

Ensuring the quality of respiratory masks and medical protective clothing

Control basis weight and material thickness with the beta sensor Gravimat DFI from Mahlo

Weight and thickness have a great influence on the functionality of nonwoven goods. Especially in the current situation in the wake of the worldwide corona pandemic, it is essential to be able to rely 100 percent on the quality of medical products such as masks or protective gowns. Thanks to decades of experience and a wide range of measurement and control technology, the German company Mahlo GmbH + Co KG can support manufacturers in monitoring and controlling important parameters during the production process. Various sensors are available depending on the application.



Fig. 1: Mouth and nose masks are currently part of everyday life.

The Gravimat DFI sensor is part of the modular Qualiscan QMS quality measurement system and measures weight and material thickness using isotope radiation. The measurement is based on the attenuation of radioactive radiation by the substrate in the measuring gap. This weakening of the intensity is a measure of the basis weight of the goods. Mahlo works with different isotope variants in order to do justice to different material properties. Krypton-85 is used for goods with a weight between 10 and 1400 g/m², strontium-90 is used for 100 to 6000 g/m².

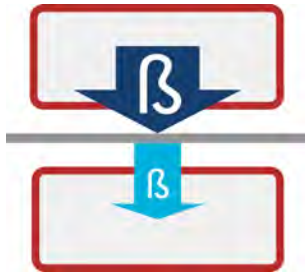


Fig. 2: Measuring principle with beta radiation

Proven and reliable function

The transmitter in the traversing sensor beams onto the running web. Due to its mass, the radiation reaches the receiver in a damped manner. The values of the transmitted and received radiation are calculated to obtain the weight per unit area. Mahlo uses a multi-channel receiver in which the incoming measuring radiation is distributed to different areas of the fabric surface. In this way precise values are obtained, no matter what position the fabric is currently in.

This method also solves one of the biggest problems faced by manufacturers of web-shaped goods such as hygiene fleece: measurement inaccuracies due to fabric flutter. Its sensor technology makes the Gravimat DFI immune to changes in the center of gravity. It measures precisely and unaffected by any changes in degree of dryness, density or thickness.



Fig. 3: Installation eines Gravimat DFI bei Kirson Industrial Reinforcements GmbH

The Gravimat DFI does not require strong absorbers or highly radioactive sources. Nevertheless, the highest precision, speed and resolution are guaranteed. The sensor can be used for practically all nonwoven applications.

For non-woven fabric used for face masks, air permeability is of particular importance. After all, the wearer must be able to breathe easily. In this case, Mahlo combines basis weight measurement with an air permeability sensor, which can also measure on the running web with a light touch.

Quality assurance from Mahlo - in the service of health

Manufacturers of medical goods are currently under pressure to deliver their goods as quickly as possible, but still with high quality. With process control systems from Mahlo, this balancing act is not only easier to master - production costs are also further reduced. The automatic basis weight control significantly limits the spread of the basis weight and thus guarantees a more uniform end product. Suitable setpoint settings with minimum tolerance ranges, in addition to ensuring product quality, save considerable material and energy costs. In addition, a safety margin is eliminated, which otherwise means loss of goods and time.

More detailed information about the products, brochures for download as well as topic-related technical articles can be found on the website of Mahlo GmbH + Co. KG at www.mahlo.com.

With Matthias Wulbeck, Area Sales Manager and Product Manager QCS, an experienced and committed contact person is available. Contact: matthias.wulbeck@mahlo.com