

THE PROSPECTOR

RESOURCE INVESTMENT NEWS

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SEARCHING OUT VALUABLE COMPANIES IN THE ENERGY METALS BULL MARKET



IT'S NOT HOW LIGHT YOU MAKE IT... IT'S HOW YOU MAKE IT LIGHT.

By David O'Brien

Scandium International Mining Corp. (SCY: TSX) is a metals technology story, focused on improving aluminum alloy properties through the addition of scandium.



From Scandium International's corporate presentation, we capture some of the features and advantages, summarily:

- Aluminum-scandium alloys can be expected to roll back substitution from some lightweight steels, magnesium alloys and carbon fibre.
- A better AlMgSc (5 Series) alloy will definitely be cost-competitive; aluminum-based alloys are easier to apply to conventional manufacturing processes.
- These specific alloys will be more field serviceable, repairable, and tougher in rough service.
- A 5 Series with scandium will add enough strength to move that alloy family into high value markets they cannot reach today.
- High weldability is a game changer in higher strength aluminum alloys, where welding usually becomes difficult.
- Scandium transforms AlMgSc (5 series) alloy into the highest performing alloy choice for many demanding applications, immediately.

owned) has earlier this year completed a Definitive Feasibility Study (DFS) on the surface-mineable resource, with both excellent infrastructure and jurisdiction. **Highlights:**

- Financial results - 33% IRR, \$225M NPV (8%), constant \$, after-tax.
- Build cost - US\$87M.
- Scandia (Sc203) production target - 38,500 kg/year.

Taking a look at SCY's corporate structure, we see 225mm shares O/S (248mm F/D), cash in the bank and no debt as at June 10, 2016.

Where Can AlSc Alloys Be Employed Today?

- Transportation uses (weight savings)
- Marine applications (corrosion)
- Extruded products (thin wall structures and fast flow rates)
- Stamped rather than CNC-machined shapes (less waste, better weldability)

Where Else Can Scandium Be Used Besides Aluminum Alloys?

- Solid Oxide Fuel Cells (SOFCs), where scandium is a superior heat stabilizer.
- Lighting systems, lasers and chemical catalyst applications.

SCY MANAGEMENT'S OBJECTIVE:

Management's objective is to be the world's first primary scandium mine, with production in 2018. Their **Nyngan Scandium Project in NSW, Australia** (80%

Note what V.V. Zakharov states on this possibility in **Metal Science and Heat Treatment**. Here's an edited intro to the abstract:

"It is shown that the addition of scandium considerably influences the structure and properties of aluminum and its alloys.

- Scandium is the strongest inoculant of the cast grain structure of aluminum alloys, the strongest suppressor of recrystallization, and the strongest hardener (per 0.1% of the additive).
- The addition of zirconium intensifies and stabilizes the action of scandium. [...]

The combination of operating properties of scandium-bearing aluminum alloys is substantially superior to that of traditional aluminum alloys."

One of the main applications of these new scandium-enhanced aluminum alloys is in the production of aircraft fuselages, with both **Boeing** and **Airbus** participating in the industry transformation.

From **Aerospace Manufacturing & Design** we selectively quote an article with **Dr. Matthias Miermeister**, (Manager, Field Engineering Global Aerospace), **Aleris Rolled Products, Germany**, where he discusses his company's new aluminum-magnesium-scandium alloy (AlMgSc, AA5028):

"When Boeing introduced the **787 Dreamliner** and Airbus the **A350**, everyone thought the next generation of planes would be made of composites, but we have to say now that is not so. For example, Boeing's 777X will have composite wings but a metallic fuselage. We have the fourth generation of aluminum-lithium alloys where the lithium content has been reduced significantly, which offers more weight savings from density reduction. Aleris has co-developed with Airbus an alloy of aluminum-magnesium-scandium (AlMgSc) - designated AA5028 - which offers an even lower density than aluminum-lithium."

(<http://www.aerospacemanufacturinganddesign.com/article/the-future-of-aircraft-metals-appears-february-2016/>)

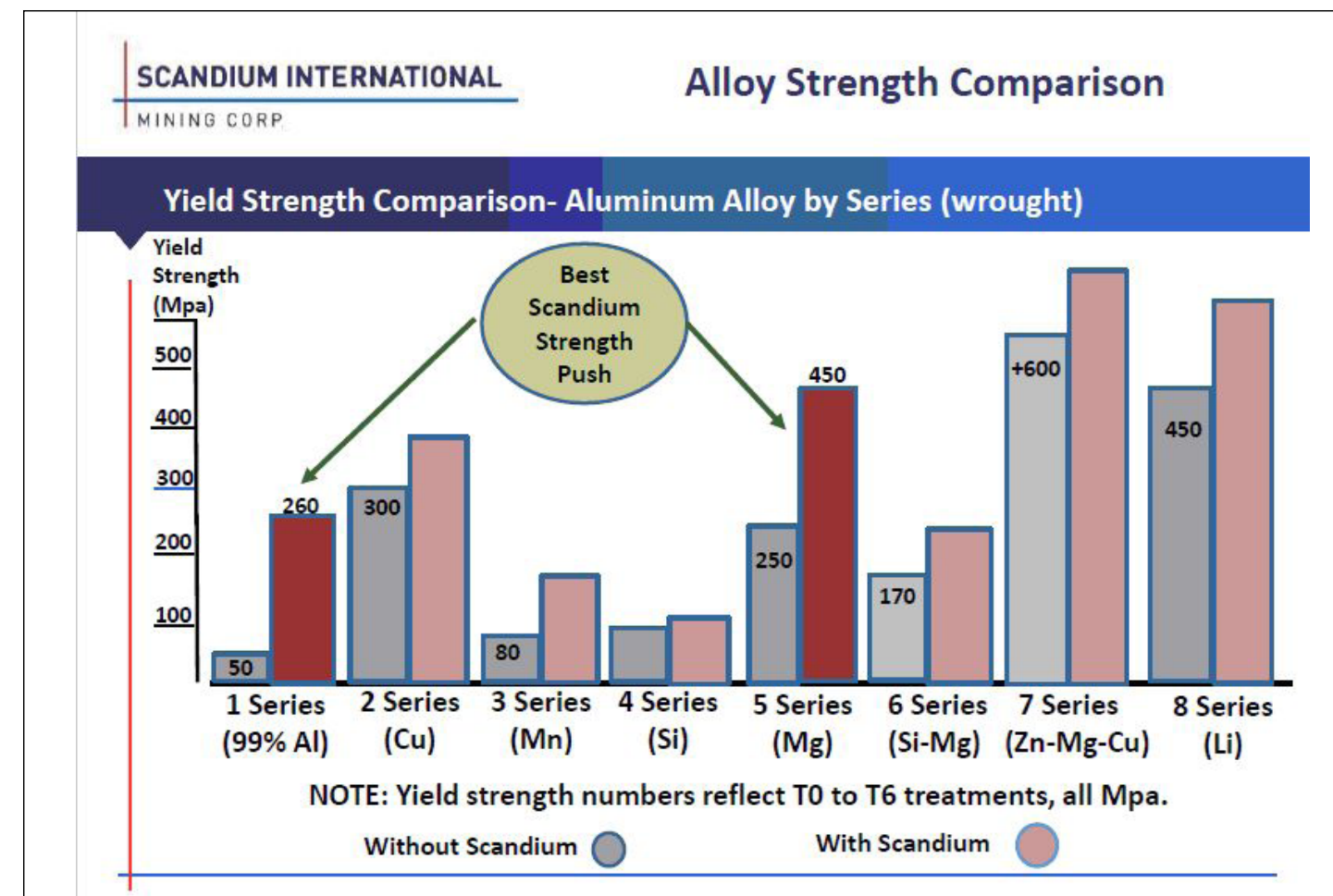
SCANDIUM INTERNATIONAL
MINING CORPORATION
(Ticker Symbol: SCY.To)

DEVELOPING THE WORLD'S FIRST PRIMARY SCANDIUM MINE
Nyngan Scandium Project - NSW, Australia
Production Planned For 2018

HIGHLIGHTS

- Feasibility Study Completed (2016)
- Surface-Mineable Resource (16Mt)
 - Project Capital Cost - US\$87M
 - Project IRR - 33%
- Initial Offtake Agreement in Place
- Experienced Management Team

For more, go to: ScandiumMining.com



What Does the Scandium Market Look like Today?

- Scandium's benefits are known and understood, but the market today is very much under-supplied and over-priced.
- Sellers make scandium as a by-product from other mineral processing operations, or waste stockpiles.
- Limited supply means inadequate volume for wide-scale adoption.
- Virtually all current supply sources are located in Russia and China.

Increased supply, from reliable sources, at reasonable cost will be the catalyst for a dramatic increase in scandium interest and usages.

The Scandium Effect Is Most Dramatic In the 5 Series Family of Aluminum Alloys

The 5 Series alloys, consisting of aluminum and magnesium, show the best response to scandium additions, yet preserve their superior properties in other areas. They remain 'manufacturing-friendly' yet become significantly stronger. The 1 Series (+99% Al) also shows great strength response—where that series is generally too weak to use beyond cladding and trim applications.

Initial Offtake Agreement - Alcoreco.

- Aluminum alloy R&D group in Ontario (ex Novelis/Alcan).
- Capabilities in alloy formulation, with scandium.
- Excellent laboratory facilities in place, with capability to make test alloys.
- Strategic alliance to develop markets.
- Alcoreco has a deep understanding of Al-Sc alloy applications.
- 7,500 kg of scandium oxide annually, for three years to 2020.

This Is A Rapidly Developing Story

- New South Wales, Australia hosts a game-changing discovery of high-grade primary scandium resources for development.
- Scandium International is developing marketing channels and multiple markets are emerging. More offtake agreements are anticipated.

THE SCANDIUM INTERNATIONAL ADVANTAGE - HIGHLIGHTS

Advancing to Production

Scandium International completed a **Definitive Feasibility Study ("DFS")** in May 2015, and anticipates completing all required governmental approvals by year-



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end 2016. Project financing/construction planned for 2017, with first production targeted for 2018.

Substantial Scandium Resource and Expandable

The Nyngan Project scandium resource is of sufficient size to support a project of the size envisioned in the DFS for 160 years, or alternatively, to support significant project expansions over a 20-year term. In addition, the Company holds exploration licenses over a neighbouring area known as Honeybugle, which shows promise for similar grade scandium-enriched resources and further expansion capability.

Extraction Technology Understood

The planned scandium extraction process involves conventional metals separation techniques, specifically high pressure acid leach (HPAL) and solvent extraction (SX), supported by over US\$1M in independent test work. The Company has filed five US patent applications to protect techniques developed from extensive independent test work on Nyngan's resources.

First Offtake Agreement in Place

Scandium International has a 3 year offtake agreement in place with a knowledgeable aluminum alloy group, for 7,500 kg/year, at prices consistent with the DFS.

Ahead of its Competitors

While there are three scandium projects under development in Australia today, Nyngan is the only project with an independently-published DFS, providing a clear time line to construction and production.

Our Note of Recognition...

it wasn't hard for us to get excited about the potential for Scandium International, after meeting and talking with George Putnam earlier this year. Having a completed SEDAR-filed DFS, and the emerging market driving forces that scandium represents, particularly in aircraft aluminum alloys, simply point to the practical realization of becoming the first primary scandium producer in the world by 2018.

Experienced Team

Since acquiring an initial earn-in interest on the Nyngan Project in 2010, Scandium International's team has demonstrated both its project development and leadership abilities, and applied extensive mining and processing experience to bring this project to a final investment decision in late 2016.

Much of the above material has been sourced directly from **SCY's** website, News and Corporate Presentation, and augmented by sourced information from the media, industry experts and the end-user websites and News. *As always, do your Due Dili.*

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