

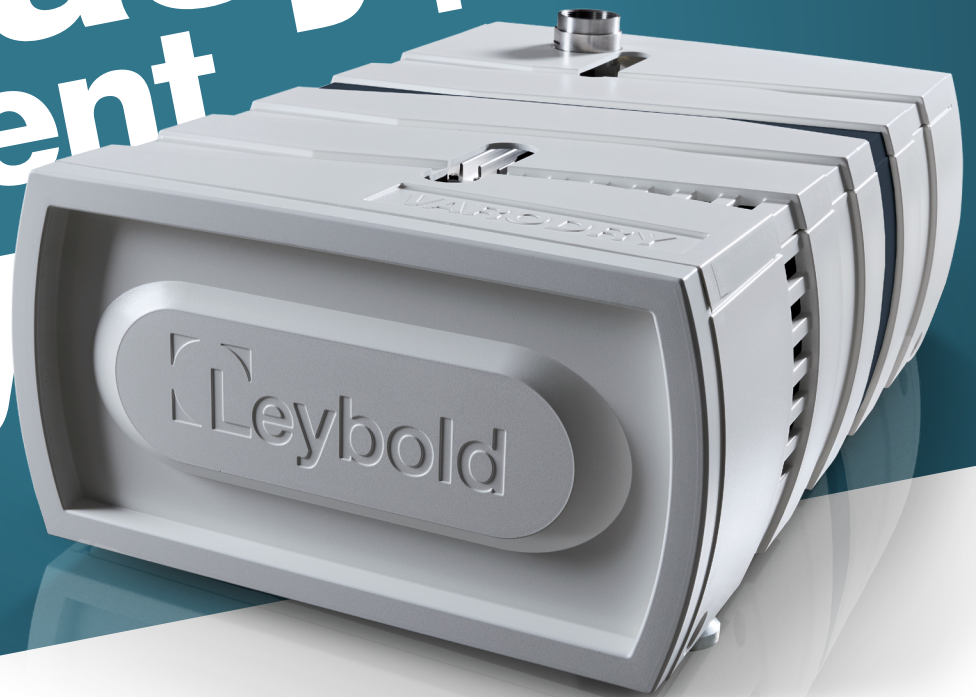


VARODRY

Dry Screw Vacuum Pumps

Vacuum can be so...

easy **reliable**
efficient
dry



VARODRY

Dry Screw Vacuum Pumps

Vacuum



...easy

OPTIMIZED SIMPLICITY

- Effortless installation - just connect to power and process
- Seamless control - via VSD or regulation valves
- Seamless integration/retrofitting - air cooled and easy accessibility



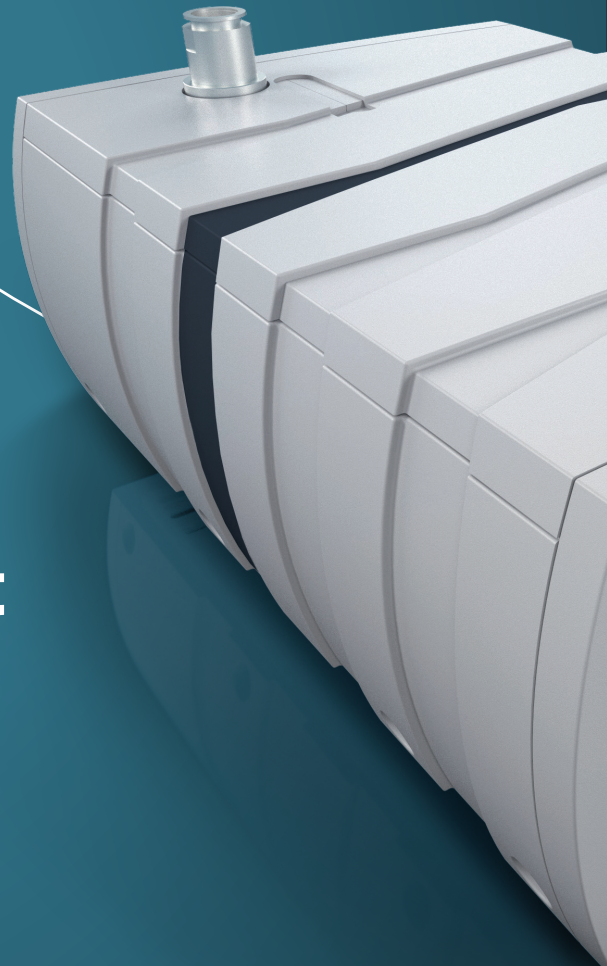
...efficient

MINIMAL TOTAL COST OF OWNERSHIP

- Low upfront investment
- Low power consumption
- Limited maintenance costs
- No costs for cooling water and compressed air

MAXIMIZED PERFORMANCE

- Competitive at all pressures and over the pump's entire life cycle
- Excellent vapor pumping capacity
- Quiet, low-pitch sound level



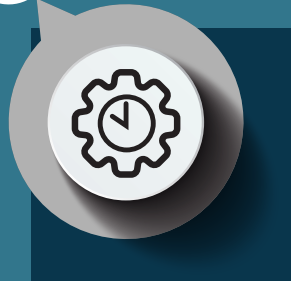
can be so...



... dry

100% CLEAN VACUUM

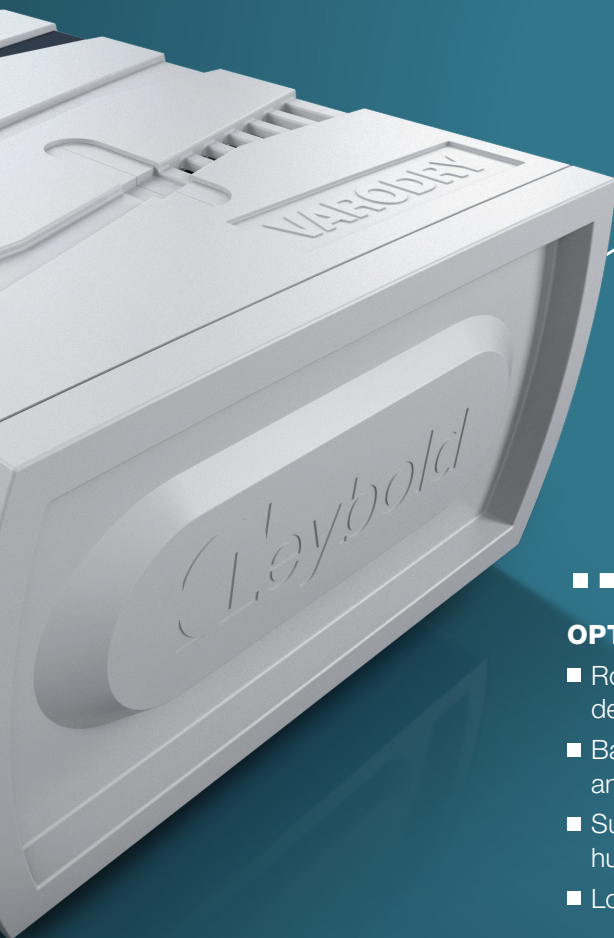
- Completely oil-free
- No oil emissions or leaks



... reliable

OPTIMIZED SYSTEM UPTIME

- Robust pump design, specially designed for industrial applications
- Based on proven technology and an innovative belt drive
- Superior performance, even in humid and dusty applications
- Long life and extended service intervals



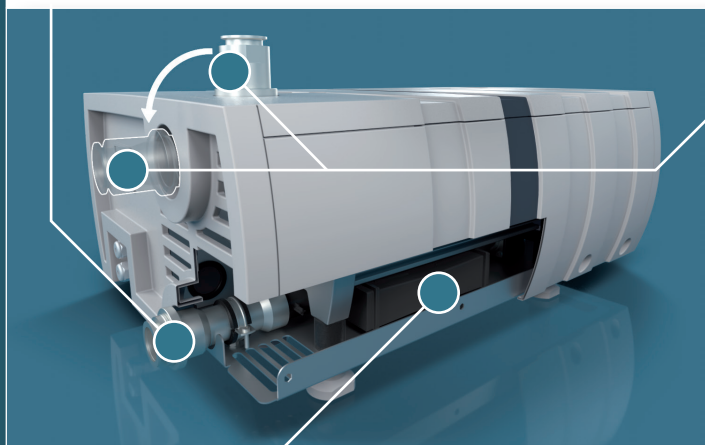
Utilizing what today's technology has to offer

Intake connection

- Horizontal or vertical orientation
- G-thread as standard
- Low position enables condensate drainage

Exhaust connection

- G-thread as standard
- ISO-KF or NPT thread as accessory
- At lowest position, enabling condensate drainage



Built-in exhaust silencer

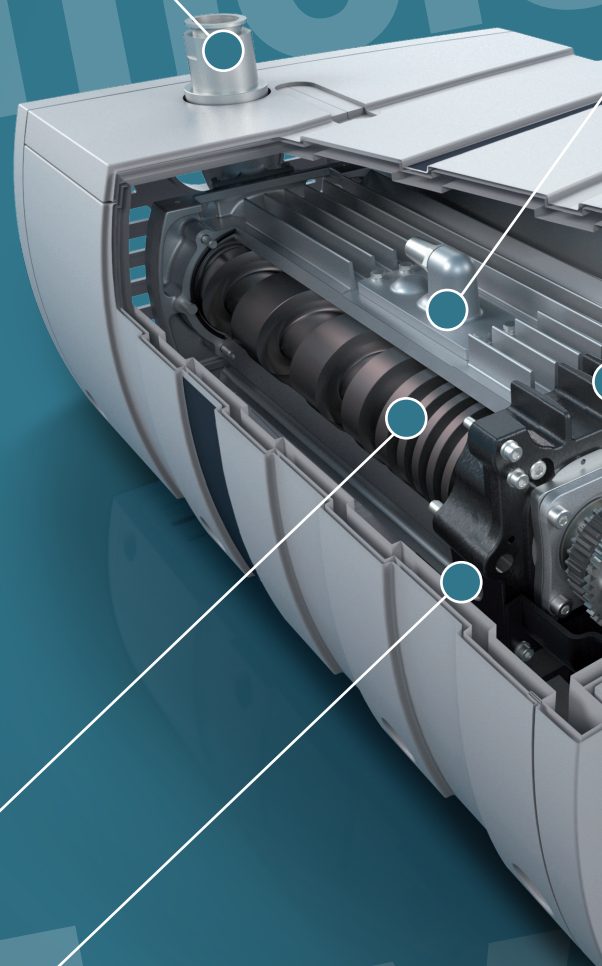
- Low noise emission
- Drainable design

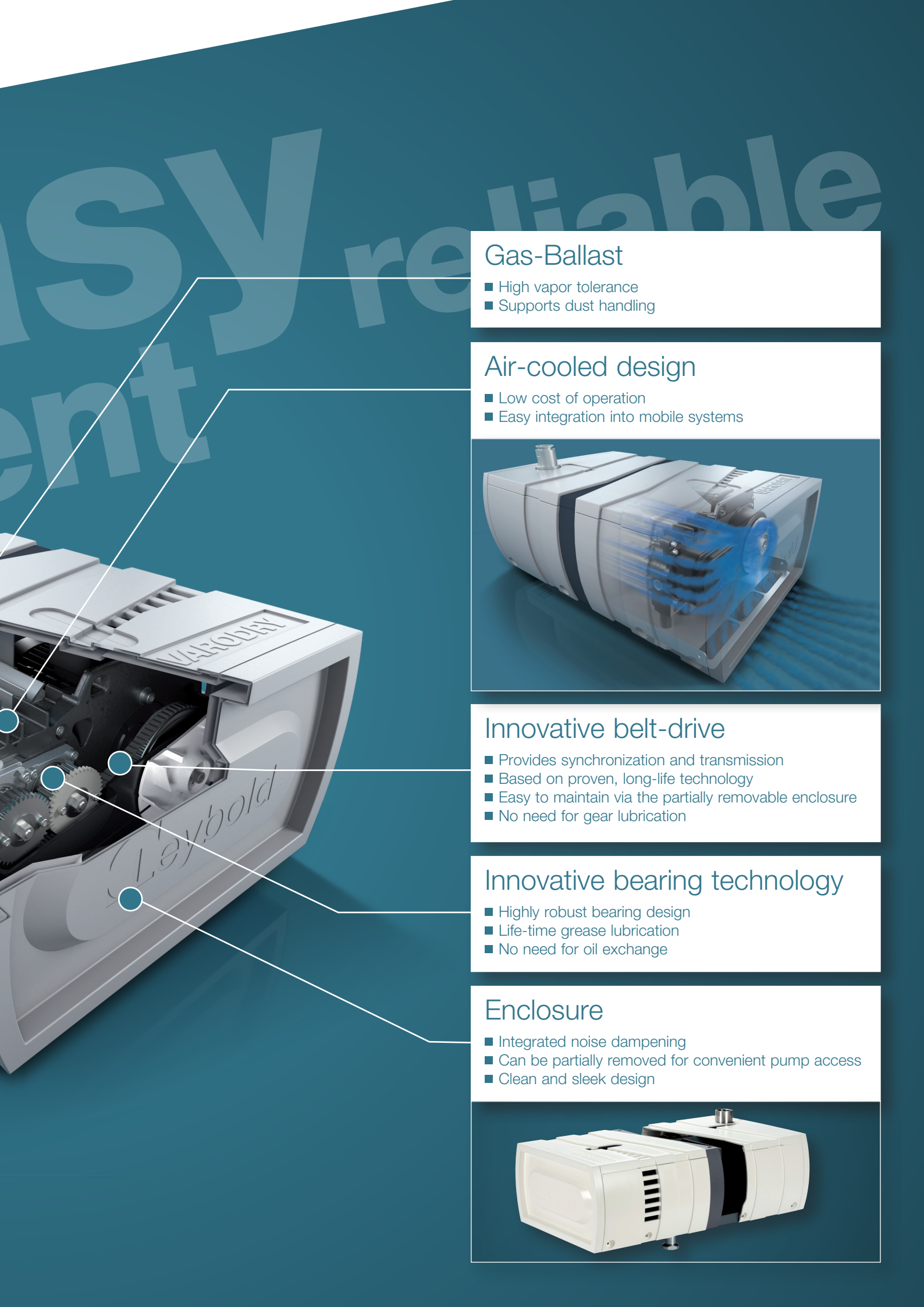
Anodized variable pitch rotor

- A benchmark for efficiency and robustness
- Low power demand in its class

Shaft seal / bearing protection

- "Self-cleaning" seal design
- Optional purge-gas system available
- No need for seal purge in most industrial applications



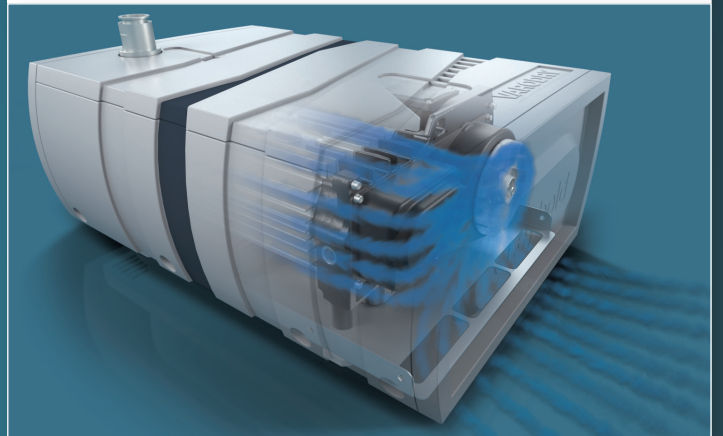


Gas-Ballast

- High vapor tolerance
- Supports dust handling

Air-cooled design

- Low cost of operation
- Easy integration into mobile systems



Innovative belt-drive

- Provides synchronization and transmission
- Based on proven, long-life technology
- Easy to maintain via the partially removable enclosure
- No need for gear lubrication

Innovative bearing technology

- Highly robust bearing design
- Life-time grease lubrication
- No need for oil exchange

Enclosure

- Integrated noise dampening
- Can be partially removed for convenient pump access
- Clean and sleek design



VARODRY

easy - efficient - reliable - dry

Eliminate process inefficiencies caused by vacuum.



The new VARODRY vacuum pump series is designed and produced specifically for industrial processes by Leybold in Germany. Give yourself one less headache. With VARODRY, vacuum can be easy, efficient, reliable and dry.

“Our motivation was to develop a highly energy-efficient industrial dry pump.”

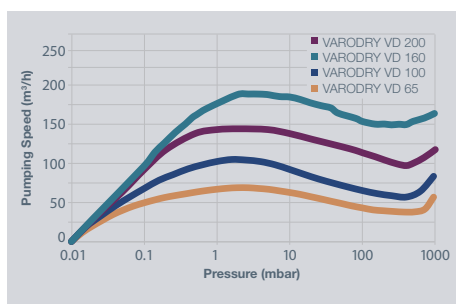
Dirk Schiller, Head of Engineering

Efficient pumping

The VARODRY rotor design is optimized to provide a high level of efficiency.

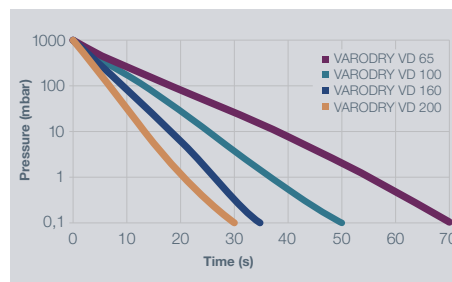
Pumping speed

The VARODRY provides a competitive pumping speed over the entire pressure range and a low end-pressure of < 0.01 mbar. It can operate continuously at any inlet pressure.



Pump-down time (100 l chamber)

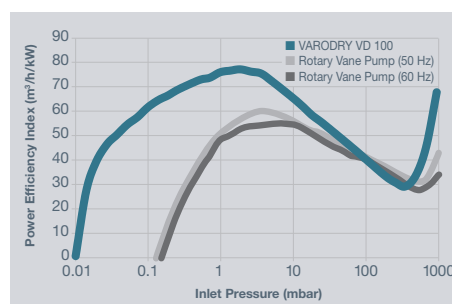
The VARODRY provides a fast pump-down down to the 10^{-2} mbar range.



*+/-10% tolerance; measurements at operation temperature for a 100l chamber with DN40 pipe and angle valve.

Power efficiency index

The effective pumping speed generated per consumed power is a market benchmark for industrial dry pumps.



The VARODRY is optimized for the challenges faced in many industrial applications:

Repeated and fast cycling:

The VARODRY offers a very quick pump down. The pump tolerates atmospheric pressure shocks and repeated evacuation cycles.

Dust / particle handling:

The rotor screw principle and anodization offers a high level of performance for handling fine, dry dust particles. For large amounts of dust, a wide filter portfolio is available.

Vapor handling:

Due to its optimized temperature profile and the built-in gas-ballast, the VARODRY offers a high vapor tolerance, thus avoiding internal condensation.

Reactive gas handling:

Vapors (e.g. hydrocarbons) often tend to react in hot, dry pumps and built-up internal coatings which can cause pumps to seize up – the internal temperature profile virtually eliminates this risk.

Liquid handling:

The VARODRY can handle droplets and even liquid slugs as the liquids can flow freely out of the pump.

Simple parts, less maintenance

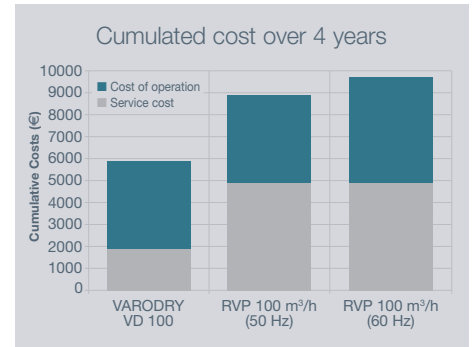
VARODRY improves the efficiency of your machines.

Operational costs

VARODRY is fully air cooled and oil free, which causes the **VARODRY** to consume electricity only. You'll never experience any extra costs for cooling water supplies or oil/oil filter exchange and disposal. Additionally, its low power consumption offers you significant energy savings.

Savings on the total cost of ownership realized by **VARODRY** apply to a wide range of demanding applications, especially since standard pumps require a high level of maintenance.

Total Cost of Ownership Example: Composites (wind power plant)



Compared to an oil-sealed rotary vane pump, the VARODRY VD 100 saves > 650 EUR in operational costs per year!

“VARODRY – the easy, efficient, reliable and dry solution for your processes”

Uwe Zöllig, Business Development Manager Industrial Vacuum

User Maintenance

You can easily change the belt in less than 30 minutes. The partially-removable enclosure makes this especially convenient. The belt exchange interval depends on the individual application, but is typically one year. Belt exchange kits and maintenance tools are available.

Additionally, we offer solutions for multiple pump control via **Multi-VAControl**. Standardized combinations with **RUVAC** root blowers are also available.

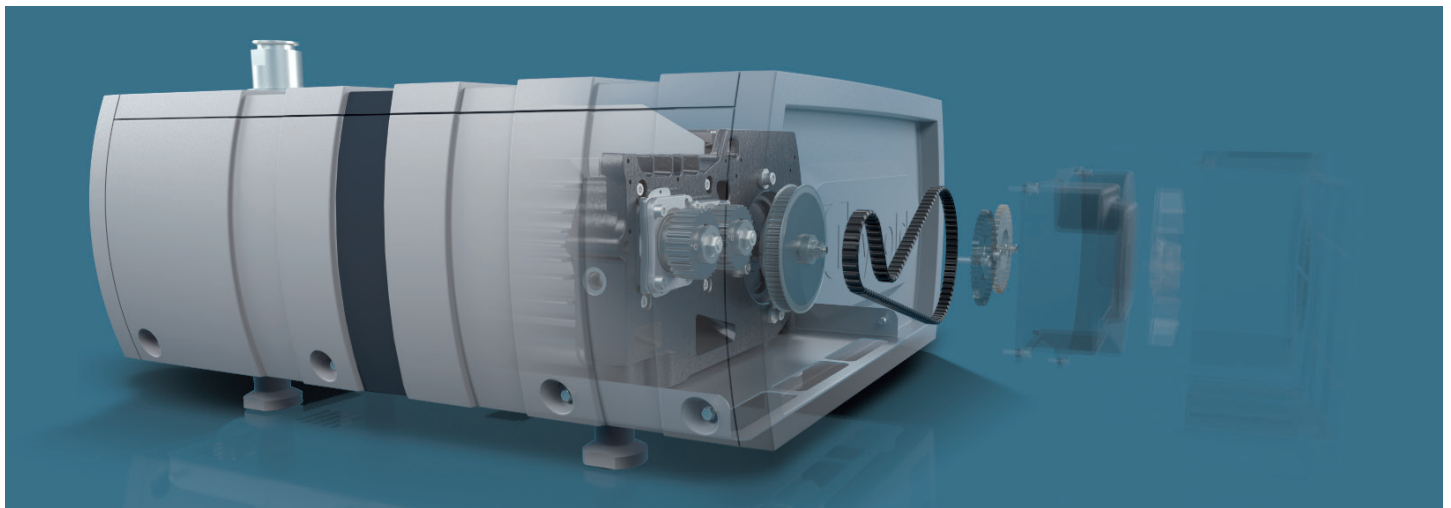
The VARODRY reduces your maintenance and service requirements

With only two replaceable parts (belt and bearings), keeping your pump running at peak performance requires minimal effort. At the same time, your facility's uptime will be greatly improved.

Leybold Service

The bearings can be changed on site by trained service technicians. The typical lifetime of a bearing is three years. Complete pump overhauls can be performed in one of the many Leybold Global Service hubs.

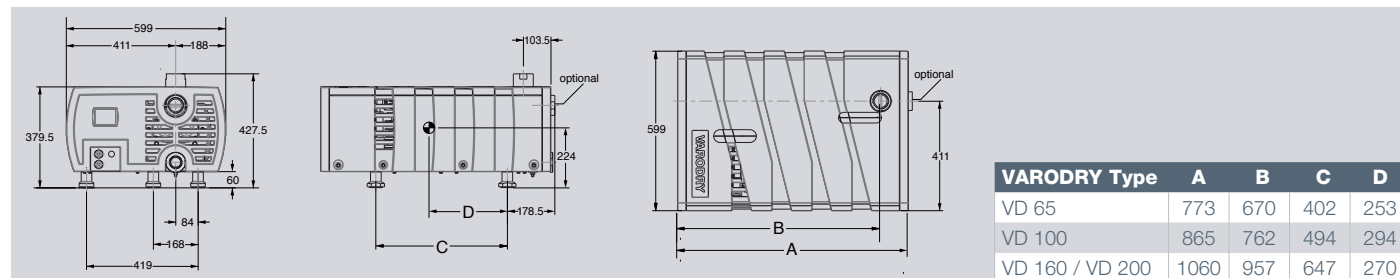
To ensure optimal factory uptime, Leybold offers an expedited “pump exchange”. Our back-up supplies offer flat pump exchange rates, to keep your production running at all times.



Technical Data

Ordering Information

Dimensions



Technical Data

VARODRY			VD 65		VD 100		VD 160*		VD 200*					
Max. pumping speed			m³/h		65		105		150		200			
Ultimate pressure			without gas ballast		mbar		< 0.01							
			with gas ballast		mbar		< 0.1							
Max. permissible inlet pressure			mbar		1050									
Max. permissible outlet pressure (rel. to ambient)			mbar		200									
Water vapor tolerance			with gas ballast		mbar		60							
Water vapor capacity			with gas ballast		kg/h		1.9		2.9		5.2		6.9	
Noise level (with built-in silencer) at ultimate pressure (50 / 60 Hz)**			dB(A)		64 / 67		64 / 67		65 / 69		65 / 69			
Permissible ambient temperature			°C		0 to +40									
Rated motor power			kW		1.5		2.2		3.0		4.0			
Protection class			IP55									IP55		
Inlet / outlet connection			G 2" (In) / G 1 1/2" (Out)											
Weight, approx.			kg		90		100		130		130			
Ordering Information					VD 65		VD 100		VD 160*		VD 200*			
VARODRY, 50 Hz, 200/400 V, +/- 10%, 3ph					111065V10		111100V10		111160V10		111200V10			
VARODRY, 50 Hz, 200/400 V, +/- 10%, 3ph, with purge gas module					111065V15		111100V15		111160V15		111200V15			
VARODRY, 60 Hz, 230/460 V, +/- 10%, 3ph					111065V11		111100V11		111160V11		111200V11			
VARODRY, 60 Hz, 230/460 V, +/- 10%, 3ph, with purge gas module					111065V16		111100V16		111160V16		111200V16			
VARODRY, 60 Hz, 200/380 V, +/- 10 %, 3ph					111065V21		111100V21		111160V21		111200V21			
VARODRY, 60 Hz, 200/380 V, +/- 10 %, 3ph, with purge gas module					111065V26		111100V26		111160V26		111200V26			
Accessories														
Inlet non return valve G 2" (for inlet pressures > 1 mbar)					111005A15									
Inlet Adapter		DN 40 ISO-KF, 20 mm			111005A20									
		G 1 1/4", 10 mm			111005A21									
		NPT 1 1/4 -11.5, 10 mm			111005A22									
		NPT 2-11.5, 35 mm			111005A23									
		DN 63 ISO-K, 27 mm			111005A24									
		DN 40 ISO-KF, 20 mm			111005A30									
Exhaust Adapter		NPT 1 1/2-11.5, 30 mm			111005A31									
Casters (only for VARODRY)					111005A50									
Flushing Kit					111005A00									
Soft Starter VD/ND, ≥ 11A, 110-230 V AC					111005A65									
Soft Starter VD/ND, ≥ 11A, 24 V DC					111005A66									
Soft Starter VD/ND, ≥ 19A, 110-230 V AC					111005A67									
Soft Starter VD/ND, ≥ 19A, 24 V DC					111005A68									
Replacement timing belt 50 Hz versions					EK6528531									
Replacement timing belt 60 Hz versions					EK6528533									
Belt replacement tool kit					EK6530942									

*Soft starter mandatory
**According to DIN EN ISO 2151



Pioneering products. Passionately applied.