

#### Pilot sites and modules ready for demonstration



The DINAMINE project has been busy developing and installing innovative technologies at its pilot sites in Norway and Portugal. The technologies include cloud software, drilling machinery, vehicle sensors and sensors at the mine and processing plants.

The technologies will be validated over the next year by collecting data and demonstrating DINAMINE's unique approach to holistic mine management from mine to product.

DINAMINE's cloud-based software solution provides mining engineers, managers and technicians up-to-date monitoring of the mine productivity from mine-to-product such that the user can manage production and update the short-term schedule of the mine and optimize processes and settings on a shift-by-shift basis. The solution provides updateable geological and geotechnical data management and also also gives the user access to a production management tool, for short-term and long-term scheduling of mine activities.



The Mine Information Model visualizer illustrates up-to-date geological information from the integrated DINAMINE database.

#### First tests at the DINAMINE pilot sites

In April, the DINAMINE team kicked off the demonstration period at the Skaland Graphite pilot site by testing three new technology modules for the first time in the underground mine environment. The DINAMINE drilling jumbo, developed by project partner AMV, successfully used automated boom guidance to drill at the tunnel face in the mine development. The drilling jumbo is specially designed for navigating and operating in the underground mining environment.

Optimised drill-and-blast design, performance and management is achieved by communication between the drilling jumbo and an automated geological and geotechnical mapping system. In addition, a real-time rock fall hazard monitoring tool was demonstrated in the operating environment.



The automated boom of the DINAMINE drilling jumbo during initial testing at Skaland Graphite.

At Skaland Graphite, conveyor а belt-mounted chemical sensor was installed. The BeltPulse sensor was developed by project partner Spectral Industries and uses Laser-Induced Breakdown Spectroscopy (LIBS) technology to measure chemical concentrations of selected elements in the input material stream.

A pair of sensors is also installed at the processing plant at the Felmica Minerais Industriais pilot site.



The BeltPulse conveyor belt measures carbon content in real-time on the input feed conveyor belt at Skaland Graphite.

In addition, both DINAMINE pilot sites have been installing and connecting a number of sensors at the processing plants and on the vehicle fleets. The sensor data include measurements of water and power consumption, petrochemical usage, weather parameters, location tracking for the vehicles, ore feed and tailings quality.



Mine vehicles are being instrumented at pilot site Felmica Minerais Industriais.

The DINAMINE team will be validating each of the technologies and software systems in the coming months, considering also their application for optimising the value chain in other mining operations and contexts.

# **PARTICIPATION IN EVENTS**

# DINAMINE Showcased at PDAC 2025 Among Europe's Leading Mining Innovations

This year's PDAC 2025 convention brought together over 27,000 participants from across the global mining sector, creating an exciting and dynamic space for knowledge exchange, networking, and innovation.

The DINAMINE project was proudly featured at the EU Booth throughout the duration of the event, alongside 18 other EU-funded Research and Innovation (R&I) projects focused on raw materials. This collective presence highlighted Europe's commitment to advancing sustainable and safe mining solutions through collaborative innovation.

A key highlight was DINAMINE's participation in the EU Day, where the project was invited to present its approach to digital mining and smart monitoring. DINAMINE was one of six selected projects featured in the workshop "Research & Innovation for Ensuring a Safe and Sustainable Supply of Critical Raw Materials (CRMs) in the European Union: EU Horizon Europe Technology Success Stories", organized by the HaDEA Raw Materials team. Representing the DINAMINE consortium, Saman Tavakoli (Norwegian Geotechnical Institute), leader of the Exploration work package, delivered an insightful presentation on how DINAMINE is leveraging new technologies and real-time monitoring to enhance efficiency, reduce environmental impact, and support the secure supply of critical raw materials in Europe.

Beyond the formal sessions, PDAC 2025 also provided valuable opportunities for networking and collaboration. The DINAMINE team connected with representatives from other EU-funded initiatives, industry professionals, and experts from various disciplines within the mining ecosystem. These discussions opened the door to future synergies and reinforced the shared commitment to innovation-driven, responsible mining.



### **DINAMINE presented at EXPOMIN 2025**

The project was also featured at EXPOMIN 2025, where Sadia Manzoor, leader of the Processing work package, and Emile Heezen (Spectral Industries) presented the innovative sensors developed by Spectral Industries for real-time elemental characterization. Their talk also introduced the broader objectives of the DINAMINE project. The conference is one of Latin America's largest mining events, with over 83,000 attendees from across the Chilean and international mining industries.

Reflecting on her experience, Sadia noted a noticeable and encouraging shift in the industry's mindset:

"The mining industry, once heavily reliant on manual and traditional methods, is now increasingly embracing digitalization and automation. Working within DINAMINE and engaging with mining professionals, I've come to believe that integrated sensor systems and smart data utilization can significantly enhance mining operations. Miners and plant engineers expressed great interest in receiving real-time data to support faster, more informed decisions and to guide processes towards greater efficiency."

She also observed that key concerns within the Chilean mining sector, such as water and energy efficiency, waste reduction, and sustainability, were recurring themes in discussions. These concerns are directly aligned with the ambitions of DINAMINE and the development of its cutting-edge technologies.

Participation in EXPOMIN 2025 offered an excellent opportunity to connect with industry leaders, share DINAMINE's progress, and reinforce its relevance to current and future needs in sustainable mining.



Stay tuned as DINAMINE continues to share its progress and contribute to reshaping the future of mining through cutting-edge technologies and cross-sector collaboration.



Stay tuned for more updates as we embark on our mission to create a mining industry that is greener and more sustainable!

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