
InssTek Korea and Z3DLAB France, in direct line of friendly relationship with the two nations (France year in Korea), join forces to offer their customers the best in advanced material for aeronautic parts repair and medical cutting edge implants.

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InssTek and Z3DLAB today announced their intention to deploy **ZTi-Powder®** and **ZTi-Med®** on InssTek product line aimed, respectively, for the repair of used parts more specifically in the aeronautic sector and the medical orthopedic implant market.

An alliance of expertise

In Aeronautic

InssTek is a leader in Direct Metal Tooling (DMT) Technology, been successfully used to repair parts of a F-15K fighter jets belonging to the main fleet of the South Korean Air Force. The permanent readiness for use and therefore the maintenance and repair of these engines are in hardly any other country of more strategic importance than in South Korea, which shares a 240 km long border with North Korea.

Z3DLAB is a French company, expert in Additive Manufacturing (AM) and has specialized in engineering Advanced Material for AM. **ZTi-Powder®** Z3DLAB's Flagship product has properties enhancing TA6V making it more harder and more resistant up to 50%, was developed for additive powder bed Laser Selective Melting (SLM). Z3DLAB continues it's deployment of it's ZTi-Powder® to the DMT technology with InssTek to provide a more advanced repair situation compare to regular TA6V by increasing up to 30% life spent of the repair parts.



ZTi-Powder® Ta6V and Nano-Ceramic Alloy

In Medical

InssTek **metal surface coatings** applied to orthopedic implants allow a three-dimensional interconnected array of pores throughout the coating thickness, which in turn helps to promote bone tissue ingrowth and provide long-term stability of the implant. The traditional processes used to apply these coatings including sintering and plasma spraying. The introduction of direct metal tooling (DMT) 3D metal printing technology however, provides a number of significant benefits in terms of the strength and porosity characteristics of the finished product.



MPC DMT® 3D metal printer for special coating of orthopedic implants

Z3DLAB early this year has announced **ZTi-Med®**, a non-toxic and low

young modulus Advanced Material for the medical world. This new material composed of Ti and Ceramic fusion can be applied as a coating on orthopedic implants and provide non-toxic coating. The ZTi-Med® will be available by 2020.

Ambitions:

Reduce cost and repair time of used aeronautic parts.

Having the possibility to repair from small to large parts and increasing their life spent is an enormous cost advantage. Immobilization of planes on the ground is one of the most costly factors in the supply chain.

The MRO (Maintenance, Repair and Overhaul) market is valued to be ranging from 43,7 B\$ in 2010 expected to reach 80 B\$ by 2025. The CFM56 (Engines from GE/SNECMA) mainly used on Airbus representing 65% of the MRO market. Repair chains are vital in the supply chain as all of them are in full production capacity.

Be ready for next generation of cutting edge implants.

The TA6V used in implants since 60 years has some drawbacks like its toxicity (it contains 6% of Aluminum and 4% of Vanadium both toxic for humans) and even though TA6V is the metal who has the closest Young Modulus (measure of elasticity GPa) to the bones compared to other metals, it is far from being close to the bones (TA6V 115 GPa and cortical bones - the hardest - 25 GPa). The Ratio Risks/Benefits will obviously change with new feedstock like ZTi-Med®

About Z3DLAB

As a French company expert in AM, as from early stage worked on the advanced feedstock of Additive Manufacturing based on metal powder bed. Specialized in Titanium metallurgy and Nano-ceramic, Z3DLAB announced in 2015 **ZTi-Powder®** a world premiere in AM by realizing a fusion of TA6V and ceramic. The result was the hardest material for AM. Early this year Z3DLAB has announced **ZTi-Med®** available by 2020, a non-toxic and low Young modulus Advanced Material for the medical world. Z3DLAB is a member of the pole ASTech the French aerospace cluster of competitiveness.

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About InssTek

InssTek is a frontier of AM (Additive Manufacturing) in DED (Directed Energy Deposition) 3D metal printing market. The company was established in 2001 for developing and commercializing metal 3D printing across the globe. InssTek developed its own DED process named **DMT (Directed Metal Tooling)** that ease to manufacture products which have complex shapes with specific functions. The technology is classified as Directed Energy Deposition by ASTM standard. It provides new and wide range solutions. InssTek offers user-friendly environment to provide customized 3D metal printing process from design to manufacture products with its software including MX-OS and Magics.

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