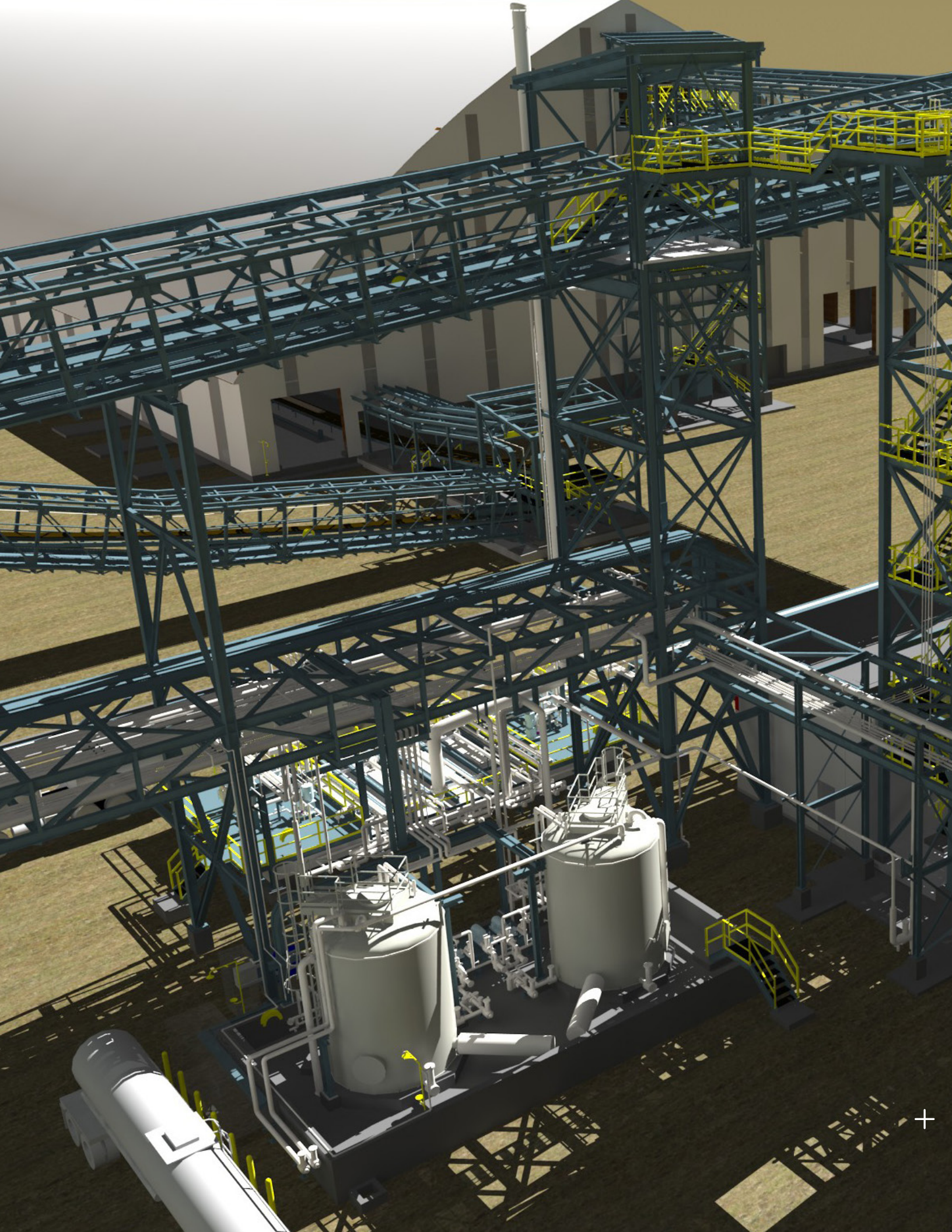




+ Phosphates





It's a hungry world.

Each year, about 80 million new individuals join the planet. Their needs drive a constant and massive demand for resources—and the potential for rapidly rising food prices and localized shortages.

With a limited amount of land suitable for agriculture, farmers and food producers must do more with what they have. They will need more of the fertilizers and growth enhancers essential for agricultural production and crop yields to feed the ever-larger population.

New products are needed to make crop fertilization more effective and efficient. Phosphate producers must constantly be upping their game, optimizing their existing facilities, and finding different and better ways to sustain the production that will feed us today, and new generations tomorrow.

We can help.

You need targeted, innovative solutions that can enhance your operation and save you money. Our professionals have a world of experience serving the phosphate industry.

With today's best practices as a baseline, we'll take it to the next level. We'll help boost your capacity. Find new technologies and tools that we can develop and adapt to your needs.

You'll get expert help, sound advice, and full support with:

- Process evaluations and improvement studies
- Granulation plant debottlenecking and improvements
- Project implementation
- Energy recovery and cogeneration
- Process development
- Due diligence studies
- Operational performance
- Digital solutions
- Project management
- Construction management.

Project experience

To meet the world's growing demand for phosphates, your facilities need to be capable of full-out, optimized production. We can help you deliver the goods.

It takes careful planning and flawless execution to produce safe, high-quality outcomes. We use the front-end loading approach to engineer and execute major brownfield expansion and retrofit projects with less risk and more successful, predictable results.

Mosaic New Wales MicroEssentials® Granulation Plant Conversion Project Florida, United States

With its new patented MicroEssentials® products coming on stream, Mosaic needed to convert an existing dual-train, diammonium-phosphate granulation plant to one that could produce and accommodate the new line.

We stepped up with detailed engineering, design, construction management, and commissioning services. Our scope of work extended to modifying the existing plants for micronutrient receiving, storage, and feed systems; sulfur unloading systems and a sulfur pit; a new 65,000-ton MicroEssentials® product warehouse with an automated reclaimer; and all the associated utilities and infrastructure. The plant's existing scrubber systems were also replaced and retrofitted for closed-loop scrubbing.

J. R. Simplot Phosphoric Acid Plant Expansion Wyoming, United States

Debottlenecking was the way to increase this plant's P_2O_5 production capacity by 10%. This heavy brownfield project was carried out within an operating phosphoric acid chemical plant. We provided conceptual, prefeasibility, and feasibility studies followed by full EPCM services, including commissioning.

A new phosphoric acid reactor and reactor-vacuum system was designed to achieve higher production rates and greater stability. The plant's cooling tower was eliminated, and the process's heat load was successfully shifted to the gypsum stack and existing cooling pond.

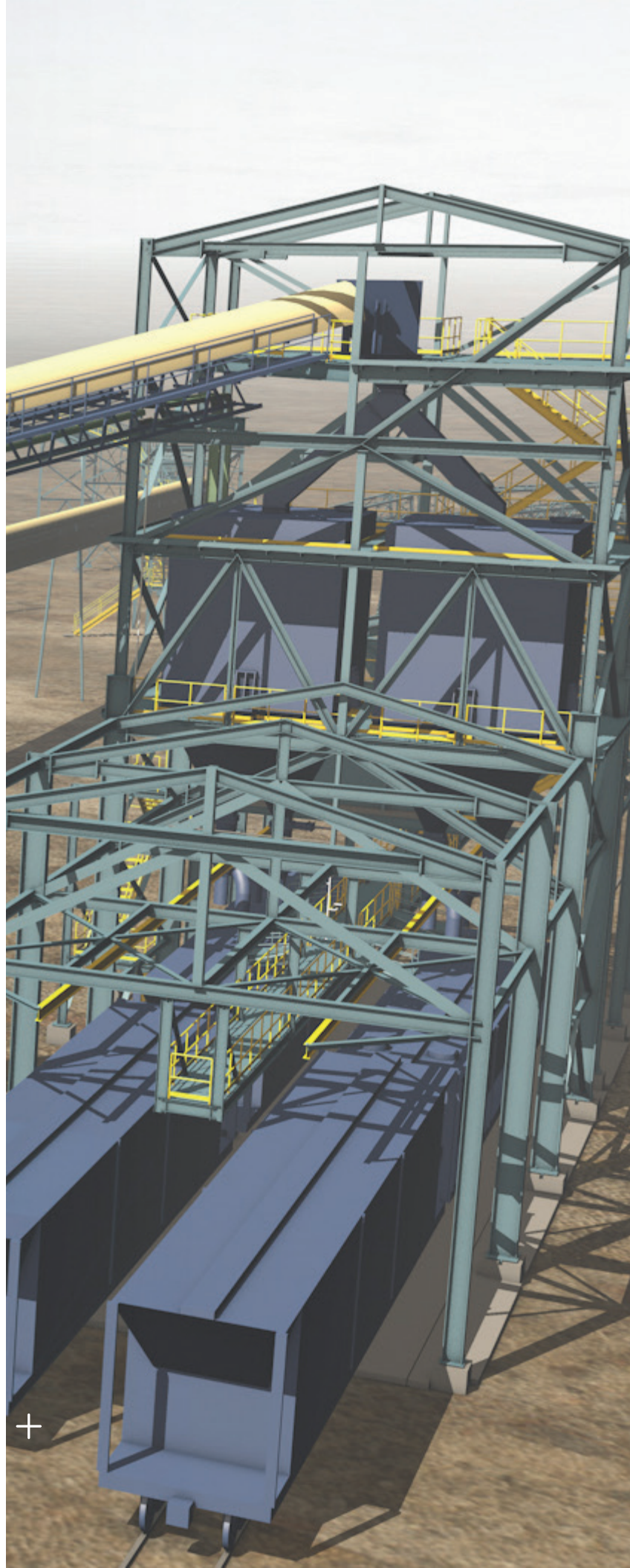
Mosaic Faustina Granulation Plant Project

Louisiana, United States

Mosaic needed to convert its diammonium-phosphate production plant to accommodate its next-generation MicroEssentials® fertilizer. As the sole partner delivering full engineering services for the project, we provided continuity, consistency, and practical experience, from the conceptual study right through detailed design, construction, and commissioning.

Screen elevations and orientations were combined to fully utilize the available area, saving at least 30 days of production downtime for installation work. The high-efficiency approach was very effective. Just four short hours after the plant started up, the new MicroEssentials® fertilizer was meeting its product specifications.

Hatch saved 30 days of production downtime for the installation work at Mosaic Faustina Granulation Plant



Essential services, sound strategies

From brownfield upgrades to planning and implementing major integrated designs, the objective is always the same: addressing your most serious challenges, solving your toughest problems.

Process evaluations and improvement studies

More productive phosphate plants mean more abundant harvests. Profitability can be improved with higher on-stream time, efficiency, improved controls, and better overall plant operation. We can evaluate your operation and find opportunities for improvement, seeing things that others miss. We're experienced in phosphate ore processing, wet phosphoric acid production, and phosphate granulation.

Granulation plant debottlenecking and improvements

Better-quality products and reduced emissions are strong competitive advantages. We can help you debottleneck your existing granulation plants and improve production rates. We understand the science behind granulation, and the design parameters needed for optimal performance and smooth operations. With strict environmental compliance, we have implemented difficult brownfield screen-debottlenecking projects and granulation plant scrubber improvements.

Project implementation

Successful projects proceed step-by-step, phase-by-phase. We work with our clients, planning carefully for quality outcomes that minimize the risk of harm to people, places, and things. This phased approach has stood the test of time. It's project development at its best, reducing risk and delivering predictable, consistent outcomes.

Energy recovery and cogeneration

We understand how phosphate facilities work. So, we can help you find opportunities to improve energy efficiency and reduce power consumption. Our solutions will deliver positive results to your bottom line.

Water management, containment, and gypsum filtration

You need to keep your head above water. We can help create the systems and processes that lead to better collection and reuse of plant water streams, and a plant water-balance cycle that really goes full circle. Efficiency improves because process waste streams are collected and reused. Acidity in the gypsum-stack process-water management system drops as plant efficiency is improved.

Process development

Your processes aren't like anyone else's. Neither is the work we do for you. We use modern project development and execution methods adapted to your operation. You can make high-value products better and faster, driving up your profitability in today's competitive market.

Due diligence studies

You benefit from our experience in partnering with investment and commercial banks, equity funds, bondholders, attorneys, and operating companies. Working together, we can provide you with thorough due diligence assessments—financial, operational, technological, environmental, market, and commercial. Our



J.R. Simplot phosphoric acid plant expansion was executed with final costs at 10% below the project budget

technical reviews and global surveys can help you accurately evaluate potash assets before you acquire them.

Operational performance

Your plant has its own unique challenges. It may need capital investment and steady funding to remain viable and meet ongoing operational and maintenance requirements. If your project funding is already secure, you may need an experienced partner who knows how to get the most value and produce the best, long-term results for the money you're spending.

We work with you, developing strategic operational-performance programs that can translate results to your bottom line. We find smarter, more efficient solutions for terminal operations. We follow up with support across the full business life cycle, from concept to closure and across the full value chain, from exploration to market.

Digital solutions

With access to the right data, we can improve your operations, no matter where they are in the world. We deliver turnkey solutions, improving the health of your assets and processes. We develop control solutions that reduce variability, impacting yields and margins throughout your operation. We provide the best people, the most advanced digital analytics.

We're making equipment become smart enough to predict when it needs attention. We extract meaningful patterns in assets and operator's performance and provide real-time alerts and preventative measures.

Project management

You need projects delivered reliably and efficiently. Our international knowledge, experience, and technical expertise are your assurance. We can help you manage capital programs and construction projects anywhere in the world.

You'll have the full range of procurement services, provided competently and thoroughly. From the selection and management of contractors and suppliers, to the arrival of goods at the project site, we deliver our projects on schedule and within budget.

Construction management

Our state-of-the-art technology and innovative construction techniques will provide you with consistent and predictable results across the entire range of your operation. Some of the world's most challenging major resource and industrial developments have been developed by our experts. The highest standards of safety, performance, quality, cost, and schedule are always top-of-mind.



About Hatch

Whatever our clients envision, our engineers can design and build. With over six decades of business and technical experience in the mining, energy, and infrastructure sectors, we know your business and understand that your challenges are changing rapidly.

We respond quickly with solutions that are smarter, more efficient, and innovative. We draw upon our 9,000 staff with experience in over 150 countries to challenge the status quo and create positive change for our clients, our employees, and the communities we serve.

[hatch.com](https://www.hatch.com)