The use of lightweight yet strong materials has become the order of the day for automotive manufacturers that are constantly seeking ways to reduce the weight of cars and trucks in order to improve fuel efficiency, safety and design for consumers. The light but strong honeycomb sandwich panels have proven to be of genuine benefit to the automotive and transportation industry to reach these goals.

EconCore has developed and offers a cost-efficient continuous, integrated high-volume production process for lightweight thermoplastic honeycomb sandwich panels. EconCore’s patented ThermHex technology has been licensed to a number of market leading companies around the world. The number of users is growing fast, as is the range of applications including automotive, transportation, building and construction, industrial packaging/graphical displays, furniture among others. Generally, for all applications the EconCore technology offers an exceptional rigidity to weight ratio.

The technology is unique in its combination of a highly automated, high-speed production process delivering high-end honeycomb structures at lowest possible cost levels. It enables greater weight savings in use than alternative processes, and allows for reduction of CO₂ emissions while the low production costs enable effective substitution of other sandwich and homogeneous panel materials.

Because of their unique thermoformability, EconCore’s honeycomb sandwich panels can also be used for more complex, 3D parts. Furthermore, next to pure PP skins applied typically in cost-critical applications, thermoplastic composite skins (including natural fiber, wood flour, glass fiber or even carbon fiber reinforced materials) can be applied on the top of the honeycomb in order to deliver application-optimized performance. The combination of composite skins and PP honeycomb cores results in materials with excellent qualities, including superior rigidity, strength and impact resistance. Honeycomb sandwich panel composites continue to push the limits in car design.

Applications: Trunk trim (polypropylene honeycomb cover boards), load floor / trunk trim (structural composite parts), headliner, door panel / door insert, vibration dampening, seat-back, lightweight elements for electric vehicles design, bulkhead, parcel shelf, wall and door cladding of vans, …

Key advantages:

- Weight reduction per the honeycomb sandwich panel effect
- Cost-reduction per the efficient, in-line integrated production process
- Enhanced rigidity
- Insensitive to moisture and humidity effects (plywood / hardboard replacement)
- Excellent thermo-formability
- Improved thermal insulation and acoustic performance
- Reduction of CO₂ emissions and minimal environmental impact
A comparison of the different core structures used today shows that the EconCore PP honeycomb boards have greater rigidity and higher compression strength compared to conventional hollow profile and cup-shaped PP boards. Furthermore, because of the unique production technology, EconCore honeycomb panels can be made in higher thickness and while the panel weight is kept exceptionally low, the stiffness might be even more than 10 times higher compared to competitive solutions, extending the range of possible applications.

PP honeycomb boards are often used as a replacement of wood-based panels in the automotive trunk trim or within van cladding. Rigidity is delivered at lower weight while the recyclable honeycomb panels are insensitive to moisture delivering long-lasting and stable performance. For more demanding applications, including trunk flooring for example, honeycomb panels with composite skins can rise the performance by another notch.

General comparison of bending stiffness and weight of different material solutions is presented in the charts.