Int-Met

Integrated Metallurgy

INTEGRATED INNOVATIVE METALLURGICAL SYSTEM TO BENEFIT EFFICIENTLY POLYMETALLIC, COMPLEX AND LOW GRADE ORES AND CONCENTRATES

BACKGROUND

The EU is self-sufficient in the production of construction minerals and also has a large production of industrial minerals, but it is **heavily reliant** on **Non-Ferrous metal imports** to satisfy domestic demand (e.g. 62% of used copper, 65% zinc, 45% Ag, 92% Au is imported). For several base metals including Critical Raw Materials (CRM) and such as Rare Earth, Platinum Group Metal, indium and cobalt to name just a few, the EU countries completely rely on imports. However, Europe has **considerable potential** of low-grade polymetallic mineral deposits but they are often dismissed, because of the (mainly) **technical impossibility** to recover metals in an efficient and economically sustainable way. Currently there is no economical process for on-site metal extraction from low grade poly-metallic deposits, and even more, there is not any industrial process able to deal with polymetallic (Cu+Zn+Pb) concentrates.

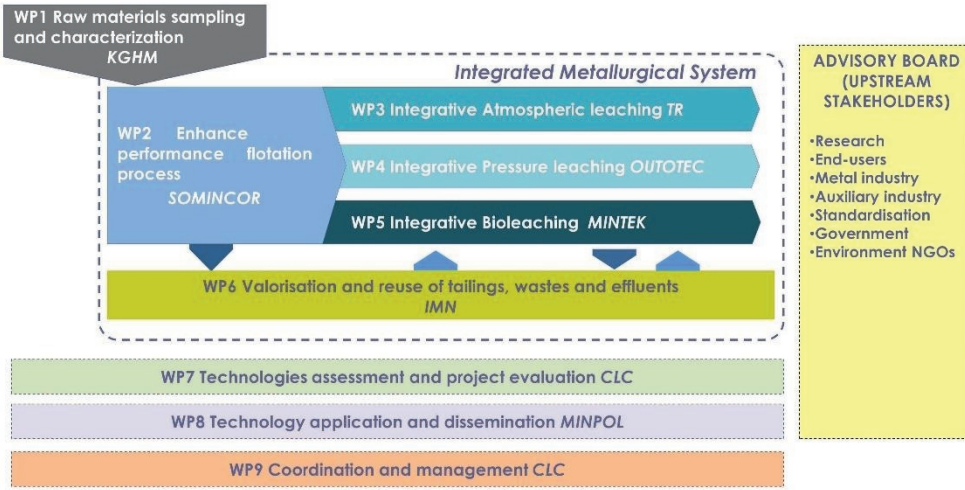
WHY INTMET

The INTMET approach represents a radical solution and a **unique technological breakthrough** to overcome the limitations related to low grade and complex ores to achieve high efficient recovery of valuable metals such as Cu, Zn, Pb, Ag, and also critical metals like Co, In, Sb. **Main objective** of INTMET is applying on-site M2M and integrated treatment of the produced concentrates, combining innovative hydrometallurgical processes (atmospheric, pressure and bioleaching), and novel metals extraction techniques (e.g. Cu/Zn-SX-EW). Additionally, secondary materials like mining (tailings) and metallurgical wastes will be added to the process for valorisation and metal recovery. The feasibility technical, environmental and economic of the entire approaches will be integrated

to offer a **real business solution**. The final goal will be to ensure the economic viability of the entire INTMET process.

METHODOLOGY TO REACH ITS GOAL

INTMET is focused on a **sustainable and efficient beneficiation** of polymetallic, complex and low grade ores including mining wastes. The concept is to produce bulk concentrates or middling concentrates that will be efficiently treated through tailored leaching technology approach to produce added value refined metal like Cu, Zn and other metals and critical materials (e.g. Au, Ag, In, Co). Effluents originated in the process will be reused and recycled, maximizing the recovering of dissolved metals. The project is divided into 9 Work Packages (WP) taking into account the technological development as well as the process validation and the exploitation approach. WP1 will focus in raw materials sampling, characterization, preliminary treatments and selection. WP2 is part of the mandatory treatment of the raw materials, which have to be concentrated; the WP pursues enhancing of concentration technologies, especially in environmental issues. WP3, WP4 and WP5 form the core of the technological developments in the project.



IMPACTS

The business models developed by the INTMET project will **increase the recovery efficiency** of metals at least 40%, including base metals Cu>63 %;Zn >51%; Pb> 125%; Ag> 180% and Au> 21%) and allow **recovery** of critical materials (e.g. In, Co not recovered currently from low grade polymetallic ores, deposits (as well as secondary materials) by providing an **integrated hydrometallurgical** way to process low qualified concentrates with efficient metal extraction technologies. Besides there will be increased **process efficiency** including water and energy consumption (20%), CO2 (up to 36 %), lower SO2 emission)

Further impacts are:

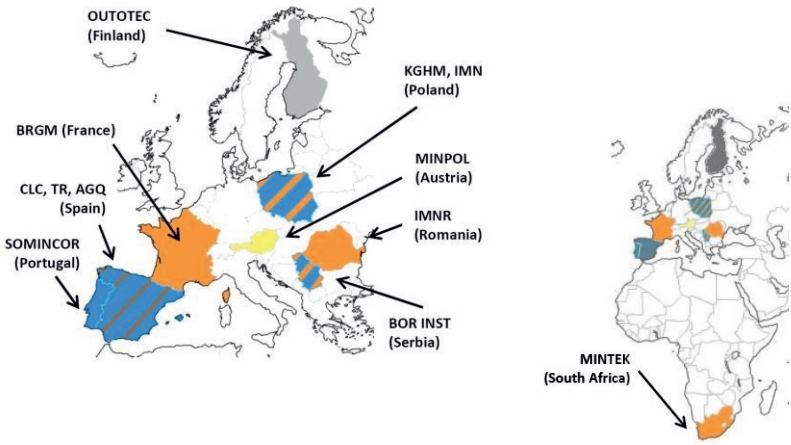
- Unlocking a **substantial volume** of various raw materials within the EU.
- Improved economic viability and **investment security** of mining operations

- Creation of **new jobs** in materials producing and downstream industries.
- **Pushing** the EU to the forefront in sustainable mining and processing technologies and solutions.

HOW AND WHY TO GET INVOLVED IN INTMET?

The project consortium is represented by multiple sectors including land use planning authorities, universities, research centres, industry, geologists associations and geological surveys. The INTMET project is based on a cross-sectoral approach. It welcomes the views and opinions of all interested sectors to ensure a **pan-European** approach from countries not included in the consortium. Further active participation is needed to discuss concepts and frameworks from other sectors such as NGOs, landscape, tourism, conservation, construction and infrastructure associations. Active participation is planned via stakeholder interaction like workshops, presentations and seminars.

The following figure shows the partner distribution in Europe and South Africa:



PARTNERS INVOLVED

1 COBRE LAS CRUCES SA CLC Spain

2 KGHM POLSKA MIEDZ SA KGHM Poland

3 SOMINCOR – SOCIEDADE MINEIRA DE NEVES-CORVO SA SOMINCOR Portugal

4 OUTOTEC (FINLAND) OY OUTOTEC Finland

5 TECNICAS REUNIDAS SA TR Spain

6 INSTYTUT METALI NIEZELAZNYCH IMN Poland

7 MINTEK MINTEK South Africa

8 MINING AND METALLURGY INSTITUTE BOR LTD BOR INST Serbia

9 BUREAU DE RECHERCHES GEOLOGIQUES ET MINIERES BRGM France

10 AGQ MINING & BIOENERGY SL AGQ Spain

11 Institutul National de Cercetare - Dezvoltare Pentru metale Neferoase si Rare - IMNR, IMNR Romania

12 Minpol GmbH Austria

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Project Coordinator

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AGQ
Technological Services


Autoclave

Project Consortium

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