



**Productivity
through technology**



Mining Finland

Mining Finland is a non-profit and membership fee funded association promoting export of Finnish mining technology, promoting foreign investments to Finnish mining cluster and facilitating R&D and education collaboration among mining sector actors working in Finland or in cooperation with Finnish companies.



Watch our video

Why mine in Finland?

- Finland is the Europe's most digitally advanced nation.
(European Commission 2019)
- Finland is the most attractive country in the EU for global mining investments and among the 10 best in the whole world.
(Fraser institute's Annual Survey of Mining Companies 2020)
- The share of renewable energy of total energy consumption is the second biggest in Finland of EU countries.
(Eurostat, Share of energy from renewable sources in the EU Member States)
- Finland is the third in Europe in Battery Supply Chain Ranking.
(BloombergNEF)

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Finland

miningfinland.com
Info@miningfinland.com



ROXON

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Towards more sustainable mining

The mining industry is facing transformation as mining companies are adopting new technologies and practices to meet decarbonisation goals and comply with environmental, societal and governance (ESG) policies. Finland is strongly committed to systematic development of sustainable mining industry. There is a long tradition for mining research in universities and research centres which have created number of new innovations and technologies improving mines productivity and responsibility. Both young and innovative SMEs and large and experienced MNEs offer equipment and services to all stages of the mine lifecycle and support more sustainable mining through offering best available technologies for the mining industry.



Socially and environmentally responsible mining

Good environmental, social and governance policies have become an essential framework for exploration and mining companies to successful and profitable operation. The low carbon future and energy transition require new raw materials while local communities ask transparency from the companies in their neighbourhood. Mineral exploration and mining companies need to obtain a social licence to operate (SLO) within the local community they operate by communication and minimizing impacts on the local livelihood and culture. Sustainable sourcing of minerals ensures also future generations have access to raw materials and clean environment.



Pioneer in eco-friendly drilling

www.oykatiab.com



The Sustainable Mining Network
provides a neutral platform for
interaction between the mining
industry and its stakeholders.

www.kaivosvastuu.fi/in-english/

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Reliable partner
in mining services

TOIVANEN

toivanengroup.com

The advertisement features a collage of mining-related images: a yellow silhouette of a person working on a vehicle, a white silhouette of a person with a shovel, a mining truck in a tunnel, and a worker in a yellow helmet welding. Social media icons for Facebook, Instagram, and LinkedIn are in the top right corner.

World class know-how

The Finnish mining technologies are available for any mine in the world. On the following pages you can learn more about the technologies, services and research Mining Finland's members provide.

- Exploration
- Mining
- Mineral processing
- Closure / rehabilitation

● AQUAMEC OY - WATERMASTER

- Aquamec develops, manufactures and markets amphibious multi-purpose Watermaster dredgers. Watermaster's capabilities include suction dredging, backhoe dredging, raking and pile driving. Over 300 references in over 70 countries worldwide.



● ARCTIC DRILLING COMPANY

- ADC offers high-quality certified drilling and state of the art drill rigs. Downtime is the common enemy and we attack that with improved safety, fastest set-up times and high mobility - even in extreme conditions. Our portfolio has the right customizable products to minimize the costs of your drilling.



● ASTROCK OY

- Astrock provides geophysical consulting covering wide range of methods from airborne to ground and borehole geophysics. We also provide geophysical instrumentation and surveys specializing in borehole logging.



● BIOSO4

BioSO4 Oy is an innovative company offering environmental friendly methods for sulphate removal and environmental waters purification combined to supplier of high quality mining reagents. Our goal is to develop customer-oriented solutions from laboratory level to full scale processes based on long professional experience.



● DRAGON MINING

- Dragon Mining's operations are focused on maximising safety performance, environmental performance, and cost efficient production. In Finland we operate the Vammala Production Centre which consists of the Vammala Plant and the Jokisivu and Orivesi Gold Mines.



龍資源有限公司
DRAGON MINING
LIMITED



Magnus Minerals – Your partner in Finland

Magnus Minerals is a private Finnish prospect generator company focused on mineral exploration. Our team is comprised of 12 entrepreneurially-minded geoscientists with a strong understanding of Finnish geology, geophysics, mining law, and tenure-related issues. Our expertise includes industry-leading knowledge in the stratigraphy of the Central Lapland Greenstone Belt (see publication: Haverinen, J. 2020). Magnus' project portfolio includes Joint Ventures with Boliden, Rio Tinto, and other major mining companies. We also have our own early-stage development projects, some of which are in separate, private corporate vehicles, and some in publicly-listed junior mining companies (e.g. FireFoxGold [TSX-V:F-FOX]), in which Magnus has been the largest shareholder for over 3 years). Our work is focused on exploration for base metals (e.g., nickel, copper, PGEs, and cobalt), with most of our projects located in Northern Finland. From target areas, we produce new interpretations of geology, geophysics, and prospectivity.

Magnus Minerals is continually creating new business opportunities with current and future partners. We understand that your needs are unique. Contact us, and let's create a mutually beneficial approach to make a new mineral discovery in Finland.



● DYNASET

- Dynaset is the global leading manufacturer of hydraulic generators, power washers and compressors. Dynaset hydraulic equipment converts the mobile machine's hydraulic power into electricity, high-pressure water, compressed air, magnet and vibration. Our company's products are used for hundreds of applications in various industries around the world.



● EHP ENVIRONMENT OY

- EHP Environment designs on-line environmental monitoring and early warning systems for surface water, ground water, flow, and quality monitoring as well as meteorological monitoring. EHP's solutions are autonomous and can be installed practically anywhere, all year-round.



● EPSE OY

EPSE Oy's patented technology, the EPSE™ Method, is a unique solution for the treatment of process waters and wastewaters containing soluble metals. Method turns hazardous wastewater into metal-free water and practically insoluble precipitate. EPSE technology thus enables recycling of metals and water.



● EUROFINs LABTIUM OY

- For exploration and mining, Eurofins Labtium Oy is the only laboratory in the Nordic Countries that provides locally comprehensive sample preparation and analytical services



● FINNCOBALT

FinnCobalt (aka Vulcan Hautalampi Oy) is a private Finnish company which owns the ground and all mining rights of the Hautalampi Cobalt-Nickel-Copper Mine. The Hautalampi Mine is located in Outokumpu town. The project is currently preparing to complete Feasibility Study.



FINNISH MINERALS GROUP - SUOMEN MALMIJALOSTUS

The mission of Finnish Minerals Group is to responsibly maximise the value of Finnish minerals. We manage the State's mining industry shareholdings and strive to develop the Finnish value chain of lithium-ion batteries. In addition, we are engaged in long-term technology development of the mining and battery industries.

FINNISH MINERALS GROUP
SUOMEN MALMIJALOSTUS

● GEOLOGICAL SURVEY OF FINLAND

- The Geological Survey of Finland (GTK) is a leading European competence centre on assessment and sustainable use of geological resources. We provide expertise that serves the interests of our clients, stakeholders and society as a whole.



● IMA ENGINEERING LTD OY

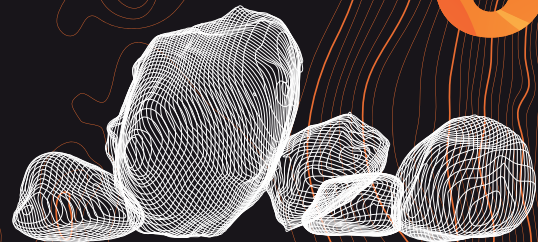
- Ima Engineering's products and services can make the difference between profitability and loss for an operation seeking to improve information used by management. In the mines and concentrators IMA cutting edge sensor technology and on-line solutions can reduce waste rock dilution and ore losses.



OULU – A HIGHER GRADE OF ROCK

OULU IS THE LEADING MINING TECHNOLOGY HUB IN FINLAND AND A PLACE FOR RESEARCH AND EDUCATION AIMING AT SUSTAINABLE USE OF MINERAL RESOURCES.

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● KELIBER OY

Keliber is a Finnish mining and battery chemical company that aims to start the sustainable production of battery-grade lithium hydroxide, utilising its own ore, in 2024. The Company is owned by Sibanye Stillwater Limited, Minerals Group and the Norwegian Nordic Mining ASA as well as by Finnish investment companies and private investors.



● MAGSORT

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● MARKKU ILJINA GEOCONSULTING OY

Dr. Markku Iljina has over 30 years post-graduation experience in mineral exploration and geological research. Experience includes supervision of field operations, planning and conducting of exploration projects, conducting and participation in international research and mining community related projects.



● MERUS POWER DYNAMICS OY

Merus Power offers proven power quality solutions for the mines across the world. Our solutions increase productivity of different mining processes by improving payload of the large motors. Mine operators and owners also benefit from improved power quality in terms of energy savings, reduced process disruptions and longer lifetime of capital equipment.





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● **MILLISECOND OY**

Millisecond Digital creates data analytics solutions for predictive planning and control of business-critical equipment. We specialize in harmonizing massive volumes of data from multiple vendors and system types – connecting different machines, environments, and individuals through standardized interfaces and signals.



● **MINERAL EXPLORATION NETWORK (SUOMI) OY**

Specialization Mining industry



● **NORMET OY**

Normet provides advanced solutions for selected customer processes in underground mining and tunneling. The company has 50 years of experience in the development, production and sales of equipment and vehicles for underground mining and tunnel construction. Concrete spraying and transport, explosive charging, lifting and installations, underground logistics and scaling.



Doofor
ROCK DRILLS

DOOFOR.COM

f in t

HYDRAULIC ROCK DRILLS MADE IN NOKIA, FINLAND

NORDIC DRILLING TECHNOLOGY

SEE MORE.

The advertisement banner for Doofor Rock Drills features a background image of a large hydraulic rock drill in a tunnel. The text is arranged in a clean, modern layout with a red and black color scheme.

● NORTHERN COMMUNITY SOLUTIONS

NCS specializes in education, expertise, products and services for private and public sector clients in natural resources based industries that focuses and supports socio-economically sustainable initiatives by providing expertise, products, resources, services, technologies and tools that enable development of successful local ecosystems that enhances job creation, economic and innovation development and exportability of products and services.



● OULU UNIVERSITY

- The Faculty of Technology at the University of Oulu is one of the leading experts in sustainable utilization of natural resources. Oulu Mining School (OMS) is an education and research unit in engineering and
- geosciences at the University of Oulu, which significantly strengthens the University's expertise in natural resources and sustainability.



● RADAI LTD

Radai provides geophysical surveys using Unmanned Aerial Vehicles. They are specialized in exploration, field work and logging, geophysical and geotechnical measurements, geophysical and geotechnical measurements and interpretation.



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drillhole logging
tailored to your orebody**

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TALLQVIST

Sustainable mining services

● ROVJOK

- ROVJOK digitises your mining operation. We combine and interpret operational and financial data across the entire value chain, giving you the context you need to perform advanced business and data analytics; in near real-time. ROVJOK's solutions are only possible with our world-class team.



● RUPERT RESOURCES (RUPERT FINLAND OY)

Rupert is a Finland focussed exploration and development company that is listed on the TSX Venture Exchange in Canada. The Company owns the Pahtavaara gold mine, mill, and exploration permits and concessions located in the Central Lapland Greenstone Belt in Northern Finland.



● SAVO-SOLAR OYJ

- Savo-Solar manufactures the most efficient solar thermal collectors and based on those delivers large-scale solar thermal systems. Focus is on large-scale applications like district heating, industrial process heating and real estate systems - market segments with a big potential for rapid growth.



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● SLEIPNER FINLAND OY

Sleipner Finland is a manufacturer of a safe and innovative transport systems for tracked machines: excavators, dozers and drill rigs. Sleipner systems can increase operational time hundreds of hours per unit, decrease maintenance costs considerably and reduce CO₂ emissions and fuel consumption at least 85% while travelling.



● SOTKAMO SILVER OY

- Sotkamo Silver's business concept is to exploit mineral deposits in the Nordic countries with regards to human society and environment.
- Sotkamo Silver owns, through its subsidiary mineral deposits. The Company's main development project is the Silver Mine project in Finland.



● TECWILL OY

- Tecwill offers cement saving concrete, shotcrete and back fill production technology for mines and tunnels. Using better technology, our customers can make concrete year-round with lower operational costs and a smaller carbon footprint. Our modular hybrid plants can mix all types of concrete mix designs.



● TEKIR

- Tekir is a strategic communications and public affairs firm. We offer a full range of services and specialize in challenging strategic communications and reputation management. Tekir employs 30 communications, public affairs and business experts.



● VOLANSI

- Volansi is a logistics company focused on the delivery of time-critical cargo using large drones. In the commercial space we focus on industrial logistics, in particular for the mining sector and their surrounding communities. We are based in the US but rapidly expanding on all continents on a "think global, act local" basis.



● VTT TECHNICAL RESEARCH CENTRE OF FINLAND LTD



- VTT is one of the leading R&D&I organisations in Europe. Our research and innovation services give our partners, both private and public, all over the world a competitive edge. We pave the way for the future by developing new smart technologies, profitable and sustainable solutions and innovation services.

● VUMOS OY



- Vumos is dedicated to efficient material flow at minings and harbors. Our services include both packing industrial materials efficiently and loading cargo. We also provide machinery contracting, i. e. we rent machines and employees for specific projects.

Not a member yet?

Check the benefits and membership fees.

miningfinland.com/membership



FireFox Gold was tailor-made to bring together veteran gold industry leadership and seasoned Finnish geological expertise to form a results-driven team focused on gold discovery in the Lapland Greenstone Belt. FireFox has assembled a leading land position that offers numerous opportunities to discover the next major deposit in the belt. The company's strategy for success includes systematic and cutting-edge exploration at its 100%-controlled properties, as well as creating joint venture opportunities to maximize project valuations.

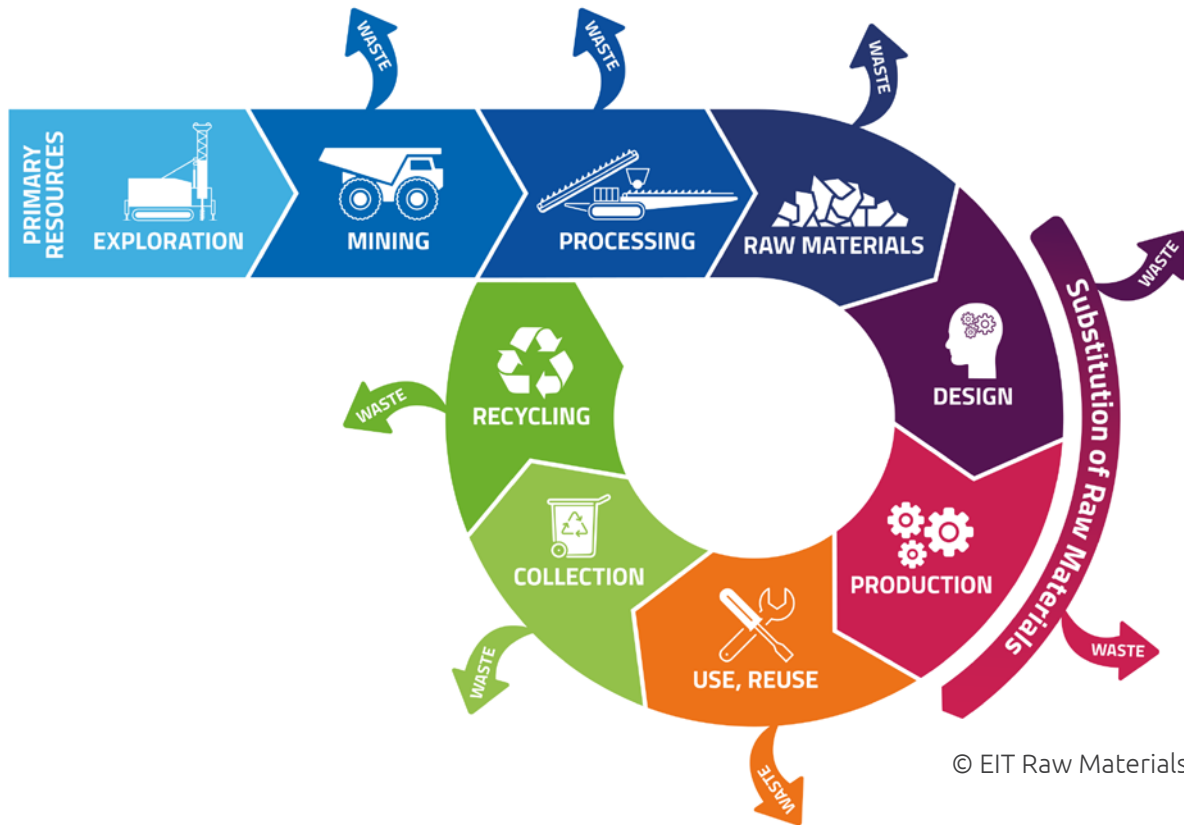
As a Finnish-run mineral exploration company, FireFox is a nimble operator with a key competitive advantage: a deep understanding of the social, environmental and logistical needs of working in Finland.

There is a new gold rush in Lapland and FireFox is a major player in a terrain charged with discovery potential.

Contact us to learn more!

Finnish know-how is extensive

The mining industry value chain is long and offers many opportunities for new innovations and efficient use of side streams.



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Mining Industry Statistics of Finland (2020)

A total amount of mining ore and waste rock 115,4 million t.

Personnel approx. 5 540



45 mines



Revenue approx. 2 billion €



Number of mines

Metals

9

Industrial minerals

29

Other

7



For more statistics
visit infogram.com

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www.exstre.fi



The mining industry in Finland offers many opportunities for research, companies, investors and employees. Please contact us for more information.
miningfinland.com

Field of the future

The evolving mining industry needs new experts.

The need for metals has grown tremendously over the last decades. Recycling could and will be made even more efficient. However, even if all the metals mined so far were recycled, they would not be enough to sustain our current lifestyle. Those working in the mining industry can themselves influence the responsibility and environmental friendliness of mining operations.

Finland has a long history of mining activity. Finnish metallurgical technology, mining equipment manufacturers and service providers along with internationally significant education and research are well known throughout the international mining community.

As the mining industry is adopting new technologies, new roles with different skillsets are required. Remote work, digitalization and flexible work arrangements are challenging the traditional ways of working and offer interesting career options. There are lots of job opportunities for skilled labour with competitive salary.



Wide range of geoservices

Palsatech provides high-quality geological and technical services for the mining and exploration industry. We have developed a unique and innovative service concept, which is always customized to meet the needs of each client. Our extensive service portfolio simplifies the customer's upfront investment and work. With us, the customer gets the know-how, methods, space and equipment all in one place.

Our services include:

- Geological and technical exploration services
- Geophysical exploration services
- Mining services
- Logging tables
- PalsaCenter – Exploration and mining service center

Read more from our website: www.palsatech.fi

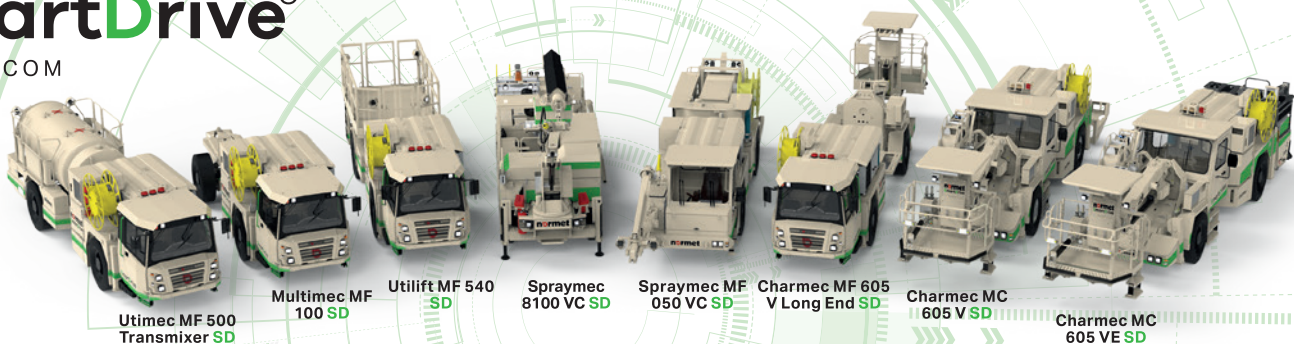


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Increased safety
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Improved energy efficiency
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Charging systems**



**ABB Ability™ eMine
Trolley system**

Digitally connected solutions

With ABB Ability™ applications so they can be monitored and controlled to optimize operations and energy usage in real time.

Did you know that if every truck in every mine were electrified, we could remove 198,000 tons of CO₂ every day from the air we breathe? ABB Ability™ eMine makes the all-electric mine possible. By fully integrating electrification and digital systems from the mine to the port, eMine™ significantly reduces your environmental impact, lowers costs and raises productivity. Let's write the future of mining. Together. new.abb.com/mining/emine

