with wide communication functionalities
- A solution easy to use and install

Our Solution:

- Modes to optimise energy use, maintenance intervals or best of both
- Direct communication via different ways I/O, field busses
- Plug and play set-up



ELEC CAB

Smart power supply and vacuum control

- ✓ **ELEC CAB is a complete solution to upgrade your favorite vacuum pump(s) and electrical control towards an intelligent version.**

Your Expectations:

- Cost optimizations via energy savings
- Improved uptime
- A solution easy to use and install

Our Solution:

- Complete solution, including components for the electrical control
- Integrated Variable Speed Drive for load depending speed control
- Sustainable power saving due to on-demand vacuum generation
- An intelligent control principle to maximize your redundancy
- Controller with intuitive menu navigation for configuration and control
- Programmable operation modes
- Plug and play system set-up



Roots Pumps

RUVAC WA(U)/WS(U)

Roots blowers

- ✓ Long-lasting and reliable
- ✓ Easy connection to any forevacuum pump

Your Expectations:

- Pumping speed increase at low pressures
- Simple to use
- Oil-free pumping of the gas
- ATEX explosion protection

Our Solution:

- Pumping speed range from 250 to 4,000 m³/h
- Reliable and robust
- Available with flanged motor or with hermetically sealed drive motor
- Suitable for 100% O₂ applications
- Certified according to ATEX directive 2014/34/EU



RUVAC WH(U)

Roots blowers

- ✓ An innovative product line, efficient and cost-effective for use in modern Process Industry applications

Your Expectations:

- Flexible pumping speed through frequency converter operation
- Rapid pumpdown times
- Compact design
- Oil-free pumping of gases
- System compatibility
- Low current consumption

Our Solution:

- Pumping speed from 720 to 9,800 m³/h (with frequency converter)
- Excellent performance and consumption specifications
- Hermetically sealed drive motor
- Small footprint
- Innovative bypass valve
- Certified according to ATEX directive 2014/34/EU, partially also according to ATEX Cat 2i
- Direct connection of large forevacuum pumps via adapter



Fluid Entrainment Pumps

Oil Booster OB

Oil vapor jet pumps

- ✓ Long maintenance intervals, wear-free
- ✓ High safety standard

Your Expectations:

- High vacuum
- Very high critical backing pressure capability
- High pumping speed
- Safe and economic
- High quality ECC

Our Solution:

- Pumping speed: 6,000 to 18,000 l/s
- Operating range: $< 10^{-1}$ to 10^{-4} mbar
- Stable pumping speed in low pressure ranges
- No wear by revolving parts
- Small footprint
- Simple handling and service

DIP / DIJ

Oil diffusion pumps

- ✓ Long maintenance intervals, wear-free
- ✓ High safety standard

Your Expectations:

- Stable high vacuum
- High critical backing pressure capability
- High pumping speed
- Safe and economic
- CE compliant electronics power supply

Our Solution:

- Pumping speed: DIP: 2,100 to 42,000 l/s
DIJ: 3,000 to 33,000 l/s
- Operating range: DIP: $< 10^{-2}$ to 10^{-7} mbar
DIJ: $< 10^{-2}$ to 10^{-7} mbar
- Optimum pumping speed in the pressure range $< 10^{-4}$ mbar
- No wear by revolving parts
- Simple handling and service
- Innovative power energy efficiency controller (ROI < 2 years)



Power Energy Efficiency Control

Control unit for oil diffusion pumps and OB pumps

- ✓ **Fast ROI (< 2 years) with power savings up to 30%.**
- ✓ **Easy and convenient to use**
- ✓ **Optimized power and oil based power consumption**

Your Expectations:

- Cost savings through reduction of energy consumption
- Simple to use
- PLC controlled

Our Solution:

- Power savings up to 30%
- Improved service life for the oil and the heating cartridges
- Simple visual monitoring of the parameters through graphic user interface
- Equipped with USB interface and Ethernet



Big Valve

Valve Housing Stainless steel made

- ✓ **Stainless steel valve for high vacuum**
- ✓ **Long lifetime and easy service and maintenance**

Your Expectations:

- Membrane sealed
- Low leak rate

Our Solution:

- Long lifetime, high cycle rate (> 50,000)
- Low conduction, shaft complete protected
- Include Bypass and measure flange
- FPM O-ring sealed
- One plug, sensorics and pilot valve connected

Turbomolecular Pumps

TURBOVAC i/iX

Turbomolecular pumps with hybrid bearing technology

✓ **Innovative and flexible product range with outstanding performance data and integrated electronics**

Your Expectations:

- Clean high and ultrahigh vacuum generation
- Long service life
- Ease of installation and operation
- Reliable usage under the most varied applications and operation conditions

Our Solution:

- Pumping speed up to 1.450 l/s
- Oil free hybrid bearings (mechanical/permanent magnetic)
- Installation in any orientation
- Integrated electronics including a variety of options for communication and control of accessory components
- TURBO.CONTROL i display unit (optionally as rack version or benchtop unit) to control and monitor the pump including connection facility for two pressure gauges available as accessory



TURBO.CONTROL i



TURBOVAC MAGiNTEGRA

Turbomolecular pumps, magnetically levitated

- ✓ **Most compact product line for industrial applications**
- ✓ **On-board frequency converter and power supply**
- ✓ **Easy and space-saving system integration**

Your Expectations:

- Clean high and ultrahigh vacuum generation
- Suitable for industrial use, like PVD and coating processes, display and glass coating
- Insensitivity to particles or deposits
- Low maintenance requirements

Our Solution:

- Pumping speed up to 2,200 l/s
- High pumping speed and high compression ratios for all gases
- Holweck stage incorporated
- Resistant to particles and deposits
- Insensitive to shock-venting
- Monitoring and self-protection functions
- Maintenance-free in most applications



Cryo Pumps, Cold Heads

COOLVAC

Refrigerator cryo pumps

- ✓ High water vapor pumping capability
- ✓ Long maintenance intervals
- ✓ Installation in any orientation

Your Expectations:

- Hydrocarbon-free vacuum
- High and ultrahigh vacuum generation

Our Solution:

- Pumping speed up to 60,000 l/sec
- DN ISO, CF and ANSI flange versions
- Two cryo pump versions for manual and for fully automatic system control and regeneration available
- Pump controller mounted on pump for fully automatically controlled iCL version for easy process and network system integration



COOLPOWER

Cold heads for cooling cryo pumps/cryostats

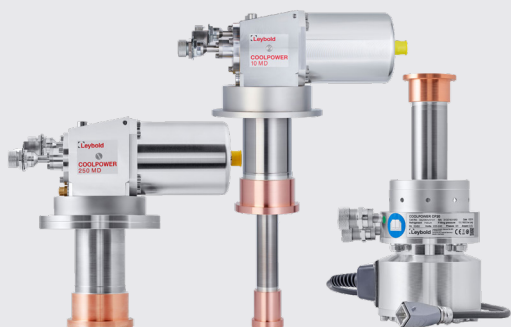
- ✓ Gas refrigerating machines for cryogenic temperature generation based on the Gifford-McMahon principle
- ✓ Designed for cooling superconductors (magnets, samples) from medicine and research

Your Expectations:

- High refrigerating capacity
- Small footprint
- Long maintenance-free operating time
- Low vibrations

Our Solution:

- Ultimate temperatures: two-stage models down to 8 K
single-stage models down to 25 K
- High refrigerating capacity from the smallest volume:
 - up to 18 W @ 20 K and up to 110 W @ 80 K for double stage coolers
 - up to 250 W @ 80 K for single stage coolers possible
- Resistant to particles and deposits
- Simple operation by key-press
- No need for liquid helium and liquid nitrogen



Ion Pumps

TiTan ion pumps, NEG pumps and TSPs

Pump systems for ultra-high vacuum

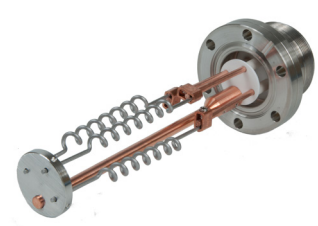
- ✓ **A full range of vibration-free and maintenance-free TiTan ion pumps, titanium sublimation pumps (TSP) and non-evaporable getter (NEG) pumps to achieve best ultimate pressures in the ultra-high vacuum**

Your Expectations:

- High pumping speed at ultra high vacuum
- Hydrocarbon-free vacuum
- Long operating time
- Complete solutions

Our Solution:

- Pumping speed from 0.2 to 1,200 l/s
- Ultimate pressure <math> < 1 \times 10^{-11}</math> mbar
- Various TiTan pump elements for different requirements available:
 - TiTan CV with titanium cathodes for pumping air and reactive gases
 - TiTan DI for pumping air and reactive gases, noble-gas stable (titanium and tantalum cathodes)
 - TiTan TR - classic triode for higher pumping speed in high pressure ranges, noble gas stable
 - A broad variety of NEG pumps and TSPs for either separate use or integrated into TiTan ion pumps
- TiTan, NEG and TSP components are bakeable up to 450 °C
- Wide range of accessories
- DIGITEL controller models for operation of ion pumps, TSPs and NEGs in diverse applications and configurations
- HV cables are available to connect your controller and ion pump



Vacuum Gauges, Vacuum Controllers

Measuring Instruments

Vacuum gauges and pressure gauges

✓ **Reliable monitoring and control for all vacuum processes**

Your Expectations:

- Gauge systems for every application
- Precise pressure measurement of gases and vapors
- Reproducibility across a wide pressure range

Our Solution:

- Measurement with active and passive sensors in a pressure range from 10^{-12} to 2,000 mbar for every application
- Intuitive operation and flexible data retrieval
- Pressure switches and pressure control instruments
- Handheld versions for easy and reliable pressure measurements
- DAKkS or factory calibration of vacuum gauges in the pressure range from 10^{-8} to 1,000 mbar system integration



GRAPHIX

Vacuum controller

✓ **Universal controllers for the connection of active vacuum sensors for direct pressure measurements in the range of 10^{-10} mbar to 2,000 mbar**

Your Expectations:

- Operation and control of the entire vacuum system
- Simple handling and operation (plug & play)
- Fast process data accumulation and transfer via USB to PC

Our Solution:

- Monitoring and control of the entire vacuum process
- Product range with 1, 2 or 3 measurement channels
- 3.5" TFT touchscreen display with intuitive user interface
- Easy to read curve or bar graph display
- Internal and external data-logging (USB port on the front) for configuration and real-time measurement data
- Readout selectable between mbar, Torr, Micron, Pascal, Psi
- Option to connect active vacuum gauges from various brands



Leak Detectors

PHOENIX 4

Leak detectors

- ✓ **The PHOENIX 4 product range sets new standards in Helium leak detection**
- ✓ **Our product portfolio provides the perfect matching unit for every application**

Your Expectations:

- Non-destructive components testing for quality assurance
- Reliable technology
- Highest measurement reliability and accuracy
- Professional consulting and support

Our Solution:

- Suitable for mobile or stationary vacuum and sniffer operation
- Quick start-up, high measurement accuracy
- Internal data logging and simple external data acquisition via USB
- Intuitive HMI with simple controls, menu structure and user friendly multicolored touchscreen
- Integrated webserver featuring easy login via Wi-Fi for remote control with any internet-enabled smartphone or tablet

PHOENIX Cart

Mobile leak testing systems

- ✓ **The PHOENIX 4 carts offer a wide range of pre-designed combinations, fully assembled and leak-checked**
- ✓ **Plug in & ready to start: Leak detection to-go**

Your Expectations:

- Mobile leak detection
- Ready-to-go solution
- Find leaks in the worst conditions
- Safety and performance

Our Solution:

- Pre-assembled system
- Fully customizable
- Best performance
- High reliability



Residual Gas Analyzers

LEYSPEC

Residual Gas Analyzers

- ✓ **All-in-one devices with integrated control and display for demanding test procedures and residual gas analysis in high vacuum systems, general gas analysis in research and industry or for environmental tracking**

Your Expectations:

- Most accurate residual gas analysis
- Easy operation
- Bake out possibility for high and ultra high vacuum applications

Our Solution:

- High sensitivity residual gas analysis allowing the detection of smallest traces of contaminants or process gases
- Product range with solutions for 100, 200 or 300 amu
- Simple residual gas analysis is possible even without connection to a computer
- Intuitive operated LEYSPEC software, integrated display
- Key gases can be displayed at the push of a button, a spare display channel for additional gases is available
- Preinstalled functions, like Helium leak test, warnings and error levels for selectable gases, degassing function after start or venting
- Compact in size and mountable in any orientation for enhanced flexibility
- Bake out temperatures of up to 300°C for operation in harsh environments

LEYSPEC Cart

Mobile residual gas analyzer system

- ✓ **Mobile Visibility**
- ✓ **Fully integrated differential pumping system**
- ✓ **Easy handling**
- ✓ **Maximum flexibility**

Your Expectations:

- Mobile gas analysis system
- Complete independent pumping system
- Easily adaptable to a wide range of measurement tasks
- Operable at various pressures
- Rapid operational readiness

Our Solution:

- Independent pumping system with SCROLLVAC 7 plus and TURBOVAC 350i
- Integrated process control for quick and easy operation
- Easy and intuitive software for LEYSPEC RGA
- Completely integrated in an independently movable cart
- UHV needle valve for flexible operation at different pressure levels up to atmosphere



Valves and Components

LEYCON

Valves in different design types and driving modes

✓ **Reliable valve technology, widely used in a broad range of applications**

Your Expectations:

- Reliable leak tightness
- High number of actuations
- Simple to fit and remove
- Delivery from a single source

Our Solution:

- Manually actuated valves
- Valves with electromagnetic/electropneumatic drive
- Gate valves
- All-metal valves for UHV systems
- SECUVAC safety valves
- Special valves, such as vacuum lock and sealing valves, venting valves, leak valves



Flange systems

Connection components

✓ **Well proven and widely used technology**

✓ **Almost any connection possible**

Your Expectations:

- Simple to fit and remove
- Reliable leak tightness
- High class materials, top quality
- Delivery from a single source

Our Solution:

- ISO-KF style small flanges in sizes DN 10 to DN 50
- ISO-K flanges in sizes DN 63 to DN 630
- CF flanges in sizes DN 16 to DN 250



Systems + Solutions

Customer first – competence for tailor-made solutions worldwide

The Systems + Solutions business unit with its **global setup delivers tailor-made solutions** solving the customer's demands. Listening carefully to the customer the core function of our organization is to meet customer's expectations by identifying and **providing the best vacuum concept**. Our portfolio varies from standard to customized and specialized vacuum systems and Solutions. **We address a wide range of vacuum applications and markets** including integration in specific production environments.

Working in close collaboration with sales, we support integrated application development, engineering and design. Production sites in North Americas Europe and China ensure a close proximity to our customers with local assembly and test capabilities and efficient order execution. **This makes our team a true global player and undisputed market leader in the field of vacuum systems.**





Systems + Solutions

Vacuum Systems

Engineering

- ✓ Vacuum solutions and systems of all kinds from the leading worldwide supplier
- ✓ Benefit from our experience since 1850

Your Expectations:

- Comprehensive consulting service
- Customer specific application support
- Design and manufacturing of custom vacuum solutions
- High flexibility and reliability
- Efficient solutions

Our Solution:

- System solutions - tailor-made concepts based on customer specifications
- Integrated forevacuum and high vacuum pump systems for custom requirements
- Worldwide engineering, production and service centers
- Global project coordination
- Custom software programming and customization
- Constant product improvements and innovations
- On-site commissioning and training



RUTA Vacuum Systems

Multistage forevacuum systems

- ✓ Reliable process engineering solutions from over 170 years of experience in designing customized vacuum systems and custom controls

Your Expectations:

- Professional consulting
- Design and delivery of demand-oriented and optimized vacuum systems
- Reliable engineering solution

Our Solution:

- Custom designed forevacuum pump systems
- Oil-sealed/dry compressing
- Pumping speed and ultimate pressures adapted to the process
- Additional high vacuum stages facilitate operating pressures down to 10^{-7} mbar



DRYVAC System

Dry Compressing Pump Systems

- ✓ **Leybold has refined its DRYVAC vacuum pump systems, making them adaptable for a variety of applications**
- ✓ **Basic and Smart System Configuration**

Your Expectations:

- Maximum system availability
- Reliable engineering solution
- Minimum footprint
- Self protection of the pump and easy communication

Our Solution:

- Extremely compact design provides more space in production areas
- Very low noise level improves working environment conditions
- Significant cost reduction because of high energy efficiency
- Clean technology with no oil emissions
- Optimized for fast cycle / load lock applications
- Fastest pump down times – by high throughput pump mechanisms
- Highest pumping speed for dry and booster pumps
- Pumping speed from 2,000 m³/h up to 9,800 m³/h
- Integrated smart monitoring of major parameters
- Standard Digital I/O interface and Profibus (optional) for the whole product family



DRYVAC PowerBoost

Dry Compressing Pump Systems

- ✓ **Its design has been specifically optimized for a fast load lock pump-downs**
- ✓ **It is equipped with an automatic cycle detection system, and the Roots pump shows a special speed management**

Your Expectations:

- Fast pump time
- High energy efficiency
- Low cost of ownership and invest
- Minimum footprint

Our Solution:

- Integrated frequency converters
- Microcontroller with touchscreen
- Digital I/O communication interface (DC37-P)
- Harting connections (power supply)
- Housing, castors and adjustable feet
- The system is water-cooled and lubricated with synthetic oil



Systems + Solutions

SOGEVAC / SOEGVAC NEO Systems

Oil Sealed Standard Vacuum Systems

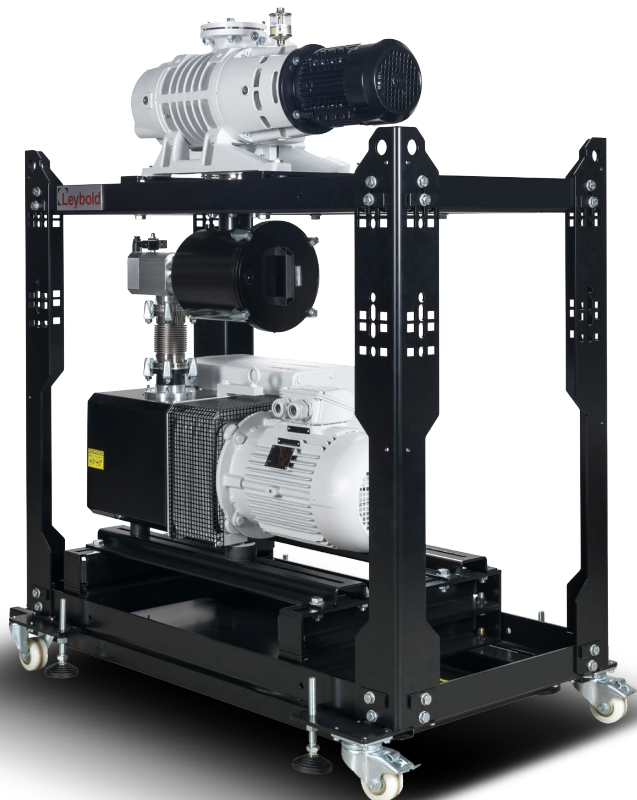
- ✓ **Combination of dry compressing Roots pumps and oil-sealed rotary vane pumps**
- ✓ **Vacuum systems based on oil-sealed SOGEVAC pumps deliver the best cost vs. performance ratio for a broad base of industrial applications**

Your Expectations:

- Comprehensive consulting service
- Customer specific application support
- Design and manufacturing of custom vacuum solutions
- High flexibility and reliability
- Efficient solutions

Our Solution:

- System solutions - tailor-made concepts based on customer specifications
- Worldwide engineering, production and service centers
- Global project coordination
- Constant product improvements and innovations
- On-site commissioning and training



CVS

Central vacuum stations

- ✓ **Modular systems for improved operational reliability in frequent varying vacuum consumptions**
- ✓ **Delivery of turnkey ready-to-operate and tested units**

Your Expectations:

- Industrial grade vacuum generator
- For covering demands of numerous small vacuum consumers individually and simultaneously
- Excellent vacuum performance data
- Modular design for customizing to customer specific processes

Our Solution:

- Typically consisting of SOGEVAC pump(s), buffer vessel, electrical cabinet with controller, all connecting components
- Pumping speed 25 to 840 m³/h
- Ultimate pressure ≤ 0.5 mbar
- Vessel volume 60, 160, 300, 500 or 1,000 liters
- Electric power from 0.8 to 18.9 kW
- Control type BASIC or Full Featured
- Low cost of ownership



TURBOLAB

High vacuum pump systems

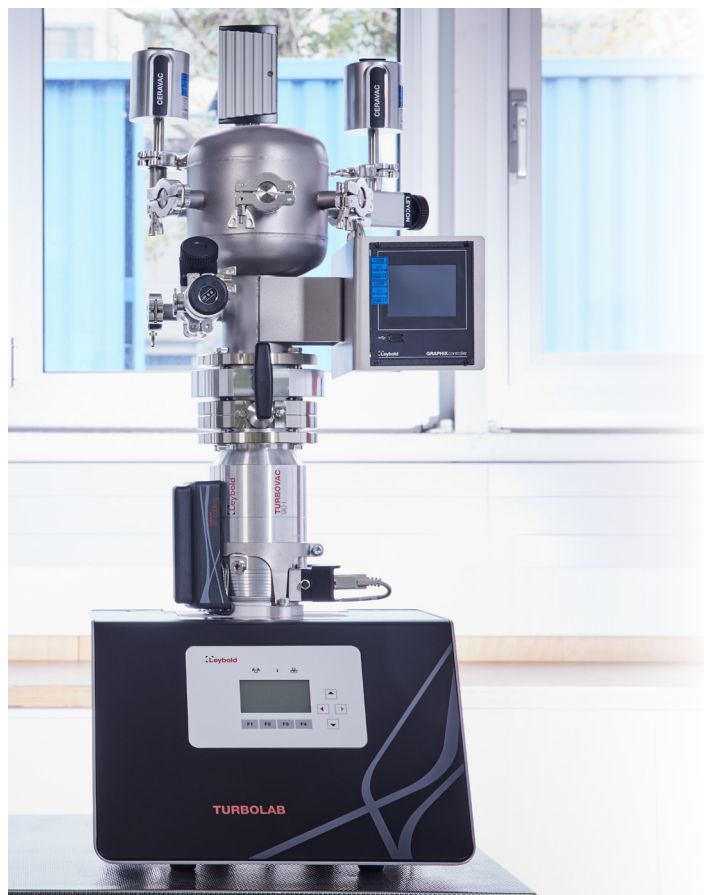
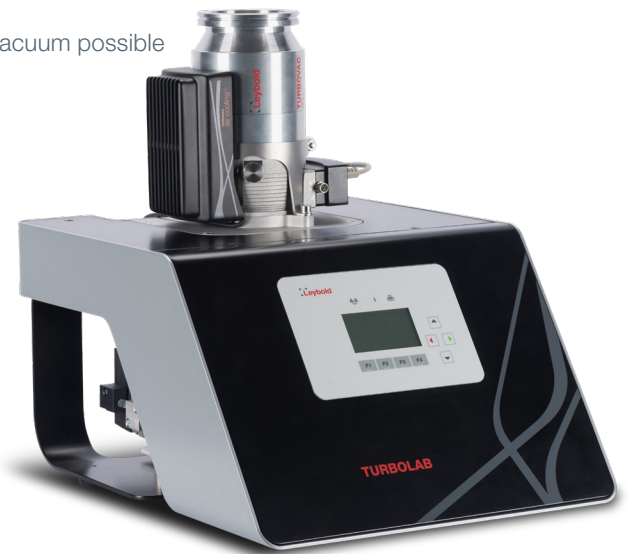
- ✓ **Plug-and-play high vacuum pump systems based on well-proven components**
- ✓ **Different configurations available cover individual vacuum demands**

Your Expectations:

- High vacuum pump systems for industry and research
- Oil-sealed or dry compressing forevacuum pumps for a hydro-carbon-free vacuum possible
- Compact and user-friendly solution

Our Solution:

- Pumping speed 78 - 400 l/s provided by the TURBOVAC i pump range
- Ultimate vacuum down to 10^{-10} mbar
- Completely preassembled units with turbomolecular pump, TPU display power unit, frequency converter and forevacuum pump
- Easy to relocate pumps out and away from the frame
- Backlight display in the innovative TPU power unit
- Covering a wide range of applications with a full range of high vacuum and dry or wet forevacuum pumps
- Integrated data logger and webserver for system control, monitoring and configuration
- Connection of up to six accessories and two gauges
- Benchmark design, reliability and functionality



Calibration Systems CS

Custom vacuum calibration systems

- ✓ **Process reliability by regular checks, adjustments and recalibration of vacuum gauges and sensors**

Your Expectations:

- Checking the characteristics of vacuum gauges
- Precise calibration of vacuum gauges in accordance with DAkkS (national accreditation body for the Federal Republic of Germany)
- Ensure reproducible parameters

Our Solution:

- Universal calibration systems with a special vacuum chamber, turbomolecular pump system, vacuum gauges and additional components depending on the calibration pressure

Systems + Solutions

UNIVEX

Experimentation and coating systems

- ✓ Easy operation and accessibility of vacuum chambers
- ✓ Manual or automatic process control and documentation

Your Expectations:

- Flexible laboratory systems for vacuum coating
- Systems for university and industrial research
- Results transferable to large scale systems or serial production
- High reproducibility degree

Our Solution:

- Multipurpose systems for the production of functional layers
- Modular system configuration, wide range of accessories
- Customized system solutions
- Variable chamber sizes



UNIVEX S

Space simulation systems

- ✓ Flexible solutions for various space applications
- ✓ Highest reliability for uninterrupted test cycles

Your Expectations:

- Best simulation of space conditions
- Equipment reliability for uninterrupted test cycles
- Configurable/extendable equipment platform
- Universal usability in R&D and space industry

Our Solution:

- Wide portfolio for thermal cycling, ion thruster testing, MLI-blanket baking etc.
- Optimized layout in terms of vacuum performance and temperatures
- Automatic process control and data logging
- Platform design with wide range of accessories
- Customized configurations for intensive use



Service



Easy, Competent, Reliable

We are where you are

With our comprehensive range of innovative service solutions, we offer unrivalled support for your Leybold vacuum pumps and we are committed to:

- **Providing you with a reliable, first-class service throughout your pump's lifecycle, no matter where in the world it is installed**
- **Maximizing your pump's uptime and ensuring it gets the best possible service**
- **Offering you specialist support with preventive maintenance and repairs**

Read on to find out more about our complete range of vacuum pump services and how our specialists can help you. The rewards are maximum uptimes, low running costs and longer lifecycles.



Service



SERVICE CONTRACTS

Our full range of service contracts are designed to ensure the lowest total cost of ownership of your pumps, maximizing their performance and uptime. From preventive maintenance contracts to warranty extensions, we offer you customized solutions that let you focus fully on your production by providing a perfect match to your needs.



SERVICE TECHNOLOGY CENTER

Fully equipped to handle pumps from every kind of application, even the harshest, our service technology centers are ready to service your pumps. From preventive maintenance to repair, we offer transparent fixed-price solutions and the capability to do anything your pump requires.



SPARE PARTS AND KITS

Our genuine spare parts fit your vacuum pump perfectly to ensure high reliability, performance, and a long service life. To ease your workflow and ensure you have everything you need for your pump, we put together spare parts kits for specific maintenance activities.



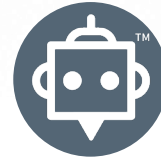
FIELD SERVICE

Our team of vacuum pump experts come to your site to perform maintenance on your pumps, whether it is routine service or troubleshooting. Competent, reliable and there for you, they know what your pumps need to perform flawlessly at their best.



CERTIFIED AND EXCHANGE

Our certified and exchange stock is always available in an emergency and to ensure your manufacturing continues as smoothly as possible with a minimum of downtime. All pumps come with a 12-month warranty and are rebuilt and tested to industry standards to ensure that they deliver OEM performance.



GENIUS INSTANT INSIGHTS™

Our connectivity solution offers you 24/7 remote mobile access to your vacuum pumps. Alarms on failures, service maintenance, insights on up-time and energy consumption are all transparent on the Genius Portal. With Genius you can set up real time notifications about important events coming from the vacuum system, giving you the opportunity to avoid costly downtime and production losses – it has never been so convenient and easy to have a healthy and reliable vacuum pump installation.



LEYBONOL VACUUM PUMP OIL

LEYBONOL has been specially formulated to achieve the best performance for your pump. The premium quality of LEYBONOL ensures long oil exchange intervals and reduces power consumption as well as wear and maintenance costs. Our certified oils keep your production running and extend your pump life expectancy.

You can find the correct oil for your pump using the Oil Finder:



Controllers and Calculation Tools

Controllers

Innovative pump and system management

- ✔ **Tailor-made controllers and control systems adapted to customer and process requirements for optimum performance and user convenience**

Your Expectations:

- Customer specific system interfaces
- Simple to complex visualization
- Power distribution integrated within the system
- Convenient control of all system components

Our Solution:

- Control and data acquisition of system parameters via digital I/O interfaces or bus systems, Ethernet, Profibus, RS 232, WiFi, GSM, for example
- Implementation of custom software programming
- Simple digital display via touch panel up to visualization on mobile devices (via apps)



LEYCALC

Smart online vacuum system calculation tool

- ✔ **New online tool to help with modeling vacuum systems for various applications, selection and implementation of vacuum pumps and measurement equipment**
- ✔ **With these new web-based tool, users can select and compile their vacuum solutions online**

Your Expectations:

- Vacuum system calculation tool able to simulate typical vacuum installations
- Easy to use
- Trustworthy results as basis for decision making

Our Solution:

- We make our expert tools available for our customers
- Simple handling, intuitive navigation
- Further access to our expert network on demand, e.g for simulation of complex systems
- Proven calculation results, based on Leybold's long time practical experience



Vacuum Academy

Vacuum Academy

Vacuum technology seminars

- ✔ **Qualified training of your staff through practical knowledge transfer**
- ✔ **Provides best possible performance and equipment uptime**

Your Expectations:

- Understand vacuum technology
- Get practical and hands-on training

Our Solution:

- Systematic training covering the entire spectrum of vacuum technology
- Vacuum basic seminar for technicians and engineers
- Leak detection – Basic and Advanced seminars
- Practical seminars on request
- Customer specific seminars – tailored to your individual needs



Online Shop

Online Shop

leyboldproducts.com

- ✔ Shop vacuum technology online
- ✔ Available in more than 12 countries worldwide

Your Expectations:

- Easy order process
- Secure payment options
- Large product range, fast delivery

Our Solution:

- Purchase vacuum components which do not require consulting, such as fittings, measuring instruments, pumps, spare parts, vacuum oils, lubricants
- Delivery with invoice, credit card or pre-payment
- Order 24 hours online



leyboldproducts.com

