Hexcel Case Study: HP Composites S.p.A

Hexcel and HP Composites Develop Body Panels for Supercars Using Hexcel Technology and Advanced Composites

HEXCEL®

Hexcel Case Study:
HP Composites S.p.A

Hexcel and HP Composites Develop Body Panels for Supercars Using Hexcel Technology and Advanced Composites

Hexcel has collaborated with HP Composites S.p.A (HP Composites), a world leader in the production of carbon fiber components for motorsport and automotive, to develop carbon fiber Class A external body panels that provide extreme durability and excellent surface characteristics along with the benefits of lightweighting and emissions reductions.

Hexcel HexPly® XF surfacing technology is being extensively used by the Italian automotive and motorsport composites specialist to manufacture body panels as well as other components for supercars such as Alfa Romeo's stunning new supersport sedans, the Giulia GTA and GTAm.

With five production plants in Italy covering a total area of 22,000m^2, HP Composites has built an impressive track record of high-performance composite successes on both road and racetrack.The group employs a variety of autoclaves, Air Press Moulding®, compression molding, and RTM processing technologies for composite production.

HP has combined this processing expertise with Hexcel HexPly® XF3 surfacing material, HexPly® M47, and HexPly® M49 prepregs, working to the highest standards set by some of the world's most prestigious supercar OEMs and leading motorsport teams.

Hexcel's composite materials were used when HP Composites recently partnered with Sauber Engineering to produce all the carbon fiber body components for Alfa Romeo's stunning new supersport sedans, the Giulia GTA and GTAm.

Hexcel and HP Composites - A Partnership in the Quest for Class A Excellence

Hexcel's automotive composites portfolio is the result of decades of industry experience, a commitment to ongoing research and technology, and the creation of strategic partnerships with companies and customers to develop and optimize leading-edge technologies.

HexPly® XF3 is an epoxy prepreg surface material, developed with processing input from the team at HP Composites, specifically to address the challenges of producing high-quality Class A automotive body panel surfaces with excellent resistance to aging tests. HexPly® XF3 is applied as the first ply in the mold and, after curing at 120-180°C in an autoclave, produces a smooth part surface with no porosity, that requires minimal preparation for painting.

Producing a Class A surface finish with composites is not simply a case of matching the surface smoothness, flatness, and reflectivity properties of a pressed steel body panel. These surface qualities must also be maintained through a tough program of cyclic thermal testing that few lightweight composite materials can successfully pass. External body panels painted in dark colors can generate extremely high surface and laminate temperatures, with repeated heating and cooling cycles creating a risk of unacceptable print through of the weave pattern from the reinforcement fabrics within the part. The HexPly® XF resin matrix, in combination with HexPly® M47 and M49 prepregs using Hexcel PrimeTex® spread tow fabrics, enables Class A body panels that meet all environmental resistance and -40 to +80°C thermal test requirements.

Minimising Surface Preparation Time with HexPly® XF3

HexPly® XF3 is supplied in an easy-to-handle roll format with good tack and drapability. It has one embossed surface that, when placed face down in the mold tool, improves air removal at the surface. After curing, the grey epoxy resin surface can be easily prepared for painting with a rapid sanding process. HP Composites has incorporated automated robotic sanding techniques for this finishing stage with the paint-ready HexPly® XF3 surface providing excellent paint adhesion according to EN ISO 2409.

HP Composites typically uses autoclave processing for HexPly® XF3 parts, maximizing weight savings and structural performance of the final components. In addition, HP has also developed its own proprietary

press and compression molding processes, including Air Press Moulding® technology, compatible with HexPly® XF3 and other HexPly® prepregs for higher volume production series that require increased production rates while maintaining the same high-performance features from the autoclave process.

Hexcel Automotive Solutions for the Vehicles of the Future

As emissions-driven weight reduction targets drive vehicle manufactures to use materials more effectively, Hexcel's portfolio of automotive composites and HP Composites' adaptable processing technologies provide OEMs with a wide range of production options for limited volume series as well as higher rate composite body programs.

"Combining the expertise of HP with a strong technical interaction and collaborative dialogue, Hexcel and HP were together able to develop the optimum HexPly® XF surfacing technology," comments Claude Despierres, VP Sales and Marketing, Hexcel. "With HexPly® XF3 we satisfy the toughest industry standards."

"Our long-term experience has given us a detailed understanding of the critical features that influence how prepregs and surfacing technologies interact with different production processes," said Abramo Levato, General Manager, HP Composites S.p.A. "The relationship we have with Hexcel is both highly technical and highly supportive. As a result we have a complete material package for high-quality Class A body panels that are formulated specifically with our requirements in mind."

Hexcel Product Family


HexTow® Carbon Fiber


HexFlow® Resins


HexMC®-i Molding Composite


HexForce® Reinforcements


Polyspeed® Laminates & Pultruded Profiles


HexWeb® Honeycomb Core


HiTape® Advanced Reinforcements


Modipur® Polyurethane


HexWeb® Engineered Core


HexPly® Prepregs

HexBond™ Adhesives


HexTool® Tooling Material


HiMax™ Multiaxial Reinforcements


HexAM® Additive Manufacturing

For more information

Hexcel is a leading worldwide supplier of composite materials to aerospace and industrial markets. Our comprehensive range includes:

- HexTow® carbon fibers
- HexForce® reinforcements
- HiMax™ multiaxial reinforcements
- HexPly® prepregs
- HexMC® molding compounds
- HexFlow® RTM resins
- HexBond™ adhesives
- HexTool® tooling materials
- HexWeb® honeycombs
- Acousti-Cap® sound attenuating honeycomb
- Engineered core
- Engineered products
- Polyspeed® laminates & pultruded profiles

For quotes, orders and product information call our sales office in Austria +43 7229 772-0. For other worldwide sales office telephone numbers and a full address list, please go to:

http://www.hexcel.com/contact

FCP 477 ST21

HEXCEL®