

PUR painting for vehicle front ends of the future

The REHAU Automotive site in Feuchtwangen is expanding its production repertoire with a ColorForm system from KraussMaffei.

- Compact complete solution with innovative product and process concept
- MX 2300 SpinForm with spin platen, Automation plus RimStar-Compact 8/8 ColorForm
- Partnership cooperation for car front ends of the future

(Parsdorf, 23.09.2024) As a renowned Tier 1 supplier, it is always important to keep your finger on the technological pulse. REHAU Automotive has invested in a complete ColorForm system from KraussMaffei at its plant in Feuchtwangen, demonstrating what the car front ends of the future could look like.

For decades, striking radiator grilles - usually painted silver or chrome-plated - were a defining style feature for many car brands. However, e-mobility means that the large air outlet is often no longer necessary, so its appearance can be rethought. In addition, future autonomous driving will require radar, LiDAR (Light Detection and Ranging) and video systems, for example, whose sensors and cameras need to be sensibly accommodated. Together with the modern headlights, the "radiator grille 2.0" will become a style-defining element on the front of the vehicle of the future.

All in one: ColorForm complete system

With around 7,000 employees, REHAU Automotive is a well-known Tier 1 supplier of automotive exterior components worldwide. The company produces a broad portfolio of plastic components such as bumpers, spoilers and ventilation systems - often including surface finishing in a wet painting process. Thanks to the strategic investment in a complete ColorForm system

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(MX 2300 SpinForm with spin platen, automation plus RimStar-Compact 8/8 ColorForm) plus several tools, REHAU Automotive in Feuchtwangen is now a technological trendsetter. Axel Oberkamp (Head of Manufacturing Engineering at REHAU Automotive) describes the goal: "By combining in-mold labelling, injection compression molding and PUR painting, we want to industrialize an innovative product and process concept for future series development - and encourage our customers to lead the way."

The well-timed multi-component injection molding process is like a well-tuned symphony orchestra, as numerous components and processes have to work together precisely in time:

Front panel of the future

First, a decoratively printed IML film is automatically cleaned and transferred to the first mold cavity by a robot. This is then processed in several steps to create a front panel with a high-quality look, which is finally coated with a self-healing IMC polyurethane protective layer in the mold. Johann Reichstein (Project Engineer Advanced Development at REHAU Automotive) describes the trick: "The individual process steps are combined and parallelized in the tool in such a way that we combine three materials and the film insert into a completely finished product before the product leaves the injection molding cell. This means that no subsequent painting steps are necessary." The new front panel from REHAU, measuring around 600 by 1200 millimetres, is finished. The panel can be optionally extended with innovative lighting functions. REHAU Automotive is cooperating with ZKW to integrate the lighting technology.

Intelligent machine control

The entire process is integrated into the MC6 machine control system - even with a few special features. An automated process allows the sequence with and without PUR painting, and if a pre-molded part is detected as "Not OK" by the system, it is ejected and also no longer covered with the PUR layer. The process is determined on the basis of the data collected, which is provided to the customer in high resolution by KraussMaffei's dataXplorer. The dataXplorer documents up to 520 machine signals from the injection

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molding machine and dosing system with a resolution of up to five milliseconds and saves them in curve sequences. This allows the user to view the entire process as if under a microscope. A file is created for each cycle, ensuring complete traceability.

Injection molding and reaction technology from a single source

For PUR painting, an MX 2300 SpinForm with spin platen and 23,000 kN clamping force, a RimStar Compact 8/8 ColorForm metering system and automation work together perfectly. KraussMaffei is the only supplier in the industry to have both injection molding and reaction process machinery expertise in-house. Frank Burkhardt (responsible Area Sales Manager IMM) knows the advantages: "This means that interfaces are perfectly coordinated. For many customers, the fact that they receive the entire production cell from a single source is a decisive factor in their investment."

This is also helpful when - as with REHAU Automotive in Feuchtwangen - the space conditions are somewhat difficult due to building heights and existing expansion joints. The project team initially started planning with the RimStar Flex dispensing machine, which is particularly versatile. After several layout optimizations, a RimStar Compact was the solution - this was very attractive in terms of price, but of course only works if several models are available.

Long-term partnership

REHAU Automotive and KraussMaffei have a long-standing partnership and both companies are also celebrating anniversaries. The REHAU Group is celebrating its 75th anniversary this year, while KraussMaffei can look back on 186 years of history. The acceptance of the ColorForm system at the technical center in Parsdorf was a celebration of over 260 years of industrial expertise. As a visible sign of the collaboration, KraussMaffei presented the guests from REHAU Automotive with the Group's 75th anniversary logo - produced using its own powerPrint 3D printer.

Electromobility is only at the beginning of its development and with it the redesign of the familiar radiator grille. REHAU Automotive and KraussMaffei

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show where the journey can take us with their demonstrator involving injection molding and PUR painting.

You can see it live at the KraussMaffei booth at Fakuma (October 15 - 19, Hall A7, Booth 7303).

Photos:

1_KM_PM_ColorForm complete system

MX 2300 SpinForm with spin platen, RimStar-Compact 8/8, two robots and tooling.

2_KM_PM_Dosing system RimStar Compact 8/8 ColorForm

RimStar Compact 8/8 ColorForm - the attractively priced solution in a small space.

3_KM_PM_Automation

An automated process allows the procedure with and without PUR painting.

4_KM_PM_Team

The core team of REHAU Automotive and KraussMaffei was characterized by a spirit of partnership.

5_KM_PM_Front of vehicle

The vehicle front from Rehau Automotive can be seen live at Fakuma at KraussMaffei: Hall A7, Stand 7303.

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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 185 years. Our range of 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 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. The company was founded in 1838 in Munich. Today, KraussMaffei is part of Sinochem Holdings Corporation Ltd., one of the world's leading chemical companies.

For more information: www.kraussmaffei.com

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REHAU Automotive

REHAU Automotive develops, manufactures and supplies high-quality exterior, bumper and polymer functional systems as a reliable partner to international vehicle manufacturers. Every day, 7,000 employees at 25 locations in nine countries share a passion for making polymer solutions for the automotive industry even lighter, safer and more sustainable: Engineering progress. Enhancing lives.

The automotive supplier is part of the global REHAU Group, which specializes in polymer-based solutions. With a total of about 20,000 employees, the Group generates annual sales of over 4.5 billion euros.

www.rehau-automotive.de

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