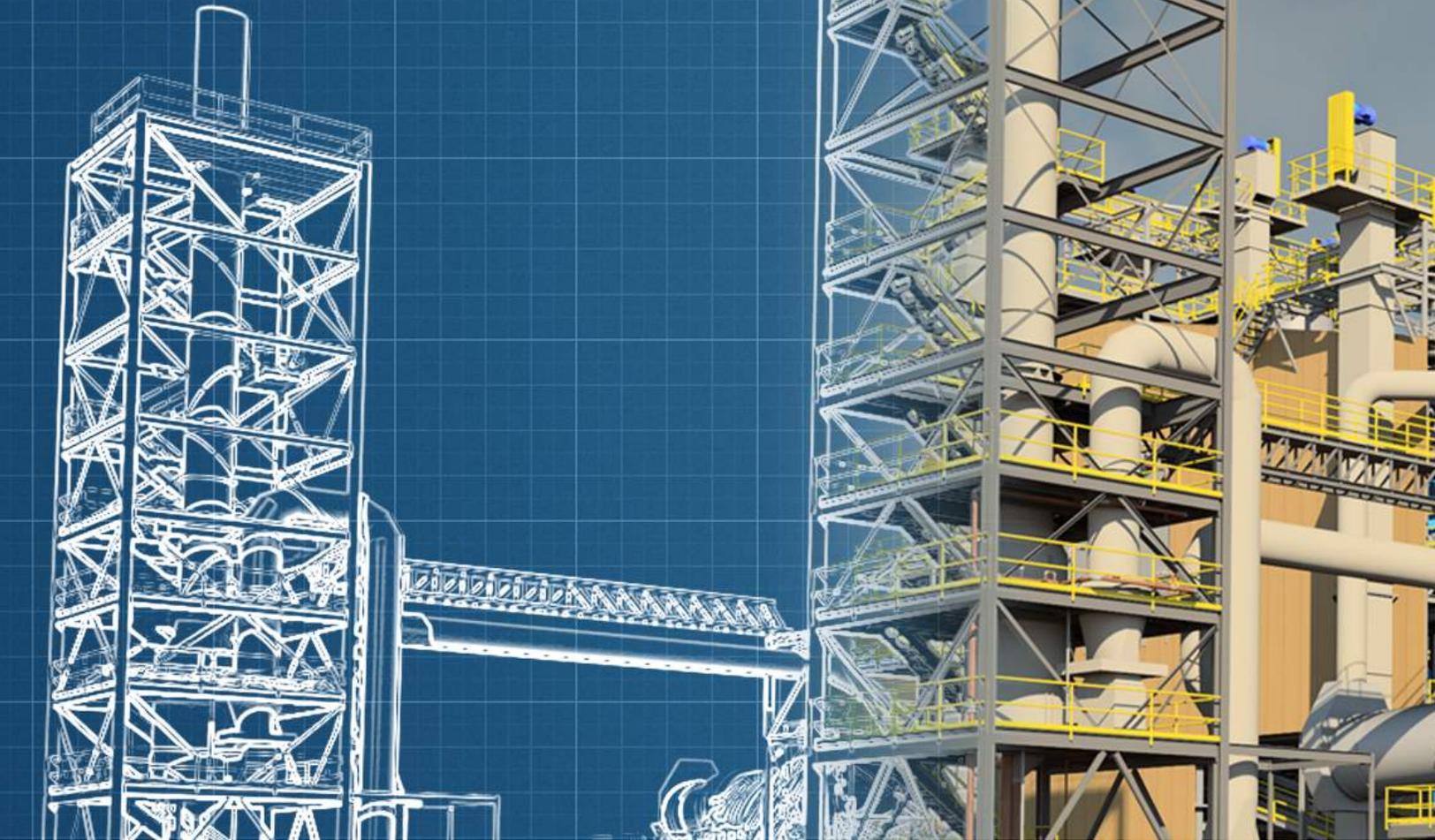


MINING
MINERALS
ENERGY
FERTILIZER
OIL & GAS
PETROCHEM
PORTS
RAIL

FULL SERVICE ENGINEERING • PROCUREMENT • CONSTRUCTION MANAGEMENT



FROM RENDERING



Millcreek Engineering is a full-service engineering, procurement, and construction management company specializing in bulk material handling and processing solutions for mining, minerals, power generation, fertilizer, oil / gas, cement, petrochemical, port and rail industries. We are staffed with highly qualified and experienced career professionals who bring deep expertise to the industries we serve.



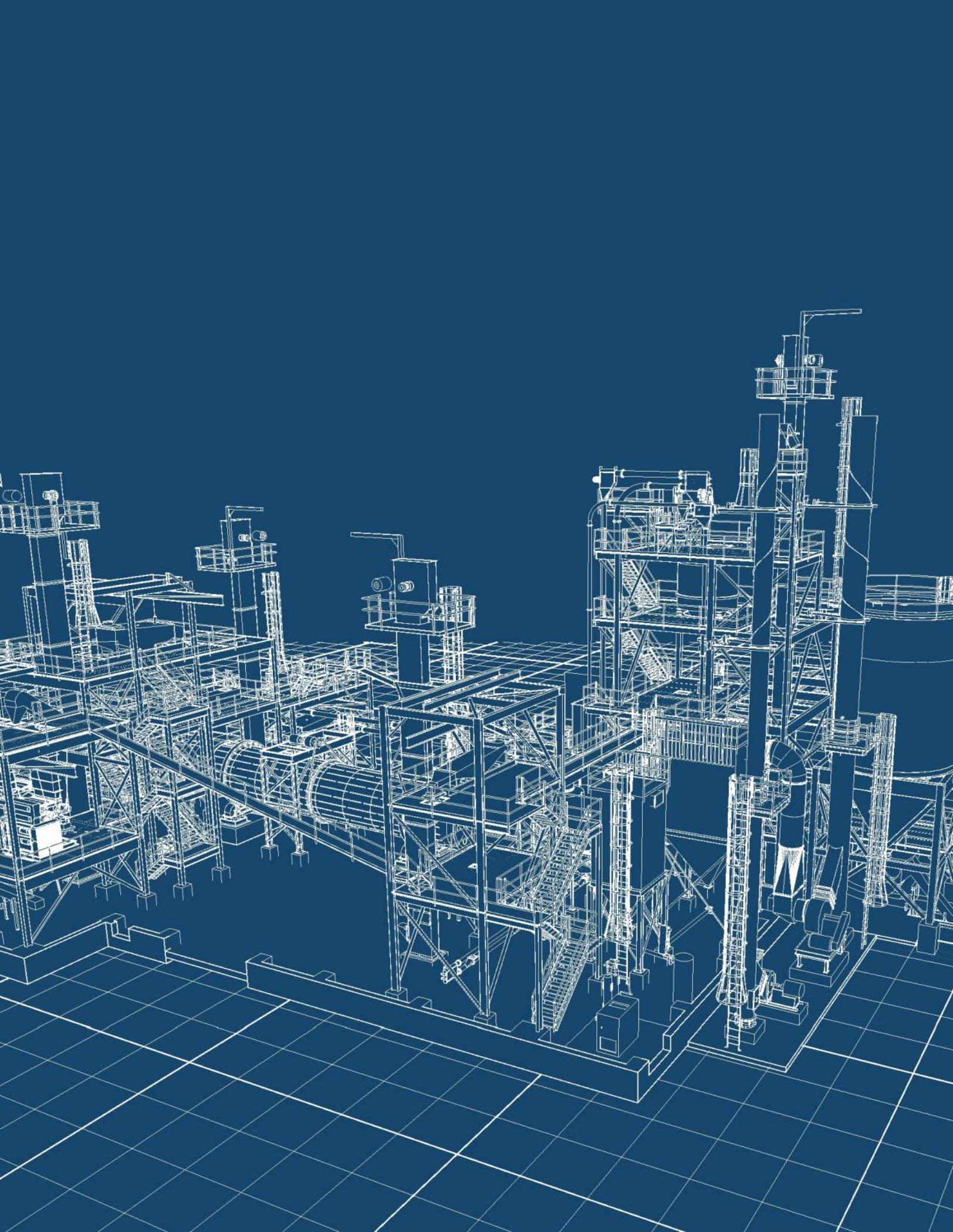
TO REALITY

We have a hands-on approach and take an on-site responsibility for the entire facility delivery process - from conceptual design and cost estimating through detailed engineering, procurement, construction management, commissioning and operator training. We are dedicated to the finish, and we do it all with in-house services and expertise.



SERVICES





ENGINEERING SERVICES

Millcreek Engineering capabilities range from concept development to detailed design in all major engineering disciplines. Our engineers provide equipment, fabrication and construction documentation, QA/QC, inspection, field engineer support, commissioning, start-up and training.

Process Engineering

- Process design and equipment specifications for minerals, aggregates, cement, coal, metals, coke, chemicals and fertilizers
- Crushing, screening, beneficiation, comminution, thermal processing, classification, electrorefining, leaching, separation, dewatering, compaction, agglomeration and pumping

Mechanical Engineering

- Mechanical design and equipment specifications for custom conveyor systems, dust control and collection, pumping, piping, tanks, pressure vessels, ventilation, HVAC, chutework, DEM analysis and many other mechanical systems

Structural Engineering

- Site evaluation and surveying
- Modeling and in-depth analysis
- Vibration analysis
- IFC design including fabrication and construction documentation
- Existing structure inspection and analysis

Civil / Environmental Engineering

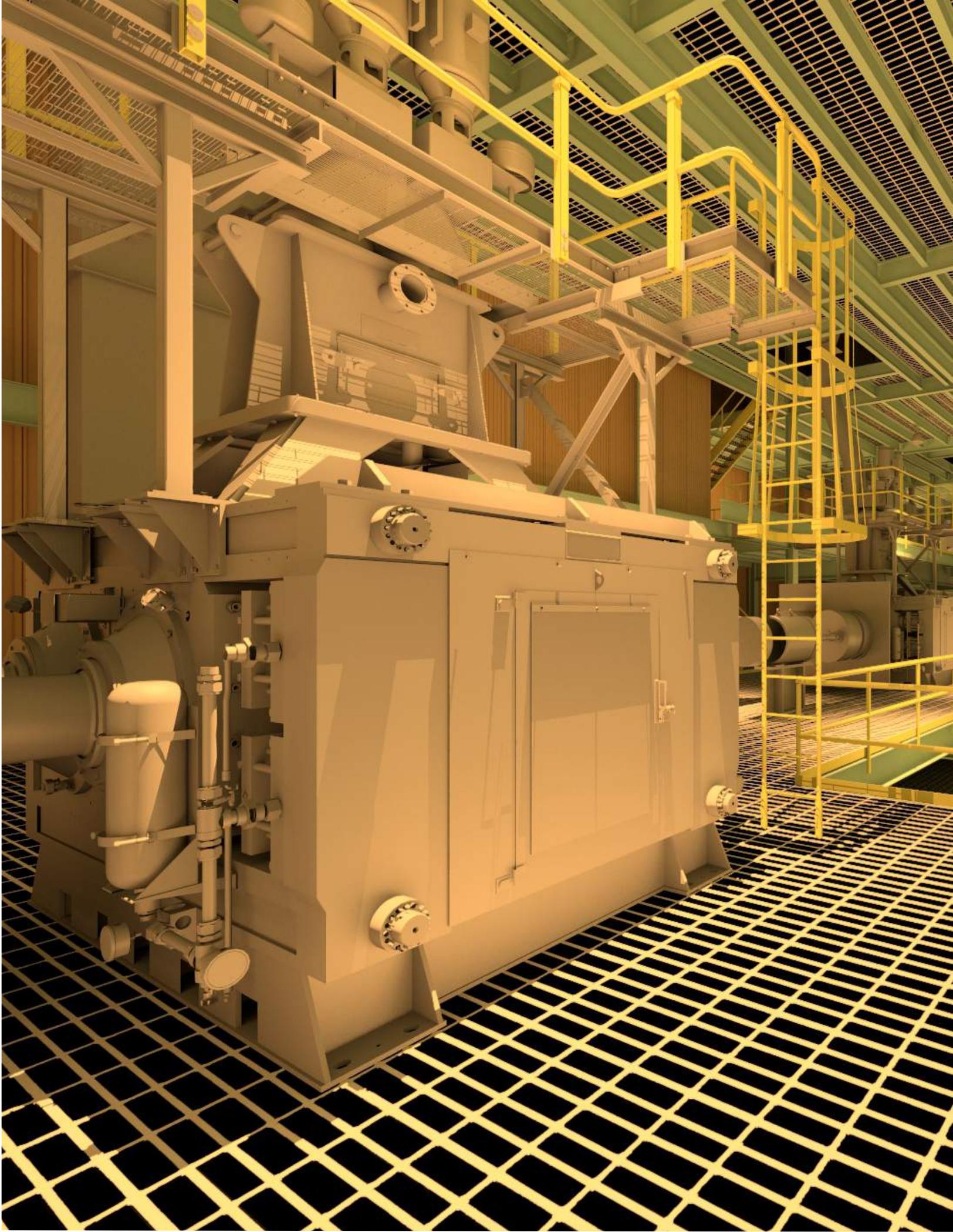
- Roads, containment ponds, embankments, paving, drainage, culverts, storm water retention and sedimentation
- Storm Water Pollution Protection Plans (SWPPP), ground and surface water protection plans, and technical documentation for NPDES permit applications
- Air quality emission determinations, air emission control calculations and design and technical documentation for air quality permit applications
- Water treatment and pond reclamation
- Facility and energy management systems

Electrical and Instrumentation Engineering

- Power systems, control systems, instrumentation systems, communications systems and automated control design

Rail Engineering

- Track layout, switching and rail bed
- Traffic modeling and analysis
- Mainline coordination and approval



DESIGN SERVICES

Customized Design

- Bulk material handling systems
- Mineral processing systems
- Steam and process piping systems
- Storage and reclaim
- Rail and truck loading / unloading
- Barge and ship loading / unloading
- Coal blending systems
- Ash handling / ash pond reclamation
- Plant decommissioning
- DCS and PLC control systems
- Clean rooms
- Machine design
- Robotics systems
- Slurry pumping systems
- Warehouse and bagging
- Aerospace machine tooling design
- Commercial / Light Industrial / Manufacturing
- Truck and railcar maintenance facilities
- Food processing

3-D Modeling and Rendering

Millcreek Engineering uses 3-D modeling software to develop our designs. Equipment, structures, piping, electrical, etc. are all combined into one model and checked for clearances, maintainability, interferences and constructability. After the model is reviewed, construction 2-D plans are produced from the model. The 3-D model also serves as a valuable tool for permitting and presentations.



PROJECT DEVELOPMENT SERVICES

Planning and Development

- Economic and technical feasibility studies
- Optimization and strategic planning
- Reclamation and closure
- Resource-reserve certification / reporting
- Due diligence audits and assets evaluation

Project Management

At Millcreek Engineering, we pride ourselves in taking full responsibility for project implementation and delivery. Our project management team understands the “triple constraints” of all projects — project scope vs. schedule vs. cost. Our team continually applies the management processes of planning, executing, monitoring, and controlling the project – all while protecting health, safety and the environment.

- Project set-up
- Project execution plan
- Scheduling, tracking and reporting
- Budgeting, cost control and forecasts
- Contract administration
- Risk identification, risk management and risk mitigation
- QA/QC
- Health, safety and environment
- Project communication and reporting

Procurement

Millcreek Engineering also provides full project procurement, expediting, inspection, logistics and shipping, and materials management.

- Vendor pre-qualification
- Technical specifications and requirements
- Request for quotation preparation
- Bid solicitation and evaluation
- Purchase recommendations
- Purchase negotiations
- Purchase order or requisitions
- Vendor inspections and QA/QC
- Expediting and tracking
- Logistics and shipping
- On-site receiving and material management

Construction Management and Commissioning

Millcreek Engineering’s approach to project delivery doesn’t end when the construction drawings are done. Our construction management team helps execute your plans by utilizing our real world expertise on-site.

- Cost control / reporting / forecasts
- Scheduling, tracking and reporting
- Risk analysis / risk management
- Document control
- Materials management
- Subcontractor management and administration
- Field engineering and technical support
- Inspections and QA/QC
- Health and safety
- Commissioning and training
- Check out and start-up
- Vendor representative coordination
- As-built sets
- Plant demonstration and performance testing



OPERATIONS SUPPORT AND PERFORMANCE AUDIT

Plant Performance Improvement / Audits

Many industrial facilities are operating long past their original design life. Plants are experiencing deterioration in structures, foundations, mechanical equipment and electrical systems due to normal wear, fatigue, corrosion and delayed maintenance.

Maintaining safety, availability and efficiency in these aging facilities is paramount for maintaining production, controlling operating cost and achieving profitability goals.

Millcreek Engineering understands the vital steps needed to monitor, plan and sustain plant operations, extend plant life, reduce costly unplanned outages and maintain or improve productivity and efficiency.

A continual program of audit, inspection, evaluation and rejuvenation is needed to maintain plant integrity and avoid failures and production losses.

Our plant audit and improvement services include:

- Performance reviews
- Debottlenecking / production Increase
- Spillage and dust control
- Conveyor and mechanical equipment
- Vibration analysis
- Safe access design for mechanical equipment
- Electrical, control and instrumentation
- Control programming updates
- Structure corrosion / life assessment
- OSHA / MSHA compliance
- Hazardous area classifications
- Predictive maintenance
- Outage planning and optimization training
- Economic trade-off studies
- Rail audits and reports
- Brownfield retrofits, modification and upgrades

Emergency Responses

In the event of a failure, Millcreek Engineering's staff is available to respond on short notice, on-site, to assist you in any way necessary. From consulting on how to stabilize a damaged structure, to performing root cause analyses, to procuring and overseeing equipment replacement, we provide solutions to time-critical problems.



SECTORS





BULK MATERIAL HANDLING

Millcreek Engineering has expertise in evaluating existing facilities and developing innovative design solutions. Our senior personnel all have more than 20 years in the industry and together have established a proven track record of successful bulk material handling projects. We have designed and delivered bulk material handling systems across a broad range of commodities, capacities and industries.

Our belt and overland conveyor design experience, coupled with the latest software, provides innovative and effective material handling solutions. Our principals have designed and built more than 1,000 conveyor systems.

We provide exceptional expertise in the design of long distance, high capacity overland conveyors with both vertical and horizontal curves.

Millcreek Engineering excels in designing material handling systems that are effective and efficient. Our designs aim to reduce material degradation and material loss during all phases of the production and effectively reduce the client's costs.

Millcreek Engineering designs and delivers bulk material handling systems across a broad range of commodities and material types:

- Aggregates
- Cement
- Ash
- Coal
- Coke
- Salt
- Industrial minerals
- Limestone
- Phosphate
- Potash (MOP and SOP)
- Hard rock ore
- Metals

Bulk material systems range in capacity and include:

- Rail and truck loading / unloading
- Barge and ship loading / unloading
- Weighing and sampling systems
- Conveying, stacking, blending and reclaiming
- Discrete Element Modeling (DEM) and chutework
- Crushing and screening
- Slurry mixing, pumping and separation



UTILITIES

Power Generation

Millcreek Engineering designs and builds all aspects of the fuel handling system — from fuel receiving to bunkers and pulverizing systems, including:

- Unit train unloading systems
- Overland conveyors
- Stockpile stacking and reclaiming systems
- Crushing
- Fuel blending systems
- Storage silos
- Washdown systems with wash water treatment
- Fine particulate reclamation

Millcreek Engineering brings particular expertise in dust control, transfer chutes and washdown in PRB coal conversion.

We design and build limestone and gypsum handling systems associated with flue gas desulfurization and other emission control systems. Our expertise also includes mechanical, structural, piping, electrical and instrumentation design throughout the generating station.

Coal Combustion Byproducts

Millcreek Engineering understands the ever-changing regulatory and environmental requirements associated with coal combustion byproducts. We provide experience and expertise in the proper handling and recycle / disposal of these materials.

Coal combustion byproducts services include:

- Master planning
- Identification of site-specific situations and compliance requirements
- Ash and gypsum disposal
- Conversion to dry ash handling
- Dust and spillage control
- Recycle / reuse for commercial applications
- Ash beneficiation
- Carbon in ash removal and recycle
- Closure and remediation of existing ash ponds
- Surface and groundwater monitoring, containment and diversions
- Pond water treatment and mineral extraction



MINING AND MINERAL PROCESSING

Millcreek Engineering designs and delivers processing and material handling facilities for all types of mining and mineral operations. We serve all stages of the mine from pit to product loading. We provide solutions for unloading, crushing and screening, conveying, classifying, grinding, flotation, filtration and thickening, leaching, electrowinning, thermal processing, drying, pumping, stockpiling, storage and reclaim, product handling and transport loading.

Millcreek Engineering provides a vast knowledge of new technologies and ways to implement these technologies into the mine. We utilize our experience across many industries to develop new and effective solutions for the challenges mines face. We are dedicated to ensuring mining's future.

Millcreek Engineering's mining and minerals experience includes:

- Phosphate
- Limestone
- Lithium
- Agricultural materials
- Frac sand
- Aggregate
- Sand
- Gravel
- Urea
- Trona
- Soda ash
- Salt
- Talc
- Sulfur
- Clay / Feldspar

Millcreek Engineering Company is affiliated with the Millcreek Mining Group. Together we provide an integrated offering to the energy and resource industries. We support every stage of project development, from early-stage mining consultancy services, resource / reserve certification (NI43-101, NI51-101, JORC, PRMS, etc.) through detailed engineering, procurement and construction management. For additional information on the Millcreek Mining Group please visit their website at www.millcreekmg.com



METALS

Millcreek Engineering provides a wide range of technical and project management services for the metals industry. From the mine through the final product loadout, we provide services ranging from conceptual design through full project completion. We provide solutions for maintenance and capital projects, with an understanding that there is not a one-fit-all solution for many of the challenges that the industry faces. We approach each project with experience that allows us to develop the proper solution for each individual and different challenge.

Millcreek Engineering's precious and base metal experience includes:

- Gold
- Silver
- Copper
- Iron
- Steel
- Zinc
- Molybdenum

Millcreek Engineering's precious and base metals facility experience includes:

- Mining
- Crushing / Screening
- Grinding / Milling
- Flotation
- Concentration
- Thickening / filtering
- Pyroprocessing
- Leaching
- Recovery
- Solvent extraction / electrowinning
- Adsorption Desorption Regeneration (ADR)
- Material handling
- Classification
- Storage
- Dust control
- Tailings
- Product load outs



POTASH

Millcreek Engineering designs and delivers material handling and processing facilities for both MOP and SOP potash operations. We have proprietary designs that reduce recirculating loads, increase production and enhance the final product. Our designs incorporate the latest corrosion-resistant features and dust control techniques. From mining through processing, we provide services for conceptual design through full project completion.

Millcreek Engineering's potash experience includes:

- Flotation
- Thickening
- Filtration
- Crystallizing
- Drying
- Compaction
- Sizing
- Classification
- Screening
- Dust collection
- Stockpile and reclaim
- Loadout systems



COAL

Millcreek Engineering specializes in coal handling facilities for the mine, utilities power generation and industrial power generation. From mine to boiler, we provide services for conceptual design through full project completion.

We have vast experience in the challenges related to coal handling. Our experience includes handling and processing of sub-bituminous, bituminous, PRB, lignite coals, metallurgical coal and coke.

Millcreek Engineering's coal experience includes:

- Run of mine truck dumps
- Stockpile, silo and reclaim
- Dust control and mitigation
- Sampling
- Crushing and pulverizing
- Screening
- Coal preparation and washeries
- Heavy media separation
- Jig, cyclone and spiral separation
- Flotation of fine coals
- Dewatering
- Air separation
- Unloading and loadout systems



CEMENT

Millcreek Engineering designs and delivers materials handling and processing facilities for the cement industry. We provide support from the concept and new technology phases through to full project completion. We provide solutions for maintenance and capital projects. We understand there is not a one-fit-all solution for many of the challenges that the industry faces. We approach each project with experience that allows us to develop the proper solution for each individual and different challenge.

Millcreek Engineering's cement experience includes:

- Raw material extraction / quarry
- Crushing (including in-pit and mobile)
- Grinding and blending
- Preheating systems
- Kilns
- Cooling
- Clinker grinding
- Material handling and storage
- Air pollution control
- Automated packaging
- Automated product load out and ticketing

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59

Pr

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praseodymium

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60

Nd

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144.2

92

90

RARE EARTHS PROCESSING

Millcreek Engineering is well qualified to serve the Rare Earth Elements (REE) industry. Our professionals have extensive operating and consulting experience with REE projects in North America and around the world.

Our services include:

- Mining
- Crushing
- Milling
- Magnetic separation
- Flotation
- Leaching
- Filtration
- Purification
- Precipitation
- Solvent extraction / electrowinning
- Storage
- Materials handling
- Packaging
- Product loadout



OIL, GAS AND PETROCHEMICAL

Millcreek Engineering's experienced professionals provide engineering solutions and deliver systems for refining facilities, product storage, piping and transloading. We perform facility assessments, environmental assessments, process optimization and brownfield / greenfield design for clients, providing effective solutions and minimizing the cost of operation.

Millcreek Engineering's oil, gas and petrochemical experience includes:

- Oil shales
- Oil sands
- Asphalt
- Ammonia
- Nitrogen
- Coke
- Natural gas
- Crude and refined oil



TRANSHIPMENT AND TRANSPORTATION

Port

Millcreek Engineering designs and delivers bulk material handling solutions for ports, terminals and marine facilities. Our services include:

- Port master planning and strategic development
- Truck, rail, barge and ship loading / unloading
- Conveying, stacking and reclaiming
- Crushing and screening
- Blending
- Weighing and sampling

We have specific expertise in the supply of the large shiploader and stacker/reclaimer equipment used at bulk material ports and terminals.

Rail

Many ports, power generating stations, mines, heavy industrial facilities connect to rail for the transport of products and supplies. Rail infrastructure in these facilities includes industrial rail loops, rail spurs, and rail switch yards. The rail interconnects with rail car loading and unloading, track scales, thaw shed and other components of the overall facility. Rail loading systems include batch car loading with rates of 10,000 tph with an accuracy of loading of less than 1 percent. Rail unloading systems include rotary car dumps, in-motion rapid car unloading or shallow pit unloading.

Millcreek Engineering's capabilities with the rail industry and rail design allow us to integrate the scope of the entire project. We can design the rail routing, grades and lines, access and crossings to optimize the entire facility arrangement.

Millcreek Engineering's experience in rail systems also include:

- Rail yard planning
- Track design
- Logistics
- Rail yard construction plan
- Main line approvals
- Rail contractor certification
- Secure location
- TWIC / MARSEC
- e-RAILSAFE
- Homeland Security – location Specific



DECOMMISSIONING, CLOSURE AND RECLAMATION

Many clients are faced with aging facilities that are no longer profitable, too costly to repair and may not meet current environmental regulations. The choices for decommissioning, dismantling and remediation can be complex. The decision should be guided by experienced personnel whose expertise is in plant systems and procedures, as well as the understanding of government rules.

Millcreek Engineering provides:

- Development of decommission plans
- Evaluation and analysis for property re-use
- Development of monitoring schedules, cost estimates and budgets
- Arrangement, coordination, and oversight of environmental, permitting, technical and other consultants.
- Management of demolition and remediation contractor(s) and vendor(s)
- Evaluation and facilitation of salvage options
- Reclamation planning
- “Natural Regrade” approaches



ANCILLARY AND COMMERCIAL

Many of our projects require ancillary facilities, customized maintenance buildings, warehousing, labs, office buildings and many other buildings. Millcreek Engineering can provide all the services to complete the design and construction of these facilities. This provides our clients with a one-stop shop for their entire project.

Millcreek Engineering offers structural, mechanical, electrical and plumbing engineering design for large commercial facilities. We are licensed in many states and have a thorough understanding of the building codes, city review processes and specific requirements.



PERFORMANCE • RISK • LOSS SOLUTIONS

Millcreek Engineering has extensive expertise in engineering, construction management, operation and maintenance. Our approach is to provide a continual program of audit, inspection, evaluation and mitigation to maintain integrity and stability. With the implementation of these steps, the plant can avoid unforeseen and extreme consequences.

Our services include:

- Asset characterization
- Risk management
- Loss prevention
- Loss recovery
- Audit and inspections
- Performance improvements
- Emergency response

Our customers include:

- Insurance companies
- Mine owners and operators
- Industrial facility owners and operators
- Investors and stakeholders



HEADQUARTERS

1011 East Murray Holladay Road

Suite 200

Salt Lake City, UT 84117

P: (801) 904-2260

F: (801) 904-2261

E: info@millcreekeng.com

www.millcreekeng.com

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