

POWER PLANTS



GENERAL SERVICES

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.

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

POWER PLANT

Millcreek Engineering Company draws from its wide array of specialized experts across all disciplines to provide project support to the power plant and its surrounding operations. Our expertise starts at the mine and continues through the plant itself.

Millcreek Power Plant Services

- Mine Plan
- Asset Evaluation
- Mine Closure
- Fuel supply - material handling
- Combustion product handling
- Brownfield retrofits, modifications and upgrades Control
- Outage Planning and Optimization
- Economic Trade-Off Studies
- Breakdown and Unplanned Outages support
- Predictive Maintenance support

Many of the facilities we work in are experiencing deterioration in the structures, foundations, mechanical equipment and electrical systems due to normal wear, fatigue and corrosion. In general, industrial facilities are operating long past their original design. Maintaining safety, availability and efficiency in these aging facilities is paramount for maintaining production, controlling operating costs and achieving profitability goals. Millcreek Engineering understands the vital steps needed to monitor, plan and sustain plant operations into perpetuity beyond design life, reduce costly unplanned outages and maintain or improve productivity and efficiency. Millcreek provides this services through the following:

Millcreek Power Plant Audit Services

- Process Review and Troubleshooting
- Debottlenecking / production increase
- OSHA / MSHA Compliance
- Dust Hazard Analysis
- Process Safety Management support
- Spillage and Dust Control
- Structure / Corrosion / Life Assessment
- Vibration Analysis
- Rail inspection and reporting
- Electrical, Control and Instrumentation
- Programming Updates
- Hazardous Area Classifications

Millcreek Follow Through:

Millcreek follows through to implement improvements. Once the audit is complete, Millcreek does not walk away. We maintain a stake in the implementation and improvement process. We have the capabilities required to implement the recommendations: Engineering design, planning and scheduling, procurement, construction management, commissioning and training. We work closely with the plant owner, management, operations and maintenance personnel to ensure the improvements are implemented successfully and value is achieved.

Emergency Responses:

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

PROJECTS EXECUTED

Millcreek Engineering professionals have had prior experience in the following representative projects:

Coal Handling System Upgrade

Location

Coal Fired Power Plant - Texas

Description:

A coal handling audit was performed to identify options to increase throughput from the mine belt to the day bins. Scope included 50% increase in capacity of existing conveyors from the mine belt to the existing generating units. Provision of new stacker, reclaim, VFD feeders, crusher and conveyors for up to 1200 tons per hour.

Scope Performed:

Engineering, procurement and field technical support for the modification and addition of a coal feed system.



Coal Handling System Upgrade

Description:

Provide Coal handling system modifications for a new, two generating unit power plant.

Scope Performed:

Engineering, procurement and construction management for the modification of a coal feed system from a mine supplied overland conveyor to a four tripper, two unit, steam generating Plant. Scope included modifications to existing coal handling system, including day bin feed conveyor system modifications of a two year old system to correct original design flaws that could not be corrected by the original designers.

Location

Coal Fired Power Plant - Texas



Coal Handling System Upgrade

Description:

Provide various coal handling system modifications for rail unloading, crushing, stacking, reclaim and plant feed systems.

Scope Performed:

Engineering support for various projects. Conveyor belt capacity increase, rail unloading system upgrade feasibility and crushing feasibility study.

Location

Coal Fired Power Plant - Texas



Owner's Engineer

Location

Lignite Mine - Texas

Description:

Provide Owner's engineer design review and oversight for relocation of mine to rail facilities.

Scope Performed:

Provide design review and oversight for relocation of mine to rail facilities, designed by design build contractor.

Owner's Engineer

Description:

Provide Owner's engineer design review and oversight for power plant conversion from Eastern(Bailey) coal to Powder River Basin(Gillette, Wyoming) coal. Project responsibility from design through construction, start-up and commissioning to post completion review.

Scope Performed:

Provide design review and oversight for PRB coal fuel conversion being performed by several design build contractors.

Project included rail unloading system and stacker modifications reclaim tunnel ventilation and washdown, new VFD belt reclaim feeders, 50% capacity increase of existing reclaim conveyor, additional of new crushing station, new plant feed conveyor and cascade system, cyclone boiler feed and ash handling systems.

Location

Coal Fired Power Plant -
Maryland



Coal Handling Facility

Description:

Develop a new coal unloading and blending facility at an existing Power Plant Facility

Scope Performed:

Engineering, procurement assistance and Construction Management.

Detailed engineering and design for the Unloading and Blending System includes civil, earthwork, drainage, rail and trackage, foundations, concrete structures, conveyor systems, steel structures, chutework and transfers, mechanical design, conveyor design, dust control, water piping, fire protection, power distribution, (including protective relay setting, arc flash studies, ETAP model, specifications, calculations, and drawings for a complete and functioning electrical distribution system), instrumentation and control, lighting, electrical grounding and demolition.

Dust control at transfer points and rainbird sprays on the stockpiles, manual washdown system, fire protection, provisions for handling frozen coal, and provisions for future handling of PRB coal.

As washdown causes significant corrosion of certain structural components, the design incorporated appropriate details and measures to effectively mitigate this type of corrosion.

Location

Coal Fired Power Plant - West Virginia



Coal Handling System Upgrade

Description:

1,600 megawatts of power is generated using coal from the site's adjacent coal mine. The mine produces nearly 7 million tons of coal each year. As a byproduct of energy production, the campus generates about 13,000 cubic yards of coal combustion residuals each day. The site disposes of the residuals at a landfill near the site. A 48" wide covered two-segment overland conveyor system is used to transport coal combustion residuals over 7,400 linear feet from the power plant to the landfill. Feeders, stacking equipment and transfer points were strategically placed to minimize material handling. Twenty-one drilled piers supporting single leg design columns elevate a portion of the conveyor system to accommodate horizontal and vertical clearances with roadways and rail crossings. A transfer station located along the conveyor path is capable of storing, and transferring material. The station includes stacking equipment, secondary HDPE containment, and a separated detention area for stormwater. The location of the transfer station was crucial because it is the pivot point for the second leg of the conveyor system, allowing straight line access across the entire 495 acre landfill site. The second leg can be relocated as landfill cells are filled.

Scope Performed:

Millcreek Engineering initially evaluated options for improvements to the bulk material handling system. The resulting feasibility study indicated that the combustion products could be conveyed using to conveyors. Millcreek provided engineering, procurement support and field technical support during construction and commissioning support.

Location

Coal Fired Power Plant - Illinois



Coal Handling System Upgrade

Description:

The project was a coal handling upgrade. The existing railcar dump did not allow railcars to open all gates over the hopper. The rail was positioned, opened 2 gates, and then had to be repositioned to allow for the final gate to be opened. In order to fix this issue, the railcar dump hoppers were extended approximately 3ft to allow for all railcar gates to be opened without repositioning. Project included a modification of the existing rail dump, raising of the rail, the relocation of the existing radial stacker, relocation of the temporary shredded tire feed system, removal of existing crusher and installation of new crusher, and the design of a new limestone silo, bucket elevator and limestone reclaim system.

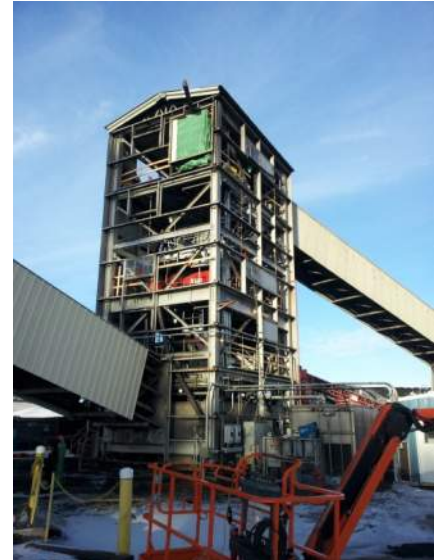
All projects had to be constructed during short outage timeframes. Millcreek designs, procurement and expediting and construction management allowed for successful implementation of this.

Scope Performed:

Millcreek Engineering initially evaluated options for improvements to the bulk material handling systems. The resulting feasibility study indicated that the Station required improvements in their current material handling system to improve their ability to receive, store, transfer and inject coal, limestone, sand and pulverized tires into the boilers to meet future plant needs. In addition, the project also required modifications to existing rail spur layout, site drainage mediation, dust control and containment improvement, and new coal crushing capability. Millcreek provided engineering, procurement and construction management over multiple project phases.

Location

Coal Fired Power Plant - North Dakota



Coal Handling System Upgrade

Description:

Feasibility study to for coal handling system modifications for new batch weigh rail loading facility and related truck dump and slot storage to rail conveyors, sampling system and on-line coal analyzers. Rail design includes siding and turnout design.

Scope Performed:

Millcreek performed the feasibility study, including the CAPEX, general arrangement design of facility and presentation to stakeholders.

Location

Coal Fired Power Plant - North Dakota





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