

Plastics News

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Polysecure technology promotes product transparency, circularity



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Polysecure GmbH, a young company based in Freiburg, Germany, has developed technology that allows for the clear identification and tracking of products, in line with the digital product passport (DPP) proposed by the European Union for a wide range of products.

The DPP is a tool to create transparency and promote circularity by sharing data and product information across the entire value chain. This information, ranging from details on the raw materials used and the available recycling options to declarations of conformity to composition, will be transparent and accessible throughout the entire life cycle of the product. In addition to the product name and producer, properties and place of manufacture, information on environmental and social indicators, such as the CO2 footprint will also be included.



Properly implemented, the DPP has the potential to become a game-changer for circular economy, although much depends on the design of the product passports.

The TrackByStars technology from Polysecure, which the company is currently presenting at the Arburg and Röchling booths at Fakuma, is based on the use of high-contrast fluorescent particles (tracers) that are mixed into the plastic material before processing, whether by injection molding, extrusion or 3D printing.

"Without robust, forgery-proof unique identification, the concept of digital product passports cannot be successful. The pattern, which is randomly generated within the material using fluorescent markers, cannot be copied, is easy to read, is practically invisible and is even extremely robust against damage, something that common technologies such as QR codes or watermarks do not offer," said Jochen Moesslein, CEO of Polysecure.

As an integrated code for the reliable identification of products for many applications, including the digital product passport – the technology is better and more robust than a superficial two-dimensional code, he added.

The technology enables permanent, unambiguous identification, even for complex and heavily used products, required for the digital product passport. It creates an individual "starry sky" is created in plastics, in colors or on metals, which can be saved in a database.

"The charm of our solution is that the particle pattern or the starry sky is absolutely tamper-proof, easily detectable, indestructible and not visible," Moesslein added. "This distinguishes our technology from printed codes, which do not have these advantages. The code is read using a hand detector. We are currently working on providing a robust solution for industrial environments, for example for moving product flows or in a waste sorting system. Once we succeed in doing this, the possible applications will be much broader."

Inline Play

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