

TNG AND SMS GROUP IDENTIFY UP TO \$50M PER ANNUM OPERATING COST SAVINGS AT MOUNT PEAKE

Technological advances in downstream TIVAN® Process deliver improved vanadium recoveries and yields and potentially transformational OPEX and CAPEX reductions

Key Points

- TNG and its strategic partner SMS group have worked on reducing overall operating costs for the Mount Peake Vanadium-Titanium-Iron Project in the Northern Territory.
- SMS have applied an innovative redesign of the vanadium extraction circuit for the TIVAN® refinery.
- SMS group have confirmed that the application of their newly discovered approach yields additional improvements in processing plant operating cost and consumption figures.
- Results show an estimated A\$50M per annum reduction in operating costs for the TIVAN® refinery with potential for significant reduction in capital costs and total operating costs for the overall project.
- Vanadium recovery by this method improved to 98% with the option of producing both high-purity vanadium pentoxide and ferro-vanadium, increasing the number of products to be delivered by Mount Peake.
- Opens up potential for further improvement in overall process economics identified for both CAPEX and OPEX.
- Further establishes that TNG could be set to be one of the lowest cost producers in the strategic metals sector globally.

Australian strategic metals company TNG Limited (ASX: TNG – “TNG” or “the Company”) is pleased to advise that, in conjunction with its strategic partner, leading global engineering group SMS group GmbH, it has identified potentially transformational capital and operating cost savings for its flagship 100%-owned **Mount Peake Vanadium-Titanium-Iron Project** in the Northern Territory.

TNG and SMS can now confirm that further refinement of the TIVAN® process during the first part of the year has resulted in the introduction of a simplified and significantly more cost effective method of vanadium extraction, leading to a reduction in both operating costs and capital costs. Testwork performed by SMS during the year has repeatedly demonstrated a **substantial reduction in utility and energy consumption** while maintaining product recoveries and qualities at a very high level.

The breakthrough savings were identified as a result of detailed plant engineering programs carried out by SMS over the past 12 months as part of opportunities identified in the 2015 Feasibility Study. These programs have now progressed to an advanced and further refined stage following the two agreements signed by TNG and SMS earlier this year (refer ASX releases – 2nd February 2016 and 5th May 2016).

Based on the energy and utility cost assumptions underlying the Definitive Feasibility Study (DFS) financial model completed in 2015, the resulting savings are estimated to be a minimum of **A\$57/tonne of concentrate processed**, compared to the DFS figures. On the basis of the DFS assumptions, this should result in an overall operating cost (**OPEX**) **saving of more than A\$50 million per annum for Phase 1** of the project (at a 3Mt per annum mining rate).

In the optimised process now being adopted, SMS has introduced an oxidative precipitation step following the production of magnetite concentrate and the TIVAN® leach phase. This replaces the solvent extraction circuits and precipitates a vanadium compound by atmospheric oxidation, from which TNG has the option to produce both very high-purity vanadium pentoxide (V_2O_5) or ferro-vanadium (FeV), therefore increasing the number of potential products from Mount Peake's planned production.

Additional benefits

This new method – combined with parallel refinements in other areas of the processing plant stemming from the ongoing engineering activities – results in significantly **improved recovery of vanadium of up to 98%** compared to the expected 90% used in the DFS, providing further upside to TNG in the overall amount of vanadium production and a corresponding expected increase in project revenue. As the redesigned vanadium extraction circuit requires less complex equipment, a comparable **reduction in plant CAPEX** is also expected.

Further refinements

Locking these improvements into the design of the overall process flowsheet has also opened up the potential for further refinements, which SMS and TNG have agreed to pursue. One of these key areas is the potential, subject to current and proposed confirmatory work, to produce a feedstock which is tailored for an industry standard fluidised bed chlorinator, allowing TNG to use an existing industry standard pigment plant design for its titanium dioxide pigment production, providing the potential for additional savings in capital expenditure while potentially producing highest purity pigment.

As a result of the outstanding success of this work, TNG and SMS have agreed to undertake further optimisation of the titanium dioxide feedstock characteristics. Related testwork will be carried out in Perth and Vienna and is expected to take approximately three months to complete.

TNG expects these enhancements to have a further material effect on the economics of the Mount Peake Project. After all improvements have been locked into the process flowsheet, a revised Financial Model will be prepared by Snowden incorporating the revised OPEX and CAPEX and production figures and the results will be reported.

Management Comment

TNG's Managing Director, Mr Paul Burton, said the work being undertaken with SMS group represented a potential game-changer for the Mount Peake Project.

"We have been doing a huge amount of behind-the-scenes work with SMS and all of our other consultants to optimise the operating costs of the TIVAN® refinery. We are delighted with the outcomes, which should result in a significant reduction in operating costs for all our products, de-risk the process further, expand the range of products to be delivered and allow further optimisations to be considered.

"The most fundamental outcome from this work is that we are confident of being able to deliver a very significant reduction in the overall pre-production capital estimate for Mount Peake, which was estimated at \$980 million in the 2015 DFS. While it is not yet possible to quantify these savings, we expect them to have a significantly positive impact on the project's economics and our ability to complete a suitable project financing package."

Commenting on the latest developments, **SMS Group Managing Director**, Mr Herbert Weissenbaeck, said: "TIVAN is a very attractive process for the cost efficient extraction of multiple fractions of payable metals from vanadium-bearing titanomagnetite ores. Our engineers have recently contributed several significant optimizations and improvements to it. SMS is looking forward to assisting TNG both with the further development of this process and with the broader development of the Mount Peake Project."

Mr Weissenbaeck will be attending the 2016 Diggers & Dealers symposium with TNG.

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1 August 2015

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About TNG

TNG is building a world-scale strategic metals business based on its flagship 100%-owned Mount Peake Vanadium-Titanium-Iron Project in the Northern Territory. Located 235km north of Alice Springs, Mount Peake will be a 20-year plus project producing a suite of high-quality, high-purity strategic metals products for global markets including vanadium pentoxide, iron oxide and titanium dioxide. The project, which will be a top-10 global producer, has received Major Project Facilitation status from the NT Government.

The Mount Peake Feasibility Study is well advanced and due for completion by mid-2015, paving the way for project financing and development to proceed. An integral part of TNG's emerging strategic metals business is its 100% ownership of the unique and patented TIVAN® hydrometallurgical process, which offers significantly lower capital and operating costs, lowers risk and successfully extracts two other valuable metals from the resource in addition to vanadium – titanium dioxide and high-purity iron oxide.

Vanadium is a highly strategic metal which is used as an alloy in steel. It is also in strong demand for use in energy storage, with vanadium redox batteries used to store electricity generated by solar and wind power, and lithium-vanadium ion batteries used to power hybrid cars.

Forward-Looking Statements

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