Presse Release Sensor Instruments

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Quality control of laser filters

Mobile inspection of lasered filter screens with a vision system

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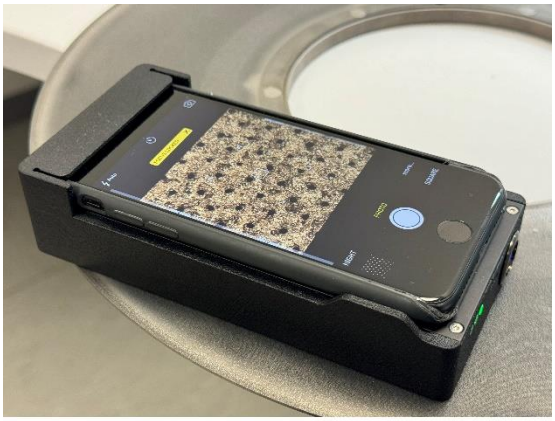
Laser filters are static filter screens made of hardened special steel with a wall thickness of typically 1.5mm, which also have closely spaced conical holes created with focused laser light. The conical shape of the holes ensures that the laser screens have a certain self-cleaning effect. Depending on the design, the holes have a diameter of approx. 100µm to 1mm at the narrowest point of the cone.

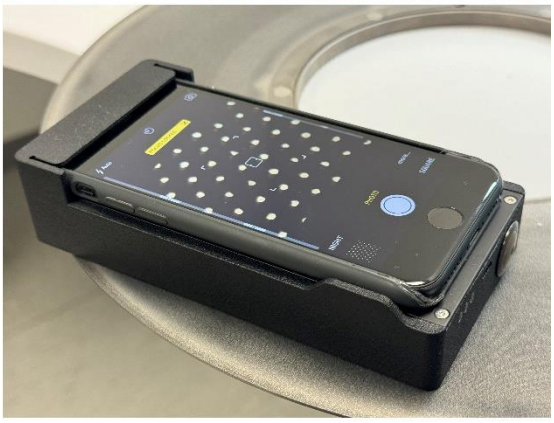
The task of the laser filter is to efficiently remove unwanted impurities from the plastic melt during the extrusion process. In conjunction with rotating scrapers, the dwell time of the impurities is kept as short as possible. The continuous screen cleaning even removes so-called soft particles (e.g. made of silicone or rubber) from the plastic flow, and the short dwell time of the impurity particles also prevents the formation of cracking products and the resulting black dots.

However, lasering can lead to unwanted filling of the conical holes, which results from the molten metal not being able to leave the conical area in time and instead solidifying, which can lead to partial or, in extreme cases, complete blockade of individual holes.

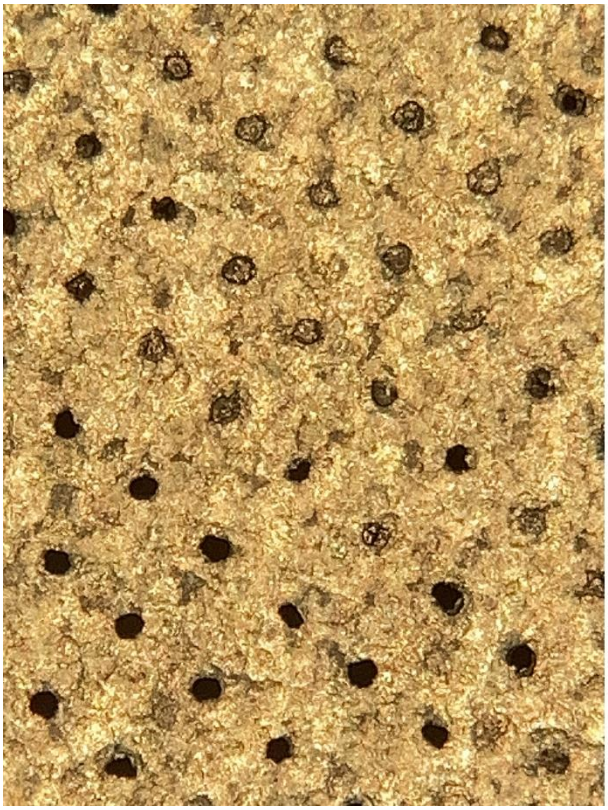
The LUMI-STAR-MOBILE-VIS/VIS mobile vision system enables simple and efficient inspection of the laser filter screens. By means of a macro lens connected in front of the smartphone and an illumination ring of white light LEDs arranged around the receiving optics, an area of 3mm x 3mm up to 12mm x 12mm can be zoomed and displayed on the smartphone screen. Defects can be found quickly and analyzed precisely.

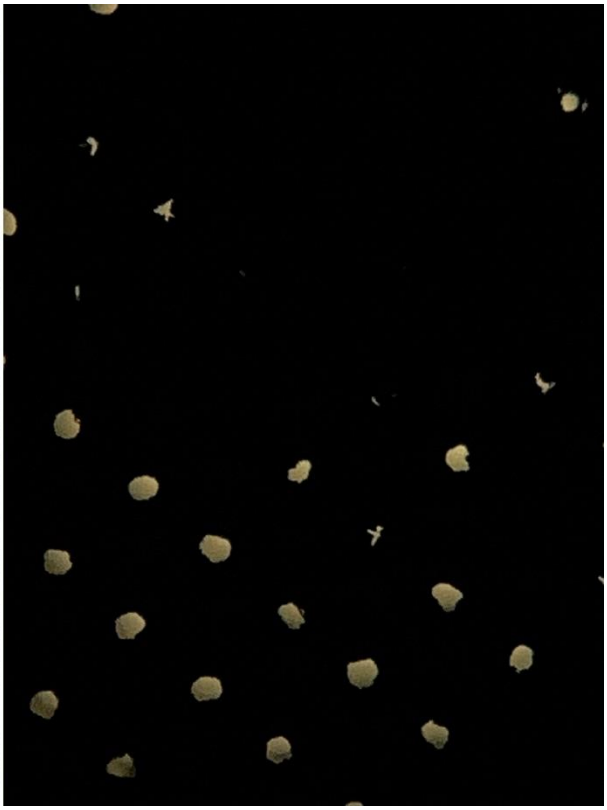
The switchable reflected light / transmitted light function makes work considerably easier. Saving and managing the photos taken is also supported by the smartphone functions.



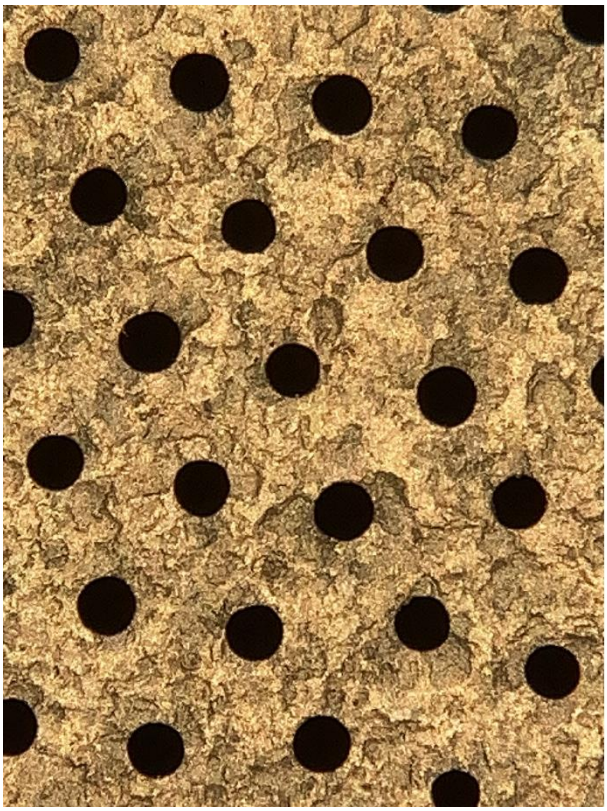


The following images show both completely and partially blocked holes. The defects can be analyzed in detail thanks to the alternating reflected light / transmitted light display:





These two pictures show what the laser-cut areas shoul look like. This is a filter disk with larger holes:



Contact:

Sensor Instruments
Entwicklungs- und Vertriebs GmbH
Schlinding 15
D-94169 Thurmansbang
Telephone +49 8544 9719-0
Fax +49 8544 9719-13
info@sensorinstruments.de