



75 Scarsdale Road
Toronto, Ontario
M3B 2R2
Tel (416) 391-3755
Fax (416) 391-3645

**EQUIPMENT DESIGN
&
SUPPLY**

PROJECT REFERENCE LIST

August 2009

EQUIPMENT DESIGN & SUPPLY

MELTING:

- Snorkel Lifting Device, including hoist, carriage and columns.
- BOF Dart Insertion Equipment system design, supply, installation engineering, controls & automation.
- Structural reinforcement of Casting Tower.
- Upgrade Melt Shop Fume Extraction System comprising: enlarge hood and design new ducting to connect to existing, new roof monitor over caster area, new louvre panels for air intake.
- Supply of new air pollution control system for electric arc furnace. 875,000 ACFM, negative pressure, reverse air baghouse.

SHAPE ROLLING:

- Billet Inspection Line including charging bed, conveyor lines, billet turnover device, brush cleaning unit and discharge transfer.
- Billet transfer system design & supply.
- Mill tables & bedplates for roughing mill.
- Reheat Furnace Billet Lift Equipment design & supply
- Miscellaneous Rod Mill ancillary equipment for improved product quality and increased billet size .
- New Cooling Bed for wide flats and grader blades.
- New dry scale removal system.
- Modified ducting system for motor cooling.
- Quick connect/disconnect system for attaching spindles to roll ends.
- Modified existing shear to enable it to be used on heavier products. Upgraded gearing, lubrication system, drives system and improved method for extended gear life.
- Modified pusher for Reheat Furnace to solve ongoing maintenance problems.
- Transfer Car to support two 25 ton 18" Mill Stands and Filler Tables to fill gaps when stands are not required or removed.
- New gripper tongs for lifting blooms from Soaking Pits. Special design was required after failure of equipment from specialized lifting company.
- New latching system for U4 Mill Stand to enable rolls to be inserted into housing and clamped automatically.
- Bloom transfer rail cars to reduce temperature losses.

- System for pre-stressing mill stands in Rail Mill to increase stand rigidity.
- Supply of new spindle support system for hot strip mill.
- Three new types of Housingless Mill Stands. Design of equipment was based on special process requirements for rolling from near net shape feedstock.
- Pinch Roll for Structural Mill charge ramp.
- Water-cooled doors and sills for Reheat Furnace.
- Ancillary mill equipment including special roll shop equipment, spindle supports, interstand troughs & adjustable mill tables.
- Modification of bedplates and foundations for mill stands in Structural Mill.
- Water header system for carbide rolls.
- Miscellaneous new equipment and modifications to existing equipment in Bar and Structural Mill.
- Major Structural Mill upgrade including doubling reheat furnace capacity, new dividing shear, hot transfer and structural modifications. Services included project management, construction management, cost & budget control, scheduling, purchasing, expediting, quality control as well as multi disciplined project engineering.
- Extension to mill motor room.
- Scale breaking roller at entry to mill.
- New compact single pass vertical mill stands installed ahead of existing first stand to reduce a larger billet to existing billet square size for entry to existing pass sequence. Included special foundation design to minimise interference with existing operation and infrastructure.
- “Wide Window” Structural Mill Roughing Stands to allow quick change of rolls and guides without need for complete housing exchange. Services included mechanical detailed design, civil, utilities, electrical installation engineering as well as multi discipline project engineering.
- “Wide Window” Structural Mill Finishing Stands with quick change system. Mill equipment included furnace charge ramp, furnace drop down and billet reject mill approach table, all interstand equipment, crop/cobble shear, spindles, reducers, motors, quick roll change cars, drives, motor rooms, hydraulic and lubrication units, pulpit and desk. Services included mechanical detailed design, civil, utilities, electrical installation engineering, operator training as well as multi discipline project engineering..
- Continuous Rod Mill upgrade equipment design & supply, Project management, civil, utility mechanical & electrical installation engineering

- Portable drive systems to allow loading of stands off line for accurate roll settings. System reduces time for setting up mill stands in line. Device is portable and adjustable to cover range of mill stands.
- Modified 12" Mill roll necks to improve times for changing chocks and rolls.
- New drop in pinch roller to replace mill stand.
- Reversing Rougher outlet including 32" 'wide window' Reversing Stand, Process stand side shifting between passes, Active screw down for gap adjustment between passes, Robot gripper/bar turners both sides of mill, New building and motor room, All mill tables, transfer and auxiliaries, Foundations, Utilities systems including water, air, hydraulic, lubrication, 2 bridge guides to control product on either side of the 32" Reversing Mill Stand, Mill Roller Conveyor/Troughs Supply
- Design & supply of new drop in conveyor system for rolling wider products
- Three stand no-twist H-V mill for rolling sucker rod for oil industry. Equipment supplied included mill stands with ability to adjust roll gap under load, accurate remote positioning of mill stand side shift position and interstand equipment
- Rolling Mill upgrade equipment including 3 Hi Roughing Mill Stand, New combination gearbox/pinion stand and universal type spindles for existing mill stand, Quad mill stands complete with combination gearbox/pinion stand and spare chock assemblies, Interstand equipment, slitting guides, universal spindles & Hi Pinion Stands.
- Crop and Cobble Shear system including duct design, installation coordination start-up, commissioning and project management.
- Hydraulically driven pinch roll located adjacent to Reheat Furnace to return billets to the furnace and be retractable off-line when not in use.
- Modified 12" Mill roll necks with improved axial holding capability allowing stands to be used as finishing stands.
- Rolling Mill Tables
- Pinch Roll Drive Gear Unit.
- Conversion of mechanical bar turners to powered roller design.
- Transfer on tilt table of 3-hi Roughing Mill.
- Modernise 18" Structural Mill including upgrading reheat furnace, new breakdown mill, mill mechanisation and upgraded inline-finishing facility.
- Turnkey mill upgrade supply of 2 Quad wide-window universal mill stands with new mill drives, gearbox and motor.
- Supply of trailing arm flying divide shear system, including pinch roll, sample / crop disposal system and installation engineering.
- New gearboxes, spindles, spindle supports and bedplates for separating common drive system with minimal installation downtime.

- Chopping Shear system after Flying Divide Shear.
- 2-hi Titanium Reversing Blooming Mill Complex and Associated auxiliary equipment including furnace, furnace handling equipment, mill entry & discharge tables, bar turners & side guide manipulators, motorized screw down, universal spindles, gearboxes, Saw line and gauge beam.
- 2-hi Reversing Titanium Finishing Mill Facility including Reversing Rougher Stand with active screwdown system, robot manipulators/bar turners both sides of mill, front and back reversing mill tables, entry and exit tables, pendulum shear, walking beam coil transfer system, coil elevator systems for quench facility and four station fine wire pay off assembly. Project included installation engineering, project management and construction site supervision.
- New manipulator for 34" Rolling Mill.
- Upgrade of 4 stand bar mill including millstand upgrades, shear modifications, new drives and controls.
- Design & Detail New Vertical Rest bars for the existing 4-Stand Mill
- Design & supply of divide shear pinch roll system for accurate length cutting of large bars
- 'Wide Window' quick change mill stands with quick change cars utilizing existing roll and chock inventory without need for complete housing exchange. System includes universal cartridges and horizontal cartridges for beam rolling.
- Modified Vertical Roll Assembly for Universal Mill to correct roll breakage problem.
- Complete laser setup system for pre-setting mill stands off line.
- Design and supply of universal & 2-hi rolling mill for testing of new pass designs.

FLAT ROLLING:

- Cold Mill - 80" Temper Mill Automated Coil Pup Removal System design, supply, installation engineering, foundation design, automation & controls.
- Temper Mill & Cold Reduction Mill Roll Bending Systems engineering, design & supply
- Vertical Edger Pivoting Heads for edging of stainless steel sheets in the planetary mill
- Roll change rig for a Slabbing Mill.
- Two high pre-stressed Scale Breaker Mill Stand for continuously cast slabs including Entry and exit side guides and tables, Pinion stand and Spindle supports.
- Upgrade of 160" plate mill to incorporate new housing blocks, roll bending and automatic quick roll change.
- Installation and contract supervision for the installation of plate surface inspection system.
- Scrap end removal and disposal system for a. Two High Temper Mill
- Coil Down Ender.

- Roller Table for coils.
- Engineering Services for a Basic Engineering for a Secondary Coil Payoff System at a Pickle Line.
- Porter bar for Blooming Mill.
- Engineering, design & supply of 4-Hi Rolling Mill upgrade equipment including Chocks, tables, controls & automation.
- Supply of 4-hi 80” wide temper mill, with hydraulic gap control as well as roll bending system.
- Supply of new bridle rolls for Strip Mill.
- Equipment design & supply to upgrade Rolling Mill for cold rolling of Aluminium strip. New chocks, roll subassemblies, motorised screw downs, complete automation of equipment & new operator's interface were applied to a used mill housing.
- 56" Hot Strip Mill auxiliary equipment including furnace entry & discharge equipment, mill tables and hot run tables.
- Rolling Mill Tables

FINISHING:

- Rail Cambering Machine for producing straighter rail off cooling bed.
- Rail Mill Cooling Bed design, supply, project engineering, purchasing supervision, quality assurance and expediting.
- Engineering analysis, design & supply of new 63000# capacity Coil Car.
- Modified walking beam Cooling Bed for rails to increase rail camber.
- Driven Stamping Machine to stamp rails to AREA specifications.
- New Bar Mill Finishing End equipment including weigh system, conveyors, transfers and elevating section. Included building and foundation designs.
- New foundations for Rolling Mill, Roll Shop and Set-up Bay, Motor Room and Cooling Bed.
- High-speed hot transfer system for Structural Mill.
- New Bar Mill Finishing End equipment including cut to length optimisation off mill, water cooling system on cooling bed, in line straightening, continuous cut to length cold shear and new bundler stacker. Services included civil, utilities and electrical installation engineering as well as mechanical engineering for interface equipment. Project management included cost and budget control, scheduling, purchasing, expediting, quality control as well as multi disciplined project engineering.
- Bundle clamp to ensure secure holding during strapping.

- New Structural Mill Finishing End facilities including 11 roll single strand straightener, 165' long cold transfer and collecting bed, 66" wide 800 ton cold shear, scrap removal system, 5 head 150' long gauge beam, tables, 75' wide structural stacker, 4 overhead strappers, bundle discharge, air, hydraulic and water services, pulpits and ancillary equipment. Services included mechanical detailed design, civil, utilities, electrical installation engineering, operator training as well as multi discipline project engineering.
- New Structural Mill rake type cooling bed 165' long x 90' wide for up to 12" wide product. Design & installation included 180' long bridge truss, innovative roof monitor for cooling. Services included mechanical detailed design, civil, utilities, electrical installation engineering as well as multi discipline project engineering that allowed equipment to be installed during normal mill operation.
- Design of adjustable scraper system for dross removal on sink roll in Galvalume line.
- Design of new quick opening tanks for continuous cleaning line.
- Design of quick roll change for brush rolls, backup rolls and wringer rolls.
- Modified off line straightener to improve axial adjustment mechanism and strengthen shafts.
- Stacking system to interlock elevator tees.
- Hook conveyor system for handling rod coils, miscellaneous mechanical equipment plus design of new building and foundations.
- Cooling Bed Upgrade Conversion of the existing flat top type cooling bed to a notch type with new rake profile and addition of anti-friction eccentric roller supports
- Weigh scale system including steelwork and civil foundation design.
- Phased upgrade for Rail Mill material handling equipment including roller tables, transfers, sideguides and manipulators.
- Rail stamping machine.
- Modified existing stacker equipment.
- Pack Annealing Indexing System for spring flats complete with new lever arm, servomotor and drive.
- Welded Beam Process Line to produce up to 16" welded beams.
- Cooling Bed for rounds, squares and flats. Upgrades to Cooling Bed including inclining bed, split mode operation, new drives and automation. Straightener and cooler product resulted from the upgrade.
- Mill Revamp engineering and equipment supply including cold shear entry table complete with raising section, re-topping of cooling Bed, aligning roll system, discharge equipment and gauge beam.

- Design, detail and supply of cold shear crop end flipper system, entry/delivery equipment, gauge beam heads and modifications to existing cold shear entry mag table
- Re-topping of existing Cooling Bed with 50" extension to existing Cooling Bed.
- Supply of new gauge beam system for cold measuring of product at saws.
- Roll Stand/Guide Units at Rail Head Hardening Line