



CEMI
Centre for Excellence
in Mining Innovation

February 2021

Ground Breaking News

CLIMATE CHANGE & INNOVATION FOR MINING

The Mining Industry is key to success in the struggle to arrest Climate Change. At the Association of Mineral Exploration (AME) Roundup Conference 2021 in Vancouver, Robert Friedland, founder and executive chairman of Ivanhoe Mines and the most prolific explorationist in mining today, forecast greater demand for all kinds of minerals and metals to fuel the Green Transition of the Global Economy.

Mr. Friedland predicted a rise in commodity prices and emphasized the need for discovering new, Tier-1 copper deposits, including in BC and the US. He is quite right, but it is difficult to see how higher metal prices will help the low-carbon transition. Finding and bringing new Tier-1 deposits into production takes decades while scientists tell us we have to impact climate change in the next 10 years. This means focusing on dramatically improving the productivity of existing mines.

The issues that confront the mining industry today are complicated, and there are few simple solutions. Significant progress will depend on integrating many SME-based innovations, and CEMI has embraced the network approach, discovering multiple solution providers across Canada and beyond. CEMI's network members are committed to collaboration, and have experience in every mineral and metal mined in Canada. The solutions come from every sector of the economy so this is 'innovation for mining' (IFM), drawing the best ideas from wherever they are found to create new, practical solutions for mining.

Fortunately, the SME innovators have developed most of the solutions mining needs to make the Green Transition a success and meet all the demands of the future. All we need to find is the investment they need to commercialize them.

CEMI'S INNOVATION FOR MINING GLOBAL NETWORK

The CEMI platform is a network of local, national, and international cross-sectorial individuals, organizations, and corporations that we leverage to address the needs of the mining value chain. The mining value chain includes mineral exploration, mine development, mining operations, mineral processing, mine closure and mine rehabilitation players. Some common threads across the supply chain are; improving operational efficiency, decreasing energy usage and GHG emissions, enhancing safety, increasing digitization, reducing environmental impact and focusing on ESG performance. Rooted in the Canadian mining and innovation ecosystem, CEMI's network includes Service and Supply Companies (SMEs + OEMs, Large), Mining Companies & Plant Operators, Government Departments Labs and Agencies, University Colleges R&D Agencies, Accelerators, Incubators, Regional and Provincial Innovation Centres, Industry Associations, Innovation and Business Support Organizations. Currently, CEMI is growing its network nationally and advancing its connectivity globally to representative innovation organizations in Australia, Brazil, Chile, France, Germany, Peru, South Africa, Sweden, and the USA. To stay engaged with CEMI, please [join our mailing list](#) or send a request to info@cemi.ca.

CRUSH IT!

PATENTS AND PRIOR ART SEARCHING FOR THE CANADIAN MINERAL PROCESSING INNOVATION ECOSYSTEM

During February and March 2021, CEMI, in partnership with Natural Resources Canada's Crush It! Challenge, offers no-cost high-level patent searches to innovators in the Canadian Mineral Processing Innovation ecosystem. A patent search, also known as a patentability search, is a search of existing patents and prior art to locate the closest existing and registered  Natural Resources Canada / Ressources naturelles Canada to your proposed invention. Why should you conduct a prior-art search?

1. keep up with technological advancements,
2. identify potential game-changing inventions,
3. glean unavailable technical information
4. gather knowledge to improve your invention
5. identify opportunities from other industries.

To learn more about [Patenting in the Mining and Mineral Processing Innovation Ecosystem](#), join the CEMI hosted [Webinar](#) March 3, 2021, 1:30 pm - 2:30 pm EST. Register via Eventbrite. To access this service, please send a request to info@cemi.ca. <https://impact.canada.ca/en/challenges/crush-it>



PRESENTATIONS & ARTICLES

["High-capacity Production Systems for Block Caving Mines,"](#) by D. Morrison (CEMI) & P. Labrecque (SRK (Canada) Ltd.), MassMin2020, Eighth International Conference and Exhibition in Mass Mining,

["Why Step-change Innovation is Essential,"](#) by D. Morrison (CEMI), 3rd Annual Mining Investment North America Conference, 2020

["One of the youthful rising stars in the mining industry, Charles Nyabeze, says Zimbabwe has all the minerals and metal resources necessary to elevate the quality of life of all Zimbabweans." ,](#) The Herald, January 2021

CONFERENCES

PDAC 2021

March 8-11, 2021

CIM 2021

May 3-6, 2021

WEBINARS

[NEXCO: Revolutionary ammonium nitrate variable energy explosive](#)

February 23, 2021, 1:30 - 2:00 pm

[CYPHER: Reduction of environmental impact energy consumption through better haul](#)

February 24, 2021, 1:30 – 2:00 PM EST

[The Future of Mining - Women's Role in the Green Transformation](#)

February 25, 10:00-11:00 AM EST

[MILTONS IP: Introduction to Intellectual Property IP for Mining and Mineral Processing](#)

March 3, 2021, 1:30 - 2:15 PM EST

WATCH

CEMI hosted webinars available online. www.cemi.ca/category/watch/

COMING SOON!

CANADIAN MINERAL PROCESSING INNOVATION ECOSYSTEM PORTAL

CEMI will soon be launching an online portal solely dedicated to highlighting innovations and encouraging discussions around user-submitted Mineral Processing Innovation related articles. This portal will also host curated current information on Innovation in Mineral Processing, and an events calendar focused on innovation-related events. Another feature of the portal will be a 2019 Canada's Mineral Processing Ecosystem Map. As this portal grows, we envision it being the go-to place for those interested in learning about innovation trends in Feed, Mill, Operations and Liberation. CEMI is pleased to deliver this project as a part of commercialization support services for Natural Resources Canada's Impact Canada Crush It! Challenge.

Fostering Innovation Implementing Excellence

WHY ENGAGE CEMI?

CEMI helps solve mining industry challenges. We accelerate the delivery of commercially viable innovations to improve operational performance. Simply said, our services are designed to bridge the gap between a challenge and a solution.

OUR SERVICES

- **Innovation Scouting**
Global search for current and emerging pre-commercial solutions
- **Challenge Identification**
Review of existing challenges from technology road maps and uncovers hidden challenges using a systems analysis process
- **Challenge Solution Matching**
Matches current and emerging pre-commercial solutions with validated industry challenges
- **Commercialization Services**
CEMI conducts innovation and commercialization gap analysis assessments and offers services to bridge identified gaps

CEMI'S BUSINESS MODEL

- Fee for services rendered
- Success based fee for services
- Commission based agreements
- Royalty and licensing agreements
- A combination of any of the above

PARTNER AND CLIENT SEGMENTS

Our services are designed to bridge the gap between a challenge and a solution. To do that, organizations are matched and grouped together based on their needs, and to deliver the best possible outcomes.

CEMI NETWORK

CEMI continues to work on developing a national network, designed to bridge the innovation-commercialization gaps by bringing together cross-sector Innovators with made-in-Canada solutions for the mining industry.

STAY INFORMED

Receive CEMI's Newsletter, event notifications, and other special announcements. [JOIN OUR MAILING LIST](#) and stay informed. Contact INFO@CEMI.CA

CEMI ENGAGEMENTS AND COLLABORATIONS



CYPHER ENVIRONMENTAL

Cypher Environmental is a Canadian company that helps its global clients in the mining and construction industry simultaneously reduce their OPEX and environmental footprint by using their dust control and soil stabilization solutions, known as Dust Stop and EarthZyme, and has completed projects in over 50 countries around the world. www.cypherenvironmental.com

Disa's patented High-Pressure Slurry Ablation (HPSA) technology uses particle attrition and slurry conditioning technology that works on the principle of collisions between two or more high-pressure slurry jets to achieve disassociation and liberation of soft to medium type hardness ores. www.disausa.com



NEXCÖ

Nexco has created a unique patented variable energy ammonium nitrate-based explosive. The production of Nexil ammonium nitrate can be produced using a simple pilot plant and is able to provide Nexil samples to potential partners. Contact iRing: Mark Sherry mark.sherry@iring.ca

For more Commercialization Services Engagements visit www.cemi.ca/commercialization-projects



Natural Resources
Canada

Ressources naturelles
Canada

Canada

CanmetMINING et CEMI aimeraient utiliser votre exploitation minière ou votre usine de traitement pour valider les résultats de son logiciel de Récupération de chaleur sur les complexes miniers. Cette validation implique pour la minière de fournir différentes données d'opérations, de l'information en lien avec la consommation énergétique et la prise de mesures sur le terrain permettant de valider les différentes hypothèses et les calculs du simulateur. Pour participer ou pour plus d'information, veuillez contacter: info@cemi.ca - yan.germain@canada.ca.

CanmetMINING and CEMI would like to use your mining operation or processing plant to validate the results of its Heat Recovery software for mining complexes. This validation requires the mining company to provide various operating data, information related to energy consumption and perform field measurements allowing to validate the various assumptions and calculations of the simulator. To participate or for more information contact: info@cemi.ca - yan.germain@canada.ca.



LEVEK TURBINES



misa

CEMI, in collaboration with Levek Turbines and Groupe MISA (QC), is looking to secure an initial evaluation followed by a demonstration of a micro-turbine technology that will recoup and repurpose energy from service water in underground mines. The technology seeks to replace Pressure Reducing Valves (PRV) with a micro-turbine that will feed power into your local grid. The pressure head created by the water head at depth is attractive for this technology.

To participate in this project please contact:

info@cemi.ca - normandlevesque@levekturbines.com - mg@groupemisa.com

SUPERCLUSTER MEMBERSHIPS

CEMI is pleased to be a member of all the Superclusters funded by the [Canadian Government Superclusters Initiative](#). We will be collaborating with the Superclusters to identify opportunities for mining application in Supercluster funded projects and activities.

- Ocean Supercluster (based in Atlantic Canada)
- SCALE.AI Supercluster (based in Quebec)
- Advanced Manufacturing Supercluster (based in Ontario)
- Protein Industries Supercluster (based in the Prairies)
- Digital Technology Supercluster (based in British Columbia)