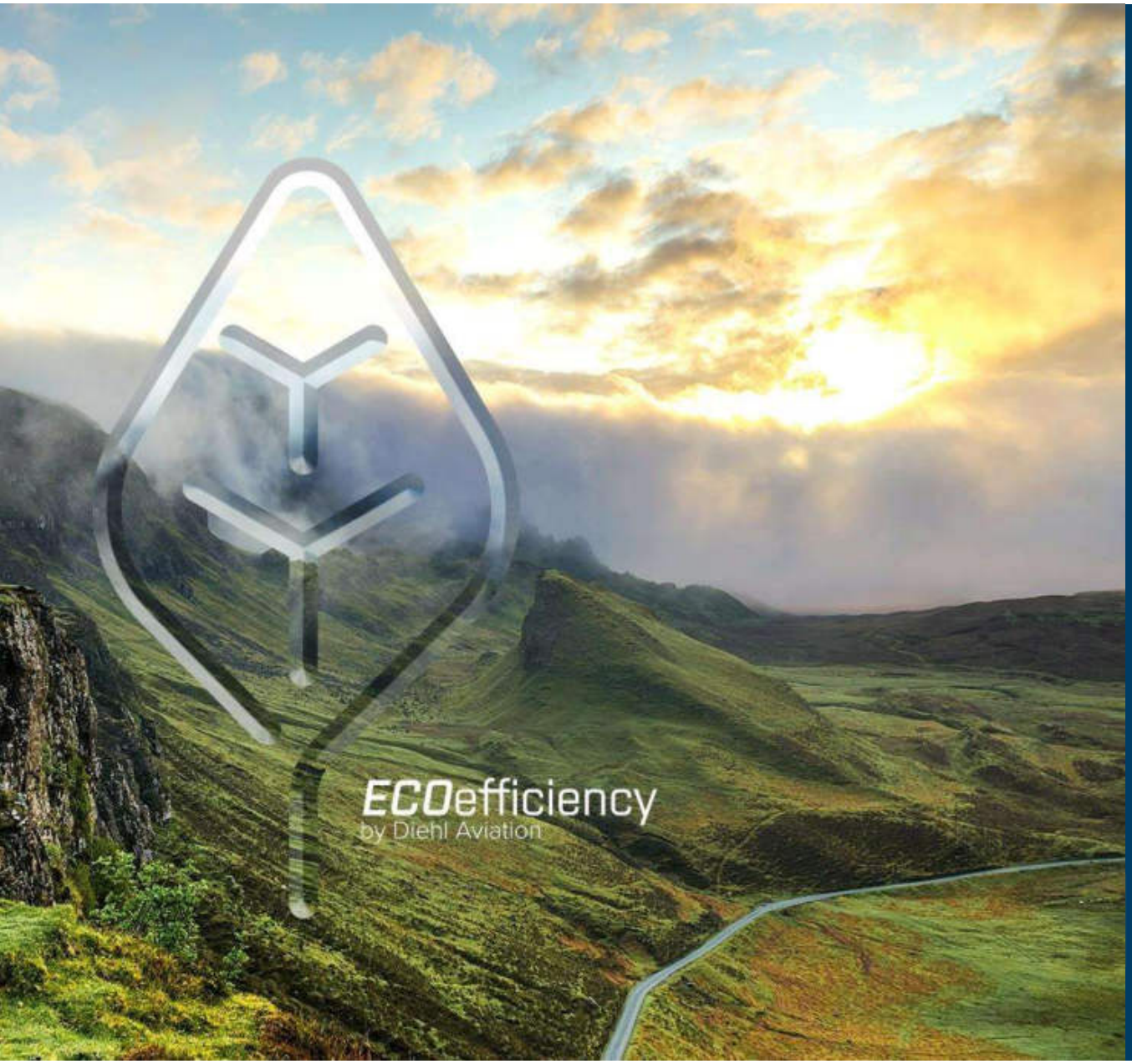


DIEHL
Aviation

Design of a sustainable aircraft cabin

Dr. Dietmar Völkle
Silvan Fiedler

Technologietag Leichtbau
06.11.2024

VALUE TO THE SKY

Design of a sustainable aircraft cabin

The agenda

DIEHL Aviation

APPROACH ALONG THE LIFE CYCLE OF THE PRODUCT

Production

Operation

End of life

PRODUCT APPLICATIONS

Diehl Aviation pre-developments

FUTURE CABIN

Concept introduction

Scenario

Materials

Intelligent Cabin (AI)

Approach along the Life Cycle of the Products

research & predevelopment projects for sustainable technologies

DIEHL Aviation

REDUCTION OF CARBON FOOTPRINT

bio based materials

alternatives for honeycomb cores

new surface finish technologies

extreme lightweight materials

new design methods for weight saving:

-functional integration
-load optimized design

INCREASE OF MATERIAL CIRCULARITY

use of recycled materials

thermoplastic materials

mono material design

design for disassembly

design for recycling

Product applications

Diehl Aviation Pre-developments

DIEHL Aviation

CRYSTAL CABIN AWARD

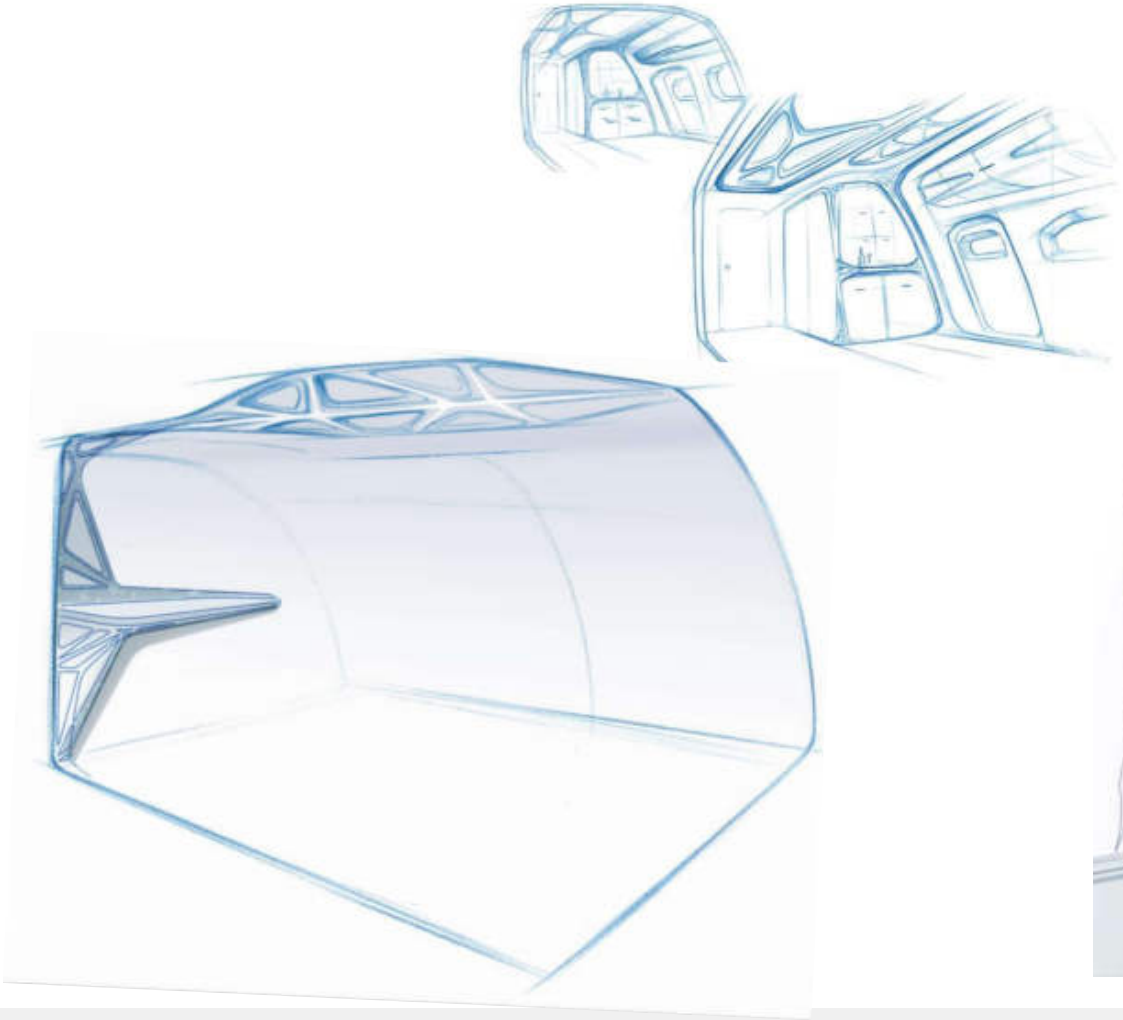
ECO Particle Foam Air Outlet	ECO Sidewall	ECO Bracket	ECO Bin
weight saving recyclable material CO2 saving	weight saving bio-based material waste reduction CO2 saving	weight saving recycled material	recyclable material waste reduction CO2 saving
weight reduction reduced manufacturing carbon footprint recyclable material	load optimized layup bio based materials finished with Eco Powder Coating	optimized geometry re-use of production cut-offs 50% weight saving	recyclable material increased repairability easy dismantling

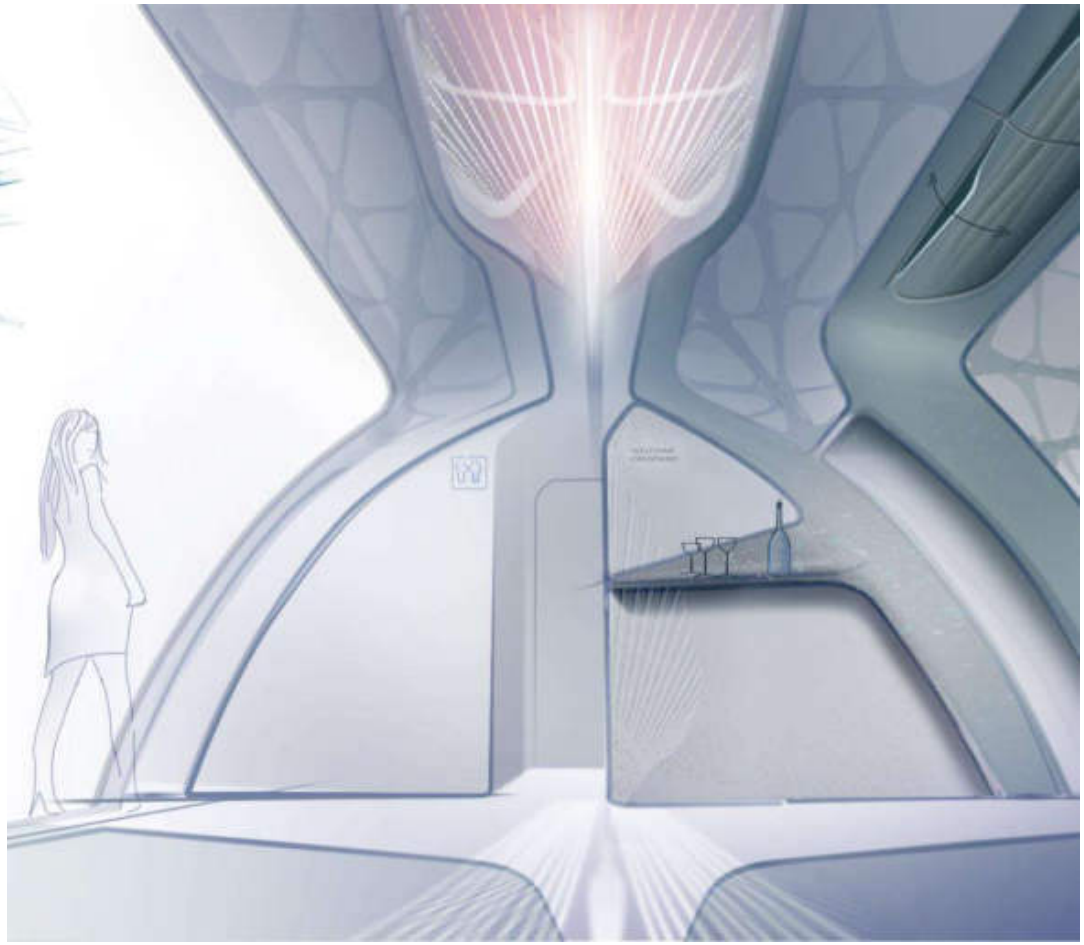
Future Cabin

Concept introcuction and ideation

Future Cabin

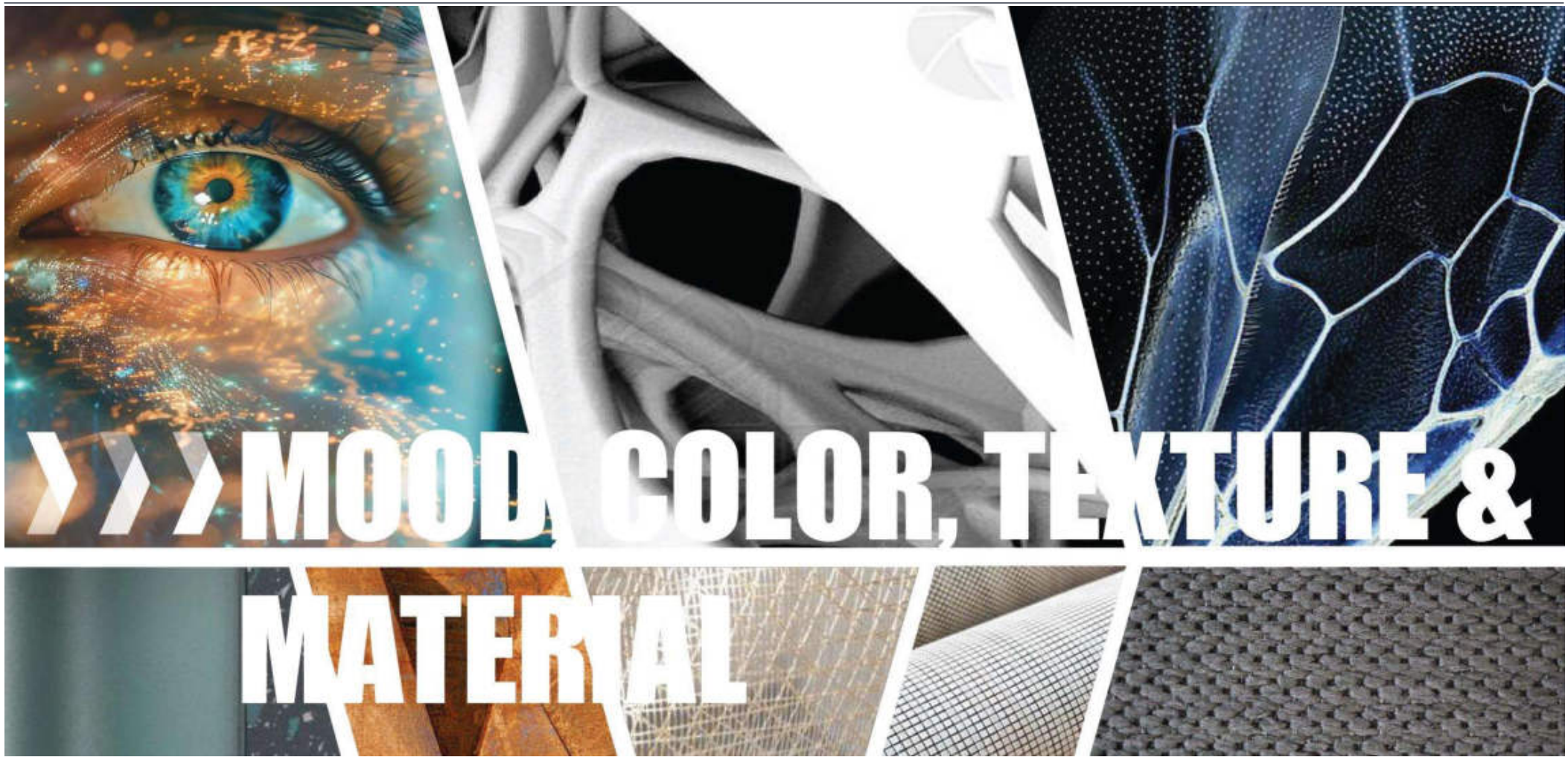
Concept introcuction and ideation





Future Cabin

Szenario and materials



Future Cabin

Szenario and materials

Future Cabin

Szenario and materials

))) RECYCLED LEATHER

/ WEIGHT:

appr. 700 g/m²
to be optimized

// FLAME RESISTANCE:

in process

/// SUSTAINABILITY:

requirements fulfilled

//// AESTHETIC:

requirements fulfilled

Future Cabin

Szenario and materials

DIEHL Aviation

))) TECHNICAL TEXTILES

/ WEIGHT:

depends on pattern and threads

// FLAME RESISTANCE:

further investigations in process

/// SUSTAINABILITY:

zero waste
monolithic use

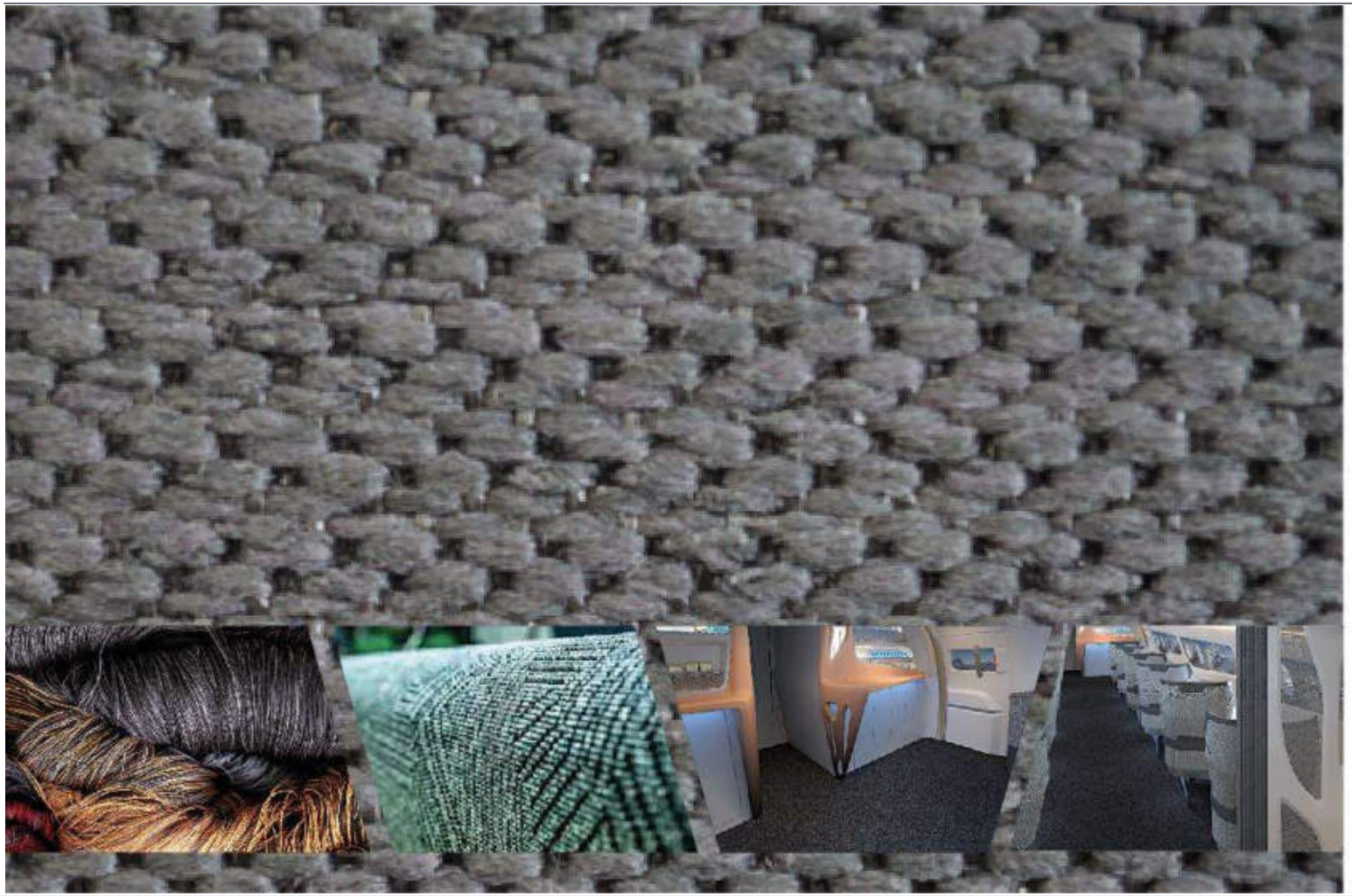
//// AESTHETIC:

customizable

Future Cabin

Szenario and materials

DIEHL
Aviation



))) FLOOR SOLUTIONS

/ WEIGHT:

appr. 800 g/m²

// FLAME RESISTANCE:

requirements fulfilled

/// SUSTAINABILITY:

cradle to cradle certified

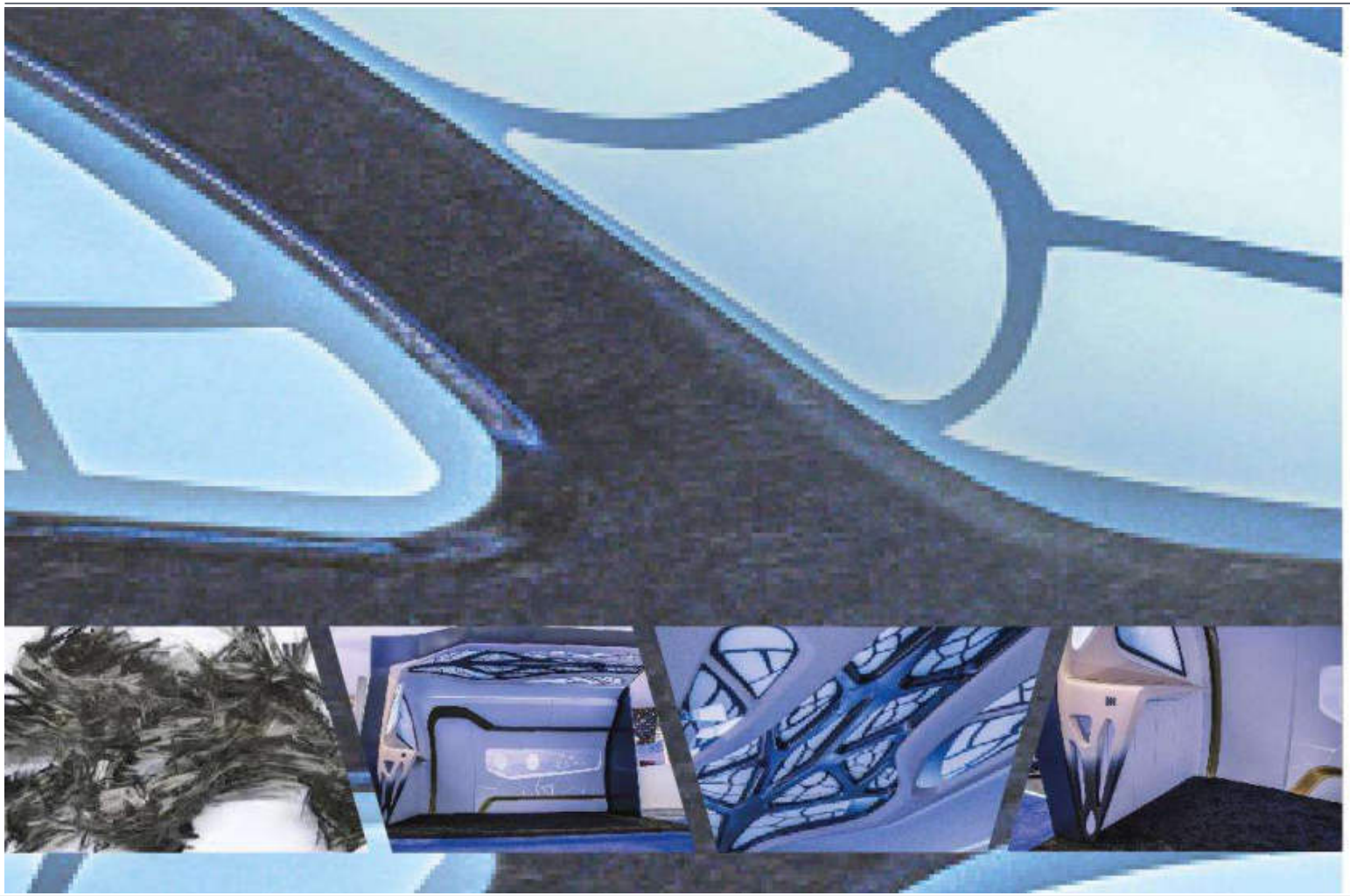
//// AESTHETIC:

customizable

Future Cabin

Szenario and materials

DIEHL
Aviation



))) RECYCLED CARBON FIBER

/ WEIGHT:

appr. 800 g/m²

// FLAME RESISTANCE:

further investigations in prozess

/// SUSTAINABILITY:

cradle to cradle certified

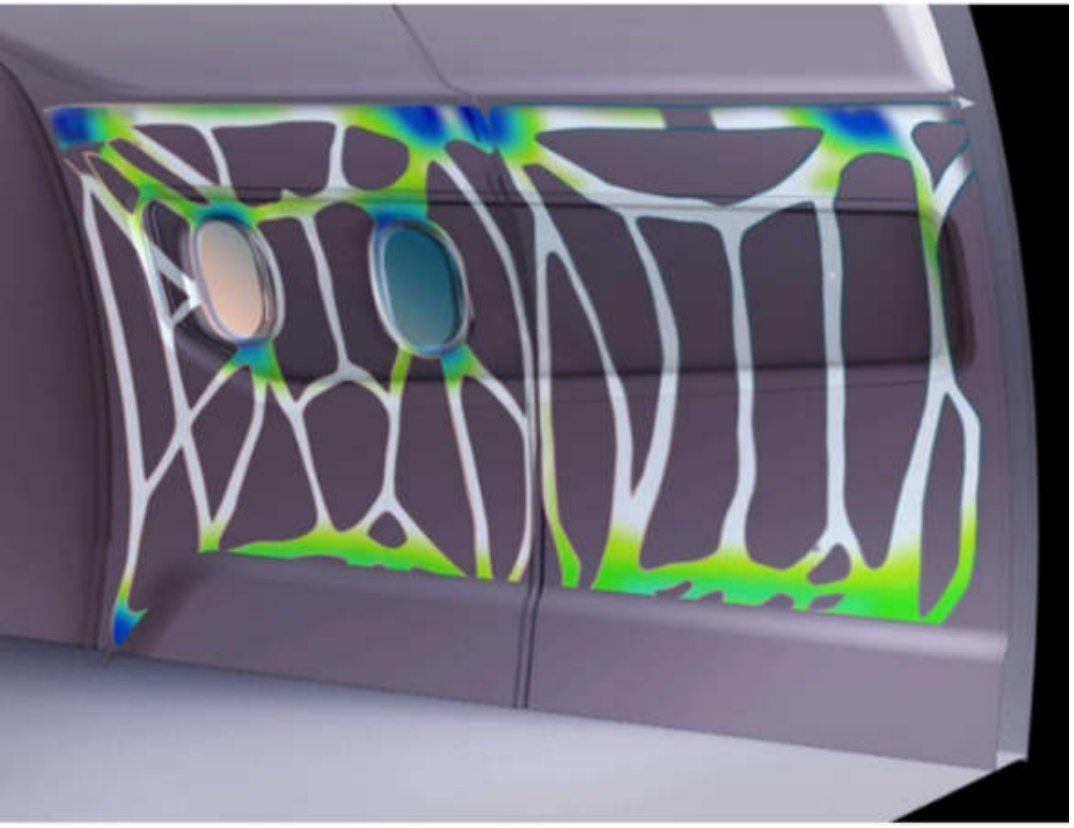
//// AESTHETIC:

requirements fulfilled

Future Cabin

Szenario and materials

- simulation and static calculation
- biconic inspired design



Future Cabin

Szenario and materials

DIEHL Aviation

Szenario

Future Cabin

Intelligent Cabin (AI)

Demonstrator

- construction material partly visible as design feature

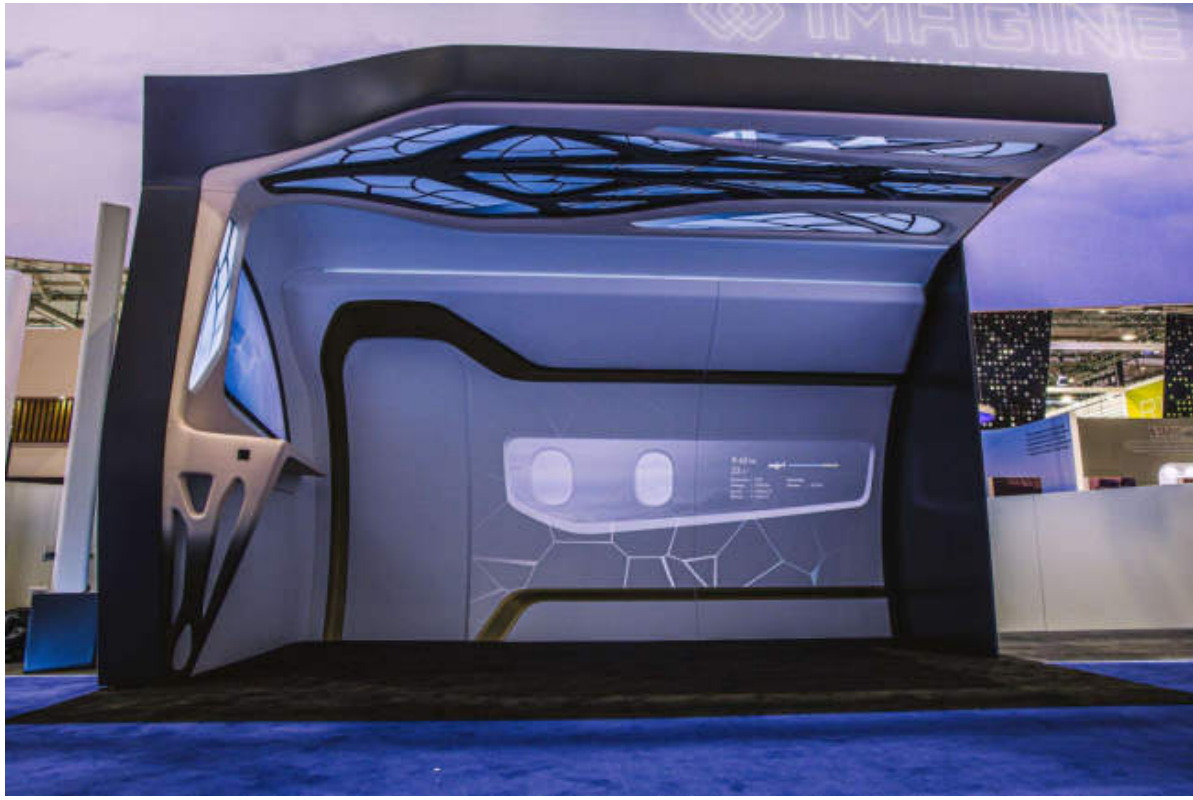
- less painting for weight reduction and design feature

Future Cabin

Intelligent Cabin (AI)

Demonstrator

- 2D and 3D textile print (customizing options)
- intelligent cabin screens



Design of a sustainable aircraft cabin

Summary

DIEHL AVIATION

Diehl Aviation is a division of Diehl Stiftung & Co. KG and combines all aviation activities of Diehl Group under one roof. In the aviation industry, Diehl Aviation - including Diehl Aerospace (a joint venture with Thales) - is a leading system supplier of aircraft system and cabin solutions. Diehl Aviation currently has more than 4,400 employees. Its clients include leading aircraft manufacturers Airbus, Boeing, Bombardier, Embraer, military partners, manufacturers of eVTOL aircraft as well as airlines and operators of commercial and business aircraft worldwide.

DIEHL
Aviation

Research
Industrial Design

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