

MINI FLOTATION PILOT PLANT TESTING

Trusted Mini Pilot Plant Expertise in Canada



For more than 75 years in Canada, SGS has been providing innovative, industry-trusted pilot plant expertise to the mining industry. Pilot plant testing demonstrates and confirms via continuous operation the flowsheet and conditions developed at the bench scale. For new projects, piloting demonstrates operational viability and proof of concept. A key objective is often to generate products representative of those expected in future commercial production, for marketing and/or further testing/characterization.

Piloting generates data which can be used as input to a full-scale plant design, thereby reducing design uncertainties and the risk of cost overruns. Existing operations can be simulated at the pilot-scale to evaluate new technologies, assess the impact of different ore types, optimize performance, or troubleshoot processing challenges without interrupting production at the main plant. Products which are more representative of those generated in bench scale testing can be acquired for downstream testing such as rheology, leaching, roasting, or environmental characterization.

We have extensive capabilities with respect to different processing technologies, sizes/styles of equipment, and equipment configurations. Our innovative full-scale pilot plant capabilities have recently been expanded to provide the opportunity for smaller scale, continuous flotation testing in the form of a "mini flotation pilot plant".

While the cost of sample acquisition from a resource for large-scale pilot plants typically represents a large expenditure to our clients, the use of a mini flotation pilot plant provides you with the benefits of a large-scale pilot plant at a fraction of the cost and time. Requiring only a few hundred kilograms of sample to



process at a feedrate of 10 – 15kg/h, mini flotation pilot plants require only a fraction of the several tonnes of sample typically required for a full-scale pilot plant program, saving you substantial costs.

We are acutely aware of the unique characteristics of each process, and our mini flotation pilot plant configuration can be customized to your specific requirements in order to evaluate various strategies aimed at optimized metallurgical performance, such as flowsheet configurations, grind sizes, and reagent suites. Additionally, variability testing of different ore types and mine production sequences in continuous operation becomes more attractive. Mini flotation pilot plants can be effectively applied across all commodity types that use flotation in their beneficiation scheme, and can provide engineering design data.

Our mini flotation pilot plant unit can be operated out of any of our Canadian metallurgical facilities in Lakefield, Ontario, Vancouver, British Columbia or Quebec City, Quebec. Alternatively, our mini flotation pilot plant unit can be shipped to your site and operated on-site across North America.

MINI FLOTATION PILOT PLANT OUTPUTS

- Continuous flotation operating campaigns including re-circulating streams
- Simulations of continuous operation of rougher, scavenger and cleaner circuits
- Analyses of the effects of metallurgical drivers on process efficiencies for optimization
- Mass balancing

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- Thorough metallurgical data packages, including reagent consumptions and grade/recovery
- Engineering data for input to full scale plant designs
- Representative products of those expected in full scale production

EQUIPMENT

Equipment used in mini flotation pilot plant campaigns can include:

- Ore feeding system
- Primary grinding rod and/or ball mill
- Classification units (e.g., cyclone)
- Slurry mixing and feeding tanks
- Mechanical rougher, cleaner, and scavenger flotation cells
- Column flotation cells
- Reagent mixing and distribution system
- Water supply and distribution system
- Regrind mill
- Auxiliary equipment such as gravity separators and dewatering equipment
- Slurry transfer pumps

BENEFITS

Benefits of using mini flotation pilot plants include:

- Lower sample requirement compared to larger scale pilot plants (~ a few hundred kg compared to >2 tonnes), with associated cost savings
- Accurate determinations of grades and recoveries earlier in the deposit evaluation process
- Streamlined assessment of ore variability
- More reliable data than acquired in bench scale testing
- More representative products (concentrates, tailings, intermediate streams), for marketing, vendor testing, additional characterization, or further metallurgical testing.



Mini flotation pilot plants can have a significant impact on the metallurgical success of your project, provided they are well planned and operated using industry best practices. Through our vast network of engineers and technologists, often with >10 years of experience in executing such metallurgical testing programs, we have the expertise required to provide you with a successful mini flotation pilot plant at any of our Canadian metallurgical facilities or onsite at your project. Partner with SGS for more confidence in the metallurgical response of your resource.

CONTACT INFORMATION

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