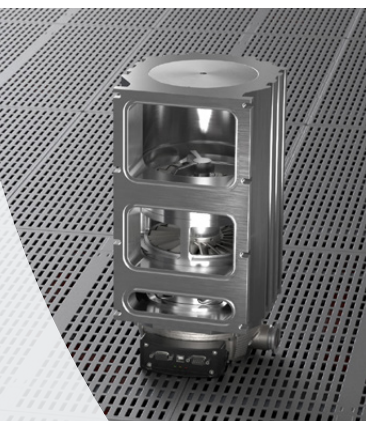
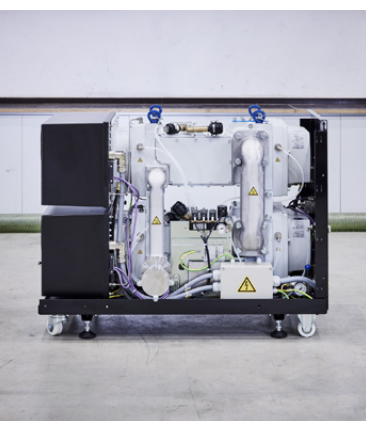




## Product overview 2025

Innovative vacuum pumps, systems and components for diverse applications



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## Oil-sealed vacuum pumps

### SOGEVAC

Single-stage rotary vane pumps



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

**Your needs:**

- Industrial rough vacuum generator
- Favorable price-to-performance ratio
- High reliability
- Analytical backing pumps
- ATEX or O<sub>2</sub> applications
- Low noise and clean operation

**Our solutions:**

- Pumping speeds of 10 to 840 m<sup>3</sup>/h
- Ultimate pressure  $\leq 5 \times 10^{-2}$  mbar
- O<sub>2</sub>-compatible versions
- Separate standard product line for food and packaging applications
- Flexible pump design
- Quietest pumps on the market with oil loss of less than 1 ppm
- ATEX directive 2014/34/EU certification
- Direct connection of RUVAC Roots pumps via an adapter
- Compatible with GENIUS Instant Insights



### NEO (S)D

Medium vacuum rotary vane pumps

- ✓ **No oil loss with integrated exhaust filter**
- ✓ **Best vapor pumping with no condensation**
- ✓ **Maintenance free up to three years in clean applications**

**Your needs:**

- Medium vacuum pumps at affordable prices
- No oil loss at exhaust
- Longest possible maintenance intervals
- Monitoring options
- Broad portfolio, can also accommodate special requests

**Our solutions:**

- Pumping speeds of 16 to 76 m<sup>3</sup>/h, all sizes available for single or three-phase power supply
- Ultimate pressure  $\leq 8 \times 10^{-3}$  mbar
- Integrated exhaust filtration and oil return with oil loss below 1 ppm
- Use of long-life oils and dynamic shaft seals
- Flexible pump design for retrofitting accessories or custom-made variants





## TRIVAC

### Dual-stage rotary vane pumps

- ✓ **A well-proven vacuum pump for long-term operation**
- ✓ **Extensive line of accessories**

#### Your needs:

- Rugged vacuum generator
- High reliability
- Optional ATEX explosion protection

#### Our solutions:

- Pumping speeds
  - TRIVAC B: 4 to 65 m<sup>3</sup>/h
  - TRIVAC E: 2.5 m<sup>3</sup>/h
  - TRIVAC L: 40 to 90 m<sup>3</sup>/h
  - TRIVAC T: 4 to 30 m<sup>3</sup>/h
- Ultimate total pressure
  - TRIVAC B:  $2 \times 10^{-3}$  mbar
  - TRIVAC E:  $2 \times 10^{-3}$  mbar
  - TRIVAC L:  $3 \times 10^{-3}$  mbar
  - TRIVAC T:  $5 \times 10^{-3}$  mbar
- For medium vacuum applications
- Economic OEM product range (TRIVAC T)
- ATEX directive 2014/34/EU certification (TRIVAC B)
- Direct connection of RUVAC Roots pumps via an adapter
- Dedicated variants TRIVAC BCS and accessories for harsh applications



## 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 needs:

- "Plug and Go" installation
- Suitable for high water vapor applications
- Potential energy savings of 50% or more

#### Our solutions:

- Highly-efficient oil-sealed rotary screw technology
- Variable pumping speeds of up to 4,980 m<sup>3</sup>/h
- Ultimate pressure of 0.35 mbar
- Integrated frequency converter for load-dependent speed control
- Controller with configurable interface and automated insights & updates
- Long maintenance intervals
- Ideally to be combined with our Multi-VAControl (see page 13)
- Compatible with GENIUS Instant Insights



## Dry-compressing vacuum pumps

### ECODRY plus

Dry-compressing multistage roots pumps

#### ECODRY 25 and 35 plus

- ✓ **High-performance compact vacuum pumps for clean applications**

##### Your needs:

- Small – Compact, light weight design for easy handling
- Fast – High speed from high pressure down to low ultimate
- Smart – Gauge and valve control
- Green – Low energy consumption, especially with eco-mode
- Maintenance-free pump

##### Our solutions:

- Each pump in the platform comes with the same compact dimensions and a low weight of less than 30kg
- Pumping speeds of 25/35 m<sup>3</sup>/h with high pumping speed at atmospheric pressure
- Adaptive speed control via a Leybold vacuum gauge
- Air-cooled pump
- Oil- and particle-free operation



#### ECODRY 40 and 65 plus

- ✓ **Vacuum pumps with low noise emissions for clean applications**

##### Your needs:

- Clean and quiet environment
- Easy handling
- High energy-efficiency
- Maintenance-free pump
- Application expertise in challenging R&D applications

##### Our solutions:

- Two pumping speed variants with ECODRY 40 and 65 plus
- Lowest noise levels in class
- Excellent pumping performance for light gas applications
- Best-in-class water vapor tolerance
- Remote operation with external drive option
- Air-cooled pump
- Oil and particle-free operation

## CLAWVAC

Oil free claw pumps

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

### Your needs:

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

### Our solutions:

- Pumping speeds of 65–1,000 m<sup>3</sup>/h
- No oil migration into process, no environmental oil contamination
- Extremely efficient air cooling, low heat emissions, non water-cooled
- Corrosion-resistant pump chamber and claws (stainless steel claws for sizes 65 to 300)
- Easy onsite cleanup
- Up to 50% energy savings via operation with variable speed drive



## SCROLLVAC plus

Oil-free scroll pumps

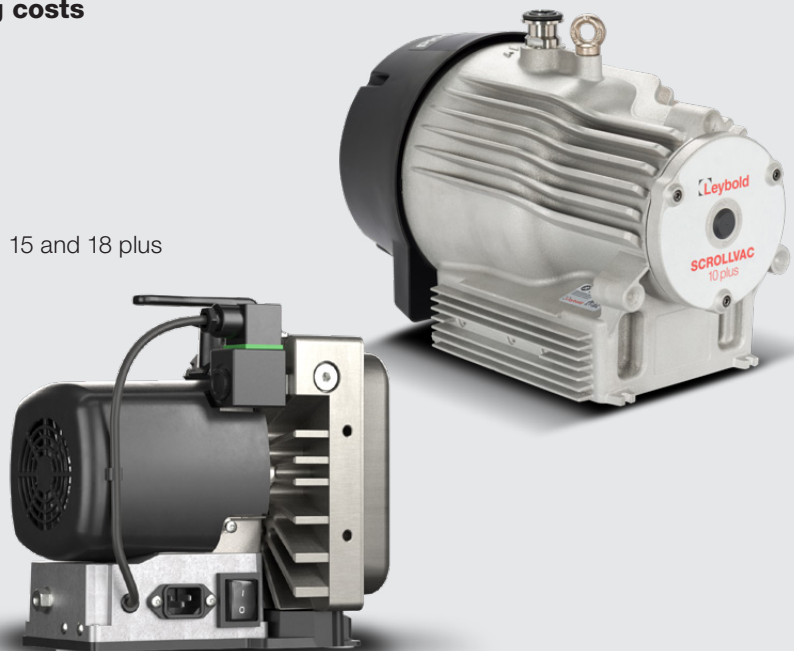
- ✓ **Dry, universal solution, low operating costs**

### Your needs:

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

### Our solutions:

- Five speed variants with the SCROLLVAC 3, 7, 10, 15 and 18 plus
- Single and triple phase available
- Robust, low-maintenance design
- Compatible with GENIUS Instant Insights





## Dry-compressing vacuum pumps

### VARODRY

Dry-compressing screw pumps

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

#### Your needs:

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

#### Our solutions:

- Pumping speeds of 65, 100, 160 and 200 m<sup>3</sup>/h
- Ultimate pressure  $\leq 1 \times 10^{-2}$  mbar
- Fully air-cooled design, no need for water cooling
- Minimal maintenance demands
- Most robust pump design
- HD/O<sub>2</sub> variant can handle up to 100% O<sub>2</sub> and harsher applications
- OEM variant with reduced footprint for optimal system integration



### VARODRY VDi+ System

Smart pump down systems with integrated controller

- ✓ **Intelligent pump systems with a little extra performance**
- ✓ **Easy maintenance**
- ✓ **Smart control**

#### Your needs:

- Adaptivity to various process needs
- Low total cost of ownership and small footprint
- Robust, adjustable performance
- Energy efficient

#### Our solutions:

- Special software features for advanced application needs
- Low maintenance costs due to decreased need for spare parts
- Performance on demand via intelligent software functions
- Extra Roots to boost pump down
- Additional energy savings with the energy saver kit





## DURADRY

Dry screw vacuum pump

- ✓ **High performance, user-friendly dry screw vacuum pumps**
- ✓ **The next stage of high-performance dry screw vacuum technology**

### Your needs:

- Stainless steel cooling system avoids corruptions
- Smart drive to monitor rotor frequency, temperatures, etc.
- Less than 64 dB of noise and vibration for easier working
- Gas sealing system prevents contamination of components

### Our solutions:

- "Plug and Go" design: multiple connector options, easy operation, simple serviceability
- Enhanced heat distribution, thermal control, dust handling, low power consumption
- Fully hermetic system: sensors, dynamic seal design, no oil leakage, quieter operation
- Suitable for harsh conditions—high temperatures, oxygen, corrosive environments



## LEYVAC

Dry-compressing screw pumps

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

### Your needs:

- Industrial vacuum generator
- Extended system uptimes
- High pumping speeds at atmospheric pressure

### Our solutions:

- Pumping speeds of 80 to 145 m³/h
- Ultimate pressure  $\leq 1 \times 10^{-2}$  mbar
- Hermetically-sealed pump
- Direct connection of RUVAC Roots pumps via an adapter



## Dry-compressing vacuum pumps

### SCREWLINE

Dry-compressing screw pumps



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

#### Your needs:

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

#### Our solutions:

- Pumping speeds of 630 m<sup>3</sup>/h
- Ultimate pressure  $\leq 1 \times 10^{-2}$  mbar
- Expandable to pump systems through the addition of Roots pumps
- Monitoring system
- Easy to disassemble pump chamber for quick cleaning
- ATEX directive 2014/34/EU certification
- Direct connection of RUVAC Roots pumps via an adapter
- Compatible with GENIUS Instant Insights



### DRYVAC

Dry-compressing screw pumps



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

#### Your needs:

- Maximum system availability
- Low cost of ownership
- Minimal footprint
- Protected pump and easy communication

#### Our solutions:

- Pumping speeds from 200 to 1,600 m<sup>3</sup>/h
- Guaranteed highest uptimes through a robust and high-performance design
- Proven track record in harsh applications
- Higher production yields and long-term stable pumping speeds
- Benchmarking energy savings via a sophisticated rotor design
- Easy installation with compact design
- Quiet - less noise loads at production
- Onboard intelligence - easy-to-use controls and self monitoring via an integrated FC
- A dry solution for every application
- Direct connection of RUVAC Roots pumps via an adapter
- Compatible with GENIUS Instant Insights



## DRYVAC Energy Saver

Power saving unit for DRYVAC and DRYVAC Systems

- ✓ **Quick ROI (approximately one year) with energy savings of up to 50%**

### Your needs:

- Cost savings through reduced energy consumption
- Improved ultimate pressures

### Our solutions:

- Power savings up to 50% at inlet pressures of < 5 mbar
- Ultimate pressure improvements by one decade
- For all pumps and systems with LEYBONOL LVO 210
- To be used in applications with non-flammable gases or oxygen concentrations of  $\leq 21\%$
- Compatible with GENIUS Instant Insights



## DRYVAC FP-r wash down version

Dry-compressing screw pumps for food & packaging applications

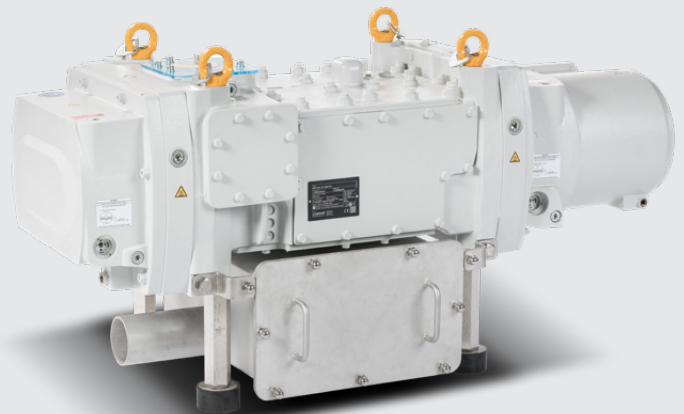
- ✓ **The hygienic pump can be installed in proximity of your production line, increasing your packaging and bottling performance. DV 650/800 FP-r pumps can be washed down with your other production equipment.**

### Your needs:

- High and long-term stable pumping speeds
- Low energy consumption
- Low heat dissipation to the food area
- Reduced footprint
- Daily wash down ready

### Our solutions:

- A compact, water-cooled and silent dry screw pump
- Pumping speeds of 650 and 800 m³/h
- O<sub>2</sub> compatible versions for MAP of red meat with oxygen
- External frequency converter for easy networking and control
- Optional integrated, easy-to-clean stainless steel silencer
- Optional energy saver allows up to 50% energy savings at low pressure
- Three inlet ports available, allowing for flexible installation and connection





## Dry-compressing vacuum pumps

### NOVADRY

#### Dry-compressing screw pumps

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

#### Your needs:

- Zero oil emissions to avoid oil contamination of products
- Lowest maintenance requirements
- Simple "Plug and Go" installation with no complicated controls or need for utilities
- Lowest cost of ownership
- No need for expensive PFPE

#### Our solutions:

- 100% oil-free design
- Fully air-cooled design based on hygienic principles
- Standard pump released for "Modified Atmosphere Packaging" (MAP) with O<sub>2</sub>
- Maximum robustness and extended uptimes
- Low noise levels
- Low operating cost



### NOVADRY NDi System

#### Smart central vacuum systems with integrated controllers

- ✓ **Intelligent pump systems with vacuum on demand**
- ✓ **Easy maintenance**
- ✓ **Smart control**

#### Your needs:

- 100% oil free for clean exhaust
- Robust dry screw – at any working pressure
- Plug & Pump – air cooled and ready-to-go

#### Our solutions:

- Proven performance down to 1 mbar ultimate pressure
- Low maintenance - no oil changes or oil filter changes
- High performance at any working pressure
- Gas ballast & self-draining design
- Smart control via our VAControl software





## Accessories and electronics

### Hygienic Enclosure

Enables wash-down cleaning of pumps installed inside food processing areas

- ✓ **Protects pumps from contamination (e.g., during food processing) or aggressive wash-down agents**
- ✓ **Standardized design, available for all NOVADRY pumps**

#### Your needs:

- 100% hygienic operation of vacuum pumps within the food processing area
- No pump corrosion with aggressive cleaning agents
- Cost-effective solution that avoids pumping speed losses over long pips
- No pump overheating due to inappropriate enclosure design
- Easy integration

#### Our solutions:

- Corrosion-resistant stainless-steel materials - resistant against aggressive wash-down cleaning agents
- Hygienic design with slanted surfaces – no accumulation of wash down liquids
- No contact of pump surfaces with food or wash-down cleaning agents
- Special design prevents pump overheating by enclosure
- Fast & easy onsite assembly



### Multi-VAControl

Smart rough vacuum control



- ✓ **Multi-VAControl creates an interconnected system of multiple pumps, ideally with variable speed driven pumps, but also with fixed speed or even competitors' pumps**

#### Your needs:

- Cost optimizations via energy savings
- An intelligent pump control with extensive communication features
- A solution that's easy to use and install

#### Our solutions:

- Modes for optimizing energy usage, maintenance intervals (or the best of both)
- Direct communication via various methods, including I/O and field busses
- "Plug and Go" set-up
- Compatible with GENIUS Instant Insights



## Accessories and filter

### All in one Inlet Filter kits

Inlet filter kits for SV, CP, VD and ND

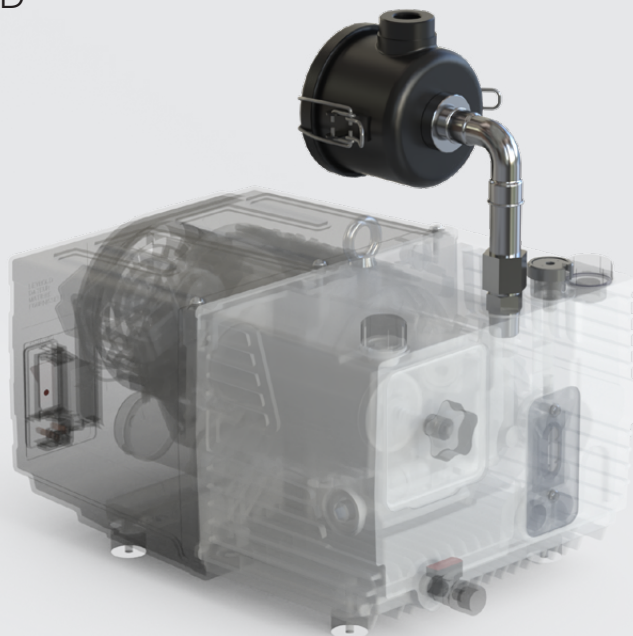
#### ✓ High performing liquid separators for all high-humidity applications

##### Your needs:

- Protect pump from debris, abrasion by dust, formation of corrosive slurry
- Prevent permanent damage of pump

##### Our solutions:

- Preventive maintenance
- Complete kit with required fittings
- Easy maintenance
- Environment friendly solution
- Shortest lead time on filters and elements



### LEYTRONIC

Frequency converters

#### ✓ Frequency converters for WA(U) 251-2001 / WS(U) 251-2001

##### Your needs:

- Save energy
- Increase pump performance
- Pump protection

##### Our solutions:

- "Plug and Go" system
- Pre-parameterized drives



### Liquid separators

LF 550 and LF 1800

#### ✓ High performing liquid separators for all high-humidity applications

##### Your needs:

- Pump protection
- Reduced corrosion
- Reduced maintenance cost

##### Our solutions:

- Liquid separation
- Demister for pre-filtration
- Polyester cartridge 5microns
- For 200 to 1,800 m³/hr pumping speed
- Adjustable feet
- Optional auto drain system



## Roots pumps

### RUVAC WA(U)/WS(U)

#### Roots blowers

- ✓ **Long-lasting and reliable**
- ✓ **Easy connection to any fore vacuum pump**

##### Your needs:

- Increased pumping speeds at low pressures
- Easy to use
- Oil-free gas pumping
- ATEX explosion protection

##### Our solutions:

- Pumping speed ranges from 250 to 4,000 m<sup>3</sup>/h
- Reliable and robust
- Available with flanged motor or hermetically-sealed drive motor
- Suitable for 100% O<sub>2</sub> applications
- ATEX directive 2014/34/EU certification



### RUVAC WH(U)

#### Roots blowers

- ✓ **An innovative, efficient and cost-effective product line for use in modern process industry applications**

##### Your needs:

- Flexible pumping speeds with frequency converter
- Rapid pump down times
- Compact design
- Oil-free pumping of gases
- System compatibility
- Low current consumption

##### Our solutions:

- Pumping speeds from 720 to 9,800 m<sup>3</sup>/h (with frequency converter)
- Excellent performance and energy consumption specifications
- Hermetically-sealed drive motor
- Small footprint
- Innovative bypass valve
- ATEX directive 2014/34/EU certification and partial certification for ATEX Cat 2i
- Direct connection of large fore vacuum pumps via an adapter
- Compatible with GENIUS Instant Insights





## Fluid entrainment pumps

### DIFFVAC OB

#### Oil vapor booster pumps

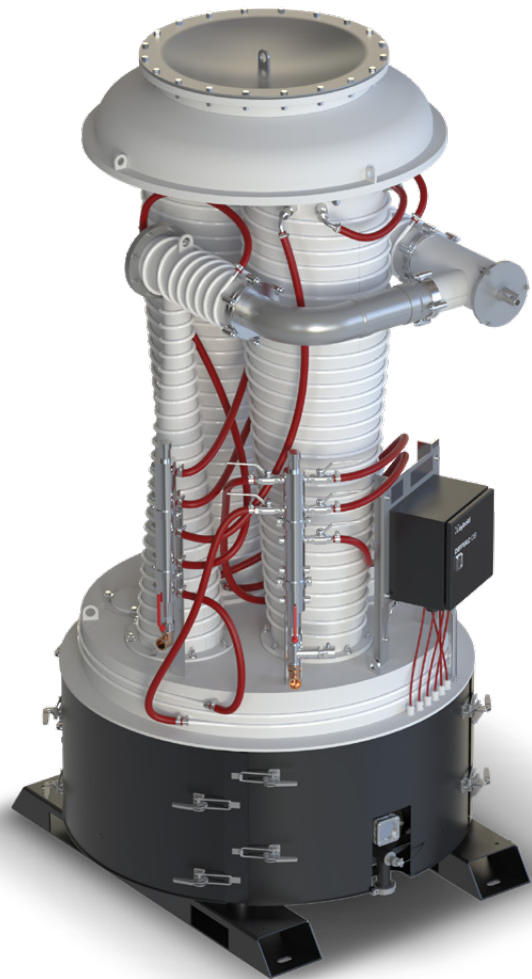
- ✓ **Robust oil booster pumps with high pumping speeds and gas throughput for harsh-process industrial applications**

##### Your needs:

- High vacuum
- Extremely high critical backing pressure capabilities
- High pumping speeds and throughput
- Safe and economic design
- High energy efficiency requirements

##### Our solutions:

- Pumping speeds of 6,000 l/s to 12,000 l/s
- Operating range:  $<10^{-2}$  to  $10^{-4}$  mbar
- High gas-throughput
- Stable pumping speeds in low pressure ranges
- Small footprint
- Reduced CO<sub>2</sub> footprint and energy savings via our innovative Energy Efficiency Controller



### DIFFVAC DP

#### Oil diffusion pumps

- ✓ **High-performance oil diffusion pumps for high vacuum applications in which high pumping speeds are required**

##### Your needs:

- Stable high vacuum
- High pumping speeds
- Safe and economic design
- Increased reliability in industrial high vacuum applications

##### Our solutions:

- Pumping speeds of 20,000 l/s (with helium)
- Pumping speeds 50,000 l/s, 30,000 l/s and 12,000 l/s will be released 2025
- Operating range:  $<10^{-3}$  to  $10^{-7}$  mbar
- Innovative direct heater concept for improved warmup times
- Reduction of CO<sub>2</sub> footprint and energy savings via our innovative Energy Efficiency Controller





## Big valve

Stainless steel valve for high vacuum

✓ **Long product life, easy service and maintenance**

### Your needs:

- Membrane-sealed
- Low leak level

### Our solutions:

- Long-lasting, high cycle rates (> 50,000)
- High conduction
- Bypass and measurement flange included
- FPM o-ring sealed
- Single plug, position indicators and connected pilot valve



## Energy Efficiency Control (EEC)

Control unit for DIFFVAC pumps

✓ **Quick ROI (< 2 years) with energy savings of up to 30%**

✓ **Easy and convenient to use**

✓ **Optimized power and oil-based power consumption**

### Your needs:

- Cost savings through reduced energy consumption
- Easy to use
- PLC-controlled

### Our solutions:

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



## Turbomolecular pumps

### **TURBOVAC i/iX**

Turbomolecular pumps with hybrid bearing technology

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

**Your needs:**

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

**Our solutions:**

- Pumping speeds of up to 1,450 l/s
- Oil free hybrid bearings (mechanical/permanent magnetic)
- Installation in any direction
- 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) for controlling and monitoring the pump, including connection facility for two pressure gauges available as accessories

### **TURBOVAC iR**

Turbomolecular pumps with remote drive

- ✓ **Specially designed for challenging R&D applications**

**Your needs:**

- Remote electronics
- Radiation resistance

**Our solutions:**

- Oil-free, robust turbomolecular pump
- Installation in any direction
- Remote electronics, including a variety of options for communication



### **TURBOVAC i/iX MI**

Turbomolecular pump multi-inlet line

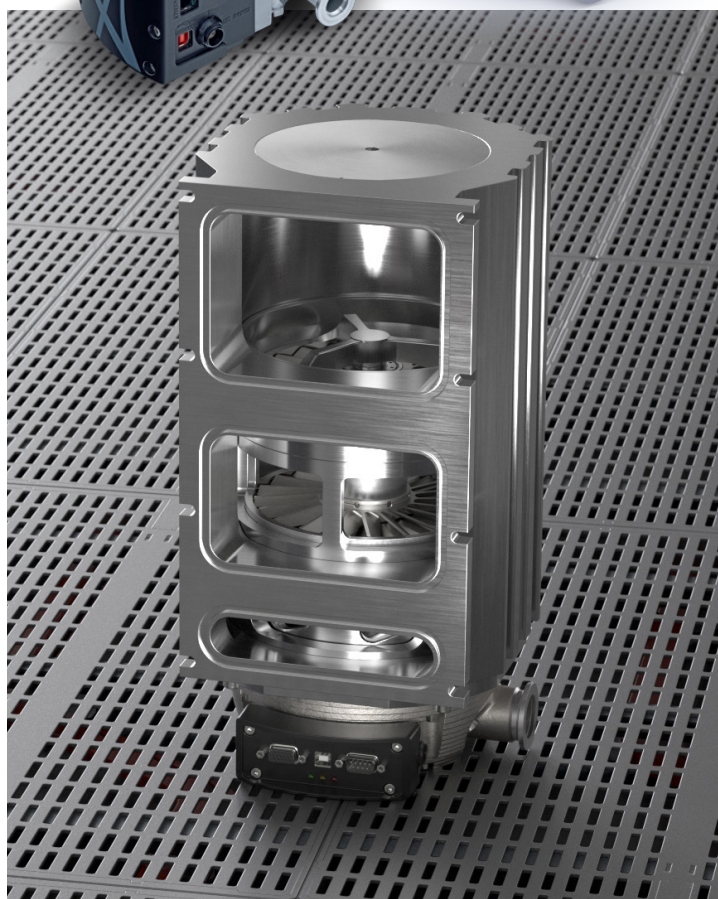
- ✓ **Flexible custom, turn-key vacuum solution**
- ✓ **Highest productivity and system uptimes at lowest CoO**

**Your needs:**

- Clean, high and ultra-high vacuum generation
- Suitable for analytical applications
- Small footprint
- Lower cost
- Ease of installation and operation
- Long service life

**Our solutions:**

- Pumping speeds of up to 1,450 l/s
- Flexible design to satisfy customer's instrument requirements
- Integrated with more than two inlets in one pump system to reduce total footprint and costs
- Hassle-free installation and maintenance
- Oil-free hybrid bearings (mechanical/permanent magnetic)
- Integrated electronics including a variety of options for communication and control of accessory components



## TURBOVAC MAG iS

Magnetically levitated turbomolecular pumps

- ✓ **One of the most compact Maglev pumps in its 3,000 l/s class**
- ✓ **Ideal for use in coating applications, as well as research and industrial environments**
- ✓ **Mountable in any orientation**

### Your needs:

- Able to withstand industrial environments
- Compact, versatile and easy to deploy
- Minimal maintenance required

### Our solutions:

- Pumping speeds up to 3,200 l/s
- The most compact magnetically levitated turbo pump in its class
- Impervious to mechanical shock and exposure to dust/moisture
- Up to 80,000 hours maintenance-free performance
- Clean, hydrocarbon-free, and vibration-free vacuum



## TURBOVAC MAGiNTEGRA

Turbomolecular pumps, magnetically levitated

- ✓ **Flexible interface options**
- ✓ **On-board frequency converter and power supply**
- ✓ **Easy, space-saving system integration**

### Your needs:

- Clean, high and ultra-high vacuum generation
- Suitable for industrial uses such as PVD and coating processes and display and glass coating
- Impervious to particles or deposits
- Low maintenance requirements

### Our solutions:

- Pumping speeds of up to 2,200 l/s
- High pumping speeds 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





## Cryogenic systems

### COOLVAC cryo pump COOLPAK helium compressor

Cryogenic systems

- ✓ High water vapor pumping capabilities
- ✓ Long maintenance direction
- ✓ Installation in any orientation
- ✓ Boost (fast cool down), customized or economical mode

#### Your needs:

- Hydrocarbon-free vacuum
- High and ultra-high vacuum generation

#### Our solutions:

- Pumping speeds of up to 60,000 l/sec
- DN ISO-K, ISO-F, CF and ANSI flange variants with vertical or horizontal orientation
- Two variants for manual and for fully-automatic system control and regeneration available
- Pump controller mounted on pump for 100% automatically-controlled iSL version allows for easy process and network system integration



### COOLPOWER refrigerator

Cooling systems

- ✓ Gas refrigerating machines for cryogenic temperature generation based on the Gifford-McMahon principle
- ✓ Designed for cooling superconductors (magnets, samples and sensors) for medical applications, research and space simulation

#### Your needs:

- High refrigeration capacity
- Small footprint
- Long, maintenance-free operation
- Reduced vibration

#### Our solutions:

- Ultimate temperatures: two-stage models down to 2,7 K  
single-stage models down to 25 K
- High refrigeration capacity from the smallest volumes:
  - 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
- Impervious to particles and deposits
- Easy key-press operation
- High reliability



# UHV (Ultra-high vacuum) solutions

## NEG Pumps, TiTan Ion Pumps, HyTan NEG-Ion Pumps, TSP Pumps and Controllers

Pump systems for ultra-high vacuum

- ✓ **A full line of vibration-free and maintenance-free UHV pumps, achieving ultimate pressures in ultra-high vacuum ranges**

### Your needs:

- High pumping speeds at ultra-high vacuum
- Hydrocarbon-free vacuum
- Long operating times
- Complete solutions

### Our solutions:

- Pumping speeds from 0.2 to 1,200 l/s
- Ultimate pressure  $< 1 \times 10^{-11}$  mbar
- Various TiTan pump elements for various requirements:
  - TiTan CV with titanium cathodes for pumping air and reactive gases
  - TiTan DI for pumping air and reactive gases, noble-gas stabilization (titanium and tantalum cathodes)
  - TiTan TR - classic triode for higher pumping speeds in high pressure ranges, noble gas stable
  - A broad variety of NEG pumps and TSPs for separate use or for integration with TiTan ion pumps
- TiTan, NEG and TSP components can withstand temperatures of up to 450 °C
- HyTan NEG-Ion Pump — highly versatile with exchangeable NEG and ion pump modules, suitable for noble and chemically-active gases. Offers a wide range of pumping speeds (up to 500 l/s) in a compact, stable, and reliable design.
- Wide range of accessories
- DIGITEL controller models for operation of ion pumps, TSPs and NEGs in various applications and configurations
- HV cables for connecting your controller and ion pump



## Vacuum gauges, vacuum controllers

### Measuring instruments

#### Vacuum pressure gauges

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

##### Your needs:

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

##### Our solutions:

- 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 controllers

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

##### Your needs:

- Operation and control of the entire vacuum system
- Easy handling and "Plug and Go" operation
- Quick data collection and transfer via USB to PC

##### Our solutions:

- Monitoring and control of the entire vacuum process
- Product line 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 of data
- Displays mbar, Torr, Micron, Pascal or Psi
- Option to connect active vacuum gauges from other brands





# Leak detectors

## PHOENIX 4

### Leak detectors

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

#### Your needs:

- Non-destructive components to test for quality assurance
- Reliable technology
- Highest reliability and accuracy of measurements
- Professional consulting and support

#### Our solutions:

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



## PHOENIX Cart

### Mobile leak testing systems

- ✓ **PHOENIX 4 carts offer a wide range of pre-designed combinations that are fully assembled and leak checked**
- ✓ **Plug in, and they're ready: leak detection to go!**

#### Your needs:

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

#### Our solutions:

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

## PHOENIX MOBILIS ULTRA

- ✓ **Handheld multiple gas leak detectors**

#### Your needs:

- Fast, accurate and highly-sensitive leak detection
- Flexibility and ease of use
- Reliability
- Durability

#### Our solution:

Ideal for standard industrial environments, quick laboratory checks, and magnetic field environments.

- Multiple gas leak detector
- Portable and handheld
- Light weight
- Magnetic protection
- Peace of mind: two-year warranty



## 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 and general gas analysis in research and industry or for environmental tracking**

##### Your needs:

- Highly accurate residual gas analysis
- Easy operation
- Bake out option for high and ultra-high vacuum applications

##### Our solutions:

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

### LEYSPEC Cart

#### Mobile residual gas analyzer systems

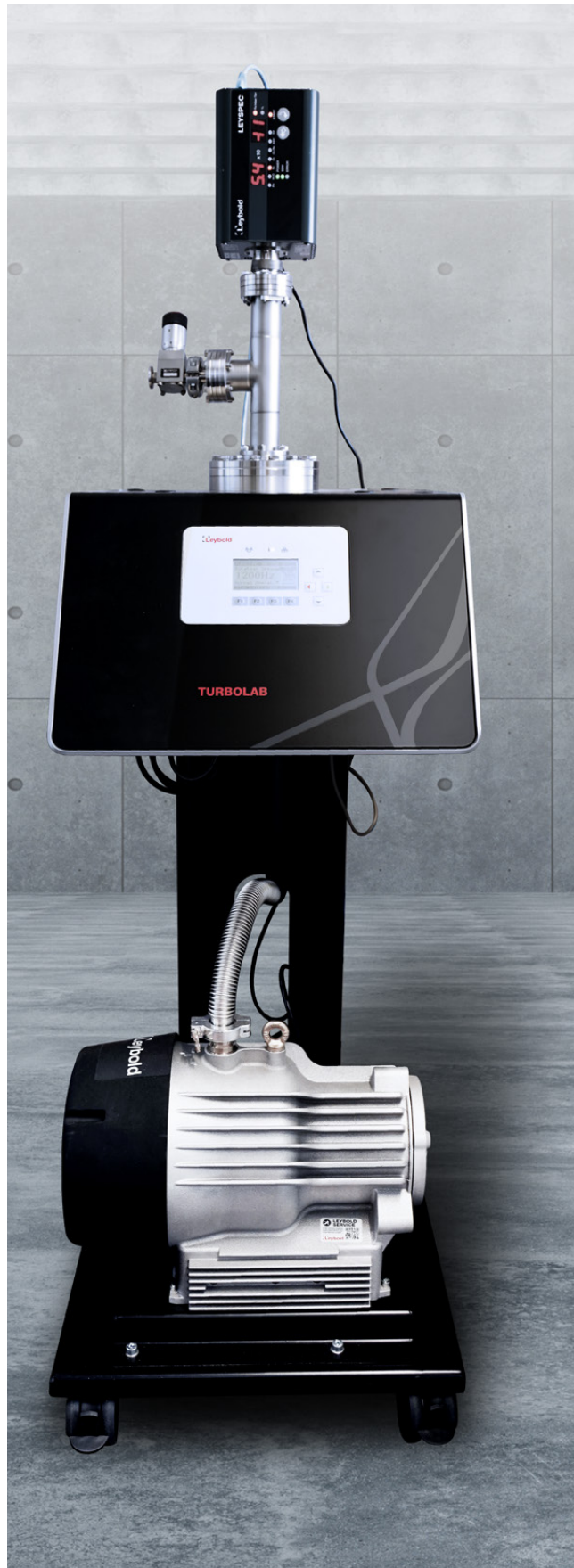
- ✓ **Mobile visibility**
- ✓ **Fully integrated differential pumping system**
- ✓ **Easy handling**
- ✓ **Maximum flexibility**

##### Your needs:

- Mobile gas analysis system
- Complete standalone pumping system
- Easily adaptable to a wide range of measurements
- Operational at various pressures
- Quick startup

##### Our solutions:

- Independent pumping system with SCROLLVAC 7 plus and TURBOVAC 350i
- Integrated process controls for quick and easy operation
- Easy and intuitive software for LEYSPEC RGA
- Completely integrated in an mobile standalone cart
- UHV needle valve for flexible operation at various pressure levels up to atmospheric pressure



## Valves and components

### LEYCON

Valves in various designs and drive modes

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

#### Your needs:

- Reliable leak tightness
- A high number of actuations
- Easy to install and remove
- Single-source delivery

#### Our solutions:

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



### Flanges

Connection components

✓ **Proven and widely-used technology**

✓ **Almost any connection possible**

#### Your needs:

- Easy to install and remove
- Reliable leak tightness
- High-quality materials
- Single-source delivery

#### Our solutions:

- ISO-KF 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 worldwide solutions

The Systems + Solutions business, unit with its **global setup, delivers tailor-made solutions** to meet the customer's demands. Listening carefully to the customer, the core function of our business, means meeting customer expectations by identifying and **providing first-in-class vacuum concepts**. 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 with 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 testing capabilities as well as efficient order execution. **This makes our team a true global player and a steadfast partner in the vacuum industry.**



## Special systems

Tailor-made vacuum solutions and systems for your applications

- ✓ **A quick look at a few applications from the leading worldwide supplier**
- ✓ **Benefit from our experience dating back to 1850**

### Your needs:

- Comprehensive consulting services
- Customer-specific application support
- Design and manufacture of custom vacuum solutions
- Flexibility and reliability
- Efficient solutions

### Our solutions:

- System solutions - tailor-made concepts based on customer specifications
- Integrated fore vacuum and high vacuum pump systems for specific requirements
- Worldwide engineering, production and service centers
- Global project coordination
- Custom software programming and customization
- Consistent product improvement and innovation
- On-site setup and training



## DURADRY System

Dry-compressing pump systems

- ✓ **A performance-driven, cost-effective dry vacuum system**
- ✓ **High-safety dry screw vacuum system for non-chemical harsh processes**

### Your needs:

- Dry pump solutions compatible with non-harsh corrosions
- Flexible and adjustable pump speed (25 – 4,100 m³/h)
- Low noise levels <68 dB
- Increased running time via preventive maintenance
- Lower water demand

### Our solutions:

- Two variants: Industrial and electronic

#### Industrial Style

- Frame structure, roots/screw pump separate maintenance available
- Air cooled roots, minimum 4lpm cooling water
- External Electrical cabinet, HMI/PLC/VFD all in one
- Plug-and-play design for simple installation

#### Electronic Style

- Full enclosure, water cooled system, environment friendly
- HMI/PLC/VFD integrated design, error log, maintenance reminder, field configurable all in one
- Pump health real-time monitoring by sensors, proactive alarm, longer life cycle
- Roots PFPE optional



## Systems + Solutions

### EXTRUVAC CP

Vacuum solutions for every application

- ✓ **Vacuum pumping systems used for processing plastics must have the ability to handle solids and liquids in a reliable and efficient way, providing vacuum on demand while ensuring control and reducing environmental impact with a low cost of ownership**

**Your needs:**

- Low cost of ownership
- Vacuum solutions for controlling and reducing environmental pollution
- Safe, high-quality, reliable and cost-effective designs
- 'Plug and Go' systems with minimal setup requirements or configurable options adapted to specific chemical processes

**Our solutions:**

- Automatic and manual control options - easy integration with your system
- Proven dry technology
- Kinder to the environment: dry pumps do not generate contaminated oil or water
- Rough to high vacuum pumping technologies for corrosion-free operation with the ability to handle liquids and solids
- Increased productivity between service intervals
- Affordable systems with low cost of ownerships
- Reduced installation, operation, service and maintenance costs



### RUTA System

Multistage fore vacuum systems

- ✓ **Combine almost any of Leybold's pumps to create a customized multistage solution for your vacuum needs.**

**Your needs:**

- High Pumping Speed: Ranges from 200 – 7,000 m<sup>3</sup>/h for efficient operation and quick process times.
- Reliable Vacuum Solutions: Designed for a wide range of applications.
- Expert Consulting: Tailor our RUTA systems to your specific needs with our expert consulting and system sizing.

**Our solutions:**

- Customizable Design: Adjustable frame design to fit into tight spaces, ensuring maximum flexibility for your facility layout.
- Decades of Expertise: Backed by our decades of vacuum expertise and support, ensuring long-lasting and reliable performance.
- Low maintenance requirements: Simple service of our product line
- Optional: User-Friendly Control Units: Ensuring precision control and full integration into your process.





## DRYVAC System

Dry-compressing pump systems

- ✓ **Leybold has refined its DRYVAC vacuum pump systems, giving them the ability to adapt to a variety of applications**
- ✓ **Basic and smart system configuration**

### Your needs:

- Maximum system availability
- Reliable engineering solutions
- Minimal footprint
- Self-protecting of the pump and easy communication

### Our solutions:

- Extremely compact design leaves more space in production areas
- Very low noise levels to improve working conditions
- Significant cost reductions through high energy efficiency
- Clean technology with no oil emissions
- Optimized for fast cycle / load lock applications
- Fastest pump down times via high throughput pump mechanisms
- High pumping speeds for dry and booster pumps
- Pumping speeds from 2,000 m<sup>3</sup>/h up to 9,800 m<sup>3</sup>/h
- Integrated smart monitoring of major parameters
- Standard Digital I/O interface and Profibus (optional) for the entire product family



## DRYVAC PowerBoost

Dry-compressing pump systems

- ✓ **Special optimized design for fast load lock pump-downs**
- ✓ **Equipped with an automatic cycle detection system**

### Your needs:

- Fast pump-down times
- High energy efficiency
- Low cost of ownership and initial investment
- Minimal footprint

### Our solutions:

- Integrated frequency converters
- Micro-controllers with touchscreens
- Digital I/O communication interfaces (DC37-P)
- Harting connections (power supply)
- Housings, castors and adjustable feet
- Water-cooling and lubrication via synthetic oil



## Systems + Solutions

### SOGEVAC / NEO D System

Oil-sealed standard vacuum systems

- ✓ **Combination of Dry-compressing roots pumps and oil-sealed rotary vane pumps**
- ✓ **Vacuum systems built with oil-sealed SOGEVAC pumps deliver an excellent cost vs. performance ratio for a wide range of industrial applications**

#### Your needs:

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

#### Our solutions:

- Tailor-made concepts based on customer specifications
- Engineering, production and service centers around the world
- Global project coordination
- Continuous product improvements and innovations
- On-site setup and training



### CVS

Central vacuum stations

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

#### Your needs:

- Industrial grade vacuum pumps
- Individually and simultaneously meeting the demands of numerous small vacuum consumers
- Excellent vacuum performance data
- Modular design for adapting to specific processes

#### Our solutions:

- Typically consisting of SOGEVAC pump(s), a buffer vessel, an electrical cabinet with controller and all connecting components
- Pumping speeds of 25 to 840 m<sup>3</sup>/h
- Ultimate pressure ≤ 0,5 mbar
- Vessel volumes of 60, 160, 300, 500 or 1,000 liters
- Electric power from 0,8 to 18,9 kW
- Basic or full-featured controls
- Low cost of ownership



## TURBOLAB and TURBOLAB Core

High vacuum pump systems

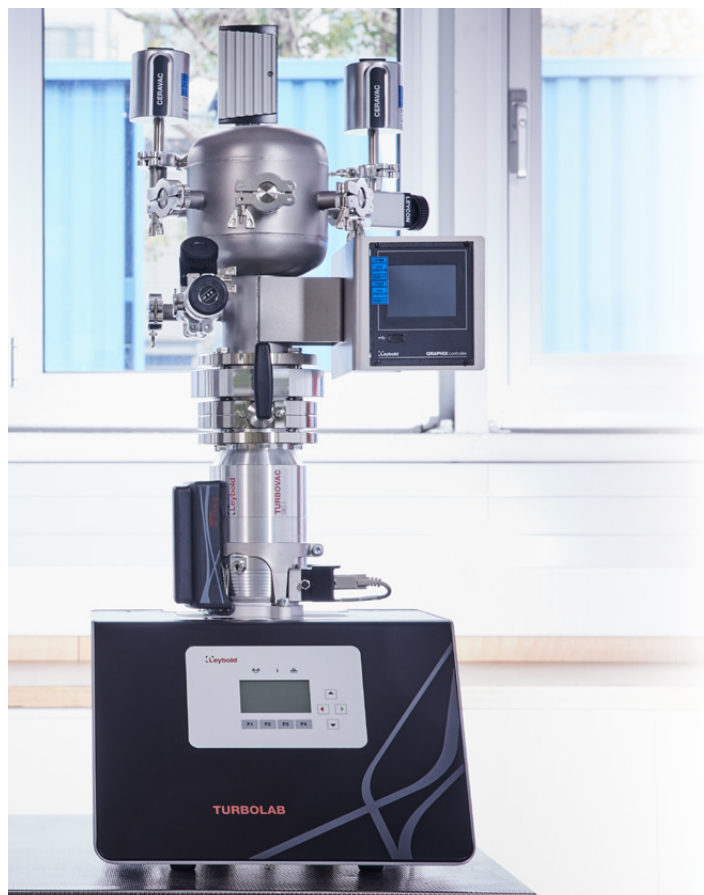
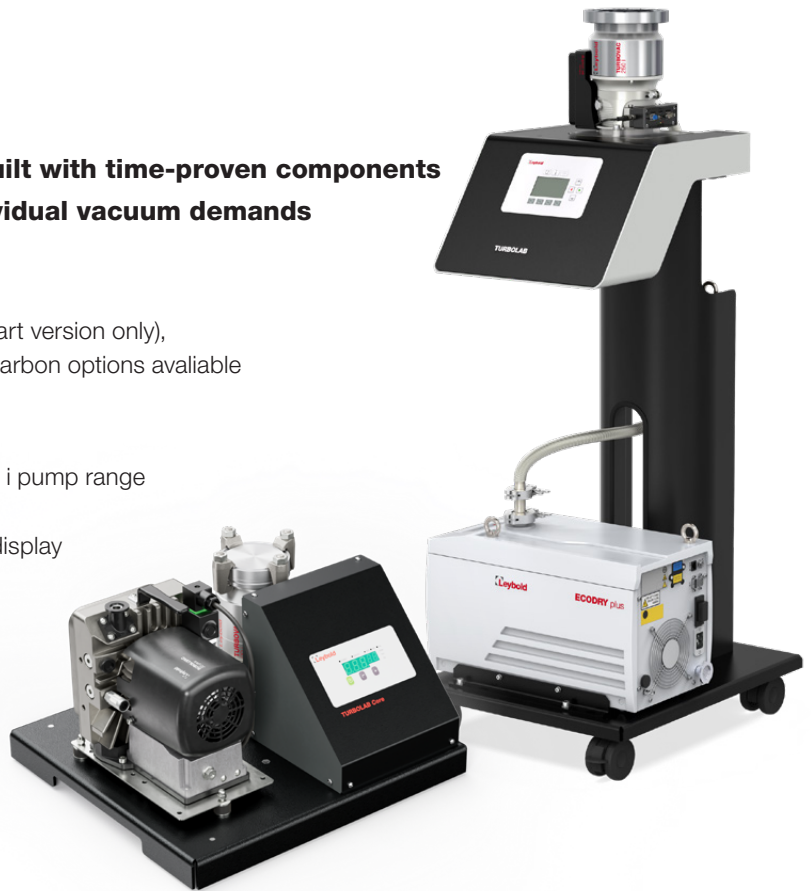
- ✓ **"Plug and Go" high vacuum pump systems built with time-proven components**
- ✓ **Various configurations available to meet individual vacuum demands**

### Your needs:

- High vacuum pump systems for industry and research
- Choice of fore vacuum pumps; from the oil-free ECODRY (Cart version only), SCROLLVAC 3S, or oil-sealed and dry compressing hydro-carbon options available
- Compact and user-friendly solution

### Our solutions:

- Pumping speeds of 78 - 925 l/s provided by the TURBOVAC i pump range
- Ultimate vacuum down to  $10^{-10}$  mbar
- 100% preassembled units with turbomolecular pump, TPU display power unit, frequency converter and fore vacuum pump
- Easy to relocate pumps out and away from the frame
- Backlight display in an innovative TPU power unit
- The ability to cover many applications with a full line of high vacuum and wet or dry fore vacuum 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



## CS Calibration System

Custom vacuum calibration systems

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

### Your needs:

- Vacuum gauge checks
- Precise calibration of vacuum gauges in accordance with DAkkS (a nationally-recognized accreditation body in the Federal Republic of Germany)
- Reproducible parameters

### Our solutions:

- 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 needs:

- Flexible vacuum coating laboratory systems
- University and industrial research systems
- Results transferable to large scale systems or serial production
- A high level of reproducibility

#### Our solutions:

- Multi-purpose systems for the production of functional layers
- Modular system configurations with a wide range of accessories
- Customized system solutions
- Variable chamber sizes



## UNIVEX S

### Space simulation systems

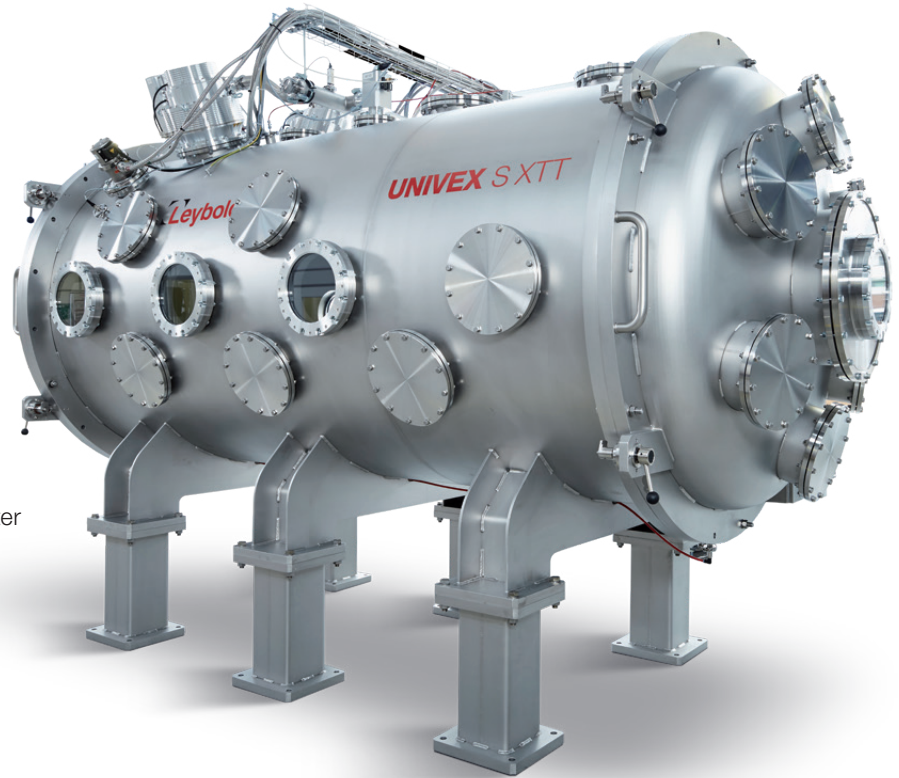
- ✓ **Flexible solutions for various space applications**
- ✓ **Highest reliability for uninterrupted test cycles**

#### Your needs:

- Highly accurate simulation of space conditions
- Reliable equipment for uninterrupted test cycles
- A configurable/extendable equipment platform
- Universal usability in the R&D and space industries

#### Our solutions:

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





## Systems + Solutions

### Beer bottling vacuum system

- Minimal to no water consumption
- Lower energy consumption - energy savings of more than 20% on average compared to water ring pumps
- Better and more stable bottling pressures — reduces CO<sub>2</sub> consumption and results in increased shelf life
- Reduced maintenance through a simple drive concept
- Dry compressing screw technology offers high robustness handling water vapor and liquid droplets
- Longest uptime due to no risk of cavitation and minimized need for internal cleaning due to our low rotor temperature profile
- Increased food safety through CIP of complete vacuum system including the vacuum pump



### Steel degassing

- Vacuum systems for efficient steel degassing
- Highest vacuum up-times via high redundancy
- Easy to install - on-site installation available
- Minor pressure increases only in the event that one module or one pump is off
- Users can perform their own service, and single pumps can be changed out in a short time
- Low energy consumption via optimized system design
- Minimal space requirements
- Easy expansion and extension
- In the event of a pump failure for multi-module installations, only one module is switched off, and the remaining modules finish the process!

### Revamping Steel Degassing

- Exchange of steam ejector vacuum pumps to dry mechanical vacuum pumps
- Complete turnkey projects incl. erection and commissioning
- Cyclone, gas cooler and filter designed for maximum efficiency and reliability
- Automation package for entire revamping project
- Highest reliability and availability of pump modules on the market
- Very low energy consumption and CO<sub>2</sub> emission
- Process control via stepless adjustable vacuum level
- ROI, CAPEX, OPEX calculation as well as layout can be offered as a study
- Long term service and extended guarantee available





## Tailor-made systems

### Hyperloop

- Three-stage pump system with a total of 12
- RUVAC WH and DRYVAC pumps entirely contained within a 12 m (40ft) shipping container
- The container has a fully-accessible long side, making it possible to install this complex system with only minor effort
- Inlet and outlet flanges are installed in the wall of the container; the customer only needs to mount the pipework to the container for operation
- Container is self-supplied with compressed air, cooling water and air-conditioning; power is the only externally supplied element
- Future implementation of several advanced solutions for easy accessibility and quick assembly



### Vacuum Housing

A vacuum pump system consisting of nine modules connected in parallel; each module includes:

- A WS 2001 FU Roots Pump with a water-cooled motor, an electronic frequency converter for speeds up to 6,000 RPM and a Roots pump adapter
- A SCREWLINE SP 630 with SP-Guard for monitoring of important operating parameters
- A DN 500 Intake Manifold
- Weather protection roof for outdoor installation
- An electrical controller with PLC for speed control
- System controls via a touch panel
- Data communication with the customer's system controller via a ProfiBus interface



### PET extruder degassing

- Modern vacuum solutions for extruder degassing
- Stable, non-fluctuating vacuum supply
- Vacuum level is independent of climate or water temperature
- Pressure at venting/degassing dome can be regulated
- Minimal maintenance and service requirements
- Maintenance is reduced to a regular cleanings in parallel with dye cleaning
- Full maintenance (incl. pump cleaning) can be performed by trained users
- Safe system design, even for expected misuse as worst-case pumps and system components build up layers
- The easy maintenance concept enables users to perform service themselves, independent of external service providers
- Flexible use, additionally for other polymers with multi-purpose extrusion systems

