

Press Release Sensor Instruments

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Problems With Folds?

February 20, 2019. Sensor Instruments GmbH. In the production of oil and air filters for the automobile industry these filters must reach the required throughput rate, which is achieved by folding the filter material so that it provides a large filter surface on a minimum of space. Depending on the filter type there are differences in the fold depth and in the numbers of folds. Before the filter mats are formed into a cylinder they are transported on a linear table as endless material. When the required number of folds is reached, the filter mat is cut off from the endless material. During feeding the individual folds are alternately contracted and extended, and the folds are counted by means of a non-contacting method. The differing fold height, detection in contracted condition, and the filter material itself due to its sometimes semi-transparent properties, are challenging factors for the sensor system.

Accurate edge counting under these conditions can be performed with the edge detectors of the **RED series**. The focused laser line that is projected onto the folds is picked up by means of two photodetectors under two different angles. While one detector is arranged near the laser transmitter, the second receiver is placed on the sensor side that faces away from the transmitter. When there is a fold, the laser spot is blocked for the detector facing away from the transmitter, whereas the signal of the receiver that is near the transmitter rather is amplified. The relationship of the two received signals provides reliable information about the existence of a fold. Additional software algorithms such as for example the activation of a dynamic dead time after fold detection and a switching hysteresis further increase the counting accuracy. With the **RED-110-L** there now is a sensor that reliably detects folds within a distance of 90mm to 130mm from the object. It does not matter whether the folds are in contracted or extended form. The maximum scan frequency of the laser sensor typically is 100 kHz and should thus be more than sufficient for this application.



RED-Scope PC software



Accurate counting of edges using the edge detectors of the RED series

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