



Titomic Exclusively Licenses 2 New Patents from CSIRO

- IP exclusively licensed from CSIRO for production of Pipe & Continuous Pipe
- Technology derived from an 8 year, approx. \$10M historical research program
- Acquisition Agreement with Future Titanium Technologies for Pipe Technologies
- New global revenue opportunities in the \$264 Billion Pipeline Industry⁵
- New global revenue opportunities in the \$88.4 Billion Valve and Fittings Industry⁴
- AM Pipe production viability with Titomic's cost effective powder supply chain

Melbourne, Australia, February 8th, 2019: Australian advanced manufacturing company Titomic Limited (ASX: TTT) ("Titomic" or "Company") today announces it has executed an Exclusive License Agreement with CSIRO and an Acquisition Agreement with Future Titanium Technologies.

The Exclusive License Agreement with CSIRO grants Titomic exclusive global rights to two patents for the production of Pipe, as well as Continuous Pipe manufactured using Titanium and Titanium Alloys which will open significant revenue opportunities for Titomic across a number of major industries, in particular the Oil and Gas, Defence, Marine and Mining sectors.



CSIRO's Dr Keith McLean, Titomic's Jeff Lang and FTT's Peter Mews celebrate the signing in Melbourne yesterday.

Under the agreement, Titomic will also receive more than 8 years of exclusive innovative additive manufacturing techniques, background IP, and Know How for the production of pipe and pipe components including, but not limited to, Valves and Fitting Components. This technology results from the 2010 Victorian Government initiated Victorian Direct Manufacturing Centre (VDMC) program, which received contributions of approx. \$10M, from industry, and research providers to help revitalise the manufacturing sector and deliver economic and environmental benefits to Victoria.

Pipe can now be Additively Manufactured (Metal 3D Printing) using Titomic Kinetic Fusion (TKF) systems without the size and profile constraints of traditional pipe manufacturing techniques.

TKF produced metal pipe has superior wear and corrosion resistant properties in comparison to traditional wrought metal pipe. By utilising TKF's production method of fusing dissimilar metals for pipes, valves and fitting components means industries will be able to gain access to next generation dual-wall materials for superior wear and corrosive resistance properties applicable to industries such as Oil and Gas, Defence, Marine and Mining sectors.

Titomic can now exploit this technology commercially due to these key performance factors:

- 1) **Quality:** Titanium TKF produced metal pipe has superior wear and corrosion resistant properties.
- 2) **Scale:** TKF produced pipe has no size and profile constraints compared to traditional pipe manufacturing techniques.

- 3) **Cost:** Titomic cost effective powder supply chain has overcome the largest barrier to entry for Additive Manufacturing suppliers into Oil and Gas, Defence, Marine and Mining sectors. (see *Titomic's Dec 2018 ASX releases a) Sino-Euro and; b) Lasting Titanium*)
- 4) **Speed:** The TKF automated production line will enable industry to manufacture continuous metal pipe using Additive Manufacturing.
- 5) **Sustainability:** Australia dominates the world's resources for titanium minerals, and Titomic is making a valuable contribution to establishing a titanium manufacturing industry and adding value to Australian natural resources.



Titomic Kinetic Fusion™ demonstrates mandrel deposition at Titomic R&D Production Centre in Melbourne yesterday.

As an example, the oil & gas industry are one of the world's largest users of valves. The inventory required and the lifecycle of these valves and fitting components is significantly influenced by sediments, sand, rock and other abrasive matter running through the pipe and fitting components during the extraction process. These new patents and knowledge capabilities will allow Titomic to produce piping, valves and fitting components with a significantly higher wear resistance than current piping being used.

There are significant cost and efficiency savings for consumers of piping and fitting components not only through longer life cycles of parts, less down time, lower maintenance costs, but TKF systems can also produce piping, valves and fitting components with new superalloys and metallurgical fusion of metal powders, combined with alloys, ceramics, polymers and composites to deliver superior performance properties.

This offers opportunities never before available to industries whereby the outside material of a product can be selected for the external environmental factors, for example: metals with corrosive protection from salt water, and the internal material of the product can be a different metal for the internal use factors, for example: high wear protection from abrasive materials.

Unlocking New, High Value Market Opportunities

Product	Advantages	Target Industries
Pipe manufacturing	<ul style="list-style-type: none"> • Corrosion and wear resistance means longer product life and less frequent maintenance; • Cost efficiencies and reliability improves; • Multiple materials can be used within same product; • Faster production time using TKF systems; • Companies can make piping to the size and requirements they desire 	<ul style="list-style-type: none"> • Oil & Gas • Defence • Aerospace • Marine • Power generation • Mining
Valves manufacturing	<ul style="list-style-type: none"> • Fusion of performance metals to minimise maintenance downtime and costly shutdowns. 	<ul style="list-style-type: none"> • Petrochemical • Chemical
Manufacturing of seamless & continuous pipe	<ul style="list-style-type: none"> • Reduce implementation timelines and cost for large pipeline projects. 	<ul style="list-style-type: none"> • Food & Beverage • Pharmaceuticals • Water treatment

Mr. Jeff Lang, Titomic Managing Director commented:

“This is a significant expansion of Titomic’s IP and associated revenue opportunities. By adding these two new patents we are broadening our footprint in the Titanium and Titanium Alloys Additive Manufacturing space to firmly secure our future market segments.

Our fundamental strategy has been well timed and managed to perfectly combine the securing of cost-effective metal powder supply chain, with the expansion of our IP portfolio positioning Titomic as the global leader in viable metal Additive Manufacturing.

To capitalise on the significant \$300+ Billion global interest Titomic has received from the Oil & Gas, Mining, and Marine industries to provide more sustainable and cost-effective AM manufacturing, these new TKF technologies enable Titomic to provide viable digital manufacturing capabilities leading to significant short, mid and long-term revenue opportunities.”

Stefan Gulizia, Research Group Leader at CSIRO, commented;

“Working with companies like Titomic shows that manufacturing remains a key driver in the Australian economy. We are pleased that Titomic are licensing the rights to utilise and further commercialise CSIRO research in developing new products and processes that go towards supporting productivity gains, boosting sustainability and helping capture emerging opportunities in local and global markets.”



CSIRO's Dr Keith McLean, Titomic's Jeff Lang and FTT's Peter Mews hold a completed pipe section created using Titomic Kinetic Fusion™



Titomic stakeholders and well celebrate the acquisition of the two pipe patents

Overview of the Key Exclusive License Agreement and Acquisition Agreement Terms

The key transaction terms of the Acquisition Agreement with FTT are as follows:

- Titomic allot to the shareholders of FTT \$400,000 worth of Titomic Limited shares at an allotment price of \$2.00 per share, half of which will be escrowed for 12 months.
- Titomic will also issue 1 new option for every 2 shares to the FTT shareholders. Each option will be exercisable price set at a 130% premium to the share price with a 2-year life.

The key transaction terms of the Exclusive License Agreement with CSIRO are as follows:

- Titomic to pay CSIRO \$125,000 in cash as an upfront fee for licensing the technologies;
- Titomic will pay CSIRO a royalty on gross revenues received directly from the sales of products produced using either of the licensed patents in accordance with Titomic’s IPO Prospectus; and
- Where Titomic directly sub-licenses any entire license field sector to a third party without adding any value to the intellectual property, Titomic will pay CSIRO a one-time 20% royalty from the revenues received, regardless of multiple licensed patents contained in the product;

- Titomic will pay minimum annual royalties to CSIRO of;

Period (Year)	Minimum Royalty Fee Payable
2018 - 2019	\$50,000
2019 - 2020	\$75,000
2020 - 2021	\$75,000
Agreement year 4 and every subsequent agreement year until the end of the licence Term	\$150,000

- In addition to the \$350,000 research fees payable to CSIRO for Titomic’s initial Load-Bearing Structure patent as disclosed in Titomic’s IPO Prospectus, with the exclusive licensing of the two new patents Titomic will pay an additional \$200,000 per annum research fee to CSIRO for 3 years to collaborative develop and explore other Cold Spray related IP projects.



Sources:

- 1 <https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2009109016&tab=PCTCLAIMS&maxRec=1000>
- 2 <https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2014085846&tab=PCTCLAIMS&maxRec=1000>
- 3 <https://www.zionmarketresearch.com/news/heat-exchangers-market>
- 4 <https://www.zionmarketresearch.com/report/industrial-valves-market>
- 5 <https://www.oqj.com/articles/print/volume-116/issue-2/special-report-worldwide-pipeline-construction/near-term-pipeline-plans-nearly-double-future-slows.html>

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About CSIRO:

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is Australia's national science agency and one of the largest and most diverse research agencies in the world. Its innovations contribute billions of dollars to the Australian economy every year. As the largest patent holder in the nation, CSIRO's wealth of intellectual property has led to more than 150 spin-off companies. For more information visit www.csiro.au

About Titomic Limited:

Titomic (ASX:TTT) is headquartered in Melbourne, Australia. Titomic is positioned to change the value proposition of Titanium, to unlock new applications and open opportunities that are now technically and economically viable with its proprietary Titomic Kinetic Fusion™ (TKF) technology platform.

TKF overcomes the limitations of additive manufacturing (3D printing) for metals to manufacture complex parts without shape or size constraints. TKF offers production run capability to organisations, which enables speed-to-market, superior products with lower production inputs using fewer resources for a more sustainable future.

Titomic's TKF enables first mover advantage in industrial scale TKF manufacturing for sectors such as aerospace, defence, resources (oil & gas, mining, rail, chemical & industrial equipment), marine, construction, automotive, medical and consumer & sporting goods.

For more information, visit: 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.

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