

FINAL EVENT –X-MINE Project 23 June 2021

Real-Time Mineral X-Ray Analysis for Efficient and Sustainable Mining

Results from the four-year H2020 funded X-Mine project will be presented in an on-line Final Event on 23 June 2021 at 9:00 CET.

The event will demonstrate how implementation of new XRF- XRT-technology in scanning of exploration drill core, collection of data for 3D-modelling of ore deposits and sorting of minerals can improve the efficiency in exploration and increase the sustainability of mining operations.

Welcome to register for the event [here](#).

Summary: The X-MINE project is an about 12 M€ research project coordinated by VTT Technical Research Centre of Finland. The project has studied and developed X-ray and 3D vision-based sensing technologies and 3D ore deposit modelling. The technologies have been integrated in large-scale prototypes: drill core analyzers and mineral sorting prototypes, which are being demonstrated in four mining sites in Sweden, Greece, Bulgaria and Cyprus. The sites illustrate different sizes (from small-scale to large-scale) and different target minerals (zinc-lead-silver-gold, copper-gold, gold). The pilots have demonstrated a 20 % reduction in transportation costs through more efficient ore and waste separation, a 7 % reduction in waste rock, and a 10 - 30 % reduction in energy consumption and CO₂ emissions, and the project is continuing research to refine and quantify the impacts in more detail. The new methods developed in X-MINE can in the longer term revolutionize exploration, resource definition and the value chain of mining operations through deepened insights into elemental distribution, mineral grain size, mineral distribution and structural, geological, geochemical and mineralogical information. Implementation of the X-MINE XRF-XRT-technology can make mining more resource efficient and reduce its environmental impact

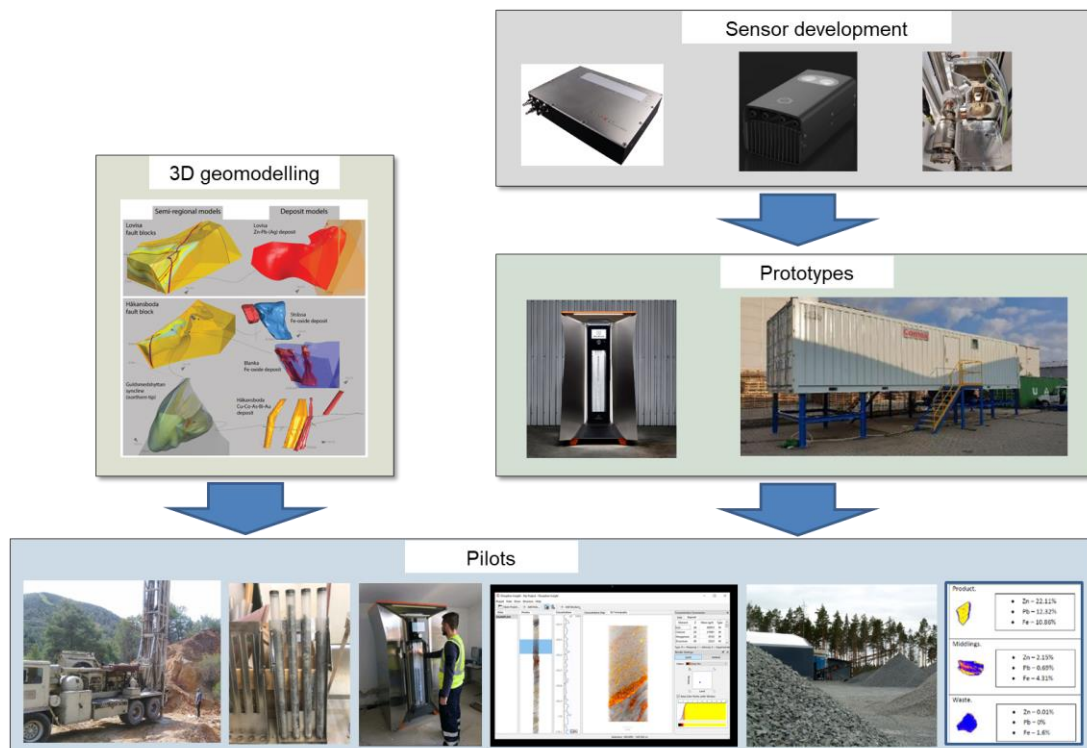



Figure 1. The X-Mine project research and development has four main streams: 1) New sensor development (X-ray sensors and 3D cameras), 2) integration of new sensor technology into drill core analyzer and mineral sorting prototypes, 3) 3D geomodelling of mineral deposits and 4) pilots: large-scale demonstrations of the prototypes and 3D modelling at the participating mines.

LOVISAGRUVAN

Drill core scanning pilot





Mineral sorting pilot




ΑΣΑΡΕΛ ΜΕΔΕΤ·ΑΔ
ASSAREL MEDET·JSC

Assarel Medet

Drill core scanning pilot

Mineral sorting pilot



Hellas GOLD

Drill core scanning pilot



Mineral sorting pilot



Hellenic Copper Mines Ltd

Drill core scanning pilot




Figure 2. The X-Mine project pilots at the four participating mines: Lovisagruvan in Sweden, Hellas Gold in Greece, Assarel Medet in Bulgaria and Hellenic Copper Mines in Cyprus. An important part of the demonstration activities is the drilling of oriented boreholes. The orientation of the drill core is maintained from drilling to logging, and to the scanning with the drill core scanner. This way, the 3D structural geology information in the drill cores can be fully exploited in the 3D modelling software packages.

The container-based pilot sorting prototype is used as a pre-concentration method after ore crushing. The first results show that several tens of per cent reduction in transported waste rock and CO₂ emissions can be achieved.

There is also some potential for conversion of existing waste piles into products.

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