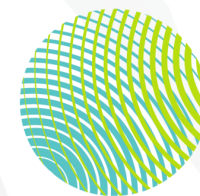


# ColorFuse™ - IMC In-Mold-Coating

2023



**Techniplas**  
Destination: ne>>xt level

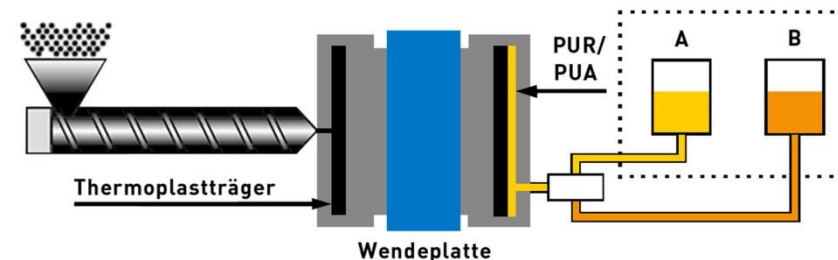
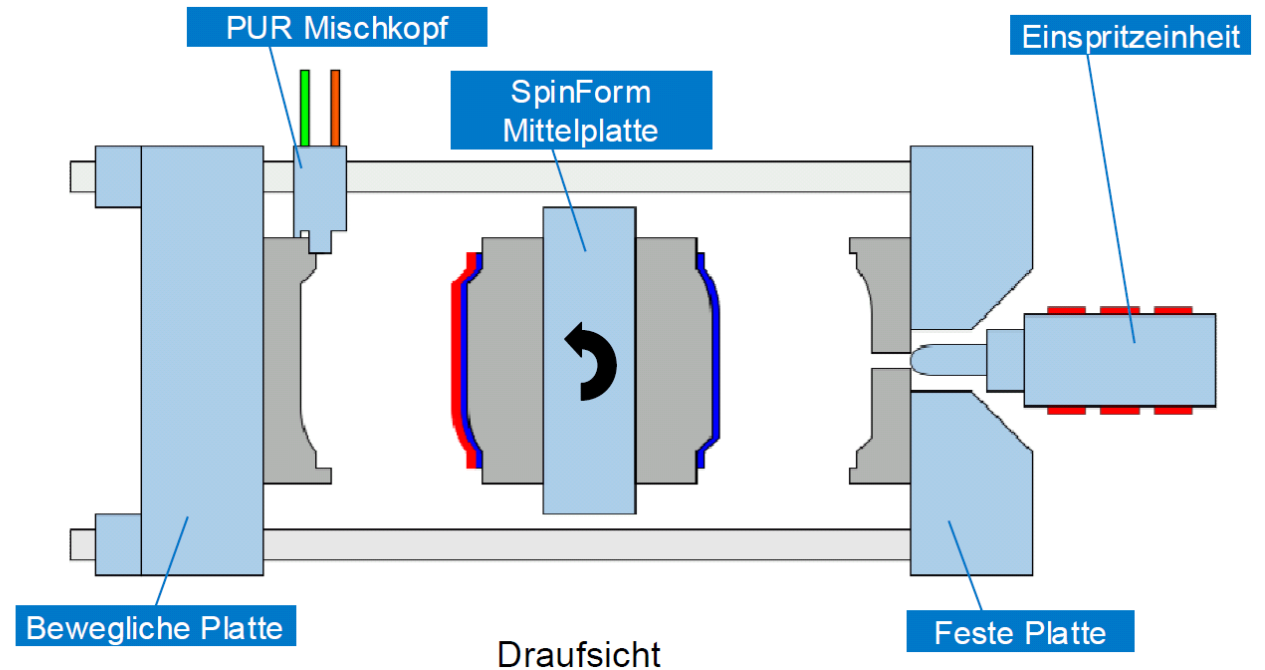
# What is meant by ColorFuse Technology?

## «ColorFuse» is

- Paint application in the closed mold (In-Mold-Painting)
- Combination of injection molding and reaction technology
- Over-flooding process comparable to 2-shot-injection

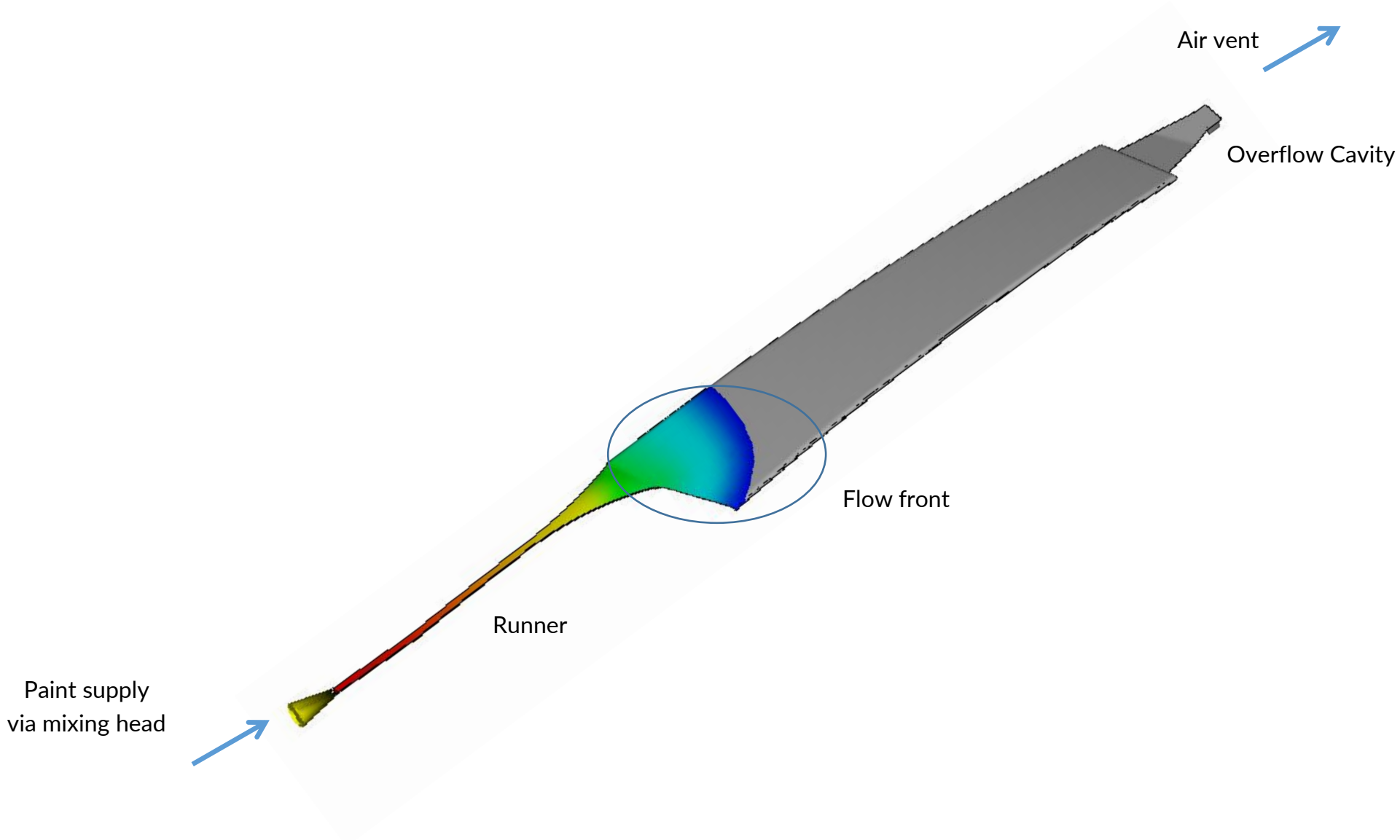
## Process description

- Injection of the thermoplastic carrier component
- Conversion of the component into the lacquer cavity
- Flooding of the component with lacquer and simultaneous injection of a new carrier component

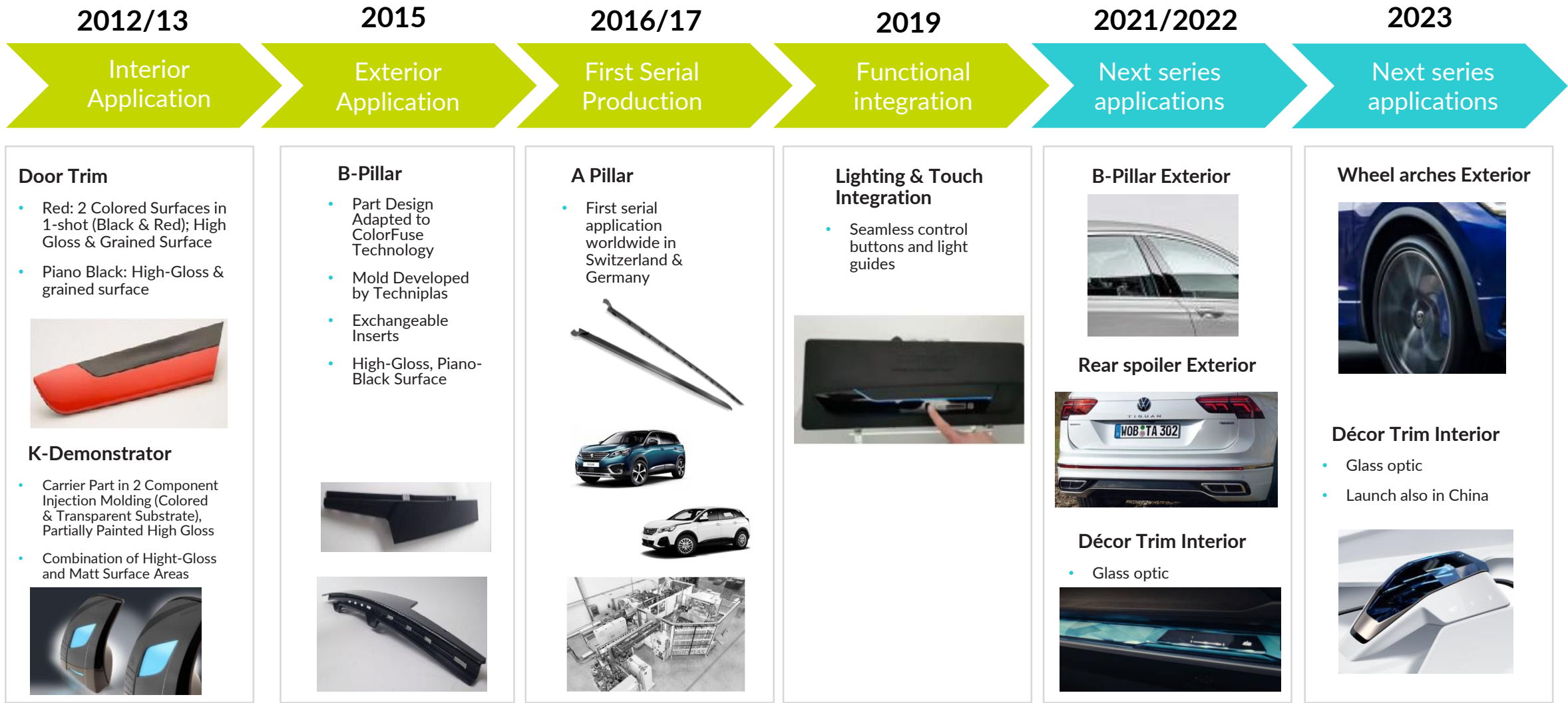


Source: KraussMaffei / WEIDPLAS

# Overflooding Process in PUX-Cavity



# ColorFuse - Evolution



# ColorFuse – Series applications

A-Pillar Exterior



B-Pillar Exterior



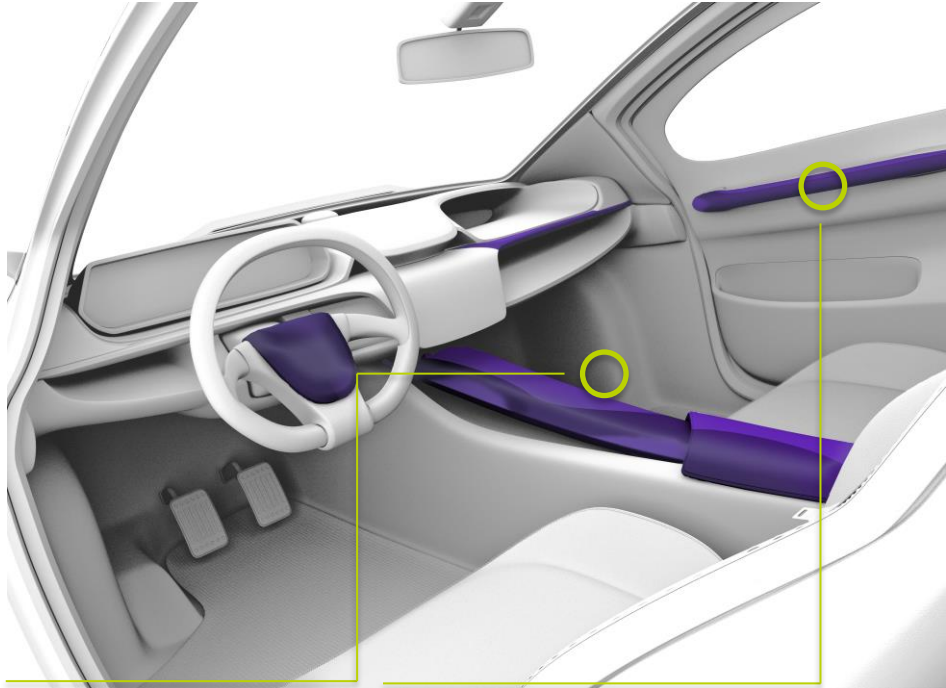
Bumper Inserts Exterior



Décor Trim Interior  
Glass optic



# Superior Surface Applications



# Which additional Equipment is required?

## PUx Dosing Equipment

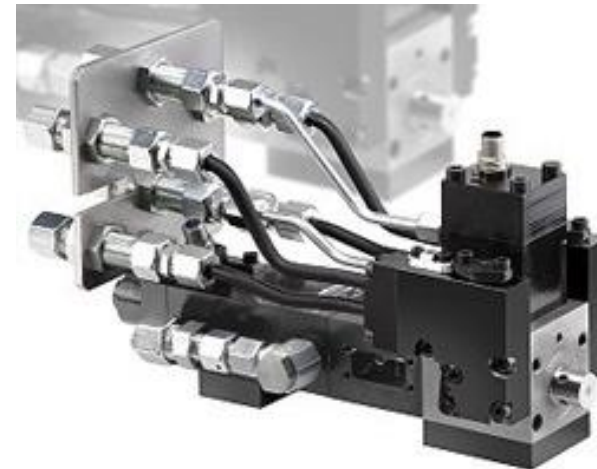
- Dosing tanks for each component
- High pressure dosing pump for each component
- Preparation of fluids: heating and homogenizing
- High pressure circulation



PU Dosing Equipment; Source: KraussMaffei

## Mixing Head

- 2-way or 3-way mixing head
- Interface between PUx equipment and mold
- Mixing of both components
- Lacquer injection into mold cavity
- Cleaning piston

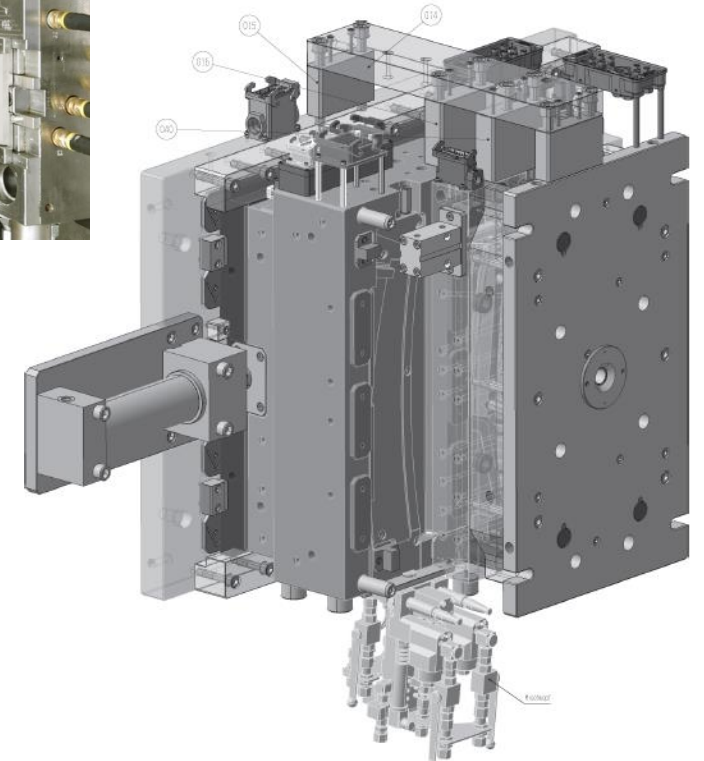
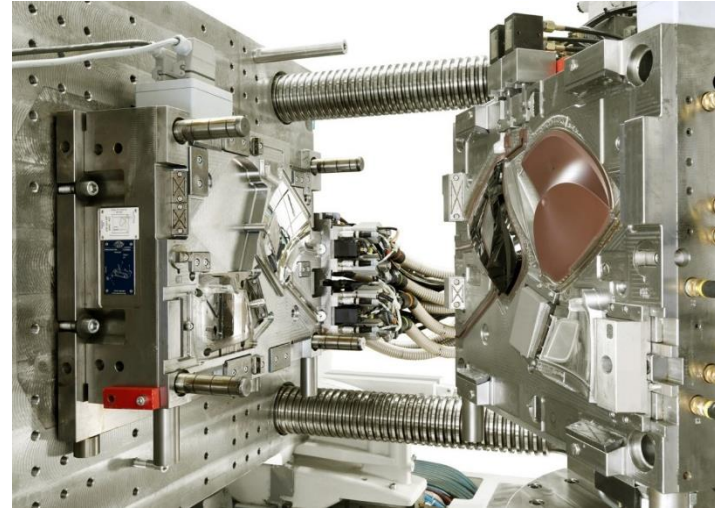


Linear Mixing Head; Source: KraussMaffei

# Which additional Equipment is required?

## Mold Design

- Possible mold concepts:
  - Sliding Table
  - Rotary Table
  - Spin Form
- Injection cavities for the carrier plus over flooding cavities for the lacquer system



## Specific Devices / Know-How

- Sprue geometry
- Overrun cavities
- Accurate sealing of lacquer cavity
- Venting
- Quality of cavity surface defines final surface quality



# What are the Advantages of ColorFuse?

## New Design Possibilities

In comparison with wet painting

## Realization “Smart Surfaces”

Integration of lighting and functions

## Excellent Material Performance

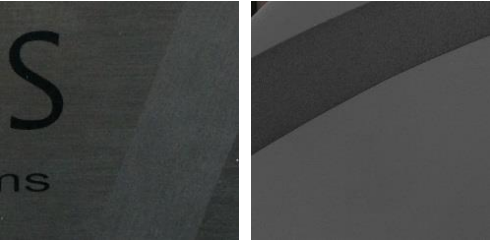
In comparison with wet painting  
(without UV-curing lacquers)  
& PMMA-applications

## Cost Saving

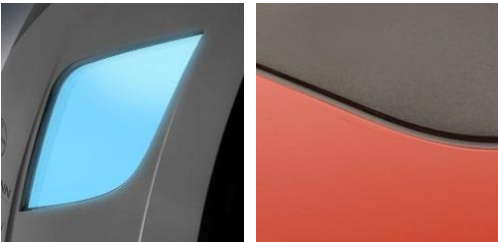
In comparison with wet painting

## Sustainability

# New Design Possibilities



Multi-Textured Surfaces



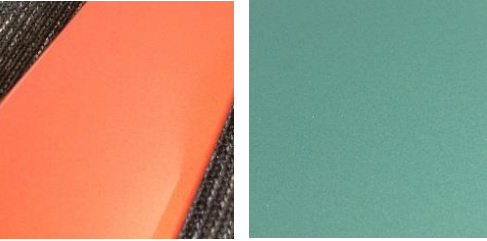
Small radii & sharp edges  
( $r \geq 0$ )



1-shot bi-colouring



Sharp edges & small radii



Transparent & metallic lacquer

# New Design Possibilities

## Colored PUR- / PUA-systems

- RAL-colors possible
- Metallic colors possible



## Transparent PUR-/PUA-systems

- Combination with plastic foils
- Combination with "Mold In Color"
- Glass optic with depth effect



Prototype «KUZ-Leipzig»



Prototype «KURZ»

# Individualisation with ColorFuse

Downstream options:

- Laser texturing
- Digital Print



# What are the Advantages of ColorFuse?

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In comparison with wet painting  
(without UV-curing lacquers)  
& PMMA-applications

## Cost Saving

In comparison with wet painting

## Sustainability

# Realization “Smart Surfaces”

## Functional Demonstrator “DoorTrim”

- Integration of lighting and functions
- Scratch resistant surface in touch area
- self healing effect possible (not possible with thermoplastic surfaces like PMMA)



# What are the Advantages of ColorFuse?

## New Design Possibilities

In comparison with wet painting

## Realization “Smart Surfaces”

Integration of lighting and functions

## Excellent Material Performance

In comparison with wet painting  
(without UV-curing lacquers)  
& PMMA-applications

## Cost Saving

In comparison with wet painting

## Sustainability

# Excellent Material Performance



Mechanical toughness & surface hardness



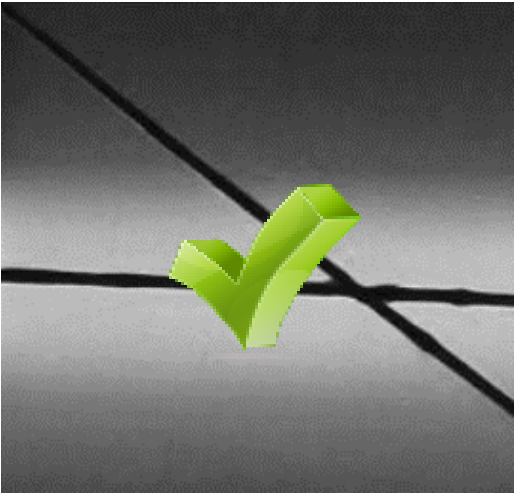
Chemical fluids proofed



Robustness against cosmetic lotions



Environmental durability

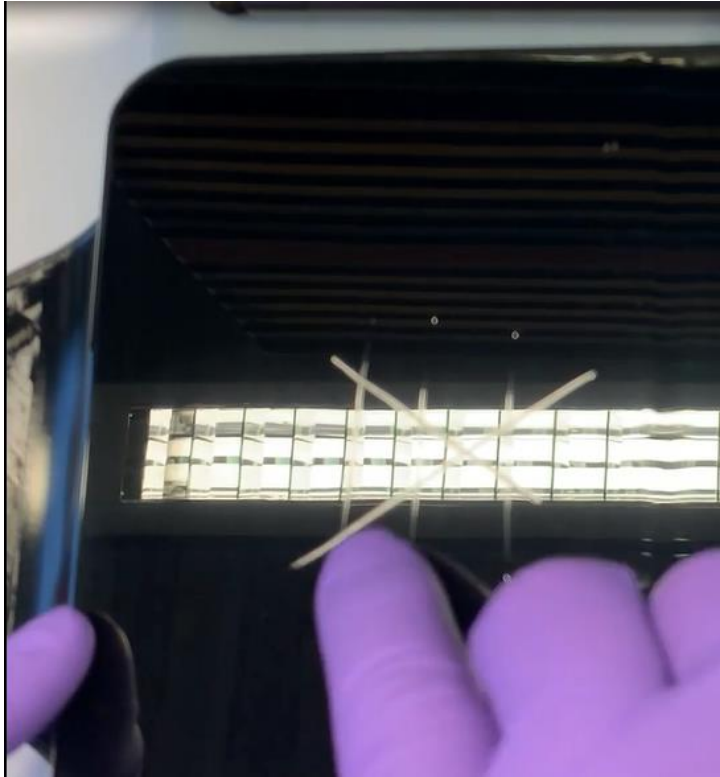


Self-healing properties



# ColorFuse – Reflow

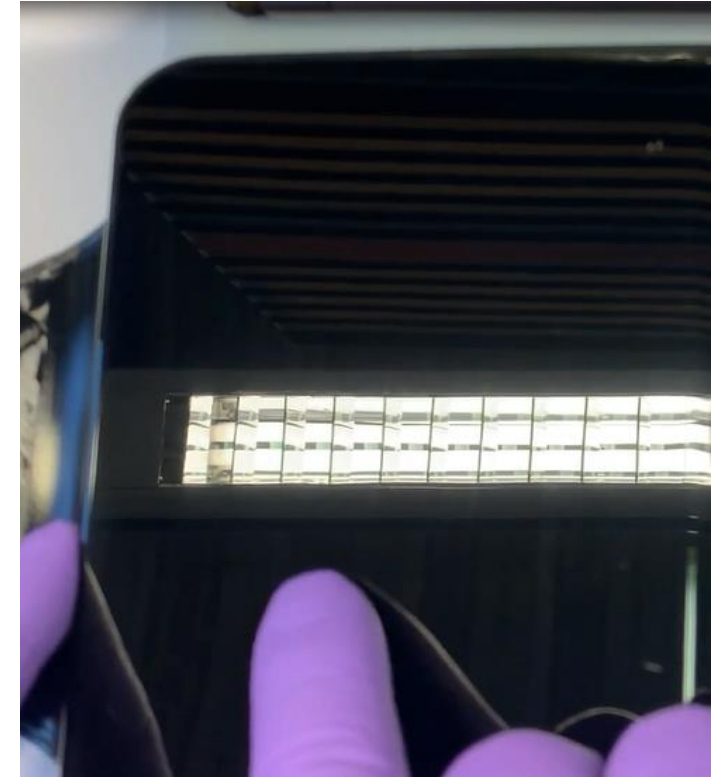
 Realization self healing properties:



Erichsen Pen 0,75mm spike  
Scratches with 20N



Temperature 60°C



Healed surface without scratches

# What are the Advantages of ColorFuse?

New Design  
Possibilities

In comparison with

Realization  
“Smart Surfaces”

Integration of lighting and  
functions

Excellent Material  
Performance

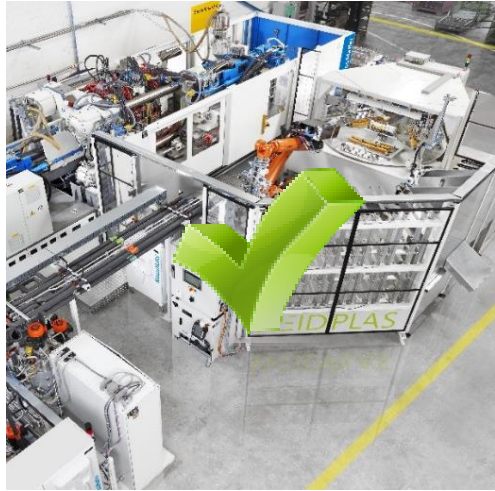
In comparison with wet painting  
(without UV-curing lacquers)  
& PMMA-applications

Cost Saving

In comparison with wet painting

Sustainability

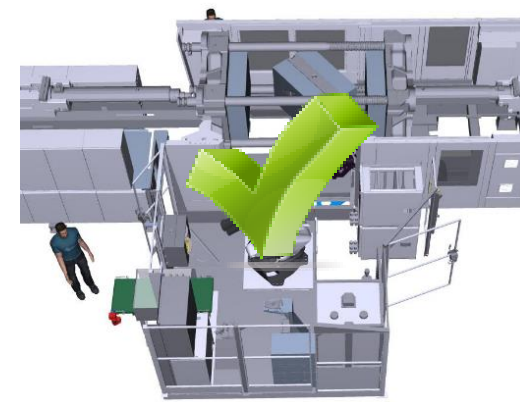
# Cost Saving in comparison with wet painting



lower investment with compact production cell



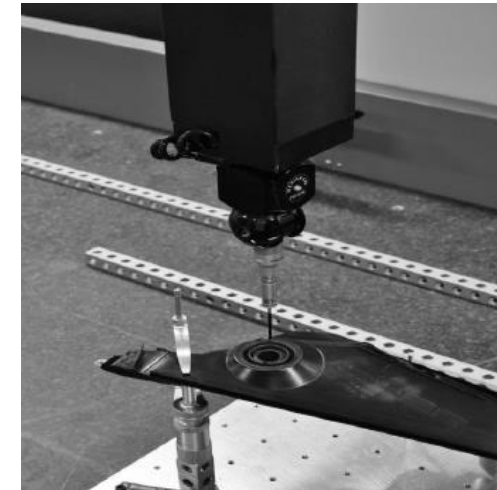
Lower costs due less logistic & handling



One-piece flow with full automatization



Efficient production of components in one process step (one-shot-process)



Lower rejection rate

# What are the Advantages of ColorFuse?

## New Design Possibilities

In comparison with wet painting

## Realization “Smart Surfaces”

Integration of functional

## Excellent Material Performance

In comparison with wet painting (at UV-curing lacquers)  
MMA-applications


## Cost Saving

In comparison with wet painting


# Sustainability

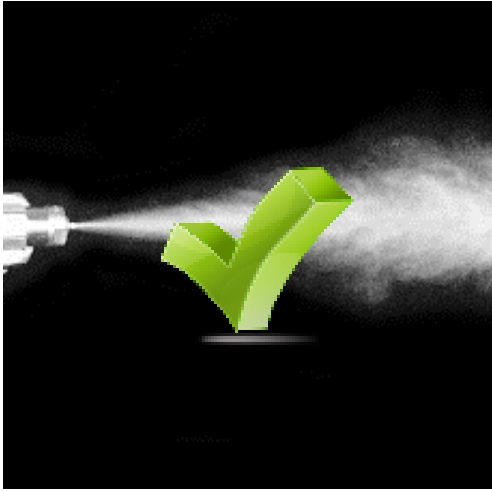
# ColorFuse & Sustainability




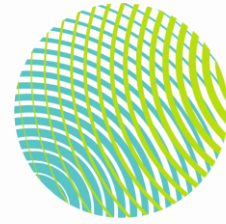
 Ecological sustainability



 Recycles as substrate material /  
PP substrates for lower  
CO2 Footprint /  
Biobased Materials



 No overspray



# Techniplas

Destination: ne>>xt level

## Contact

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# Techniplas

Destination: ne>>>xt level

Next generation products,  
systems and surface solutions

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