**PET RECYCLING: TOWARDS A CIRCULAR ECONOMY**

**Altshausen, 27 May 2020** – Lightweight and inexpensive, plastic is one of the world’s most used materials, but its extreme durability means that effective end-of-life management is critical. High quality recycling is therefore an indispensable solution for processing plastic waste. Recycling considerably benefits the environment, as new goods are replaced by recycled goods: it reduces demand for raw resources, requires less energy for processing, and reduces the quantity of plastic in landfill.

PET is the most recycled plastic because of its multiple advantages over other types of plastic. First of all, it is a very inert polymer, which makes PET packaging ideal for storing food, as it has virtually no interaction with the contents. It has the property of creating a barrier for oxygen and water and can be easily formed, it is highly resistant and very lightweight – perfect for beverage bottles. Also, it can be used to produce transparent bottles, which is not possible with PE or PP.

**PET Recycling – a growth industry**

In an industrialized affluent society, we rely on plastic. However, recycling must increase significantly. Through effective and high-quality recycling, we can move towards a circular economy approach, thus protecting nature and the environment for future generations. Recycling rates are increasing as a result of growing public awareness and greater effectiveness in recycling operations. STADLER is at the forefront of this progress, constantly searching for ways to maximize the efficiency of the recycling process and the quality of the output. It has planned and built more than 20 sorting plants for mixed plastic bottles across the world, of which more than 10 exclusively dedicated to PET.

In this context, PET recyclate is set to become increasingly important due to a variety of factors, as Roland Göggel, Sales Director for Germany, Austria and Switzerland at STADLER, explains: “Until recently there were no specifications for the use of recyclates in manufacturing new products, but this is not the case any more. The EU has introduced new regulations stipulating that beverage bottles must contain 25% recycled content by 2025 and 30% by 2030. At least as important is the appearance of new collection and recycling routes for plastic packaging, which together with changes in consumer behavior will give recycling an enormous boost. The plastics manufacturing and processing industry is now showing great interest in recycling, which was not the case in the past. However, the targets set by the EU regulation can only be achieved if all sectors involved in the process work together.”

**Returning PET into the production cycle: the recycling process**

The used PET bottles are collected and delivered to the recycling plant, where labels and caps are removed. The bottles are sorted by color and shredded. The material is washed, dried and decontaminated, then melted at 270oC and granulated. The resulting product, called “regranulate”, is mixed with new granulated and melted, then fed into injection moulding machines to produce “preforms” for new PET bottles. The preforms are transported to the filling plant, where they are heated and blown into PET bottles. Once cleaned and labelled, the bottles are ready for refilling and sale. The circle is closed as they begin a new life.

**Environmental benefits of PET recycling**

Recycling reduces the environmental impact of the PET industry in different ways. The first advantage is the reduction in the use of raw materials: new bottle preforms can be made with approximately 35% regranulate, with a consequent saving of the crude oil that would have been used to produce new granulate. In addition, recycling plastic requires 88% less energy than producing plastics from new raw materials *(source: “An Overview of Plastic Recycling” by Rick Leblanc – the balance small business).*

A further improvement has come through a more efficient use of materials for the preforms: “today the preform for a 1.5-litre PET bottle only weighs around 26.8 g – considerably less than the 38 g of 5 years ago,” explains Roland Göggel. “The use of regranulate and the more efficient use of materials has resulted in a 66% reduction in raw materials in the last 5 years.”

The PET industry is also optimizing transport by blowing the preforms into bottles at the filling plant, dramatically reducing the number of truck trips from the recycling plant: one truck can transport 700,000 preforms but only 15,000 finished PET bottles. The result is a significant cut in fuel use and emissions.

**The importance of professional sorting systems for effective recycling**

For recycling to fulfil its role in addressing the plastic waste issue in the PET industry, it needs efficient processes and high-quality end-products that can compete with virgin materials on the market – this is precisely where STADLER can make all the difference: “We understand the process technology for the entire life cycle of the material,” explains Roland Göggel. “This means that we can design the optimal combination of technologies and use them more effectively in terms of the cost-benefit considerations of the customer. Very importantly, STADLER always has overall responsibility on the project, so that we always provide our customers with expert know-how on every aspect of the process.”

Recycling management company RCS Rohstoffverwertung GmbH, based in Werne, Germany, has first-hand experience of the advantages of STADLER’s expertise. Alexander Rimmer, Joint-CEO of RCS, says: “STADLER offered us the complete package, from project planning to the construction of the modernization of the entire plant, managed and implemented by their staff. We particularly appreciated their technical know-how and the support during the entire project. Their advice was flawless and they offered us great technical experts who advised not only on the technology and processes, but also on the implementation possibilities specifically adapted to our technical requirements with good solutions to problems."

This project also shows how STADLER is always anticipating the evolution of the recycling industry. Having seen how PET bottle manufacturers had changed the packaging, increasingly using “full-body” sleeves, it identified a new need: removing the label before sorting. To address this, it developed a new Label Remover, which was included in the RCS project at the beginning of the line to the great satisfaction of Alexander Rimmer: "With the STADLER Label Remover the labels are stripped off and the PET bottles are less damaged than with other manufacturers. As a result, we can register less fine abrasion.”

**Closing the recycling circle**

Used PET bottles can be a valuable resource for the packaging sector and other industries, and can play an important role in addressing the environmental impact of plastic. However, it remains underused in many areas. STADLER has seen an opportunity to close the recycling circle and has partnered with KRONES, a well-established name in the food and beverage industries. The two partners aim to harness the advantages of plastics recycling for customers around the world to benefit customers as simply and profitably as possible. “We want to provide our customers with the highest quality material output in the industry,” explains Willi Stadler, CEO of STADLER.

Together, STADLER and KRONES will offer a complete package, from sorting through to the washing process, and all the way to the creation of a new plastic product: “this cooperation partnership enables us to offer process engineering from heterogeneous waste mixtures to the finished plastic bottle,” explains Roland Göggel. “As far as I know, no other company on the market can offer this extensive process competence. Having the entire processing under one roof means that the concepts can be improved and adapted even more specifically to the task at hand, both qualitatively and economically. And we can offer solutions not only for plastics such as PET, but also for mass plastics such as PE, PP or PS, making an important contribution towards achieving the EU recycling targets.”

The partnership not only aims to offer customers the two partners’ tried-and-tested solutions as complete single-sourced turnkey plants, but also develop jointly new solutions, processes and technologies for the sorting and treatment of waste. By combining their specialist expertise and technologies, KRONES and STADELR expect to generate significant momentum for recycling technology and the associated circular economy.

**About STADLER**

**STADLER®** is dedicated to the planning, production and assembly of sorting systems and components for the waste disposal and recycling industry world-wide. Its team of over 450 qualified employees offers a tailor-made full service, from conceptual design to planning, production, modernisation, optimisation, assembly, start-up, conversions, disassembly, maintenance and servicing of components to complete recycling and sorting systems. Its product range includes ballistic separators, transport conveyor belts, screening drums and label removers. The company is also able to provide steel structures and electrical switch cabinets for the plants it installs. Founded in 1791, this family-run company’s operation and strategy is underpinned by its ethos of delivering quality, reliability and customer satisfaction, being a good employer and providing strong social support.

For more information, visit [www.w-stadler.de](http://www.w-stadler.de/en/index.php)

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