The NEXTorr pump is not just a combination of two different pumps. The integration of the getter element, with a substantial reduction of back-streaming effects for the same reason, enhanced pumping efficiency for H2 and CH4, is another reason for the superior performance of the NEXTorr pump.

Gases released by the ion pump during the operation are intercepted and removed by the getter element, reducing the potential contamination of the vacuum system. Fine titanium particles which may be sputter-emitted by the ion pumps during operation are also effectively trapped by the getter element, reducing the potential contamination of the vacuum system.

Pump down results in a chamber fitted with the NEXTorr D100-5 and a 75 l/s sputter ion pump. A factor 2 improvement in the base pressure is achieved. Similar improvements have been achieved for the other NEXTorr models when compared with sputter ion pumps of similar nominal pumping speed (H2). Applications:

- Scanning / transmission electron microscopes
- Metrological equipment, semiconductor defect and review tools
- Surface science equipment
- Portable analysers and vacuum instrumentation
- General purpose UHV-XHV research systems
- Particle accelerators, synchrotron radiation sources and related equipment
- Industrial UHV systems.
Is there a solution for compact, light and high performing UHV pumps?

The quick answer is NEXTorr.

NEXTorr: the next step in pumping technology

Non Evaporable Getter (NEG) pumps are very compact and light, vibration-free devices, able to deliver extremely high pumping speed per unit volume with minimal power requirement. For these reasons they have been extensively used in UHV applications. Presently available NEG pumps can save a significant amount of weight and space in UHV systems providing state of the art performance.

Equipment like scanning and transmission electron microscopes, portable analyzers, systems for surface science characterization or materials preparation can greatly benefit from reducing their weight and footprint.

Even in very large research vacuum systems, like accelerators and synchrotrons, the presence of magnets, diagnostic tools and diversified instrumentations greatly limits the space available for vacuum pumps. This poses big challenges to the design of pumping groups both in term space, weight and achievable performance.

Leveraging on its multidecade experience in getter and UHV‐XHV technology, SAES® Getters has now made a further step forward in pumping technique, introducing a novel product family, the NEXTorr, which fully addresses the challenges of miniaturization and extreme performance.

NEXTorr®

NEXTorr: great performance in a small package

The NEXTorr concept combines in a suitable design NEG and ion pumping technology. In the NEXTorr design a NEG pump is integrated with a comparatively small ion pump. The getter removes and traps noble gases and capacitors, while the ion pump is used for the active gases, leaving to the ion pump the task of removing noble gases and methane, which are not pumped by the NEG. Being methane and rare gases a very small percentage of the gas composition of UHV‐XHV systems, generally dominated by hydrogen and oxygenated gases, just a small pumping speed is required for the ion pump. The ion pump also provides a pressure reading, which can be used for vacuum and process monitoring.

This approach radically improves the main limitations of NEG pumps, providing in a very compact design a superior product in terms of pumping speed, capacity, power consumption, reliability.

Light, compact, large pumping speed

The weight of the NEXTorr is ≈ 10‐50 times lighter than an ion pump of comparable (H2 ) performance. This allows reducing the total weight of the vacuum system, particularly important in portable systems or in analytical equipment, like scanning electron microscopes or semiconductor review tools.

Small size

The size of the NEXTorr is ≈ 10‐50 times smaller than an ion pump of comparable (H2 ) performance. The NEXTorr can easily fit in a small space delivering large pumping speed and freeing space in instrumentation‐packed systems.

Thanks to the compact design, magnetic field is also greatly reduced.

Best in class performance

The NEXTorr® product line incorporates and exploits the patented concept of a combined pumping system comprising a ge/gid1a9er pump and an ion pump, and have global Intellectual Property Rights coverage with patents already granted in the US (8,287,247), Europe (2,409,034), Japan (5,372,239), China (102356236).

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NEXTorr: great performance in a small package

The NEXTorr concept is based on a suitable design of the NEG and ion pumping technology.

In the NEXTorr design a NEG pump is integrated with a comparatively small ion pump. The getter provides very high pumping speed and capacity and acts as the main pump for the active gases, leaving to the ion pump the task of removing noble gases and methane which are not pumped by the NEG. Being methane and rare gases a very small percentage of the gas composition of UHV-XHV systems, generally dominated by hydrogen and oxygenated gases, just a small pumping speed is required for the ion pump. The ion pump also provides a pressure reading, which can be used for vacuum and process monitoring.

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The NEXTorr pump is not just a combination of two different pumps. The integration of the getter element, with a substantial reduction of back-streaming effects, has the same reason, increased pumping efficiency for H₂ and CH₄, are obtained. Fine titanium particles which may be sputter-emitted by the ion pumps during operation are also effectively trapped by the getter element, reducing the potential contamination of the system.

Applications

- Scanning / transmission electron microscopes
- Metrological equipment, semiconductor defect and review tools
- Surface science equipment
- Portable analysers and vacuum instrumentation
- General purpose UHV-XHV research systems
- Particle accelerators, synchrotron radiation sources and related equipment
- Industrial UHV systems.
The NEXTorr pump is not just a combination of two different pumps. The integration of the getter element with the ion pump allows for improved pumping performance and reduced contamination. Gases released by the ion pump during operation are intercepted and removed by the getter element, with a substantial reduction of back-streaming effects. For the same reasons, increased pumping efficiency for H₂ and CH₄ are obtained.

Applications
- Scanning / transmission electron microscopes
- Metrological equipment, semiconductor defect and review tools
- Surface science equipment
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