

Selected Case Studies

From
**Concept
to Turnkey**

WengFu PPA Plant, China

Bateman Litwin supplied Guizhou HongFu Industry & Commerce Development Co. Ltd. (WengFu) with a 100,000 tons per annum purified phosphoric acid (PPA) plant. The project included the process development, basic engineering package, design and supply of all SX equipment and training & commissioning services. The SX section in the WengFu PPA plant utilizes six Bateman Pulsed Columns and two mixer settlers.

Cargill (MOSAIC) Phosphoric Acid Demonstration Plant, USA

Laboratory and pilot tests were initially carried out on Cargill merchant grade phosphoric acid (WPA) at the Bateman Litwin R&D center. Based on these results Bateman Chemical Technologies designed and constructed a demonstration plant for food grade phosphoric acid. The plant was successfully operated at the client's site.

Mineral Beneficiation, Middle East

Bateman Litwin's Chemical Technologies Business Unit carried out the process development and basic engineering for a new phosphate beneficiation complex of 4,650,000 ton per annum to be built on a green field site. During beneficiation, ROM ore is crushed, ground and deslimed ahead of a tailor-made selective flotation circuit. The ore is upgraded from 19% to 32.5% P₂O₅ while the carbonate minerals, dolomite and calcite are selectively rejected (from 4% to 1% MgO in the product). The process incorporates maximum reclaim of water as it is located in a desert environment.

Chemical Technologies

Advanced solutions for:

- Minerals processing
- Phosphate & downstream industry
- Chemical process industry
- Environmental protection

Bateman Litwin's Chemical Technologies Business Unit provides advanced technologies and comprehensive solutions for the mineral processing, fertilizer, industrial phosphate and chemical industries.

Our involvement starts from the preliminary stages of defining the customer's needs, R&D and feasibility studies, through to plant modifications, expansions and new facility construction. The projects are fully covered by performance guarantees and mechanical warranties.

Our technologies and services are backed by Bateman Litwin's research and development center with fully equipped laboratories and pilot facilities, utilizing the latest analytical tools.

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Chile, Italy, Kazakhstan,
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Russia, Romania,
Slovakia, Switzerland,
the Middle East, USA

Bateman Litwin at a glance

Bateman Litwin focuses on mid-sized EPC contracts, principally executed on a lump sum turnkey (LSTK) basis. Bateman Litwin also provides technology solutions to the phosphate sector and solvent extraction applications.

Backed by an impressive track record of hundreds of projects in more than 40 countries, Bateman Litwin has established a reputation for excellence and on-time, on-price project delivery, which maximize customer profitability.

www.bateman-litwin.com

Chemical Technologies

The optimal solution for your process plant



Phosphoric acid purification process

Wet Phosphoric Acid

Pretreatment

Purification

Post Treatment

Food Grade & Technical Grade Phosphoric Acid

Purified phosphoric acid (technical and food grade)

Phosphoric acid is a key raw material used in fertilizer production, as well as in food, detergents and other industries. Bateman Litwin's purification technology can be adapted to all wet process acids (merchant grade) and the process optimized to meet client specifications.

Project Development

Over the years Bateman Litwin Chemical Technologies has cultivated a comprehensive step-by-step approach to project development, ensuring fulfillment of the project requirements and successful delivery of the project.

Pre - Feasibility

Go/no go decision, evaluating optional process schemes & costs

Feasibility

Confirms/revises earlier conclusions, enhances accuracy of cost evaluation

Definitive Feasibility

Formal documentation reporting process details, estimation of capital & operating costs

Finance

Facilitating the optimum, most cost - effective financing packages. For certain solutions equity investment may be considered.



Pretreatment

To reduce impurities (e.g. sulphates, cadmium, fluorides, arsenic, total organic carbon and solids).

Purification

Through selective extraction of phosphoric acid and impurity removal using Bateman Litwin's proprietary solvent extraction equipment (Bateman Pulsed Columns & mixer settlers).

Post treatment

To bring the product to its final specification (e.g. concentration, solvent recovery, reduction of total organic carbon and bleaching).



Need

Defining processing goals, optimization of capital and operating costs, safety and environmental issues.

Lab

Evaluating samples, determining materials for construction, identifying recovery procedures.

Mini Pilot

At our research center/on site: process testing on a small scale mini-pilot plant, also providing samples for further testing and market assessment.

Pilot

At our research center/client facility: integrating the process into a continuous operation, validating the process and obtain scale-up data.

Demonstration

Produce marketable samples in a small industrial simulation plant, which provides conclusive evidence of process and project viability.

Design, Supply & Construction

Process and equipment optimization, design, supply and construct the industrial plant (i.e. EP, EPC, Lump Sum Turnkey).

Commissioning & Start-up

Comprehensive training provided for the plant operation team as well as technical and operational support services. BOO skills available if required.



Lump-Sum Turnkey & EPCM solutions for:

- The minerals industry – processing phosphate rock, base metals, rare earths, industrial and heavy minerals
- The phosphate industry – purified phosphoric acid and industrial phosphate salts
- The chemical industry – medium and mega projects in the inorganic industry
- Environmental protection – effluent and waste treatment, removal of nitrates and heavy metals

Research & Development

Bateman Litwin utilizes the latest technologies, analytical methods and state-of-the-art scientific instrumentation to provide innovative and optimal solutions for any phosphate-processing and minerals beneficiation application.

- Development of in-house technologies
- Bench-scale testing
- Pilot plant work at Bateman Litwin's dedicated facilities or at client site
- Tailor made process testing

Bateman Pulsed Column technology for phosphoric acid purification

Bateman pulsed column and mixer-settler technologies provide highly efficient, cost-effective and safe liquid-liquid contacting, which enhance solvent extraction processes during the extraction, stripping and scrubbing or washing stages.

