



Hydrometallurgy

Mineral Processing Plant Operations Optimization

Paterson & Cooke (P&C) brings together industry experts in precious and base metal hydrometallurgy. Our real-world experience in all aspects of hydrometallurgical processing ensures that our clients have access to the industry's best practices in equipment selection and design for their unique projects. We quickly identify options for what is "nice to have" versus what is necessary for the successful operation of your plant and provide the best fit for each project, blending operating flexibility with capital and operating costs.

Our experience covers options from extraction through recovery including: heap, VAT and atmospheric tank leaching; ADR and Merrill-Crowe plants; Solvent extraction, Ion-exchange and resin recovery systems; and SART circuits. P&C can provide facility designs that ensure operability over the entire life of the operation, such as phased carbon columns or solvent extraction designs which accommodate ramp up stages in flow when considering a valley or conventional leach pads.

Nevada Gold Mines – Goldstrike, Nevada, USA

Detailed Design and Commissioning Support

In response to a changing ore body, Nevada Gold Mines (NGM) began the process of converting the resin-in-leach (RIL) adsorption circuit at the Goldstrike TCM facility to carbon-in-leach (CIL). P&C supported NGM with the initial feasibility study in 2019, investigating the risks and costs associated with the conversion. The RIL flowsheet was evaluated for equipment that could be re-used and for critical gaps. P&C developed a modified flowsheet that included changes to the existing leach circuit equipment, rerouting of the tailings disposal and reclaim water circuits, installation of new reagent addition lines and the Caro's acid CN destruction circuit, along with other various additional ancillary equipment.

In 2022, P&C provided NGM with the detailed engineering for the required circuit modifications, along with plans to support the commissioning stage.

Yamana Gold – Cerro Moro, Argentina

Process Optimization and OpEx Reduction

P&C had been involved in auditing numerous operating and exploration sites for Yamana Gold, providing feedback where data gaps existed, or process improvements could be made. P&C reviewed relevant project documentation, including design, costs, staffing plans, mineralogy, mine planning, operations planning, etc., and performed site visits to evaluate the projects on behalf of the client.

At Cerro Moro, the P&C team worked with the site team on the findings of the initial audit, focusing on enhancing the kinetics of the cyanide leach circuit and the efficiency of the subsequent cyanide destruction circuit. Confirmatory leach test work was designed and overseen by P&C to validate the recommendations, incorporating shear reactors for improved circuit aeration and reaffirming dosing of hydrogen peroxide for cyanide destruction. Overall plant performance was enhanced, and reagent consumption was decreased resulting in significant value gains to the site.



Paterson & Cooke

KNOWLEDGE | EXPERIENCE | PASSION

Hydrometallurgy Services

- Flowsheet development from Concept Studies through Detailed Engineering
- In-house laboratory metallurgical and tailings management testing
- Geometallurgical determinations of optimized ore routing and processing
- Advanced, predictive production modelling
- Commissioning support for new operations
- Process optimization (debottlenecking) and upgrade opportunities
- Site feed trials
- Operator training
- Process auditing, including focuses on Cyanide Code and Safety Compliance
- Qualified Persons (QP) for technical reports

Leaders in Process Engineering

At P&C, we have a team of process engineers with extensive design experience supported by our expert team of metallurgists offering a wide variety of project and operational experience, all of whom are backed by a team of world-renowned subject matter experts as part of our technical review panel.

Our engineering expertise in the field of mineral processing spans services enabling us to provide clients with unique, more creative, and more definitive mineral process solutions. Our engineering is backed by in-house laboratory testing to assist in providing cost-effective and operationally robust solutions.

Group Capabilities

- Tailings & Mine Waste
- Slurry Pipeline Systems
- Mine Backfill
- Mineral Processing
- Mine Services
- Marine Pipeline Systems
- Laboratory Services

Contact Us

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