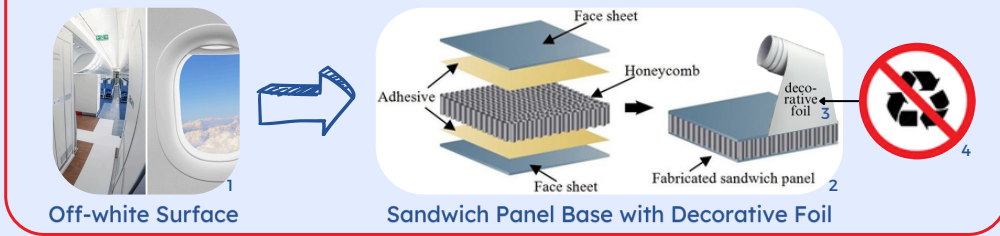


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Problem Statement

AS IS - current Industry Standard



TO BE - Project Task



Grading System

The materials and assembly methods are evaluated across several criteria within a 0-5 grading scale. The grades are afterwards weighed with the importance of the criterion (1-3) to receive a final grade on the scale of 0-5.

Materials

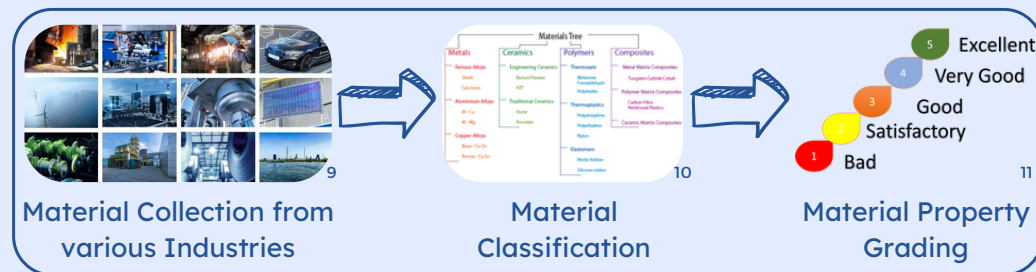
- Fire resistance (instant ignition to natural resistance)
- Durability & Scratch Resistance (strength & hardness)
- Recyclability (ease of recycling)
- Color options (none to full palette)
- Density (lower, better)

Assembly Methods

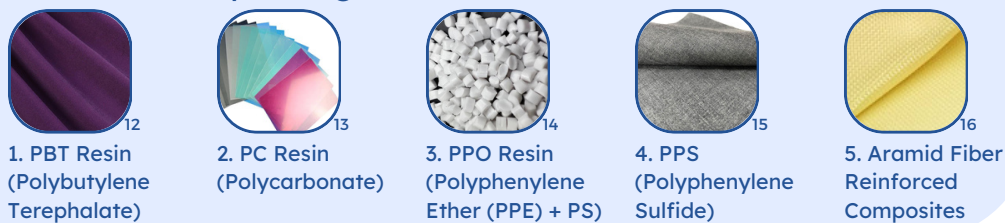
- Detachability (easy to not detachable)
- Surface Quality (consistency, ease of application)
- Reparability (easy & cheap to not repairable)

Criterion Importance	Weight
Shall/Must	3
Should/Will	2
May	1

Material Database



Top 5 High Performance Materials



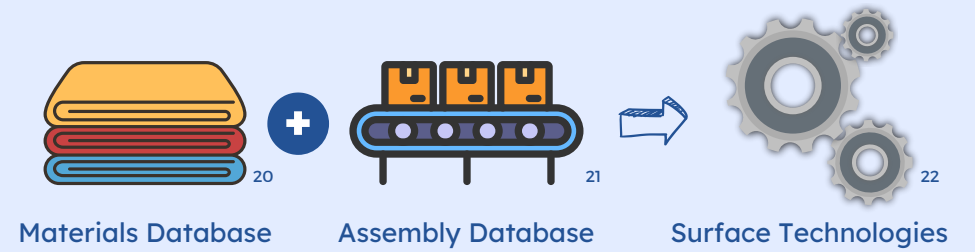
Assembly Methods Database



Top 5 Assembly Methods:

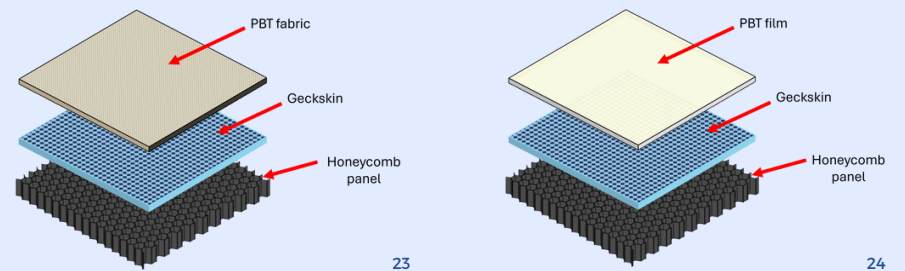
- 1 - Geckskin (Biomimetic)
- 2 - Detachable Upholstery
- 3 - Fastening elements with light-curing adhesive
- 4 - Thermoformed Surface Finish
- 5 - Veneer and mounting process

Surface Technologies

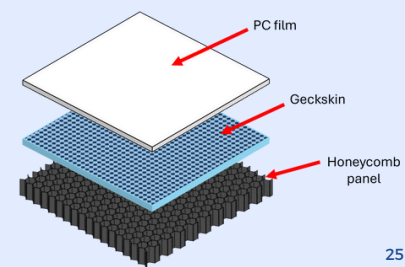


- Through the information specified in both databases, it is possible to automatically generate surface technologies by combining each material to their compatible assembly methods.
- A “score” is calculated for each Surface Technology, through the weighted average of the grades from their respective material & assembly method.
- The calculated “score” is then used as reference for sorting & comparing the Surface Technologies, allowing for easy and precise assessment of the best options.

Final Surface Technologies



With an identical final grade of 4.7/5, the top three technologies each use a thermoplastic polymer as surface material and Geckskin as assembly method.



Optimization Potential & Review

Materials & Assembly Methods Catalogue

- utilize new & different research sources: future partners could include material technology labs at universities etc.
- limited amount of time: research was cut off to proceed with further milestones

Grading System

- elimination of subjective gradings: estimations needed to be made for some criteria due to missing detailed information
- important additional information to assess technologies is missing: e.g. strength of connection for assembly methods, availability & cost for materials

Surface Technologies

- check automated mapping: detailed check & expert review of all technologies for technical feasibility
- prototyping: start rapid prototyping to shorten the list even further