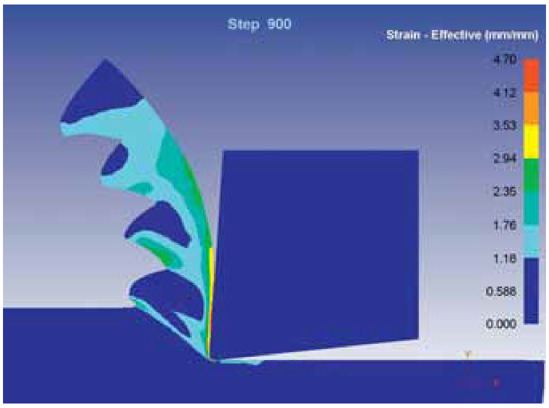
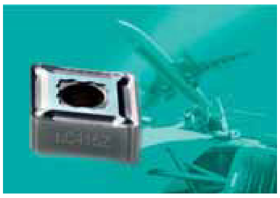
TIZ^2

Highly economical titanium chip removal – second point of emphasis

Due to its physical, mechanical and thermal properties, the lightweight construction material titanium is among the materials which are difficult to machine. The difficulty with the machining of titanium is seen above all in the following facts: because of the relatively low thermal absorption of titanium splinters, with low specific heat values, the cutting edge of the tool is subjected to high thermal stress. Due to its low modulus of elasticity, titanium yields to the pressure of the cutting tool, causing dimensional deviations and component tolerance problems and possibly oscillations of the tool. The latter generally accelerates tool wear. Titanium also tends to fuse to the tool (keywords: adherence, built-up edges).





The goal of this project is to achieve technological supremacy in titanium machining, ahead of the USA and Japan. This entails improving process reliability for the increasing complexity of components, with a performance increase greater than 100% compared to today's machining. The consortium partners can directly implement and utilize the results in aviation, where a large growth in titanium applications is predicted. Applications in other industries such as the automotive, racing, aerospace, energy and medical engineering sectors are also under consideration.

The consortium is seeking to achieve vast improvements and optimization in titanium machining. This focuses on turning with indexible inserts and milling with solid carbides. The parallel investigation of both machining processes should identify synergetic effects and reduce the risks for the individual partner companies. The many specialized areas of expertise of the partner companies represent a solid basis for ensuring the success of the project. Decisive for the optimization is to be able to achieve a high-quality compromise between a sharp cutting tool, high mechanical stability and good thermal strength.

Info box

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