



PyroGenesis Signs Two Contracts with Aluminerie Alouette for \$2.7 Million

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Both contracts aim to recover and valorize residue streams from primary aluminum smelters

MONTREAL, June 22, 2023 (GLOBE NEWSWIRE) -- PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX: PYR) (NASDAQ: PYR) (FRA: 8PY), a TSX30® and a Deloitte Canada Clean Technology Fast 50™ high-tech company (the "Company" or "PyroGenesis"), that designs, develops, manufactures and commercializes advanced plasma processes and sustainable solutions which are geared to reduce greenhouse gases (GHG), is pleased to announce today that, further to [its Press Releases dated March 17, 2021](#) and [April 20, 2022](#), the Company has signed two contracts with Aluminerie Alouette for \$2.7 million. The first contract is to further advance its spent pot lining valorization technology. The second contract is geared to develop a new valorization solution for excess electrolytic bath. Both contracts address primary aluminum production process residue streams.

The project funding includes contributions from both Aluminerie Alouette and the *Centre québécois de recherche et de développement de l'aluminium* ("CQRDA"). The latter administers funding and programs made available by the provincial government's Ministry of the Economy, Innovation and Energy for Quebec's aluminum industry.

"We are very proud to be partnering, once again, with Aluminerie Alouette, a company renowned for its environmentally friendly practices and which operates the largest aluminum smelter in the Americas," said Mr. P. Peter Pascali, CEO of PyroGenesis. "PyroGenesis' technology and engineering capabilities will help re-use residues from aluminum production, including spent pot lining and electrolytic bath, thus helping Aluminerie Alouette advance its decarbonization strategy. These are the types of projects that underscore PyroGenesis' strategy to position its processes to enable sustainable and environmentally responsible practices within the aluminum industry," continued Mr. Pascali.

Primary aluminum is produced today in electrolytic cells using the Hall-Héroult reduction process. The cell, commonly known as a pot, is basically a steel shell lined with insulating materials (mainly carbon) that serve as a container vessel for a solution made up of alumina (aluminum oxide) and a solvent. Aluminum is produced when a high amperage electric current is forced to pass through a pot, causing a number of chemical reactions in the electrolytic solution (the "bath") which leads to the decomposition of alumina into carbon dioxide and molten aluminum. The lining of the pots, which typically has an average lifespan of 5 years, will eventually fail from continuous use, causing the pot to be put out of service. At this time (being contaminated with chemical compounds), all remaining materials are removed and replaced so the pot can return to production. This lining removed from decommissioned pots, also known as "Spent Pot Lining" or just "SPL", is a solid residue classified as hazardous.

While dangerous, SPL contains valuable materials that, if processed correctly, could be recovered, and reused. One of the projects announced today was launched with the goal of developing a new process to valorize that SPL material in a safe and environmentally friendly manner.

An estimated 1.5 million tons of SPL are produced annually worldwide. If PyroGenesis' proposed process proves successful, it could address a major issue concerning the aluminum industry in Quebec and elsewhere.

PyroGenesis' solution for SPL valorization seeks to use its plasma arc thermal treatment plant to transform the carbonaceous and refractory materials contained in SPL into synthesis gas, as well as into aluminum fluoride, a key raw material that can be re-used by Aluminerie Alouette in their production process. Compared with the chemical treatment currently used, PyroGenesis' alternative method should enable significant savings by reducing or eliminating existing costs associated with various steps of processing and management of SPL.

The second project announced today proposes a similar approach to valorize another type of residue composed of excess electrolytic bath produced in the pots during normal operation. These residues, also known in industry as "pure bath" or just "bath", may be considered as hazardous material because of their high content in fluorine. The objective of the project is to process them in a plasma arc thermal treatment plant with the goal of producing aluminum fluoride. The latter is therefore a common element in both projects.

After significant progress, projects will now move to the design and fabrication (currently underway) of the integrated thermal plasma furnace and gas purification system, with various lab-scale tests and experimental activities for gas conversion taking place concurrently. Subsequent phases will include further testing of the integrated system, and the eventual design of both pre-commercial and commercial scale (full industrial) systems at the Aluminerie Alouette site.

Both projects have a commercial end goal with a strategy to market the solutions industry-wide in conjunction with Aluminerie Alouette.

About Aluminerie Alouette

Established in 1992, Aluminerie Alouette is an independent aluminum producer. With over 850 employees and an annual production capacity exceeding 620,000 tonnes of primary aluminum, Alouette is the largest private employer in Sept-Îles and the largest aluminum smelter in the Americas. Sustainable development and innovation are at the core of the Sept-Îles facility's operations.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and sustainable solutions which reduce greenhouse gases (GHG) and are economically attractive alternatives to conventional "dirty" processes. PyroGenesis has created proprietary, patented and advanced plasma technologies that are being vetted and adopted by multiple multibillion dollar industry leaders in four massive markets: iron ore pelletization, aluminum, waste management, and additive manufacturing. With a team of experienced engineers, scientists and technicians working out of its Montreal office, and its 3,800 m² and 2,940 m² manufacturing facilities, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The operations are ISO 9001:2015 and AS9100D certified, having been ISO certified since 1997. For more information, please visit: www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward- looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Company's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Company with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Company's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.sec.gov. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Company undertakes no obligation to publicly update or revise any forward- looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the Toronto Stock Exchange, its Regulation Services Provider (as that term is defined in the policies of the Toronto Stock Exchange) nor the NASDAQ Stock Market, LLC accepts responsibility for the adequacy or accuracy of this press release.

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