

# OIL, GAS & PETROCHEMICALS



# GENERAL SERVICES

Millcreek Engineering is a full-service engineering, procurement and construction management company specializing in engineering solutions for mining, minerals, 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**

- PFD's and H&M Balance
- Facility optimization/debottlenecking

## **Mechanical Engineering**

- Mechanical design and equipment specifications for pumping, piping, tanks, pressure vessels, ventilation, HVAC, unloading systems, loadout systems, 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

# OIL, GAS & PETROCHEMICALS SERVICES

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.

We provide the following services:

## Services

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

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

For additional details on our oil, gas and petrochemical experience, please request a copy of the resumes of our key personnel.

# PROJECTS EXECUTED

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

## **Pet Coke Handling System - Refinery Egypt**

The project consisted of a traveling overhead bridge crane which picks the pet coke up from a pad and loads it into a hopper. A 300 mTPH feeder breaker transferred the pet coke to a conveyor which stockpiled the material in an open pile. Material was reclaimed via vibratory feeders. The reclaim conveyor, fed by the feeders, transported the material to a 100 ton truck loading surge bin. A truck scale was used to verify weight in truck. A PLC system was used to automate the system.

## **Oil Sands - USA**

Completed Basic and Detailed Engineering of a 2,000 bbl/day PR Spring plant. Developed plant material and heat balance using Metsim® simulation software. Developed Process Flow Diagram (PFD) and Piping and Instrumentation Diagram (P&ID) for detailed mechanical, electrical and control system engineering. Developed overall plant control philosophy.

## **Molten Sulfur Loadout - Idaho**

Completed upgrade design for new molten sulfur loadout. Design was from existing sulfur pit to new loadout. Increased loadout capacity, designed to prevent line freezing and increased accuracy of loading railcars with new metering.

## **Granulated Sulfur stacking and reclaim - Thailand Oil Refinery**

Completed FEED design for sulfur granulation, stacking, reclaim, truck loadout and ocean vessel loadout. 35,000 mTon storage done. Linear stacker and portal reclaimer. Dual Rotating/telescoping ship loaders capable of filling 20,000 DWT vessels. Approximately 3km of conveyor belt.

## **Biodiesel Refinery - USA**

Completed basic engineering of a 3,000 barrel per day micro-refinery. The facility processed feedstock consisting of distiller's corn oil and used cooking oil. The feedstock was converted to diesel fuel, naphtha and heavy atmospheric gas. The facility included rail, feedstock unloading and storage, refining, product storage and loadout.

## **Pet Coke Handling System Upgrade - California**

The project consisted of a storage facility, enclosed truck dump and associated material processing and material handling equipment. The project was integrated into the existing facilities to increase storage capacity and flexibility of the material handling system. The pet coke was received via truck dump and crushed at 550 TPH. The increased storage capacity was 170,000 tons. The reclaim rate was 2,200 TPH to feed existing ocean vessels.

## **Pet Coke Handling System upgrade - Refinery California**

The existing Pet coke handling system needed upgrades. Major design concerns included how to make upgrades while leaving the existing facility in operation. A project execution plan was completed to allow 90% of the equipment to be installed during normal operation with the remaining 10% installed during outage time. Upgrades included modifications to sump pits, second mobile crushing unit, upgrade to existing mobile crusher, two new conveyors and transfer station, new 500 ton hopper for loading trucks, truck scale, baghouse dust collection, and PLC system.

## **Pet Coke Handling System - Refinery Texas**

Pet coke handling system was designed to receive coke from 750 TPH pet coke crushers. The pet coke was conveyed from the crusher towers to the train loadout area at 1,500 TPH. The pet coke was transferred to the two train loadout silos by two silo feed conveyors. The 1,600 ton capacity silos discharge to the railcars through hoppers with isolating chutes and rolling blade control gates. Dust suppression was used to control dust. Washdown and service air utilities design was included in the scope.



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