



## MARKET ANNOUNCEMENT

- **Certification Standards Achieved for TKF Process for Titanium**
- **\$2.6M Research Project 12mth milestones achieve successful test results meeting Industry Standards**
- **83.8% Higher Strength than ASTM<sup>4</sup> Standard for Titanium Parts**
- **38.5% Higher Elongation than ASTM<sup>4</sup> Standard for Titanium Parts**
- **Results position Titomic as the global leader in transformational metal AM technology for aerospace structural components**

**Melbourne, Australia, Monday 28<sup>th</sup> October 2019:** Australian digital manufacturing solutions company Titomic (ASX: TTT) is pleased to advise of the outstanding test results which have been achieved from the \$2.6M co-funded IMCRC, CSIRO & RMIT Research Project to develop Titomic Kinetic Fusion (TKF) certification standards announced to the ASX on 26<sup>th</sup> October 2018<sup>1</sup>.

The research findings show that Titomic's TKF process to additive manufacture titanium parts using CP Titanium Grade two powder<sup>2</sup> achieved ultimate tensile strength (UTS) of 634Mpa being 83.8% higher than 345Mpa<sup>3</sup> set by ASTM International<sup>4</sup>, and an increased elongation of up to 27.7% being 38.5% higher than 20%<sup>3</sup> set by ASTM International. This provides evidence that Titomic Kinetic Fusion has the fatigue resistance and strength requirements for aerospace and other industry applications, plus far exceeds the minimum ASTM International standard requirements.

The primary objectives of the 2-year research program is to develop new industry standards for fatigue, crack growth, fracture toughness of Titanium complex-shaped structures produced using the TKF manufacturing process as further validation for additive manufactured parts for Aerospace.

With the current focus by ASTM International world standards on the lack of metal 3D printing industry standards, design principles, as well as qualification and certification challenges for additively manufactured metal parts, Titomic is the transformational leader in commercially viable Titanium additive manufacturing with a secure supply chain of Titanium powders.

Mr. Jeff Lang, Titomic Managing Director, said:

*These test results not only provide validation to industry of titanium parts produced using our TKF process, but more importantly the research conducted across multiple Titanium powder supply chains secured by Titomic outlines why we placed so much emphasis on securing feedstock powders with industry leading companies to capture the entire value chain surrounding our technology whilst meeting ASTM International standards.*

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**1 ASX Announcement - 26<sup>th</sup> October 2018:**

Joint \$2.6 million Research Project to develop Titomic Kinetic Fusion™ (TKF) Standards  
<https://www.asx.com.au/asxpdf/20181026/pdf/43zn7xpchst5fx.pdf>

**2 Commercially Pure (CP) Titanium Grade 2** is the most widely available of the commercial titanium grades and as such is probably used in the most diverse range of applications that require a high resistance to corrosion, such as aircraft construction or chemical and industrial applications.

**3 ASTM International Standard B348 for Commercially Pure Titanium**

<http://www.astm.org/Standards/B348.htm>

Ultimate Tensile Strength (UTS) Properties (Minimums)\*  
UTS Tensile: ASTM 345Mpa      Elongation: ASTM 20%

**Disclaimer:** The use of this information is strictly voluntary and should be used as a guideline only

**4 ASTM International** <https://www.astm.org>

ASTM International is a globally recognized leader in the development and delivery of voluntary consensus standards. Today, over 12,000 ASTM standards are used around the world to improve product quality, enhance health and safety, strengthen market access and trade, and build consumer confidence.

Our leadership in international standards development is driven by the contributions of our members: more than 30,000 of the world's top technical experts and business professionals representing 140 countries. Working in an open and transparent process and using ASTM's advanced IT infrastructure, our members create the test methods, specifications, classifications, guides and practices that support industries and governments worldwide.

ASTM International standards are the tools of customer satisfaction and competitiveness for companies across a wide range of markets. Through more than 140 technical standards-writing committees, we serve a broad range of industries: metals, construction, petroleum, consumer products and many more. When new industries - like nanotechnology, additive manufacturing and industrial biotechnology - look to advance the growth of cutting-edge technologies through standardization, many of them come to ASTM International.

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**About Titomic Limited:**

Titomic Limited (ASX:TTT) is an Australian public company specialising in digital manufacturing solutions for industrial scale metal additive manufacturing using its patented Titomic Kinetic Fusion® (TKF) technology. The TKF technology provides unique capabilities for producing commercially viable additively manufactured metal products competing directly with traditional manufacturing methods. Titomic provides OEM production and R&D services from their TKF Smart Production Bureaus to the global Aerospace, Defence, Shipbuilding, Oil & Gas, Mining and Automotive industries. Titomic also provides an extensive range of metal powders for 3D Printing especially Titanium and super alloys whilst providing sales and support services for their TKF production systems.

For more information please visit: [www.titomic.com](http://www.titomic.com)

**Forward-looking statements:**

Certain statements made in this release are forward-looking statements and are based on Titomic's current expectations, estimates and projections. Words such as "anticipates," "expects," "intends," "plans," "believes," "seeks," "estimates," "guidance" and similar expressions are intended to identify forward-looking statements. Although Titomic believes the forward-looking statements are based on reasonable assumptions, they are subject to certain risks and uncertainties, some of which are beyond Titomic's control, including those risks or uncertainties inherent in the process of both developing and commercialising technology. As a result, actual results could materially differ from those expressed or forecasted in the forward-looking statements. The forward-looking statements made in this release relate only to events as of the date on which the statements are made. Titomic will not undertake any obligation to release publicly any revisions or updates to these forward-looking statements to reflect events, circumstances or unanticipated events occurring after the date of this release except as required by law or by any appropriate regulatory authority.