



## Titomic Kinetic Fusion™: Powering the Next Generation for Titanium Manufacturing

Titanium is the fourth most abundant metal on earth. It has many characteristics that make it highly desirable for use in industrial production however, issues with its cost, supply, and fulfilment has meant adoption of Titanium for general manufacturing has been limited to high value products, for example, Aerospace and Defence.

**Titomic's proprietary Titomic Kinetic Fusion™ (TKF) manufacturing process can resolve these challenges to unlock opportunities for industries to use titanium in their applications.**

Factors	Current industry challenges	Titomic's Solution
<b>Cost</b>	Existing metal 3D printers require the highest grade of Titanium powder (starting from US\$250/kg) making it only suitable for high value uses (Defence, Aerospace, Medical)	<ul style="list-style-type: none"><li>• TKF process can utilise all grades of titanium powder</li><li>• Titomic's access to all price-point titanium powders translates to economies of scale and viable high-volume production for demand generation in new markets (automotive, building, marine, consumer goods)</li></ul>
<b>Supply</b>	Titanium is predominantly used in Defence, it is also a restricted material in most countries	<ul style="list-style-type: none"><li>• Titomic's access to global titanium powder suppliers with TKF's ability to utilise various powder grades allows many new industries to utilise titanium for manufacturing</li></ul>
<b>Fulfilment</b>	Current metal 3D printers are restricted in size, cannot deliver volume, and lack build speed for manufacturing at scale	<ul style="list-style-type: none"><li>• TKF has no size or shape constraints and can deliver build speeds of up to 45/kg per hour</li><li>• Delivers automated volume production at industrial scale</li></ul>

## Titomic: Best-in-Class Value Proposition

Titomic can overcome technical and economic constraints in additive manufacturing production to enable a new wave of materials applications and development with TKF:

- **Transforms production value proposition:** TKF systems offer viable metal 3D printing solutions to industry allowing it to compete directly with traditional metal fabrication manufacturing;
- **Enables onsite production:** As TKF will offer end-to-end production solutions, this crates more efficient labour and overhead cost, complex international logistical issues and transportation footprint, to become competitive to low-cost labour outsourcing;
- **Speed of production:** With deposition speeds of between 15 - 45 kg per hour, TKF systems can mass produce a wide range of large volume parts of various sizes and complexity;
- **Substantially less material waste:** The TKF processes can achieve up to a 99% deposition efficiency, and when used to produce near net-shaped parts can reduce machining process of these parts by up to 70%; and
- **Versatility:** TKF can run production using Titanium, other metals, alloys, superalloys and composites.

With Titomic's recent exhibition at Formnext 2018 in Germany, there has been an increasing growth in global interest for TKF from a range of major companies in several high value verticals.



Titomic is positioned to maximise the potential of its technology and develop assets by accelerating market adoption globally.

## Expanding business model for viable industrial scale production

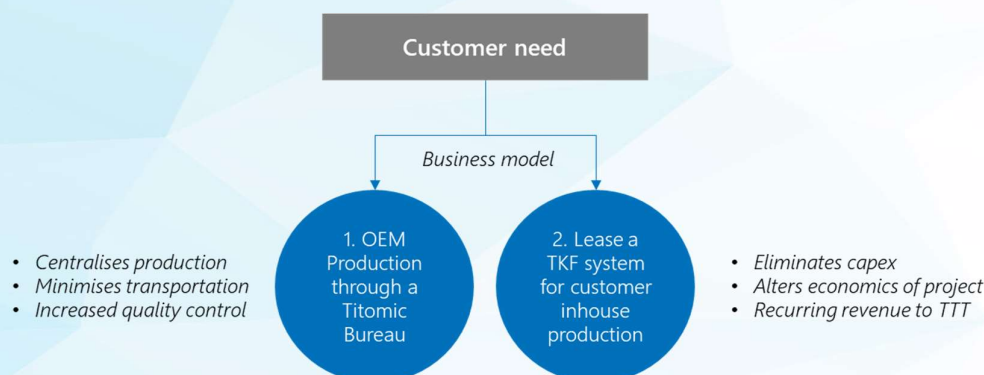
To unlock the growth potential of the company and increase revenue opportunities, Titomic can offer:

### 1. OEM production run capability to customers through its own centralised Bureau

Customers can contract the use of Titomic's existing TKF production capacity at its Bureau to produce both small and large-scale production runs thus lowering a customers' adoption cost barrier.

### 2. Leased TKF system options

For customers who require production runs greater than the available Titomic Bureau capacity, or who have specific compliance or location requirements, they can use TKF systems to have manufacturing on their own site (e.g. Defence, Building, Mining, Marine, & Oil & Gas). Customers will receive ongoing hardware, software and maintenance support as part of a TKF system leasing arrangement.

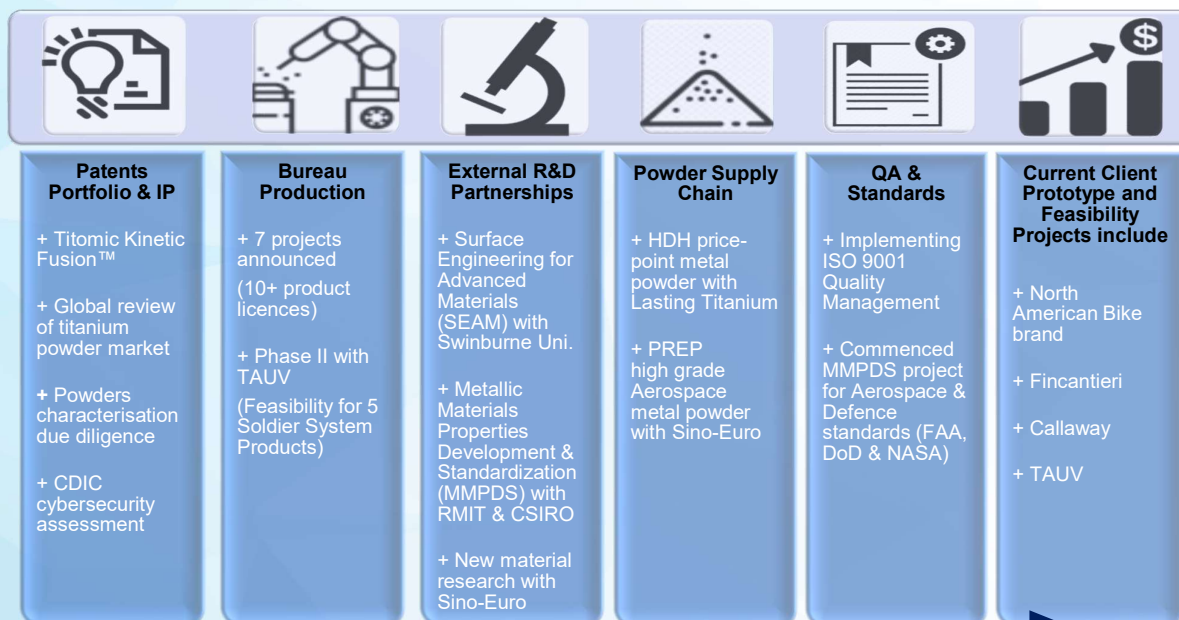


Offering two potential manufacturing pathways to customers may create several transactional and recurring revenue streams that allow Titomic to capture value throughout a customer lifecycle whilst de-risking the business model:

Transactional	Recurring
<ul style="list-style-type: none"> <li>OEM production manufacturing</li> <li>Consulting and advisory services</li> <li>Prototyping and feasibility of projects</li> </ul>	<ul style="list-style-type: none"> <li>TKF system leases</li> <li>Consumables (powders and nozzles,)</li> <li>Service and maintenance support contracts</li> <li>License fees of products</li> <li>Exclusivity fees of products</li> </ul>

## The Titomic Roadmap of Achievements to Date

Titomic continues to invest in IP, infrastructure, partnerships and processes to meet industry demand.



**Announced Achievements: September 2017 to January 2019**

**Titomic is laying the groundwork to overcome the current limitations of metal additive manufacturing (AM) by creating a sustainable production supply chain as an integrated solution for its customers.**

**Converting IP into Production-Ready TKF systems:** Securing proprietary IP from CSIRO allowed Titomic to develop its TKF9000, the world's largest metal 3D printer. The continued development of TKF systems has led to the development of its TKF1000, an entry level multi-metal AM 3D printer, and the TKF automated production line for high volume additive manufacturing.

**Development of New Materials Standards:** Titomic's strong relationships with research institutes is creating a significant step-change to transform metal manufacturing to validate mechanical properties of kinetically fused metal powders. This has led to significant research projects to achieve various industry standards whilst exploring the next generation material science.

Our programs to create new certified standards for the TKF process will bolster Titomic's market position as a global leader in industrial scale metal additive manufacturing. This will result in significant commercial opportunities for TKF adopters to use a cutting-edge digital manufacturing process for the production of complex shaped structures. Our current IMCRC project in conjunction with CSIRO and RMIT, as well as our SEAM project with Swinburne University and ANSTO, focus on enhancing TKF as a transformational technology to the highest industry standards

**Securing Powder Supply Chain:** Titomic has completed an extensive analysis of titanium powder suppliers, producers and manufacturing methods which was the most known significant global due diligence undertaken for the AM industry to date. This proprietary information provides a strategic advantage for Titomic to secure a sustainable supply chain matrix of titanium powders for various industry demands.

**Access to all Price-Point Powders for Demand Generation in Target Markets:** The current metal AM 3D printers require high grade ultra-refined high cost titanium powders restricting its use in high volume production of AM parts and products. The advantage of Titomic TKF systems are that they can use a wide range of graded powders whereby high grade titanium powders can be used for the production of high volume highly regulated aerospace & defence products, or lower price-point titanium powders, certified for the TKF process, can allow customers to produce commercial products using AM solutions in direct competition against traditional manufacturers in industries such as automotive, buildings, marine and consumer goods.

**The Integration of our Achievements to Date Progress the Titomic Strategic Business Plan:** Expanding our business model to include OEM production runs and TKF system lease options for Titomic customers utilises Titomic's existing production capacity, eliminates large customer capex barriers, and will generate recurring product licence, leasing, royalties and consumables revenue for Titomic and its shareholders.

## Notable Announcements

### October 2018

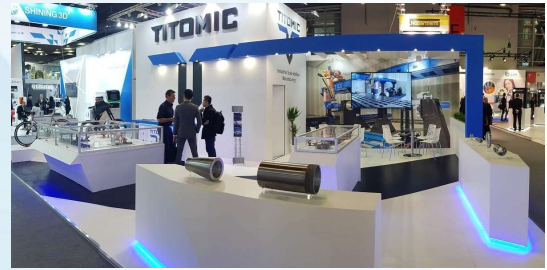
- Jeff Lang, Founding Director, who led the Company through TTT's IPO was appointed Managing Director. His knowledge of the technology and industry experience will drive shareholder value through the Company's next growth phase.
- Titomic signs 12-month \$1.8M Defence Program with TAUV to manufacture next generation soldier systems.
- Titomic executes \$2.6M IMCRC Research Project with CSIRO and RMIT to develop TKF standards to meet MMPDS for recognition by FAA, DoD and NASA. Project will position Titomic as a global leader in additive manufacturing technology for the production of structural components for the Aerospace and Defence industries.
- The Governor of Victoria, The Hon. Linda Dessau AC visits Titomic to see first-hand how Titomic establishes a self-sustained R&D production centre accruing in-house STEM capabilities and sustaining Victorian innovation.





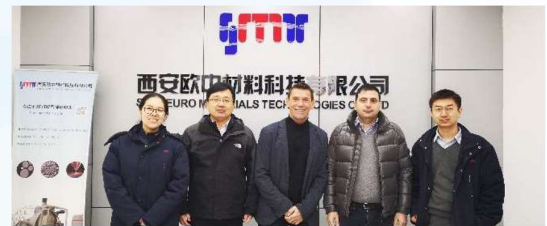
## November 2018

- Titomic demonstrates Industrial Scale Additive Manufacturing at Formnext 2018 in Germany
- Launched TKF1000, multi-metal 3D printer for all industries & research centres enabling R&D into super alloys and heterogeneous materials using TKF process.
- Click [here](#) to watch Jeff Lang introducing products on display.



## December 2018

- Phase II with TAUUV commenced to deliver prototypes and feasibility reports for 5 products (soldier systems & sensors category) manufactured using Titomic Kinetic Fusion. Upon successful completion of Phase II will commence Phase III for 5 products' production trials.
- Secures exclusive supply of new price point HDH metal powders with Lasting Titanium, opening up new commercial opportunities for commercially viable titanium products across multiple industry sectors
- Secures aerospace grade PREP metal powders with Sino-Euro. New metal powders to be developed for TKF systems. Sino-Euro to be distributor of TKF systems in China



## Upcoming Events

### Avalon Airshow, Geelong, Australia

26<sup>th</sup> February – 3<sup>rd</sup> March 2019

Titomic will be exhibiting its latest applications at Avalon 2019, Australia's international aerospace and defence exposition. Avalon will provide Titomic with a valuable platform to own TKFs unique additive manufacturing capabilities for the aerospace industry and further ongoing customer discussions towards revenue opportunities



### Contact:

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[investors@titomic.com](mailto:investors@titomic.com)

### About Titomic Limited:

Titomic (ASX:TTT) is headquartered in Melbourne, Australia. The company overcomes limitations of additive manufacturing (3D printing) for metals to manufacture complex parts without shape or size constraints. Titomic Kinetic Fusion™ offers manufacturing which enables speed-to-market, superior products with lower production inputs and using fewer resources for a more sustainable future.

Titomic systems can be customised to client requirements offering additive manufacturing advantages at industrial scale. Multiple robots can be utilised to scale up in both speed and size to compete with traditional subtractive manufacturing for industries such as aerospace, defence, resources (oil & gas, mining, industrial equipment), marine, construction, automotive and consumer & sporting goods.

Other benefits of the Titomic Kinetic Fusion technology include:

- Joining dissimilar metals and composites for engineered properties in a structure
- No heat-related oxidation or distortion issues when it comes to manufacturing large parts
- Reduced time to market with industry-leading deposition speeds

Titomic's business model involves providing clients with feasibility tests and manufacture of prototypes to work out the manufacturing costs of the product. Clients will be offered a licence to manufacture via Titomic Kinetic Fusion™ or choose to commission their own Titomic system. After the system sales, Titomic continues to support clients with powder and consumables supply, system upgrades, service and maintenance.

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

## Appendix 4C

### Quarterly Report for Entities Subject to Listing Rule 4.7B

Introduced 31/03/00 Amended 30/09/01, 24/10/05, 17/12/10, 01/09/16

**Name of Entity**

Titomic Limited

**ABN**

77 602 793 644

**Quarter Ended ("Current Quarter")**

31<sup>st</sup> December 2018

Consolidated Statement of Cash Flows	Current Quarter \$A'000	Year-to-Date (6 months) \$A'000
<b>1. Cash flows from Operating Activities</b>		
1.1 Receipts from customers	173	289
1.2 Payments for:		
(a) research and development	(191)	(364)
(b) product manufacturing and operating costs	(176)	(426)
(c) advertising and marketing	(216)	(365)
(d) leased assets	(36)	(36)
(e) staff costs	(909)	(1,417)
(f) administration and corporate costs	(194)	(561)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	42	99
1.5 Interest and other costs of finance paid	(1)	(2)
1.6 Income taxes paid	-	-
1.7 Government grants and tax incentives	-	351
1.8 Other (GST refunds)	50	50
<b>1.9 Net Cash From / (Used In) Operating Activities</b>	<b>(1,458)</b>	<b>(2,382)</b>

<b>Consolidated Statement of Cash Flows</b> <i>(Continued...)</i>	<b>Current Quarter</b> <b>\$A'000</b>	<b>Year-to-Date</b> <b>(6 months)</b> <b>\$A'000</b>
<b>2. Cash Flows from Investing Activities</b>		
2.1 Payments to acquire:		
(a) property, plant and equipment	(897)	(1,236)
(b) businesses (see item 10)	-	-
(c) investments	-	-
(d) intellectual property	-	-
(e) other non-current assets	-	-
2.2 Proceeds from disposal of:		
(a) property, plant and equipment	-	-
(b) businesses (see item 10)	-	-
(c) investments	-	-
(d) intellectual property	-	-
(e) other non-current assets	-	-
2.3 Cash flows from loans to other entities	-	-
2.4 Dividends received (see note 3)	-	-
2.5 Other (provide details if material)	-	-
<b>2.6 Net Cash From / (Used In) Investing Activities</b>	<b>(897)</b>	<b>(1,236)</b>

<b>3. Cash flows from Financing Activities</b>		
3.1 Proceeds from issues of shares	-	-
3.2 Proceeds from issue of convertible notes	-	-
3.3 Proceeds from exercise of share options	-	-
3.4 Transaction costs related to issues of shares, convertible notes or options	-	-
3.5 Proceeds from borrowings	-	-
3.6 Repayment of borrowings	-	-
3.7 Transaction costs related to loans and borrowings	-	-
3.8 Dividends paid	-	-
3.9 Other (provide details if material)	-	-
<b>3.10 Net Cash From / (Used In) Financing Activities</b>	<b>-</b>	<b>-</b>

4. Net Increase / (Decrease) in Cash and Cash Equivalents for the Period			
4.1	Cash and cash equivalents at beginning of quarter/year to date	9,084	10,347
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(1,458)	(2,382)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(897)	(1,236)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	-	-
4.5	Effect of movement in exchange rates on cash held	-	-
4.6	Cash and Cash Equivalents at End of Quarter	6,729	6,729

<b>5. Reconciliation of Cash and Cash Equivalents</b>		<b>Current Quarter \$A'000</b>	<b>Previous Quarter \$A'000</b>
	at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts		
5.1	Bank balances	6,729	9,084
5.2	Call deposits	-	-
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
<b>5.5</b>	<b>Cash and cash equivalents at end of quarter (should equal item 4.6 above)</b>	<b>6,729</b>	<b>9,804</b>

6. Payments to Directors of the Entity and their Associates		Current Quarter \$A'000
6.1	Aggregate amount of payments to these parties included in item 1.2	153
6.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-
6.3	Include below any explanation necessary to understand the transactions included in items 6.1 and 6.2	
Salaries, director's fees and consulting fees at normal commercial rates.		
Amounts exclude GST where applicable.		

7. Payments to Related Entities of the Entity and Their Associates	Current Quarter \$A'000
7.1 Aggregate amount of payments to these parties included in item 1.2	-
Aggregate amount of cash flow from loans to these parties included in item 2.3	-
7.3 Include below any explanation necessary to understand the transactions included in items 7.1 and 7.2	
-	

8. Financing Facilities Available <i>Add notes as necessary for an understanding of the position</i>	Total Facility Amount at Quarter End \$A'000	Amount Drawn at Quarter End \$A'000
8.1 Loan facilities	-	-
8.2 Credit standby arrangements	-	-
8.3 Other (please specify)	-	-
8.4 Include below a description of each facility above, including the lender, interest rate and whether it is secured or unsecured. If any additional facilities have been entered into or are proposed to be entered into after quarter end, include details of those facilities as well.		
-		

9. Estimated Cash Outflows for Next Quarter	\$A'000
9.1 Research and development	(232)
9.2 Product manufacturing and operating costs	(227)
9.3 Advertising and marketing	(104)
9.4 Leased assets	(42)
9.5 Staff costs	(975)
9.6 Administration and corporate costs	(304)
9.7 Other (capital & equipment purchases)	(298)
<b>9.8 Total estimated cash outflows</b>	<b>(2,182)</b>
<b>Estimate FY2018 R&amp;D tax refund cash inflow</b>	<b>2,000</b>
<b>Estimated net cash movement</b>	<b>(182)</b>



10.	Acquisitions and disposals of business entities (items 2.1(b) and 2.2(b) above)	Acquisitions	Disposals
10.1	Name of entity	-	-
10.2	Place of incorporation or registration	-	-
10.3	Consideration for acquisition or disposal	-	-
10.4	Total net assets	-	-
10.5	Nature of business	-	-

### **Compliance Statement**

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.

Sign here:   
Company Secretary & CFO

Date: 31<sup>st</sup> January 2019

Print name: Peter Vaughan

### **Notes**

1. The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity that wishes to disclose additional information is encouraged to do so, in a note or notes included in or attached to this report.
2. If this quarterly report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standard applies to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.