Spanish company seeks efficient alternatives to measure, control and mitigate suspended dust in the open pit mine that interacts with the underground mine

Summary

Profile type	Company's country	POD reference
Technology request	**Spain**	**TRES20251031029**
Profile status	**Type of partnership**	**Targeted countries**
PUBLISHED	**Commercial agreement with technical assistance**	**• World**
Contact Person	**Term of validity**	**Last update**
Enrico FRANZIN	**31 Oct 2025** **31 Oct 2026**	**31 Oct 2025**

General Information

Short summary

A Spanish consultancy specializing in innovation and internationalization seeks advanced technology solutions to measure, control, and mitigate suspended dust (PM10 index) in large-scale open pit mines with underground operations, aiming to improve environmental and operational safety. Collaboration types sought include commercial agreements with technical assistance and research & development cooperation.

Full description

Our company, based in Spain and operating in the innovation consultancy sector, is seeking solutions for dust monitoring and control at an open-pit mining operation in Chile. The transition from open-pit to underground extraction using the block caving method has increased dust emissions due to slope subsidence and blasting-induced rock displacements.

The requested technology or know-how should enable effective and autonomous monitoring and control of suspended dust (PM10), taking into account variables such as wind, temperature, and extensive spatial coverage. Solutions must minimize water consumption, operate independently with self-sufficient power supply, and allow real-time monitoring of mitigation effectiveness. The anticipated cooperation involves developing pilot tests for both dust control and dust monitoring technologies, to be validated on-site at the mine in Chile and potentially scaled for

broader industrial use

Requirements for the proposed solution
• Be self-sufficient in terms of power supply.
• If water is required, only industrial water may be used (its use should ideally be minimized due to local restrictions), and a dedicated supply tank must be provided.
• Operation independent of human intervention (ideally automatic or requiring minimal human involvement).
• Monitor the efficiency of mitigating systems with the proposed technology.

This opportunity is part of an innovation challenge for which the evaluation criteria is as follows:
• For the CONTROL/MITIGATION SOLUTION: Efficiency in dust control (% reduction of PM10 index)
• For the MONITORING SOLUTION: Measurement precision, accuracy, reliability, range and extension of dust measurement area (PM10 index)
• EVIDENCE OF FEASIBILITY of the proposed system, including solution maturity, similar success cases, and robustness of the solution in a mining environment. The system must withstand extreme conditions (winds up to 150 km/h and high and low temperatures).
• GREATER SIMPLICITY of the solution (space requirements, usage, equipment...) and ease of implementation:
• Must not interrupt mine operations or the production process on the EAST slope.
• Must require minimum personnel on site.
• Must not pose any danger to people, equipment, or the environment.
• Must minimize water consumption.
• Must ensure energy autonomy.
• ON-SITE TECHNICAL SUPPORT: Specify how technical support will be provided for the pilot execution and subsequent operation, to be carried out at Chilean facilities.
• Challenge finalists will meet with the mine representatives to present and defend their proposals.

Advantages and innovations

• Autonomous and scalable monitoring and mitigation of dust emissions in large, complex mining environments.
• Integration of environmental and operational data for real-time adaptive dust control, triggering mitigation measures based on dynamic conditions.
• Reduction of PM10 dust indices and their propagation to surrounding areas, improving compliance with environmental regulations and community health.
• Optimization of resource use, including minimal water consumption and energy autonomy.
• Pilot tests aligned with industrial needs and onsite validation at a leading global copper mining site.

Technical specification or expertise sought

• Advanced technologies for real-time PM10 dust measurement and monitoring across extensive mine areas (e.g., sensors, lidar, imaging).
• Dust mitigation systems capable of autonomous or minimally supervised operation, triggered by environmental and operational data.
• Systems designed to withstand harsh mining conditions (high winds, dust, temperature fluctuations).
• Solutions that integrate with existing monitoring infrastructure and provide actionable data feedback for continuous improvement.
• Expertise in environmental monitoring, mining operations, automation, and remote sensing technologies.

Stage of development

Already on the market

Sustainable Development goals

- **Goal 6: Clean Water and Sanitation**
- **Goal 3: Good Health and Well-being**
- **Goal 13: Climate Action**
- **Goal 9: Industry, Innovation and Infrastructure**

IPR Status

No IPR applied

IPR Notes

Partner Sought

Expected role of the partner

The partner is expected to provide innovative technological solutions and implementation expertise for autonomous dust measurement and mitigation. Specific expertise in mining environmental monitoring technologies, automation systems, and operational integration in large open pit and underground mining contexts is required. Experience in pilot project management and field validation in harsh mining conditions is highly valued. Partnership may involve

joint development, technical assistance, and potential scale-up collaboration.

Type of partnership

Commercial agreement with technical assistance

Type and size of the partner

- **R&D Institution**
- **SME 50 - 249**
- **Big company**
- **SME 11-49**

Dissemination

Technology keywords

- **10002007 - Environmental Engineering / Technology**
- **04003004 - Mining and extraction**
- **09001009 - Sensor Technology related to measurements**
- **03008 - Mining Technologies**

Market keywords

- **08003003 - Mining machinery**
- **08002002 - Industrial measurement and sensing equipment**

Targeted countries

- **World**

Sector groups involved