The sandwich principle

Benefits:
Sandwich materials provide excellent mechanical properties at much lower weight than traditional designs. The sandwich solution has a very high stiffness-to-weight and strength-to-weight ratio.

A typical sandwich solution has skins that are thin, strong and stiff. The core is a high-performance material that has the strength to transfer the loads between the skins.

The high stiffness and strength of the sandwich solution are achieved by separating the skins from each other. The further apart the more efficiently the material is used. As a result, sandwich components achieve the same structural performance as conventional designs, at much lower weight.

A solid design can be replaced by a sandwich solution that is twice as thick, only a fourth of the original material is needed for the skins, to get the same strength and twice the stiffness. The weight of the sandwich is reduced to approximately a third. Since less material is used, cost is also reduced.

<table>
<thead>
<tr>
<th>Sandwich (2t)</th>
<th>Solid (t)</th>
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</thead>
<tbody>
<tr>
<td>Bending strength</td>
<td>100%</td>
</tr>
<tr>
<td>Bending stiffness</td>
<td>260%</td>
</tr>
<tr>
<td>Weight</td>
<td>33%</td>
</tr>
<tr>
<td>Material cost</td>
<td>58%*</td>
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</tbody>
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*If cost of core is five times the cost of skin per kg

Sandwich solutions can be manufactured into virtually any shape, offering full design freedom. In addition, sandwich solutions provide thermal insulation, thus saving Insulation materials.

Sandwich solutions can take a higher payload, have better durability, consume less energy and be manufactured fast and efficiently.
Predict the future – Design it

The transportation industry is facing a paradigm shift. Sustainability demands and autonomous electrical vehicles are changing the market, but whether a new or traditional vehicle, the key to reduced carbon footprint is weight and aerodynamics. Lower weight reduces resistance and allows for increased payload while an aerodynamic design reduces energy consumption, especially at high speed.

Sandwich materials are the solution, offering higher payload, improved energy economy, increased design freedom and enhanced durability. Easily implemented, they simplify your production through fewer parts.

A modern truck or trailer body often demands high degrees of customization and adaptation. Rails for intermediate floor, internal wall dividers, doors, hooks and extra equipment all require a sturdy and secure fixation to the lightweight walls and roof. The most efficient way to handle this is to use structural core in these areas.

Sandwich materials offer higher payload, improved energy economy, increased design freedom and enhanced durability. Easily implemented, they simplify your production through fewer parts.

Aerodynamics is one of the two most important properties that affect efficiency. Sandwich solutions offer tremendous design flexibility while providing stiff and robust parts with long life at low weight. The stiffness of the parts gives the opportunity to have integrated functionality rather than additional cover panels.

Self-supporting sandwich panels offer a homogeneous floor with fewer parts, simplifying production and reducing costs by eliminating the need for transversal beams. The full sandwich design also allows for improved energy economy allowing for reduced floor thickness. With the appropriate combination of materials, the floor can be designed to meet any load demands and still save weight. The result is an increase in possible payload and increased energy economy. In addition, sandwich materials are insensitive to rot or decay.

To achieve the desired overall structural integrity of the box, the assembly of the corners is very important. High density structural core is used in combination with aluminum profiles to strengthen the assembly. The assembly is simplified through the use of screws into the structural core for rot or decay. The sandwich core is insensitive to rot or decay and provides consistent screw retention properties.