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3D printing: Carmakers put brakes on prototype costs

By Tanya Powley, Manufacturing Correspondent

Technologist Mark Smith cleans a 3D printed part at Ford's 3D printing facility in Michigan

Car manufacturers are extensively using 3D printing technology to make design samples and prototypes, but are a long way behind their aerospace counterparts in using it for mass production.

Though the car industry is the second-biggest user of 3D printing after consumer products, according to consultancy Wohlers Associates – ahead of both medical and aerospace – for most car manufacturers the economics of using 3D printing for high volume mass production do not make sense.

Sandro Piroddi at Ford Europe says the carmaker has no plans to use it for production, noting that machines are too slow and expensive at present.

Rich Oldfield, technical director of GKN Aerospace, says: "I think the jury is still out on just how far and fast it will penetrate into automotive and other mass market industries. Additive works for aerospace because we use exotic expensive materials."

Ford, Jaguar Land Rover, Volkswagen and Aston Martin are just a few of the automotive companies using the technology to quickly produce prototype parts, saving millions of pounds in their product development process.

Compared with conventional production processes, making 3D products requires no expensive tooling and can be accomplished by a direct transfer of digital data to a production machine.

The reduction in development time is a key benefit of 3D printing, according to carmakers. With traditional methods, a Ford engineer would create a computer model of an intake manifold engine part and wait about four months for a prototype at a cost of $500,000. With 3D printing, the car manufacturer can print the same part in four days at a cost of $3,000.

Most of the prototyping by carmakers has been done using plastics, but many are now exploring 3D printing with metals. Volkswagen says it is testing the latest printing methods, which utilise laser sintering of powdered metals to produce metal parts.

"The goal is to achieve widespread use of this method, which could compete with conventional fabrication methods for short production runs," says Pietro Zollino of Volkswagen.

Terry Wohlers of Wohlers Associates believes that once prices of machines and materials fall, the automotive industry will begin to use

the technology for manufacturing. He believes this could happen in seven to 10 years.

3D printers can be used to create a wide variety of products, even a Christmas tree. This festive favourite has been printed out of super-hard special steel, the same material used to print parts of burners for gas turbines



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