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## Rolls-Royce plans 3D printing for jet engine parts

By Jeevan Vasagar in Berlin



Rolls-Royce is gearing up to use 3D printing technology to produce components for its jet engines, as a means of speeding up production and making more lightweight parts.

Henner Wapenhans, the company's head of technology strategy, said Rolls-Royce was "a few years away" from using the technology to produce parts that go into service.

"3D printing opens up new possibilities, new design space," Dr Wapenhans told a round-table for journalists in Dahlewitz, outside Berlin. "Through the 3D printing process, you're not constrained [by] having to get a tool in to create a shape. You can create any shape you like."

The Rolls-Royce executive said the technology could be used to reduce the weight of parts such as brackets.

He said: "There are studies that show one can create better lightweight structures, because you just take the analogy of what nature does and how bones are built up – they're not solid material.

"And so things that are simple things like brackets can be made a lot lighter."

He declined to give examples of other parts that could be printed, but added: "It's more a question of individual parts that are ready to be released into serious production, as opposed to large parts of an engine."

General Electric said recently that the company plans to expand the use of 3D printing, including creating fuel nozzles for jet engines.

Last year GE Aviation acquired two privately held companies in Cincinnati which specialise in 3D printing, also called additive manufacturing.

Companies such as Siemens and BMW are among those developing applications for additive manufacturing. The technology dates back to the 1980s, when 3D printers used plastics. The latest technology is capable of building complex shapes from ceramics and metal.

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Dr Wapenhans said that use of 3D printing would enable Rolls-Royce to slash lead times. The company would gain an "inventory advantage," with less need to store parts, he noted.

"One of the great advantages in the aerospace world is that some of these parts that we make have very long

faster lead times, because of the tooling process that's got to [happen], and then it takes potentially 18 months to get the first part after placing an order – versus printing it, which could be done quite rapidly.

- Henner Wapenhans, Rolls-Royce  
head of technology strategy

“Even if it takes, you know, a week to print, that's still a lot faster.”

Sales of 3D printers and related services rose to \$2.2bn last year, and are estimated to rise to about \$6bn annually by 2017, according to a forecast from consultancy Wohlers Associates.

The devices, which are expected to transform the manufacturing process of many products from hip replacements to sports shoes – have recently hit the headlines because of their ability to create a gun in the comfort of someone's living room.

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