

Challenge Synopsis:

In mining, one of the biggest environmental issues is the generation, management, and disposal of mine waste, in particular tailings. Currently, it is common practice in the mining industry to manage tailings by storing it in tailings storage facilities. These tailings storage facilities typically last into perpetuity (i.e. forever) and pose a risk to the company, the environment, and nearby communities.

Applying circular economy thinking to tailings presents a major opportunity to reduce the risks associated with long-term tailings storage. By reducing the amount of tailings that need to be stored or eliminating the need to store tailings entirely through recycling or upcycling of tailings, the risk associated with tailings storage facilities can be reduced or eliminated. The ArcelorMittal mining segment is therefore interested in exploring ways to recycle or upcycle the tailings generated at its Canadian iron ore mining operations in Quebec (i.e. Mont Wright near the town of Fermont, and Port Cartier near the town of Sept-Îles).

Challenge Statement:

The ArcelorMittal mining segment is looking for ways to recycle or upcycle the tailings generated at its Canadian iron ore mining operations in Quebec (i.e. Mont Wright near the town of Fermont, and Port Cartier near the town of Sept-Îles).

The tailings are made of mainly quartz (Silicon Dioxide), and based on laboratory tests there is no toxicological concern (i.e. both environmental and human health risks can be considered extremely low). More detailed information about the tailings can be shared with applicants once a Non-Disclosure Agreement has been signed.

ArcelorMittal mining is particularly interested in economically viable solutions that can recycle or upcycle the tailings at its Port Cartier site (near Sept-Îles, Quebec) due to its proximity to transportation infrastructure (i.e. port and road).

ArcelorMittal mining is particularly interested in, but not limited to, technologies that could:

- Remove impurities from the tailings (e.g. bio-mediated processes such as bio-refining / bio-leaching, physical separation processes such as density or cyclone separation, etc.) to produce a high grade Silica product.
- Transform the tailings into Silica based industrial products (e.g. Sodium silicate also known as “water glass”, glass, etc.).

Context:

Currently, it is common practice in the mining industry to manage tailings by storing it in tailings storage facilities. These tailings storage facilities typically last into perpetuity (i.e. forever) and pose a risk to the company, the environment, and nearby communities. By reducing the amount of tailings that needs to be stored or eliminating the need to store tailings entirely through recycling or upcycling of tailings, the risk associated with tailings storage facilities can be reduced or eliminated. The ArcelorMittal mining segment is therefore interested in exploring ways to recycle or upcycle the tailings generated at its Canadian iron ore mining operations in Quebec (i.e. Mont Wright near the town of Fermont, and Port Cartier near the town of Sept-Îles).

Response Criteria:

Preference will be given to solutions that:

- avoid or minimize secondary processing of the tailings.
- produce high value recycled or upcycled products.
- produce recycled or upcycled products where there is existing market demand.
- minimize transportation requirements of the recycled or upcycled products.

The Opportunity:

- Potential to discuss your solution (if selected) with one of the world's largest steel manufacturing and iron ore mining companies. ArcelorMittal is a global company with mining operations in 9 countries around the world.
- Meet new customers and enter new markets with your service offering.

About ArcelorMittal:

ArcelorMittal is a vertically integrated steel producer and one of the world's leading producers of iron ore, through its mining segment. The company's mining portfolio is active in the whole value chain, from exploration and development, to mining, concentration, pelletizing, rail transport and port operations. ArcelorMittal has full or partial ownership over mining assets across Europe, Asia, Africa, North and South America. ArcelorMittal's mining assets ensure supply of high-value raw materials for its own operations, as well as for our external customers.