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Walter Kunststoffe uses a combined recycling/compounding line to produce pigmented and filled polyolefin compounds.

“The best of two worlds”





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During the line demonstration, post-industrial PP film and sheets were converted into talc-filled blue-pigmented recomponds.

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Walter Kunststoffe GmbH converts about 30,000 metric tons of commercial and industrial waste into 22,000 t of usable reclaim per year. After this initial recycling step, the material is either sold or processed into compounds using in-house twin-screw extruders. “Thanks to our longstanding experience with both process steps, i.e. recycling and compounding, we know exactly which machine technology is best suited and which factors really matter,” says CEO Bernhard Baumberger who has recently started to operate a pilot version of the combined recycling/compounding line at the company site in Gunskirchen, Austria.

Text: Karin Regel, Dipl.-Ing. (FH), K-PROFI editor

Originally focused on wastepaper recycling, Walter Kunststoffe GmbH started to process plastics scraps in the mid-1990s after the introduction of the Packaging Regulations. Today, the family enterprise ranks among the largest and most efficient film and sheet recycling companies in Europe. “The responsible use of available resources and the production of premium-quality products for our customers are our top priorities,” said Bernhard Baumberger on the occasion of the recent “Recycling and compounding TecDay”, jointly organized by the mechanical engineering companies Erema (located in Ansfelden, Austria) and KraussMaffei Berstorff GmbH (headquartered in Hannover, Germany). About 60 interested guests participated in this unique event.

For Bernhard Baumberger – CEO of Walter Kunststoffe – simplified logistics and the omission of an intermediate process step are decisive benefits of the combined recycling/compounding technology.

“We have cooperated with both companies for over 10 years. We use their machine technology and know it inside out, and we are among the partner companies that are always ready to try out new developments.” This partnership is a clear win-win situation. “Staying always one step ahead of our competitors, we secure substantial quality benefits for our customers and hone our competitive edge. At the same time, the machine manufacturers receive direct feedback from the field.” The line concept launched at K 2016 – composed of a complete Erema recycling line and a KraussMaffei Berstorff compounding line – provides a good example of how well this cooperation works. The technology is referred to as “Corema” by Erema and called “Edelweiss Compounding” by the Hannover-based machine manufacturer.

Walter Kunststoffe GmbH primarily uses the pilot line for customer trials performed on behalf of Erema and KraussMaffei Berstorff. During the remaining time, the plastics recycling company employs it for internal production. “The new line concept is extremely convincing. The inter-

mediate pelletizing step involved in the two-stage process we usually apply can be omitted. This results in simplified logistics and substantially reduced energy consumption,” says Bernhard Baumberger. Although at the moment Walter Kunststoffe is not planning to invest in a new line because they already operate four Erema lines and three compounding lines, Baumberger is definitely convinced of the technology. “For customers who enter the business and plan forward or backward integration, the new line concept is an ideal solution merging the best of two worlds.”

Closed material cycle

Walter Kunststoffe produces PE-LD based reclaims in four shifts. The complete washing and separating equipment as well as four Erema lines of TVE plus type are available at the second company site in Wels, Austria. “The Erema machine technology is ideally suited for processing film and sheet scraps. The cutter compactor arranged upstream from the single-screw extruder is used to compact the high-volume input material in order to prepare it for extrusi-

on,” says Bernhard Baumberger to name one of the reasons why the company opted for the Austrian machine manufacturer.

Walter Kunststoffe then converts the reclaim material produced in-house into PE based compounds, using several compounding lines equipped with KraussMaffei Berstorff twin-screw extruders. This takes place at their facility in Gunskirchen. The product range comprises PP, PS and PET based compounds as well as master-batches. Back at its Wels site, the plastics processor operates a total of four blown film lines on which it processes its own reclaims and compounds to produce film tubes with a width ranging between 300 and 1,500 mm and film thicknesses from 25 to 250 µm for carrier and refuse bags

Film production is a perfect indicator for quality monitoring and assurance during the processing of reclaimed material. “We focus on speck and bubble formation, pressure increase and dispersion, as these parameters allow reliable conclusions to be drawn in terms of material recycling quality.”



Dr. Gerald Breuer, marketing manager at Erema: “Circular economy is the key issue of the future and our innovative line concept offers ideal conditions for its implementation.”



Carl-Philipp Pöpel, product manager at KraussMaffei Berstorff: “The combined line enables converters to tap new markets.”

In addition, the CEO is very proud of the fact that 60 and 110 l refuse bags are produced in-house, which implies that the material cycle is virtually closed. "We produce a product from reclaimed material, and we do this locally in Austria and for Austria – this is sustainability in the true sense of the word!"

Recycling/compounding concept for a wide range of applications

The new line concept is also suited for sustainable use of residual material. During the demonstration, the Corema or Edelweiss line was used to process post-industrial film scrap to create filled compounds suited for further use. For this purpose, the film scraps are supplied on a conveyor or belt to the preconditioning unit where they are cut by rotating knives, mixed, heated, dried, pre-compacted and buffered. The material is then led to the 80 mm discharge screw of 28 D length that is di-

rectly connected in tangential direction. The counter current technology gives optimized intake behavior over a wide temperature range.

The extruder is followed by a continuously operating laser filter with 150 µm screens and a melt pump. "The melt pump as volumetric metering system is of decisive importance to ensure a pulsation-free and constant melt flow transfer to the next process step," says Carl-Philip Pöpel, product manager at KraussMaffei Berstorff. Thanks to the melt pump, the melt is guided through a melt pipe from the Erema line section to the KraussMaffei Berstorff compounding section. The main component of this section is a ZE 60 R UTXi twin-screw extruder with a length of 56 D. Equipped with two side feeders and three degassing systems, i.e. two atmospheric and one vacuum venting unit, this compounding extruder gives outstanding flexibility during the production of the most

varied compounds. Finally, the pellets are produced on a water-cooled die face pelletizer. "This line concept is suited for the production of filled and pigmented polyolefin-based compounds that can be provided with further additives. The Erema recycling equipment allows the ultra-light film with an apparent density of 50 kg/m³ to be processed without any problem," says Carl-Philip Pöpel who is convinced that this technology can also be used for the production of compounds for engineering plastics in the future. The complete line is rated for a production capacity of 600 to 1,000 kg/hour of high-quality commodity compounds that are suitable for a wide variety of applications in the injection molding and extrusion sectors – where they can either be used on their own (100%) or in addition to virgin material. ■

www.walter-kunststoffe.at
www.erema.com
www.kraussmaffeiberstorff.com

Photo: Erema

The pilot line suited for processing a wide variety of different compound formulations is available for customer trials at the premises of Walter Kunststoffe GmbH.

