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Plastic recycling sounds quite simple: collect plastic wastes, reprocess them and then manufacture new products – and you're done! Unfortunately, it's a lot more complicated than that in practice. Besides difficulties in collecting and sorting wastes, and with plastic mixtures and composite materials that are difficult to separate, recycling is also made more difficult by the wear and tear on the plastics.

Plastics are subject to various environmental influences during use, which can lead to thermo-oxidative degradation and shortening of the polymer chains. This has effects on their mechanical properties and subsequent processing. Both of these can be compensated to a certain extent by the use of

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additives. However, this requires checking the specific condition of the plastic wastes. These investigations must be carried out continuously for each waste batch in order to ascertain the wear and tear on the material in each case.

In this regard, by the way, recycling is no different from plastic processing. The continuous process monitoring also plays an important role in injection molding, extrusion and compounding. For this, inline processes are being used ever more frequently. If this takes place in a production environment – the keyword here is Industry 4.0 – and if machine learning is used, problems can be identified and often directly remedied while the products are being manufactured. And even, increasingly, without human intervention. You can find current examples of successful quality assurance in the Special in this edition, from page 6.

Wishing you interesting insights,

Florian Streifinger

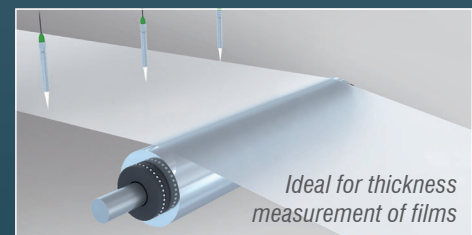
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