

Press information from Sensor Instruments

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Sustainable v. virgin! The arrival of plastic recyclates

16/10/2020. Sensor Instruments GmbH: A difficult birth! After standing in the shadow of virgin materials for many years, plastic recyclates have now come into their own. There are many reasons for this: whilst the complex technical procedures to which recycled plastic must be subjected rendered them uneconomic, technological improvements mean that the quality could be improved whilst reducing costs. Despite these advances, without the decision on the part of the EU to change the legal framework to effect the sustainable use of plastics, recyclates would have remained uneconomic. For example, an EU directive has established a minimum amount of plastic recyclates to be used in plastic bottles.

Despite their improved properties, plastic recyclates still do not approach the quality of virgin material. For example, color deviations in comparison to the target state are still common. Color value targets can only be reached by the targeted addition of virgin material. Determining the exact quantity of new material to be added requires color measurement of the plastic recyclate.

Color measurement is performed **INLINE**. The high ambient temperature means that color measurement system is realized as a fiber optic system (**KL-D-0°/45°-85-1200-A3.0-VIS**) and works in accordance with the 0°/45° color measurement procedure. When using a white light spot diameter of 25 mm, an average is ascertained optically over a large number of pellets, so that the evaluation unit connected to the fiber optic front end **SPECTRO-3-FIO-MSM-ANA-DL** can determine a precise color value ($L^*a^*b^*$ or xyY). The color values are transmitted to the control of the metering unit and depending on the color deviation from the target, the metering unit will add virgin material as required.

A number of interfaces are provided with which to transmit the color values. 3x analog (0V...+10V, 4mA...20mA) or Ethernet and in future, Profinet. The calibration procedure can be performed easily on-site using the Windows® software **SPECTRO3 MSM ANA Scope V3.2** included in the scope of delivery.

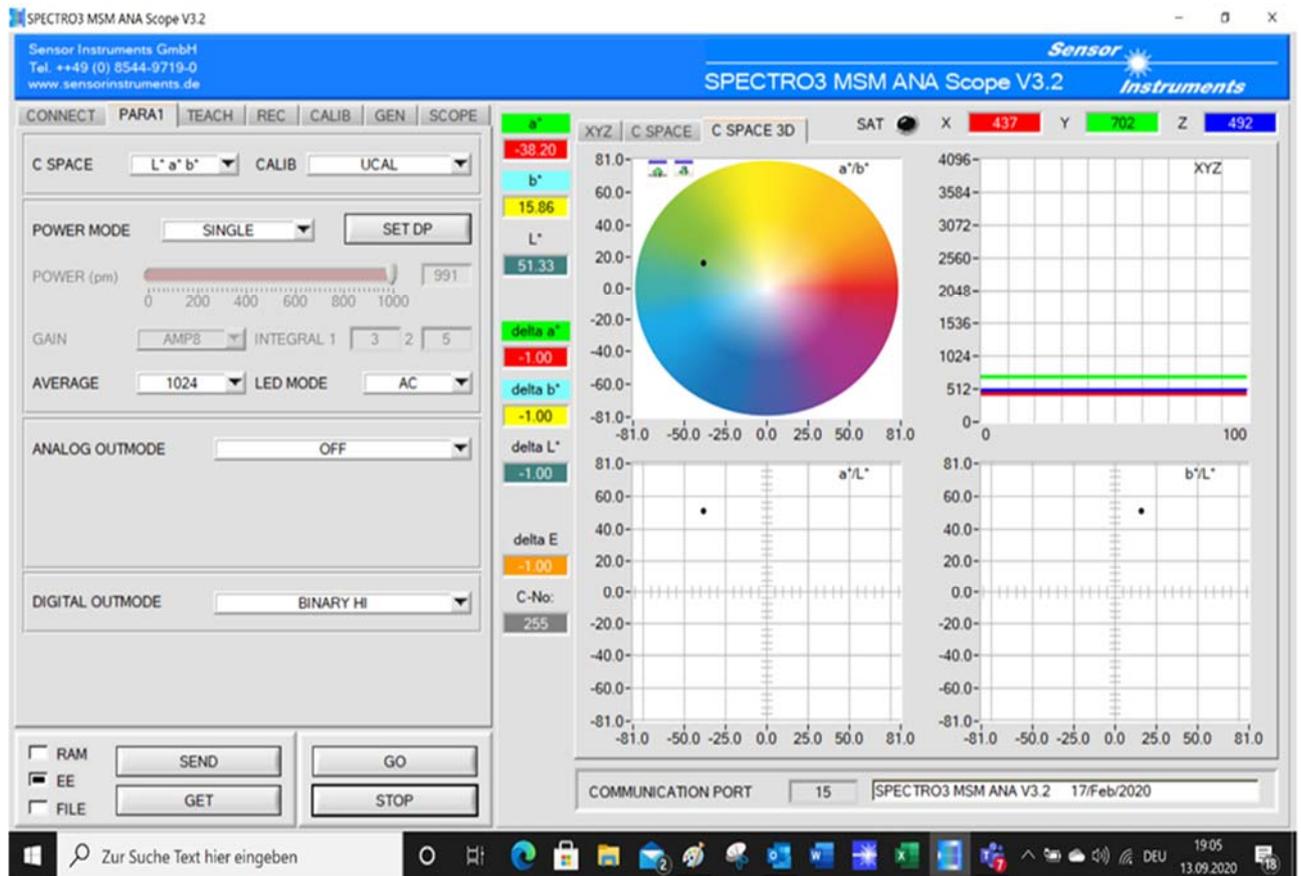
RAL color charts with defined $L^*a^*b^*$ color values that visually match the plastic pellets used are used to calibrate the color sensors; this permits easy on-site re-calibration. Calibration and re-calibration is performed using the RAL color charts.



INLINE color measurement in accordance with the 0°/45° color measurement procedure using a fiber optic system consisting of a **SPECTRO-3-FIO-MSM-ANA-DL** evaluation unit and a **KL-D-0°/45°-85-1200-A3.0-VIS** fiber optic front end. The plastic granulate is located behind a glass plate. The distance between the glass plate and the sensor head is 85 mm.



Precise color determination is performed with various plastic recyclates (pellets)



Windows® software **SPECTRO3 MSM ANA Scope V3.2** for the parametrization and calibration of the measurement system

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