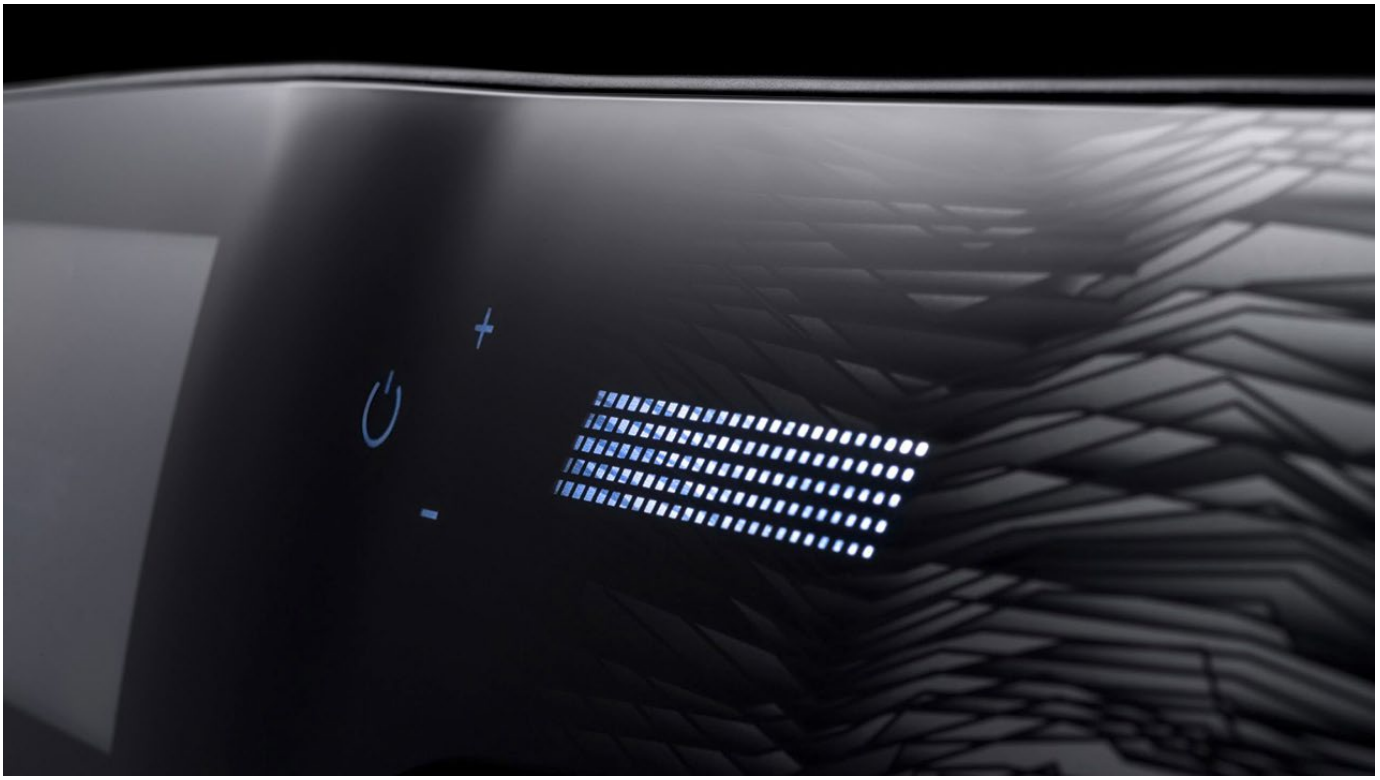


Why PolyIC? Case Study HMI Concept Panel for Autonomous Driving

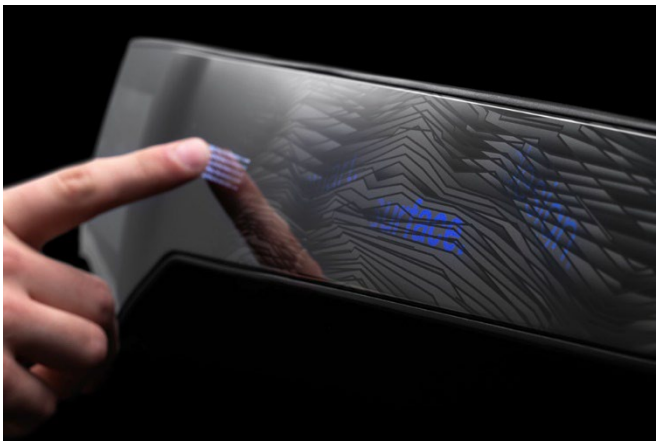
LEONHARD KURZ, Sumitomo Demag, Covestro, HRSflow and Werkzeugbau Siegfried Hofmann Create a Futuristic Interior Panel

The Challenge

The automotive interior of the future will feature connected surfaces without gaps or spaces, because buttons and switches will have become obsolete. Ever more supporting functions must be integrated, while remaining clearly arranged for the driver. Organically swept designs help with this and support intuitive operation in vehicle interiors. Dead-front designs do not reveal what's under the surface until touched. The aim is to link innovative functionality with unusually large decorative surfaces and sophisticated design. The concept control panel Fading Lines, winner of the Red Dot Award 2020, illustrates a new way to efficiently and economically solve this challenge.

The Goal

To develop a futuristic HMI (Human Machine Interface) concept panel that fathoms the technically feasible: Fading Lines is an unusually large, almost one-meter long panel with strikingly natural-looking decoration that flows into a high-gloss black piano surface.The control area is organically swept, thereby providing the driver with intuitive support. The homogeneous panel holds a host of functional and lighting elements. The main control element is the touchscreen with multitouch function and touch buttons. Backlighting reveals control icons and ambient light effects, which are controlled with the touch control panel.



Without activated backlighting, a homogeneous design is visible. Sustainable design is achieved – the process is efficient and also supports the use of recyclates as an alternative to new material. No difference can be perceived between recyclate or new material in terms of aesthetics and technical sophistication.

The Solution

Injection molding, decoration of single images via IMD (In-Mold Decoration), as well as attachment of sensors for the multitouch panel via IML (In-Mold Labeling) all occurred in a single work step. The proximity sensor in the instrument panel was laminated on. Sensors for the light-regulating touch controls were integrated with the patent pending FFB (Functional Foil Bonding) process. The result is a smart panel with day-night design and a durable surface that meets the demanding specifications of the automobile industry. Another advantage is the precise technological coordination of machine, tool, and production steps in a process capable of series production, which uses resources sparingly. What's more, KURZ surface decorations are recyclable because the finishings are razor thin.

Partners for the car interior of the future: KURZ, Sumitomo Demag, Covestro, HRSflow, Werkzeugbau Siegfried Hofmann

The technology of tomorrow requires the concepts of tomorrow, and process steps coordinated down to the tiniest detail. Decisive to success were the KURZ network and strong partners working hand in hand.

KURZ was responsible for the HMI concept, surface and component design, and the backlit IMD coating. Subsidiary Kurz Digital Solutions designed the user-surface and interface designs. Kurz subsidiary PolyIC supplied the sensor technology. Embossing machine manufacturer Baier, also a member of the KURZ Group, contributed with the technology for FFB integration. The fully automatic injection molding machine came from Sumitomo Demag, and the precisely coordinated tools from Werkzeugbau Siegfried Hofmann. Covestro developed the high transparency thermoplastic resin for the component. A special challenge was the injection-molding process, since low wall thicknesses, in this case 2.5 mm, can cause stress that affects appearance. Hot-channel molding material technology was applied with the Flexflow Evo servo-controlled needle-valve system from HRSflow, which also provides for low tool internal pressure. It ensured a successful production result.

Why PolyIC is the Right Technology Partner

- A reliable network of subsidiaries and strong partners facilitates outstanding developments
- Design for Recycling finishings do not affect the recyclability of products, and they beautify recycled material as well
- PolyIC and KURZ continuously develop their processes and has more than 3,100 patented and patent-pending technologies
- The combination of modern processes leads to design and functional solutions for series production
- A host of awards confirms PolyIC's and KURZ's innovation and technology expertise

Conclusion

High precision, bundled know-how, and tight coordination of all processes have led to a rewarding result in the most literal sense: the jury of the Red Dot Award bestowed the KURZ Fading Lines concept panel with the Red Dot Award 2020 for Product Design in the Automotive category.

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