VIABLE ALTERNATIVE MINE OPERATING SYSTEM

iVAMOS! is developing a prototype underwater, remotely controlled, mining vehicle with associated launch and recovery equipment.

A SAFE, CLEAN AND LOW IMPACT WAY TO ACCESS UNEXPLOITED EUROPEAN MINERAL RESOURCES

VIABLE ALTERNATIVE MINE OPERATING SYSTEM

Start date: 1 February 2015
Duration: 42 months
EC funding: 9.2 million EUR
Coordinator: BMT Group Ltd
Technical management: SMD
Quality and risk management: Damen Dredging Equipment

For any additional information please visit us at WWW.VAMOS-PROJECT.EU

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement no. 642477
Estimates indicate that the value of unexploited European mineral resources at a depth of 500 - 1,000 metres is in the order of 100 billion EUR. Many of these deposits are submerged, in unmined deposits which are below the water table.

The ¡VAMOS! project is developing a safe, clean, and low impact automated solution for the extraction and pre-processing of ores found in water-bearing strata inland or in coastal waters. The project is constantly engaging with stakeholders to make sure that the technology developed is environmentally, economically and socially acceptable.

Major benefits of ¡VAMOS! over conventional inland mining include:
- ultra-low stripping ratio (in (semi-) vertical deposits);
- no dewatering costs and/or barrier construction and maintenance;
- no blasting noise, ground vibration, fumes or dust nuisance;
- no discharge of mine water;
- no personnel in the mine;
- lower energy requirements and CO₂ emissions. Additionally, ¡VAMOS! provides a chance to address rehabilitation problems that have been left behind at former mining sites.

**DEVELOPMENTS**

The ¡VAMOS! technology has evolved from its original concept into a system composed by many parts, that saw their completion in Summer 2017. Crucial system components include:
- mining vehicle with cutter head;
- Launch & Recovery Vessel with power distribution and control unit;
- dual stage slurry pump and slurry circuit system;
- processing and dewatering facilities;
- control cabin with Virtual Reality Human-Machine Interface;
- Autonomous Underwater Vehicle for survey and spatial awareness;
- real-time grade control technology.

To prove the operability of the ¡VAMOS! innovative technological approach, the system is deployed at two test sites: the Lee Moor kaolin open-pit site in Devon, UK and Smreka iron open-pit site in Vareš, Bosnia and Herzegovina. During these trials, ¡VAMOS! extracts rocks varying in hardness and constitution and operating parameters like machinery productivity, equipment wear, environmental impacts and social acceptance are assessed.

The field testing makes it possible to estimate the industrial viability of the ¡VAMOS! equipment and the market up-take possibilities, specifically focussing on under what circumstances the ¡VAMOS! technology outperforms conventional mining methods.

**EXPECTED IMPACT**

The ¡VAMOS! technique will enable the re-opening of abandoned open pit mines, the extension of mines which are limited by stripping ratio, hydrological or geotechnical problems, and the opening of new, previously inaccessible, underwater mines. In each case ¡VAMOS! will result in a smaller environmental footprint compared to conventional mining.