COOLVAC Cryopumps
COOLPOWER Cold Heads
COOLPAK Compressors

Technical information 182.50.02
Oerlikon Leybold Vacuum, worldwide leader for vacuum solutions and services, is presenting its “smart” family of cryogenic pumps. The product and performance spectrum has been adapted to current and future economic trends and cycles of our customers and markets.

In this family of cryogenic pumps we have combined a smart controller which is easy to operate for rapid, reliable and clean regeneration with high performance, low vibration and efficient cold heads and compressors. Long maintenance intervals as well as simple and cost-effective servicing for our cryopumps make this performance spectrum complete.

High quality, high reliability and impressive performance data are guaranteed and confirmed by our customers through current installations.

Oerlikon Leybold Vacuum fulfills the rapidly increasing requirements for cryopump systems and offers application and engineering support as well as service and training courses for our customers.

### Advantages to the User

- Universally usable for almost all vacuum coating processes
- Ultra-clean vacuum
- High pumping speed
- Efficient regeneration
- Easy operation
- Flexible system design
- Easy system integration
- Simple and rapid maintenance
- Shortest regeneration intervals for maximum productivity with minimum downtimes

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**ClassicLine Cryopumps**

The “ClassicLine” cryopumps have been prepared for fully automatic control and monitoring of their operation and for electric regeneration. In addition to the regeneration heaters and the temperature sensors, they have also been equipped with a vacuum gauge head, a forevacuum valve and control electronics.

ClassicLine cryopumps are available as standard in the following pumping speed classes: 800, 1,500, 2,000, 3,000, 5,000, 10,000 and 18,000 l/s for nitrogen.

- Highly effective pumping speed for all gases, water vapor in particular
- 100% available pumping speed and capacity after each regeneration run
- No nitrogen purge is necessary
- High-performance, low vibration and reliable cold heads
- Insensitive to mechanical disturbances like process particles or external vibrations
- Easy computer process checking and control

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**BasicLine Cryopumps**

“BasicLine” cryopumps are equipped only with a temperature sensor (Si diode) at the second stage. However, the dimensions and the vacuum performance data are identical to the ClassicLine cryopumps.
Smart Technology for Many Applications

Applications
- UHV systems
- Load lock chambers
- Beam tubes of particle accelerators
- General research
- Metallization systems
- Evaporation systems
- Electron beam welding systems
- Space simulation chambers

The principal system components are:
- Cryopumps
- Compressor
- Control unit
- Power unit
- Flexible helium lines
- Interconnection cables

Depending on the operating conditions and the application, single, double and multiple systems with up to 40 cryopumps can be built from these components in a modular fashion. The system is controlled and monitored either locally by one control unit per pump or centrally through a single control unit.
Custom Units based on Customers Specifications

Most of the known applications are covered by our standard cryopump systems from the ClassicLine and the BasicLine.

However, in the development and optimization of new applications in research or industry (MBE, space simulation) there is an increasing requirement for custom vacuum system solutions.

Jointly with our customers, Oerlikon Leybold Vacuum designs and manufactures custom vacuum solutions to meet customer’s specifications.

Engineering Example

- Large cryopumps up to a pumping speed of 60,000 l/s without liquid nitrogen (LN$_2$) cooling of the thermal radiation baffle.
  
  Benefit: Increased operational reliability and ease of operation.

- Cryopumps suited for applications involving high thermal loads during degassing of the process chamber to attain pressures in the UHV ranges below $10^{-11}$ mbar.

Our Services

- System design
- Application consulting
- Installation / startup support
- Training (operation and maintenance)
Compressors and Accessories

COOLPAK Compressors
The COOLPAK compressor units have been proven to drive cold heads and cryo pumps absolutely reliable and cost-effective.

COOLPAK 2000/2200 for single operation of COOLVAC pumps
The new COOLPAK 2000/2200 compressor units are optimized for single operation of our standard cold head COOLPOWER 7/25 and the cryo pump families COOLVAC ClassicLine and BasicLine in the pumping speed class from 800 to 3,000 l/s. These compressor units are available either as water cooled or air-cooled versions.

COOLPAK 4000/4200 and COOLPAK 6000/6200
The compressor units from the COOLPAK family permit trouble-free and cost-effective operation of the Oerlikon Leybold Vacuum cryopumps. They are available in “high-voltage” (COOLPAK 4000 and 6000) as well as “low voltage” (COOLPAK 4200 and 6200) versions.

Advantages of the COOLPAK Compressors
- Easy to install and operate
- Quiet and low vibration operation (< 53 dBA)
- Global voltage compatibility
- 24 VDC and RS232 interface
- Minimal maintenance
- Small footprint
- Low cost of ownership
- LCD display for displaying the operating status and messages

Electric Controllers and Power Units

COOLVAC SC System Controller
For automatic operation of the COOLVAC cryopumps of the Classic Line. The smart COOLVAC SC system controller controls and monitors up to 40 COOLVAC pumps. Online monitoring, help functions and simple diagnosis are only a few of the user friendly features. The system controller may be operated either manually or remotely controlled through an interface.

- 19-in. 3 HU installation modules
- Pushbutton operation
- Simple menu guidance through LCD display

COOLVAC PS Power Supply for Single and Dual Operation
The COOLVAC PS power supply delivers the power to the electric regeneration heaters and electronics of up to two COOLVAC pumps. Being controlled by the System Controller SC, the power supply switches the compressor units on and off in response to demand from the connected pumps.

COOLVAC PS Power Supply for Multiple Operation
The COOLVAC PS power supply supplies power to the cold head motors, the electric regeneration heaters and provides the operating voltages for the electronics of up to 3 COOLVAC pumps. The COOLVAC PS power supply is also driven by the COOLVAC SC system controller.
### COOLVAC CL "ClassicLine" Technical Data

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All measurements in accordance with PNEUROP

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