

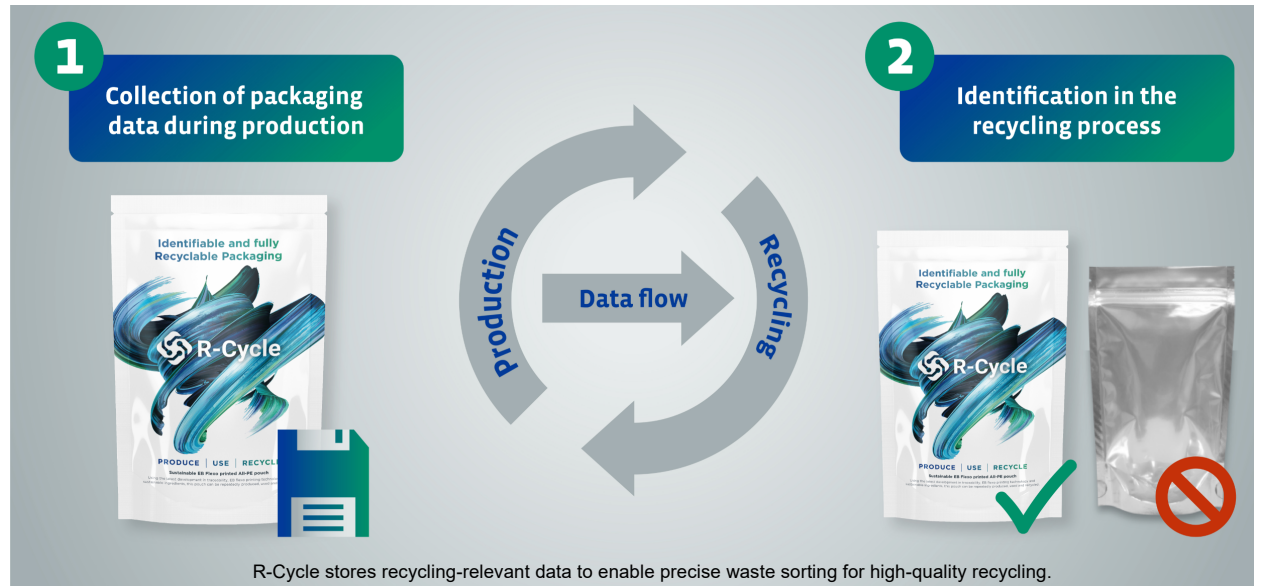
# Digital plastic recycling

Is recyclable plastic packaging really recycled to a high standard? The answer is: often not yet! The open traceability standard R-Cycle addresses precisely this problem and paves the way for a true circular economy and highly efficient process chains through the use of a digital product passport. Value-chain partners worldwide are working on a common data platform to capture and retrieve recycling-specific packaging properties to improve product sustainability and efficiency in the manufacturing process.

A study of present-day waste streams in Germany shows that only about 6% of plastics from household waste are recycled as so-called post-consumer recycle (PCR) to make equivalent new products\*. Besides improving recyclability by making materials easy to separate and sort, sharing recycling-relevant data plays a key role in increasing recycling rates. A digital product passport is the way to provide more information about ingredients and will result in higher-quality new products from PCR.

## Cross-industry standard

R-Cycle is being developed to market maturity as an initiative driven by various technology companies and organizations along the plastic-packaging value chain. As a cross-industry standard, R-Cycle can automatically record packaging properties (type of plastic, adhesive, printing ink, content, etc.) in a digital product passport during production and pass them along the value chain. The vision is to provide via a machine-readable marking on the packaging



additional data that can be used for the recycling process and sorting.

Manfred Hackl, CEO of EREMA Group, global leader in the development and manufacture of plastics recycling machines, explains: "R-Cycle improves waste sorting and thus the availability of pure waste fractions for the recycling stream. This results in a significant increase in production volumes of high-quality recyclates and forms the basis for a functioning circular economy."

Peter Funke, CEO of STEINERT GmbH, specialist in waste sensor sorting, adds: "Our advanced sensor sorting systems are already capable of detecting and selecting a wide variety of recyclable materials with extreme precision for further recycling. The R-Cycle concept is based on new principles that focus on the increasing use of digital product information. We are looking forward to contributing our expertise to the development process."

The recyclates obtained in this way can be reused in high-quality applications, such as packaging that is both functionally complex and recyclable, thus saving fossil raw materials. As part of the R-Cycle Initiative, the entire cycle is undergoing practical trials. One example is a pilot project at KAUTEX MASCHINENBAU. Huafeng Zhao, Sustainable Production Manager, explains: "As a consortium partner, we are producing a plastic bottle from post-consumer recycle as part of the trial. The exact composition is then recorded via R-Cycle - so the value chain becomes a value circle."

## Efficient production thanks to digital product passport

In addition to effectively improving product sustainability, manufacturers and processors of plastic packaging also benefit in terms of process efficiency and quality. This is because several companies are usually involved in the production of a package. Machines that are networked with the R-Cycle data platform obtain precise information from the digital product passport about the primary products and add their own values accordingly.

One example - also taken from a pilot project: Thanks to the data connection, the slitting and winding lines from R-Cycle partner KAMPF can optimize their configuration automatically when the plastic film processed has a digital product passport. This increases efficiency in the production process as well as product quality. KAMPF is already conducting initial application trials with a European customer in summer 2021. The prefabricated

plastic films are then ultimately filled with food or other goods by packaging machines. Here, too, a digital product passport provides valuable information to make the packaging process more efficient, faster, and thus more sustainable.

Guido Spix, Group President of MULTIVAC, the world's leading manufacturer of integrated packaging solutions, summarizes: "We are pleased to help shape an industry standard as part of the R-Cycle initiative and thus make a positive contribution to promoting a circular economy for plastic packaging. The exchange with upstream and downstream processes in the value chain helps us to understand the individual steps even better and to be part of a holistic and sustainable solution."



\* Conversio study 2017 (Material flow diagram plastics in Germany)

## The R-Cycle Consortium

- ARBURG
- BRÜCKNER MASCHINENBAU
- COMEXI
- EREMA GROUP
- GS1 GERMANY
- Institute for Plastics Processing (IKV)
- KAMPF
- KAUTEX MASCHINENBAU
- MULTIVAC
- PRODATA
- REIFENHÄUSER GROUP
- STEINERT



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