

Outstanding quality values exceed expectations

German recycling company produces food contact compliant rPET using EREMA's new VACUNITE[®] bottle-to-bottle system

One of the first VACUNITE[®] bottle-to-bottle systems recently started operation in Werne/Germany. Using this system, the RCS Group, who already produce PET flakes for the non-food sector, is expanding their plastics recycling division to include the production of food-grade PET recycle for food and beverage packaging, films and blisters.

For the further processing of PET flakes, the waste disposal and recycling group has built a new location on a 10,000 square metre site, creating 20 additional jobs. Here, the EREMA VACUNITE[®] recycling system will process up to 15,000 tonnes per year of PET flakes from the German deposit bottle collection system and other European sources to make high-quality recycle, vacuum-assisted and in a nitrogen atmosphere. Due to the strict travel restrictions during the Corona pandemic lockdown in spring, commissioning the plant became an unexpected challenge for everybody involved. The plant components had already been delivered, but since the installation team was not permitted to travel to Germany, RCS started to assemble the recycling plant themselves. An EREMA team was then able to be on site for commissioning.

New standard for recycled material quality

RCS now operates seven days around-the-clock to produce rPET that meets all existing FDA and efsa specifications for direct food contact and the often even stricter regulations of well-known beverage brands. It also clearly exceeds the customer's expectations. "Our analyses indicate that for all potential contaminants we achieve values that are significantly below our target values or are not detectable at all," explains Alexander Rimmer, Managing Director of the RCS Group.

VACUNITE[®] is based on the combination of VACUREMA[®] technology - which has been proven over the past 20 years and EREMA has further developed for this application - together with newly patented vacuum-assisted Solid State Polycondensation (SSP) technology, which was also specially developed by Polymetrix for this demanding application. All thermal process steps now take place in nitrogen and/or vacuum atmosphere. Discolouration of flakes and pellets is largely eliminated and additives that could lead to undesired reactions in the melt are reliably removed. In addition to these quality factors, this new technology minimises energy consumption. The process requires 40 percent fewer components and consumes up to 36 percent less energy than

comparable systems on the market. The energy consumption for the entire production process from flakes to the final pellets is only 0.35 kWh per kg.

Following the commissioning of the VACUNITE® system with a throughput capacity of up to 1.8 t/h, RCS can now offer its customers not only high-quality rPET flakes but also rPET pellets that are food contact compliant. The cooperation between RCS and a leading PET bottle and preform manufacturer illustrates how a closed plastic cycle can be implemented, taking the PET material obtained from the German deposit system as an example. Alexander Rimmer says: "The recycling process of PET bottles returned by consumers using deposit machines begins in our group of companies as early as the collection stage. We turn the bottles into washed flakes, which are then processed using the new VACUNITE® system to produce food contact compliant recycled pellets. Our customer uses this in proportions of up to 100 percent to produce new preforms and bottles, which in turn end up in the retail trade and in households. This means that the cycle is completely closed and completely transparent to consumers, who can trace the route from the deposit machine back to the retailer."

Christoph Wöss, Business Development Manager at EREMA Group GmbH, is also convinced that this route will be a successful one in the future. "Even though demand in the beverage industry has gone down due to the Corona pandemic and the situation in the recycling industry is tense due to the fall in the price of new raw materials - our customers and we are convinced that plastics recycling will not lose importance as a major contributor to the circular economy and that the demand for high-quality recycled pellets will continue to increase over the medium term." The reasons for this are the voluntary commitment of all well-known brand manufacturers, as well as EU directives on the recycling of PET bottles and the minimum proportion of recycled material to be used in new PET bottles.



Photo: In the VACUNITE® system, EREMA combines its VACUREMA® technology with the newly patented vacuum-assisted nitrogen SSP from Polymetrix. *Photo credit: EREMA*



Photo: EREMA's Commissioning Team, Project Manager and Development Manager, as well as Christoph Wöss, Business Development Manager at EREMA Group GmbH (2nd from left), Roland Koch, EREMA Sales, with RCS Operations Manager Thomas Hayner (4th from left), Managing Director Alexander Rimmer (6th from left) and shareholder Gerhard Francke (7th from left) in front of the new VACUNITE® bottle-to-bottle system. *Photo credit: RCS*

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