



**engenium**  
smart project delivery

## Battery Metals

The battery metals include lithium, nickel, cobalt and vanadium. Each are used in modern large scale automotive and stationary energy storage systems. With increasing adoption of electric vehicles and solar panels, there is rapidly increasing demand for these metals as the current world supply is limited. Copper and graphite will play an increased role in the electrification of the global vehicle fleet and the use of batteries to store renewable energy.

### Our Expertise

The Engenium experience covers a diverse commodity base and throughput range. Engenium has the ability to evaluate its client's resource and utilise sound metallurgical and mineralogical principals to engineer flowsheets suited to a variety of commodities and incorporating the entire spectrum of metallurgical unit operations.

Within the battery metals industry the Engenium Process Engineers have gained their experience in key senior project development and technical roles for projects and operations for recovery of lithium, nickel, cobalt and vanadium which utilise processes such as magnetic separation, dense media separation, high pressure and atmospheric leaching, solvent extraction, precipitation and electrowinning processes. Including from ore bodies such as pegmatites, laterites, oxides and sulphides.

### Our Capabilities

The services provided by Engenium include:

- Metallurgical testwork design, core selection,

supervision, interpretation and geo-metallurgical assessment of ore bodies.

- Process selection studies based upon test work results including consideration of both operating and capital cost minimization.
- Heavy media separation of spodumene and tantalite from pegmatite ores.
- Lithium recovery from brine sources.
- Comminution studies and projects including crushing, high pressure grinding rolls, single stage SAG milling, single stage Ball milling, SAB, SABC, AG milling, rod milling, fine and ultra-fine milling.
- Leaching studies including HPAL of laterites, atmospheric leach processing and heap leaching.
- Greenfield and brownfield circuit evaluation and modelling including application of new or novel technologies.
- Tailings handling including thickening, centrifugation and filtration, paste tailings, paste backfill and filtered tailings.
- Recovery from leach solutions by precipitation with or with solvent extraction.
- Engineering – concept and feasibility study across all disciplines, owner's team representation during project development.
- Management and Coordination – project management, study management, owner's representation, project implementation strategies, design management, project engineering, cost control, scheduling.
- Commissioning, operations ramp-up and optimisation.
- NI 43-101 support, reporting and QP sign-off.
- Capital Equipment – QA/QC, selection, inspection, storage, maintenance and expediting.

**Delivering Value. Delivering Results.**