

Innovative
Vacuum Components
and Systems for Versatile
Applications

The entire world of vacuum



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Global support Online Shop

Leybold

Consulting, sales and service



Your partner for vacuum engineering. Benefit from our worldwide support.

Your Expectations:

- First-class consulting
- Excellent product quality at optimized price-to-performance ratio

Our Solution:

- Worldwide sales and service network
- Highly qualified and committed staff
- Comprehensive consulting service
- Customer specific application support
- Highly reliable top quality solutions
- Competitive pricing
- Certified in accordance with DIN ISO 9001/9002
- After sales, application and production support

Online Shop

www.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

- 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

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 explosion protection, optionally

Our Solution:

- Pumping speed 10 to 1,200 m³/h
- Ultimate pressure $\leq 5 \cdot 10^{-2}$ mbar
- O₂-compatible versions
- Separate standard product line for the food and packaging market
- Flexible pump design
- Certified according to ATEX RL 2014/34/EU

TRIVAC B, E and T

Dual-stage rotary vane pumps



A well-proven vacuum pump for long-time 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 RL 2014/34/EU (TRIVAC B)

Dry Vacuum Pumps

DIVAC

Diaphragm pumps



Environment-friendly, low operating costs.

Your Expectations:

- Backing pump for turbomolecular pumps
- Corrosion resistant vacuum pump for laboratories

Our Solution:

- Pumping speed 0.8 to 4.8 m³/h and 0.6 to 2.2 m³/h for corrosive media
- Ultimate pressure ≤ 1 mbar
- Dry operation, oil-free
- Media contacting parts made of PTFE and PVDF

SCROLLVAC SC / 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:

- Pumping speed 5 to 60 m³/h
- Ultimate pressure ≤ 1 · 10⁻² mbar
- Robust, low-maintenance design
- High pumping speed even at 1000 mbar

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

- Pumping speed 40 to 65 m³/h
- Lowest noise level in class
- Air-cooled pump
- Oil and particle-free operation

Dry Vacuum Pumps

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
- Clean vacuum generation
- No expensive cooling water
- 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
- Compact design, small space requirements
- Corrosion resistant stainless steel claws
- Robust and maintenance-friendly design
- Low maintenance requirements
- Simple and complete cleanable of all media touched surfaces on-site
- Up to 50% energy saving by operation with variable speed drive
- Low operating costs

LEYVAC

Dry compressing screw pumps and systems



Rugged vacuum pumps for rough applications and high process throughputs. Simple vacuum performance upgrade with RUVAC roots pumps.

Your Expectations:

- Industrial vacuum generator
- Long system uptimes
- High pumping speed already at atmospheric pressure
- Compact unit
- Low cost of ownership

- Pumping speed 80 to 300 m³/h
- Ultimate pressure ≤ 1 · 10⁻² mbar
- Optimized performance for light gases
- Hermetically sealed pump
- Low noise operation, low heat loss
- Direct connection of RUVAC Roots pumps via adapter

Dry Vacuum Pumps

DRYVAC

Dry compressing screw pumps and systems



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 450 to 9.800 m³/h
- Ultimate pressure ≤ 5 · 10⁻⁴ mbar
- Robust design for demanding processes
- Highest energy efficiency
- Flexible modular system for compact vertical and horizontal installation
- Variants with ATEX certification according to ATEX directive 2014/34/EU, Cat. 2i available.
- Integrated smart monitoring of major parameters; i-versions with touch screen control and digital I/O interface (optional Profibus, Profinet)

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

- Pumping speed 250 and 630 m³/h
- Ultimate pressure ≤ 1 · 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 RL 2014/34/EU

Roots Vacuum 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 RL 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

- Pumping speed from 720 to 9,800 $\,\mathrm{m}^3/\mathrm{h}$ (with frequency converter)
- Excellent performance and consumption specifications
- Hermetically sealed drive motor (IE2)
- Small footprint
- Innovative bypass valve
- Certified according to ATEX RL 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
- CE compliant electronics power supply

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 operation

DIP / DIJ / LEYBOJET

Oil diffusion pumps



Long maintenance intervals, wear-free, high safety standards.

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: 3,000 to 50,000 l/s DIJ: 2,800 to 28,000 l/s

LEYBOJET: 12,000 l/s

- Operating range:

DIP: $< 10^{-2}$ to 10^{-7} mbar DIJ: $< 10^{-2}$ to 10^{-7} mbar LEYBOJET: $< 10^{-2}$ to 10^{-5} mbar

- Optimum pumping speed in the pressure range $< 10^{-4}\,\text{mbar}$ (DIP, DIJ) and 10^{-2} to 10^{-3} mbar (LEYBOJET)
- No wear by revolving parts
- Simple operation
- Suited for application in sputtering processes (LEYBOJET)
- Innovative power efficiency controller (ROI < 2 years)

Controller for Fluid Entrainment Pumps Turbomolecular Pumps

Power 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 consumption data.

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

TURBOVAC i/iX

Turbomolecular pumps with hybrid bearing technology (mechanical/magnetic)



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 most varied applications and operation conditions

- Pumping speed up to 440 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
- Versions for high compression and high gas throughputs available
- 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.

Turbomolecular Pumps

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:

- 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

TURBOVAC MAG digital

Turbomolecular pumps, magnetically levitated



Flexible, vibration-free and low-maintenance turbomolecular pumps with separate frequency converter.

Your Expectations:

- Clean high and ultrahigh vacuum generation
- Robust and reliable in demanding semiconductor processes
- For installation in any orientation
- High forevacuum tolerance
- Long service life

- Pumping speed up to 3,200 l/s
- Magnetically levitated
- Compound stage versions available
- Stable system performance capability; high pumping speed and high compression ratios for all gases
- Easy system integration
- Temperature management system (TMS)

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

- 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



A full range of vibration-free and maintenance-free ion pumps, Titan sublimation pumps and NEG getter pumps to achieve best final pressures in the ultra-high vacuum.

Your Expectations:

- High pumping speed at excellent final pressure
- Hydrocarbon-free vacuum
- Long operating time

- Pumping speed 0.2 1,200 l/s
- Ultimate vacuum < 1 x 10⁻¹⁰ mbar
- Various TiTan™ pump elements for different requirements available:
- TiTan™ CV two Titan cathodes for highest pumping speed
- TiTan™ DI Titan- and Tantalum cathodes for improved long-term stability when pumping inert gases
- TiTan™ TR classic triode elements at higher operating pressures
- All TiTan™ and TSP components are bakeable up to 400 °C
- Wide range of accessories
- DIGITEL™ controller models for operation of ion pumps and TSPs in most diverse applications and configurations





TiTan™ and DIGITEL™ are registered trademarks of GAMMA VACUUM, USA

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

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

- 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 new 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 technical solution
- Highest measurement reliability and accuracy
- Professional consulting and support



- 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
- Enhanced HMI with simple controls, intuitive menu structure and comfortable multicolored touchscreen
- Integrated webserver featuring easy login via Wi-Fi for remote control with any internet-enabled smartphone or tablet



PHOENIX L500i

Leak detectors and leak testing systems



Highest productivity and reliability in testing all kinds of components during continuous short cycle operation. Unique operating concept.

Your Expectations:

- Absolutely reliable leak detection for quality assurance
- Rapid and reproducible test results
- High productivity
- Series testing in short cycle operation
- Testing of all kinds of components
- Simple and convenient operation
- Mobile unit, always ready for operation

- Rapid evacuation, fast start-up time
- Response time: < 1 s
- Helium pumping speed at the inlet up to 50 l/s
- Simple operation, clear test results visualization
- Integrated data memory
- Rugged, innovative industrial design
- Remote control for wireless operation up to a distance of 100 m

Vacuum Solutions / Engineering

Vacuum Systems

Engineering



Vacuum solutions and systems of all kinds from the worldwide leading supplier. Benefit from our long-term experience.

Your Expectations:

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



- 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 due to long-term 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

- 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

Central Vacuum Systems

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



VACUBE

Central vacuum stations



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

- Highly efficient oil-sealed rotary screw technology
- Pumping speed 420 to 1,620 m³/h
- Ultimate pressure ≤ 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 pallet size dimensions
- Programmable operation modes
- Plug and play system set up
- Long maintenance intervals

High Vacuum Pump Systems

TURBOLAB

High vacuum pump systems



Plug-and-play high vacuum pump systems based on well-proven components. Different configurations 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

UNIVEX

Experimentation and coating system



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

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

Calibration Systems Controllers for Vacuum Systems

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 (heating jacket, separate pump system for admitting gas, et al.)

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

- 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)

Valves

Fittings

LEYCON

Valves in different design types and driving modes



Reliable valve technology is 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

- 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

Vacuum Oils and Pump Fluids Leybold Academy

LEYBONOL

Vacuum oil, pump fluids and special lubricants



Broad product portfolio for every application in practical container sizes. Guaranteed, constant quality for a long pump lifetime.

Your Expectations:

- High quality lubricant with long lifetime
- Excellent vacuum performance
- Reliable pump fluids for diffusion pumps

Our Solution:

- Special vacuum oil in 5 star quality for highest demands, qualified according to proven standards
- Mineral, Ester, PAO special synthetic and PFPE oils for exchange intervals up to 3 years in clean applications
- Permanent quality control
- Oil analysis services for process control and optimization

Leybold Academy

Vacuum technology seminars/training center



Qualified training of your staff by practical knowledge transfer. Provides best possible performance and equipment uptime.

Your Expectations:

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

- Systematic training covering the entire spectrum of vacuum technology
- Basic seminars for technicians as well as non-technical employees
 - Advanced seminars
 - Leak detection seminars
 - Personnel qualification seminars according DIN EN ISO 9712 for NDT methode leak detection level LT1 and LT 2
 - Practical seminars
 - Customized seminars, tailored to your individual needs

Spare Parts After Sales Support

Spare Parts

Genuine wear parts and consumables



Original spare parts for long and trouble-free operation.

Your Expectations:

- Guaranteed availability
- Highest manufacturer quality
- Short delivery times

Our Solution:

- Range for all commonly requested spare and wearing parts, widely available in practice-oriented parts kits
- Spare parts are subject to the same rigorous quality requirements which apply to our pumps

After Sales Support

Services



Reliable original equipment manufacturer service from one source. Easy, competent, reliable

Your Expectations:

- Global availability of service
- Short downtimes
- Fair repair charges

- Range of service that accompanies your vacuum equipment over the entire life cycle
- Tailor-made service concepts and contracts
- Maintenance and repair, on-site or at a Leybold Service Center
- Installation and training
- Exchange and backup pool
- Calibration of measurement systems



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