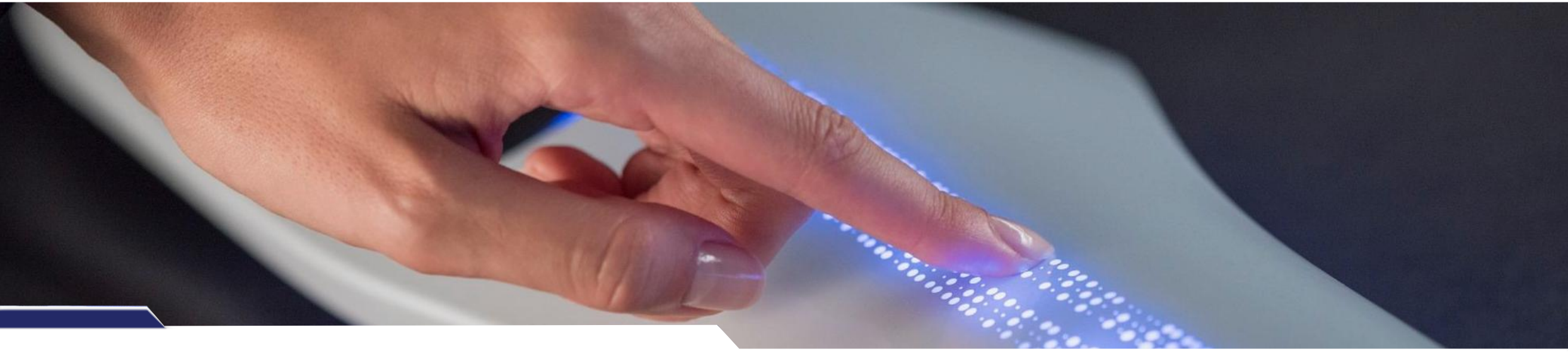
Charisma in DESIGN

Kunststoffspritzguss – nach vorn gedacht

SPRITZGIESSEN next

Martin Hahn | LEONHARD KURZ Stiftung & Co. KG



Martin Hahn

Divisional Director of Application, Technology & Innovation

BAP Business Area Plastic Decoration

The KURZ Group

Making every product unique

Business Area	Business Area	Business Area	Business Area
INDUS-TRIAL	SECURITY	PLASTICS	APPLI-CATION
BAI	BAS	BAP	BAA

KURZ

KURZ Group

WE ARE, WHERE YOU ARE (4 Main Hub´s for BAP Unit products)

- 24 subsidiaries
- 14 production locations
- More than 70 agents
- Global service network

Leonhard KURZ Stiftung & Co. KG

Fürth, (GERMANY)

KURZ Stamping Technology Co. Ltd.

Hefei (CHINA)

KURZ Transfer Products L.P.

Huntersville (USA)

KURZ Vietnam

Quy Nhon (Vietnam)

The KURZ Group

Company – LEONHARD KURZ Headquarter Fürth + Sulzbach Rosenberg Germany

Leonhard Kurz Stiftung & Co. KG Fuerth Germany

Sulzbach Rosenberg Germany

The KURZ Group

Company – KURZ TRANSFER PRODUCTS KTP in Huntersville (US, NC)

Kurz Transfer Products Inc. Huntersville USA

The KURZ Group

Company – KURZ STAMPING PRODUCTS KST in Hefei (CN)

Kurz Stamping Technology Hefei, China

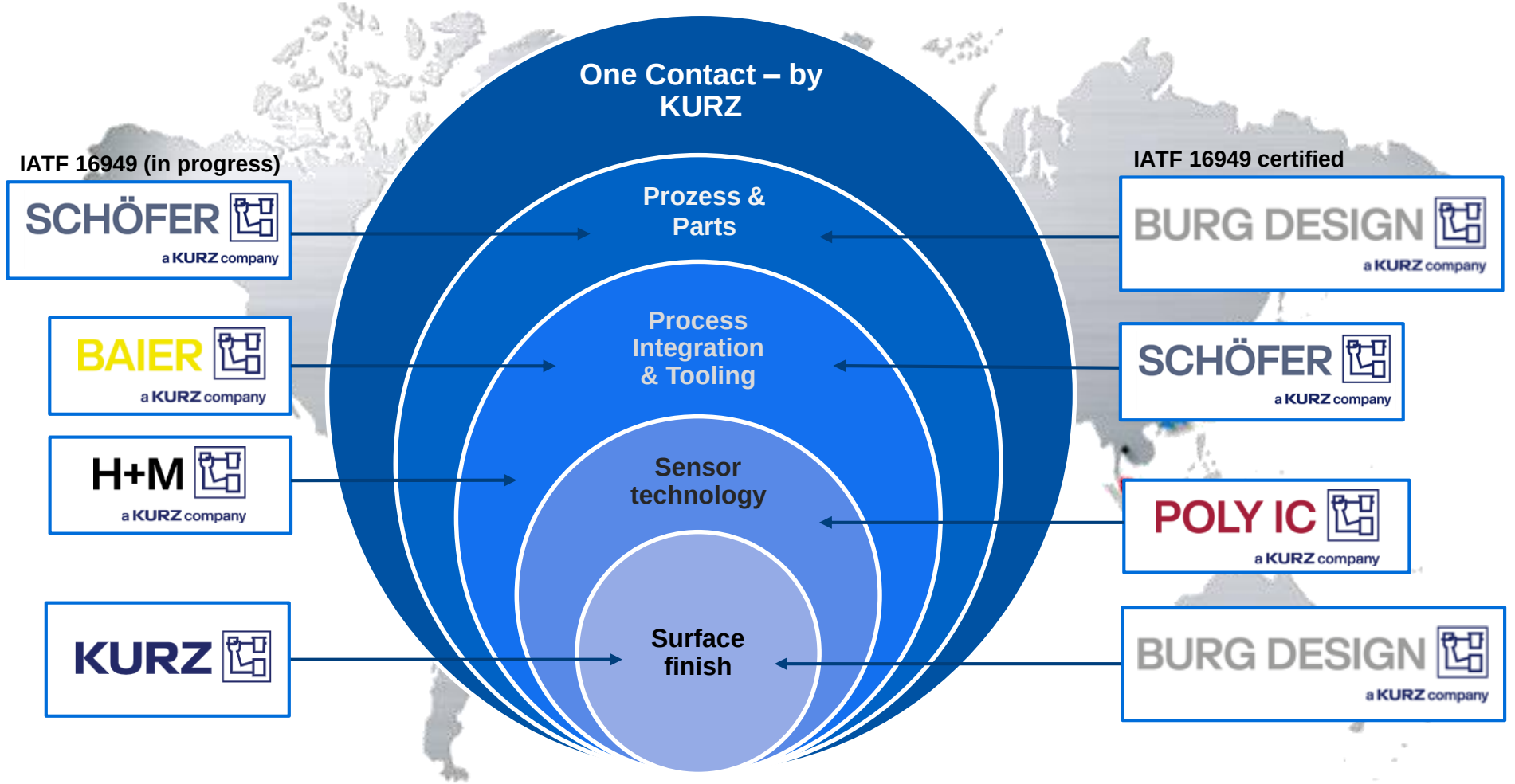
The KURZ Group

Company – KURZ STAMPING PRODUCTS KST in Hefei (CN)

Kurz Quy Nhon,
Vietnam

KURZ Group

Your global partner / We are where you are … and how you want



Design / Motivation

Design / Motivation “LichtDesign” Interieur

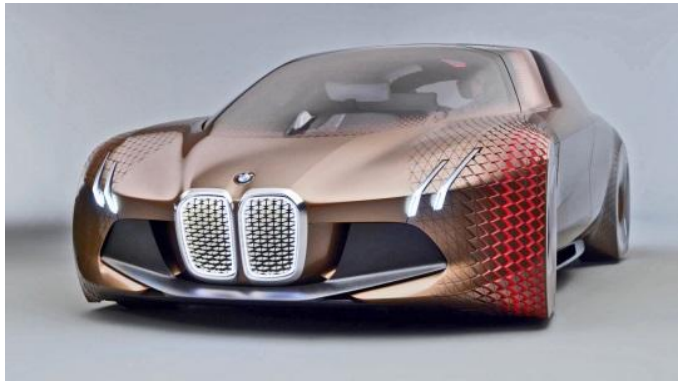
Design / Motivation “LichtDesign” Interieur

- Lounge Ambience
- Touch
- Display
- Gesture
- Light Integration
- Haptics

Design / Motivation „LichtDesign“ Display

Design / Motivation „LichtDesign“ Display

Design / Motivation “LichtDesign”



- Digital Decor
- Light Management
- Textile Decoration
- HMI + SurfaceMegatrend Display
- Gesture
- Haptics & Structure
- Functional Integration
- Autonomous Driving

Design / Motivation “LichtDesign” Exterieur

Design / Motivation “LichtDesign” Exterieur

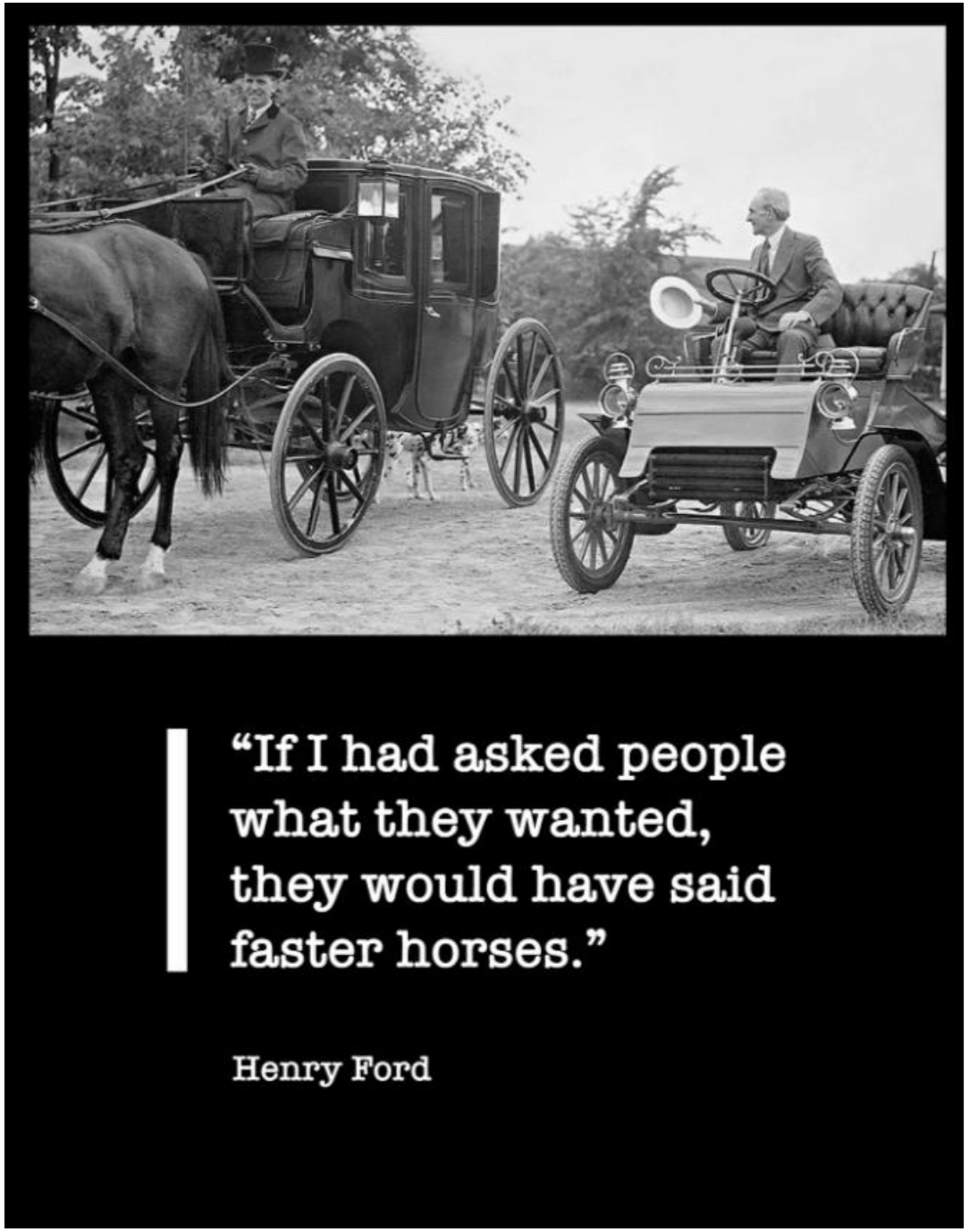
Design / Motivation “LichtDesign” Exterieur

Design / Motivation “LichtDesign” Exterieur

Motivation

Inspiration

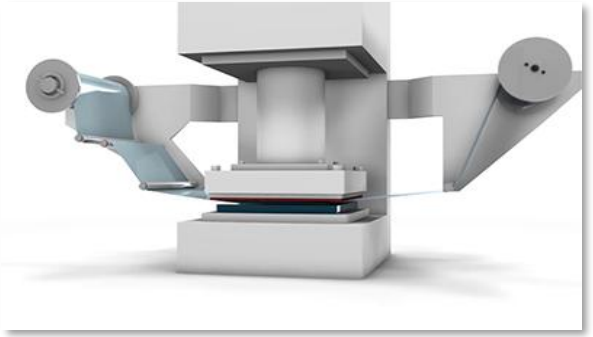
Innovation



Technology & Applications

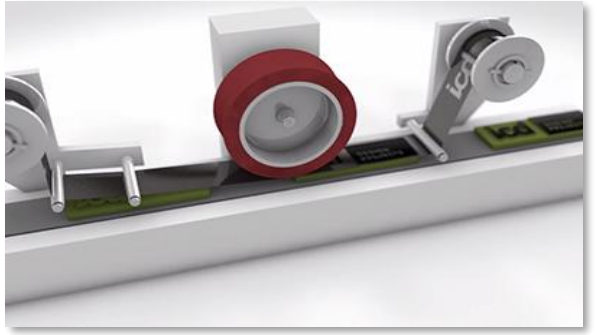
Hot Stamping

Up-and-down stamping



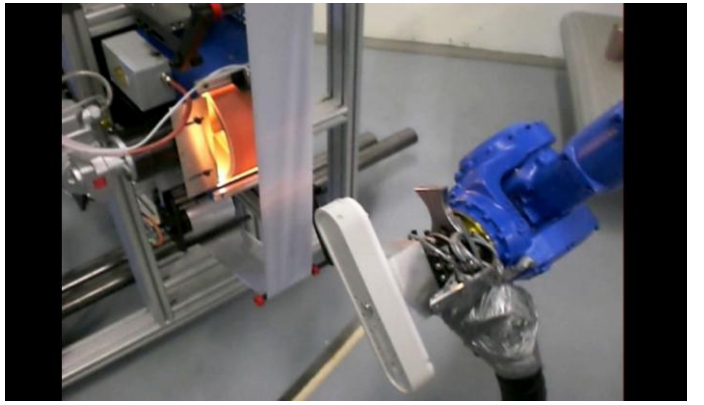
Hot Stamping
Maximum precision for your plastic surface decoration

Roll-on stamping



Hot Stamping Live Movies

Foil technologies for Automotive / Non Automotiv



Hot Stamping

Foil technologies for Automotive - reference for backlighting applications

S-Class 2021

https://www.daimler.com/magazin/technologie-innovation/licht-scheinwerfer-simulator.html

HS Blue translucent

Hot Stamping

Foil technologies for Automotive - references exterior

KURZ

Hot Stamping next Generation

Hot stamping PERFORMANCE+

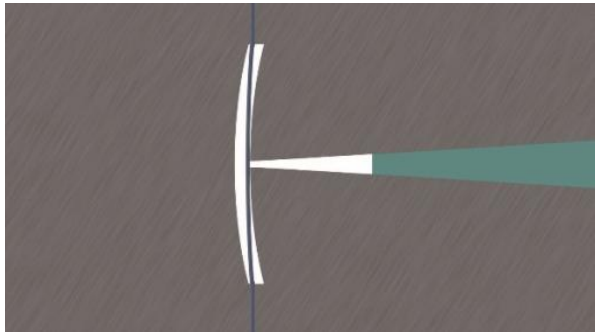
For challenging geometries

KURZ

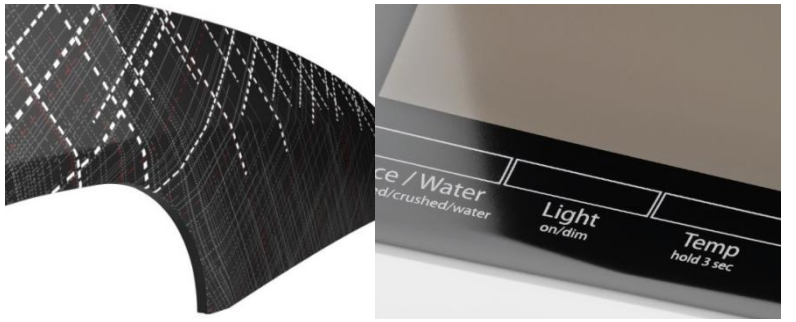
IMD In-Mold Decoration

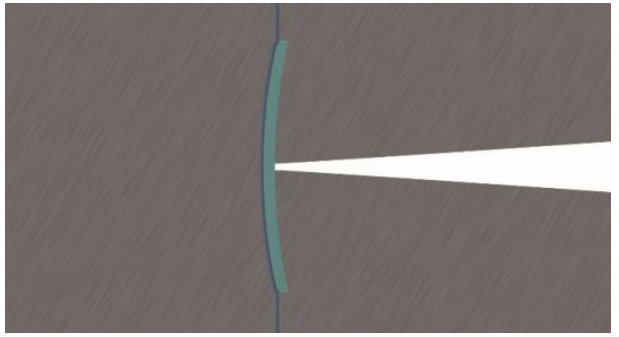
Process

The IMD foil is positioned.

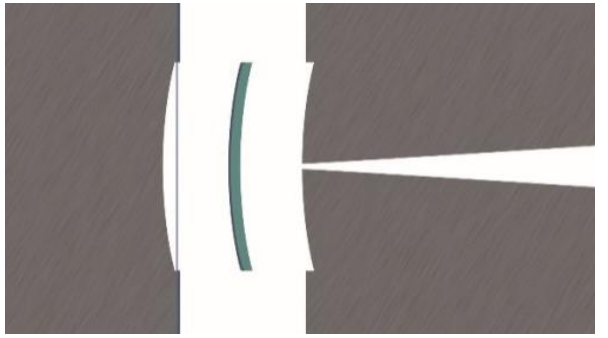


The tool closes and the plastic is injected.





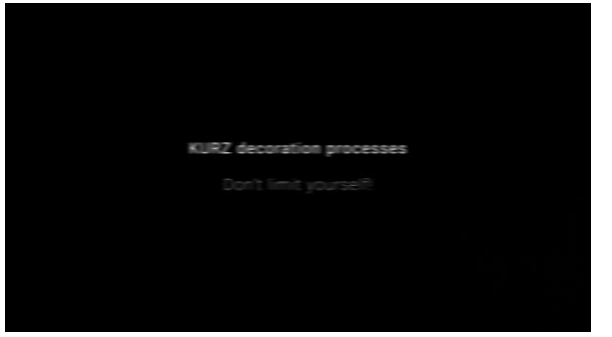
The hot plastic material fills the mold cavity, pressing the decorative foil against the wall. This securely bonds the decorating layer to the plastic material.



The tool opens and the part can be removed.

Wallbox DEMO Development

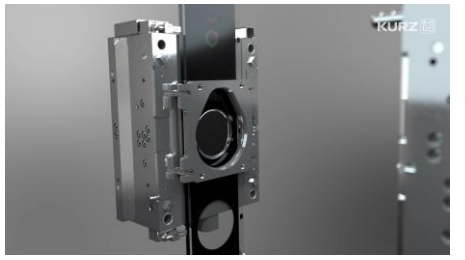
Cooperation KURZ and Covestro



Partners

- LEONHARD KURZ Stiftung & Co. KG
- Sumitomo DEMAG
- Covestro
- Acsys Lasertechnik
- PolyIC GmbH & Co. KG
- BAIER GmbH + Co. KG Maschinenfabrik
- Schöfer

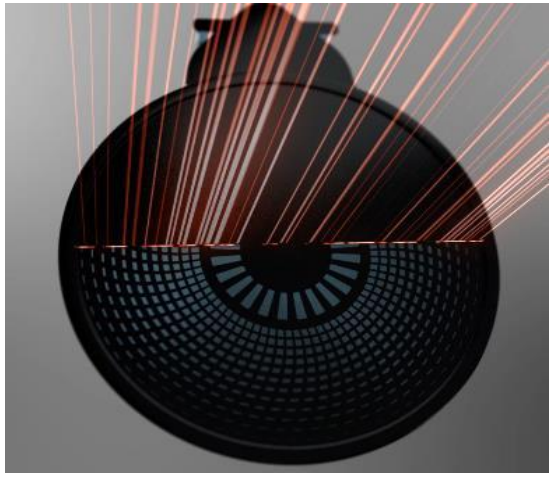
Wallbox DEMO Development



The Result IMD + Laser

Step 1:
IMD injection

Step 2:
Laser edging



Extensive functions with unlimited design freedom

- Panel front module is completely seamless
- Features a wide range of functions:
  - Touch Control
  - Day-night design
  - Customizations in Design by HS, IMD, PMD, Laser……

New principle optimizes sensor integration

- In-Mold Decoration (IMD) with a classic roll-to-roll process, combines injection molding with our new “LASERLight” Foil Technology

Efficiency goes hand in hand with sustainability

- Compared to competing processes IMD is significantly more economical and more sustainable. By combining different work steps into a one-shot process, CO_2 emissions can be noticeably reduced

Next level decoration for Automotive Interiors

Backlighting - IMD

BMW iX1

KURZ

Next level decoration for Automotive Interiors

Volkswagen Tiguan New 2024 - IMD

Tiguan

Next level decoration for Automotive Interiors

Volkswagen Passat New 2024 - IMD

Passat

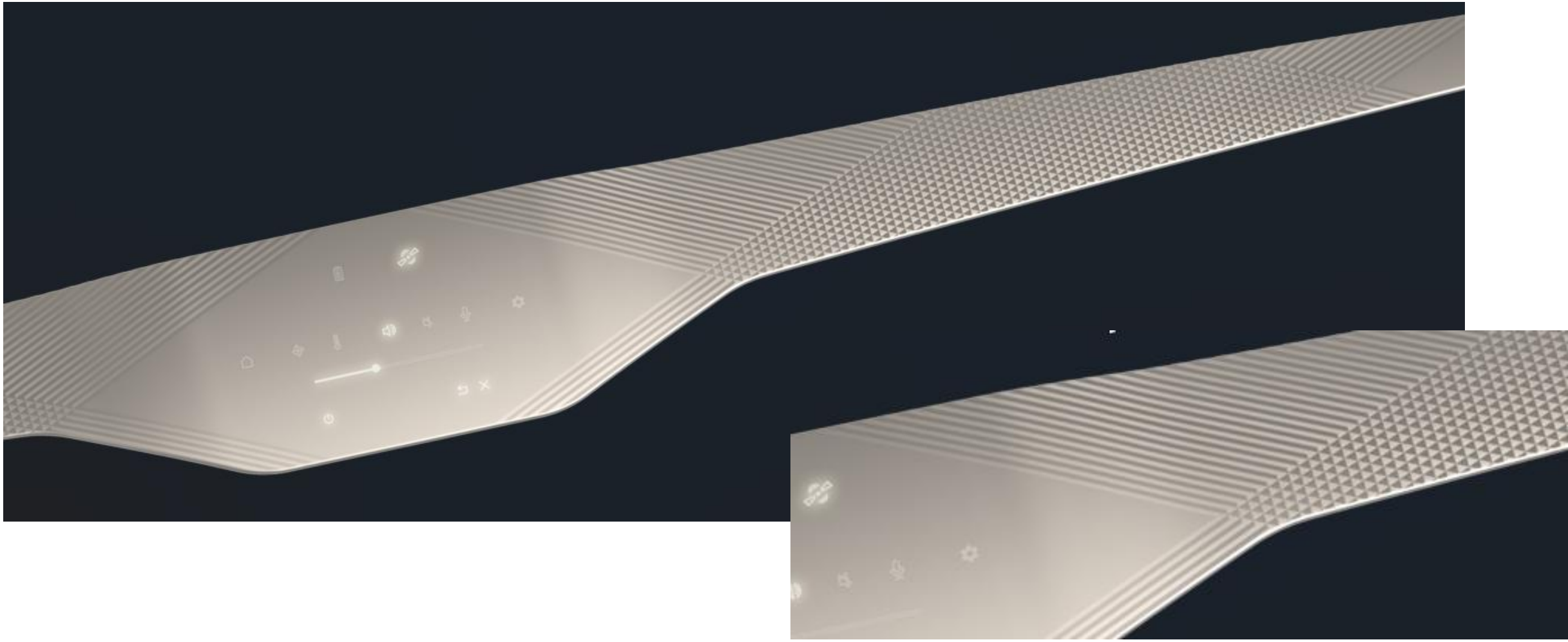
Next level decoration for Automotive Interiors

IMD Black Piano / Anti Reflection Coating implemented IMD System

Mercedes CLA 2025

Reference

Perfect integration of structure by IMD Decoration



Project Overhead Light Console (OHLC)

Cooperation KURZ and ams OSRAM AMLS

Partners

- LEONHARD KURZ Stiftung & Co. KG
- OSRAM Automotive Lighting Systems
- PolyIC GmbH & Co. KG
- BAIER GmbH + Co. KG Maschinenfabrik
- Wittmann Battenfeld
- Syntech Plastics

Project Overhead Light Console (OHLC)

The Result

Extensive functions with unlimited design freedom

- Console is completely seamless
- Features a wide range of functions:
  - Touch Control, Sliders and Buttons
  - Shy Tech
  - Day-night design
  - Organic three-dimensional deformation

New principle optimizes sensor integration

- In-Mold Decoration (IMD) with a single image classic roll-to-roll process, combines injection molding, sensor integration using functional In-Mold Labeling, and decoration in one highly efficient work step

Efficiency goes hand in hand with sustainability

- Compared to competing processes IMD is significantly more economical and more sustainable. By combining different work steps into a one-shot process, CO_2 emissions can be noticeably reduced

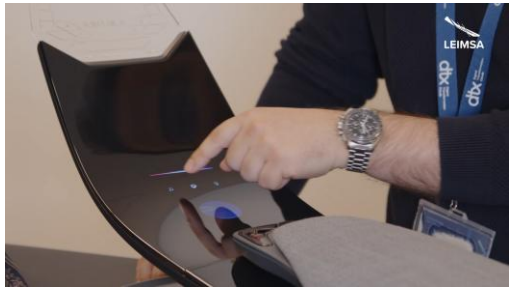
Overhead Light Console (OHLC)

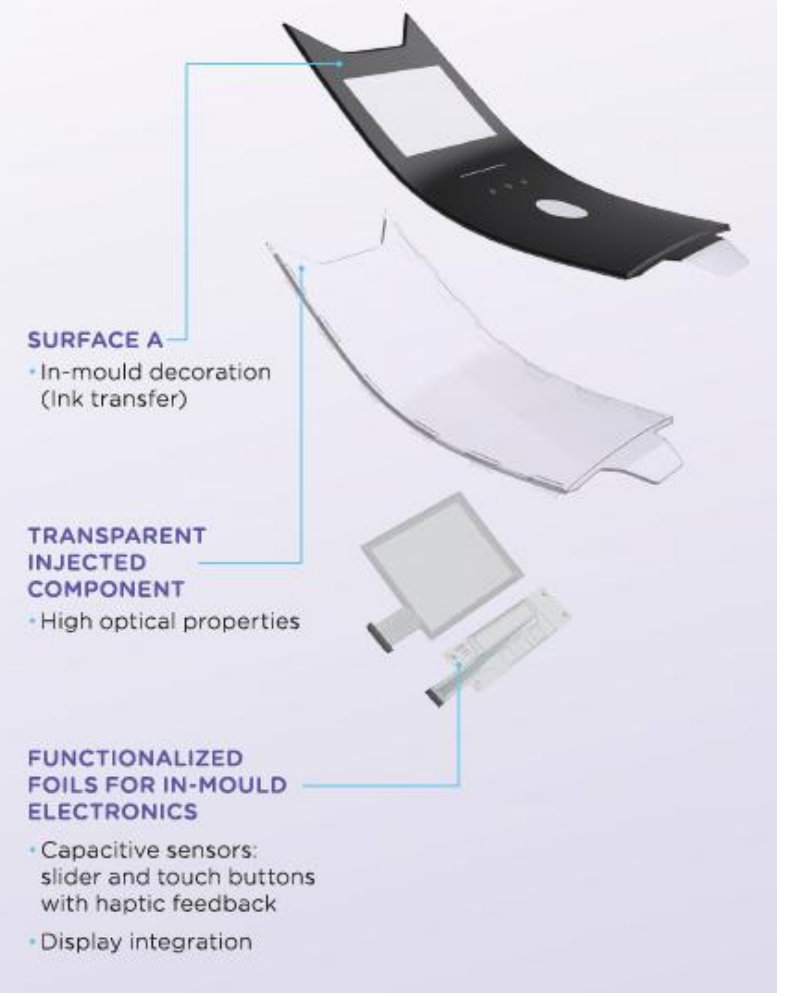
Project LEIMSA Lightweight Electronics by Injection Molding in Steamless Architecture

Cooperation KURZ and Simoldes & more Partners

Project LEIMSA Lightweight Electronics by Injection Molding in Steamless Architecture

Cooperation KURZ and Simoldes & more Partners



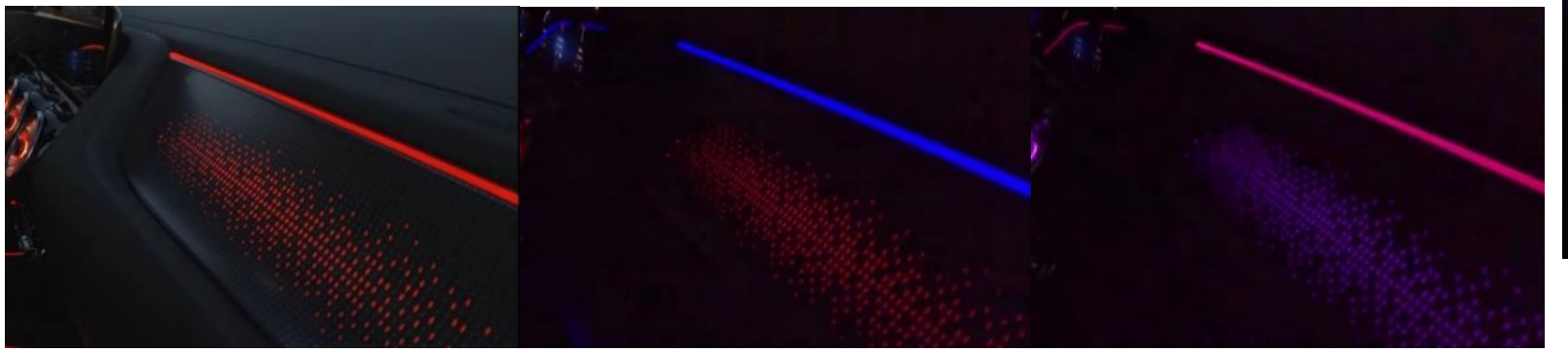


Next level decoration for Automotive Interiors

Backlighting - IMD

Mercedes EQA

Mercedes-benz.de



Next level decoration for Automotive Interiors

Backlighting - IMD

Mercedes EQB

Mercedes-benz.de

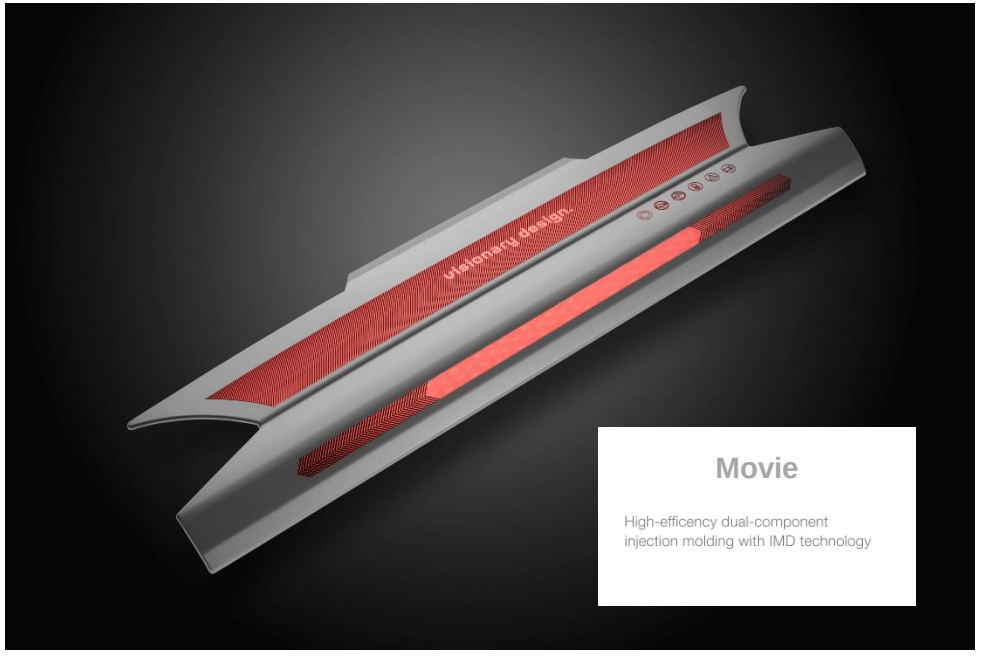
Automotive Rear End Cover

Efficient 2K IMD Process

- All visualizations shown can be realized - in a single production step and in series
- 5G-compatible metal designs
- Precisely defined backlighting with 3D light effects
- Different day-night designs
- Ideal for large components that can be installed directly
- Touch functions with Shy Tech designs
- Time- and cost-efficient IMD Process
- Reduces the carbon footprint
- Recyclability of the complete component
- Use of recycled material possible

Project Rear End Cover (big size single picture decoration solution)

KURZ LIVE Demo at K 2022 Hall 5 A19

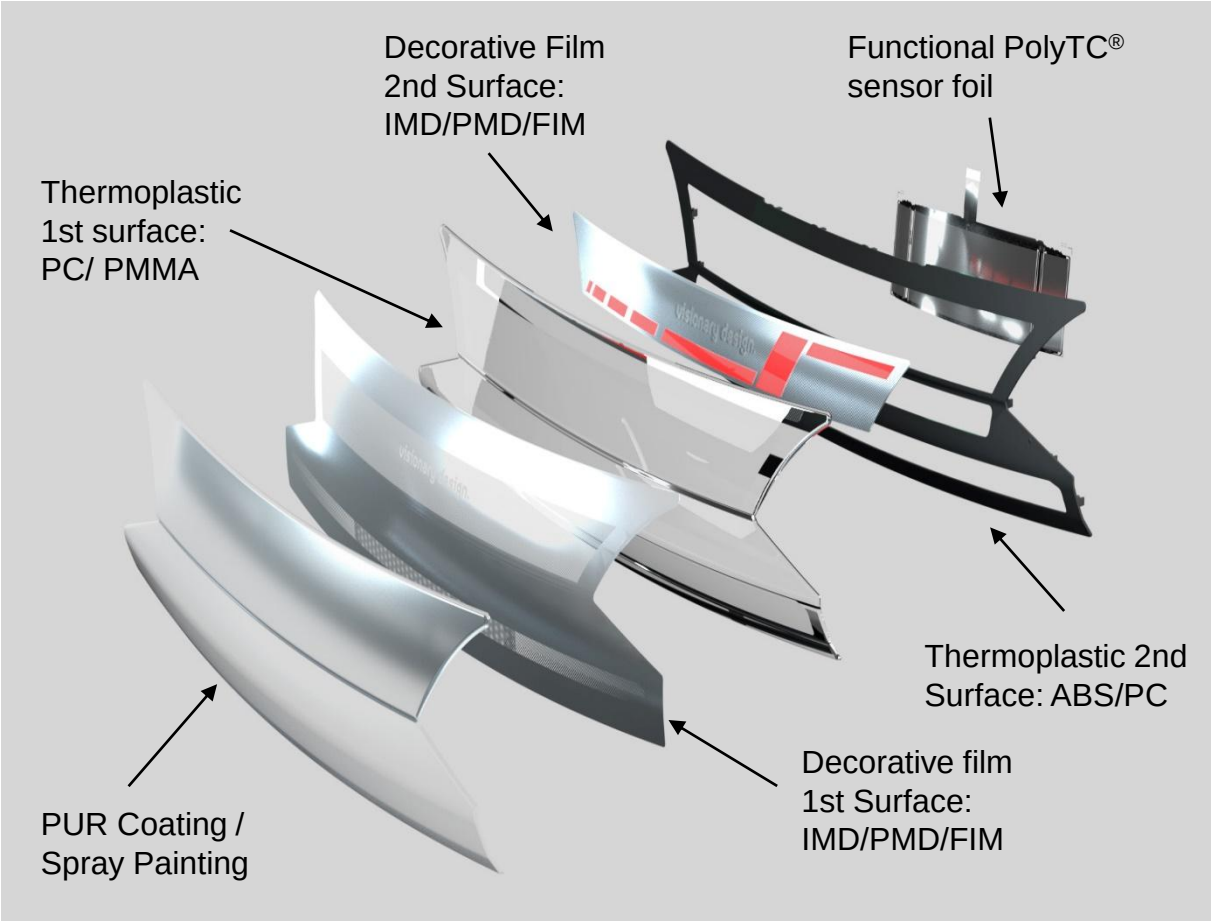


Partners

- LEONHARD KURZ Stiftung & Co. KG
- Engel Autria
- PolyIC GmbH & Co. KG
- Schöfer Werkzeugbau
- Reichle Strukturtechnik
- Sabic Blend PC/ABS
- Röhm PMMA
- HRS Heißkanaltechnik
- Frimo Automatisierung Angußtrennung

Component Concept Rear End Cover (K2022)

IMD + 2K Injection molding + PUR/Spray painted topcoat + PMD + PolyTC®



Decorative film IMD system 1st surface:
- Continuous closed surface
- Single image, technical pattern, hidden-till-lit, backlit designs

Thermoplastic 1st surface:
- Transparent PMMA or PC
- Excellent transmittance

Thermoplastic 2nd surface:
- Light sealing chambers
- Mounting possibilities

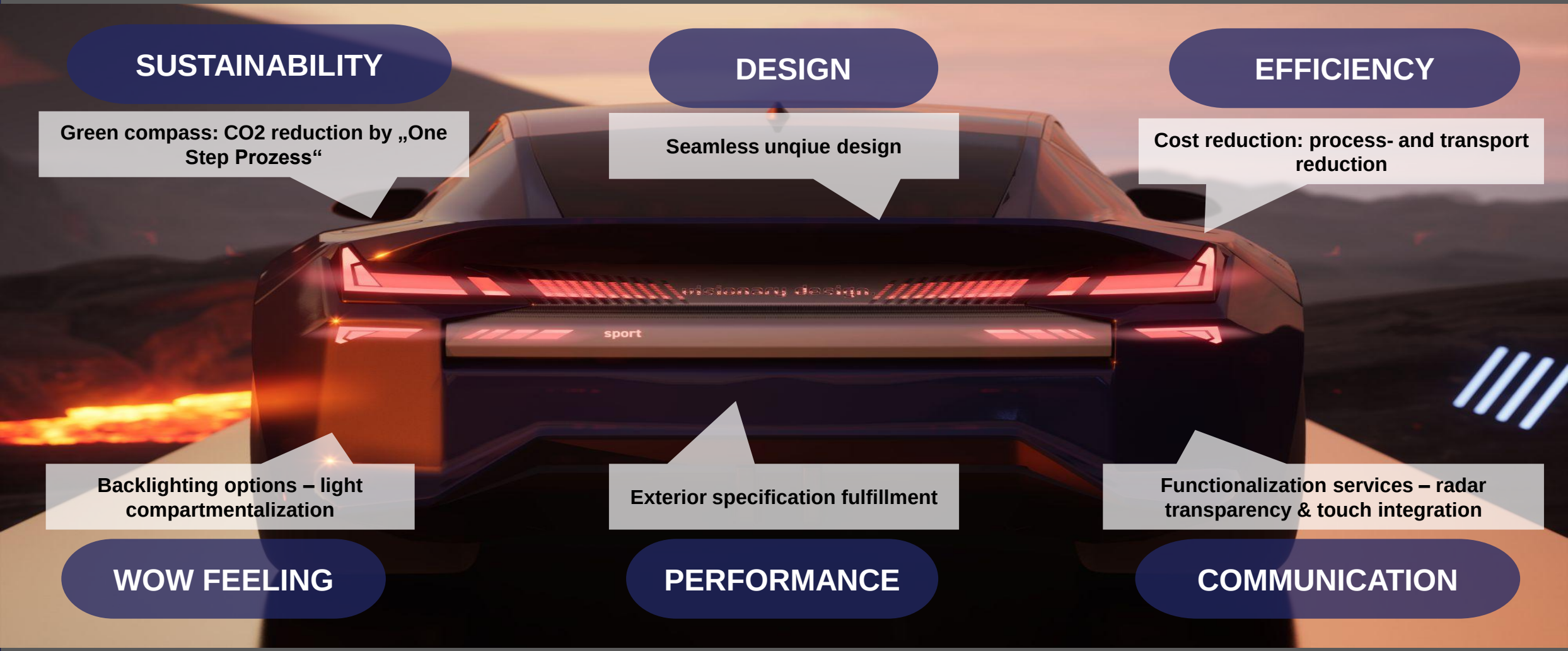
PUR/Spray painted topcoat:
- Approved exterior requirements
- Depth / 3D effects

Partial decorative film PMD/INS-System 2nd surface:
- Additional design flexibility
- Design on different levels

PolyTC® sensor foil:
- Function integration, e.g. touch or slider functions

Portfolio by KURZ

Requirements



SUSTAINABILITY

Green compass: CO2 reduction by „One Step Prozess“

DESIGN

Seamless unqiue design

EFFICIENCY

Cost reduction: process- and transport reduction

Backlighting options – light compartmentalization

WOW FEELING

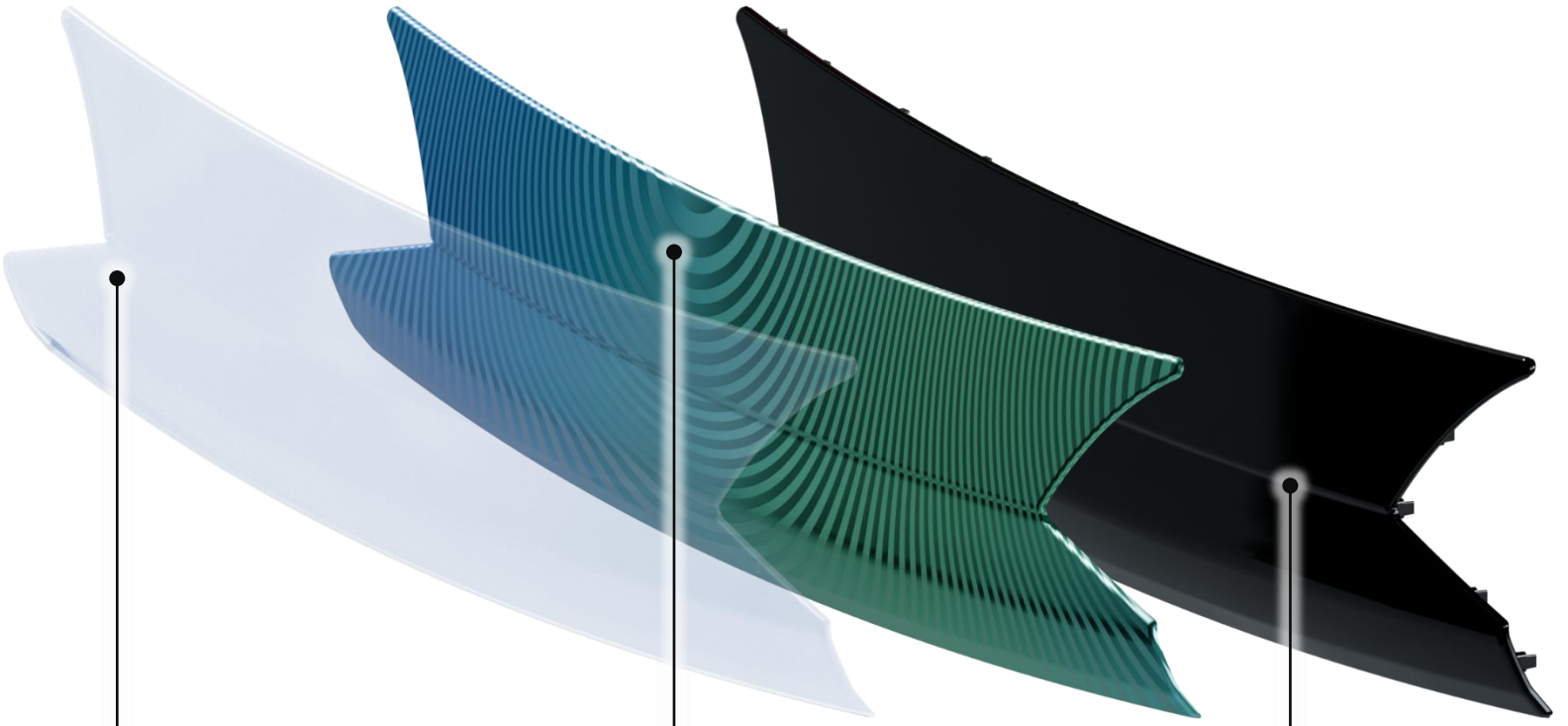
Exterior specification fulfillment

PERFORMANCE

Functionalization services – radar transparency & touch integration

COMMUNICATION

PUR Exterior

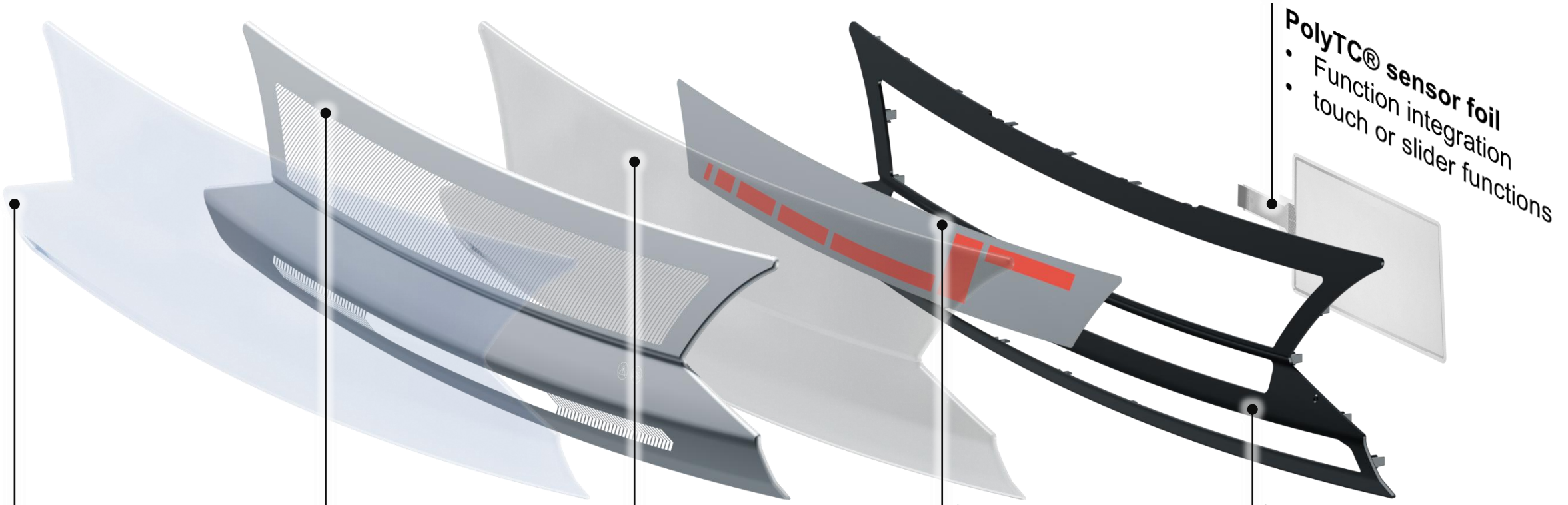


PUR layer
- Approved exterior requirements
- Depth / 3D effects

IMD Decorative film
- Continuous closed surface
- Single image, technical pattern, hidden-till-lit, backlit designs

Thermoplastic carrier
- Excellent transmittance
- RADAR / Lidar compatible
- Mounting possibilities

PUR Exterior – Actual Requirements



PUR Exterior – Actual Requirements

REQUIREMENTS

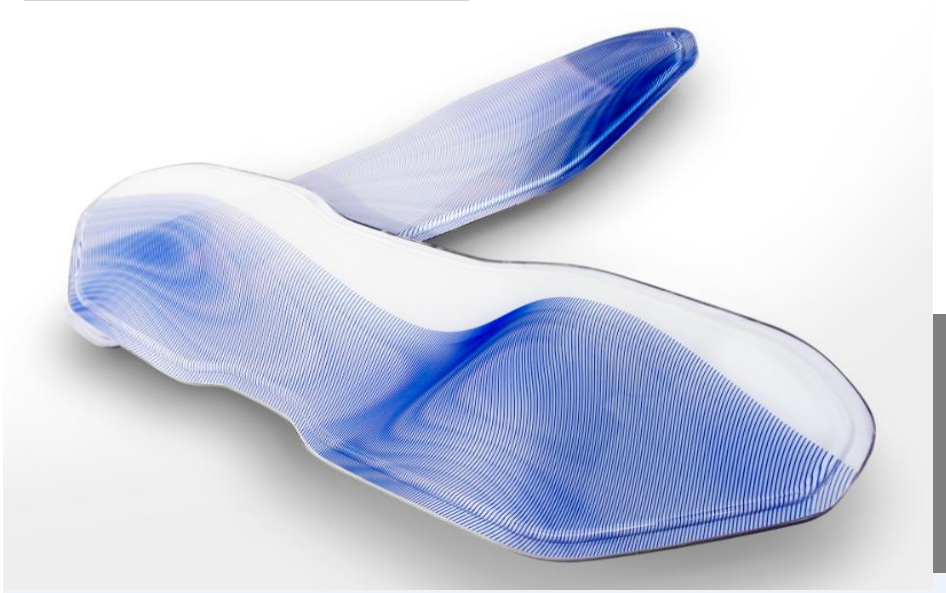
- Materials for exterior use
- Impact performance
- RADAR / Lidar transparent
- Design freedom
- Deep visual depth effect
- Electric components integrated
- Light design / light shielding

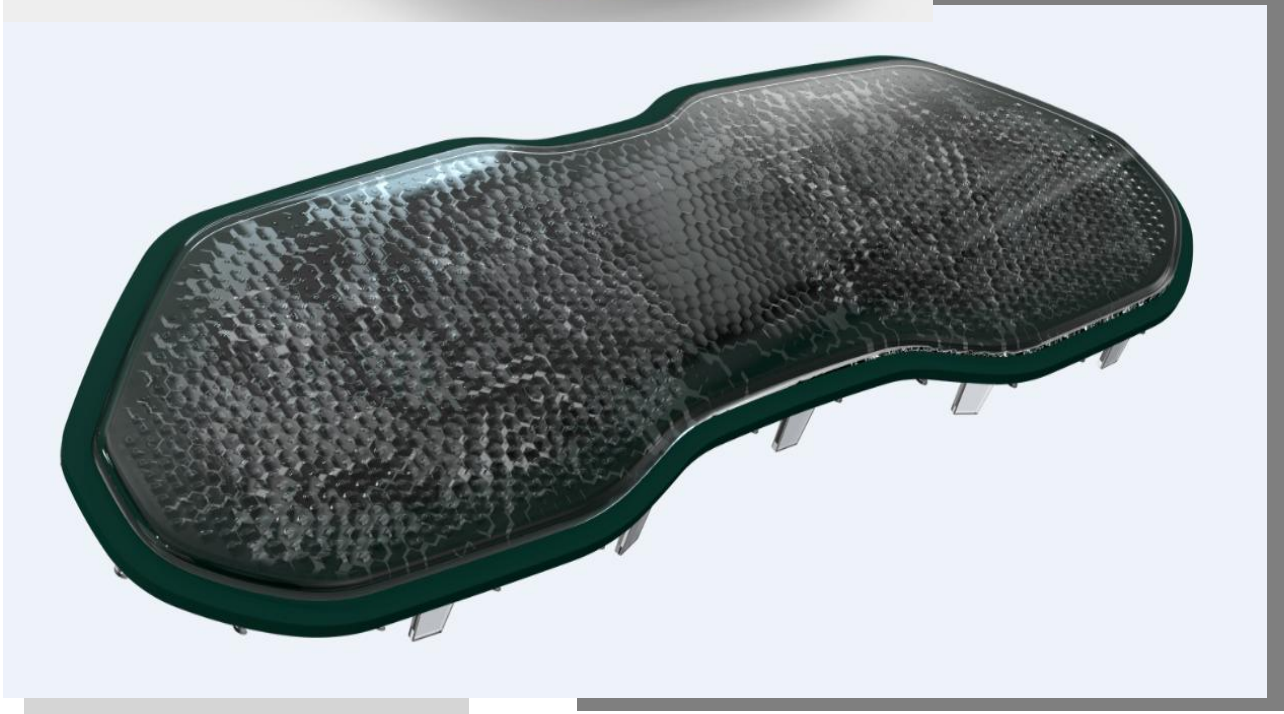
PUR Exterior – Actual Requirements

Multi K / Automotive Rear End Cover

IMD Mold Decoration IMD / INS + PUR Fluting

DECOPUR®





KURZ IMD + PUR

One-Step-Process-Solution

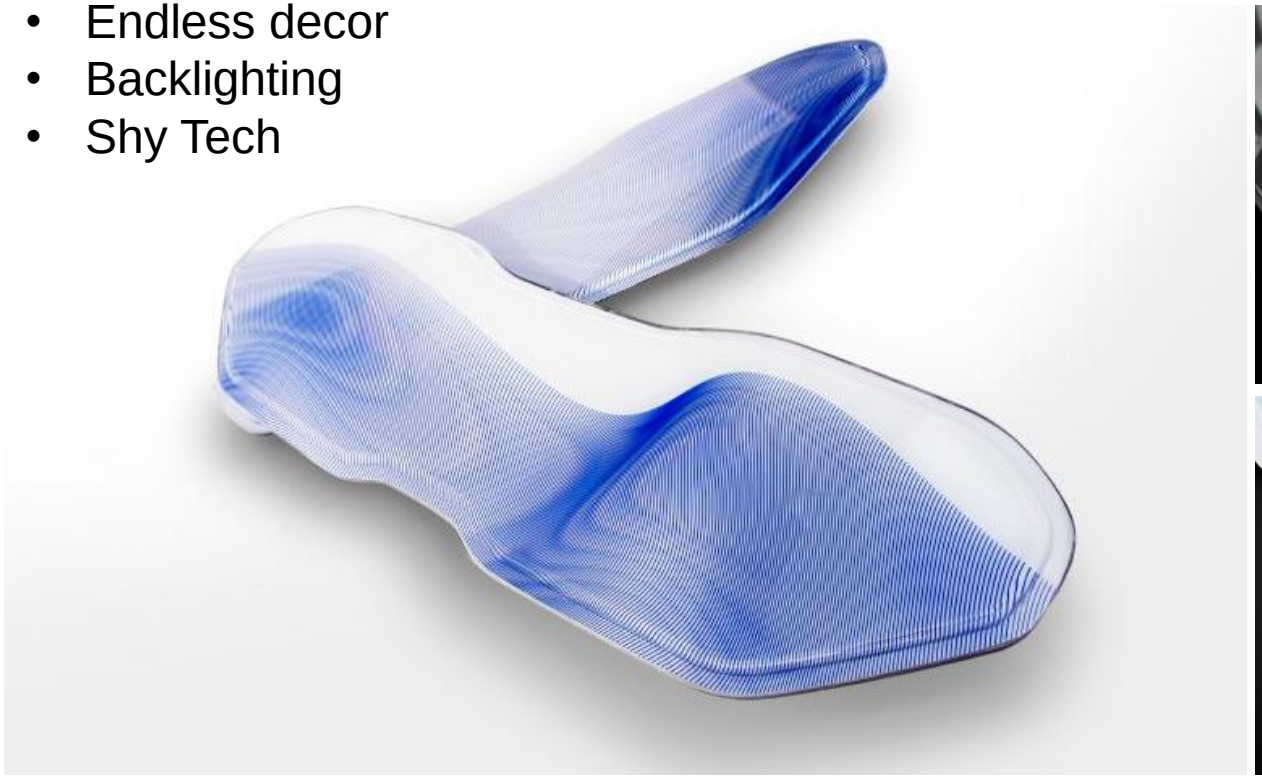
Roll to Roll

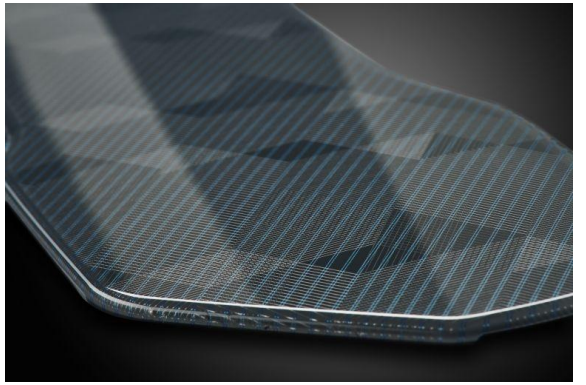
Thermoplastic Material + Polyurethan

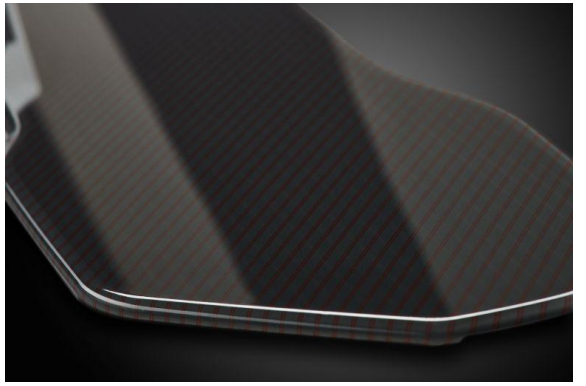
2 K Process

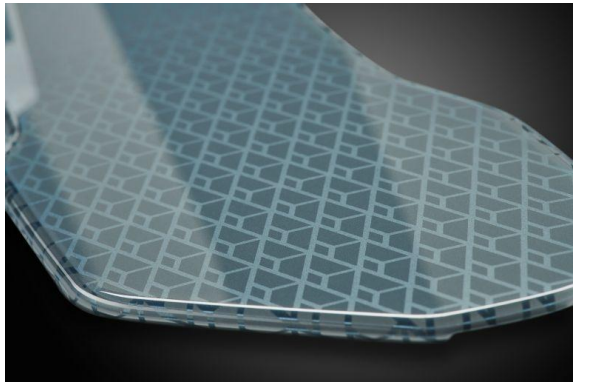
DECOPUR® – Design Possibilities

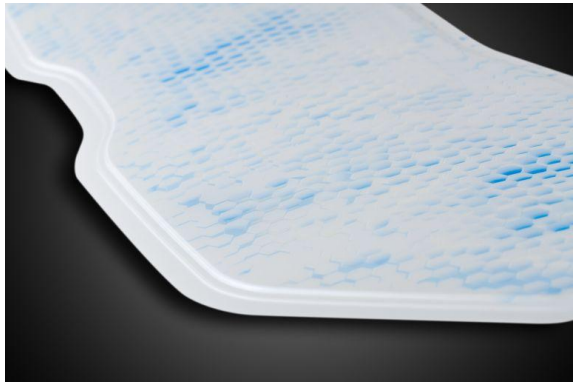
- Pigmented
- Metallized
- Brushed
- High gloss
- Matte
- Single picture
- Endless decor
- Backlighting
- Shy Tech

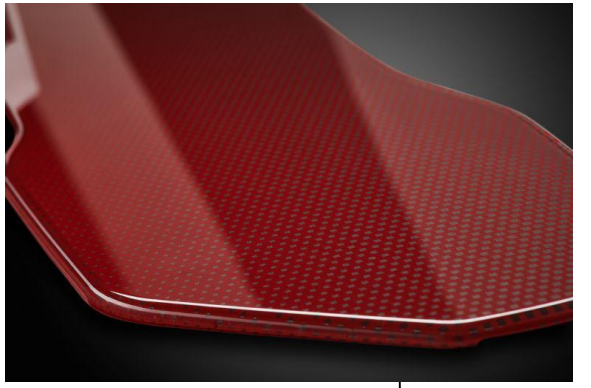




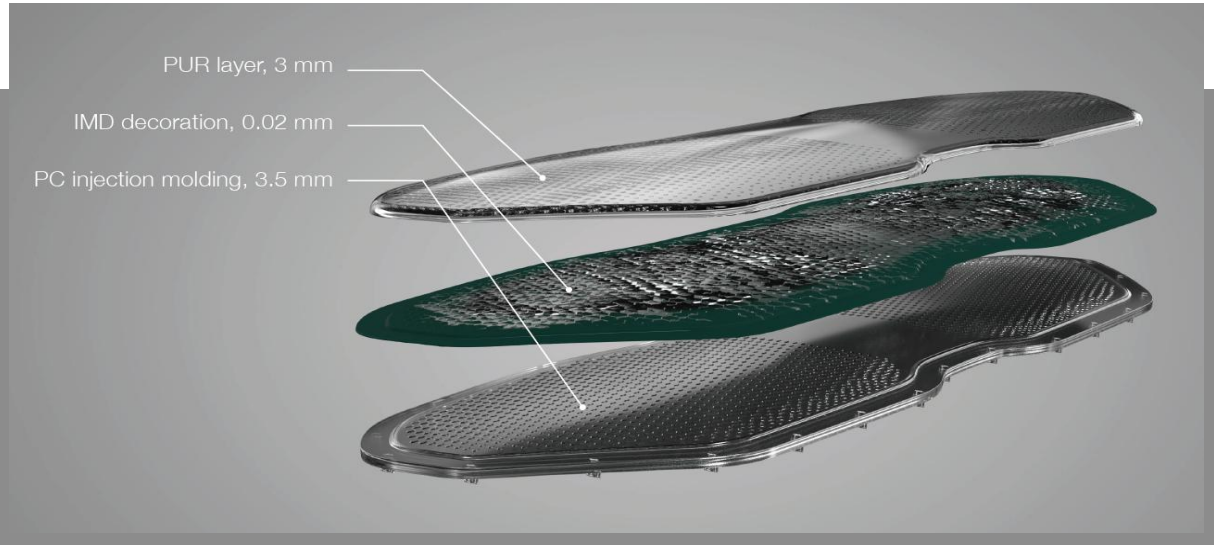


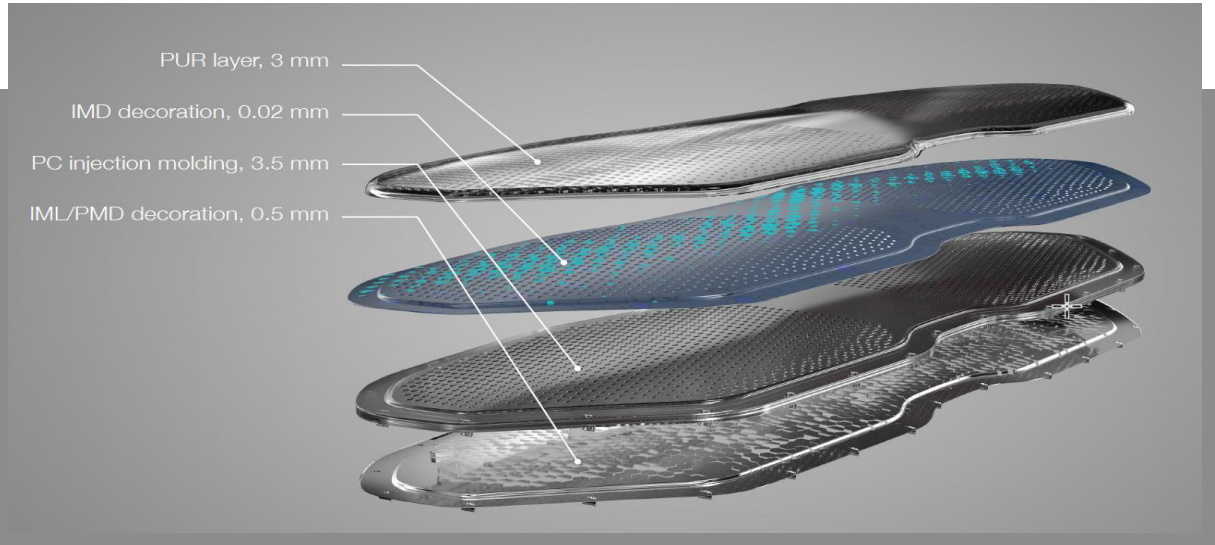


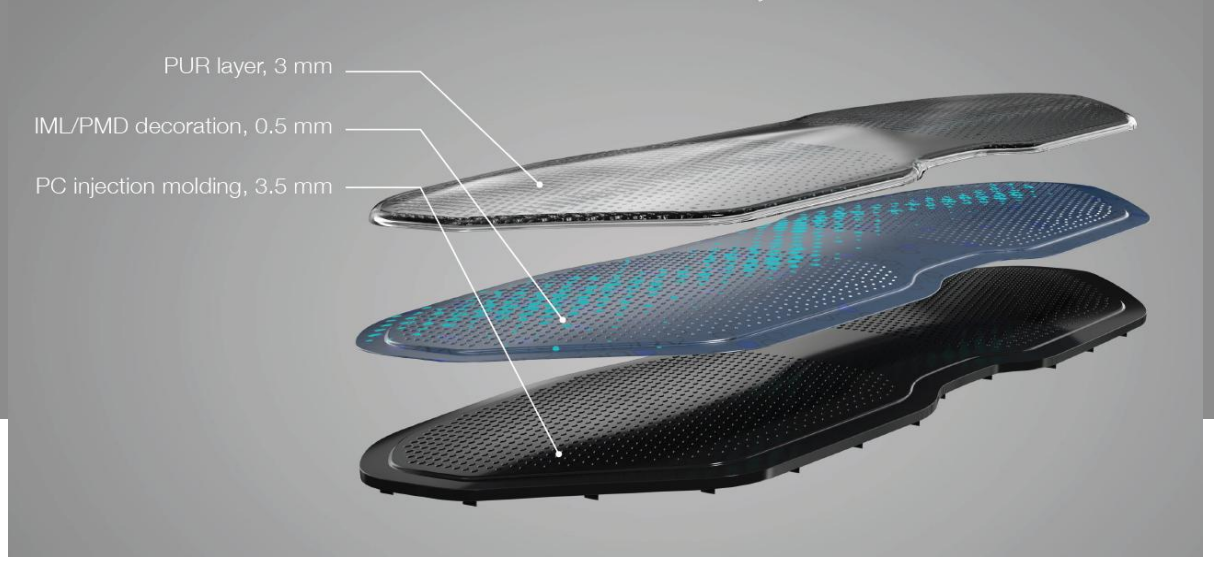


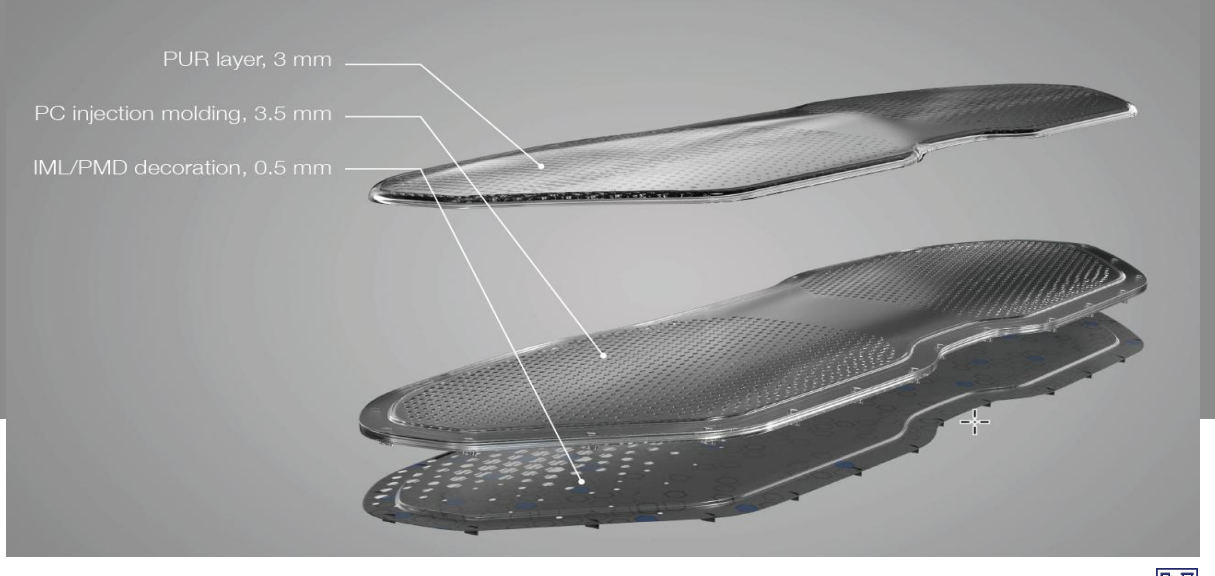


PUR Integration Variation Technology



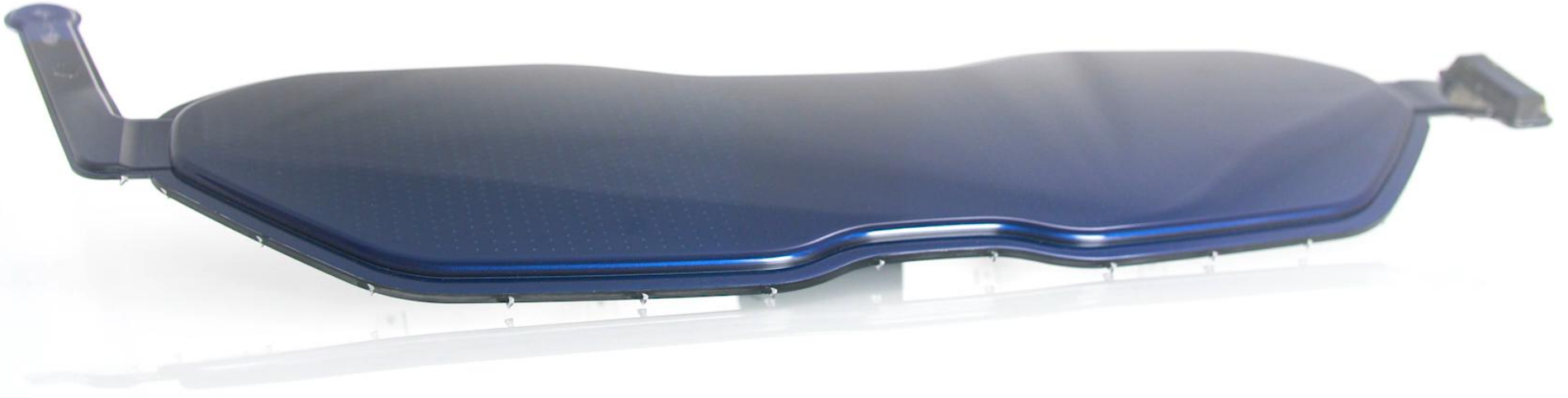




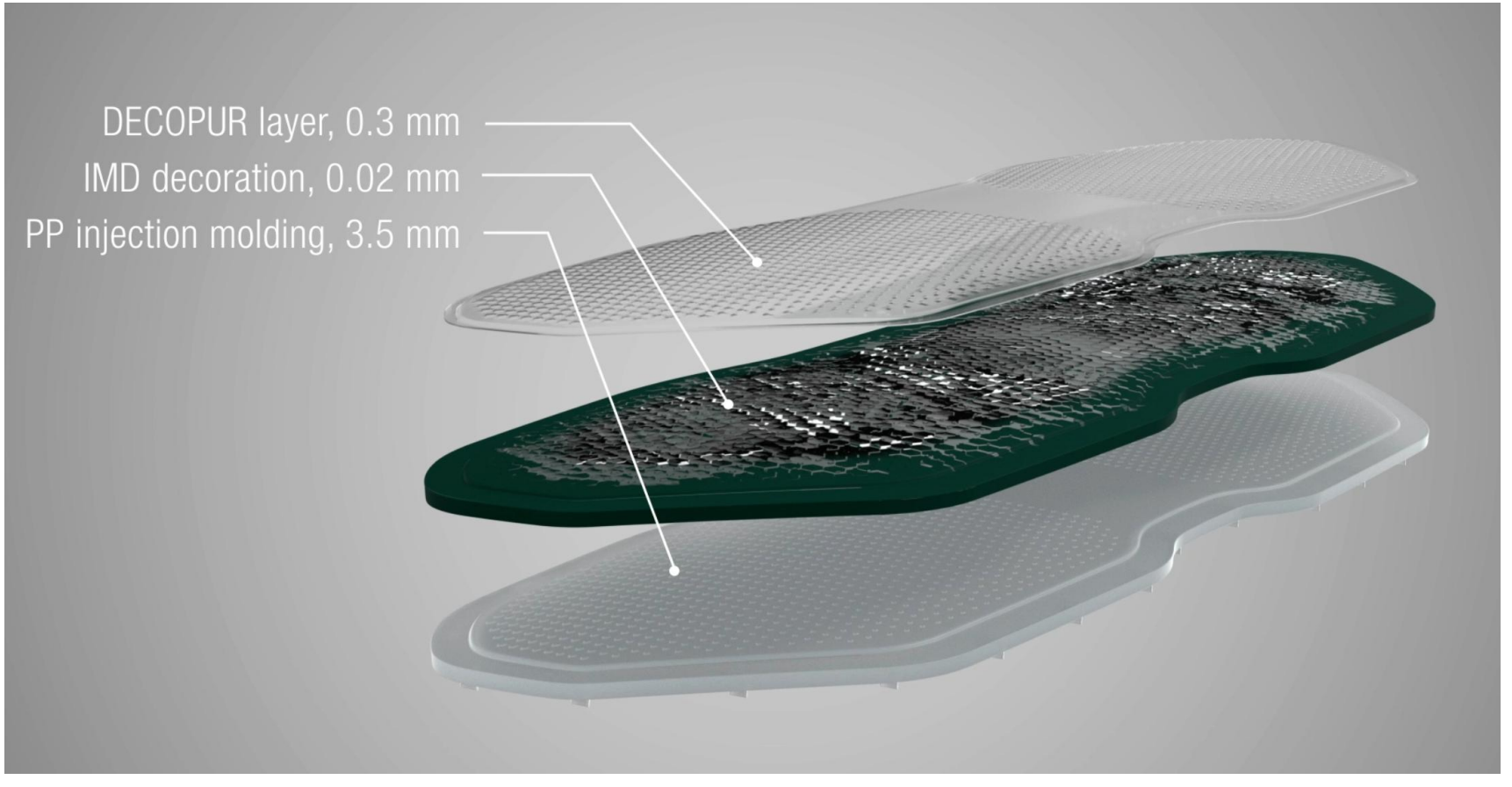


IMD PUR®

IMD Decoration with PUR Flooding



IMD DecoPUR in ONE process special developed for PP solution



Reference

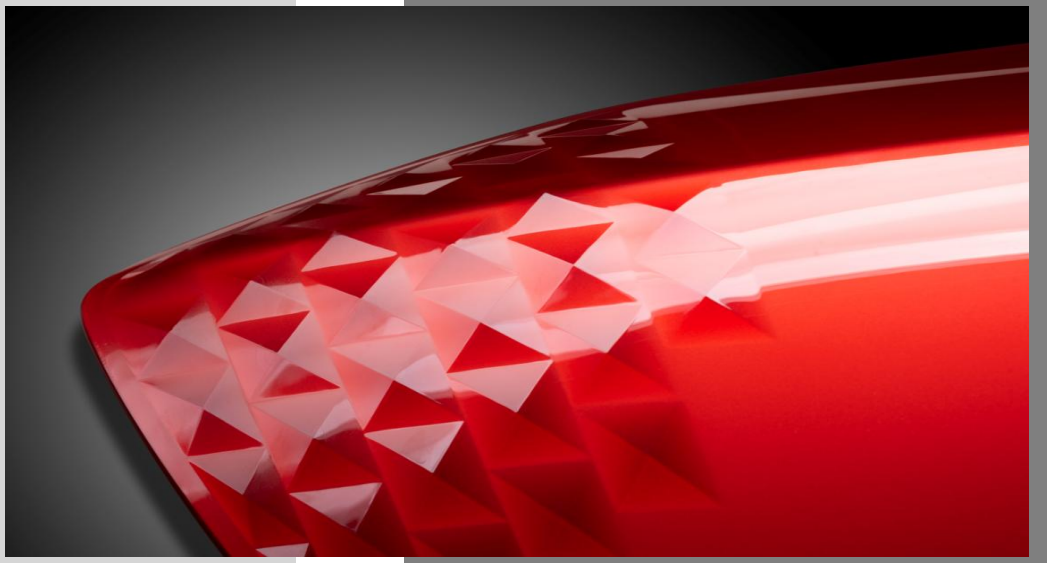
Behr-Hella Thermocontrol GmbH (BHTC)

Reference

BHTC Demonstrator

Transformation Interieur System _KURZ Direct PUR coating on IMD FILM / second surface decoration

IMD Mold Decoration IMD + PUR Fluting
Front End Technology



KURZ Technology + PUR

One-Step-Process-Solution

Roll to Roll

Thermoplastic Material + Polyurethan

2 K Process

“Front End Lamp”

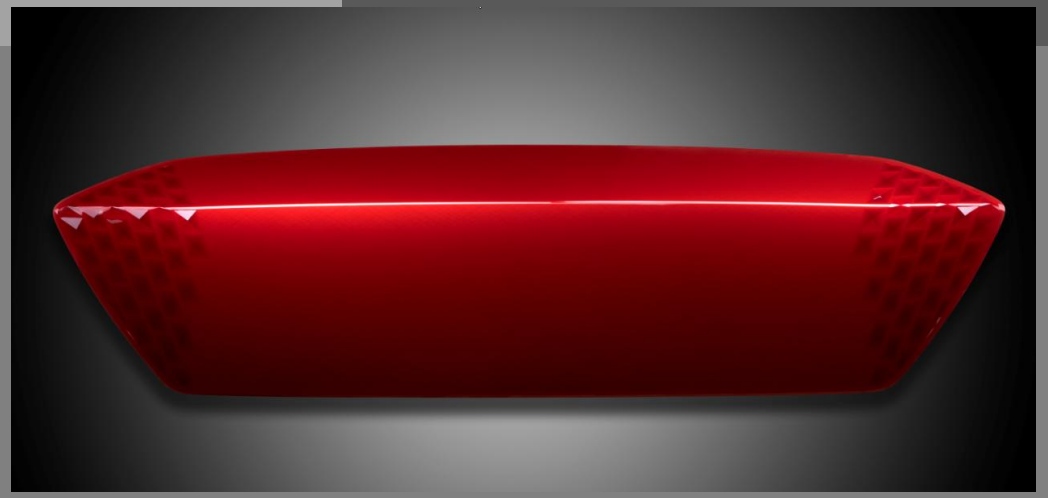
3 Component – Technology for next level

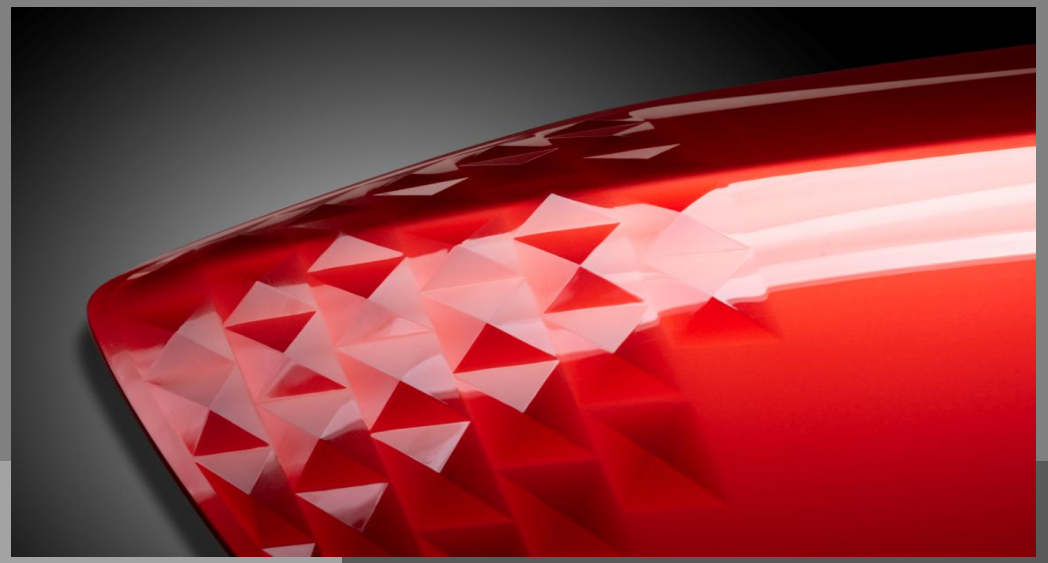
LIVE at

KURZ / Krauss Maffei K2025 Show

DECOPUR® + **VARIOFORM®**

New Dimensions → **In Inline Decoration**





“Rear End Lamp”

2 Component – Technology for next level

LIVE at

KURZ / Engel K2025 Show

InMoldDecoration

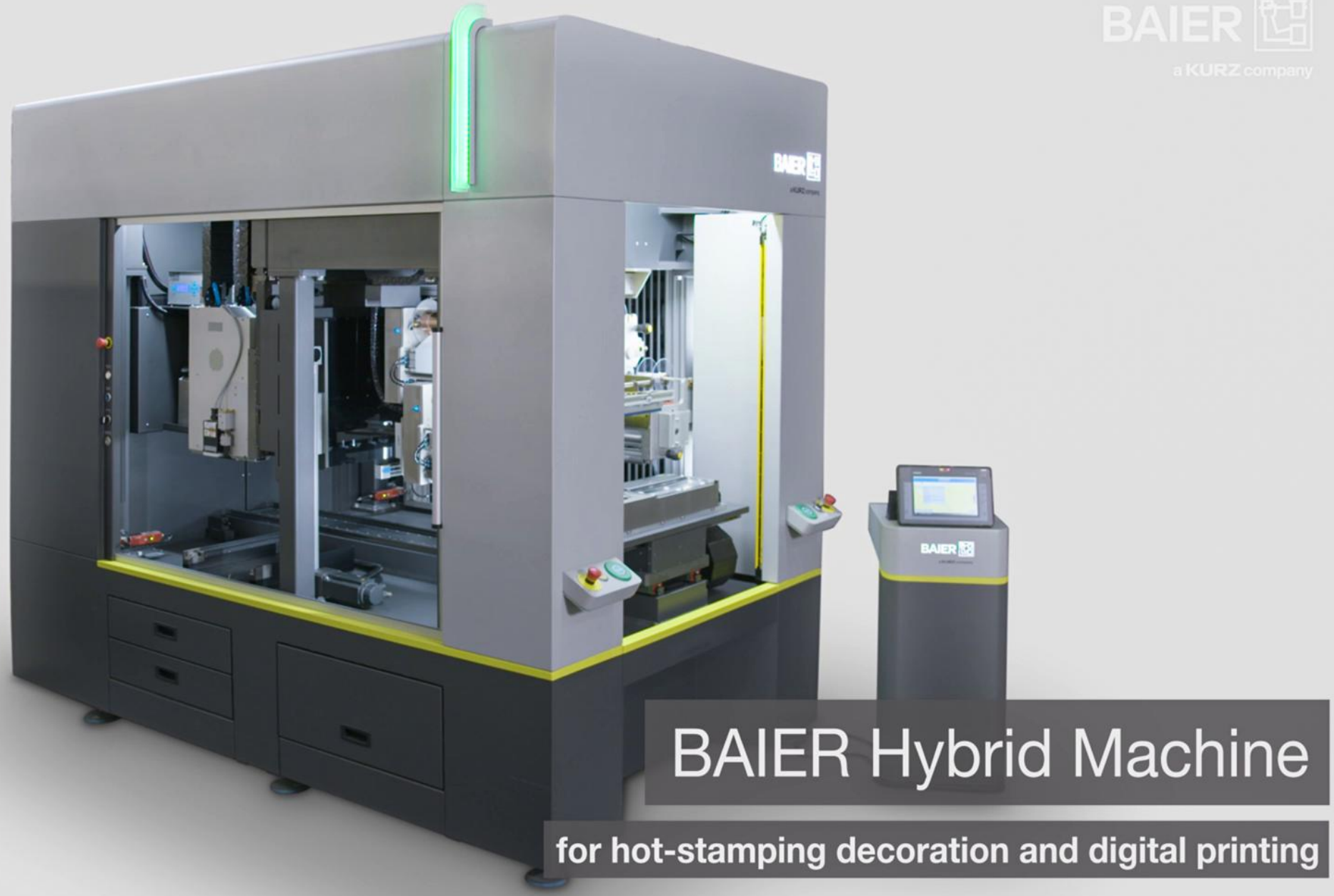
DECOPUR®

New Dimensions
In Inline Decoration

The Innovative Hybrid Machine

Multiple Fields of Application

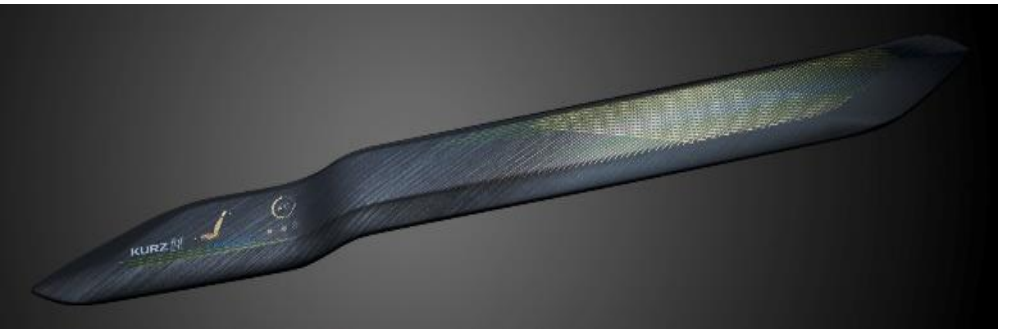
- Hot Stamping and Digital Printing possible
- Both decoration processes can be applied in a flexible sequence and can be carried out in one operation. The part to be decorated needs to be placed only once in the tool
- The Hot Stamping unit is equipped with a specially developed embossing drum that can hold four precision Hot Stamping tools produced by the KURZ subsidiary Hinderer + Mühlich
- The second decoration station is a CMYK + white digital printing unit. It prints crisp and clean images on e.g. plastic substrates – even if the component is black

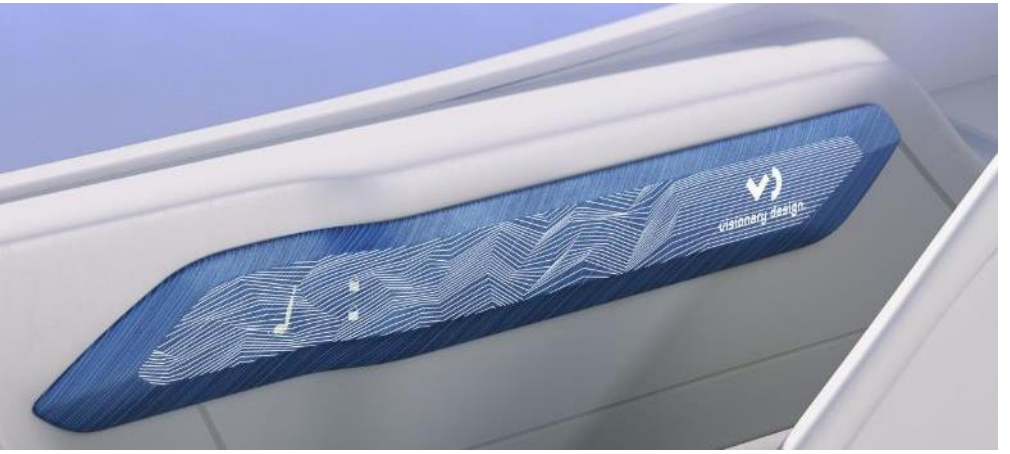

BAIER
a KURZ company
BAIER Hybrid Machine
for hot-stamping decoration and digital printing

Movie

IMD UNIFY

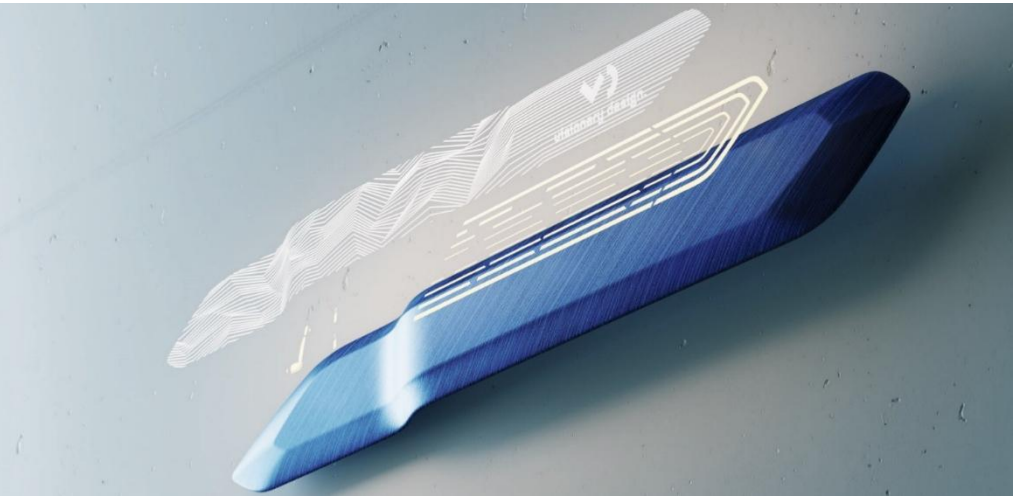
The Innovative Development





The pioneering IMD UNIFY innovation

- New overprintable IMD decoration
- Retroactively customizing IMD surfaces
- Printing direct to shape possible
- Ensuring excellent adhesion and longevity of overprinting
- Particularly developed for the automotive, consumer electronics and home appliances sectors

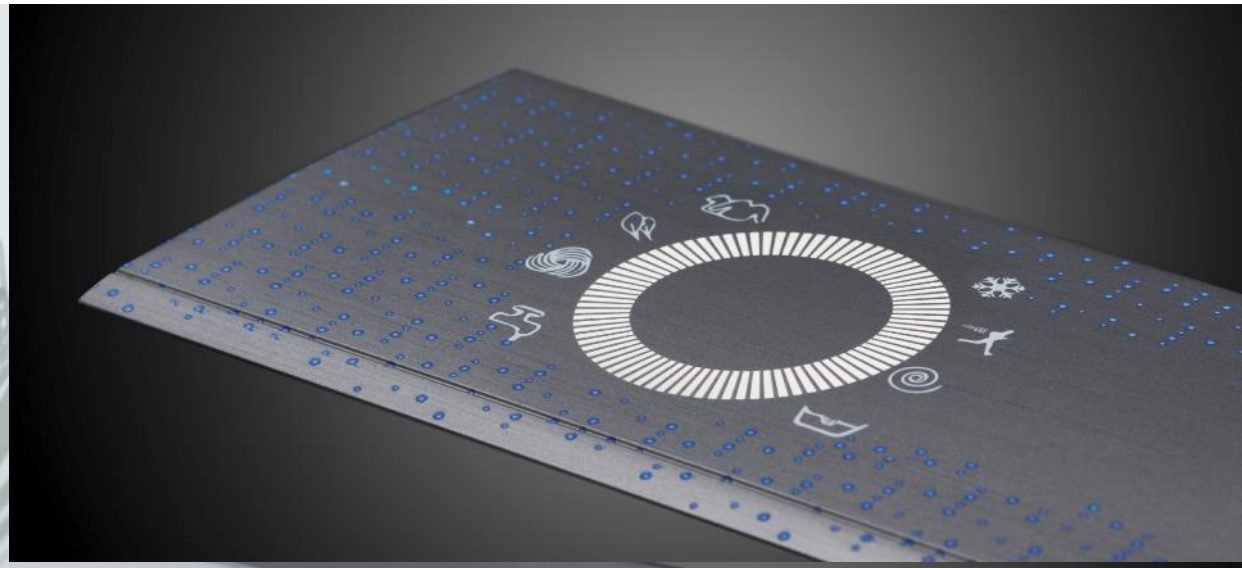


IMD UNIFY

Product Examples – Washing Machine Parts

IMD UNIFY

Product Examples – Washing Machine Parts



IMD VARIOFORM® + Single Image Design + Touch Sensor

Advantages & Features

- New one-step process for decorating extreme 3D geometries
- 3D shaped geometry realized in roll-to-roll process
- Directly in the injection mold: Deform, back-inject, punch and decorate
- Edge-precise decoration
- Short production time
- Flexibility of the process
- Wide range of designs with identical component geometry, featuring endless or single-image decoration
- Variety of materials (ABS, ABS/PC, PP, PP/TPU, TPU, …)
- Cost-effective process
- Single Image Decoration / Design Process
- Functional Insert Touch Sensor Integration

IMD VARIOFORM® + Single Image Design + Touch Sensor

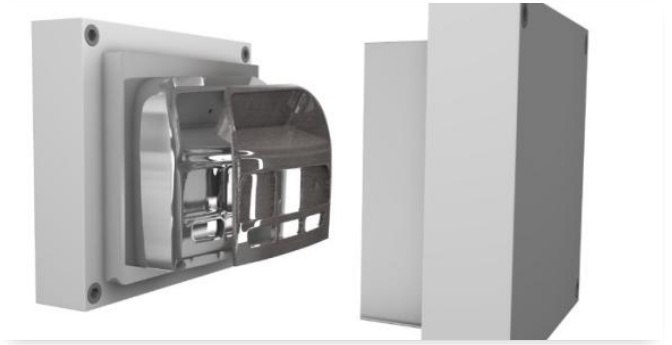
Advantages & Features

INS Insert Molding

Process

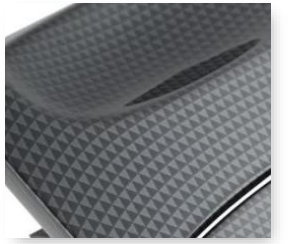
A deep-drawable plastic foil is decorated by hot stamping. The decorated plastic foil is heated and deformed by vacuum or compressed air.

The formed plastic foil is then cut true to contour.



Now the insert that has been produced can be put into the injection mold.

The insert has been inseparably bonded to the back-injection molded plastic material.



Foil Technologies for Backlighting

Case Study in Cooperation with SMIA

SMIA

KURZ

Foil Technologies for Automotive

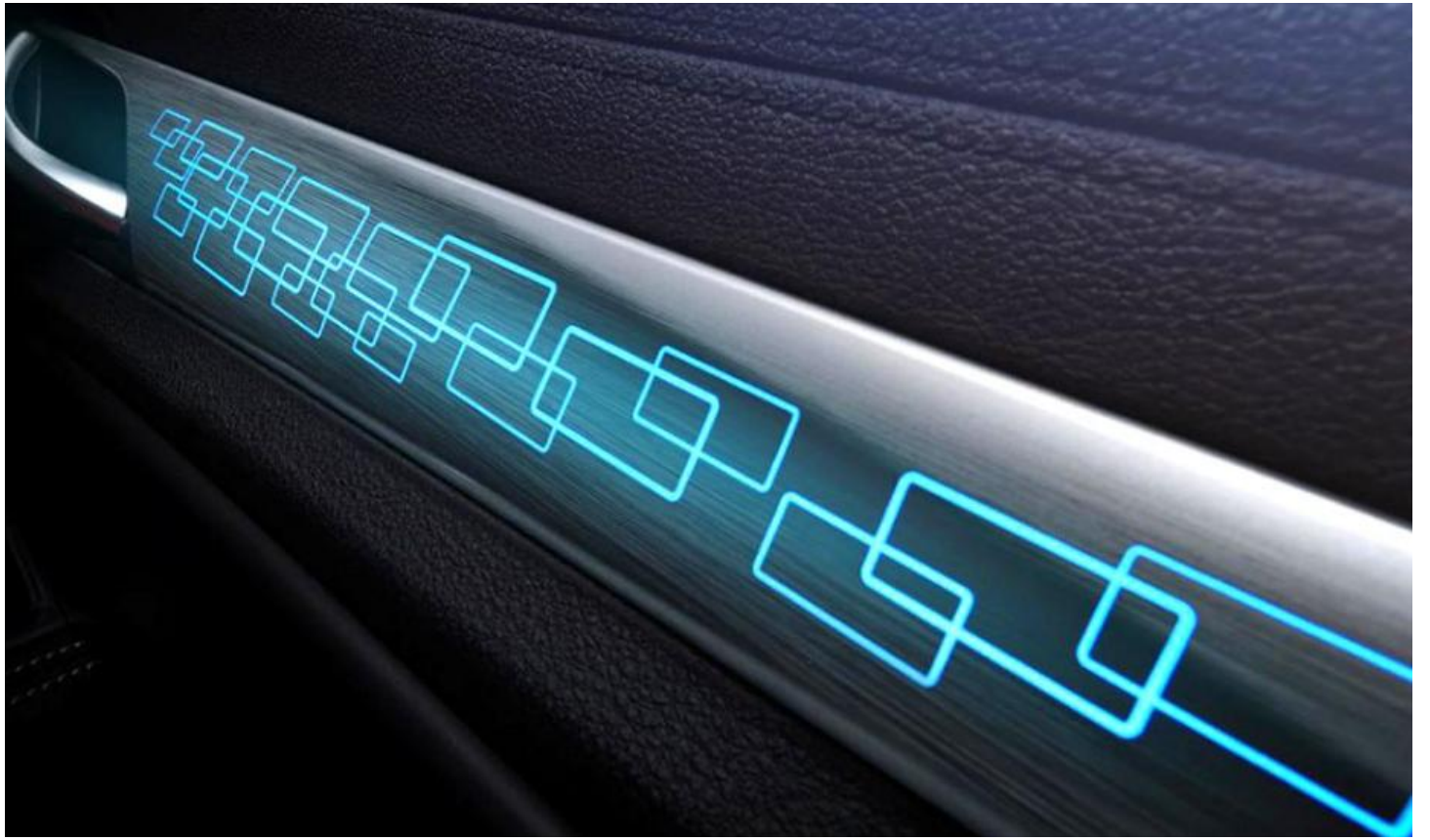
Insert Molding – Reference VW Talagon

INS Backlighting Part:

1. IP-Passenger
2. Front Door Left
3. Front Door Right
4. Rear Door Left
5. Rear Door Right

Foil Technologies for Automotive

Insert Molding – Reference Geely



Foil Technologies for Automotive

Insert Molding – Reference BAIC X7

北汽集团
BAIC Group

INS Backlighting Part:

1. IP-Passenger
2. Door Trims

KURZ

Foil Technologies for Automotive

LINCOLN

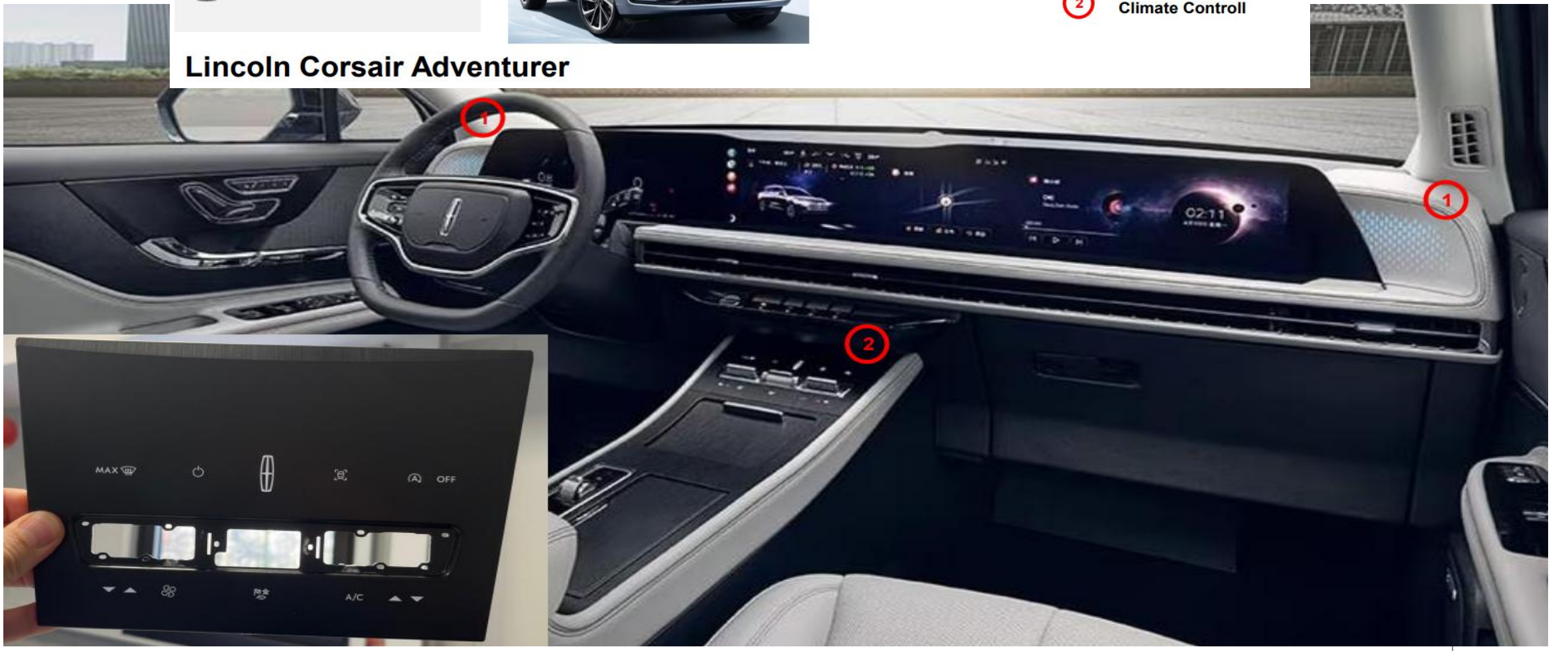
INS Backlighting Part:

1 **IP-Passenger LH / RH**

IMD Backlighting Part:

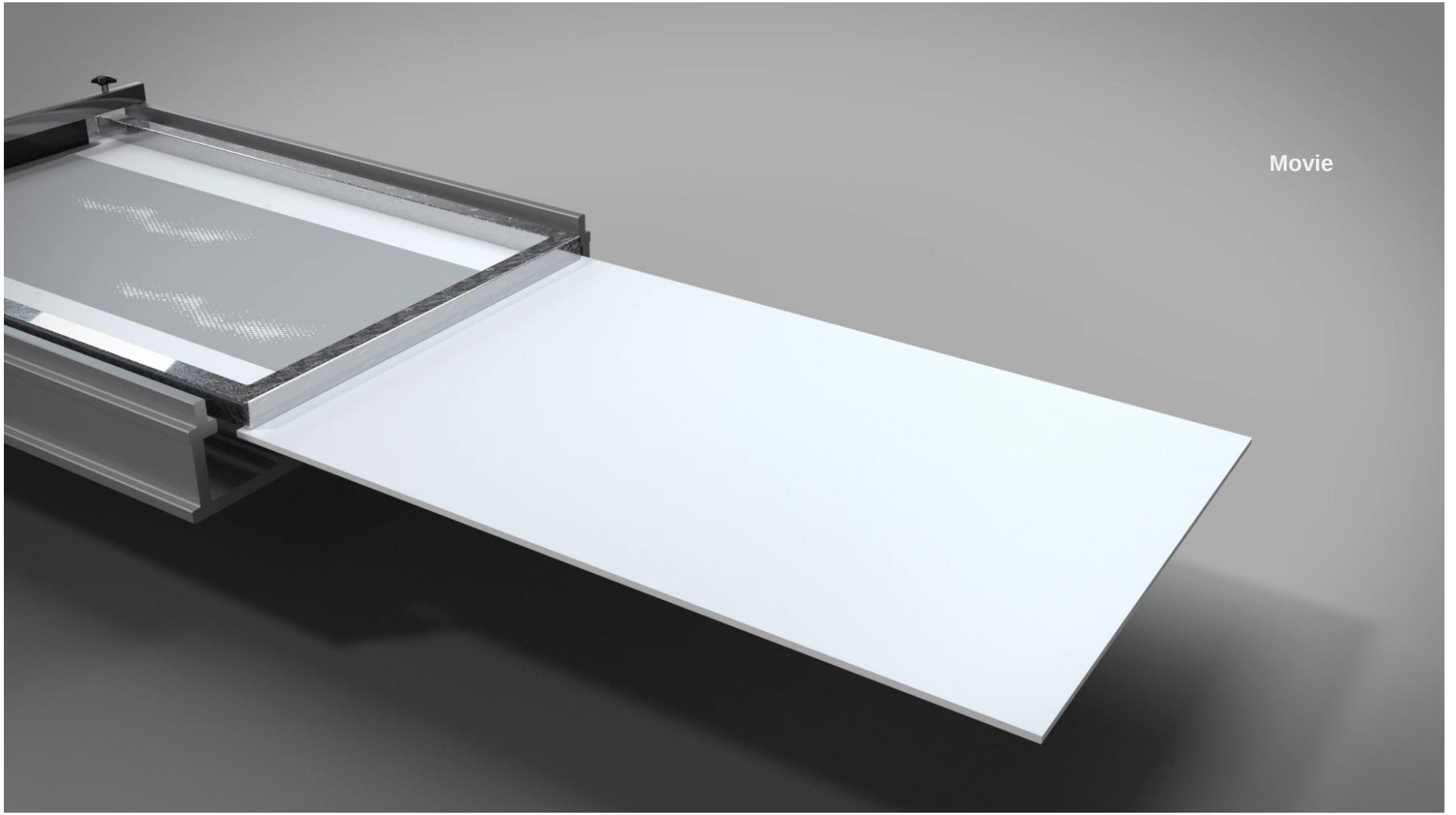
2 **Climate Controll**

Lincoln Corsair Adventurer



KURZ

PMD Print Mold Design - Ambient Light



PMD Print Mold Design - Backlit

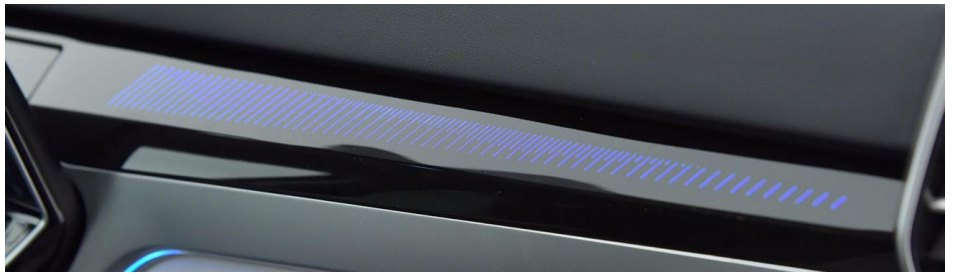
Door-bezel backlit MINI f56

PMD Print Mold Design - Backlit

IP- and Center Console Panels Audi Q2

PMD Print Mold Design - Ambient Light

VW ID6



PMD Print Mold Design - Ambient Light

BMW 2er Serie

PMD Print Mold Design - Ambient Light

Genesis GV70

PMD Print Mold Design - Ambient Light

Hongqi E HS9

PMD Print Mold Design - Ambient Light

Project Smart Crystal Panel

Cooperation with SWAROVSKI

Partners

- LEONHARD KURZ Stiftung & Co. KG
- SWAROVSKI Mobility
- PolyIC GmbH & Co. KG
- BURG Design

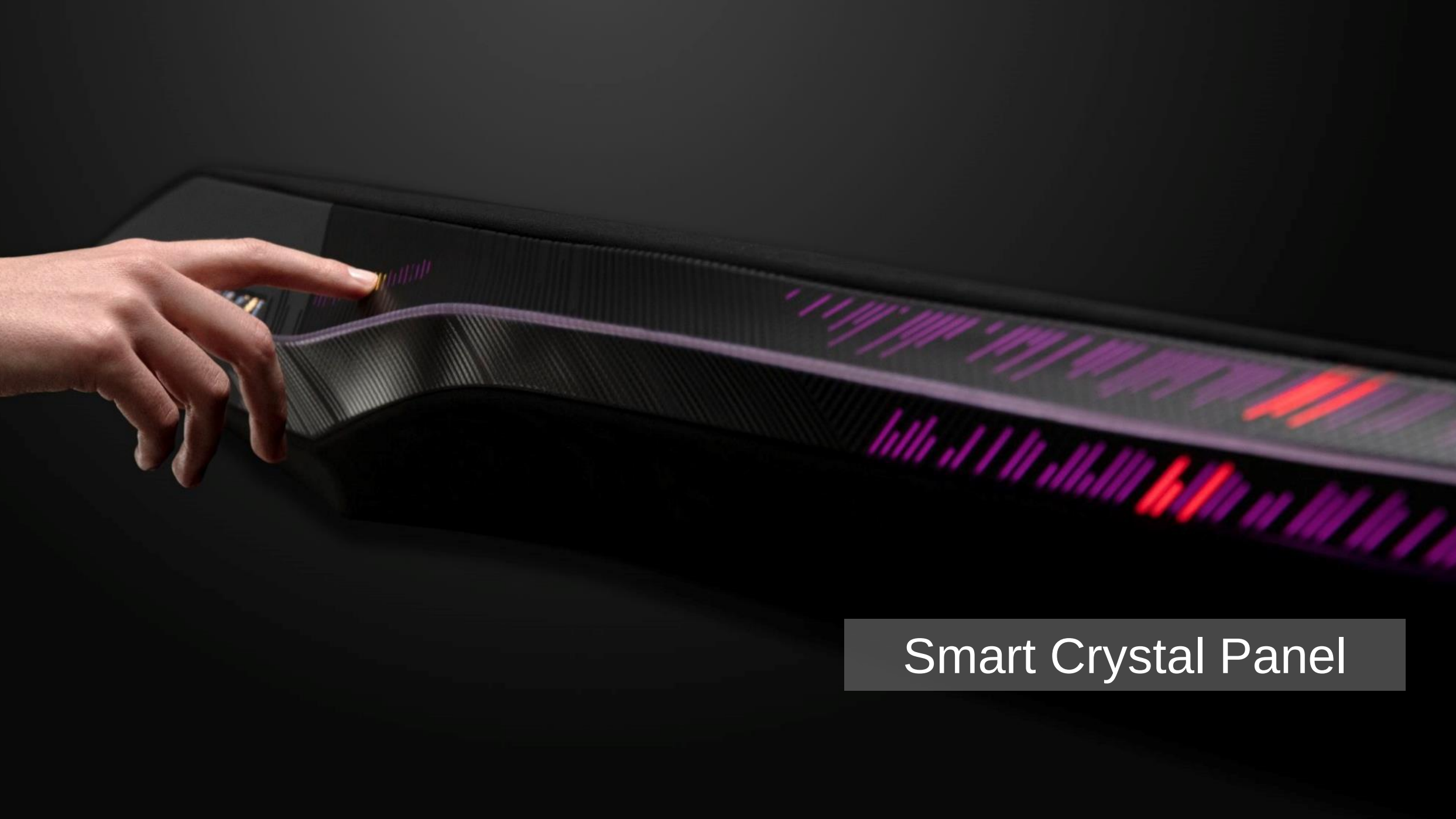
Project Smart Crystal Panel

Crystal Design Luxury: Shiny design and smart technology in cooperation with Swarovski

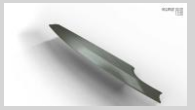
Luxury Lounge Mode
Earth- & copper colors
Gold effects

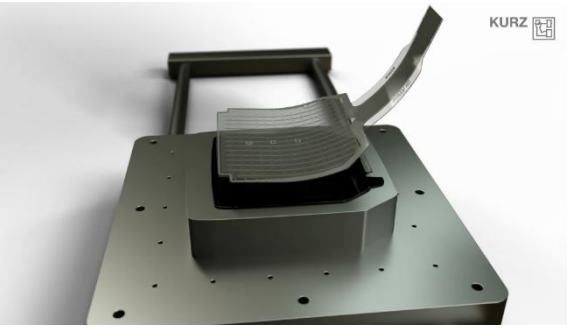
Sportive Dark Mode
Black colors
Smoked glass crystals

Elegant Light Mode
Bright colors
Cool elegance with geometric patterns

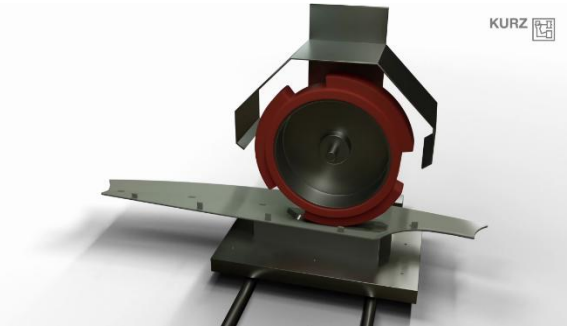

Smart Crystal Panel

FUNCTIONAL FOIL BONDING (FFB)
for functional Sensor

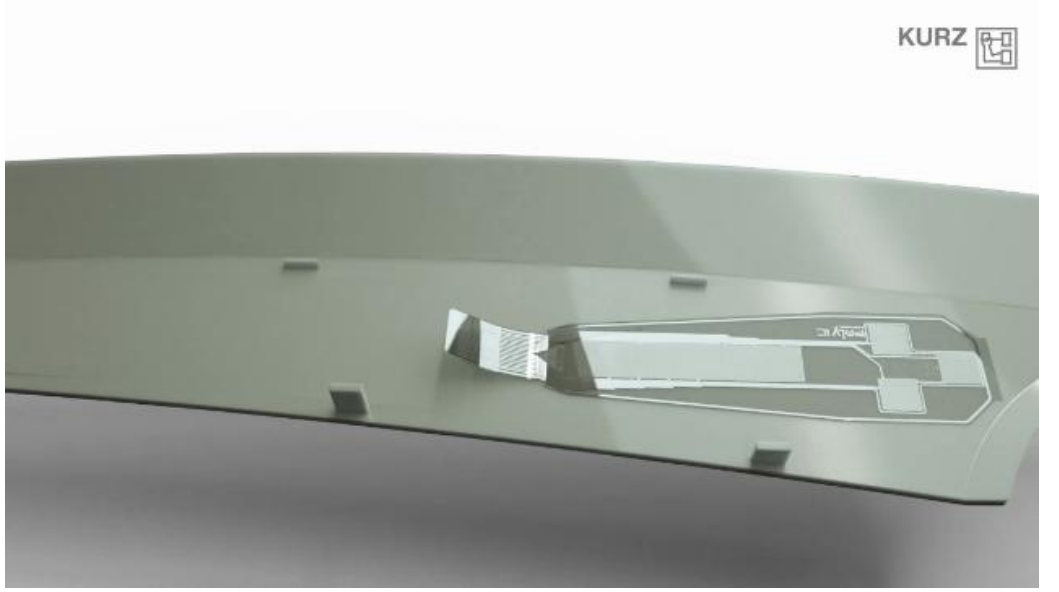




Functional Foil Bonding with
“UP & DOWN” Technology

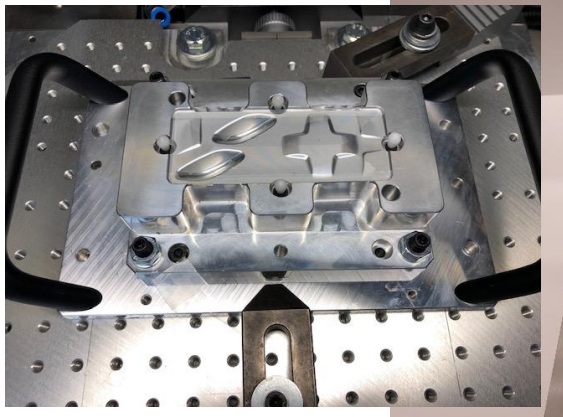


Functional Foil Bonding with
“ROLL ON” Technology



Sensor Integration FFB

- full solution from KURZ/PolyIC
- patent-registered by KURZ
- 2D to 3D shape
- to processes depending on sensor size and layout
- bonding of plastic parts with ribs or frames
- immediately ready for assembling
- applicable on different materials (e.g. PC, PMMA)
- no bubble formation
- tested for automotive, consumer and home appliance specifications



Touch Sensor Use Cases

PolyTC® Touch Sensors in Capacitive Switches in automotive HMI Applications

iX, i7

- PolyTC® Button Sensor
- Integration by FFB
- Active haptic Feedback

2 series, iX1

- PolyTC® Button Sensor
- Integration by FFB
- Passive haptic Feedback

POLY IC a KURZ company

Touch Sensor Use Cases

PolyTC® Touch Sensors in Capacitive Switches in automotive HMI Applications

e-tron

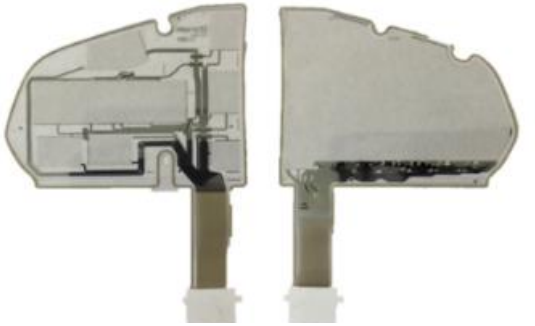
A3

- PolyTC® Button/Wheel Sensor
- Integration by mechanic fixing
- Passive haptic Feedback

LYNK&CO

01, 05

- PolyTC®
  - Right side: Matrix
  - Left side: Buttons / Slider
  - Integration by Lamination
  - Passive haptic Feedback



POLY IC a KURZ company

Touch Sensor Use Cases

PolyTC® Touch Sensors in Capacitive Switches in automotive HMI Applications

Ocean

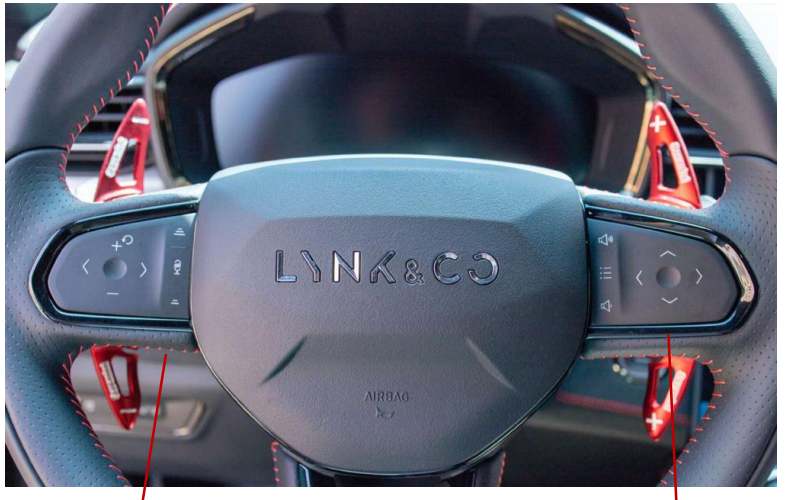
- PolyTC® Button Sensor
- Integration by FFB
- No haptic Feedback

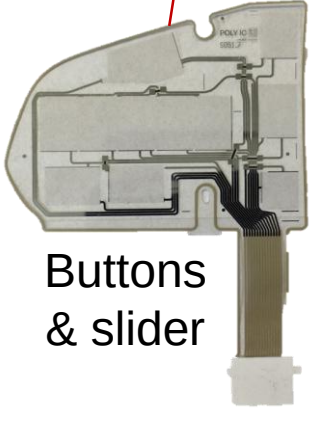
HMI Automotive Trends, case studies

Geely Lynk&Co 05 (public since 05/2020)

Capacitive Steering Wheel Switch Button with haptic feedback

- Capacitive Sensor
  - PolyTC® Technology
  - with transparent buttons/matrix area
- Function left side
  - 6 capacitive Buttons
  - 1 capacitive Slider
- Function right side
  - transparent matrix
  - Free touch function
- Haptic feedback by mechanic switch





Buttons & slider

Matrix

HMI Home Appliances

Series products

Metal-Mesh touch sensors in series products of **Home Appliance** applications








HMI Home Appliances – Series products

HMI Solutions, with PolyTC® Touch Sensors

Capacitive Touch Control for Washing machines & Laundry Dryers (IQ500 & Avantgarde)

- PolyTC® sensor
  - 7“ touchscreen for LED and LC-display
  - Single layer free programmable backgammon sensor
  - Integration by IML and OCA lamination

HMI Home Appliances – Series products

HMI Solutions, with PolyTC® Touch Sensors

Capacitive Touch Control for Washing machines & Laundry Dryers (Series 6 & 8)

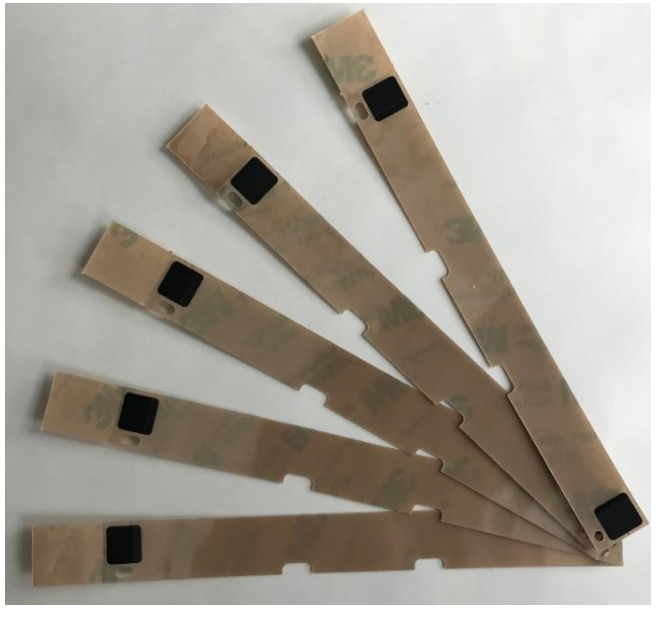
- PolyTC® sensor
  - 7“ touchscreen for LED and LC-display
  - Single layer free programmable backgammon sensor
  - Integration by IML and OCA lamination

HMI Home Appliances – Series products

HMI Solutions, with PolyTC® Touch Sensors

Capacitive Touch Control for Oven

- PolyTC® sensor
  - transparent buttons/slider areas
  - Backgammon functionality
  - PSA integration



HMI Home Appliances – Series products

LIEBHERR

HMI Solutions, with PolyTC® Touch Sensors

Capacitive Touch Control for Refridgerator

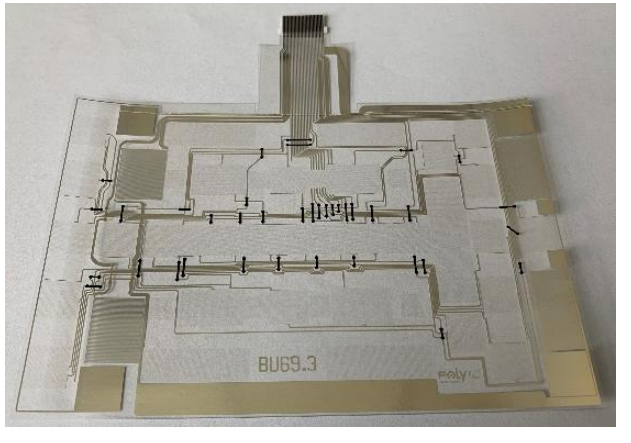
- PolyTC® sensor
  - Self-capacitance button sensor
  - transparent buttons/slider areas
  - OCA integration by lamination

HMI Home Appliances – Series products

BORA CLASSIC 2.0

Capacitive Touch Control for Ceramic Glass Cooktop

- Capacitive Sensor
  - mutual capacitance matrix
  - transparent buttons/slider areas
  - PSA integration
- Function
  - 22 capacitive Buttons
  - 1 capacitive Slider
  - additional sensor fields

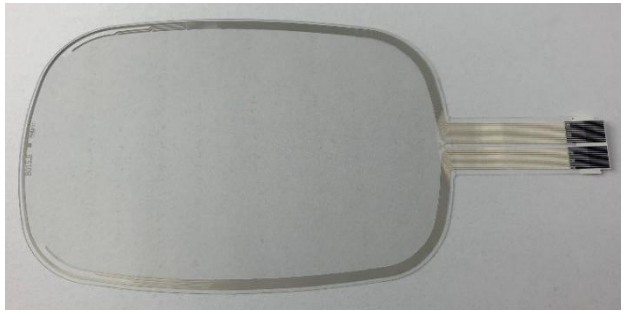


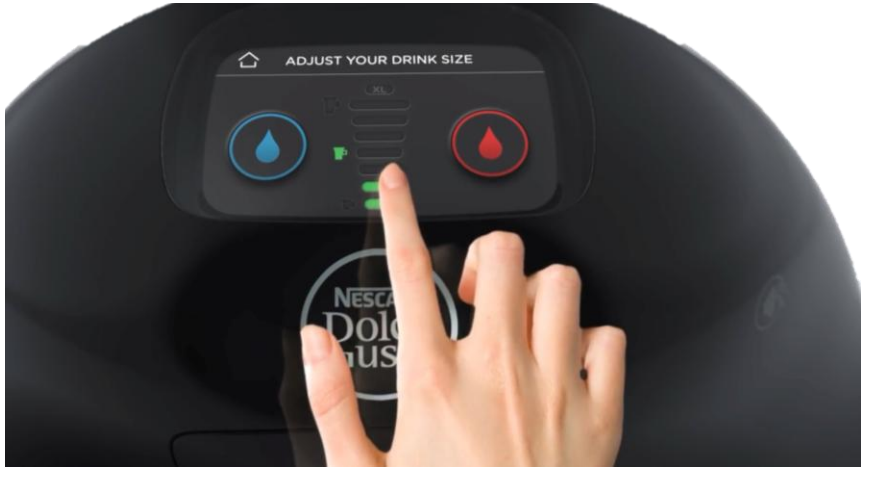
HMI Consumer– Series products

Nescafé Dolce Gusto Majesto

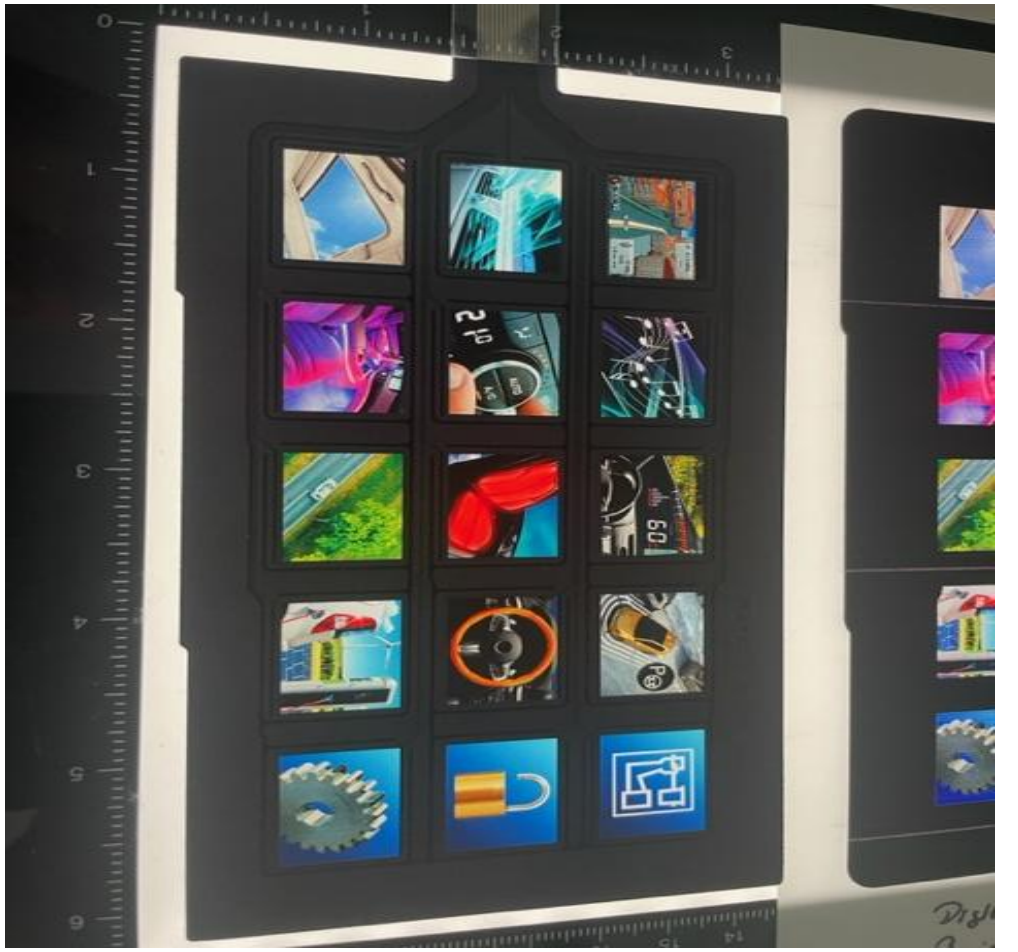
HMI – Curved Touchscreen Sensor for Coffee Machine

- PolyTC® touchcreen sensor
  - Transparent touchscreen
  - oval sensor shape
- Function
  - single layer, single finger
- Panel
  - 2.5D curved panel
  - thick overlay for 3D effect
- Sensor integration
  - OCA lamination integration





PolyIC + Decor Technologie

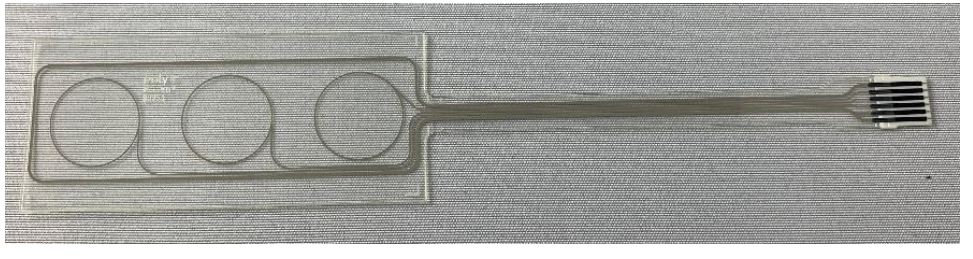


HMI Consumer – Series products

proWIN Airbowl Premium / airvenue Lufterfrischer

Capacitive Touch Sensors for Air Freshener

- 2 identical capacitive sensors
  - PolyTC® Technology
  - transparent buttons
- Function
  - 3 capacitive Buttons
  - self capacitance
- Sensor integration
  - PSA integration / Lamination

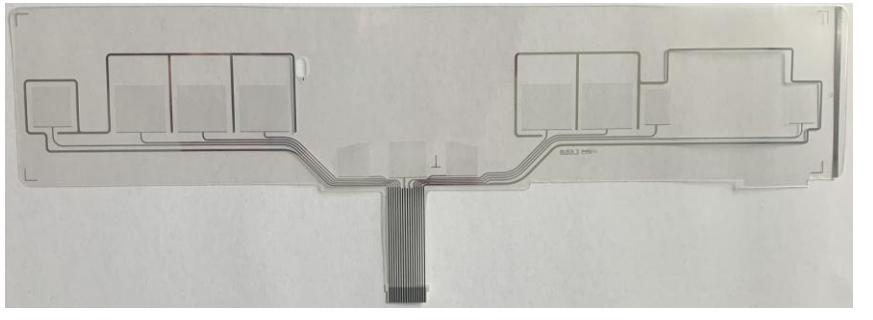


HMI Home Appliances – Series products

HMI Solutions, with PolyTC® Touch Sensors

Capacitive Touch Control for Waterheater

- Capacitive Sensor
  - Self-capacitance button/wheel sensor
  - transparent buttons/slider areas
  - Integration by lamination

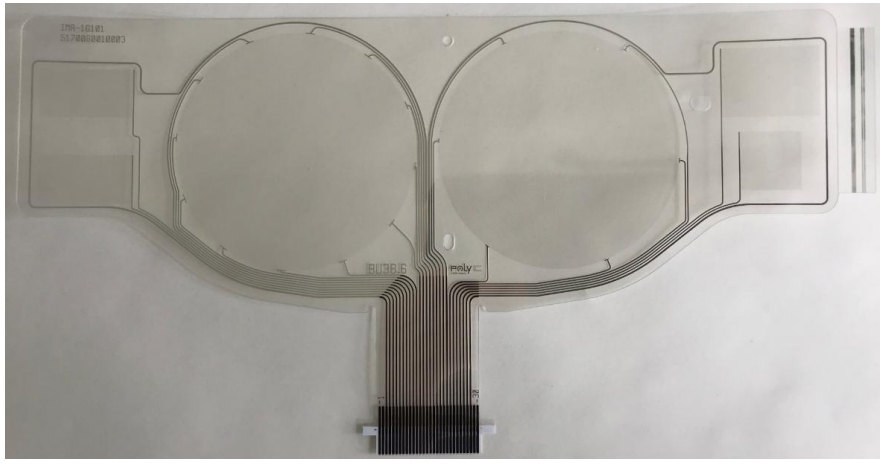


HMI Home Appliances – Series products

HMI Solutions, with PolyTC® Touch Sensors

Capacitive Touch Control for Waterheater

- Capacitive Sensor
  - Button and Wheel Sensor
  - Self-capacitive
  - transparent buttons/slider areas
  - Integration by lamination
- Function
  - 4 capacitive Buttons
  - 2 capacitive Sliders



Innovations: In-Mold Electronics & Functional Foil Bonding

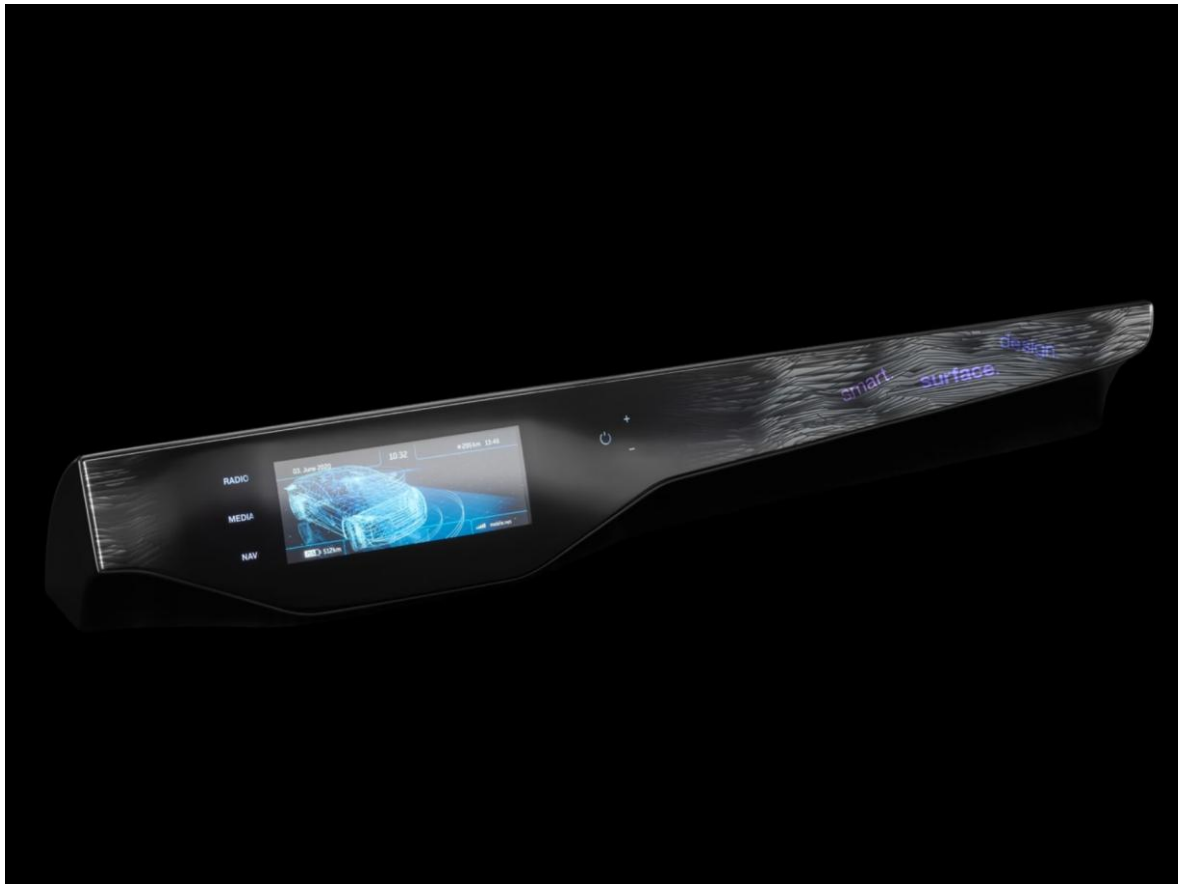
Concepts with Infotainment, Decor and Lighting

HMI instrument panel

- >90 cm with curved surface
- Seamless integration of display, light & function
- IMD single picture decoration
- Touch screen sensor integration by IME
- Touch buttons & slider sensor integrated by FFB

Innovations: In-Mold Electronics & Functional Foil Bonding

Concepts with Infotainment, Decor and Lighting



HMI instrument panel

- Award winning concept

reddot winner

Innovative product

POLY IC a KURZ company

Innovations: New Concepts

Concept with Infotainment, Decor and Lighting

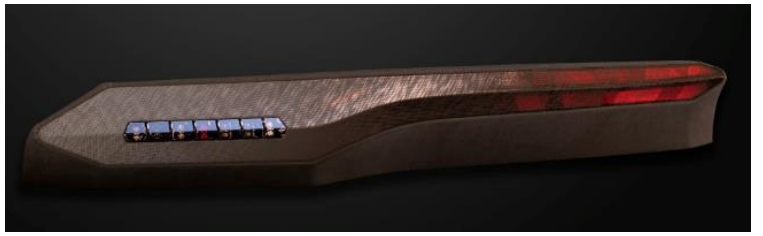
Smart Crystal Panel

Combination of

- glass crystals
- decoration
- light
- touch function

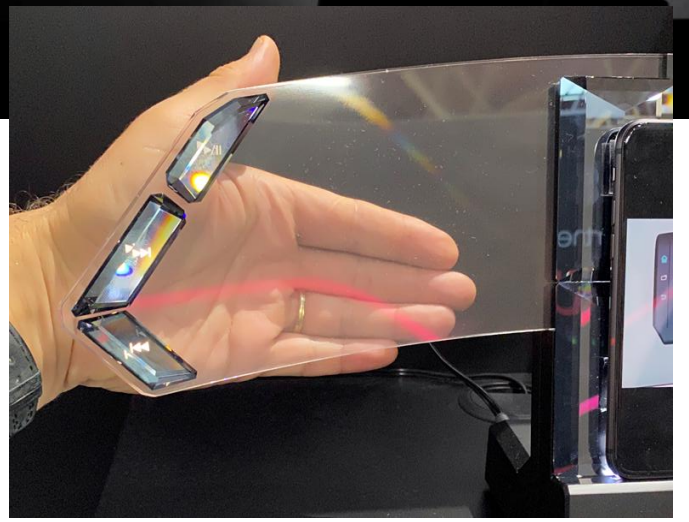
Partners:

- KURZ, BurgDesign, PolyIC
- Swarovski



Innovations: New Concepts

Concept with Infotainment, Decor and Lighting



Transparent Steering wheel switch study

Combination of

- Glass Crystals
- Transparent Conductive Touch Films
- Transparent Hard Coat

Partners:

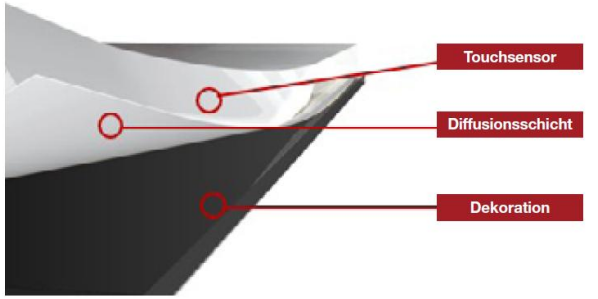
- KURZ, PolyIC
- Swarovski

Innovations: PolyTC® VarioSym

PolyTC® Sensors with diffusion layer and lasered symbols on decoration

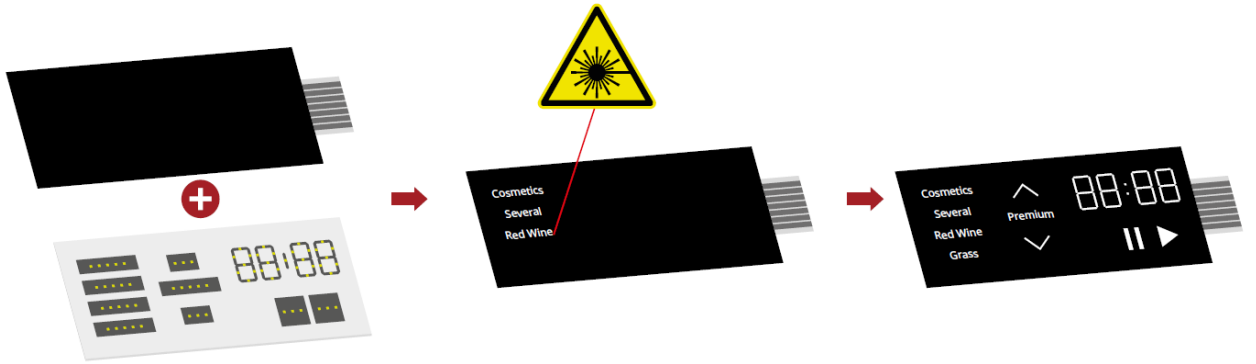
Setup

- PolyTC® Sensor
- Diffusion layer
- Decoration layer



Process

- Delivery of Label without Symbols
- Lamination of Label on Light Guide
- Individual Lasering of Symbols



Display-like appearence behind smoked Panel

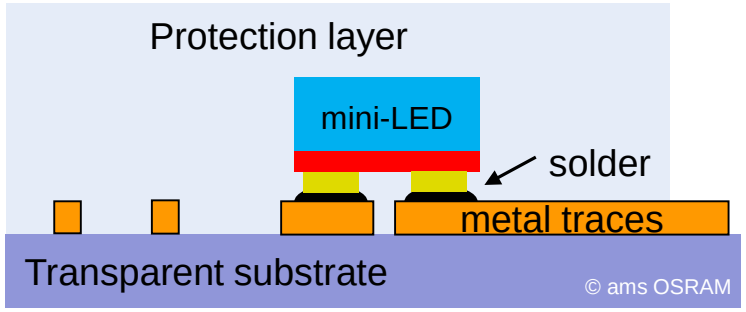
Off

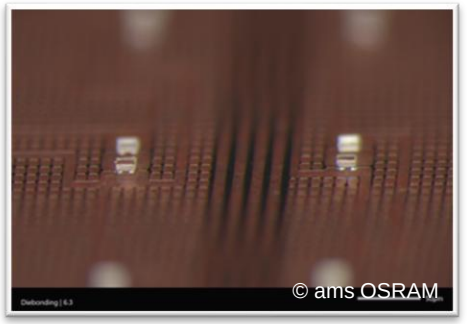
On

POLY IC a KURZ company

Light Integration with FFB

Kurz & ams Osram – FFB and ALIYOS™ – better together

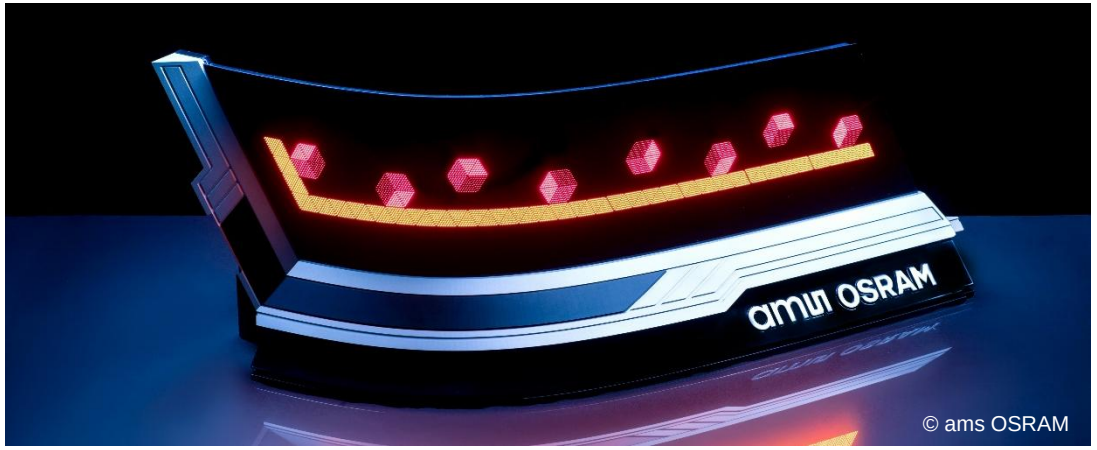




- Light
- Thin
- Bright
- Transparent
- Flexible
- Freedom of Design

Light Integration with FFB

Kurz & ams Osram – FFB and ALIYOS™ – better together



- Combination of the benefits from ALIYOS™ and FFB

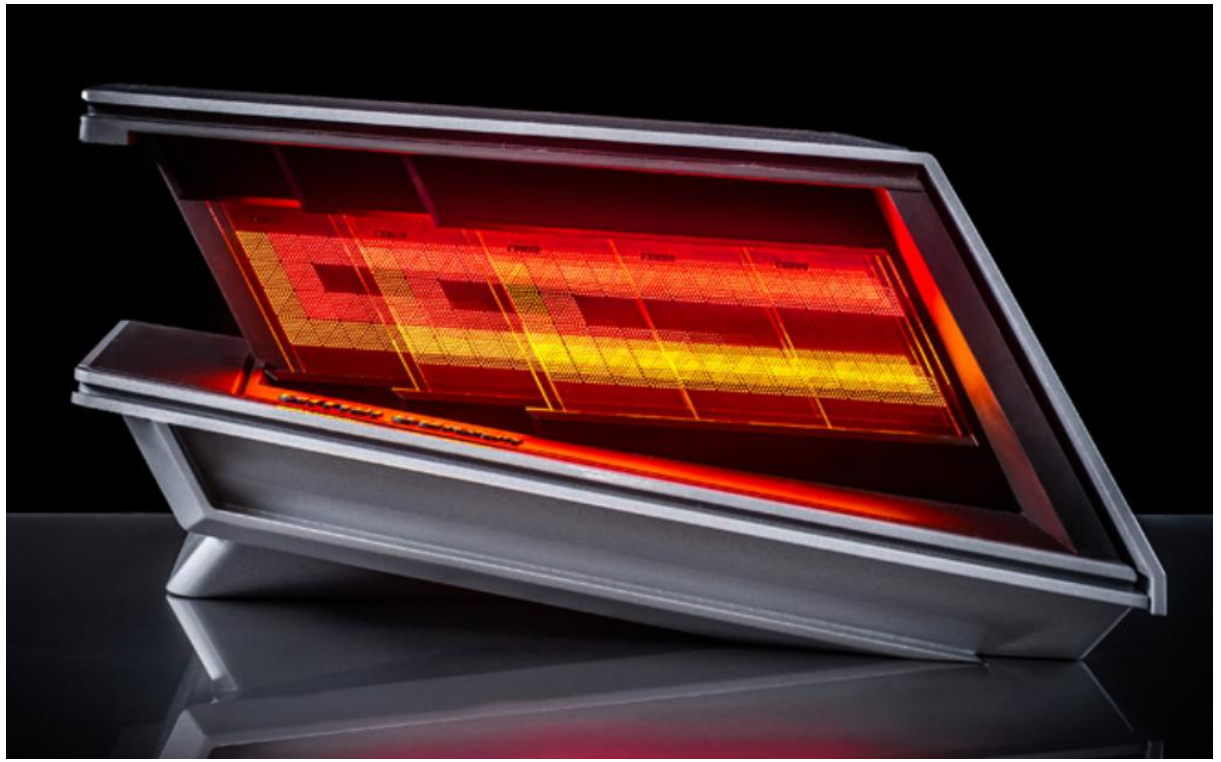
ALIYOS™ LED-on-foil technology by ams OSRAM

Functional Foil Bonding process by KURZ

- First lifetime tests successfully passed
- Complete validation started
- Ready for design-in as of today

Light Integration with FFB

Kurz & ams Osram – FFB and ALIYOS™ – better together



DecoPress NFPP

Natural Fibers

- low density
- fiber reinforcement
- Regrowing

+

PP-Fibers

- thermoplastic
- short cycle times
- reasonable

General Information

Fibers are Flax, hemp, kenaf, jute and sisal and mixes

Fibre selection determines component appearance

NFPP offers:

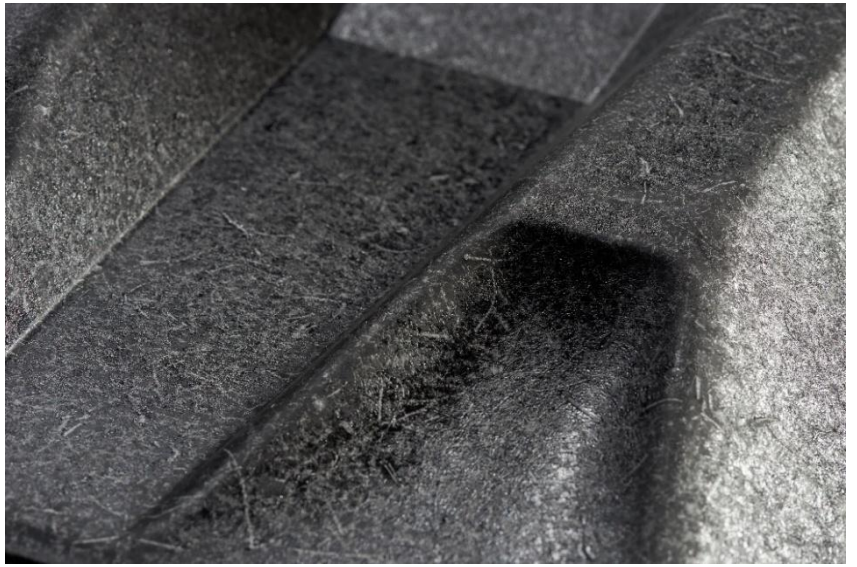
- better crash behaviour, even at temperatures below -20°C
- Weight saving of 15-40% possible
- better acoustic insulation of driving and engine noise

NFPP Process

Natural Fibers and PP (NFPP)

Decoration of natural fiber composite material

Optical Part Design Guideline - Fibers



- Fiber: Flax (Natural)
- Grammage: 1800 g/m²
- Foil: Dual Colour
- PP-Backing: Black
- Decor: Silver Pigemented

- Fiber: Kenaf (Cleaned)
- Grammage: 1800 g/m²
- Foil: Dual Colour
- PP-Backing: Black
- Decor: Silver Pigemented

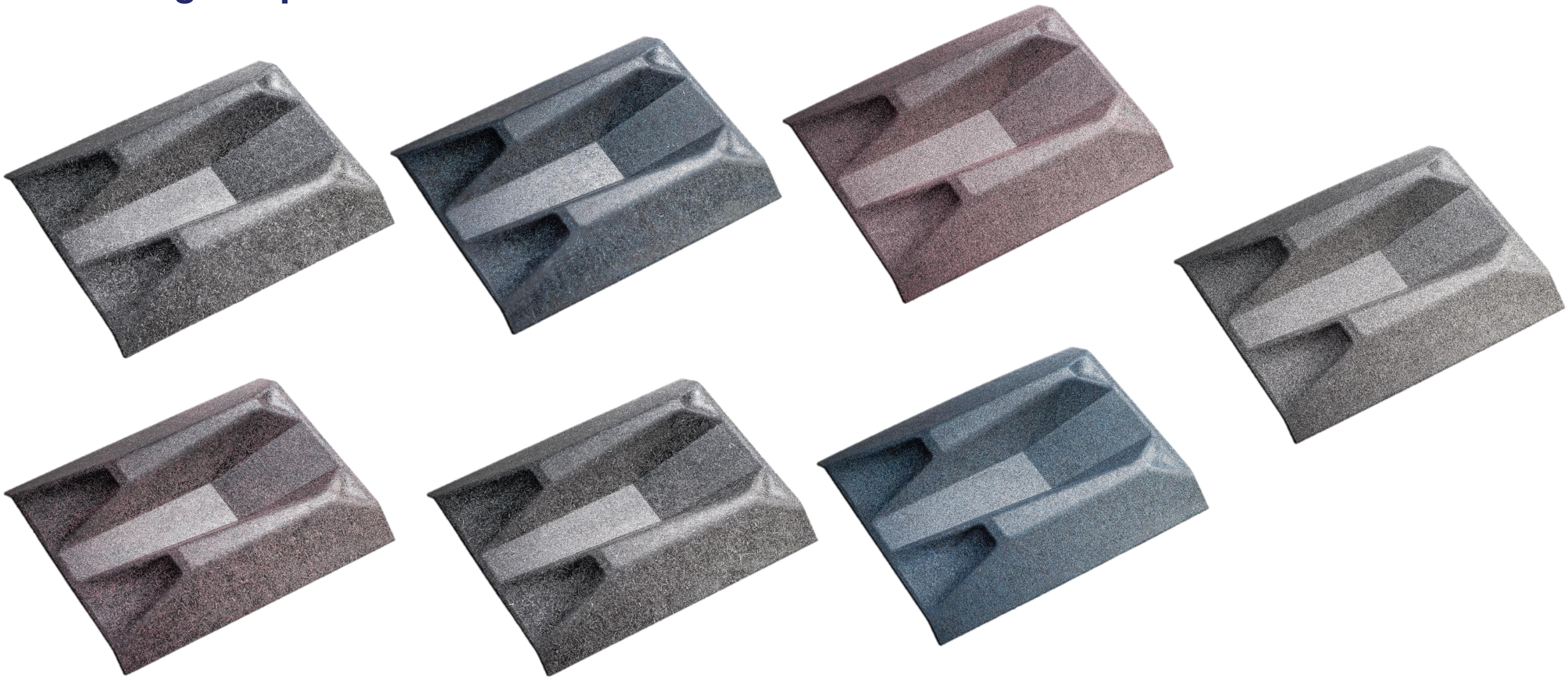
Optical Part Design Guideline - Foil

- Fiber: Flax (Natural)
- Grammage: 1800 g/m²
- Foil: Dual Colour
- PP-Backing: Black
- Decor: Red pigmented

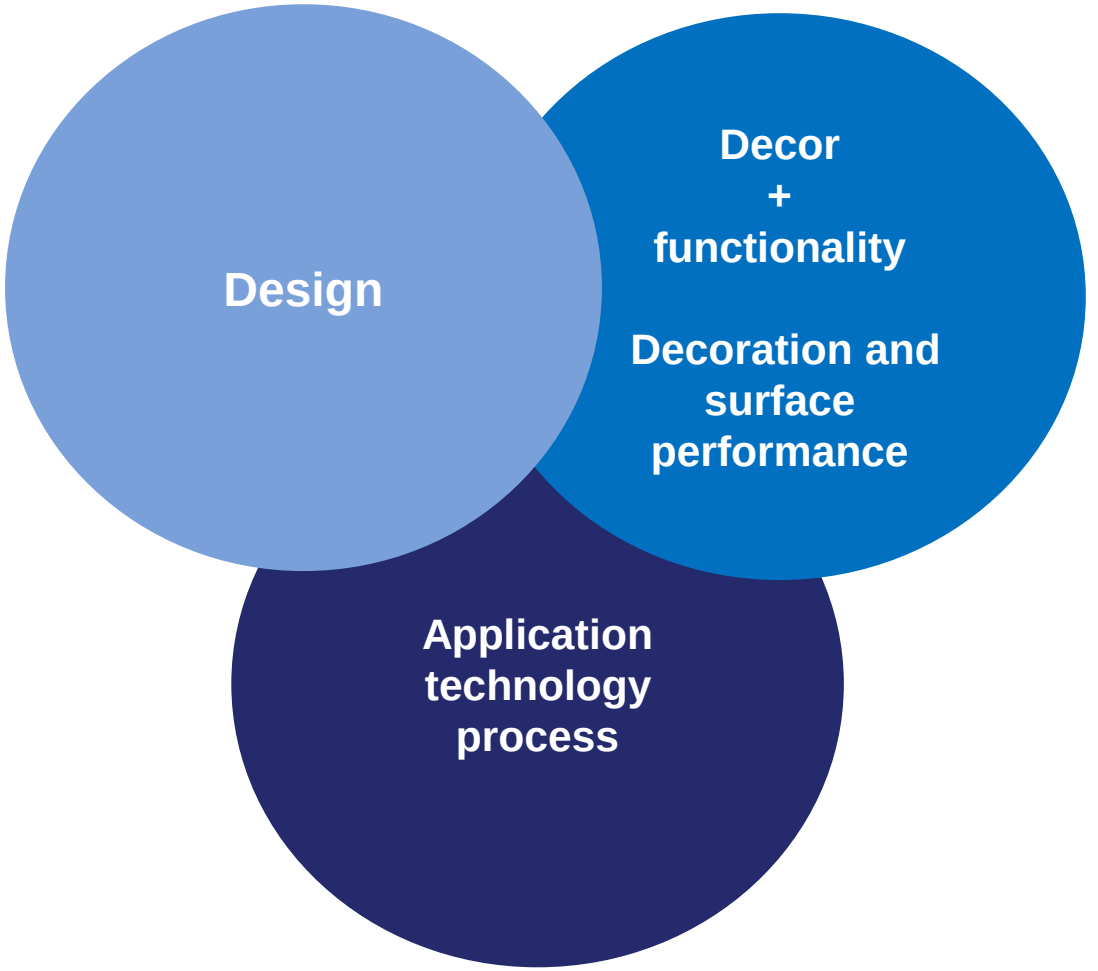
- Fiber: Kenaf (Cleaned)
- Grammage: 1800 g/m²
- Foil: Single Colour
- PP-Backing: Transparent
- Decor: ochre red

- Fiber: Kenaf (Cleaned)
- Grammage: 1800 g/m²
- Foil: Natural Pattern
- PP-Backing: Transparent
- Decor: Technical Rain

Design Impressions – Dual Colours



Customer Focused Development

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Thank YOU for YOUR Attention !

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