E+E

your partner
in sensor
technology.

Sensors for Cleanroom Monitoring

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Sustainable Monitoring with E+E Elektronik Sensors

In the pharmaceutical and semiconductor industries, it is crucial to rely on measurement technologies that are both long-term stable and highly precise. Monitoring sensitive production processes in cleanrooms sets high standards, particularly regarding the continuous monitoring of the working environment in accordance with established norms and guidelines, such as ISO or GMP.

Reliable, Precise, and Fail-safe – Cleanroom Monitoring at the Highest Level!

1 Laminar Flow

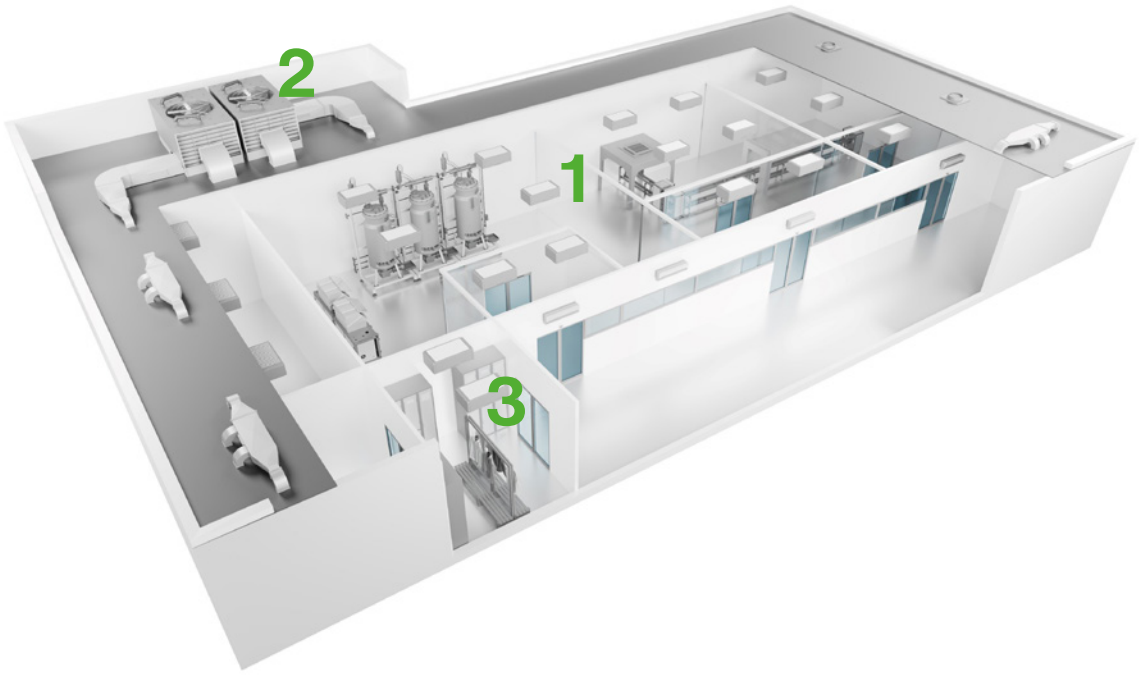
Ensuring clean and validated operation through laminar flow control

2 Climate Control

Preparing cleanroom air to maintain standard climate conditions

3 Differential Pressure

Preventing contamination through personnel and material airlocks



Laminar Flow

In nearly all cleanrooms, Filter Fan Units (FFUs) are used to ensure a clean environment through a directed airflow with very low air movement. E+E Elektronik air flow sensors are excellent for controlling laminar flow, guaranteeing safe and validated operation.

High Measurement Accuracy for Minimal Flows

A clean working environment is crucial for stable processes and high-quality components. Monitoring airflow plays a central role in the validation and continuous monitoring of production facilities in cleanrooms.

The EE680 air flow sensor from E+E Elektronik is optimised for monitoring laminar flows in cleanroom environments. Its GMP-compliant design is ideal for cleanrooms and safety cabinets in pharmaceutical, life sciences, and microelectronics industries. With a measurement range of 0 to 2 m/s and an accuracy of 0.05 m/s, it is particularly suitable for sensitive systems such as RABS (Restricted Access Barrier Systems) and isolators.

Additionally, laminar flow sensors can be tested in-house in the ISO 17025 accredited laboratory to ensure traceable measurement accuracy.

Sensor Solution

EE680

GMP-compliant airflow sensor for laminar flow monitoring

- Combined airspeed and temperature measurement
- High-quality stainless steel design
- LED ring for status visualisation

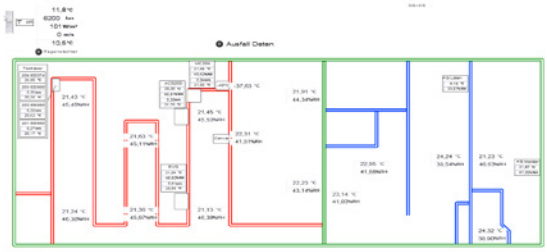
Advantages of Laminar Flow Monitoring

- Ensuring production safety
- Maintaining cleanroom conditions through continuous air exchange
- Preventing particle accumulation in gloveboxes
- Removing harmful particles effectively

Climate Control

Climate plays a vital role in clean or grey rooms. Humidity and temperature are particularly important for smooth processes, as they influence material properties, static charges, microbial growth, and more. Targeted climate control also significantly enhances the overall system's efficiency.

Measurement Points for Temperature and Humidity Control in Cleanrooms



Example of T and RH measurement in clean and grey room.

Advantages of Targeted Climate Control

- Compliance with ISO 14644 cleanroom standards
- High energy-saving potential through optimised climate control
- Ensuring high product and production safety

Sensor Solutions

EE210

Humidity and temperature transmitter for demanding applications

- Maximum measurement accuracy
- Freely configurable analogue outputs, Modbus RTU interface
- Easy installation

HTS801

Humidity and temperature sensor for high humidity and chemically challenging environments

- Maximum measurement accuracy
- Automatic Recovery (ARC) function to remove chemical contaminants
- High-quality stainless steel design

Differential Pressure

To prevent potentially contaminated air from entering the cleanroom, it must maintain a higher pressure than adjacent areas, such as airlocks or grey rooms. Many cleanrooms are therefore equipped with real-time monitoring systems for continuous differential pressure monitoring.

Highly Accurate Measurement of Low Differential Pressure

Differential pressure measurement is a key aspect of ensuring optimal cleanroom conditions. It monitors the pressure differences between individual cleanroom zones and ensures the correct airflow direction to prevent contamination.

In addition to the individual cleanroom classes, the correct pressure must also be maintained in buffer zones between the cleanroom and uncontrolled areas, such as airlocks or transfer chambers. This prevents contamination of the cleanroom during the introduction of materials or when personnel enter.

To comply with all relevant cleanroom standards, highly precise differential pressure measurement between the rooms is essential.

Furthermore, continuous differential pressure monitoring helps prevent dangerous pressure fluctuations in the cleanroom caused by faulty ventilation systems.

With the EE610, E+E Elektronik offers the ideal differential pressure sensor for cleanroom applications. The EE610 provides an accuracy of ±0.5 Pa across the entire measurement range. Its long-term stable piezoresistive sensor element operates without gas flow, thereby preventing cross-contamination.

Sensor Solution

EE610

Low-differential pressure sensor

- Adjustable pressure measurement ranges
- Highest accuracy
- Long-term stable measurements
- Optional auto-zero function

Calibrating your Limits

Sensors for cleanroom environments are crucial to achieving the highest standards of cleanliness and environmental control. For qualification purposes, they often require traceable calibration certificates. E+E Elektronik provides such certificates through its accredited laboratory with every sensor delivery.

High-End Sensor Calibration - around the World

Your products and services can only be as precise as the devices used to measure them. E+E Elektronik's calibration laboratory ensures your sensors meet the highest quality standards, guaranteeing optimal performance and compliance with all necessary regulations.

With over 20 years of experience, the E+E calibration team focuses on providing reliable service with minimal error potential and no unnecessary delays.

„For my team and me, precision, speed and reliability in calibration have top priority. With over 20 years of experience, we stand for the highest quality, regardless of the manufacturer, all around the world."

Dietmar Pachinger, Head of Accredited Calibration Laboratory, E+E Elektronik

Advantages of the E+E Calibration Laboratory

- High accuracy with traceable calibration
- Low measurement uncertainty paired with extensive calibration offerings
- All-in-one solutions with manufacturer-independent calibration
- Minimized downtime through fast calibration processes

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