

Press Release Sensor Instruments

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Optical INLINE sensors in plastics production and recycling

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Plastics have become an integral part of our daily life. Their production consumes valuable resources; it is clear that the plastics industry needs to introduce a sustainable level of recycling management. The realization of this aim presents considerable challenges.

Plastic refuse is often sent to incineration plants, rendered into filler material or just pollute the environment. Plastics recycling is often hindered by the difficulty of extracting homogeneous reyclate. The possibilities are currently restricted.

A range of initiatives and technical solutions have been developed to improve the sorting of plastics and thereby increasing the recycling quota. A number of procedures use near infra-red procedures to differentiate between the base materials of plastics; others apply codes to enable the sorting and traceability of plastic packaging.

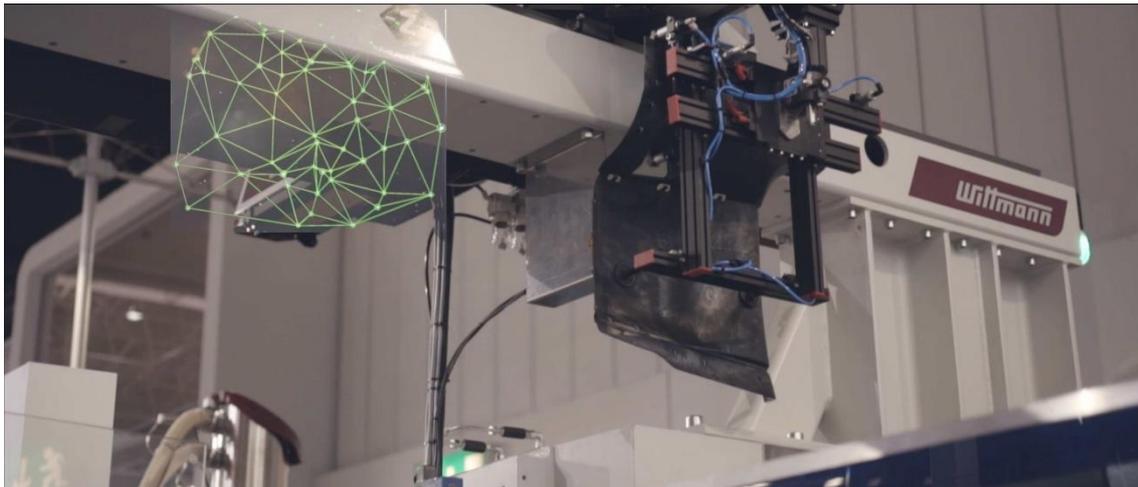
Sensor Instruments and GABRIEL-CHEMIE have combined to develop a new technology which integrates a machine-readable signature in a range of plastic materials

TAGgant TECnology,  **TAGTEC**, permits the marking and precise authentication of plastic products. All safety issues are addressed by corresponding markers or "taggants". These are microscopic fluorescing particles embedded in plastic granulate. This means that the production processes do not need to be adapted, as the markers can simply be introduced into the plastic as a TAGTEC master batch. The very low marker concentration required in the plastic supports the economic integration of this method and avoids influencing the material characteristics of the plastic products.

Every individual step of a product life-cycle - whether production, quality assurance, in the supply chain or recycling - from production over distribution to collection, can be followed and traced using TAGTEC.

The detection of TAGTEC is performed using optical detectors from Sensor Instruments. INLINE sensors monitor the integration in the production process / the finished product. Hand detectors permit mobile controls. Robust INLINE sensors are available for material identification and sorting.

GABRIEL-CHEMIE presented TAGTEC and its basic applications to a wide public within the scope of the K-2019.



K-2019: TAGTEC-application – a fingerprint with individual product monitoring for injection molded parts

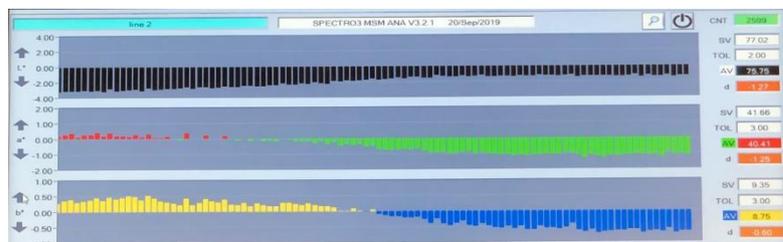
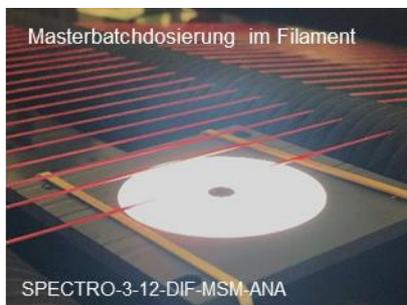
The technology has a wide range of applications in the plastics branch, A range of versatile applications are possible, ranging from simple material identification and the metering control of function additives in production to the tracing of individual plastic products (Track & Trace).

When deployed in plastics recycling, TAGTEC permits not only the differentiation of materials, but the differentiation of plastic products made of the same material, but subject to different uses. For example, plastic bottles filled with cleaning agent or chemicals must be separated from comestibles bottles made of the same material and directed to a separate recycling flow.

In addition to the detection and identification of concealed properties, optical sensors can also make a contribution to the optimization of production processes and the evaluation of optical properties in plastics recycling.

One of these properties is color. The spectral properties of plastic materials are often obscured by their color, thereby impeding detection. The use of robust INLINE color sensors enables the pre-sorting of plastic waste before the products can be sorted by material type.

The incorporation of recycled material in plastic products is also facilitated by efficient INLINE color controls. The mixing of recycled material can result in color variations which must be adjusted in the process. For example, an INLINE color measurement system enables monitoring of the current color values of intermediate products such as plastic filaments in the process; the coloration can then be controlled correspondingly via the master batch metering.



INLINE control of the color metering in the incorporation of recyclates

A further field of application for optical sensors in the plastics field is INLINE gloss measurement. The surface gloss of films and floor coverings is an important quality criterion. INLINE gloss measurement can be used for the early detection of deviations in the gloss grade in the production process, which helps to avoid rejects.

ABOUT GABRIEL-CHEMIE

GABRIEL-CHEMIE specializes in the refining and coloring of plastics. Established in 1950, it is one of the leading masterbatch manufacturers in Europe. The privately-owned, independent group is headquartered in Gumpoldskirchen (Austria) and has a number of further locations in Germany, Great Britain, Hungary, the Czech Republic, Poland, Italy, Spain and Russia, where it employs around 630 employees.

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