Integrated Mineral Technologies for More Sustainable Raw Material Supply

Project

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TOPIC:

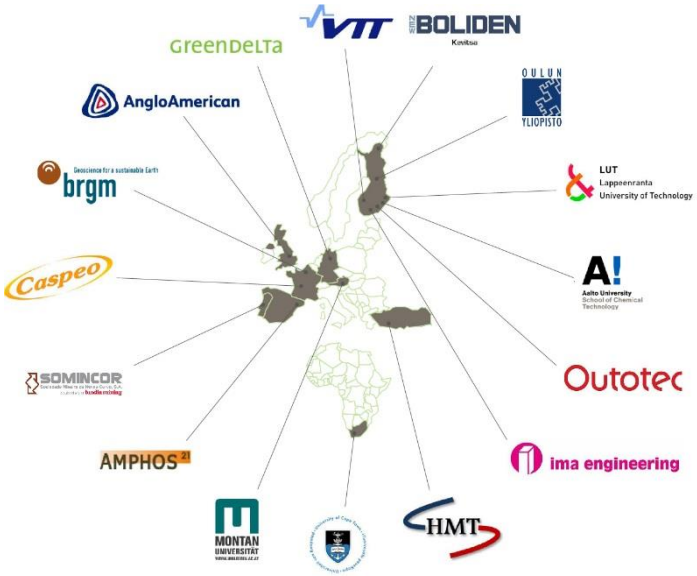
"Sustainable selective low impact mining"

DURATION:

3 years: 1/06/2017 – 31/05/2020

PARTNERS:

9 industrial partners, 2 RTOs and 5 universities from 9 countries (7 EU Member States).



Concept

The **closed water circuit** results in a complex system where different process steps and technologies have diverse and interconnected effects on the operation of other processes. Complete closure of water loops increases thermodynamical and kinetic unstability and process disturbance. Residence time of water storage before re-use is reduced leaving water in a kinetically controlled thermodynamic unbalance. Furthermore, water circulation tends to rise temperature, which could generate growth of bacterial biomass.

ITERAMS creates capabilities and different tools via laboratory experiments, modelling and validation at mine sites to tackle this complexicity.

The ITERAMS project takes an ambitious step forward by aiming **to use tailings as backfill materials** on site. The minerals of the tailings will be applied as binding system by activating the mineral phases leading to the formation of **geopolymers**. Hence the mine tailings will be used in geopolymers, which appear to be a very promising environmentally friendly and technically competitive material. Geopolymers can also be used as covering material to seal the tailings.

The project aims to obtain mining activities more **ecologically friendly and economically** feasible.

Context

Conservation and management of freshwater resources are the challenges of this century. Local water usage in mining operations can be high requiring to save even more water and build zero-emission concentrators. In this context, ITERAMS works in the **development of new solutions and technologies** to meet the requirements of closed water loops in the mining operations.

Metals are vital to manufacturing products and some of them can be found as by-products in mineralisations. ITERAMS targets **to fully exploit all tailings** of the minerals by first studying the sulphide ores and then enabling to use the same approach for the other ore types, too.

Main environmental concerns related to mining processes are the produced waste rock during the preparation work and the waste stream from ore processing. ITERAMS will bring advances in licenses to operate and in technologies for exploiting the valuable contents of the tailings. Additionally, ITERAMS aims at improving the properties of the material that will be finally deposited to storage.

SUSTAINABLE MINERAL SUPPLY

ITERAMS works in the development and consecution of a NEW PARADIGM PROOF OF CONCEPT at mine sites to enable future sustainable mineral supply in Europe in three main areas: Water recycle, valorization of tailings and improving environmental and economic results.

ITERAMS will deliver new solutions to meet the water issues and its new technologies target to enable closed water loops in the mining operations.

ITERAMS will innovate technologies for exploiting the valuable contents of the tailings and, at the same time, ITERAMS aims at improving the properties of the materials that will be finally deposited.

ITERAMS has the target to mitigate the environmental impacts of processing operations and mine general management. Environmental footprint of the ITERAMS approach will be demonstrated.

REINVENTING THE ROLE OF WATER AND WASTE IN MINING

ITERAMS

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