

# corem

Innovation in mineral processing

## ACTIVITY REPORT

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# MESSAGES FROM THE PRESIDENT OF THE BOARD AND OF THE CEO



JEAN-FRANÇOIS LEROUX, Eng.  
CHAIRMAN OF THE BOARD



FRANCIS FOURNIER, Eng., F.  
PRESIDENT AND CEO

Strength in the mining sector continued in 2021 and many projects in development accelerated. Despite the pandemic, the global demand for minerals and metals was robust and underpinned their prices. Corem's clients and members have taken advantage of these favorable prices to pursue and to increase their investments in innovation. The increasing demand for certain minerals necessary to support the development of strategic industry sectors such as the energy transition and transportation electrification, sparked excitement in development projects for metals like lithium, graphite and nickel. Government strategies aimed towards the development of critical and strategic minerals supported the development of multiple mining projects.

2021 represented a second year in the management of our activities during a pandemic. Every segment of our organization adapted, favouring a growth of our activities, while prioritizing the health and safety of our personnel and their families. Once again this year, Corem's personnel was asked to show creativity and resilience, which made all the difference. Thanks to our devoted personnel, we could pursue our mission and achieve our goals for 2021, despite the challenging environment created by the pandemic.

Our pre-competitive research program being at the heart of our activities, we maintained the investments in our research program dedicated to our members at the same level as in 2020 at \$7.5M. This considerable level of investments included the construction and operation of a demonstration plant of a wastewater treatment process in one of our members' facilities. We kept on quantifying the economic impact of the pre-competitive research program in partnership with our members, and the latest data shows that every dollar invested in our program generated \$4.17 in benefits.

We also continued our efforts in developing innovative technologies and processes in collaboration with our industrial and research partners. Our participation to *Crush-It! Challenge* of Natural Resources Canada resulted in significant reductions in energy consumption in grinding circuits. Moreover, with the financial support of Quebec's Ministère de l'Énergie et des Ressources naturelles, we established a collaborative research program with junior mining corporations addressing the development of innovative processes for the extraction, separation, purification and recycling of rare earth elements.

To fulfil the needs of our members and clients, we further developed our expertise by recruiting qualified personnel. The Board of Directors also approved a new 3-year plan of nearly \$7M to purchase state-of-the-art equipment, improve our infrastructure and support our digital transformation.

On the governance front, the Board of Directors, under the chairmanship of Mr. Jean-François Leroux, welcomed two new directors in 2021 and maintained the objective of adopting the best practices in governance as part of a continuous improvement approach.

Corem's management would like to thank its staff and directors for their contribution to the success of the organization.



# GOVERNANCE

## BOARD OF DIRECTORS (4 meetings)

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### DIRECTORS

**JEAN-FRANÇOIS LEROUX** (Chairman of the Board)  
Glencore – Raglan Mine

**JEAN CHÂTEAUNEUF**  
Canadian Malartic GP

**CATHERINE COBDEN**  
Canadian Steel Producers Association (CSPA)

**FRANCIS FOURNIER** (President and CEO)  
Corem

**NATACHA GAROUTE**  
Quebec Iron Ore

**ANGELA HAMLYN**  
Canadian Institute of Mining, Metallurgy and Petroleum (CIM)

**MARC LAFONTAINE**  
Agnico Eagle

**JEAN MORISSETTE** (Treasurer, Corporate Secretary)  
Raymond Chabot Grant Thornton

**SYLVAIN MORISSETTE**  
Hecla Québec

**JEAN-PAUL ORDIONI**  
ArcelorMittal Mining Canada

**STÉPHANE RIVARD**  
IAMGOLD Corporation

**ROLF STÖSSER**  
IOC Mining Company of Canada

**ANDRÉ ZACCARIN**  
Université Laval

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### OBSERVERS

**MARIE-ÈVE BOUCHER**  
Ministère de l'Énergie et des Ressources naturelles  
Gouvernement du Québec

**JOSÉE MÉTHOT**  
Quebec Mining Association

**DENISE MORANVILLE**  
Ministère de l'Économie et de l'Innovation  
Gouvernement du Québec

## EXECUTIVE COMMITTEE (7 meetings)

**JEAN-FRANÇOIS LEROUX** (Chairman of the Board)  
Glencore – Raglan Mine

**STÉPHANE RIVARD** (Vice-Chairman of the Board)  
IAMGOLD Corporate

**JEAN MORISSETTE** (Treasurer, Corporate Secretary)  
Raymond Chabot Grant Thornton

## AUDIT COMMITTEE (4 meetings)

**JEAN MORISSETTE** (Chairman of the Committee)  
Raymond Chabot Grant Thornton

**NATACHA GAROUTE**  
Quebec Iron Ore

**JEAN-PAUL ORDIONI**  
ArcelorMittal Mining Canada

## ETHICS AND GOVERNANCE COMMITTEE (4 meetings)

**JEAN CHÂTEAUNEUF** (Chairman of the Committee)  
Canadian Malartic GP

**ANGELA HAMLYN**  
Canadian Institute of Mining, Metallurgy and Petroleum (CIM)

**MARC LAFONTAINE**  
Agnico Eagle

## MANAGEMENT

**FRANCIS FOURNIER**  
President and CEO

**STÉPHANIE ALLAIN**  
Director – Organizational Development and Human Resources

**CLAUDE GAGNON**  
Director – Innovation

**MICHEL GARANT**  
Director – Member and Client Relations

**DONALD LEROUX**  
Executive Director – Innovation and Business Strategies

**SYLVIE LÉVESQUE**  
Executive Director – Operations

## PRE-COMPETITIVE RESEARCH COMMITTEE

(3 meetings)

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### REPRESENTATIVES

**MARTIN LEBEUF** (Chairman of the Committee)  
Newmont – Éléonore

**CHRISTIAN BAHOME MUNGA**  
Kinross Gold

**GIANNI BARTOLACCI**  
Rio Tinto, Iron & Titanium

**PHILIPPE BARBEAU-VERREAULT**  
Glencore – Raglan Mine

**STEVE BEAUDIN**  
Métal 7

**SIMON-PIERRE BLOUIN**  
Niobec

**MAYARA CAMILA DUARTE DE OLIVEIRA**  
Vale S.A.

**RENÉE DUPÉRÉ**  
Canadian Malartic GP

**JEAN-FRANÇOIS DUPONT**  
Kirkland Lake Gold

**COREY HENNESSEY**  
IOC Mining Company of Canada

**SANDRA CÔTÉ**  
Ministère de l'Énergie et des Ressources naturelles  
Gouvernement du Québec

**FRANÇOIS LAVOIE**  
Quebec Iron Ore

**JEAN-SÉBASTIEN MAROIS**  
Niobec

**ROMAIN PRÊCHEUR**  
ArcelorMittal Mining Canada

**STÉPHANE RIVARD**  
IAMGOLD Corporation

**FRANÇOIS ROBICHAUD**  
Agnico Eagle

**THIAGO TOLENTO SILVA**  
Hecla-Québec

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### OBSERVER

**TONY DI FEO**  
Canmet

# COREM, A LIVING ENVIRONMENT

In 2021, we followed the evolution of the pandemic and the restrictions imposed on workplaces. Our teams were very receptive and understanding, and they complied with all the measures put in place. Our objective was to ensure the health and the safety of all our employees.

Within the context of growth and the competitive labor market, we welcomed many new employees in all the departments of our organization. Over 150 employees, representing 17 different nationalities, were at the core of Corem's accomplishments.

Regardless of the situation, we were able to bring our employees together for social activities while complying with sanitary measures: a foodtruck lunch featuring Mexican food, baskets of organic vegetables during summertime, a Christmas party hosted by a team of actors, as well as an end-of-year appreciation gift offered to all our employees to thank them for their collaboration and their involvement in the different projects.



# OUR MISSION

Create innovative solutions in mineral processing for the benefit of a sustainable mining industry, working closely with our members, our customers and our partners.

# OUR SERVICES

Adapted to our clients, research and innovation are at the heart of our business model. Supported by our state-of-the-art installations and expertise, our services are offered to our clients under three models:

- Pre-competitive Research Program
- Research and collaborative innovation
- Contractual services

# THE VALUES THAT GUIDE US

## CREATIVITY

We are working to find possibilities where none are seen: we cultivate the art of doing otherwise.

## INTEGRITY

Through the veracity and exactitude of our words and actions we strive to uphold honesty.

## ENGAGEMENT

Our promise to our colleagues, organisation, members and partners is to offer the best of ourselves and to have our actions reflect those intentions.

## TEAM SPIRIT

We unite and work toward a common goal in a climate of confidence, openness and respect.

## HEALTH, SAFETY & SUSTAINABLE DEVELOPMENT

We work toward a safe and healthy workplace and we take actions to be part of sustained development and environmental awareness.



## COREM IN NUMBERS

# \$22.4M

Annual Budget

# \$7.6M

Investment in the Pre-Competitive Research Program:

## 201

Technological transfers  
and contracts

## 254

Number of projects  
annually

## 3

Licensed technologies

## 3

Patented technologies

(South Africa, Australia, Brazil, Canada and the United States)

## TYPES OF ORE PROCESSED

PRECIOUS  
METALS

BASE  
METALS

TITANIUM-  
BEARING  
ORES

CRITICAL  
AND STRATEGIC  
MINERALS

IRON  
ORE

MINERALIZED  
SANDS

INDUSTRIAL  
MINERALS

## OUR FIELDS OF EXPERTISE



COMMINUTION



PHYSICAL  
SEPARATION



FLOTATION



EXTRACTIVE  
METALLURGY



PELLETIZING  
AND THERMAL  
PROCESSES



MINERALOGY



# OUR MEMBERS, THE CORE OF OUR ORGANIZATION



## MEMBERS

### AGNICO EAGLE

LaRonde Division, Cadillac (Qc)  
Goldex Division, Val-d'Or (Qc)  
Meadowbank Division Baker Lake (NU)  
Meliadine Division, Rankin Inlet (NU)  
Kittila Division, Kittila (Finland)  
La India Division, Sonora (Mexico)  
Pinos Altos Division, Chihuahua (Mexico)

### ARCELORMITTAL MINING CANADA

Mont-Wright Concentrator, Fermont (Qc)  
Pelletizing Plant, Port-Cartier (Qc)

### IAMGOLD CORPORATION

Westwood Complex, Rouyn-Noranda (Qc)

### KIRKLAND LAKE GOLD

Detour Lake Mine, Cochrane (Ont.)

### GLENCORE CANADA CORPORATION

Raglan Mine, Katinniq (Qc)

### HECLA QUÉBEC INC.

Casa Berardi Mine, Val-d'Or (Qc)

### NEWMONT

Éléonore Project, Rouyn-Noranda (Qc)

### CANADIAN MALARTIC GP

Canadian Malartic, Malartic (Qc)

### QUEBEC IRON ORE

Lac Bloom Mine, Fermont (Qc)

### NIOBEC

Niobec Mine, St-Honoré-de-Chicoutimi (Qc)

### RIO TINTO ENERGY & MINERALS

IOC Mining Company

- Concentrator, Labrador City (N.L.)
- Pelletizing Plant, Labrador City (N.L.)

Rio Tinto, Iron and Titanium

- OPP Plant, Sorel-Tracy (Qc)
- QIT Madagascar Minerals, Mandena (Madagascar)

### VALE S.A.

Usina 8 – Pelletizing Plant, Vitória (Brazil)  
Conceição I – Serra do Esmeril Concentrator, Itabira (Brazil)

### KINROSS GOLD CORPORATION

Paracatu Mine, Paracatu (Brazil)

## ASSOCIATE MEMBER

### MÉTAL 7

Sept-Îles (Qc)

## PARTNERS

### RESEARCH

- AMIRA International, Melbourne (Australia)
- Canada Mining Innovation Council (CMIC), Ottawa (Ont.)
- Coalia, Thetford Mines (Qc)
- IVADO, Montréal (Qc)
- National Research Council of Canada (NRC)
- Natural Resources Canada (CanmetMINES), Ottawa (Ont.)
- Universities
  - Curtin University, Perth, (Australia)
  - British-Columbia, Vancouver (B.C.)
  - École Polytechnique de Montréal (Qc)
  - INRS-ÉtÉ, Québec (Qc)
  - Laval, Québec (Qc)
  - McGill, Montreal (Qc)
  - Queens, Kingston (Ont.)
  - Toronto, Toronto (Ont.)

## INDUSTRIAL

- BBA
- BioCarbon Industries
- Draslovka
- Copper Mountain Mining
- Cyanco
- Derrick
- FLSmidth
- H2Flow
- MeGlobal
- Métal 7
- Metcom
- Mining and Process Solutions
- Multotec
- National Carbon
- Newmont, Mine Porcupine
- Outotec
- Paul Wurth
- ThyssenKrupp
- Scantech
- Weir Minerals







# HIGHLIGHTS

## 2019–2023 STRATEGIC PLAN

In 2021, we completed the 3<sup>rd</sup> year of our 5-year strategic plan. Despite sustained efforts, our high level of activity in the context of a pandemic forced us to prioritize the most promising actions in the short term, and to postpone some planned development works. Our actions remained aligned with our challenges and our two guiding principles:


- Develop a culture within the organization based on service, with the absolute priority of ensuring our members and client's satisfaction;
- improve the efficiency of each of our projects and of the organization as a whole.

Our expertise being at the core of our organization, we made the required improvements, following significant organizational changes made in 2021, to finalize a management structure ensuring better availability and support for all our employees. Recruiting efforts allowed us to attract new Canadian and international talents. Optimization of our processes and development of management tools have continued and now facilitate the integration of new employees into the organization.

Efforts put into our digital transformation were also pursued in 2021. A full review of our management systems through an approach based on our business process was completed and the tools and systems required to support our growth were identified. Significant efforts were made to adopt the best cyber security tools, practices and systems.

Corem kept positioning itself on the Canadian R&D ecosystem by pursuing partnerships with key organizations in mining innovation. We renewed our partnership agreement with the Ministère de l'Énergie et des Ressources naturelles du Québec to support our pre-competitive research program and the establishment of a collaborative program on critical and strategic minerals.

Our practices in business development and relations with our members and clients are constantly improving. Maximizing environmental and economic benefits for the mining industry remains our top priority, while considering social issues.



## Innovate to reduce energy consumption during grinding

*"Newmont inherited our relationship with Corem through the acquisition of Goldcorp in 2019. Since that time, we have been impressed with the range of precompetitive projects supporting the industry members."*

– Frank Roberto  
Director – Processing  
Newmont

## ENVIRONMENT

The impacts of mining projects on the environment are a main concern of the mining industry, from their development stages to the mine closure, and throughout operation. The industry is working to identify new processes and new plant operation practices to minimize these impacts. Corem, in addition to evaluating the environmental benefits of all its projects, dedicates part of its program to developing technologies specifically intended to decrease the environmental impact of mineral processing.

### PARTNERSHIPS FOR NEW PROCESSES AND GREENER PRODUCTS

The process of choice for gold extraction is cyanidation. However, before the spent solutions from cyanidation are sent to the effluent, they are treated to destroy any cyanide by-product. Nonetheless, these oxidation processes produce nitrogen products that are rejected into the environment. To solve this problem, Corem developed a process that regenerates and reuses cyanide from these by-products. With funding from the Federal Government *Clean Growth Program*, financial contributions from the Québec Ministère de l'Économie et de l'Innovation and from the Ministère de l'Énergie et des Ressources naturelles, as well as contributions from our partners (Agnico Eagle, Canmet, Cyanaco, Draslovka, H2Flow, IAMGOLD, Newmont and TÉLUQ), Corem conducted a \$4.2M project in 2021 which included the construction and operation of a pilot plant to demonstrate this process. The plant, with a capacity of 1 m<sup>3</sup>/h and installed on Agnico Eagle's LaRonde site, demonstrated all the unit processes of the flow sheet, from regeneration to the reuse of the cyanide for gold recovery. During

the tests, about 70% of the cyanide by-products were regenerated. Corem is confident that regeneration will reach 80% in the next series of tests that will be carried out in 2022.

Corem has also partnered with the Université Laval, Flottec and Agnico Eagle to develop new flotation reagents from proteins. Reagents usually used for the recovery of sulphides have a certain level of toxicity, even when used in very small amounts. The approach developed by Corem and its partners uses viruses that have the ability to bind to minerals. By identifying the proteins that allow viruses to selectively bind to valuable minerals, it is then possible to isolate these proteins, make them hydrophobic, and use them as flotation collectors. This new approach for the production of collectors made it possible to identify several promising molecules that will be tested as collectors in the upcoming months at Corem.

### COREM SUPPORTS THE INDUSTRY'S EFFORTS TO REDUCE ITS ENVIRONMENTAL IMPACT

Corem also supported Canadian Malartic Mine (CMM) with the development of a method to generate inert mine tailings that could be used for the restoration of the mine's tailings areas. The project will ultimately allow CMM to produce all the materials required to restore its tailings storage areas instead of importing these materials. This project will decrease the mine's environmental impact and restoration costs. Corem carried out the tailings desulfurization works for CMM.



## GHG

Reducing greenhouse gas emissions (GHG) is one of the main concerns of the mining industry. The industry is indeed faced with the climate crisis and is currently working on quickly finding ways to reduce CO<sub>2</sub> emissions. Corem has therefore committed to develop technologies to help the industry achieve its goals.

### INNOVATIVE APPROACHES TO INCREASE THE IMPACT OF RECOGNIZED TECHNOLOGIES

The mining industry consumes 3 to 6% of the world's electrical energy production. Ore comminution, in particular, represents about 50% of the mining industry energy consumption. Therefore, there are significant potential positive impacts from implementing alternative technologies to replace the current ones or increasing their energy performance. In 2021, Corem completed its project to demonstrate that HPGR (High Pressure Grinding Rolls) could replace ball milling as the final grinding stage. Although HPGR is a recognized and efficient technology, it is currently only used for primary grinding. With the funding of the *Crush It! Challenge* program of Natural Resources Canada, Corem has developed, in collaboration with the University of British Columbia (UBC), Newmont Mining, Copper Mountain, Weir Minerals, Thyssen Krupp, Koeppern and Derrick, a new flow sheet that allows HPGR to be used for fine grinding, even downstream of wet grinding equipment such as a semi-autogenous mill. Tests carried out for both case studies (Copper Mountain Mine and Porcupine) showed reductions of over 50% of the energy consumption by replacing the ball mill circuit with HPGR. For the Canadian industry, this represents a potential reduction of GHG of over one million

tonnes per year. Corem is currently developing the next phase of the project, which consists of a demonstration of the process at a mining site.

Corem also aims towards accelerating the implementation of ore sorting ahead of concentrators. This technology can decrease at the source the ore tonnage to process in the plant by as much as 80%. Therefore, future processing plants could be smaller and generate significantly less GHG and tailings. Corem plays an active role in several collaborative projects to accelerate the adoption of this technology within the mining industry to reduce the annual GHG emissions by several million tonnes of CO<sub>2</sub> before 2030.

### TARGET APPLICATIONS THAT CAN SIGNIFICANTLY REDUCE GHG EMISSIONS

Firing of ore pellets causes large emissions of GHG. Corem is working with its partners ArcelorMittal, Rio Tinto IOC and Vale to develop technologies that will reduce these emissions. Research carried out by Corem in 2021 and before showed that biochar (coke from organic sources) could replace 100% of the mineral coke used as an additive for firing ore pellets with a slight decrease in quality, or with partial substitution for coke without any loss of quality. Work will continue in 2022 through an in-plant demonstration and will aim at improving the performance of biochar as a substitute.



## CRITICAL AND STRATEGIC MATERIALS

Corem positions itself as a main supporter of critical and strategic mining projects thanks to its recognized expertise in mineral processing as well as its infrastructure, which includes its new hydrometallurgy platform. Corem actively participates in the development of Quebec and Canadian economies that are oriented towards green energies.

### SUPPORTING QUEBEC AND CANADIAN PROJECTS TO SUPPLY THE WORLD WITH MATERIALS FOR MANUFACTURING BATTERIES

The 2025 Quebec plan for critical and strategic minerals predicts that significant increases in the production of strategic minerals would need to reach up to 400% over the 2020 rates in order to meet the demand in 2050 for minerals used for manufacturing batteries and essential for transportation electrification. Corem is currently working with several clients and partners to develop processes to extract these substances and transform them into materials necessary for battery manufacturing in Quebec and in Canada. In 2021, Corem carried out over 25 projects related to the production of graphite, nickel or lithium as battery materials. In addition to extracting these materials from mineral sources, Corem has participated in the development of a recycling process for battery materials, thereby contributing to the development of a circular economy in Quebec.

### NEW TECHNOLOGIES FOR THE EXTRACTION OF RARE EARTHS

The Québec Ministère de l'Énergie et des Ressources naturelles (MERN) financed the launching of a program for the development of technologies to promote the mining of Quebec's deposits of rare earths and nickel. This program, with \$1.5M financing, is carried out through a partnership with Commerce Resources, Torngat Metals, SOQUEM, Magneto Investments and the MERN, who form an advisory committee ensuring a follow-up on the project, and with several research partners such as Canmet, Université Laval and Mineral Process Solution. This 33-month program will continue until December 2023.



## EFFICIENCY OF MINING OPERATIONS

Part of Corem's mission is to improve the competitiveness of its members' operations. Several projects are therefore carried out in partnership with these operations to improve their metallurgical performances.

### INNOVATIONS DIRECTLY AT THE MINE

Geologists in mining operations must identify the ore and differentiate it from waste rocks to send a minimal volume containing a maximum of value to the concentrator. To support them in their decision-making process, Corem completed a project in 2021 to develop a sensor that measures the ore grade in bulk samples directly on truck loads and from drill cuttings. Corem supported the implementation of this technology based on a measure of bulk density on trucks at the Havre-Saint-Pierre mine. This technology allows the mine to identify if the content of each load is composed of ore or waste rocks. Upon completion, it will allow the mine to increase the quality of its ore, as well as the quality and the quantity of its products. The technology applied to drill cuttings was tested at four different mining plants through the research program and contractual testwork. This technology gives geologists the capability to estimate in the field the proportion of valuable content from the different drill holes.

### MORE VALUE FOR OUR MEMBERS

Gold producers are often confronted with refractory ores where the value is encapsulated in other minerals, therefore preventing or decreasing their extraction. In 2021, Corem completed the demonstration of its gold recovery process from refractory ores containing arsenopyrite and carbonaceous material that absorbs gold. After a gold recovery close to 80% was obtained for these types of ores through a research project, this promising technology was tested on three different ores in five contractual projects. A greater access to the precious metals contained within refractory ore with Corem's process represents a significant gain for Corem's members.

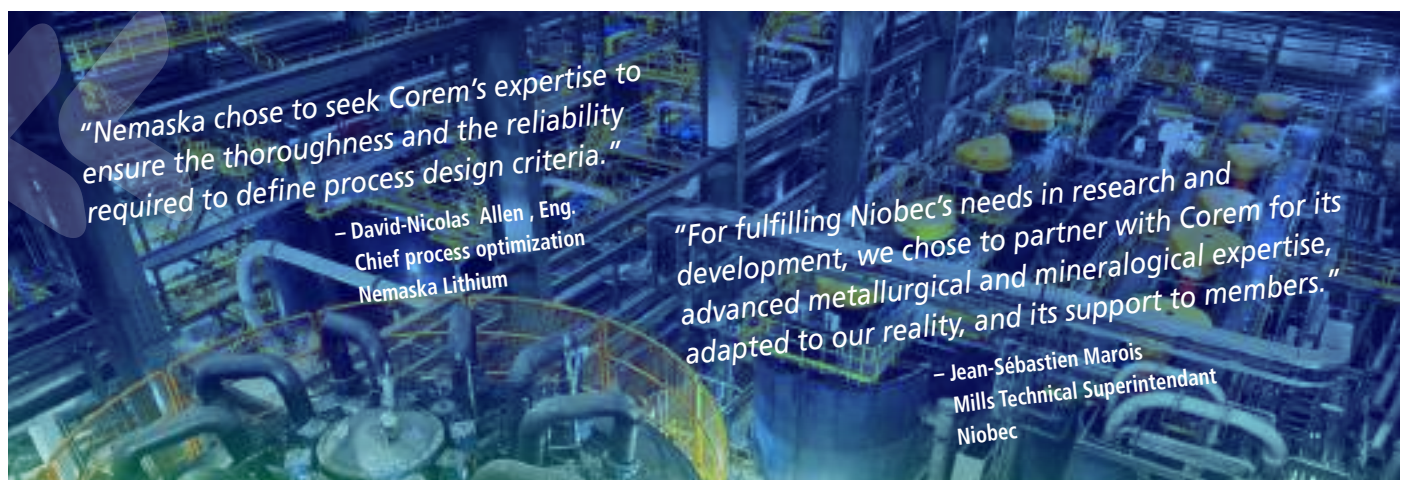
Spiral circuits are used in ore processing plants to concentrate iron.

However, the performance of these circuits significantly decreases for particles finer than 150 µm. Several streams containing large quantities of iron units, which can represent between 5 and 15% of the total valuable iron, are sent to the mine tailings pond. However, research carried out by Corem showed that by combining the adjustment of operating conditions and classification of the ore before it is fed to the spiral, it was possible to obtain a high-quality concentrate from the finer size fractions, especially for the -106 µm fraction. In 2021, Corem performed tests in plants that confirmed the recoveries obtained in Corem's laboratories. A saleable concentrate can be produced in the plant and could represent several hundreds of thousands of tonnes per year. Corem will continue this development in 2022 by optimizing the classification efficiency in the process.

### METALLURGY 4.0

Corem remains at the cutting edge for new digital technologies in mining by enabling their integration and developing new applications. For example, Corem develops applications to extract information from automated mineralogical analysis of samples using big data analysis. This data is processed by unsupervised data learning to identify the underlying structures that improve the understanding of the impact of the ore mineralogy on the process performance.

Corem also added to its organization a digital vision team that leads different process optimization projects. For instance, an application that analyzes the froth images captured by a camera at the surface of flotation cells to measure and predict the hydrodynamic phenomena occurring in the cells, which will allow the process plant to control flotation circuits with non-intrusive and robust tools.



# COREM IS PRESENT

## PARTICIPATION IN EVENTS (ON-SITE)

- CMP - Toronto, October 14, 2021, Toronto
- CMP – Northwestern Quebec, November 9 to 11, 2021, Val-d'Or
  - *Les spirales gravimétriques : Simples en apparence, tout un défi à comprendre*. Authors: Laurence Boisvert, Daniel Amariei, Simon Goudreau and Marilène Renaud

## EXHIBITIONS (VIRTUAL STAND)

- AME round-up, January 18 to 22, 2021
- Arab Mining Convention, February 24 to 26, 2021
- PDAC, March 8 to 11, 2021

## PUBLICATIONS

- GOUDREAU S., BOISVERT L. AMARIEI D., *Fine Iron Particles Recovery Using Wash Water Spiral Concentrators*, Procemin - Geomet, October 20 to 22, 2021
- GUIRAL-VEGA J. S., PÉREZ-BARNUEVO L., BOUCHARD J., POULIN É., Université Laval, DU BREUIL C., Corem, *A Particle-Based Classification Model to Assess the Efficiency of Magnetic Separation*, Procemin – Geomet, October 20 to 22, 2021
- FAUCHER M., GRAVEL O., LARACHI F., *A continuous-flow surface flotation cell for the separation of scanty mineral samples based on wettability contrast*

## PARTICIPATION IN EVENTS (IN VIRTUAL MODE)

- AME round-up, January 18 to 22, 2021
- 53<sup>th</sup> Canadian Mineral Processors, January 19 to 21, 2021
- Arab Mining Convention, February 24 to 26, 2021
  - *R&D and innovation applied to mineral processing – Key issues for the industry: energy, water and environment*. Author: G. Bartolacci
  - *Challenges in comparing gravity separation technologies for gold pre-concentration assessment*. Authors: D. Amariei and G. Bartolacci
- PDAC, March 8 to 11, 2021
- 27<sup>th</sup> Ore and Minerals Analysis, April 14 and 15, 2021
  - *Geometallurgy: Evaluate the effect of ore variability in the processing scheme*. Author: G. Bartolacci
- Global Iron Ore 2021, March 17 and 18, 2021
- Comminution '21, April 19 to 21, 2021
- Congrès annuel de l'Association Minière du Québec, June 3 and 4, 2021
- Conference of Metallurgists, August 17 to 19, 2021
- Procemin – Geomet, October 20 to 22, 2021
  - *Fine Iron Particles Recovery Using Wash Water Spiral Concentrators*. Authors: Simon Goudreau, Laurence Boisvert and Daniel Amariei
  - *A Particle-Based Classification Model to Assess the Efficiency of Magnetic Separation*. Authors: Juan Sebastian Guiral-Vega, Laura Pérez-Barnuevo, Jocelyn Bouchard, Éric Poulin (Université Laval, Canada) and Clémence Du Breuil
- Xplor 2021, October 25 to 28, 2021, Montreal
  - Partner in the preparation of the geometallurgical workshop: *The key to a successful mining project*. Sylvie Lévesque and Donald Leroux
- Flotation '21, November 8 to 12, 2021
  - *Packed-bed reactor conditioning as an investigative intensification approach to polymetal sulphides flotation assessments*. Authors: Olivier Gravel and Faïçal Larachi
- Iron Ore conference, November 8 to 10, 2021
- CMP – Ottawa, Montreal, Quebec, November 18, 2021
- Québec Mines et Énergie, November 22 to 25, 2021
- CMP - BC/Yukon, November 24, 2021





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