

# UNIVEX

## Experimental Vacuum Coating Systems for research, development and pilot production

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# UNIVEX

## – from the experiment to series production

In modern technologies, vacuum coating has become indispensable in many applications.

When developing new products it is required to experimentally develop suitable coating processes. Laboratory testing of these processes is an important part of such a development process.

For use in research and development as well as for pilot production facilities, Oerlikon Leybold Vacuum has developed a family of universal UNIVEX experimentation systems.

Their application extends chiefly within the area of vacuum coating technology as well as experiments in the area of vacuum process engineering.

The universal experimentation systems are based on a modern modular concept. Upgrading or retrofitting is easily possible.

### **The most important benefits of this modular concept:**

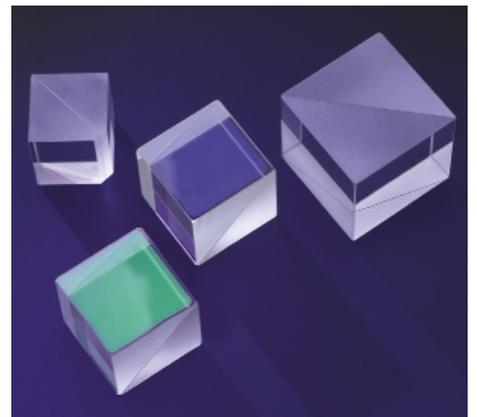
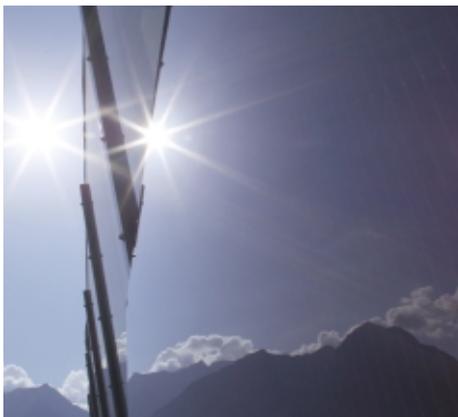
- Universally usable for almost all vacuum coating processes
- Uncomplicated to operate
- Compact
- Easy retrofitting and upgrading
- Modern vacuum technology with turbopump or cryogenic pump systems

The universal experimentation systems from Oerlikon Leybold Vacuum are divided into one of three types: bell jar, chamber and cluster systems.



Regardless of what kind of experiment you are planning, have us put together your tailor-made system based on our universal concept.

Our application support will be pleased to be of assistance.



## UNIVEX 300



### Bell jar system

The UNIVEX 300 is a bell jar system suited for bench top placement. The diameter of the chamber amounts to 300 mm.

The high-vacuum pump system has been integrated in the cabinet section and consists as standard of turbomolecular pump and backing pump. As to the type of pump and pumping speed these pumps may be adapted to the process in each case.

Chamber and pump system form the basic equipment which can be expanded by adding process components specifically selected by the customer.

### The following options are available:

- Thermal evaporators
- Vacuum etching facility
- Electron beam evaporator
- DC sputtering sources
- Auxiliary components like substrate holders, heaters, film thickness measuring instruments
- Lifting device for vacuum bell jar
- Custom installations according to customer requirements

**The UNIVEX 300 is the entry level unit of the UNIVEX system and has been designed specially for the manufacture of simple functional films. Besides of its use in research it is especially well suited for student training purposes.**

## UNIVEX 350

### Chamber system with door

The UNIVEX 350 is a chamber system and consists of two cabinets which may be separated. On one side the vacuum chamber (370 mm wide, 500 mm high and 370 mm deep) and the high-vacuum systems are accommodated. The other half of the cabinet contains the complete electrical power supply. This system design allows the installation of the system in a clean room wall.

The pump system consists as standard of turbomolecular pump and backing pump. As to the type of pump and pumping speed these pumps may be adapted to the process in each case.

Both the pump system and the basic functions of the UNIVEX 350 are controlled by means of a PLC. Optionally the PLC may also control the process itself in part or in full.

A load lock may be easily fitted to one of the lateral chamber flanges.

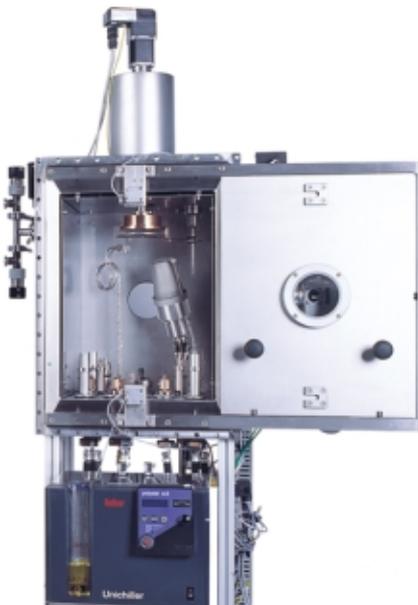


# UNIVEX 450B

The basic UNIVEX 350 configuration may be expanded by adding process components specifically selected by the customer. These process components may be fitted to all available chamber walls.

Besides all the options listed for the UNIVEX 300, the UNIVEX 350 may also accommodate RF sputtering sources or other RF supported processes (like RF bias, for example).

**The UNIVEX 350 has been specially designed for the production of functional films and systems of films. The design of the chamber allows highest flexibility when it comes to installing process components and substrates. The UNIVEX 350 is particularly well suited for research applications also under clean room conditions. The optional process controller ensures particularly well reproducible results. The design of this system is also well suited for student training.**



## Chamber system with door

The UNIVEX 450B is a chamber system the development of which is based on the UNIVEX 350.

The mechanical section of the system consists of the vacuum chamber (490 mm wide, 680 mm high and 500 mm deep) and the high-vacuum pump system. High-vacuum pump and backing pump are adapted to the particular requirements of the processes in each case.

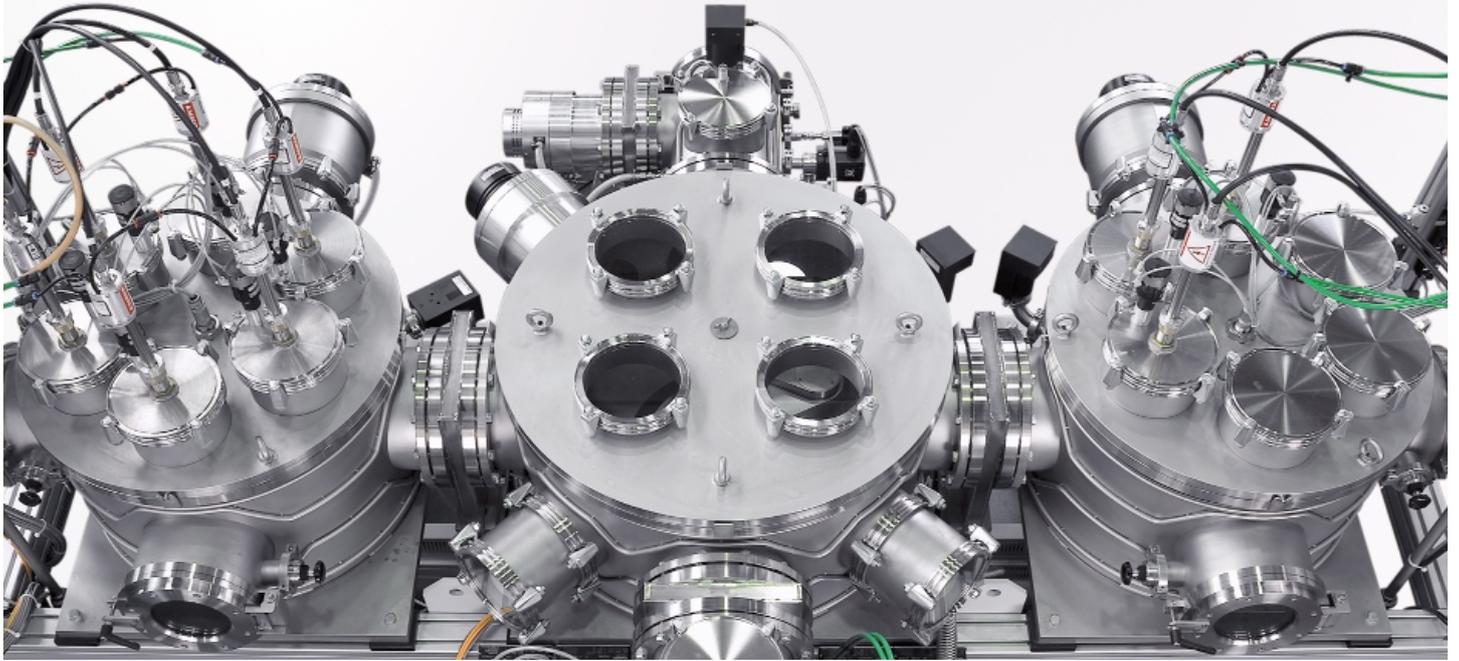
The complete electrical power supply is accommodated in a separate 19" cabinet. This allows easy installation of the chamber in a clean room wall.

Also in the case of the UNIVEX 450B the pump system and the basic functions of the system are controlled by a PLC. Optionally the PLC may also control the process itself in part or in full. A load lock may be easily fitted to one of the lateral chamber flanges.

All process components listed above may be installed in the chamber of the UNIVEX 450B. Owing to the additional space available, the number of possible combinations is almost limitless.

**The UNIVEX 450B has been specially designed for the manufacture of functional layers and systems of layers on larger substrates. The design of the chamber allows for the highest flexibility when it comes to installing process components and substrates. The UNIVEX 450B is especially well suited for applications in research and in pilot production systems also under clean room conditions. The optional process controller ensures particularly well reproducible results. The design of this system is also well suited for student training.**

# UNIVEX 450C



## Cluster tool system

The UNIVEX 450C is a cluster system whereby the size of the chamber is manufactured according to customer's requirements.

The UNIVEX 450C consists of one or several process chambers as well as a transfer chamber and a load lock chamber. The chambers are each equipped with their own high-vacuum pump systems. The entire electrical power supply is accommodated in a separate 19" cabinet.

The pump systems will usually consist of a turbomolecular pump and a backing pump. As to the type of pump and pumping speed these pumps may be adapted to the process in each case.

The pump systems and all process steps of the UNIVEX 450C are controlled by a PLC.

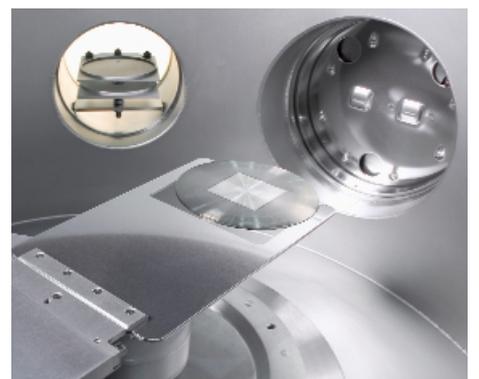
Numerous different processes and parameters can be saved and processed by way of recipes.

A couple of vacuum components can be installed into the process chambers:

- Thermal evaporators
- Vacuum etching facility
- Electron beam evaporator
- DC sputtering sources
- RF sputtering sources
- Auxiliary components like substrate holders, heaters, film thickness measuring instruments
- Custom installations according to customer requirements
- RF cleaning
- Robot controlled transport system

The UNIVEX 450C has been specially designed for the production of functional films and film systems with fully automatic processing. The process controller allows considerable throughputs and ensures highly reproducible results. The design of the chamber is strictly oriented along the customer's specific requirements.

**The UNIVEX 450C is especially suited for university and industrial research as well as pilot production also under clean room conditions.**



# UNIVEX

## Special applications and test systems

Besides the standard concept for the UNIVEX systems there exist several systems which have been designed for specific applications.

### UNIVEX 450 dactyloscopy

With this system initially invisible traces (fingerprints, for example) on carriers having a large surface (plastic bags, for example) can be rendered visible.

The carrier of the traces is evaporation coated with gold and zinc in a specially designed process chamber. In order to ensure even coatings several evaporating stations have been accommodated in the chamber. The cabinet section of this system houses the pump system and the electrical power supplies.

The process chamber is placed on a separate frame beside to the electrical cabinet. As the pump system, a cryogenic pump with matching backing pump is used.

This provides the basis for the short pump down times required here.

**The UNIVEX 450 dactyloscopy has been developed for use in laboratories specialising in criminal investigations.**



### Test systems

Industrial processes, especially those involving the manufacture of tubes, special lamps and others, require increasingly complex testing methods which need to be run under high-vacuum conditions. For such tasks we can provide complete solutions perfectly adapted to the customer's requirements in each case.

We deliver a "turnkey" solution from the vacuum chamber via the pump system up to fully automatic testing including process documentation. Here we provide coverage of the entire project from the planning stage to commissioning.

We shall be pleased to plan and manufacture the high-vacuum test systems specially for your process and precisely in line with your requirements.

Simply address our application consulting department with your ideas and requirements!

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