KraussMaffei
Pioneering Plastics

For more sustainability in the automotive industry: Techniplas and KraussMaffei build new MXW 1000 ColorForm system

– Depth effect for premium-quality automotive components
– Customer benefits from KraussMaffei expertise in injection molding and reaction process machinery
– Flow-coating with PUR directly in the injection mold
– Reduction of working steps saves money and conserves CO2

(Munich, March 10, 2022) **"ColorForm technology holds great potential for a lower CO2 footprint in the production of components with a finished multifunctional surface," explains Michael Fuchs, Global Application Owner Surface & Lightweight at KraussMaffei. Now the technology once more demonstrates its strengths at TECHNIPLAS, the well-known provider of sophisticated plastic components for the automotive and plumbing industries. In Treuen, Saxony in the Vogtland region, a KraussMaffei MXW 1000 ColorForm system for the series production of components with a transparent surface has been put into operation.**

Process expertise and quality awareness are the keys to sustainable production in the automotive industry. The wealth of experience of Techniplas as the user and KraussMaffei as the provider of injection molding technology and PUR/PUA processing systems makes solutions possible that become increasingly more significant these days. ColorForm, that is, the ingenious fusion of injection molding technology and surface finishing with polyurethane in a single process step, is one such solution.

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ColorForm: Coating right in the mold

The ColorForm process is based on a combination of injection molding and polyurethane processing. The tried-and-tested multi-component injection molding procedure is the foundation of this process. What is special about it: After injection molding of the thermoplastic mold base body, this body is flow-coated with polyurethane (PUR) or polyurea (PUA) as the surface material in a second cycle.

The RimStar Flex ColorForm reaction process machine, which was designed specifically for this process, and the mixing head feed the surface material (PUR/PUA) directly into the cavity. "RimStar systems take up very little space and meter even small amounts precisely and at a high clock frequency," explains Philipp Strasser, Global Application Owner RPM & Automotive at KraussMaffei.

Transparency with depth effect

"On this system, parts are produced in the injection-compression molding process. To obtain a special depth effect, a premium-quality, transparent PUR surface is applied to these parts," explains Toni Luckner, Process Developer in Treuen (Vogtland). "One more system for the project will be put into operation in the first quarter of 2022."

"Our customers, large OEMs from the automotive industry, have stringent requirements regarding quality. There must not be any deviations greater than 0.2 mm on any part of the transparent component. Using the MXW 1000 in combination with the RimStar Flex for PUR metering, we fully meet these requirements," says Luckner.

Techniplas has had positive experiences with the ColorForm technology from KraussMaffei for many years now. At Techniplas, the technology is called "ColorFuse". The company currently has four ColorForm systems in Treuen and one in Rüti, Switzerland. This system has been manufacturing ColorForm parts in series production since 2016.

In addition, their in-house TechCenter in Treuen operates two more systems.

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Production in the cleanroom

"We run this production process under cleanroom conditions. Thus, not a grain of dust can sneak in between the coating and the substrate surface while the mold is open." Accordingly, the entire system is equipped with a cleanroom enclosure. "In this way, we achieve very low scrap rates", emphasizes Luckner.

Efficient and sustainable production

Initially, ColorForm was developed for greater production efficiency and specific effects for vehicle interior components. At Techniplas, the MXW 1000 ColorForm system puts those qualities on full display. Today, however, aspects such as workplace safety and the CO2 footprint of the technology compared to other production methods are becoming more and more important. Again, the ColorForm process scores points here in multiple areas. Moreover, ColorForm components are increasingly used even in the exterior area because here as well, a classy appearance is a selling point for end customers.

Increased potential for saving

Not only is the ColorForm technology eliminate the need to transport and paint components, and to invest in a painting plant – the ColorForm components are also ready for installation as they are discharged from the highly automated production cell. This saves both production time and money for buffer storage and drying of the components.

Upgrade in difficult times

For the system that has been put into operation now, Techniplas used an existing MXW 1000 injection molding machine from KraussMaffei as the basis. Techniplas had the MXW retrofitted at its manufacturer's main factory in Munich's Allach neighborhood. "There, all necessary equipment is available on-site, and commissioning at the TechCenter was also completed on schedule – both for the injection molding machine and for the PUR technology, that is, for the RimStar Flex with two MK 5-2K CCM mixing heads for simultaneous production of two components. This cannot be taken

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for granted under the current basic conditions determined by the pandemic," says Luckner.

New control system and ORCA cooling

The MXW 1000 was not just retrofitted for ColorForm technology. Its control system was also completely upgraded to the MC6 control system, and a new ORCA cooling system was installed. "The system performs a contact-free temperature measurement, which minimizes maintenance. The technology allows us to control the twenty cooling circuits of the MXW precisely and thus makes a critical contribution to the high, uniform quality of the components," explains Luckner.

Images:

KM_RPM_20220131_KM-Techniplas-Team.jpg
Mission accomplished: Employees from Techniplas and KraussMaffei are happy about the successful commissioning of the MXW 1000 ColorForm for the production of smartbars for the automotive industry.
(from left: Peter Giessmann (KraussMaffei), Eric Jan Frijters (Techniplas), Philipp Strasser (KraussMaffei), Michael Fuchs (KraussMaffei), Rene Rudolf (Techniplas), Sarah Seidel (Techniplas))

KM_RPM_20220131_KM-Techniplas-RIMStar Flex.jpg
KraussMaffei supplied both the MXW 1000 injection molding machine and the RimStar Flex mixing and metering machine, including mixing heads for efficient production of components with a polyurethane surface.

KM_RPM_20220131_KM-MXW ColorForm.jpg
At Techniplas, the MXW 1000 ColorForm from KraussMaffei produces premium-quality automotive components.

KM_RPM_20220131_ MXW ColorForm Detail.jpg
The swivel plate for the thermoplastic substrate makes the MXW 1000 from KraussMaffei particularly productive.

KM_RPM_20220131_ ColorForm Schema_en.jpg

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Schematic representation of the PUR/PUA flow-coating in the mold.

KM_RPM_20220131_ MK5-2K-CCM.jpg
Two MK5-2K CCM mixing heads ensure high productivity of the ColorForm system at Techniplas.

Photos: KraussMaffei
Enclosure: Pictures and more information can be found at
www.kraussmaffei.com

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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 stands for cutting-edge technologies – for more than 180 years. Our range of services covers all areas of injection molding machinery, extrusion technology and reaction process machinery. This 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 allow 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. Since its foundation in 1838, the company's headquarters have been in Munich.

In April 2016, the Chinese state-owned company China National Chemical Corp. Ltd. ("ChemChina"), one of the leading chemical companies in China, became the majority shareholder of KraussMaffei Group. At the end of 2018, ChemChina listed the KraussMaffei Group as KraussMaffei Company Ltd. in Shanghai. The listing opened up access to the Chinese capital market and local investors.

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