

Product Overview 2014

Innovative

Vacuum Components

and Systems for Versatile

Applications

Product Overview 2014

The entire world of vacuum

Table of contents:

	Page
	3
Forevacuum pumps	
Oerlikon Leybold Vacuum - Consulting, Sales and Service	3
Oil sealed vacuum pumps:	
Rotary vane pumps TRIVAC B	3
Rotary vane pumps SOGEVAC B/BI/FP	3
Rotary piston pumps E/DK	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/WS and RUVAC WH	6/7
High vacuum pumps	
Fluid entrainment pumps:	
LEYBOJET OB	7
DIP and LEYBOJET.....	8
Energy-efficiency control for diffusion 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 VACVISION	12
Leak detectors	
Leak detectors PHOENIX L300i and PHOENIX L500i	13
Solutions	
Vacuum Solutions/Engineering	14
Innovative pump and system management	14
Multistage Forevacuum Systems (RUTA)	15
Central Vacuum Supply Systems CVS	15
Calibration systems CS	16
High vacuum pump systems PT/TURBOLAB	16
Experimentation and coating systems UNIVEX	17
Thermal reactor for CVD applications CVD Cube	17
Components	
Spare parts, wear parts and repair materials	17
Flange systems, connecting elements and components	18
LEYCON valves	18
Oils, greases and pump fluids	
LEYBONOL vacuum oils, pump fluids and special lubricants	18
Services	
Vacuum Academy	19
After Sales Support	19

Product Overview 2014

Global support

Oil sealed Vacuum Pumps

Oerlikon Leybold Vacuum

Consulting, sales and service



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

TRIVAC B

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, optionally

Our Solution:

- Pumping speed 2.5 to 65 m³/h
- Ultimate pressure 10⁻⁴ mbar
- For medium and high vacuum applications
- Certified acc. to ATEX RL 94/9/EG

SOGEVAC B/BI/FP

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:

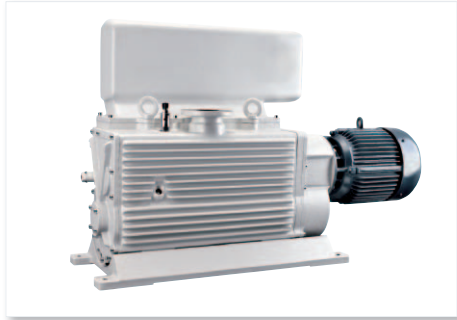
- Pumping speed 10 to 1,200 m³/h
- Ultimate pressure $\leq 5 \cdot 10^{-2}$ mbar
- O₂-compatible versions
- Separate standard product line for the food and packaging market
- Flexible pump design
- Certified acc. to ATEX RL 94/9/EC

Product Overview 2014

Oil sealed Vacuum Pumps Dry Vacuum Pumps

E / DK

Rotary piston pumps



Ideal pump for harsh applications.

Your Expectations:

- Rugged vacuum generator
- High pumping speed, low ultimate pressure
- Insensitive to dirt

Our Solution:

- Pumping speed 200 and 250 m³/h
 - Ultimate pressure < 10⁻³ mbar
 - Single and dual stage versions available
 - Expandable to pump systems by adding a Roots pump
-

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 ≤ 1 · 10⁻² mbar
 - Robust, low-maintenance design
 - High pumping speed even at 1000 mbar
-

Product Overview 2014

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
- Resilient vacuum pumps for harsh applications and high process throughputs
- Compact unit

Our Solution:

- Pumping speed 80 to 145 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
 - Rugged, for demanding processes
 - Highest energy efficiency
 - Flexible modular system for compact vertical and horizontal installation
 - Integrated smart monitoring of major parameters; i-versions with touch screen control and profibus interface
-

Product Overview 2014

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 acc. to ATEX RL 94/9/EC
-

RUVAC WA/WS

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 rugged
 - Available with flanged motor or with hermetically sealed drive motor
 - Suitable for 100% O₂ applications
 - Certified acc. to ATEX RL 94/9/EC
-

Product Overview 2014

Roots Vacuum Pumps

Fluid Entrainment Pumps

RUVAC WH

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 the gas
- 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
 - Direct connection of large forevacuum pumps via adapter
-

LEYBOJET 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 2014

Fluid Entrainment Pumps

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



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 2014

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
 - 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)
 - 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 2014

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
- Rugged 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 2014

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
 - Clamp and CF flange versions
 - Fully automatic regeneration cycle
-

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 2014

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

VACVISION

Vacuum controller



Flexible and easy configuration and controlling of the vacuum system via touch screen.

Your Expectations:

- Fully automated control of the entire vacuum system
- Flexible configurable auto control of the pumping system
- Simple handling and operation (plug & play)
- Fast process data accumulation and transfer via USB to PC

Our Solution:

- Connection of all vacuum components, e.g. fore- and high vacuum pumps, up to 5 valves and 5 active sensors
- Self detection of connected vacuum devices
- Visualization of the entire vacuum system on a large TFT graphic display

Product Overview 2014

Leak Detectors

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
-

PHOENIX L500i

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

Our Solution:

- Rapid evacuation, fast start-up time
 - Response time: < 1 s
 - Helium pumping speed at the inlet up to 50 l/s
 - Operation either cable-bound connected or wireless via iPad (WiFi)
 - Simple operation, clear test results visualization
 - Integrated data memory
 - Rugged, innovative industrial design
-

Product Overview 2014

Vacuum Solutions / Engineering

Vacuum Systems Solutions / 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 2014

Vacuum Systems

RUTA Vacuum Systems

Multistage vacuum 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 backing and high vacuum 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 supply systems



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 560 m³/h
 - Ultimate pressure ≤ 0.5 mbar
 - Vessel volume 60 to 1000 l
 - Electric power from 0.8 to 11 kW
 - Control type BASIC or Full Featured
-

Product Overview 2014

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.)
-

PT-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 33 to 600 l/s
 - Ultimate vacuum down to 10^{-10} mbar
 - Completely preassembled as a benchtop unit with turbomolecular pump, frequency converter and fore-vacuum pump
 - Control unit for automatic or manual operation optional
-

Product Overview 2014

Vacuum Solutions for special Applications Spare Parts

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

CVD Cube

Thermal reactor for CVD applications



Extremely compact benchtop unit for chemical gas phase deposition for the production of graphene and carbon nanotubes.

Your Expectations:

- Demanding CVD applications
- Fast, reproducible results
- High safety

Our Solution:

- Plug-and-play system
- USB connection at the reactor
- User-friendly operation and software for experiment programming, operation and control
- Adjustable masses for gases e.g. Ar, H₂, CH₄, N₂

Ersatzteile

Genuine wear parts and consumables



Original spare parts for long and trouble-free operation.

Your Expectations:

- Original equipment manufacturer parts with 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

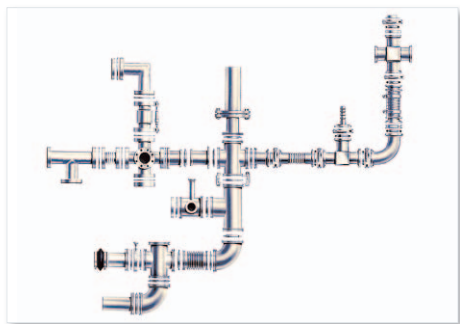
Product Overview 2014

Fittings, Valves

Vacuum Oils and Pump Fluids

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:

- Small flanges in sizes DN 10 to DN 50
- Clamped flanges in sizes DN 63 to DN 630
- CF flanges in sizes DN 16 to DN 250

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

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

Product Overview 2014

Vacuum Academy After Sales Support

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 technology.

The program comprises:

- Fundamentals of vacuum technology
 - Leak detection and leak testing
 - Maintenance work on vacuum pumps
 - Customer-specific workshops
-

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
-

At Your Service.

Fast. Competent. Customer oriented.



Your contact – wherever you are

Belgium

Phone: +32 2 711 00 83
sales.vacuum.zv@oerlikon.com

China

Phone: +86 22 2697 0808
sales.vacuum.tj@oerlikon.com

France

Phone: +33 1 69 82 48 00
info.vacuum.ctb@oerlikon.com

Germany

Phone: + 49 221 347 1112
sales.vacuum@oerlikon.com

India

Phone: +91 80 278 3992
sales.vacuum.pu@oerlikon.com

Italy

Phone: +39 02 27 22 31
sales.vacuum.mi@oerlikon.com

Japan

Phone: +81 45 471 3330
sales.vacuum.yh@oerlikon.com

Korea

Phone: +82 31 785 1367
sales.vacuum.bd@oerlikon.com

Netherlands

Phone: +31 30 242 6330
sales.vacuum.ut@oerlikon.com

Spain

Phone: +34 93 666 4311
sales.vacuum.ba@oerlikon.com

Switzerland

Phone: + 41 44 3 08 40 50
sales.vacuum.zh@oerlikon.com

Taiwan

Phone: +886 3 500 1688
sales.vacuum.hc@oerlikon.com

UK

Phone: +44 13 7273 7300
sales.vacuum.ln@oerlikon.com

USA

Phone: +1 800 764 5369
info.vacuum.ex@oerlikon.com

leybold

Headquarter Germany

Oerlikon
Leybold Vacuum GmbH
Bonner Strasse 498
D-50968 Köln

T +49 (0) 221-347-0
F +49 (0) 221-347-1250
info.vacuum@oerlikon.com

www.oerlikon.com/leyboldvacuum

