AIRBUS: Walking On Sustainability

Fishing for Experience – Project 2 | SoSe 23

FISHING FOR EXPERIENCE

AIRBUS

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INTRODUCTION

Air traffic is expected to grow at higher rates in the upcoming years. Hence, we need more sustainable aircrafts to reduce the carbon footprint of aircrafts. Approaches towards sustainability:

- Optimizing fuel consumption
- Increasing the rate of recycling and reusing the materials
- Reducing the weight of the aircraft are some of the approaches.

One often underestimated area of focus in sustainable aircraft design is the floor system which is responsible for

- Weight distribution and in-flight stability
- Influences passenger experience and cabin layout of seats, aisles lavatories, and other amenities.
- Substantial impact on fuel efficiency, carbon emissions, and overall aircraft weight

Sustainable flooring is not only related to comfort but also a key element in creating a responsible eco-friendlier travel experience for our planet and passengers.

CURRENT SOLUTION

The current Solution is shown in Fig 1. with various layers of the floor system.

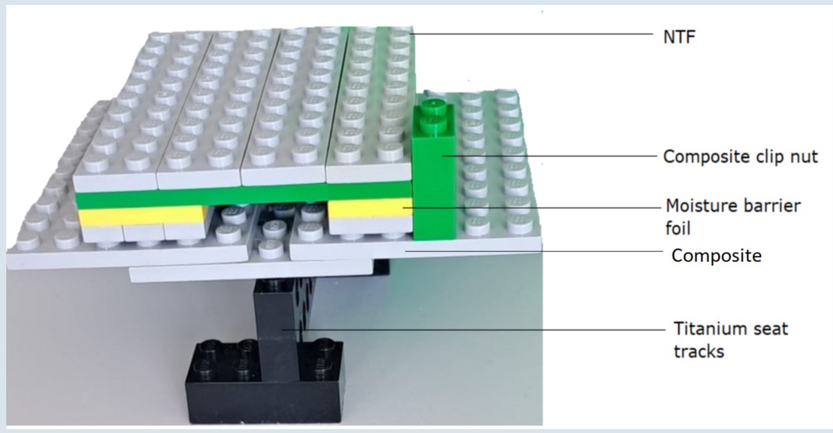
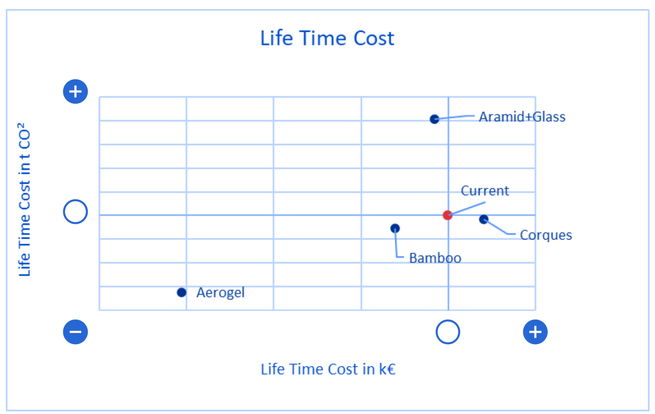


Fig. 1 – Model of the current floor system solution

SOLUTION PROPOSED

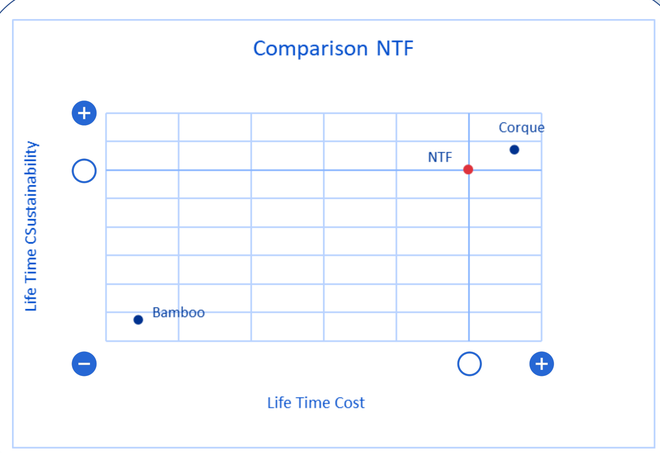
The table above has all the solutions proposed which had good sustainability in terms of reusability or recycling. The carbon footprint estimated is mentioned in the LTC Co2 column.

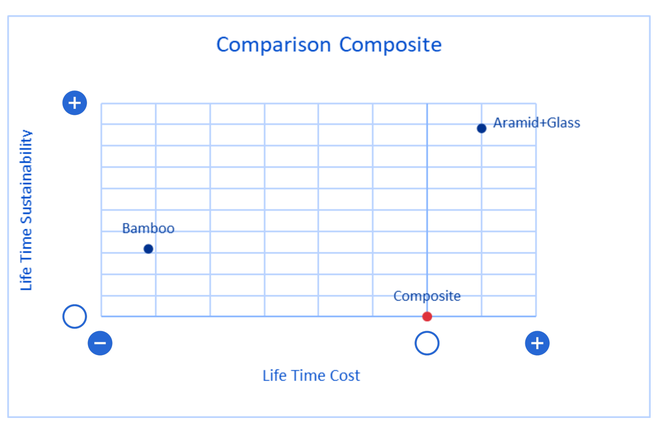
SOLUTION NAME	Compared to current solution: LIFE TIME COST	LIFE TIME SUSTAINABILITY
Current Solution	*100 %*	*100 %*
Corques Liquid Lino	1 19 %	103 % 2
Aerogel	4 711 %	165 % 4
Aramid fiber + glass fabric layer on top	2 133 %	19 % 1
Bamboo Honeycomb core + Recycled Aluminium	3 223 %	111 % 3



The Figure shows the plot with estimated values of lifetime cost of all the materials that were proposed.

The presented figure shows a comparative analysis involving two distinct NTFs, namely cork and bamboo, in contrast to the current NTF employed by Airbus. The graph is designed to illustrate the estimated values for both lifetime sustainability and life-time cost associated with these NTF options.





The presented figure shows a comparative analysis involving two distinct Composite, namely Aramid+Glass and bamboo, in contrast to the current Composite employed by Airbus. The graph is designed to illustrate the estimated values for both lifetime sustainability and life-time cost associated with these Composite options.

RESEARCH AND LEARNINGS

Aramid fiber

- heat resistant
- very high strength with very low weight
- Excellent thermal stability from - 70 °C to + 200 °C
- for moisture absorption: add glass or (carbon fabric) layer on the surface

Aerogels

- Dramatically increased strength
- Increased stiffness
- Flexibility
- Machinability and resistance to fracture
- Waterproof
- Impact resistance

Corques Liquid Lino

- made from renewable raw materials
- free from plasticizers, volatile organic compounds
- zero waste, as no cutting losses
- no adhesives required
- residue-free degradable, 100% recyclable

Bamboo Honeycomb

- made from recyclable and bio-degradable materials
- Bamboo known for its higher durability and strength

PROPOSED SOLUTION

The primary consideration in product design is sustainability. Through extensive research and assessments, Aramid + Glass has emerged as a promising substitute

- Boasts a lighter weight and robust durability (reductions in fuel consumption)
- Higher reusability percentages and offers ease of installation.

The figure below shows all the layers and its best alternatives proposed