



## South Africa in talks with Airbus, Boeing to print 3D titanium parts

South African researchers developing the world's largest machine for producing aircraft parts using lasers to melt powdered titanium are in talks with Airbus and Boeing, with the first commercial application expected in 2019.

Officially launched in 2011 and backed by government, the Aeroswift research project last year produced its first three demonstrator parts – a pilot's throttle lever, a condition lever grip which is part of the throttle assembly, and a fuel tank pylon bracket, in a digital process known as 3D printing, or additive layer manufacturing. Increasingly adopted by the automotive, aerospace and military industries as a cheaper way of making complex parts, the new manufacturing process could save

millions of dollars on fuel and production costs as aircraft makers replace aluminium bodies with lighter materials such as titanium alloys.

"How best to commercialise the process is a discussion we are currently having with the Aeroswift partners and relevant government agencies," said Simon Ward, Airbus's vice-president for international cooperation in Toulouse.

Ward said Airbus was in talks with Aeroswift and the South African government to ensure the project was commercially successful and created jobs in South Africa, where unemployment runs above 25 percent.

Airbus, which already sources parts for its A400M military transport aircraft from



South Africa, has been offering Aeroswift support in terms of consulting, benchmark information and advice on what type of aircraft components to focus on, Ward said.

South Africa's Council for Scientific and Industrial Research (CSIR), in partnership with local aerospace firm Aerosud Innovation Centre, say access to vast titanium reserves as well as pioneering the world's largest titanium powder-based 3D printing machine should give them a competitive edge.

South Africa ranks fourth in world titanium reserves, behind leader China, Australia and India, according to the U.S. Geological Survey.

"Our machine is unique and the only one in the world," said Hardus Greyling, Aeroswift's contract coordinator who works at the CSIR's laser centre.

"We have developed new technologies and patents which allows us to upscale the additive process to go significantly faster and significantly larger than other systems."

During proof of concept trials, the machine achieved production speeds up to 10 times faster than currently available commercial laser melting machines, he said. Its production chamber's volume measures up to 2 metres by 600mm by 600mm – about four times larger than the biggest commercial machines currently available, which operate at dimensions of 600mm by 500mm by 400mm, said Greyling.

Terry Wohlers, president of U.S.-based industry consultancy Wohlers Associates, said after initial doubts his optimism for the project was rekindled when learning that the first parts demonstrated would be in test flights this year.

## Mercury Marine Installs New High-Pressure Die Casting Machine



Mercury Marine (Fond du Lac, Wisconsin), manufacturer of recreational marine engines, announced the commissioning of a new high-pressure die casting machine, said to be the largest in North America.

This investment is a 4,500-ton Buhler-Prince machine. Installation began late in 2016 and was completed in March 2017.

According to a news release, Mercury Marine has now invested more than \$800 million in R&D and manufacturing expansion at its Fond du Lac campus since 2009.

"This new machine positions us to

make castings that no one else in the industry can do," said Mike Meyer, general manager, Mercury Castings.

"With this new machine, Mercury can make larger, lightweight structural components and reduce the overall weight of engine by producing more efficient castings."

The new machine has 4,500 tons of closing force with three industrial robots

integrated into the cell. The total weight of machine with tools and oil is more than one million lbs. The new machine can produce large, structural components for the high horse power marine segment, and other segments such as automotive.

"This new state-of-the-art casting machine on our campus gives us the opportunity to continue to drive growth for the business," said John Pfeifer, president, Mercury Marine.

"This investment is one of many milestones on Mercury's investment journey to support our customers now and into the future."