

JOINT PROJEKT



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Detailed project information

**13th Project**

# **Surface Treatment of Plastic Moulded Parts**

**Carbon Footprint and Saving Potential  
Analysis | EcoDesign | Trends**

## CONTENT

How sustainable are coated surfaces? What product carbon footprint (PCF) do various finishing processes have? What process parameters do have an impact on the PCF and how can this impact be reduced? Research on sustainable plastic materials and coatings is included as well as process combinations and material flows and supply. The basics of EcoDesign will be provided and Life Cycle Analysis will be performed. The basis for the investigations will be components and production processes provided by the project participants.

## WHY YOU SHOULD ATTENT

- Identification and use of saving potentials
- Knowledge gain and experience in calculation of Carbon Footprint
- Competitive advantage through expertise in use of sustainable materials and processes for your products
- Proof of early activities on sustainability activities and reports for current and future legislation
- Capacity building with minimal personnel and cost effort
- Access to an interactive information and sharing platform exclusively for the project group
- membership in an extensive and strong network – because it is more effective to work on tomorrow's challenges together

## INFORMATION

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## PROJECT DATA

Title:	Surface Treatment 13
Start:	September 2024
Terms:	2 Years
Costs:	5.600 €/Year* incl. Hour Pool 7.900 €/Year*

Invoices are issued in two instalments. The first instalment due on start of the project, the second one is payable after one year.

\*Member companies of the supporting organisation of the Kunststoff-Institut Lüdenscheid will have to contribute ten percent less.

### Data protection regulations:

The responsibility for the consignment of this flyer lies with the Kunststoff-Institut Lüdenscheid. The consignment was made because of your interest in news concerning our company. More information about data collection can be found on [www.kimw.de](http://www.kimw.de). You also have the right to object at any time to the processing of personal data for this purpose. Please send the objection to Kunststoff-Institut Lüdenscheid, Karolinenstraße 8, D-58507 Lüdenscheid, Phone +49 2351 1064-191 or [mail@kimw.de](mailto:mail@kimw.de). For more information about data protection please contact [datenschutz@kimw.de](mailto:datenschutz@kimw.de).

# Surface Treatment of Plastic Moulded Parts 13

Carbon Footprint and Saving Potential Analysis |  
EcoDesign | Trends



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INSTITUT  
LÜDENSCHIED



# Trend Overview



BMW i5 M60 xDrive | IAA 2023



LEONHARD KURZ Stiftung & Co. KG | Fakuma 2023



Cupra RAVAL | IAA 2023



BYD Seal | IAA 2023



Woodio Sink | ISH 2023



Mercedes-Benz Concept CLA | IAA 2023 | © image Car Men



Continental Hidden Display | IAA 2023 | © image Car Men



Midea Washer Dryer | IFA 2023



Washing Machine Control Panel CHIQ | IFA 2023 | 2

# Drive together into a sustainable future!



- ▶ How sustainable are coated surfaces?
- ▶ What product carbon footprint (PCF) do various finishing processes have?
- ▶ What process parameters do have an impact on the PCF and how can this impact be reduced?
- ▶ What are the saving potentials of your coated products?

## ▶ **CO<sub>2</sub> and Saving Potentials**

- Calculation of Carbon Footprints of defined coating processes and process combinations
- Determination of influencing parameters and their influence
- Account of the Product Carbon Footprint of various surface technologies like IMC, IMD/FIM, Spray Coating, Printing, Combination with Foaming, ...)
- Research and data collection of sustainable materials, processes and material flows

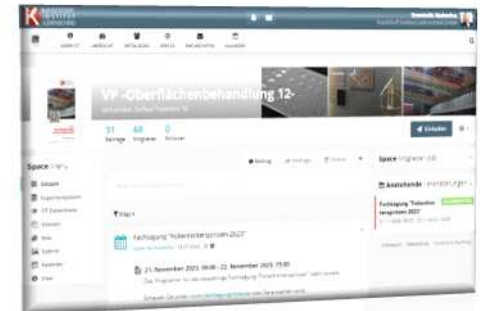


## ▶ **EcoDesign and Chances**

- Provision of EcoDesign basics for coated parts
- Early determination of trends and market developments
- Use of creative work practices (Design Thinking, ...) with the project group
- Technology- and trend reports from leading trade fairs such as IAA, IFA, ISH, Fakuma and many more
- Confident assessment and application of the major project topics
- Networking between the participating companies

# Motivation for Participation

- ▶ Identification and use of saving potentials
- ▶ Knowledge gain for a proficient approach on calculation of CO<sub>2</sub> footprints
- ▶ Competitive advantage through knowledge about use of sustainable materials and production processes for your products
- ▶ Proof of early activities on sustainability activities and reports for current and future legislation
- ▶ Development of competencies with a minimum of personnel expenses and costs
- ▶ Periodic surveys and discussions about the companies' demands
- ▶ Networking between the participating companies (currently 32 companies)
- ▶ Access to a project related online platform for networking surveys and news sharing
- ▶ Access to results of former project terms (more than 20 years)



# The Theory of Carbon Footprint

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- ▶ Introduction in the basics of calculation
  - Product Carbon Footprint (PCF)
  - Life Cycle Assessment (LCA)
- ▶ Knowledge sharing concerning legal requirements (Reporting)
- ▶ Increasing recycling rates and withdrawal requirements
- ▶ Bio-based versus fossil materials
- ▶ Analysis of the calculations and development of improvals
  - Identification of saving potentials (materials, machines, tools, process)
  - Assessment of improvals and their interdependencies
  - Redesign of components for a more sustainable assessment





- ▶ Choice of processes and comparison
  - Carbon footprint and LCA for approx. 10 coating processes
  - Procurement and production of components
    - Analysis based on product data and process data from the participating companies
    - Investigation on process combinations  
e.g. foaming combined with IMC and FIM, spray coating, ...
    - Comparison with uncoated parts  
(lifetime → effects on CO<sub>2</sub> footprint)
  - Variation of process parameters of 2-3 processes to analyse the influencing factors (layer thickness, temperature, drying / curing time, ...)
  - Endurance testing (scratch or abrasion resistance of coated and uncoated parts)



# What are the Sources of Materials?

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- ▶ Research on exemplary products from the project participants
  - Sustainable base and coating materials
  - Recycling possibilities for coated components
  - Availability of recycled materials and quality assurance
- ▶ What material flows are available and what is the state of developments
- ▶ Risk assessment of the availability
  - Short term
  - Long term
- ▶ Preparation für planned recycling rates and therewith ensuring delivery capability



- ▶ Basic seminars, lectures and workshops
  - Design for recycled materials
  - Upcycling, Downcycling, End of Life
  - Material change vs. bonding agents
- ▶ Knowledge sharing concerning new regulations
  - EU Ecodesign Directive
- ▶ Development of new concepts
- ▶ Assessment of the concepts with regards to carbon footprints
- ▶ Benchmarking with other branches within the project group



- ▶ ...of the leading trade fairs for surface technologies
  - IAA, CES, IFA, PMS, Fakuma, „K“ and other congresses

## Trends – IFA 2023



Miele Duoflex HX1 | vacuum cleaner

## KURZ / Deckerform – IMD

- ▶ Leichtbau-Türzierleiste für E-Mobility
- ▶ 5G-fähiges Bauteil (IMD-Folie I)
- ▶ Gewichtsreduktion 10-15%
- ▶ CO<sub>2</sub>-Fußabdruck 70% reduziert
- ▶ Post-Industrial-Rezyklat PIR-PC



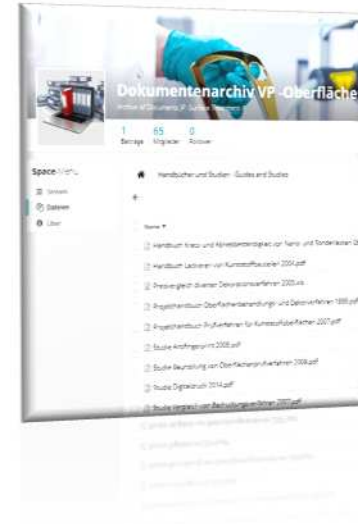
## Trends – IAA 2023



Dongfeng Forthing U-Tour

# Other Project Services

- ▶ Documentation of the project results
- ▶ Two or three project meetings per year for up to two persons per company (change of participants possible)
- ▶ Access to handbooks, reports, studies, examinations and speeches from former project terms (protected login area)
- ▶ Free of charge seminars for one or two persons for three seminars dealing with surface technologies (Over the project runtime of two years)
- ▶ Knowledge exchange and networking with the other participating companies
- ▶ Lectures of external speakers



## ▶ Project Data

- Short Title: Surface Treatment 13
- Start Date: September 2024
- Project Runtime: 2 Years
- Project Costs: 5.600 €/Year (Basic)  
7.900 €/Year (Extended)\*

*\*incl. 30 h for project related orders during the project runtime*

## ▶ Applicable Documents

- Project Flyer
- Terms and Conditions

## ▶ Person of Contact:

Dipl.-Ing. Dominik Malecha  
Phone: +49 2351 1064-132  
E-Mail: malecha@kimw.de

# Extract of Former Project Focus Topics

## ▶ IMC – InMould Coating

- Impression of various structures
- Design and production of various sample sheets
- Interior and exterior testing



## ▶ Design Thinking workshops in cooperation with FUTURE+YOU

- Learning of the method
- Design & material trends
- Sustainability



- ▶ Easy to Clean Surfaces (E2C)
  - Research on available E2C coatings
  - Testing of cleanability of the chosen systems according to various specifications
- ▶ Digital printing
  - Possibilities of individualisation of components with digital printing technology
  - State of the art
- ▶ Anti-scratch coatings
  - Research on available anti-scratch coating systems
  - Scratch and abrasion resistance tests on the chosen systems



Get in contact for further information



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Registration for joint project:

**Surface Treatment of Plastic Moulded Parts 13**

Herewith we confirm our binding participation in the joint project above.

Project manager: Dipl.-Ing. Dominik Malecha  
 Project costs:  
 Exercise price: 5.600,00 Euro\* \*1  
 Incl. options hour pool: 7.900,00 Euro\* \*2  
 Run-time: 2 Years  
 Project start: September 2024  
 Documents: AGB and Project flyer

\*plus VAT, Member companys of our „Trägergesellschaft des Kunststoff-Instituts Lüdenscheid“ pay a 10 % reduced contribution. Invoices are issued in instalments at the start of the project and then annually shortly before the start of the new project year. Participation can only be booked for the entire period and not for individual years.

\*1 Exercise price \*2including optional hour pool (+30 hrs)

Our purchase order number: \_\_\_\_\_

We hand in our purchase order number later

Send us the invoice without purchase order number

**Please hand in your purchase order number within two weeks from the date of this document. After the expiration of this deadline we have to send the invoice without this information.**

**With regard to the exchange of information with third parties, it is helpful to name the companies participating in the project - not least in view of attracting further project partners.**

**We agree to the naming of our company to third parties:**

yes no

		<input type="checkbox"/> Invoicing adress (if different):
Company*		
Street*		
Place*		
Phone		
Telefax		
Please contact the participants below*:		Direct dialing / Mail*:
1.		
2.		
Date		Legally binding signature

\*required information