

Divinycell F

Changing the way aircraft interiors are made



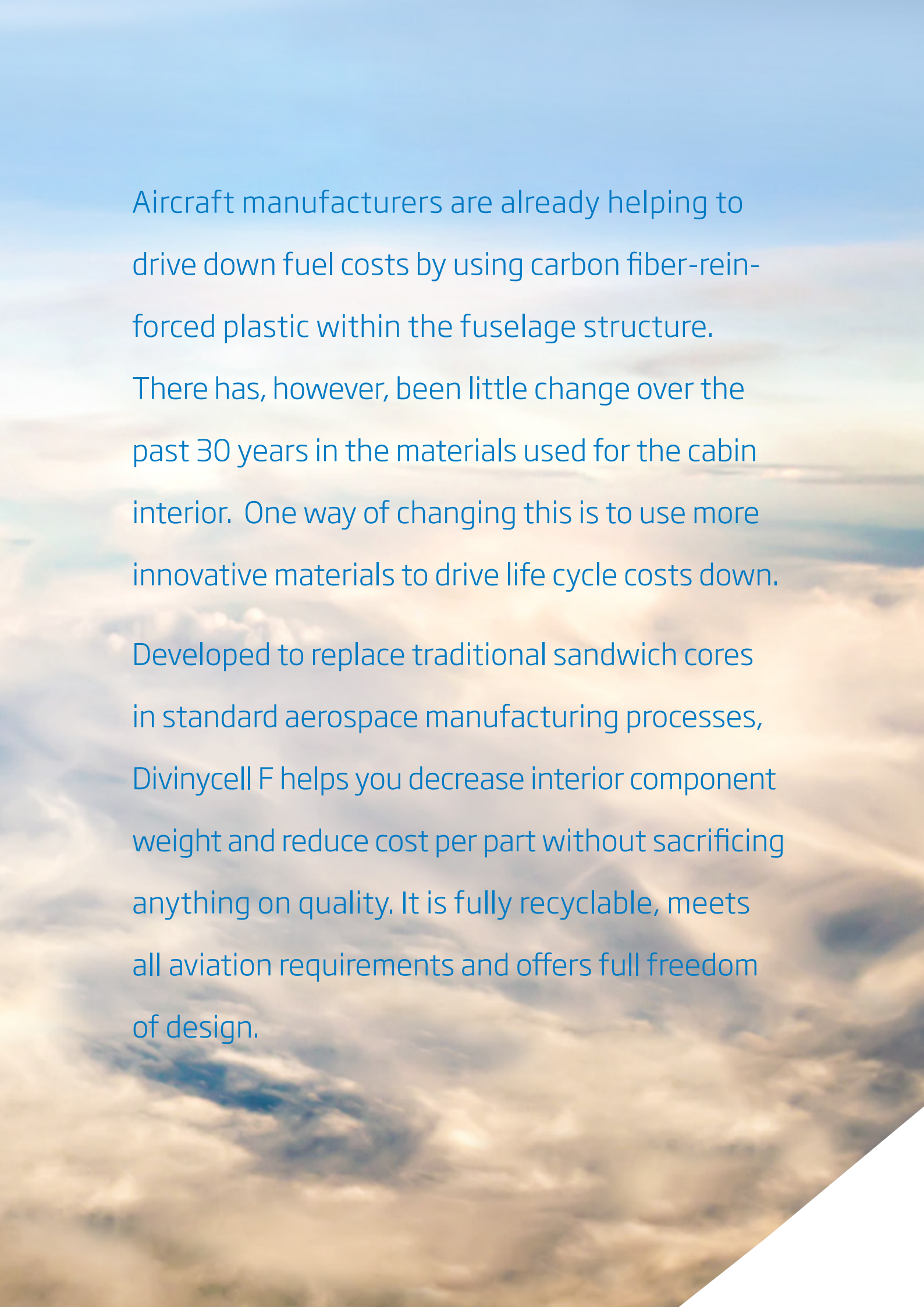
Decreasing lifetime cost and environmental impact
through composite innovation

Diab

The background of the entire page is a high-angle, aerial photograph of a thick, multi-layered cloud deck. The clouds are illuminated from the side, creating a gradient of colors from pale yellow and white to deep, vibrant blues. The sky above the clouds is a clear, light blue. The overall composition is serene and expansive, suggesting a high-altitude environment.

The future material for aircraft interiors

Diab, Divynycell, Matrix and ProBalsa are registered trademarks in countries all over the world.



Aircraft manufacturers are already helping to drive down fuel costs by using carbon fiber-reinforced plastic within the fuselage structure.

There has, however, been little change over the past 30 years in the materials used for the cabin interior. One way of changing this is to use more innovative materials to drive life cycle costs down.

Developed to replace traditional sandwich cores in standard aerospace manufacturing processes, Divinycell F helps you decrease interior component weight and reduce cost per part without sacrificing anything on quality. It is fully recyclable, meets all aviation requirements and offers full freedom of design.

When every ounce & gram counts

Divinycell F is developed especially to provide an alternative to traditional phenolic sandwich core materials. This lightweight composite core reduces both weight and manufacturing cost of interior aircraft parts such as stow bins, sidewall panels, monuments, galleys, seats and lavatories.

Tailormade for aerospace

Divinycell F is one of the few core materials that offer exceptional OSU heat release performance and nearly zero smoke – well below all regulatory requirements. Acoustical and thermal insulation performance is superior to rigid honeycombs.

Significantly lower cost

The continuous micro-cell structure of the Divinycell F core fully supports the laminate, reducing the amount of finishing needed to achieve a high-quality surface. No edge fill or hard point potting is needed. If required, high-density inserts may be added before lay-up, providing strength and durability for hinges, fasteners and pulls.

Divinycell F can be pre-cut into kits ready for lamination, which offers further savings on labor time and cost.

Lower environmental impact

By reducing component weight Divinycell F also reduces the impact on the environment. Available in a wide range of densities, it makes it possible for you to optimize your application. Reducing weight also means positive impact on fuel consumption, payload and range. Divinycell F's unique polymer is fully recyclable and therefore an ideal 'green' option compared to alternative core materials such as phenolic honeycombs and acrylics.

Divinycell F's unique polymer is fully recyclable, further reducing environmental impact compared to alternative core materials such as phenolic honeycombs and acrylics.

Freedom of design

Divinycell F brings a whole new level of design freedom. It is coldformable, thermoformable or can be shaped with CNC machining, which makes it particularly suitable for free form parts.

Divinycell F is compatible with most common aerospace composite manufacturing processes and well suited in crush core press molding as it does not crack. It also performs well in traditional vacuum bag molding up to 205°C/400°F and resin infusion processing.





Proven performance

To illustrate how Divinycell F decreases cost and weight compared to honeycombs, Diab conducted a study in which three different composite manufacturers fabricated identical parts using honeycombs and Divinycell F. The results clearly show that Divinycell F reduces component weight and production cost while improving cosmetic quality.

A potential cost saving on a typical overhead stow bin or locker door can be approximately 10-20% compared to a honeycomb alternative. At the same time you can save up to 10% in weight.

The Divinycell F product range

▶ Divinycell F40

Divinycell F40 is an ultra lightweight interior core for parts not exposed to passenger loads, such as ceiling panels and headrests. It is used on parts requiring FST (Fire, Smoke and Toxicity) compliance, acoustic damping performance and good cosmetic appearance.

▶ Divinycell F50

Divinycell F50 is a lightweight interior core for components such as first and business class seats, sidewalls, galleys, monuments and headrests. It is used on parts requiring FST compliance, acoustic damping performance and good cosmetic appearance.

▶ Divinycell F90

Divinycell F90 is a moderate weight interior core for components subject to heavier loads and impacts, such as stow bin floors. It is used on parts requiring toughness and durability, FST compliance and acoustic damping performance.

▶ Divinycell F130

Divinycell F130 is the ideal material for hardpoints, closeouts and edge filling. It can also replace PU foam.



A closer look at Divinycell F

FST compliance

Divinycell F is the only polymer core material that easily meets global industry standards for fire, smoke and toxicity in commercial aircraft interiors. It will not burn or produce toxic gases and does not generate smoke.

Fire

Divinycell F easily meets FAR vertical burn criteria and OSU 65/65 heat release standards (21/21 at 12.7 mm)

Smoke

Divinycell F shows exceptionally low optical smoke density (Ds) levels. The lower densities of Divinycell F have a value close to zero for Ds1.5 and Ds4, while F90 and F130 measure 2.

Toxicity

The toxicity performance based on Boeing and Airbus Toxicity standard for Commercial Aircraft Interiors, BSS 7239 and ABD 0031, resulted well. Divinycell F easily passed the requirements at ½ or less the allowable values depending on gas component: CO, CO₂, NO_x, SO₂, HCl, HBr, HCN.



For more information about Divinitycell F, visit diabgroup.com, where you can download product sheets with more technical data.

Environmental resistance

Divinitycell F is resistant to most aerospace fluids. Its closed cell structure provides low water absorption and its chemistry is non-hygroscopic.

Service life

The polymer maintains its mechanical characteristics well over time and the Divinitycell F cellular structure outperforms the impact resistance and damage tolerance of honeycomb alternatives. Should the part be damaged, repair is quick and easy.

