

Intelligent technology for modern analytics

11 March 2020 by Leybold

Vacuum technology from one source

Low-noise, oil-free vacuum solutions, energy efficiency and optimized data evaluation are the requirements in analytics and the associated research and laboratory environments, such as mass spectrometry. Vacuum technology functions almost as a heart in most systems, as it enables processes to run. Often however, little attention is paid to the correct choice of vacuum components, which is nevertheless an essential factor for the efficiency of analytical or even manufacturing processes.

Fore vacuum – innovative technology supports the environment

Oil-free vacuum is the method of choice here. With the ECODRY series, Leybold offers a clean, silent, compact and low-maintenance pump for use in analytical or research laboratories. This pump class lies exactly in the transition area between small laboratory devices and large machines. However, the most significant innovation is undoubtedly the reduction of the noise level: "The pump is compact, low-vibration, powerful, easy to operate and very quiet in its design", states Product Manager Alexander Kaiser.

The ECODRY plus was developed exactly in line with the requirements of systems such as mass spectrometers and electron microscopes. It is therefore also suitable for use in large accelerators, because there is no contamination by dust or oil. It offers users a high degree of comfort, pumping speed performance and flexibility.

Equipped with two flexible interfaces, the pump can also be remote-controlled. When used in commercial analysis systems, it is often integrated into the plant control system and can be started, stopped, varied in speed and also monitored as required.

High vacuum – Plug & Play pump systems

The devices of the TURBOLAB series are plug-and-play high vacuum pump systems and offer a wide range of variants: They are compact, fully assembled and can be put into operation immediately. Different configurations cover the vacuum requirements of applications in the R & D markets and analytical applications. The unique oil-free hybrid bearing of the TURBOVAC i/iX turbopumps and the choice of different

dry-compressing fore vacuum pumps allows hydrocarbon-free operation. These compact pump systems are delivered fully assembled and ready for operation.

They include a turbomolecular pump, a backing pump and an innovative TPU display unit. Both compact tabletop and mobile cart versions are available and offer flexible and convenient operation. Installation kits for variable mounting of the turbopump away from the pumping station frame can also be obtained.

A wide range of accessories, such as sealing gas and / or venting valve, backing vacuum safety valve, cooling unit, heating tape, etc. facilitates the adaptation to individual requirements.

Today, data and its correct interpretation are essential factors in machine-based research and development, but also in manufacturing. Therefore, the measurement technology associated with vacuum technology is crucial for the evaluation of processes from basic research to industrial manufacturing. Leybold therefore offers a wide range of measuring instruments, sensors and components.

Measure – Analyze - Optimize

TURBOLAB systems can be equipped with THERMOVAC TTR fore vacuum gauges and PENNINGVAC PTR high vacuum sensors. Connected sensors are detected and pressure readings are automatically shown on the display.

All critical parameters and operating conditions such as errors, warnings, frequency, temperature etc. are automatically recorded in an internal memory based on a standard time interval and can be adjusted by the user directly on site. An integrated web server allows remote control, monitoring and configuration of the TURBOLAB devices from the mobile device or from the computer via browser.

A full portfolio of sensors and controllers makes the measurement and control of processes easy. Leybold offers real innovations with its sensors for vacuum measurement in numerous applications in the pressure range of 2000 to 10⁻¹² mbar.

These measuring devices offer higher precision, an extended measuring range, improved reproducibility and process stability. They complement the portfolio with novel interfaces and additional areas for use in lock chambers.

Leybold offers sensors of various designs with their own characteristic measuring ranges. A distinction is made between direct and indirect pressure measurements.

These gas type independent vacuum sensors cover measurements directly and mechanically:

- capacitive CERA-VAC measuring devices and
- capacitive DI/DU and piezo pressure sensors

The indirect, gas type dependent pressure measurement is possible with the sensors

- THERMOVAC, a thermal conductivity vacuum gauge according to Pirani
- PENNINGVAC cold cathode ionization vacuum gauges based on the principle of the reversed magnetron.
- IONIVAC hot cathode ionization vacuum gauges according to Bayard-Alpert

The controllers of the Graphix and Display series complete the range of accessories.

Leybold offers from one source everything from consulting to after sales options to support the customers in achieving their goals.

Source: Leybold GmbH; PR Schulz