

Product Overview 2016

Innovative

Vacuum Components
and Systems for Versatile
Applications

Product Overview 2016

The entire world of vacuum

Table of contents:

	Page
	3
Forevacuum pumps	
Oil sealed vacuum pumps:	
Rotary vane pumps SOGEVAC B/BI/D	3
Rotary vane pumps TRIVAC B, E and T	4
Dry compressing vacuum pumps:	
Diaphragm pumps DIVAC	4
Scroll pumps SCROLLVAC	4
Screw pumps and systems LEYVAC and DRYVAC	5
Screw pumps and systems SCREWLINE	6
Roots pumps:	
RUVAC WA(U)/WS(U)	6
RUVAC WH(U)	7
High vacuum pumps	
Fluid entrainment pumps:	
Oil booster pumps OB	7
Oil diffusion pumps DIP, DI-JET and LEYBOJET	8
Energy-efficiency control for diffusion pumps and OB pumps	8
Turbomolecular pumps:	
Mechanically suspended TURBOVAC	9
TURBOVAC i/iX with Hybrid bearing system	9
Magnetically levitated MAGIntegra and MAG digital	10
Cryogenic pumps and refrigerator cold heads:	
Refrigerator cryo pumps COOLVAC	11
Refrigerator cold heads COOLPOWER	11
Vacuum measurement and control	
Vacuum gauges and pressure measurement systems, vacuum controller GRAPHIX	12
Leak detectors	
Leak detectors PHOENIX L300i	13
Valves	
LEYCON valves	13
Pump systems	
Vacuum Systems / Engineering	14
Innovative pump and system management	14
Multistage forevacuum Systems (RUTA)	15
Central Vacuum Stations CVS	15
Calibration systems CS	16
High vacuum pump systems TURBOLAB	16
Experimentation and coating systems UNIVEX	17
Components	
Flange systems, connecting elements and components	17
Oils, greases and pump fluids	
LEYBONOL vacuum oils, pump fluids and special lubricants	18
Academy, Seminars	
Vacuum Academy	18
Maintenance and Repair	
Spare parts, wear parts and repair materials	19
Services	
After Sales Support	19
Online Shop	19

Product Overview 2016

Global support

Oil sealed Vacuum Pumps

Oerlikon Leybold Vacuum

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
 - Clear pricing
 - Certified in accordance with DIN ISO 9001/9002
 - After sales, application and production support
-

SOGEVAC B/BI/D

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 94/9/EG (RL 2014/34/EU)
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Product Overview 2016

Oil sealed Vacuum Pumps

Dry Vacuum Pumps

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 such as dust filters, adsorption traps, etc.

Your Expectations:

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

Our Solution:

- Pumping speed 2.5 to 65 m³/h
- Ultimate pressure 10⁻⁴ mbar
- For medium and high vacuum applications
- Certified according to ATEX RL 94/9/EG (RL 2014/34/EU)

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

SCROLLVAC

Oil-free scroll pumps



Dry, universal solution, low operating costs.

Your Expectations:

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

Our Solution:

- Pumping speed 5 to 60 m³/h
- Ultimate pressure $\leq 1 \cdot 10^{-2}$ mbar
- Robust, low-maintenance design
- High pumping speed even at 1000 mbar

Product Overview 2016

Dry Vacuum Pumps

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

Our Solution:

- Pumping speed 80 to 300 m³/h
 - Ultimate pressure $\leq 1 \cdot 10^{-2}$ mbar
 - Optimized performance for light gases
 - Hermetically sealed pump
 - Low noise operation, low heat loss
 - Direct connection of RUVAC Roots pumps via adapter
-

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 5,000 m³/h
 - Robust design for demanding processes
 - Highest energy efficiency
 - Flexible modular system for compact vertical and horizontal installation
 - Certified according to ATEX RL 94/9/EC, partially also according to ATEX Cat 2i
 - Integrated smart monitoring of major parameters; i-versions with touch screen control and profibus interface
-

Product Overview 2016

Dry Vacuum Pumps

Roots Vacuum Pumps

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

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 RL 94/9/EC
-

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 94/9/EC
-

Product Overview 2016

Roots Vacuum Pumps

Fluid Entrainment Pumps

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 (IE2)
 - Small footprint
 - Innovative bypass valve
 - Certified according to ATEX RL 94/9/EC, partially also according to ATEX Cat 2i
 - Direct connection of large forevacuum pumps via adapter
-

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
-

Product Overview 2016

Fluid Entrainment Pumps

DIP / DI-JET / 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
 - DI-JET: 2.800 to 28.000 l/s
 - LEYBOJET: 12,000 l/s
- Operating range:
 - DIP: $< 10^{-2}$ to 10^{-7} mbar
 - DI-JET: $< 10^{-2}$ to 10^{-7} mbar
 - LEYBOJET: $< 10^{-2}$ to 10^{-5} mbar
- Optimum pumping speed in the pressure range $< 10^{-4}$ mbar (DIP, DI-JET) 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)

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

Product Overview 2016

Turbomolecular Pumps

TURBOVAC

Turbomolecular pumps, mechanically suspended



Reliable and proven product range for demanding applications with separate pump electronics.

Your Expectations:

- Clean high and ultrahigh vacuum generation
- Reliable usage even under tough operating conditions
- Long service life

Our Solution:

- Pumping speed up to 1,150 l/s
 - Two oil-free mechanical ceramic bearings
 - Installation in any orientation
 - Versions with high resistance to mechanical shocks and shock venting obtainable
 - Versions without any electronics for radiation applications available
-

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

Our Solution:

- 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
-

Product Overview 2016

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

Our Solution:

- 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)

Product Overview 2016

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
 - Fully automatic system control and regeneration
-

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:

- Refrigerating capacity:
 - two-stage models down to 8 K
 - single-stage models down to 25 K
 - High refrigerating capacity from the smallest volume
 - Resistant to particles and deposits
 - Simple operation by key-press
 - No need for liquid helium and liquid nitrogen
-

Product Overview 2016

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 2,000 to 10^{-12} mbar for every application
- Intuitive operation and flexible data retrieval
- Pressure switches and pressure control instruments
- 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 2000 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 bargraph 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

Product Overview 2016

Leak Detectors Valves

PHOENIX L300i

Leak detectors and leak testing systems



Designed for the requirements of industrial series production. Well-proven and easy to use in production and quality control programs.

Your Expectations:

- Non-destructive components testing for quality assurance
- Reliable technical solution
- Professional consulting
- Design and delivery of custom leak detection systems

Our Solution:

- Suitable for mobile or stationary vacuum and sniffer operation
 - Configuration of leak rate, time and type of gas according to customer specifications
 - Quick start-up, high measurement accuracy
 - Remote control for wireless operation up to a distance of 100 m
-

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, like vacuum lock and sealing valves, venting valves, leak valves
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Product Overview 2016

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



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

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

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)

Product Overview 2016

Vacuum Systems

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

Our Solution:

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

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
- 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 1000 liters
- Electric power from 0.8 to 18.9 kW
- Control type BASIC or Full Featured
- Low cost of ownership



Product Overview 2016

Vacuum Systems

High Vacuum Pump 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)
- Ensuring reproducible parameters

Our Solution:

- Universal calibration systems with a special vacuum chamber, turbo-molecular pump system, vacuum gauges and additional components depending on the calibration pressure (heating jacket, separate pump system for admitting gas, et al.)

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 65 - 450 l/s
- 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

Product Overview 2016

Vacuum Solutions for special Applications Fittings

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
-

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:

- 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
-

Product Overview 2016

Vacuum Oils and Pump Fluids

Vacuum 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 and PFPE oils
 - Permanent quality control
 - Oil analysis services for process control and optimization
-

Vacuum Academy

Vacuum technology seminars/training center



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

Your Expectations:

- Comprehension of vacuum technology
- Practical training

Our Solution:

Systematic training covering the entire spectrum of vacuum and leak detection technology.

The program comprises:

- Fundamentals of vacuum technology
 - Leak detection and leak testing
 - Maintenance work on vacuum pumps
 - Customer-specific workshops
 - Qualified according to DIN ISO 9712 (leak testing)
-

Product Overview 2016

Spare Parts

After Sales Support, Online Shop

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



24/7 support by phone. Fast response times. High quality standard. Custom solutions for your specific service requirements.

Your Expectations:

- Global service
- Short downtimes
- Fair repair charges

Our Solution:

- Maintenance and repair, on-site or at an Oerlikon Leybold Vacuum Service Center
 - Exchange and backup pool
 - Installation and training
 - Service across all brands
 - Tailor-made maintenance contracts
 - Decontamination services
 - Calibration of measurement systems
-

Online Shop

www.leyboldvacuum-shop.com



Shopping vacuum technology online. Available in more than 12 countries worldwide.

Your Expectations:

- Simple order process
- Secure payment options
- Wide choice of products

Our Solution:

- Purchase vacuum components with no need of advisory services, such as fittings, measuring instruments, pumps, spare parts, vacuum oils, lubricants
 - Delivery on invoice, credit card or pre-payment
-

At Your Service.

Fast. Competent. Customer oriented.



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