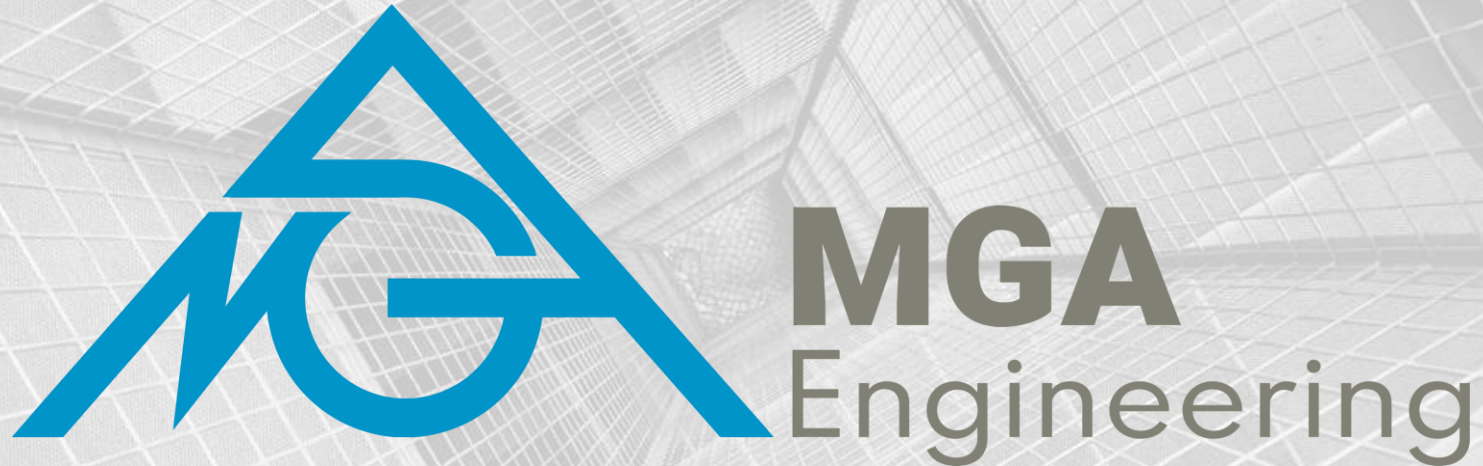


EQUIPMENT PORTFOLIO



MGA Engineering Inc.

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Calgary, Alberta, Canada T2R 0H8
<https://www.mgaeng.com/>

Contact:

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Vice President
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ABOUT MGA

MGA Engineering Inc. is a master designer of structural and mechanical systems utilized across the globe in the marine, mining, infrastructure, and building sectors. Founded in 1996, the firm is headquartered in Calgary, Canada, and operates regional offices in Canada, USA, and Egypt. Throughout the decades, MGA has lent its expertise to owners, operators and fabricators of large-scale bulk materials handling equipment such as conveyors, ship loaders, stackers/reclaimers, crushers, storage tanks, vessels and transfer stations.

Over the decades, MGA has worked with all major Original Equipment Manufacturers (OEM), including Takraf, ThyssenKrupp, PHB, FAM, MWS, FLSmidth, Shinhan, and Sandvik.



CLIENT SNAPSHOT

BULK MATERIAL HANDLING

MGA's core expertise is anchored at BHM installations typically found in the mining, marine ports, and oilsands industries. MGA expertise is available in CAPEX and OPEX:

CAPEX: New equipment

(needs analysis, planning, design, design-build, erect, commission)

OPEX-A: Equipment in operation

(repairs, troubleshooting, modifications, alterations, senescence)

OPEX-B: Inspection, Testing & Certification

(maximization of economic life of operating assets)

BULK TRANSFER

- Single-boom spreaders
- Mobile stacking bridges
- Transport crawlers
- Stacker and reclaimers (single & combined)
- Bucket wheel reclaimer (boom & bridge)
- Scraper, drum, and portal reclaimers
- Portal and bridge-type scraper reclaimers
- Ship loaders & unloaders
- Grab type ship unloader
- Circular storage with stacker/bridge reclaimer

BULK TREATMENT

- Crushing plants
- Breakers and high-pressure grinding rolls
- Roll crushers and double roll crushers
- Belt linear screens
- Hard rock sizers
- Slurries plant and tailings
- Primary separation cells and flotation cells
- Granulators
- Vacuum belt filters for dewatering

EXCAVATORS

- Bucket chain excavators
- Bucket wheel excavators

TRANSPORT

- Apron feeders
- Belt conveyors
- Belt feeders
- Mobile conveyor bridges
- Mobile transfer conveyors
- Tube conveyor
- In-plant conveyor systems
- Pipe conveyor systems
- Steel belt conveyors

FACILITIES & Buildings

- Wagon / truck loading
- Wagon unloading / tripper
- Rapid train load-out station
- Storage pits
- Tanks and reservoirs
- Pressure vessels and bullets
- Process piping
- Pipe racks
- Steel structures

CAPEX engagements encompass:

- ▶ Concepts: feasibility studies, equipment and layout options
- ▶ Definition: Selection, constraints, scoping (budgets & timelines)
- ▶ Conception: Design, layouts, execution planning
- ▶ Procurement: purchases, contracts, leases, logistics
- ▶ Realization: Fabrication, transportation, construction, erection, commissioning, certification, start-up
- ▶ Operations: Field support, troubleshooting, modifications

CAPEX EXPERTISE

OPEX–A engagements keep the assets operating profitably:

- ▶ Assessments of structural and mechanical integrity
- ▶ Failure analysis and prevention
- ▶ Fracture and fatigue assessments, detection, and mitigation
- ▶ Design of alterations, modifications, upgrades, and repairs
- ▶ Design assessments of performance enhancements, capacity increases, reliability improvements, and automation opportunities

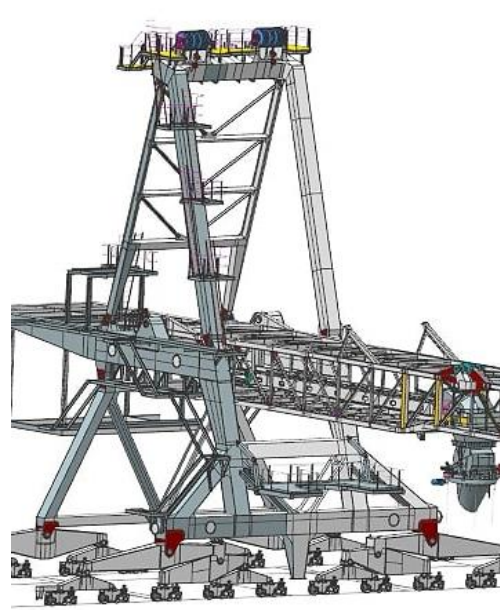
OPEX–A EXPERTISE

OPEX–B engagements extend the economic life of assets:

- ▶ In-situ inspections of equipment under static and operating conditions for detection of structural, mechanical, and operational problems, concerns or issues.
- ▶ Corrosion, erosion and structural degradation detection, and progress monitoring
- ▶ Testing, troubleshooting, and identification of remedial options & opportunities for improvements and/or degradation mitigation
- ▶ Certification of operational & structural compliance to Codes, Standards, and Permit requirements
- ▶ Risk mitigation: risks of failure, to productivity, to health, safety and the environment, to reliability, to budgets, and to shareholders' returns on investment.
- ▶ Design options for extending the economic life of operating or idle equipment.

OPEX–B EXPERTISE

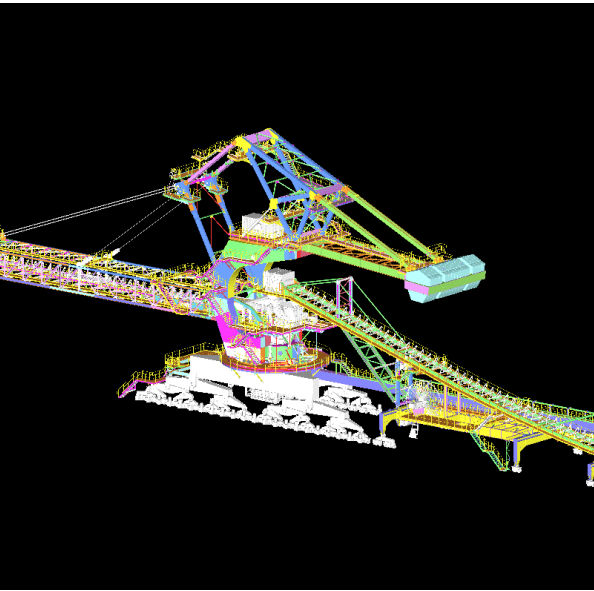
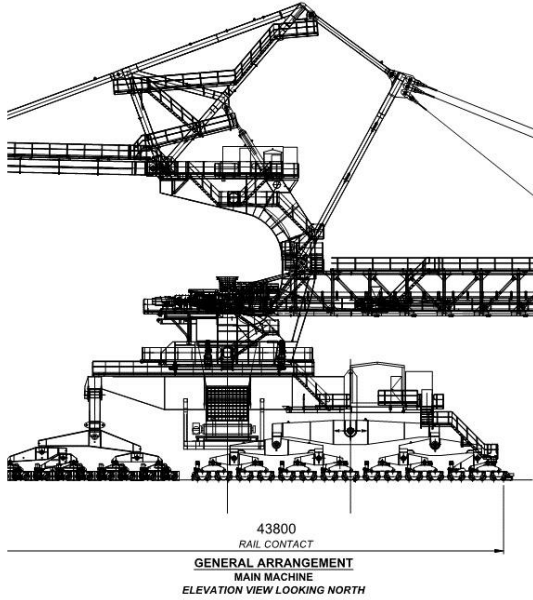
SALIENT EXAMPLES

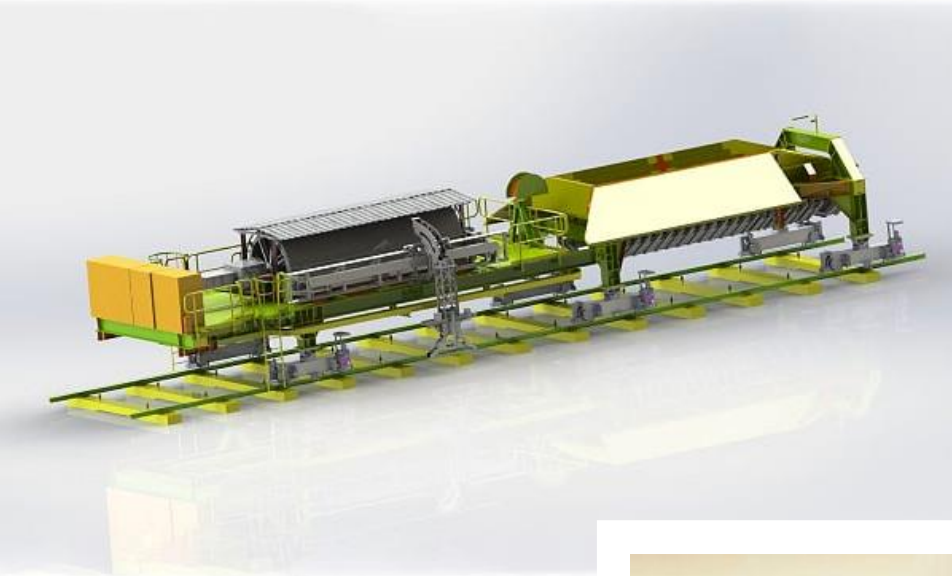


SHIP LOADERS & UNLOADERS



STACKERS AND RECLAIMERS





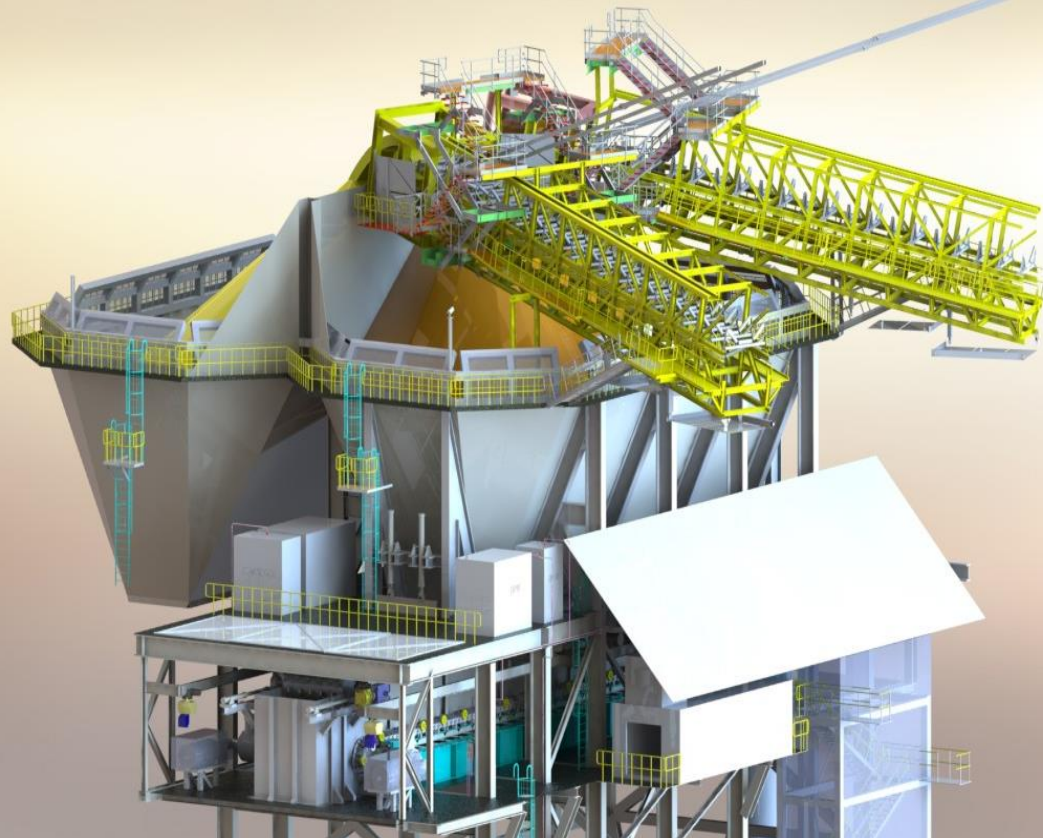
CONVEYORS

ANTUCOYA CONVEYOR SYSTEM



PRIMARY CRUSHING SYSTEMS

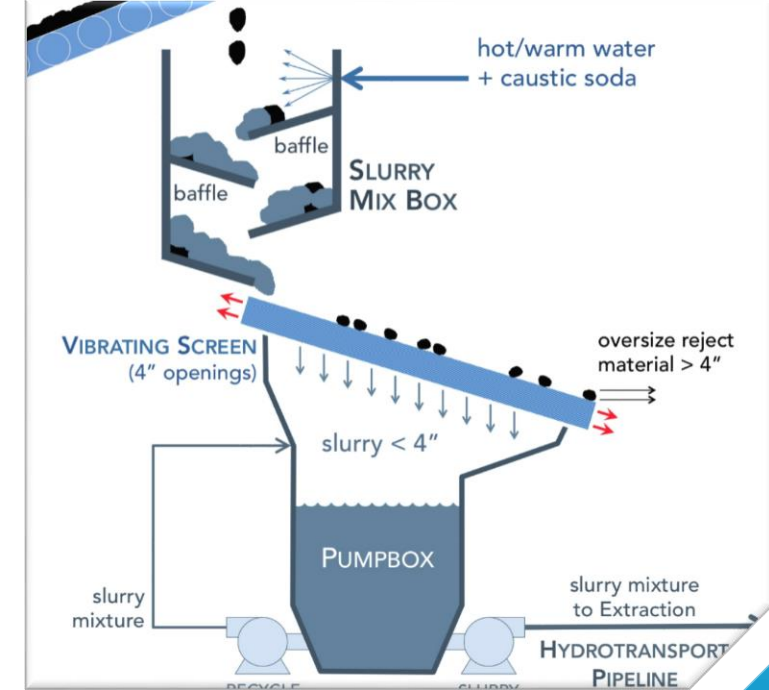




SURGE FACILITIES



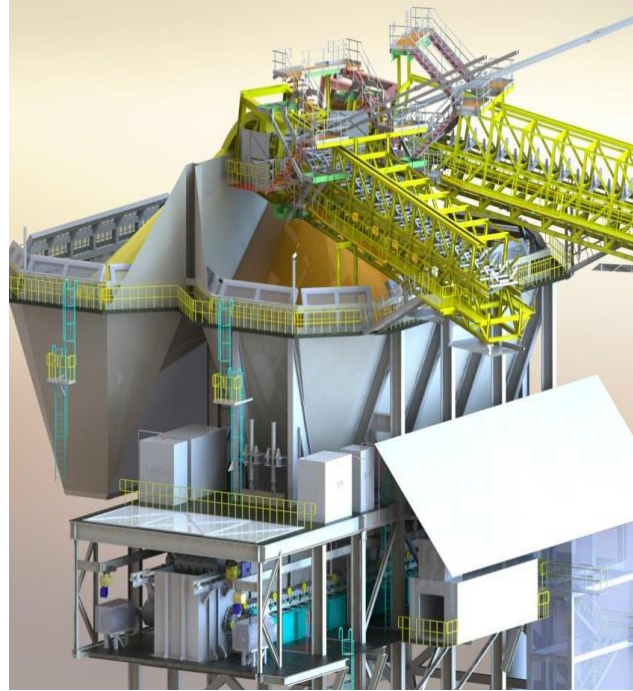
SLURRY PREPARATION PLANTS



SLURRY PUMP BOXES

PRIMARY SEPARATION CELLS

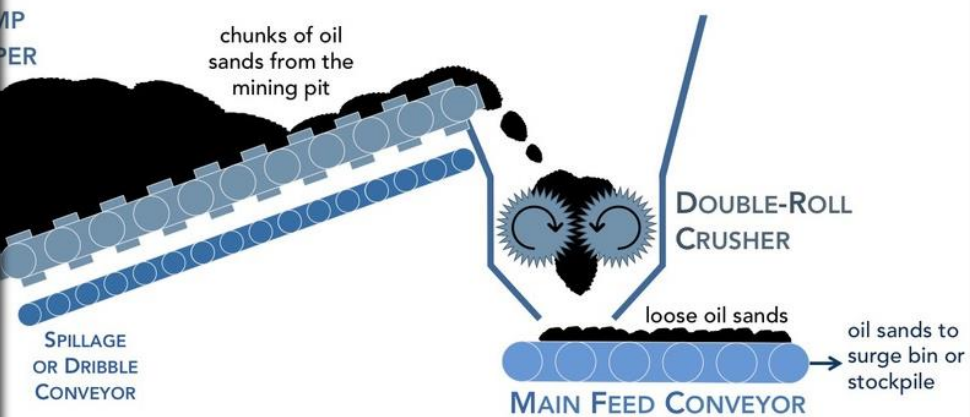




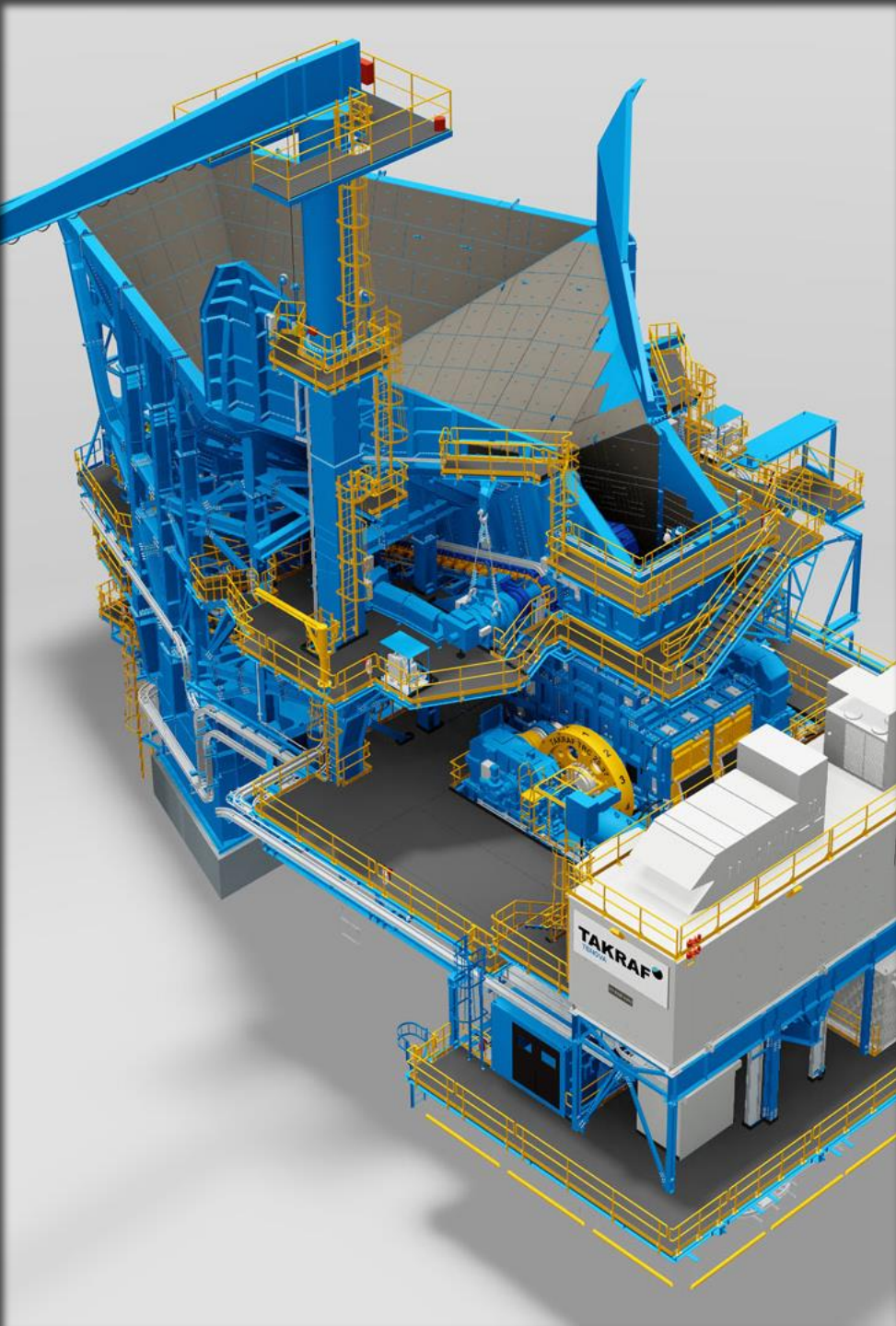
SURGE BINS



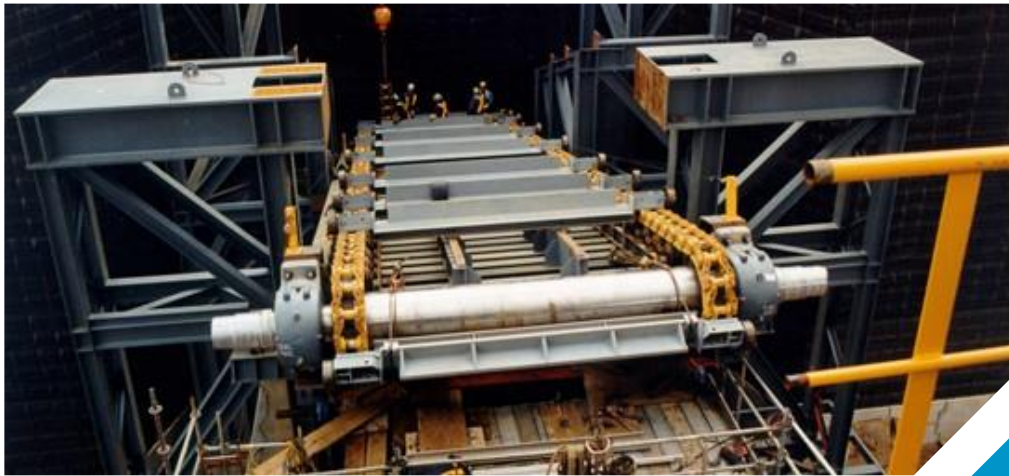
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CRUSHING PLANTS



HOPPERS

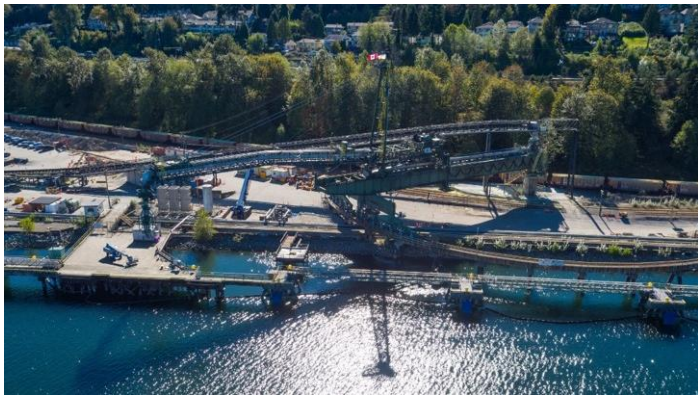
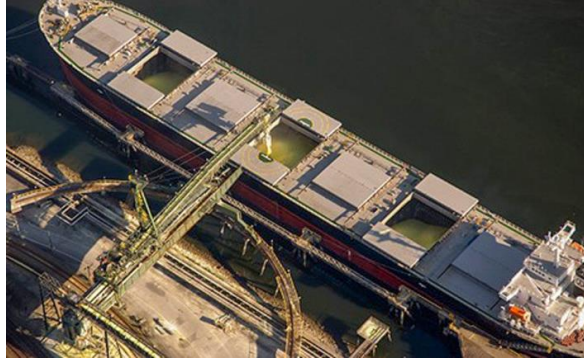


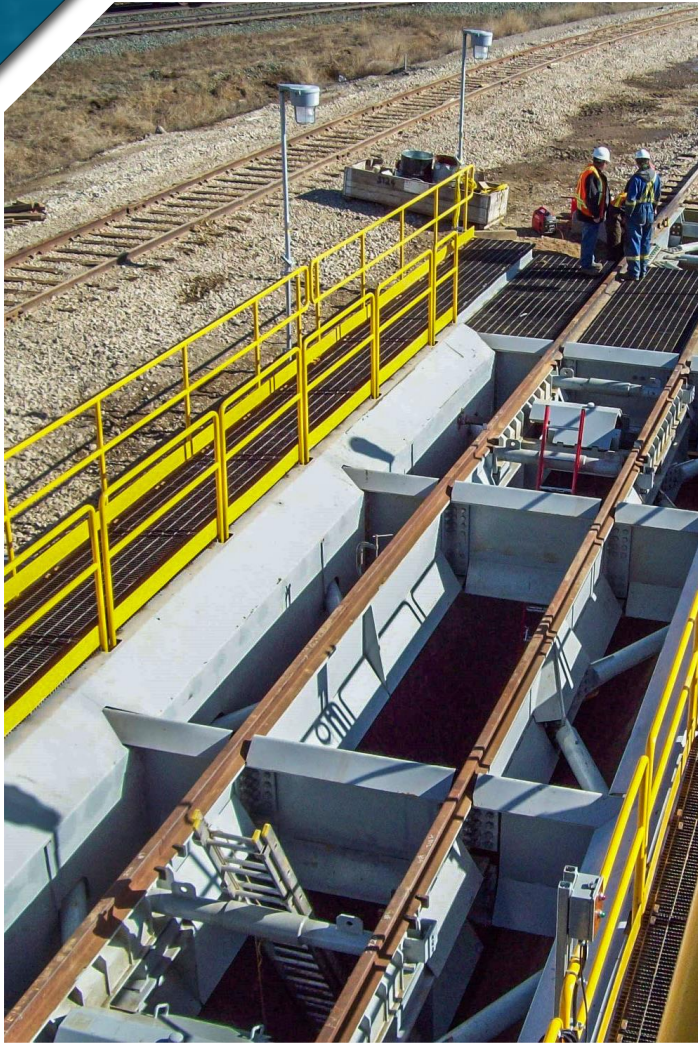
HOPPER INSTALLATION



MATURE FINE TAILINGS CENTRIFUGING PLANT

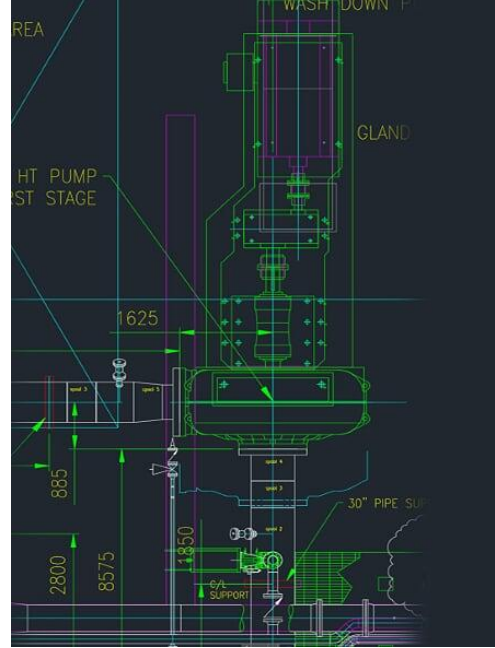
TERMINALS

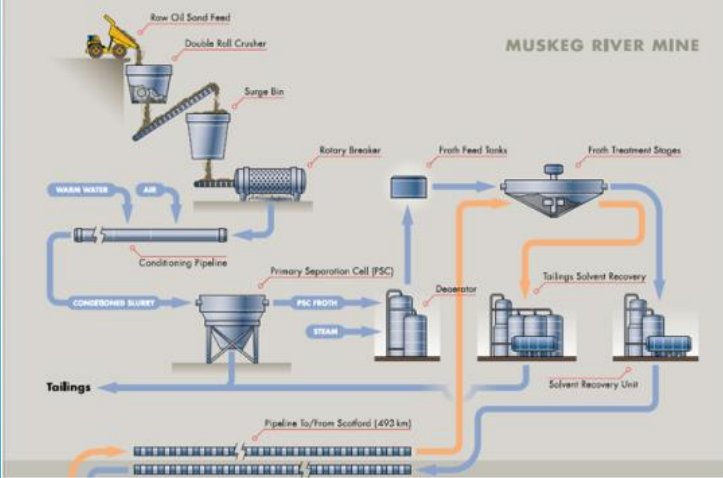




RAIL

SPECIAL STRUCTURES AND EQUIPMENT





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