

TITAL® - NEWS-FLASH

Top marks for TITAL GmbH: The investment casting specialist located in Bestwig is the only company worldwide that has been classified as an A Level supplier in Airbus new supplier monitoring system. All other suppliers are rated in levels B, C or D. Only a year ago Airbus introduced the new comprehensive system for monitoring its suppliers (Industrial Process Control Assessment+ (IPCA)). Berthold Busch, Director Quality Management at TITAL: "This substantiates the high standards which we apply to everything we do."



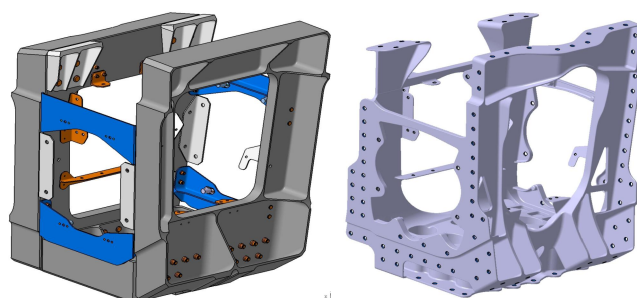
TITAL® - STATEMENT

Is a FE-model which results from topology optimization suited as a production model? TITAL Sales Manager Michael Kersting: "It is not that simple. The integrated mounting parts and gating have to be added to the FE-model so that the part can be built into the plane without any problems. This step is recorded in a CAD model. Based on this CAD-model we produce a one-piece component using the investment casting process which is much lighter than the original component due to omitting assembly parts like fittings, rivets and nuts. Using this process, several assembly (installing fittings and placing rivets) are left out resulting in an overall cost saving of more than 20 percent."

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20 Percent lower Costs through Topology Optimisation plus Investment Casting

The specialist for titanium and aluminum investment castings TITAL strengthens its cutting edge regarding innovative product development processes for the aerospace industry. Using topology optimization and conversion in the investment casting process, the medium-sized company located in Germany was able to reduce the weight of a titanium component by 30 percent. When using topology optimization the casting body mass is distributed in an optimal way within a determined space. Therefore the mechanical properties remain unchanged. Topology optimization also facilitates a reduction of assembly time which can result in dramatic cost savings. A 20 percent cost savings was realized during a joint project for an EMBRAER pylon component. TITAL's partners on this project were the Engineering Society for General Mechanical Engineering (Ingenieurgesellschaft für Allgemeine Maschinentechnik+ (IAMT)) located in Lud-



Titanium component before and after topology optimization.

wigsfelde, Germany, and the fourth largest aircraft manufacturer worldwide, EMBRAER from Brazil. In 2009, TITAL and the IAMT started further development of an EMBRAER pylon component. The original part, which consisted of three individual components, was condensed to the minimum mass using computer simulation without reducing the required mechanical properties. Subsequently, the part was opti-

mized as a casting and cast in one piece. Thus, not only the weight but also the assembly times were drastically reduced as additional parts like rivets and bolts were also omitted. The combination of topology optimization and investment casting always results in considerable cost savings. and not only in this specific case. Almost all structural parts can be considered for this process.

High Quality Standards have always been achieved

TITAL meets the high NADCAP quality requirements of the big aircraft and turbine manufacturers with its special production processes. TITAL regularly completes five different certification processes for NADCAP (National Aerospace and Defense Contractors Accreditation Program) with very convincing results.

This global testing and accreditation institution monitors

the compliance of special production processes for well-known aerospace companies like Airbus, Boeing and Rolls Royce.

Special processes are work steps in production and quality control where the technological and physical characteristics of the material are changed, but the changes can only be identified via special measurement and

analyses. Companies that meet the high NADCAP standards and requirements are classified by the major aerospace manufactures as "strategic suppliers". Worldwide only a few casting companies like TITAL exist that only have to conduct the NADCAP audits at intervals of 18 or 24 months due to the extremely stable test results.