

### TITAL® - NEWS-FLASH

TITAL set a positive example at the ILA in Berlin for more environmental protection in the aerospace industry. TITAL's latest research innovation - titanium-aluminide turbine blades provides an opportunity for the creation of value in Germany as a location for industry to supply a more environmentally global air transportation market. The innovation also serves as a driving force for new technology development and competition. Climate protection means taking precautions now for long-term economical and ecological development.

### TITAL® - STATEMENT



Why was it so important to develop a casting process for the intermetallic alloy titanium-aluminide (Gamma TiAl)?

Philipp Schack, Managing Director at TITAL GmbH: "Because titanium-aluminide carries great technical potential: turbine blades made from Gamma TiAl are very heat resistant and resist temperatures up to 850°C, compared to conventional alloys of 600°C. Furthermore with a density of 4 g/cm³ they are 10% lighter than conventional titanium alloys and only half the weight of comparable special purpose steel. These significant weight savings contribute to substantial energy savings and are particularly advantageous regarding CO<sub>2</sub>-emissions."

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## Research Success: Inauguration of Casting Facility for Turbine Blades made from Gamma TiAl

The partnership between Access, an institute at the RWTH Aachen, and TITAL GmbH, the premier investment casting company based in Bestwig, has taken a major step forward. Following a long-term development process a new melting and casting plant for the production of titanium aluminide blades has been commissioned in Aachen. Full production of these turbine parts (overall size, or edge length, ranging up to 300 mm) is planned to go forward in 2013. Within the scope of their partnership, the common goal of TITAL and Access has been to develop an efficient process to cast aircraft engine components in gamma TiAl (titanium aluminide), an intermetallic alloy. A new concept for a casting plant that will achieve cost-effective production has been developed in parallel in a second partnership with ALD Vacuum Technologies. Gamma TiAl is lightweight and temperature resistant, an ideal material for aircraft engines. The project has



Legend: (from top left): Prof. Dr.-Ing. A. Bührig-Polaczek (Casting Institute RWTH), Dr. N. Arndt (Rolls-Royce Germany), Dr.-Ing. J.-M. Henne (MTU Aero Engines), M. Nettekoven (RWTH), N. Hardouin (Snecma). (From bottom left): P. Schack (TITAL), R. Guntlin (Access), Secretary of State Dr. J. Bağanz, Dr. M. Schmeer (1. mayor of the town Aachen), Dr. R. Walter (ALD Vacuum Technologies).

received the financial backing from the Ministry of Economics of North Rhine-Westphalia, as well as funding from the federal government's Aerospace Research Program. Additional investment in the project has been made by TITAL and the other industrial partners and has enabled one of the most ambitious projects in the globally competitive field of aircraft engine manufacturing technology in the North Rhine-

Westphalia region. Having successfully completed the technology and development phase, the execution and implementation phase is now underway where Access and TITAL will be counting on the support of both the federal government and the North Rhine-Westphalia region. This continuing support will enable the partners to sustain their competitive edge in the global market.

## TITAL's HERO-Premium-Casting® Process Licensed in Japan

The fourth casting facility worldwide that produces aluminum castings using the HERO-Premium-Casting® process has been put into operation in Japan. The patented casting process was developed in the 90s by TITAL GmbH. The facility has been commissioned by the Japanese company NIDAK Seimitsu Corporation in Soma City. NIDAK Seimitsu delivers aluminum investment castings

like TITAL, mainly to customers in the aerospace industry. When using the patented HERO-Premium-Casting® process, aluminum investment castings with casting factor 1.0 can be produced in a safe, reliable and repeatable way. Aluminum investment castings produced with the HERO-Premium-Casting® process have measurable quality that cannot be attained with any

other casting process. By using this process, aluminum investment castings can compete directly with parts machined from solid material. In 2008 the Japanese company NIDAK Seimitsu formed a sales partnership with TITAL and was granted a license for the HERO-Premium-Casting® process for aluminum investment casting.