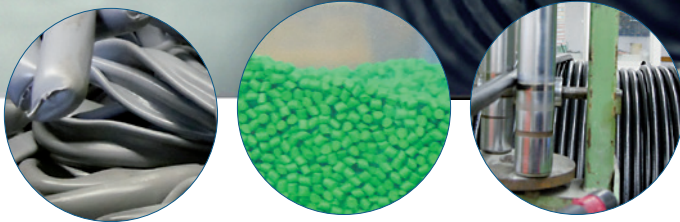
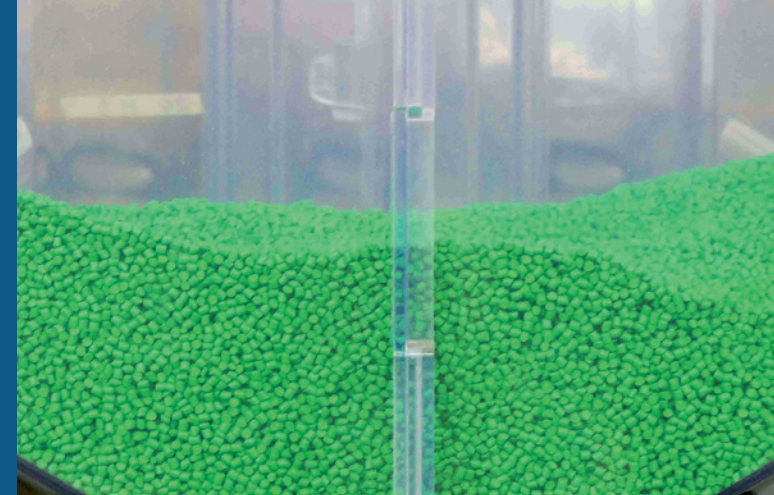


DiLink Digital solutions for industrial plastic circuits

DiLink research enables plastics producers to create high-quality products from recycled plastics, avoid plastic waste and close material cycles. To this end, the latest sensor technologies and digital software solutions are being developed and linked in order to be able to collect, analyse and further develop valuable data on the quality of plastic waste and the recyclates produced from it, and to use this data in the right places.



Resource-efficient Circular Economy – Innovative Product Cycles (ReziProK)

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Closed loops

DiLink contributes to the closing of material cycles in the plastics industry. The sensor technologies further developed in DiLink and the digital solutions tailored to them will collect the data required to close material cycles and enable the dissemination and processing of the data obtained. In this way, a more resource saving model of plastics use can be established.

Currently, large quantities of secondary plastics – recyclates – cannot be processed at all or only to inferior products. Information deficits in the markets regarding the quality and availability of the recycled materials are a main reason for this. With the right data on the attributes and quantity of plastic residues and the recyclates produced from them, and with the possibility of passing on this data digitally along the value chain, plastics manufacturers, commercial enterprises and recyclers can be put in a position to keep such plastics in circulation as high-grade materials.

The large number of different sources of residual materials for recycling can be reflected in the product quality of the recyclates. Sometimes product properties vary from batch to batch. This can make processing difficult within the framework of the tailor-made processes of the producing companies. With the help of the DiLink-sensors

to be developed, these fluctuations in product quality can be detected and avoided or digitally documented, so that recycle purchasers can obtain the relevant information on the materials and thus procure the right material or adapt their processes accordingly.

Digital recycling solutions

In a first step, the exact needs of the industry are determined through interviews and on-site appointments. The corresponding solutions are then developed, mapped on the software side and connected in suitable systems, for example by using and testing them in company co-operations. At the same time, an assessment of the sustainability of the developed solutions is carried out to ensure that the effort does not exceed the potential benefit.

By means of DiLink's innovative solution approaches, plastic recyclate can be used more safely and reliably in the future. The additional information, together with the rapid availability of digital data along the value-added chain, will enable companies to play a pioneering role in the rapidly growing recycling market and thus secure the international competitiveness of Germany as a business location.

First results

In the survey of the companies, insufficient purity, interfering factors in the recycled plastics and information deficits were named as the biggest hurdles for recycling.

Inline impact strength measurement has been successfully tested. Currently, the lower resolution limits of the technique are being evaluated. Further tests with materials as used in application are taking place. Successful trial runs have also been carried out for inline spectroscopy. A test with recyclates of different “qualities” is currently underway.

For both technologies, tests in real production environments are planned for early summer. As a software solution, the infrastructure for data acquisition, storage and management has been implemented. The associated user interface is being developed in consultation with the users.

Interdisciplinary team of experts

An interdisciplinary team has been formed for this task. On the research side, the three-year project is carried out by SKZ – Das Kunststoff-Zentrum, the Research Institute for Rationalisation at RWTH Aachen University (FiR) and the Wuppertal Institute for Climate, Environment and Energy (consortium leader). From the industry, the company partners INFOSIM, experts in the field of industrial software development, as well as the companies Hoffmann + Voss and MKV Kunststoffgranulat, which have extensive experience in plastics recycling, are involved.

The solutions developed from DiLink research can be used by the entire plastics processing industry as well as by other companies where plastic waste is generated to provide or use more recycled plastics.

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Resource-efficient Circular Economy – Innovative Product Cycles (ReziProK)

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The circular economy – efficient use of raw materials, avoiding waste.

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Status

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