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Press Release**APK Relies on Coperion ZSK Extruder Technology for Newcycling®****How to Make High-Quality Plastic Compounds Out of Packaging Waste**

Stuttgart, October 2020 – For its innovative, solvent-based plastic recycling process Newcycling®, APK AG in Merseburg, is relying on the high-performance ZSK extruder technology and technical process expertise from Coperion. Using the Newcycling® process, multi-polymer and multi-layer plastic packaging, that previously could not be recycled, can now be separated and processed into homogeneous regrind using ZSK twin screw extruders. In contrast to chemical recycling, the polymer in this process remains unchanged and does not require energy- and cost-intensive re-polymerization. Newcycling®, therefore, is highly efficient from a cost and from an environmental perspective.

Thanks to the innovative, solvent-based Newcycling® treatment, as well as the excellent devolatilization performance and gentle material handling in the ZSK extruder, the quality of the recyclates is close to that of virgin product.

Plastic Waste as Challenge and Opportunity

The amount of plastic waste produced daily is one of the greatest problems of modern times. Worldwide, nearly 80 million tons of plastic packaging waste accrues annually. Of this amount, currently only about 10 percent of the resources used are recovered by recycling. 90 percent of it is incinerated, dumped into landfills, or littered into the environment.

The necessity of a circular plastic economy has never been greater. With its innovative Newcycling® process, APK is laying an important cornerstone for achieving the goal of greater sustainability and higher recycling rates in the plastics industry.

This one-of-a-kind physical and solvent-based process enables clean and single-origin polyamide (PA) and polyethylene (PE) pellets with virgin-near material character to be extracted

October 2020

from complex PA/PE multi-layer films. These recyclates can be reused in high-quality products up to the original application. Downcycling can thus be reduced and closed-loop recycling becomes possible.

Newcycling® – An Economical and Ecological Sensible Recycling Process

In Newcycling® at APK's Merseburg location, PA/PE multi-layer film is first mechanically pre-treated, undergoing among other things shredding and classification. Next, the PE layer is dissolved and liquefied in a solvent bath, leading to separation of the polymers and polymer layers. The undissolved PA is then separated from the dissolved PE using conventional solid-liquid separation technology and the polymers are further processed in separate material streams.

The PA is introduced into a Coperion ZSK twin screw extruder where it passes through various process sections and is processed into a high-quality PA melt using very high dispersion performance and intensive devolatilization. Finally, it is pelletized into first-class PA recyclates.

Following pre-evaporation, the PE is likewise introduced into a ZSK twin screw extruder together with the solvent. There, intensive devolatilization of the liquid takes place, precisely calibrated for this application to produce first-class results even when PE/solvent ratios fluctuate. The solvent is completely volatilized and added back into the Newcycling® process in a closed loop. PE remains in the form of a homogeneous, high-quality melt that is then pelletized. The PE recyclate possesses quality similar to that of virgin product.

PE recyclate manufactured using APK's Newcycling® technology and marketed under the brand name Mersalen®, as well as PA recyclate sold under the brand name Mersamid®, stand out for their high product quality and substantial reductions in emissions. Newcycling® recyclates exhibit on average 66% fewer emissions than virgin material of a given plastic. In pointing out the market potential for Newcycling® recyclates, Klaus Wohnig, CEO of APK explains: "Our recyclates' very high degree of purity has been confirmed by numerous expert reports.

Mersalen® for example is suited for a wide range of applications such as cosmetics packaging." Jochen Burger, Process Engineer at Coperion, elaborated: "In APK's innovative Newcycling® process, we see a very important step along the path to a circular economy in the plastics industry. Thanks to the use of first-class technologies and comprehensive process expertise from APK and Coperion, very high-quality recyclates are being manufactured. At the same time, the process saves energy and resources because it replaces cost-intensive new plastic production. In this way, we are serving the environment and future generations. Coperion is proud to support APK in this innovative process."

October 2020

About Coperion

Coperion is the international market and technology leader in compounding and extrusion systems, feeding and weighing technology, bulk materials handling systems and services. Coperion designs, develops, manufactures and maintains systems, machines and components for the plastics, chemicals, pharmaceutical, food and minerals industries. Within its three divisions – Polymer, Equipment & Systems, and Service – Coperion has 2,500 employees and nearly 30 sales and service companies worldwide. Coperion K-Tron is part of the Equipment & Systems division of Coperion. For more information visit www.coperion.com or email info@coperion.com.

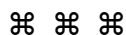
About APK

APK was founded in 2008 with the vision of producing pure polymers from plastic waste, with properties close to virgin plastics. APK's researchers and engineers have developed a suite of environmentally sound and market-leading recycling technologies under the Newcycling® brand. At its industrial-scale plant in Merseburg (Saxony-Anhalt, Germany) APK currently employs around 130 engineers, researchers, and administrative staff and features a recycling capacity of up to 20,000 tonnes per year. The two well-established plastic recyclate products produced in Merseburg are marketed as Mersalen® and Mersamid®. More information is available at www.apk-ag.de.

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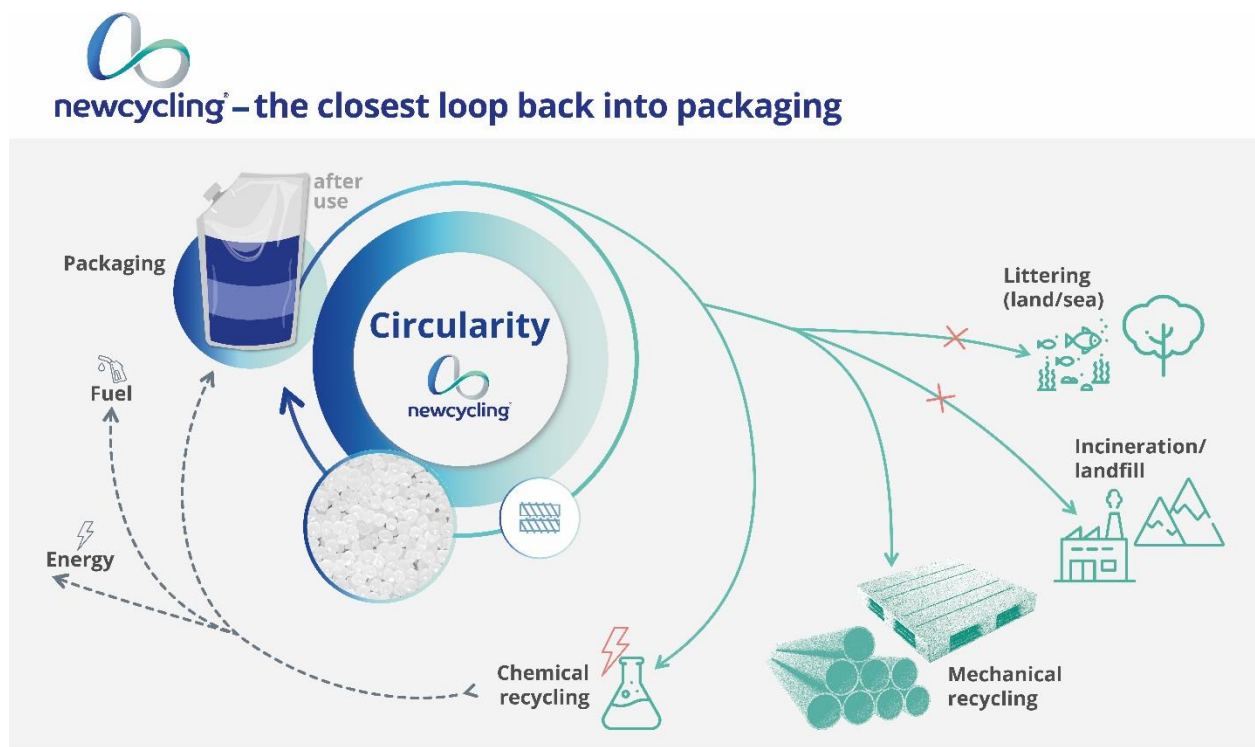
October 2020



Advanced factory at APK AG in Merseburg, Germany, where up to 8,000 tons of plastic recyclate can be manufactured per year using the Newcycling® process, alongside intensive research and development.

Photo: APK, Merseburg

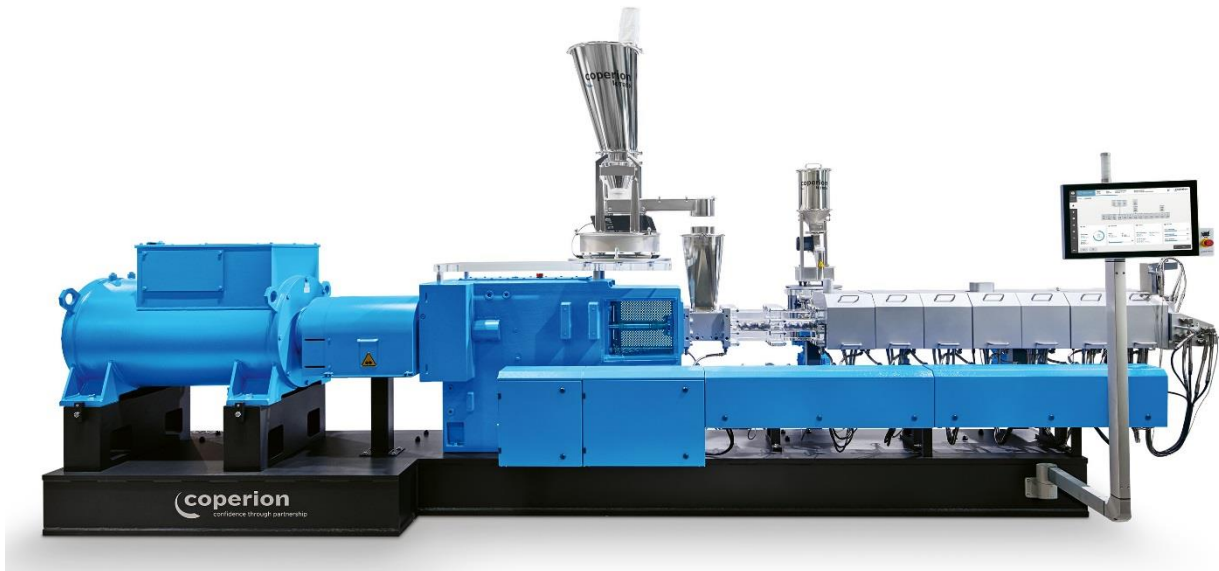
October 2020



Unique plastic recycling technology Newcycling® from APK that manufactures clean, single-origin PA and PE pellets out of complex PA/PE multi-layer film waste, with properties similar to virgin product.

Photo: APK, Merseburg

October 2020



ZSK twin screw extruders from Coperion are ideally suited for APK's Newcycling® process due to their high dispersion and degassing performance.

Photo: Coperion, Stuttgart