

**ALPIQ**

Clean-room technology for the pharmaceutical industry and for the industrial sector.  
Overall solutions. And the required products.



We specialize in clean-room systems for the pharmaceutical industry, the electronic industry, the food industry, hospitals, plastic manufacturers and research laboratories. Our overall solutions and our products – formerly Luwa – have occupied a leading role for years. International businesses rely on our proven technology and our experts have extensive, in-depth know-how in a broad range of manufacturing and finishing processes.



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# Clean-room technology for the pharmaceutical industry.

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We develop and implement overall clean-room solutions for the pharmaceutical industry. Our experts have thorough, detailed knowledge of the different manufacturing processes regarding sterile and non-sterile products as well as primary production and secondary production for liquid, semisolid and solid forms.



For our projects, we use our own, tried-and-tested products, thus ensuring optimal interaction of all planning-related and technical issues for our customers.

- The RERA ceiling system guarantees mounting of filters in compliance with GMP standards and FDA standards.
- The CG clean air diffuser optimizes system solutions and ensures a low-turbulence laminar flow; also used for insulators.
- Recertification of clean-room environments (certified)
- Certification and validation

Our service portfolio includes professional execution of the individual steps in the certification process. We provide detailed documentation for each step and register all important data. This preparatory work greatly simplifies acceptance by authorities and the FDA.

Our array of services covers SQ, DQ, IQ and OQ certification.

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# Highly sensitive clean-room environments for the electronic industry.

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We conceive and implement industry-specific and customer-focused solutions for highly sensitive clean-room environments for the electronic industry. The semiconductor sector is witnessing rapid development towards ever-smaller structures and ever-more powerful generations, which has entailed a considerable increase in the requirements of finishing processes and clean process environments.



Highly sensitive clean rooms are a must in many fields, for instance those involving DUV processes, copper metallization or CMP processes, and even the manufacture of microprocessors requires ever-more sophisticated and thus ever-more expensive clean-room equipment. While power semiconductors currently have CD (critical dimension) structures of between 0.5 and 0.25 micrometers, the next generation shift is already in progress and will be completed before long, introducing even smaller structures of 0.18 micrometers and less.

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## Certification

We measure and analyze the following:

- Temperatures and air humidity
- Turbulence intensity
- Site-specific clean air distribution
- Filter leakage tests and integration tests
- Clean-room classification
- Airborne molecular impurities
- Electrostatic and magnetic compatibility
- Vibration level
- Security tests

Certification pursuant to ISO 14644-1 to -8 or in compliance with local regulations.

## Our products

- RERA clean-room ceiling profile systems
- Fluid gasket (PU gel 1087, blue)
- Filter fan units (FFUs)
- CG clean air diffuser
- Monitoring
- Mini-environments
- Environmental chambers
- Particle measurement in clean rooms

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# CG clean air diffuser for optimal air conditions in critical areas.

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## All the benefits at a glance

- No micro-turbulence in the clean air flow area, unlike with traditional filter outlets or perforated metal plates
- Uniform air distribution over the entire area of +/-5%, related to mean flow velocity
- High-quality clean-room classes, even at airspeeds of less than 0.45 meters per second
- No need for additional flow stabilizers
- Very low pressure decrease
- Lower investment costs and operating costs
- Optimal protection of process areas

The CG clean air diffuser, a large-scale air outlet with two-ply micro-tissue covering, is a patented invention that ensures clean laminar air flows. It guarantees low-turbulence laminar flow, over the entire air outlet, at a given airspeed. An absolute filter eliminates bacteria, viruses and dust particles directly before the air enters the CG clean air diffuser.

The CG clean air diffuser is a core component of our system solutions for clean-room technology. Together with our customers and partners, we develop overall solution concepts for various fields of application.

The CG clean air diffuser is used as a supply air outlet for highly sensitive manufacturing areas and processes, for example the production and control zone, filling and packing processes, sensitive work zones, laboratories, etc. The CG clean air diffuser features a diverse range of applications and is used in the following industries:

- Pharmaceutical industry and chemical industry
- Food industry
- Electronic industry
- Plastics industry
- Optical industry
- Precision engineering
- Hospital care

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# RERA clean-room ceiling profile systems.

## Variable solutions for process air.

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### All the benefits at a glance

- Guaranteed particle density
- Variable
- Stable and robust
- Quick mounting
- High-quality materials
- Node systems with feed-throughs for media, etc.
- Easy integration of additional equipment

RERA ceiling systems enable customers to implement their air shroud requirements optimally. The customizable ceiling system meets different needs, depending on the branch of industry. Due to the diversity of variants, we are able to develop system solutions for a very wide range of clean-room environments together with our customers and partners.

### The RERA ceiling system can easily be combined with other elements

- Blank panels (walkable/non-walkable)
- Flexible wall connections
- Cable glands
- CG clean air diffuser
- Clean-room lamps (tear-drop)
- Sprinkler systems
- Smoke detectors
- Ionization systems
- Filter fan units (FFUs)
- Cooling coils

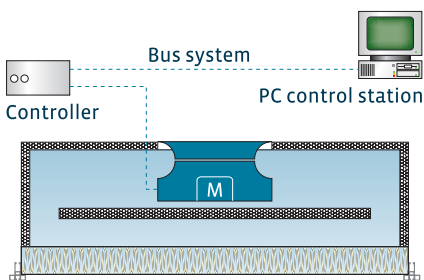
The fields of application are accordingly diverse: clean rooms which meet the highest requirements, microelectronic and pharmaceutical applications – from mini-environments through to ballroom solutions.



# Filter fan units (FFUs) for all clean-room classes.

## All the benefits at a glance

- Flexible application options
- Compliance with the most stringent clean-room standards
- Low noise and vibration levels
- Cost-optimized and energy-optimized
- Suitable for all types of power supply
- Small and light
- Smooth surface that can be cleaned easily
- Individual control or group control possible
- Simple to install and to maintain from inside the clean room
- Network-compatible
- A wide range of accessories



Wherever clean air is essential for the manufacturing processes of our customers from various industries, the FFUs transport, filter and cool down the required air as needed before it enters the clean room. In so doing, the most stringent purity requirements and clean-room standards are met.

As varied as the fields of application are for FFUs, the industries which our customers come from are equally diverse. Our business development department designs individual and customized solutions for customers from the pharmaceutical industry, the electronic industry, the medical industry, the food industry and the plastics industry. The exceptional flexibility of our FFUs enables implementation of anything – from local clean rooms (mini-environments) to large open-plan clean-room concepts.

It is possible to install an individual FFU within a RERA system or to install several FFUs covering the entire surface of a RERA installation.

## Security and monitoring

Comprehensive monitoring of the different clean-room areas is becoming ever-more important for our customers. Our FFUs are available as individual devices or as groups of several devices with integrated speed control, potentiometer, transformer or electronic speed controller. A complex network solution including a PC control station is provided for central and complete monitoring and control of equipment systems with high security requirements.

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# We measure the things that you don't see.

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The right quality of air has a positive effect on well-being, safety and productivity. We measure and analyze your air and provide the basis for specific solutions, no matter what problems you face. We also have a wealth of experience in certifying and recertifying clean rooms.

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## Particle measurement

- DEHS scanning
- Filter performance levels
- Purity classes
- Recovery tests (recovery period)

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## Air values

- Airspeeds and the resulting quantities of supply air and return air
- Air change within the room (purification)
- Turbulence intensity (turbulent or laminar)

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## Differential pressure

- Differential pressures between different rooms
- Differential pressures between a room and the atmosphere
- Differential pressures across filters

### **Particle measurement: when there is something in the air.**

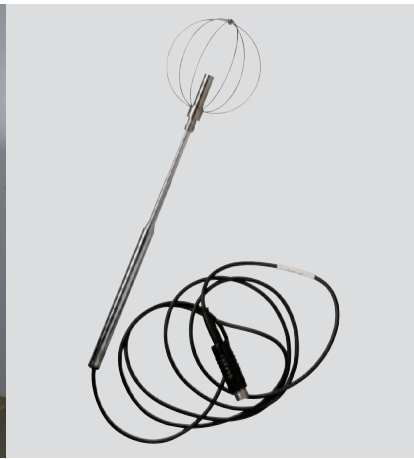
Clean rooms have to comply with specific requirements relating to particle concentration. We use a particle counter to identify impurities and we document the results. We have been providing this kind of service to well-known customers for years – always in a reliable and neutral manner.

### **Air values: when air flows are out of control.**

If you control the air, you control the climate. We measure air flows, the laminar or turbulent air movements, and provide the required information. We know how to operate in laminar zones, how draughts can be identified and what specific actions can be taken.

### **Differential pressure: when the next room is also important.**

Differential pressure is an effective means to protect rooms from outside influences. A differential pressure is created on the basis of different air volume flows. This approach is used in the hospital sector as well as in the pharmaceutical industry and the electronic industry, as clean rooms and operating rooms in hospitals only function properly if predefined pressures are adhered to. We measure differential pressures between different rooms, between a room and the atmosphere and across filters.



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#### Visualization

- Air flows in laminar zones (weighing cabinets, OR air outlets, etc.)
- Overpressures in rooms

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#### Germ counting

- Contact tests of surfaces
- Counting of germs in the air

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#### Comfort evaluation

- Temperatures and humidity in the immediate vicinity
- Sound pressure level in the room
- Illumination or light intensity
- CO<sub>2</sub> content
- Turbulence intensity

#### **Visualization: when the problem is invisible.**

We are able to visualize spatial air flows. In so doing, we can show our customers how room ventilation behaves in relation to the customers' processes. Spatial air flow behavior is extremely varied. Due to the visualization of flows, weaknesses can be identified and specific measures can be taken to remove them.

#### **Germ counting: because sterility is a guarantee for life.**

We count microbiological germ numbers in the air and on surfaces. On the basis of the test results, cleaning processes are adjusted and optimized. Depending on the degree of fungal infestation, materials used need to be replaced or treated with special cleaning agents. In the pharmaceutical industry, these tests are absolutely essential and an important part of quality assurance.

#### **Comfort evaluation: if well-being is disturbed.**

In buildings where people work or spend their time off, these people's well-being depends on comfort. We know the criteria which determine comfort and we are aware of the critical values. In very little time, we can ascertain precisely why people don't feel well in a building. Quite often, small measures can eliminate great discomfort.

[www.alpiq-intec.ch](http://www.alpiq-intec.ch)

