

## Automatic Quality & Process Control for Medical Respirators (N95, FFP 2/3, KN95, ...)

Medical Respirators



The SARS-CoV2 pandemic is a drastic reminder of the importance for rigorous measures to contain infectious diseases.

Medical and care staff with close contact to patients depend on highest possible protection. Their medical respirators must meet strict requirements to reduce the wearer's exposure to airborne particles, e.g. droplets containing bacteria and viruses.

A micro-hole in the material could result in infection of the wearer.

### Take control of your respirator manufacturing process

Medical respirators comprise layers with specific purposes, e.g. a spunbond polypropylene outer and inner layer, a second cellulose / polyester layer treated with different compounds to inactivate viruses and a layer of finest meltblown material resembling cotton candy to provide mechanical filtration.

Any issues during production of respirator material can cause local defects, such as (micro-) holes, or variations in overall material properties, e.g. porosity, impairing the function of the respirator and lowering protection for the wearer.

Dr. Schenk EasyInspect detects local defects and overall variations in the material. Used at critical steps in medical respirator material making, it reduces time, cost and waste while increasing quality and profit.

### Typical defects in respirator material layers

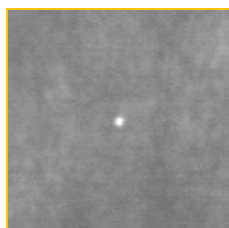
#### Meltblown filtration material

- Shots / micro-holes
- Dirt
- Drops

#### Spunbond outer / inner layer material

- Drops / bond point fusion
- Holes / pinholes
- Wrinkles
- Hard filaments
- Thin spots

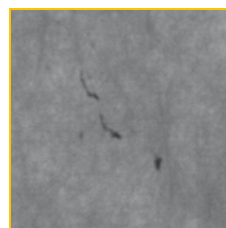
Micro-hole in TBF...



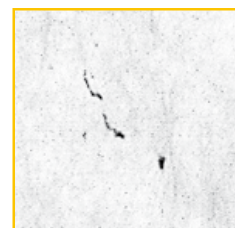
...and in ABI



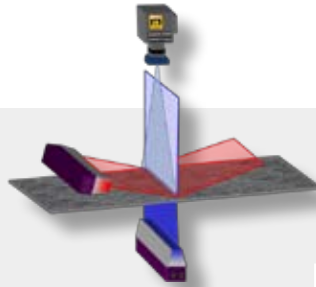
Dirt conventional...



....and virtual X-ray



Your path to zero-defect  
respirator production

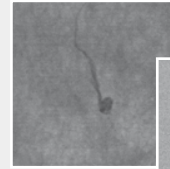


## EasyInspect with MIDA

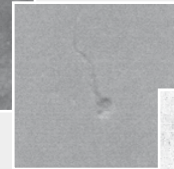
Optimum detection and classification of defects is crucial for defect-free respirator production. EasyInspect uses MIDA (Multiple Image Defect Analysis) technology to inspect melt-blown filtration material with multiple optical channels on a single scan line. Any local defect is detected from different perspectives, i.e. optical channels.

The combination of defect information from different channels is essential for comprehensive defect classification and material qualification.

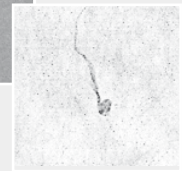
TBF channel



ABI channel



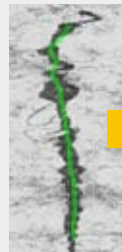
Virtual X-ray channel



Drop in meltblown filtration material as seen with different channels

## Dr. Schenk MIDA X and AI

MIDA X is the intelligent answer to any segmentation issues. Together with Dr. Schenk artificial intelligence (AI) it transcends multiple threshold approaches, which led to incompletely detected defects or pseudo-defects, and assists in the creation of automated classification algorithms.



1

Manually trace approximate defect contours...



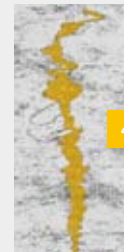
2

...check initial MIDA X interpretation



3

Benefit from improved detection based on MIDA X...

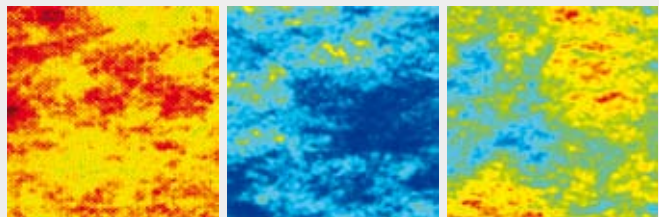


4

...resulting in perfectly AI segmented defects and optimum classification

## EasyMeasure: Monitoring material property variations

Formation analysis and monitoring of grammage and porosity need to be controlled in medical respirator material production, as they are essential to the respirator's desired function. EasyMeasure offers complete monitoring of these properties with over 65.000 gray levels to detect large-scale material variations in high resolution and with great detail.



Material grammage maps show inhomogeneities in great detail (thin areas yellow, very thin red, thick blue)

### About Dr. Schenk

Dr. Schenk GmbH offers inspection and measurement solutions for automated quality assurance and production process control - a key success factor in the making and converting of many materials, e.g. plastics, textile materials, nonwovens, paper, metal, or glass, for a multitude of markets like display glass, automotive, packaging, medical, renewable energy, and many more. From modular standard units to highly customized systems - Dr. Schenk's solutions have precision in focus!

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