

Level Sensors in Ventilators

Leinfelden-Echterdingen, 10 March 2022. The setup of ventilators is highly complex. On the one hand, they have to keep up the gas exchange, on the other hand, the ventilator used must not damage the lung. To ensure this, reliable technology and sensor systems are needed.

Machine ventilation always requires respiratory gas conditioning before the breathing gas is delivered to the patient. It includes the warming, cleaning and humidification of the breathing gas. The components used have to work precisely and yet stand up to operating times of several ten thousand hours. All containers utilized also require permanent monitoring and special hygiene.

Level Monitoring in Active Breathing Gas Humidifiers

No matter whether nebulizers, evaporators or bubblers are used to humidify the breathing gas, it is always essential to maintain the proper water level. If it goes below or above, the optimum water content of the air supplied cannot be granted and the patient's lung may be damaged. For this reason, reliable level measurement is indispensable. In medical engineering, where safety and sterility have top priority, contact with the medium should be avoided. This is where the EBE technologies come in. The capacitive sensors from EBE are capable of contactless measuring. They can be implemented both as continuously measuring sensors and as level switches.

Different Approaches to Measure the Filling Level

To measure the level in respiratory gas humidifiers it is possible to apply level sensors that output a value indicating how much liquid is still left in the tank. However, it is also possible to apply level switches that send a digital signal if the filling level reaches a certain value or no signal if this value is not reached or exceeded.

All sensors are located completely touchless outside the container in the device behind a protective wall or in a tight and therefore easy to clean housing. There, they cannot be touched or damaged. Due to the sensor system installed, the respiratory device can be cleaned and disinfected easily without disturbing gaps and edges. The shape and surface of the level sensors can be adapted to the conditions and requirements of the individual application resp. of the tank. Thus, particularly small surfaces or extraordinary geometries can be implemented. In the same way, customer-specific interfaces and output parameters can be individually implemented to ideally adapt the sensor system to the equipment technology.



Picture file: EBE_Fuellstand_in_Beatmungsgeraeten.jpg

Picture text: The fill level monitoring in respiratory gas humidifiers is essential to ensure the optimum water content of the breathing gas delivered.

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Short Profile

The company EBE Elektro-Bau-Elemente GmbH (brand name: EBE sensors + motion) based in Leinfelden-Echterdingen near Stuttgart develops and manufactures OEM-products in the fields of sensor technology, components for HMI-interfaces as well as actuator and mechatronics technology. The focus lies on capacitive and inductive sensors based on the technologies developed in-house and mechatronic solutions for industry, appliances, medicine and mobility. The sensor program also includes level sensors, pressure sensors, position sensors and capacitive buttons. Furthermore, EBE develops and manufactures customer-specific solenoids and robust rotary switches, buttons and encoders and adapts them to the customer requirements. The company sees itself as a competence center for the development and production of sensor systems and drive technology.

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