DOWNSTREAM R&D PROJECTS FROM THE MINING INDUSTRY

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DOWNSTREAM R&D PROJECTS FROM THE MINING INDUSTRY

1. MATERIALS

2. LOGISTICS

3. CHEMISTRY & FERTILIZERS

4. ENERGY
DOWNSTREAM R&D PROJECTS FROM THE MINING INDUSTRY

1. MATERIALS

- ComPoFiVi -
- RFCS JOINOX -
- Safe Car -
1. MATERIALS

- ComPoFiVi -

High density polypropylene fiber

End-user & validate the technology

Pultrusion of GFRP & HDPPRP

Design & prototyping of pultrusion molds

On-line analysis of defects
1. MATERIALS

- RFCS JOINOX -

Guidelines for use of welded stainless steel in high demanding environments
1. MATERIALS

- Safe Car -

Improved safety and lightweight structures for man transport vehicles in mines
DOWNSTREAM R&D PROJECTS FROM THE MINING INDUSTRY

LOGISTICS

- HERMES -
Optimize rail freight transportation: improved freight wagon performance at competitive prices, enhanced logistics operations, higher wagon load capacity, optimised loading/discharging processes and increased wagons flexibility in order to foster intermodality and allow a diversification of carried goods.
DOWNSTREAM R&D PROJECTS FROM THE MINING INDUSTRY

- Treva -
- Agro -
- Breath -
- Nurture -
- Treva -

Technologies to recover and revalorize nutrients from the water cycle: obtain struvite from a downstream high Mg-content compound from the mining industry.
- Agro -

Technologies to recover and revalorize nutrients from animal manures: obtain struvite from a downstream high Mg-content compound from the mining industry.
3. CHEMISTRY & FERTILIZERS

- Breath -

Revalorization of clays from the mining industry to improve grapevines soil
- Nurture -

Optimization of fertilizer compounds

\[ \text{KCl (60\% K}_2\text{O)} \rightarrow \text{K}_2\text{SO}_4 (50\% K}_2\text{O} + S) \]
DOWNSTREAM R&D PROJECTS FROM THE MINING INDUSTRY

- Heat Recovery -
- PRO -
- SOLAR -
- Green Batteries -
4. ENERGY

- Heat Recovery -

Recovery of heat within mining processing activities

Hot air generated in the GMOP Plant as a result of thermal and mechanical processes

- Is inserted in the drying plant to reduce the amount of energy required to increase the air temperature to dry potash

AICL

Iberia Subía & Seiende

CTM
4. ENERGY

- PRO (Pressure Retarded Osmosis) -

Power generation from the salinity gradient between two streams in contact through osmotic membranes.
- SOLAR -

Usage of Sodium and Potassium salts in thermosolar applications as thermal energy storage material

1: Heliostat field
2: Central Receiver
3: Hot Salt Thermal Storage Tank
4: Conventional Steam Turbine Generator
5: Steam Generator
- Green Batteries -

Na-ion batteries: a low cost clean energy
R&D still required in cathode & anode materials

P. Barpanda, et al., Nature Communications, DOI: 10.1038/ncomms5358, July 2014

M. Minakshi, SPIE, 10.1117/2.1201304.004817, 2013
Thank you very much