



COOL GADGETS AND OTHER CRUSHWORTHY STUFF

ADVERTISEMENT

High-end supercar makers can't get enough of carbon fiber usage

By Automotive News on Oct 13, 2010

Like Confirm Tweet 0 Share Print



Lamborghini unveiled the Sesto Elemento concept at the Paris auto show. Many body parts and structural components use carbon fiber. Even the car's tailpipe is made from a carbon and glass-ceramic composite.

(Credit: Wayne Cunningham/CNET)

European carmakers such as Lamborghini, Ferrari, Bentley and McLaren made carbon-fiber composites the standard for high-end supercars. Now they're taking carbon fiber even further, creating new ways to reduce molding time and get more of the material into structural parts.

Automobili Lamborghini S.p.A made its new technology the centerpiece of its Sesto Elemento concept, which was introduced September 30 at the Paris auto show.

The car uses carbon fiber for the passenger compartment, the front and rear-end structures, suspension components, the interior, all exterior panels, and suspension components.

Crave Topics

- | | |
|---|--|
| Lifestyle (415) | Cars (209) |
| Luxury (43) | Digital Cameras (1517) |
| Mobile Phones (3723) | Future Tech (592) |
| Music & Play (1195) | Gadgets (1826) |
| Notebooks (2230) | Games and Gear (551) |
| PC & Peripherals (1751) | Green Tech (262) |
| Printers (121) | Handhelds (596) |
| Software (285) | Home Appliances (86) |
| Web (441) | Home AV (1869) |

Most Popular

- [Microsoft fixes critical Windows flaw](#)
- [iCell showcases 7-inch tablet at Media Fiesta 2011](#)
- [Report: Windows tablet OS targeted for release in 2012?](#)
- [Microsoft to patch four bugs for Windows and Office](#)
- [Twitter releases update to iPhone app](#)

Even the tailpipe is made from a carbon and glass-ceramic composite.

The new thrust, said Stephan Winkelmann, CEO of Lamborghini, is part of an effort to slash weight and push performance.

"The Sesto Elemento shows how the future of the super sports car can look," Winkelmann said. "Extreme lightweight engineering, combined with extreme performance, results in extreme driving fun."

"It is our abilities in carbon-fiber technology that have facilitated such a forward-thinking concept."

Others active, too

And Lamborghini is not alone in taking carbon fiber further. During the Society of Plastics Engineers' automotive composites conference in suburban Detroit last month, engineers from Lamborghini were joined by engineers from Bentley Motors and McLaren Automotive in talking about new production techniques for carbon fiber.

Bentley has added cobalt to its carbon fiber to make it magnetic, and is using magnets to automate the layup process, which speeds production and cuts costs. McLaren has been focusing on liquid-resin infusion.

BMW AG has developed a carbon fiber processing technique that it will use on its future Megacity Vehicle electric car.

Lamborghini--which has been working with Boeing engineers at its Advanced Composite Structures Laboratory in Seattle and runs its own research center in Italy--is focused on advanced compression molding using short carbon fibers in a low-pressure injection mold, said Paolo Feraboli, director of the structural carbon-fiber research group.

Working with Callaway

Lamborghini also has signed a development agreement for carbon fiber with golf club maker Callaway Golf to expand the technology.

The process, which Lamborghini calls "forged composite," is far faster than traditional hand processing, he said. That system could produce a maximum of four passenger cells, called monocoques, per week, which is too slow even for a low-volume producer.

Lamborghini considered vacuum-assisted resin transfer molding, similar to the process used for yachts and other marine structures, but it had problems with variable thickness on mold lines.

Traditional resin transfer molding provided consistent thickness and a controlled shape, but requires an expensive machine and large and expensive tooling, and it would be difficult to achieve large parts such as the monocoque and the front and rear structural cells.

Using a method with low pressures, vacuum assist and carbon tooling still will require investment in injection presses.

The new process has more flexibility in tooling than the traditional resin transfer molding system and speeds up production, Feraboli said.

30 percent lighter than aluminum

Lamborghini's experiment using compression molding with a carbon fiber sheet molded compound produced a structural suspension part that was 30 percent lighter than an aluminum part, and its three-minute cycle time beat both traditional carbon-fiber and aluminum processing, he said.

The Sesto Elemento concept car weighs 999kg, about 340kg lighter than the current Gallardo LP Superleggera.

Winkelmann said the Sesto Elemento is a clear indication of where Lamborghini will take carbon fiber. "Systemic lightweight engineering is crucial for future super sports cars," he said while introducing the car in Paris.

"We will apply this technological advantage right across our model range."

Its high-end competitors will be on the same track.

Most Discussed

- 9 [A brand new CNET Asia](#)
- 9 [Could smartphones replace conventional cameras?](#)
- 5 [Nokia CEO explains Windows Phone decision](#)
- 5 [Will you still buy the iPad 2?](#)
- 4 [iPad 2 coming to Singapore, Korea and Hong Kong](#)

SPONSORED LINKS ▾

[Experience Bhutan with your CANON EOS 600D](#)

Take a shot with your EOS 600D to win an unforgettable photography trip to Asia's mystical kingdom. Contest open from 1 June - 15 August 2011.

[How to Select the right LG HDTV 2011](#)

Explore LG's latest 2011 TV HD TV line-up. Smart Choices for Smart Users.

[101 reasons to be at Digital Matters and Music Matters in Singapore](#)

Sony, Microsoft, Facebook, Baidu, Coke, SingTel, MediaCorp, Converse, Fox, AirAsia, MTV & more

[LEGRIA HF M41 HD.](#)

Make movies easy yet dramatic with Cinema Style feature.

[Sony VAIO S Series. Time saved is time mastered.](#)

Speed ahead in life with it's blistering 17 seconds boot-up time

[LG Cinema 3D TV. The Next Generation.](#)

Introducing the brighter, lighter and more comfortable, battery-free, and certified flicker-free LG CINEMA 3D TV.

ADVERTISEMENT ▾



Bentley has focused on ways to speed the hands-on production setup for carbon-fiber parts, said Antony Dodworth, principal research manager with Bentley Materials Technology. "We need to automate," he said.

The process, called "directed carbon-fiber pre-forming," adds a very small amount of cobalt to the carbon fiber. The company then can robotically shoot a fine stream of carbon fiber into a magnetized mold at a rate of 6 kilograms per minute.

"The robot can achieve that delivery all day, every day," he said.

Bentley compared its automated system to a bumper system for a race car that takes a day and a half with hand labor, Dodworth said. Its new process completed the layup in 20 minutes.

The company already has used the process in a structural carbon-fiber spare wheel well on its Mulsanne sedan.

Via [Crave CNET](#)

Tags: [Society of Plastics Engineers](#), [Advanced Composite Structures Laboratory](#), [BMW Megacity](#), [Gallardo LP](#), [BMW AG](#), [Bentley Motors Ltd.](#), [Callaway Golf Company](#), [McLaren Group](#), [Antony Dodworth](#), [Paolo Feraboli](#),

Comments

Add Your Comment

SUBMIT

▼ sponsored

[Carbon fiber masts](#)

Carbon fiber spars , rudders poles and structural parts

www.gmtcomposites.com

[Aerospace Composites](#)

Alternative to Aerospace Composite Material Manufacturing. Quickstep.

www.quickstep.com.au

[Carbon Fiber Processing](#)

Complete production lines for advanced carbon fiber manufacturing

www.harperintl.com

[Composite Materials](#)

3D Solid & layered Sandwiched Shell analysis for aerospace & auto

www.nisasoftware.com

[Composites Manufacturing](#)

Machines for fiber/tape placement, filament winding, prepreg making.

www.mikrosam.com



[Guide to smartphone shortcuts](#)

We show you ways to make your smartphone more productive with shortcuts for Android, BlackBerry, iPhone, Symbian and Windows Phone devices.

[Five things you should know about mirrorless ILCs](#)

Like dSLRs, mirrorless ILCs offer plenty of exposure functions and advanced features such as RAW image capture. However, since they lack the mirror mechanism, there is no optical viewfinder, though some models offer either built-in or optional electronic viewfinders (EVF). Still, if you're thinking of getting a dSLR but don't want the weight and bulk, mirrorless ILCs may be the solution. To get you started, here are some tips.



[How to Select TVs](#)

[Tips for buying TVs from abroad](#)

About CNET Asia



CNET is Asia's premier destination for all things tech. From managing your tech lifestyle, to buying the latest gear, CNET connects you to the pulse of technology through our trusted experts and our tech-savvy community.

Copyright © 2011 CBS Interactive, a CBS Company. All rights reserved. [Privacy Policy](#) [Terms of Use](#) [Sitemap](#) [Advertise](#)

Explore the network: [CBS Interactive](#) [GameSpot Asia](#) [ZDNet Asia](#)