



Our **SOLUTIONS**

An experimental pilot facility for the treatment of mineral raw materials, waste and industrial by-products: **PLAT'INN**

As part of building a more “circular economy”, BRGM can help you design and develop innovative solutions for the extraction and use of primary and secondary mineral resources.





Notched gyratory crusher on BRGM's Plat'Inn platform (Loiret, 2020). © BRGM – Didier Depoorter

TRANSCRIPTION

Plat'Inn supports the processing of mineral resources and the recycling of waste that could potentially become a source of raw materials. The platform provides a link between laboratory research and industrial-scale production and has a variable processing capacity from a few dozen kilos to several tonnes.

The platform incorporates different tools and specialised workshops for:

- material fragmentation and sampling
- mineral processing
- thermal treatment
- hydrometallurgy
- separation through wet and dry processes.

The versatility of the platform environment allows innovative solutions to be demonstrated for the advancement of integrated, optimised and sustainable processing concepts.



Recycling of industrial waste (Orléans, 2015). © BRGM – Pauline d'Armancourt

APPLICATIONS

Processing of metal ores and industrial minerals:

- Development of flexible and mobile technologies for the exploitation of complex polymetallic resources.
- Development of a new type of reactor for the bioleaching of metals from low-grade resources.
- Environmental assessment of innovative hydrometallurgical processes for mining operators.

Characterisation of deposits:

- Sampling and characterisation of ore tailings to be reprocessed to secure the supply of strategic metals on a European scale.
- Sampling and characterisation of batches of electrical and electronic waste for recycling.

Recycling of mining and industrial waste and exploiting the urban mine:

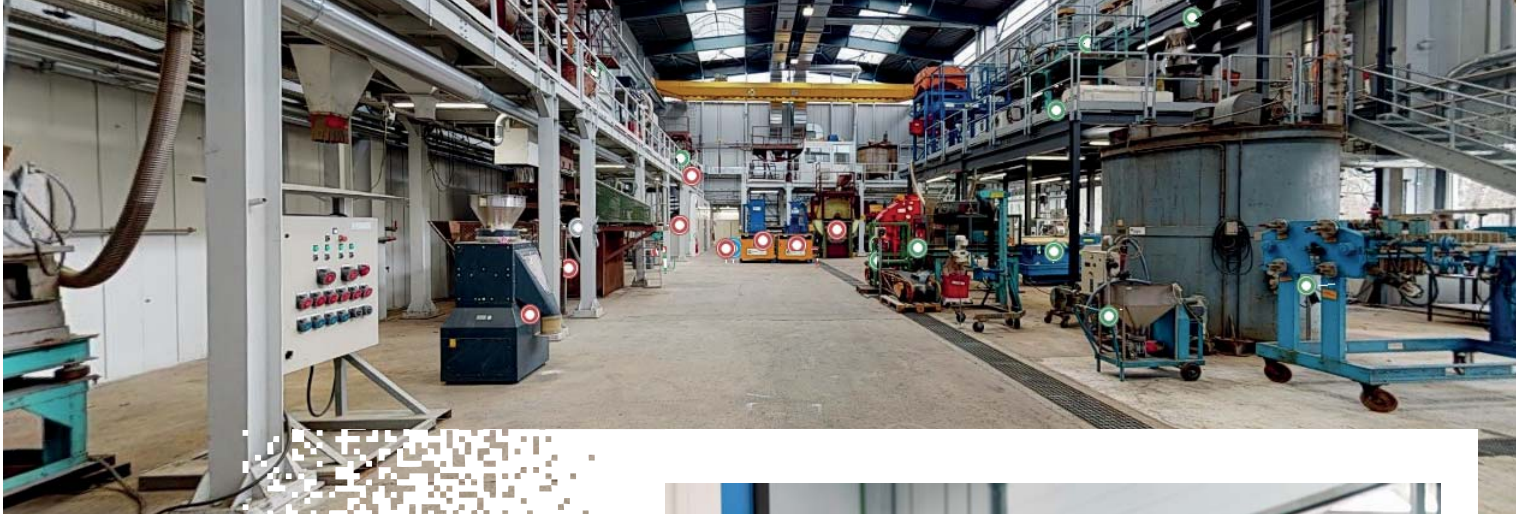
- Development of processes for the physical separation of rare earth-bearing minerals in tailings.
- Co-processing of sulphur-containing ore tailings and post-consumer waste using microbial extractive metallurgy and control of associated environmental impacts.
- Recovery of strategic metals from electronic circuit boards and permanent magnets.
- Upcycling of concrete rubble.

Recycling of fine materials:

- Flotation of fine particles to extract rare earths from ore tailings and luminophores.
- Treatment of powders from the manufacture of brake pads for the recovery of non-ferrous metals.
- Treatment of dredged sediments.

Treatment of industrial and mining effluents:

- Recovery of metals and minerals in industrial wastewater.



Overview of the Plat'Inn experimental pilot facility.
© Matterport

AVAILABLE RESOURCES

TECHNICAL RESOURCES

More than 200 pieces of equipment catering for the following needs:

- Sampling and preparation of materials by crushing, grinding, micronisation, shredding and quartering.
- Separation technologies using gravimetric, magnetic, electrostatic, flotation, filtration and coagulation processes.
- Hydro- and biohydrometallurgy.
- Thermal treatment.

Flagship equipment for material embrittlement on a pilot scale:

- Selfrag (electrofragmentation).
- Micro-wave oven.

DIGITAL TOOLS

- Echant, Bilco, Usimpac for the simulation of processes.
- Thermoddem database on thermodynamics / kinetics of natural and industrial processes.
- Simapro and Ecoinvent database for life cycle analysis / environmental assessment.

HUMAN RESOURCES

25 engineers, scientists and technicians specialising in sampling, process engineering, chemical engineering, biotechnologies, numerical modelling/simulation and environmental assessment.



Selfrag, an electrofragmentation device, is available at BRGM's Plat'Inn platform (Orléans, 2020). © BRGM – Didier Depoorter



EDUCATION & TRAINING,
one of BRGM's missions

BRGM helps to develop scientific and technical skills through both “off-the-shelf” and “tailor-made” training courses, provided by its specific professional training branch: BRGM Formation.

Training course themes :

Geology | Sustainable management of groundwater resources | Mineral resources and circular economy | Environment, land-use projects | Energy transition and underground space | Natural risks, impacts of climate change.



Geoscience for a sustainable Earth

brgm

Service géologique national
3, avenue Claude-Guillemin
BP 36009 – 45060 Orléans Cedex 2
Tél. 02 38 64 34 34
e-mail: contact-brgm@brgm.fr
www.brgm.fr

