

# RESEARCH & DEVELOPMENT SERVICES

Optimizing Processes, Driving Innovation



# R&D CAPABILITIES

Hydromet is a trusted partner in the minerals sector, recognized for our expertise in flowsheet development and feasibility studies for both primary and complex secondary raw materials. Our proven success in metallurgical testing has enabled numerous companies to implement cost-effective flowsheets and innovative technical solutions for processing challenges.

At Hydromet, we believe that effective management of metallurgical projects is best achieved through active client participation from project initiation to completion. This collaborative approach fosters a continuous exchange of information and ideas, ensuring that project objectives are met efficiently and to the highest standards.



## BENCH-SCALE TEST WORK

Bench-scale test work is a critical step in metallurgical process development, providing essential data for flowsheet design and optimization. Key activities include:

- Sample Preparation & Characterization
- Comminution Testing
- Leaching Tests
- Precipitation & Purification Studies
- Solid-Liquid Separation Tests
- Solvent Extraction Tests
- Electrowinning Tests
- Evaporation & Crystallization Tests
- Ion Exchange Tests
- Reagent Screening & Optimization
- Environmental & Waste Characterization
- Mass & Component Balances



# PILOT PLANT TESTING

Pilot plant testing plays a crucial role in validating the flowsheet developed at the bench scale. Unlike standalone laboratory tests, a pilot plant operates in an integrated manner, with all unit operations functioning continuously to produce a finished product.

For new projects, pilot testing confirms operational viability by demonstrating real-world performance and producing representative final products. This process significantly reduces technical risk while providing critical data for full-scale plant design, minimizing both design and capital risks. For existing operations, pilot-scale simulations offer a controlled environment to evaluate new technologies, assess the impact of different raw materials, or troubleshoot operational challenges—without disrupting production at the main plant.



## KEY ACTIVITIES IN PILOT TESTING

During pilot testing, a range of critical activities can be conducted to ensure process efficiency, optimize design parameters, and mitigate risks. These include:

- Validating Flowsheet Viability
- Optimizing Flowsheet Parameters
- Demonstrating Continuous Integrated Operation
- Determining Chemical Consumption Norms
- Assessing Waste Generation
- Developing a Water Balance
- Evaluating Raw Material Variability
- Producing Bulk Samples
- Training Key Personnel

# ADVANTAGES OF PILOT TESTING



Pilot testing is the most effective way to:

- ✔ **Validate Critical Unit Operations** – Confirm the functionality and efficiency of key metallurgical unit operations within a flowsheet.
- ✔ **Demonstrate New Technologies** – Assess the feasibility and practical application of innovative processing methods.
- ✔ **Ensure Environmental Compliance** – Verify that processes meet regulatory and sustainability requirements.
- ✔ **Reduce Risk** – Minimize technical, environmental, operational, and commercial uncertainties before full-scale implementation.



## METALS OF INTEREST

Hydromet is your trusted partner in developing optimized flowsheets for the extraction and processing of a wide range of metals from both primary and secondary resources, including:

- ✓ Copper
- ✓ Nickel
- ✓ Cobalt
- ✓ Manganese
- ✓ Zinc
- ✓ Molybdenum
- ✓ Vanadium
- ✓ Tungsten
- ✓ Titanium
- ✓ Lithium
- ✓ Precious Metals
- ✓ Rare Earth Elements

Our expertise in metallurgical process development ensures cost-effective, sustainable, and efficient solutions tailored to your project's specific needs.



# CONTACT INFORMATION



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