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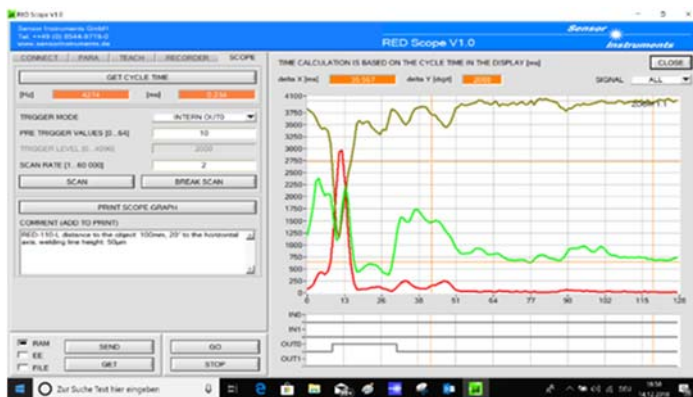
Welding Seam Detection With Edge Detectors

February 2, 2019. Sensor Instruments. For the detection of welding seams, contrast or color sensors would seem to be the proper solution, because in most cases the welding seam optically shows a clear difference from the surrounding product surface. In everyday practice, however, it turns out that these methods involve frequent readjustment and reparameterisation. On the one hand this is due to the varying, product-dependent distance of the object surface from the sensor, and on the other hand to the highly alternating appearance of the respective welding seam with respect to color and contrast. Both methods, however, seem to be completely unsuited for printed objects, especially if a color or contrast similar to the welding seam is already contained in the printed material. So-called eddy current sensors offer a completely different approach, because the metallurgical structure of the object in the welding seam differs from the remaining metal sheet. This method, however, requires recalibration of the measuring equipment when the product changes with respect to sheet thickness, metal type, welding method, and distance of the object from the sensor.

Edge detectors might offer an alternative here. All that is required is the existence of an edge, which by nature should be the case with a welding seam (with the exception of polished welding seams). The sensors of the **RED series** operate with the principle of edge detection. A laser spot or a focused laser line is projected onto the object surface. The laser spot is detected by two photodetectors that are integrated in the laser sensor. These two detectors are positioned in such a way that the detector that is close to the laser transmitter receives more light when there is an edge, whereas for the detector that is opposite to the laser transmitter the laser light beam so to speak is blocked. The sensor's integrated controller with its software then compares the signals of the two detectors and provides a result that is independent of the intensity. The outstanding feature here is that smallest edges, even on printed objects, are reliably detected by the sensor (**RED-110-L**) in a distance range from 90mm to 130mm. The advantages of edge detection!



The edge optics of the RED sensor directs a laser spot onto the object surface.



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