



**Carlos F. Perucca, MASc**

Phosphates and Potassium Salts Processing

401 - 717 Victoria Avenue

Saskatoon, SK S7N 2T5

(306) 220 0171

[cperucca@cppcprocess.ca](mailto:cperucca@cppcprocess.ca)

[www.cppcprocess.ca](http://www.cppcprocess.ca)

**Professional Summary**

25+ years of experience in mineral processing engineering, specializing in SOP, MOP and Phosphates beneficiation. Main areas of expertise include Flotation, Compaction, Crystallization, Desliming, Plant Benchmarking and Debottlenecking, Process evaluation, troubleshooting and optimization, Project optimization and value engineering, Commissioning and startup assistance, Independent 3rd party design reviews, due diligence studies, Operator and technical staff training

**Education**

Minerals Processing Engineer, Universidad Nacional de San Juan, Argentina.

M.A.Sc., University of British Columbia, Canada.

**Languages**

Spanish, English.

**Summary of core skills**

- Process simulation. Metsim<sup>®</sup> power user.
- Process design and development, conceptual design, metallurgical studies, feasibility studies, flowsheets and layouts, equipment selection and sizing, mass and energy balance calculations.
- Process audits and design of diagnostic testing programs.

- Bench-scale, pilot plant and field testwork, statistical analysis of experiments.
- Design and operation of pilot plants, industrial-scale tests and plant start-up assistance.
- Strong flotation expertise, from laboratory test work to the industrial plant. Flotation kinetics, selective flotation, design of flotation circuits, new flotation technologies (contact, column, hydrofloat).
- Process evaluation, troubleshooting and optimization
- Project optimization and value engineering
- Facility debottlenecking studies for greater efficiency and throughput
  - ✓ Determine effective strategies for increasing throughput.
  - ✓ Maximize individual equipment/unit operations performance.
  - ✓ Assessing true capacity under actual or after start-up operating conditions.
  - ✓ Recommend additions or modifications to existing equipment or unit operations.
  - ✓ Provide innovative solutions to upgrade projects from experience with similar facilities.
  - ✓ Assistance with the design and engineering, project management and eventual construction management.
- Commissioning and startup assistance
- Independent 3rd party design reviews, due diligence studies
- Operator and technical staff training

### **Employment history**

Senior Process Engineer, AMEC, 2000-2008.

Plant Metallurgist, Agrium, 1997-2000.

Senior Metallurgist, Potasio Rio Colorado, 1989-1995.

Project Metallurgist, Minera TEA, 1985-1988.

Mill-Mine Technical Services, Compañía Minera Cerro Castillo, 1984-1985.

### **Major achievements**

- Lead Process Engineer for several recent expansions, and new Industrial Minerals, Phosphates, MOP and SOP process plants.
- Development of a brand new, one-of-a-kind selective flotation process to separate potassium sulphate from potassium chloride for a fertilizer producer in South America.
- Flowsheet development, mass and energy balance calculations, process design criteria and equipment specifications for several prefeasibility and feasibility studies in the Industrial Minerals, Phosphates, MOP and SOP fields.

- Plant audits, mass balances, test work planning and review, flotation kinetics, and process simulation studies for the expansion of several IM and fertilizer flotation circuits.
- Due diligence studies for various metallic and industrial mineral international prospects.
- Process simulation of Industrial Minerals, Phosphates, MOP and SOP process plants using Metsim<sup>®</sup>.
- Conceptual flowsheet development, mass and energy balances, economic evaluation of process alternatives. Metallurgical test design and results interpretation.

### **Other assignments**

- Mass and heat balances for various crystallization circuits.
- Conceptual development, supervision of lab test work, mass balance and flowsheet, and equipment sizing for expansion/modification studies for various clients.
- Supervision of pilot-scale tests for the selection of new process equipment. Determination of operating parameters.
- Calculation of complete mill mass and energy balances for various clients.
- Audit of flotation plants including crushing, grinding, flotation, compaction and post-treatment circuits, detection of bottlenecks, and recommendations to streamline the circuits.
- Design and start-up of metallurgical laboratories, and training of personnel.

### **List of Projects as Lead Process Designer**

Completed and currently in operation:

- PCS Rocanville Compaction (Canada)
- SQM Dual MOP – SOP Plant (Chile)
- SQM MOP I Expansion (Chile)
- PCS Lanigan Phase I (Canada)
- Miski-Mayo (Bayovar) Phosphate Plant (Peru)
- PCS Allan Expansion (Canada)
- SQM Planta Dual I & Dual II (Chile)
- PCS New Brunswick Sussex Compaction Plant (Canada)
- PCS New Brunswick Piccadilly Mill (Canada)
- SQM MOP G-III Compaction Plant (Chile)

Under Construction

- Agrium Vault (Canada)

- Eurochem Volgakali (Russia)

### **Professional Development Seminars**

- Economic Evaluation of Mineral Projects
- Introduction to Project Management
- Uranium Processing
- McGill University's Mineral Processing Systems Seminar
- Applied Mineralogy

### **Publications**

- "Storing and Transporting of Potassium Chloride: A Proposal" (Bulk Solids Handling, 1994).
- "Update on Insols Flotation at Agrium's Vanscoy Potash Plant" (31st Canadian Mineral Processors Operators Conference, 1999).
- "The Use of Polymers in Potash Beneficiation" (3rd UBC-McGill International Symposium, 1999).
- "Potash Processing in Saskatchewan, an Update" (35th Canadian Mineral Processors Operators Conference, 2003).
- "Audit of the MOP Plant at SQM" (36th Canadian Mineral Processors Operators Conference, 2004).

### **Work experience by region**

- South and North America
- Middle East
- Africa
- Australia
- Russia