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Rio Tinto



Martin Lavoie is Director of Operations for the Vaudreuil aluminum refinery located in the Jonquière industrial complex, for the Port-Alfred port facilities and rail services. He is responsible for managing multidisciplinary teams to achieve optimum performance in raw materials procurement, the aluminum refinery, specialty hydrate and fluoride production and the spent pot lining treatment plant.

Since joining Rio Tinto in 1999, Martin has held various technical and operational positions, including R&D at the Arvida Research and Development Centre and process engineering at the Vaudreuil refinery and the Gove refinery in Australia. He has also worked in bringing new operations online, supervising and managing aluminum refining maintenance and operations.

Martin holds a Bachelor's degree in Chemical Engineering and a Masters of Applied Sciences in Chemical Process Engineering, both from Université de Sherbrooke, in Canada.



Source : Rio Tinto

Question 1: Since the 1990s, Rio Tinto has put a lot of time and effort into reducing its environmental footprint.

In fact, it has decreased its greenhouse gas emissions by 50% over the past 30 years. As it targets another 50% drop by 2030, what motivates an organization like yours to attach so much importance to this environmental issue?

Answer 1 : As we move globally toward zero emissions, the advantage of green aluminum over aluminum from fossil fuels will grow. The same will be true for our hydro-powered smelters.

The low-carbon transition is central to Rio Tinto's new business strategy. We are part of the solution where climate change is concerned. Thanks to our use of hydropower, Québec aluminum is already one of the cleanest and most responsibly produced in the world, generating seven to eight times fewer CO₂ emissions than elsewhere on the planet.

Nevertheless, our teams are working relentlessly to continue to improve and Rio Tinto has set extremely ambitious goals for itself, namely: reducing its GHG emissions by 50% by 2030, to be net-zero in 2050, and decreasing its emissions by

15% between 2018 and 2025.

In addition to reducing aluminum's carbon footprint, we are working on other fundamental points to make our aluminum truly ecological, responsibly-produced, traceable and part of the circular economy.

Question 2 : Which projects to you intend to promote to achieve this ambitious goal? How can these projects benefit the maritime transport sector?

Answer 2 : These significant improvements will require substantial effort, targeted investments, our teams' expertise, new technologies and collaboration with the Saguenay – Lac-St-Jean region and local businesses. They will affect the entire aluminum supply chain and will be based, among other things, on developing ELYSIS' inert anode electrolysis technology to eliminate 100% of the GHG emissions linked to the electrolysis process.

We are also working to optimize our processes and improve our current technologies, for example, by reducing the effects of anodes in our electrolysis process.

Another aspect we are working on non-

stop is aluminum by-product recycling and recovery and we are a genuine world leader in this field. Our efforts have led to the creation of dozens of new products, including anhydrite, a soil amendment used in agriculture.

Working with blueberry producers from the Coopérative d'Albanel, we are currently trying to determine whether anhydrite helps makes blueberry plants stronger and more fruitful. In Laterrière, we are building a re-smelting system to recycle aluminum cuttings inside our facilities. Construction is going well and should be completed in the coming weeks.

Rio Tinto's port facilities, which were 95 years old in 2021, play a fundamental role in maintaining aluminum production in Saguenay – Lac-St-Jean.

As a leading shipper, we recognize that we have a significant role to play in decarbonizing our maritime activities and those of the industry as a whole.

Since 2010, our port facilities have been certified under Green Marine's environmental certification program for the North American marine industry.

Rio Tinto has signed Global Maritime Forum's Call to Action targeting the

maritime industry's decarbonization and we are collaborating on The Next Wave, a study on green corridors, according to which ammonia is one of the most promising alternative marine fuels for reducing greenhouse gas emissions by the maritime industry.

To achieve zero-net emissions by 2050, the new ships we build must be carbon neutral by 2030.

Question 3: Thanks to the new ELYSIS process, you will now be able to produce aluminum while slashing your GHG emissions compared to more traditional processes.

Based on the tests conducted, can you tell us what impact this technological breakthrough could have on your production overall?

Answer 3 : Our industry's decarbonization and transition to new sources of energy will require the use of new technologies.

The ELYSIS technological breakthrough will help us solve the aluminum paradox: aluminum is essential in a low-carbon-emissions world but is one of the materials that generates the most emissions and whose production requires significant amounts of energy.

In Canada, all of our aluminum smelters run on clean hydropower, allowing us to produce aluminum with one of the lowest carbon footprints in the world.

By combining this hydropower-generated energy with ELYSIS technology, we can eliminate 100% of the GHG emissions linked to the electrolysis process and millions of tonnes of GHGs from the Earth's atmosphere as well as transforming aluminum into an even more sustainable material.

On the Canadian scale alone, ELYSIS a technology can reduce GHG emissions by 7 million tonnes - the equivalent of taking 1.8 million cars off our roads.

Rio Tinto is proud to collaborate with Alcoa, Apple and the Québec and Canadian governments on the next development phase and on implementing revolutionary ELYSIS technology.

It's very exciting to see the ELYSIS team moving ahead with this ground-breaking initiative. Although it is still an advanced, very complex R&D project, I have great confidence in the ELYSIS team and in our employees supporting the project with our partner Alcoa.

Question 4 : With your many Québec-

based facilities, you are a major shipper using maritime transport on a daily basis.

In this context, how do you see the maritime industry of the future in terms of being able to meet your needs and address your concerns?

Answer 4 : Every year, about 125 ships are unloaded at our Port-Alfred port facilities. This corresponds to more than 5 million tonnes of raw materials (bauxite, alumina, caustic soda, green coke, etc.), which are then shipped via our rail services to other Rio Tinto facilities in the region.

In February 2021, we invested \$105 million CAD to modernize our port facilities (improve raw materials reception and unloading operations' security and efficiency). This work, slated to end in late 2022, will allow us to adapt our infrastructures to the size of today's ships and to build a new platform at the end of one of our docks to make mooring easier.

The maritime industry of the future would generate zero emissions and zero waste and have zero adverse impact on communities. Smart corridors come to mind, along with management of watercourse-level data on aquatic plant

and animal life. Since last year, our RT Marine division has imposed Transport Canada recommendations on the Time Charter fleet to proceed with voluntary ship speed reduction for ships travelling through the Cabot Strait to no more than 10 knots over ground in order to protect right whales.

We closely monitor technological advances related to vessel design so as to reduce the footprint on ecosystems. As the race toward zero-emissions maritime

transport by 2050 moves forward, ammonia continues to emerge as a green fuel with promise for the future. The use of biofuel must be envisaged for our tugboats as well, not just our ships.

We want to integrate our climate targets into the maritime transport sector to maximize our company's value in order to offer our clients and partners solutions and products resulting from sustainable value chains.

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About Rio Tinto :

Rio Tinto is a mining and metals company operating in 35 countries around the world. Our purpose is to produce the materials essential to human progress.

Our four product groups bring this purpose to life: Aluminium, Copper, Minerals and Iron Ore. These are complemented by our Safety, Technical and Projects, Strategy & Development, and Commercial groups, as well as our service and support functions.

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