

Additive processing of recompounds

- Integrated solutions covering the entire process chain – from PCR materials preparation to 3D printing of components
- Sustainable and efficient component manufacturing
- Table tops made from recycled materials

(Laatzen, May 23, 2023) At the upcoming Compounding World Expo Europe, held in Essen, Germany, from 14 to 15 June 2023, KraussMaffei will offer its visitors a real attention-grabber at booth A433: a unique bar height table printed with the pellet-based powerPrint large-format 3D printer. The highlight of the solution exhibited at the trade show is not the table itself, but the raw materials based on recycled plastics it is made from, and the fact that the entire machinery involved in the process – from the compounding line with ZE BluePower twin-screw extruder to the additive manufacturing solution and the film and sheet extrusion line for the table top – can be provided from a single source.

High-grade raw materials are key to delivering premium-quality finished products in plastics processing applications. If the input material is based on recycled plastics, the process adopted in manufacturing recompounds is of particular importance. Compounding lines for the production of high-quality recompounds based on recycled materials are one of KraussMaffei's chief specialties. In particular, the well-established ZE BluePower twin-screw extruder – with its ideal ratio between screw volume and screw torque – provides optimum melt homogenization as well as perfect incorporation of additives and, as required in this case, glass fibers. And, to complete the processing section of the ZE BluePower extruder, there are appropriate metering systems for solid and (if used) liquid additives, as well as vent ports through which moisture, volatile components and odor build-up can escape when processing recycled materials. With KraussMaffei's in-depth

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mechanical engineering expertise and extensive knowledge of formulations, the recompounds required for additive manufacturing can be produced to ideal quality specifications, based on different material types and different proportions of recycled materials with glass fiber or carbon fiber reinforcement and the appropriate color masterbatch.

Sustainable and efficient component manufacturing

The pellet-based powerPrint large-format 3D printer, which debuted on the market at K 2022, has several special features for industrial manufacturing of components. Direct processing of the pellets made in the compounding line eliminates the need for filament production, which not only enhances process flexibility, but also results in a more cost-effective and sustainable process. Furthermore, the powerPrint enables printing of large-format components with build volumes of up to 2 m x 2.5 m x 2 m. The closed, thermally insulated enclosure makes for reliable printing (with excellent process stability) of, for example, casting molds for tool and mold making, autoclave components or pipe ducts and conduits. This means the large-format 3D printer is a fast, dependable industrial solution for efficient production of near-net-shape components. As an extrusion-based system, the powerPrint enables direct processing of pellets while offering outstanding flexibility in terms of the raw materials that can be used at temperatures up to 400°C. Owing to KraussMaffei's wealth of expertise in extruder engineering, the processing unit boasts superior wear resistance at high production speeds. Customized designs can be provided whenever requested. The table demonstrated at the Expo, printed with the powerPrint 3D printer, impressively showcases the scope for manufacturing large components based on compounds from recycled materials.

Table tops made from recycled materials

A table not only needs a base, which in this case comes from the 3D printer, but also a top. As with the base, the table top can also be made from recycled materials. KraussMaffei offers the right processing machine for this application. The unique feature of the table top shown at the Expo is that it is actually a 5 mm thick floor-covering manufactured on an in-line compounding and laminating line. Another highlight is that the floor-covering

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is a mono-material solution that can be easily recycled again. While the laminated decorative film is made of pure PP, the core sheet of the table top consists of PP with a chalk content as high as 80%.

Captions:

Photo1_KM_EXT_2023_05_23_Recompounds_additiv_verarbeiten: The pellet-based powerPrint large-format 3D printer with thermally insulated enclosure enables printing of large-format components with build volumes of up to 2 m x 2.5 m x 2 m.

Photo2_KM_EXT_2023_05_23_Recompounds_additiv_verarbeiten: ZE BluePower twin-screw extruder – The perfect solution for the production of premium-quality recomponds from recycled materials

For further information and printing-quality photos, please visit:

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(Wordcount: 627/ characters 4,178)

KraussMaffei – Pioneering Plastics

KraussMaffei is among the world's leading manufacturers of machinery and systems for the production and processing of plastics and rubber. Our brand has been standing for cutting-edge technologies – for more than 185 years. Our range of

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services covers all areas of injection molding machinery, extrusion technology and reaction process machinery. In 2022, we added additive manufacturing to our portfolio. This broad range of technologies gives KraussMaffei a unique selling point in the industry. With the high innovative power of our standardized and individual product, process, digital and service solutions, we can guarantee customers sustained additional value over the entire value-adding chain. Our range of products and services allows us to serve customers in many sectors including the automotive, packaging, medical and construction industries, as well as manufacturers of electrical and electronic products and household appliances. KraussMaffei employs around 4,700 people all over the world. With more than 30 subsidiaries and over 10 production plants, as well as about 570 commercial and service partners, we are represented internationally close to our customers. The company was founded in 1838 in Munich.

In April 2016, China National Chemical Corporation Ltd. (“ChemChina”) became the majority shareholder of KraussMaffei Group. In December 2018, ChemChina listed the KraussMaffei Group as KraussMaffei Company Limited in Shanghai. The listing opened up access to the Chinese capital market and local investors. Now ChemChina is part of Sinochem Holdings Corporation Ltd., one of the world’s leading chemical conglomerates with over 220,000 employees.

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