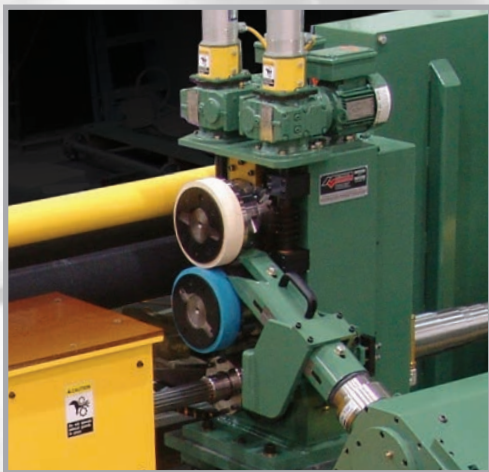
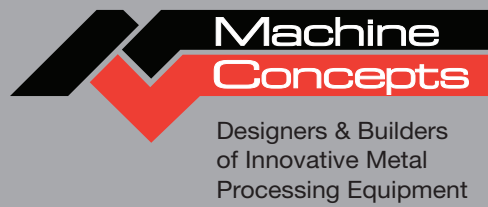


Coil Processing



Side Trimmers



Slitters



Scrap Choppers



Coilers & Mandrels

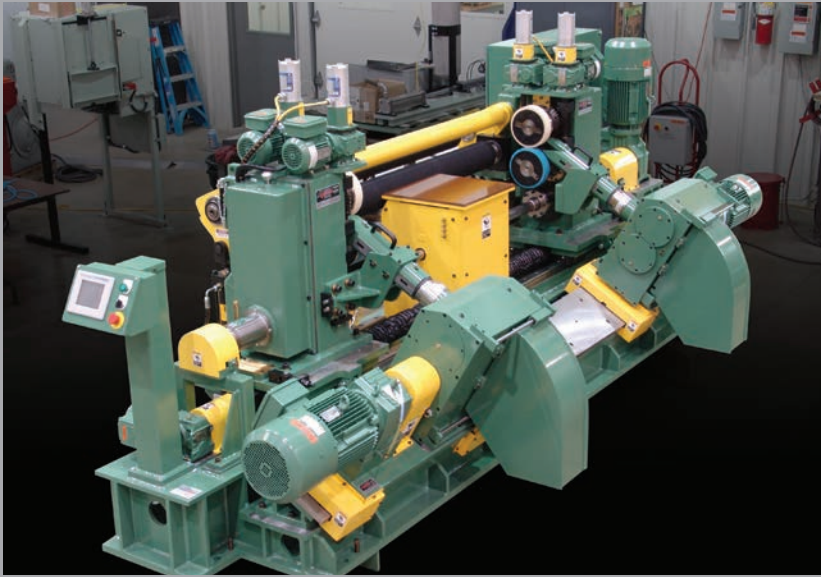


Terminal Equipment & Shears



Custom Equipment

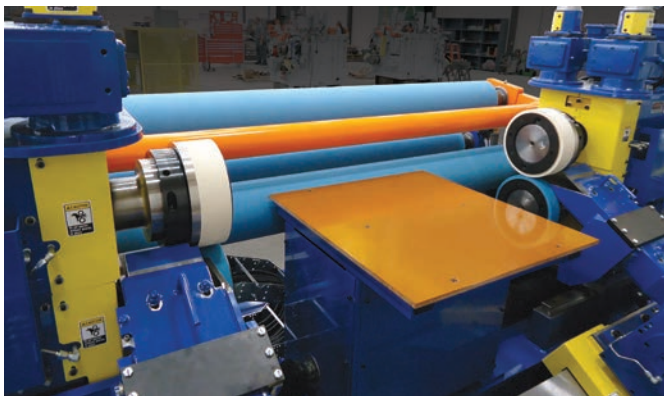
Side Trimmers



Compact Designs Ideal for Retrofitting into Existing Lines



Entry Bride for Use with Light Gauge Products

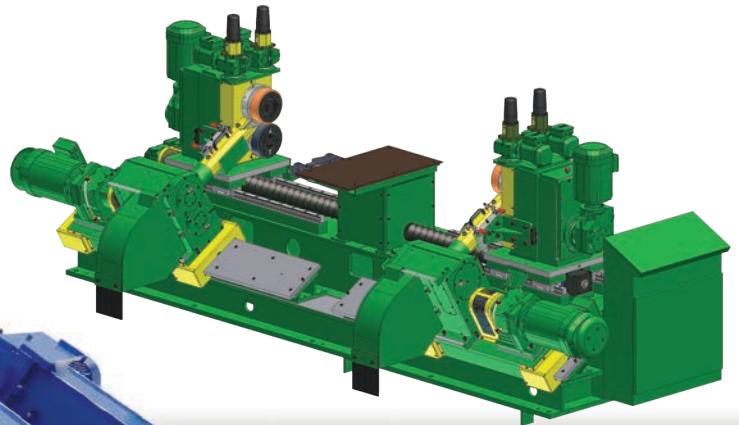


Automatic Knife Gap and Overlap
Setup with Position Feedback

Side Trimmer Options

Machine Concepts designs and builds several types of side trimmers to fit our customer's needs. Some of our standard features include:

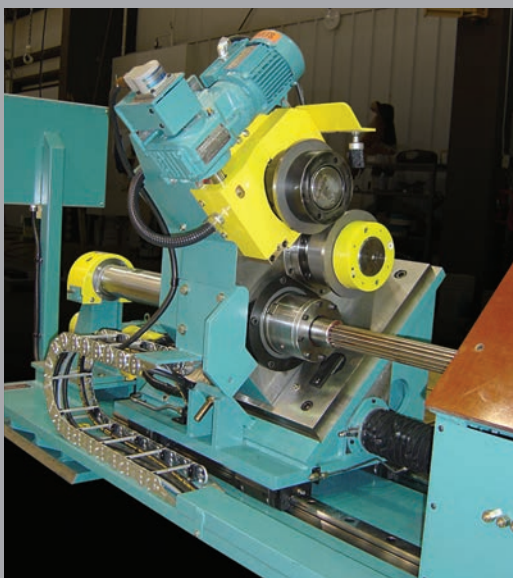
- ▶ High precision bearing setups specialized for your application
- ▶ Adjustable cant/skew plates
- ▶ Horizontal knife gap adjust packages
- ▶ Manual adjustments or automatic setup via onboard PLC controls
- ▶ Retrofit packages to replace existing slitter heads
- ▶ Stand alone direct drive system or designed to use your existing drive
- ▶ Turret side trimmers for process and pickle line applications



**High Speed Slitting
and Side Trimming
is our Specialty**



Side Trimmers



Custom Passline Configurations



Scrap Chutes for Any Application

Control Features

- ▶ PLC controls with full communication capability
- ▶ Automatic “Go To” knife gap, knife overlap and outgoing sheet width control packages available
- ▶ Digital position readouts and/or HMI display screens

SIDE TRIMMER SETUP SCREEN				
PART #	INPUT	SAVED	LOADED	ACTUAL
THICKNESS	0.012	0.012	0.012	0.012
WIDTH	84.000	84.000	84.000	84.000
OP SIDE LAP	CALCS	-0.005	-0.005	-0.005
DR SIDE LAP	-0.005	-0.005	-0.005	-0.005
OP SIDE GAP	0.0012	0.0012	0.0012	0.0012
DR SIDE GAP	0.0012	0.0012	0.0012	0.0012
SAVE ACTUAL	LOAD SAVED	PART #	PASSWORD	RECIPE #
MAIN SCREEN	LOAD CHANGES	THICKNESS	STRENGTH	1
		WIDTH	58000	▲ ▼

Side Trimmer Input and Saved Recipe Screen

TRIMMER READY		
OP SIDE LAP	DRIVE SIDE LAP	MANUAL ADJUST
-0.005	-0.005	
-0.005	-0.005	
-0.005	-0.005	
OP SIDE GAP	DRIVE SIDE GAP	WIDTH
0.0012	0.0012	
0.0012	0.0012	
0.0012	0.0012	
WIDTH	SETUP SCREEN	OP SIDE LAP
84.000	MAIN MENU	
84.000	MAIN MENU	
84.000	MAIN MENU	

Side Trimmer Knife and Width Positions Screen



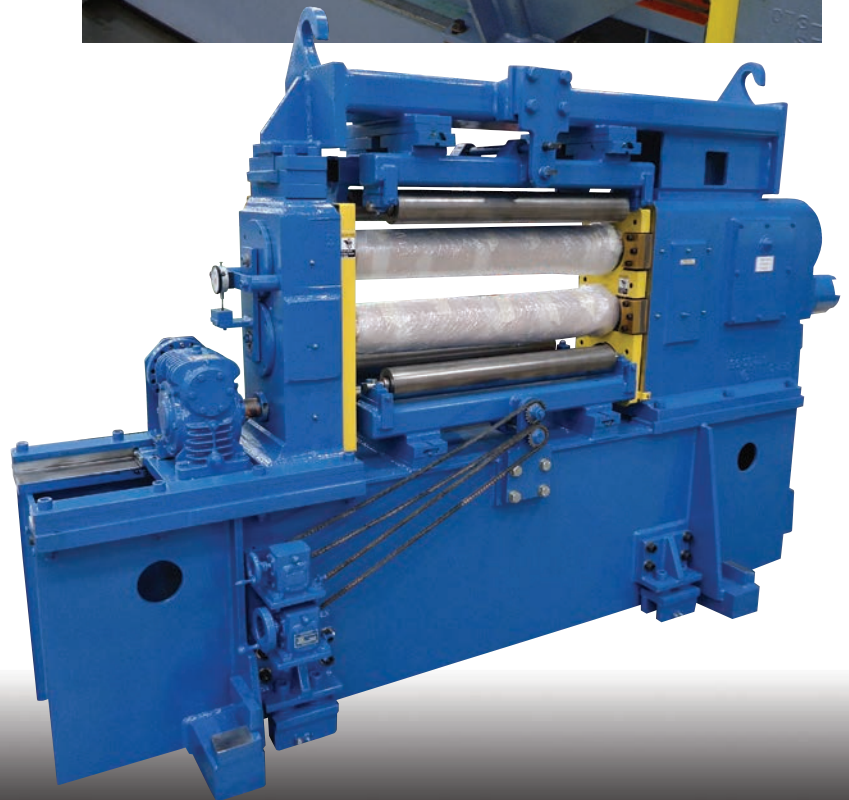
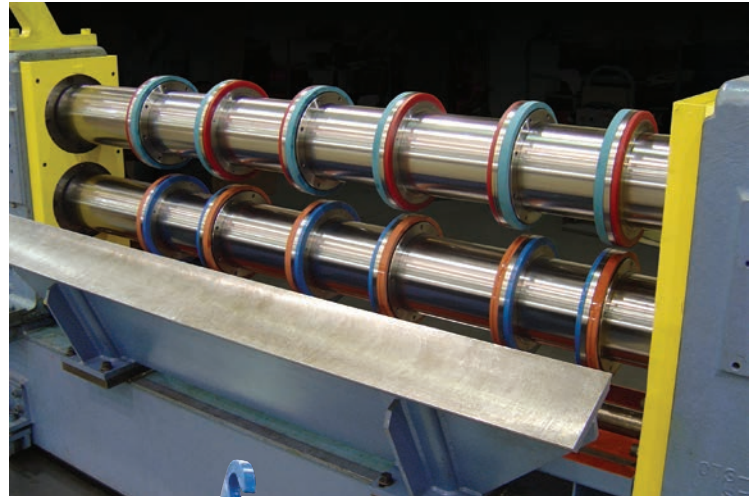
Slitters

Machine Concepts builds a full line of slitters for applications in finishing and cut to length lines.

Common Applications

Machine Concepts specializes in high precision, high speed slitting and trimming applications. From complete coil processing systems to individual components for retrofits, our engineering team will provide innovative solutions to achieve your production goals. Some common features include:

- ▶ Drop in self contained heads to replace or be interchangeable with existing slitters
- ▶ High precision heads for light gage, high speed lines running aluminum, steel and red metals
- ▶ Arbors driven via single input, dual output pinion stand with several "U" joints, or specialty coupling choices
- ▶ Motorized knife overlap adjustment options available
- ▶ Standard sliding outboard housings or optional swing out housings for better access to tooling
- ▶ Complete sets of tooling available including precision spacers, knives, stripper rings and hydraulic nuts
- ▶ New slitters designed to be compatible with existing scrap handling systems



Fixed slitter base designed for easy, quick and accurate exchange of slitters or side trimmer heads.

High precision slitter with super finished arbors that are capable of accepting hydraulic hub cutters/ knife holders or standard packed arbor tooling.

Rotary slitter storage tray designed for long service life and low maintenance. Lateral or side shifting slitter storage systems are also available.



Slitters

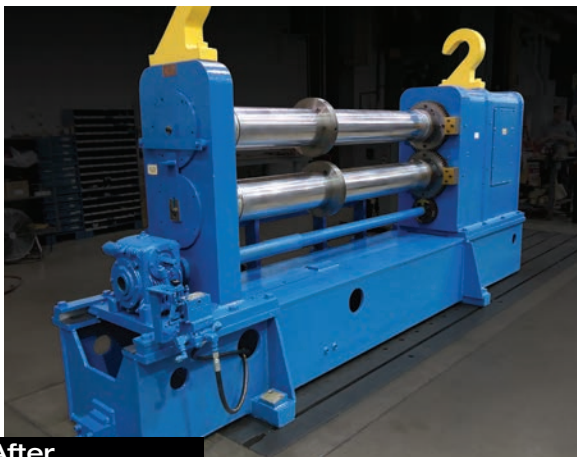
Rebuilds and Upgrades

Machine Concepts has extensive experience rebuilding all types of equipment with special expertise in slitters, side trimmers and scrap choppers. We offer complete line rebuild and upgrade services to suit our customer's needs. When required, we can supply custom engineered solutions and upgrades for many applications. Our basic rebuild scope of work includes the following:

- ▶ On-site baseline inspection
- ▶ Complete equipment inspection and reports before teardown, including endplay checks, breakaway torques, runout checks, etc. – All reports are provided to customer for their records
- ▶ "Pre-Rebuild" inspection reports according to print specifications, including arbor measurements and runouts, housing bore measurements and bore alignments
- ▶ Final inspection reports and run-in data provided to customer
- ▶ Multiple upgrade options including new drives (retrofit into existing heads), new fixed or setup bases, high precision bearings and improved arbor precision
- ▶ Slitter arbor upgrades to accept hydraulic hub cutters, knife holders or other specialized tooling
- ▶ In-house inspection of precision bearings and grinding of bearing spacers for proper preload or endplay – Machine Concepts has experience setting up bearings up to 40" in diameter



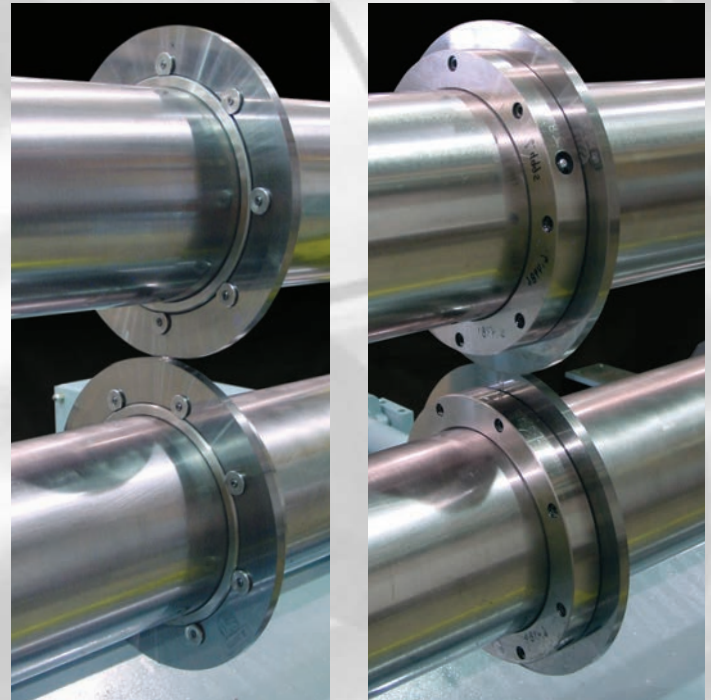
Before



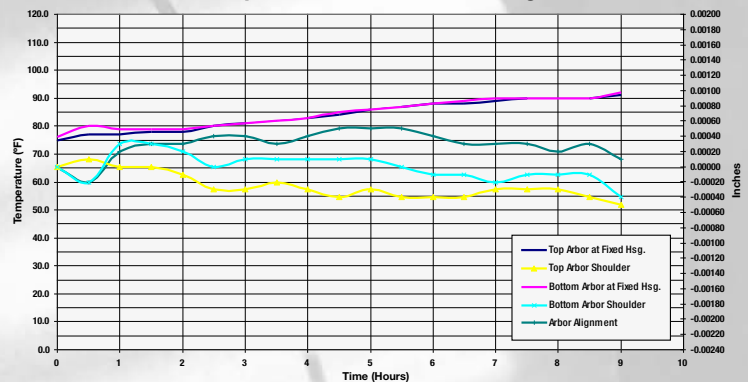
After

Hydraulically Expanded Hub Cutters/Knife Holders

Machine Concepts designs and manufactures a full line of hydraulically expanded, self-clamping slitter and side trimmer hub cutters/knife holders. These hubs are high precision, have excellent holding power, are easy to use, and are ideal for quick tooling setups or changes. Because of the self-clamping functionality, these hubs can achieve very low tooling runouts. This is very important to customers that use ultra high precision or carbide tooling. We also provide hydraulic systems used to expand the hubs and position measurement systems for accurate hub placement.



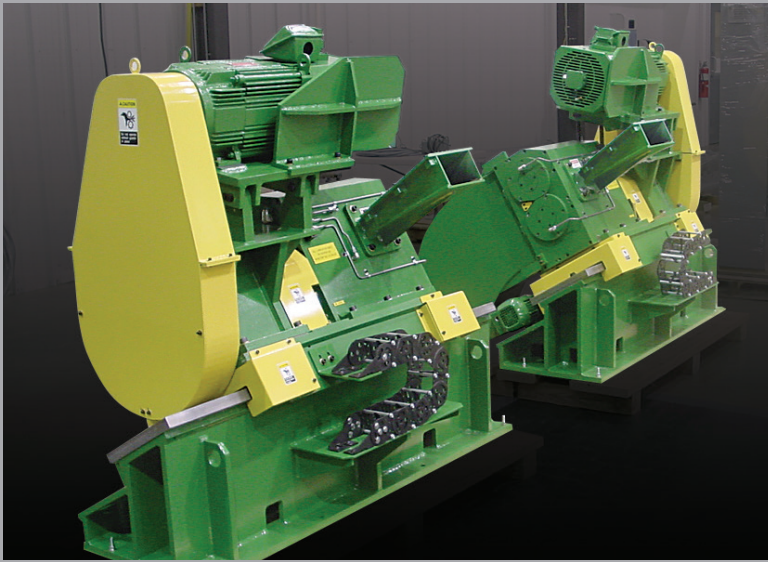
Slitter Arbor Temperature and Shoulder Alignment Chart



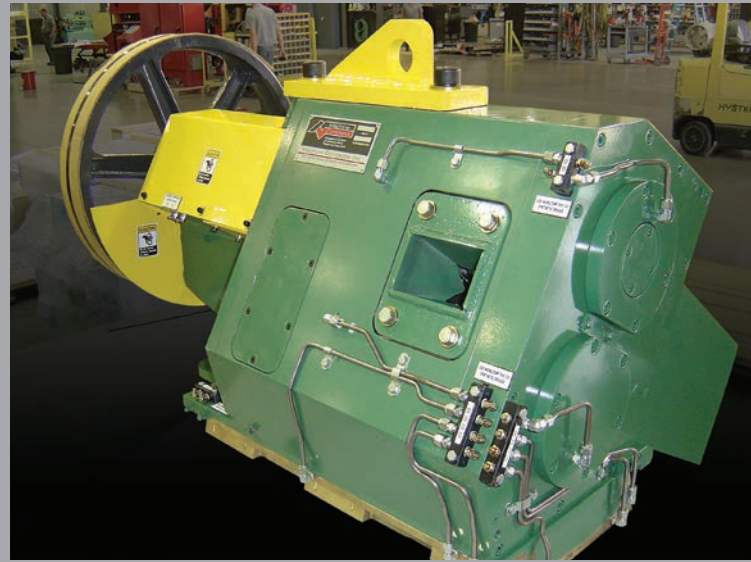
Testing and Inspection

At Machine Concepts our standard procedure is to test run and fully inspect all slitters and side trimmers at our facility prior to shipment. Thermal arbor growth is measured and recorded to insure machine performance once installed. Arbor endplay, radial runout and tooling shoulder runout are also checked and held within tight tolerances. All machine inspections are fully documented and included in our service manuals.

Scrap Choppers

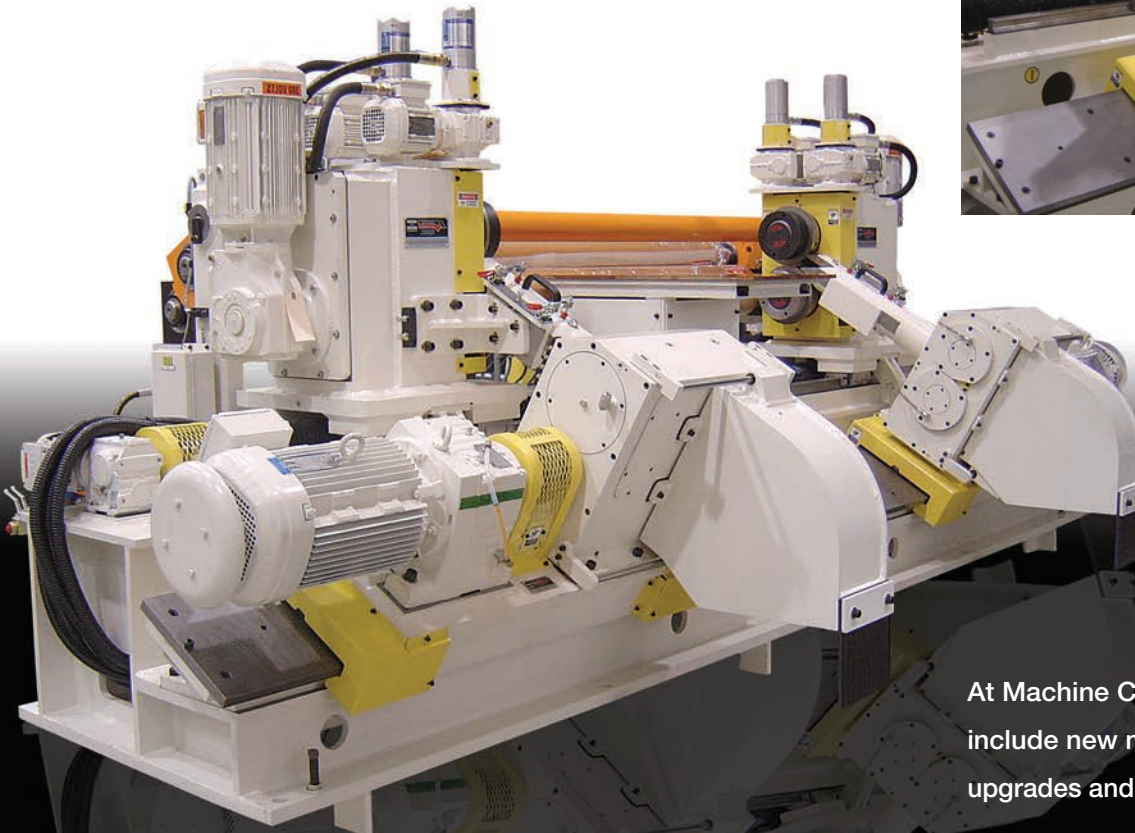
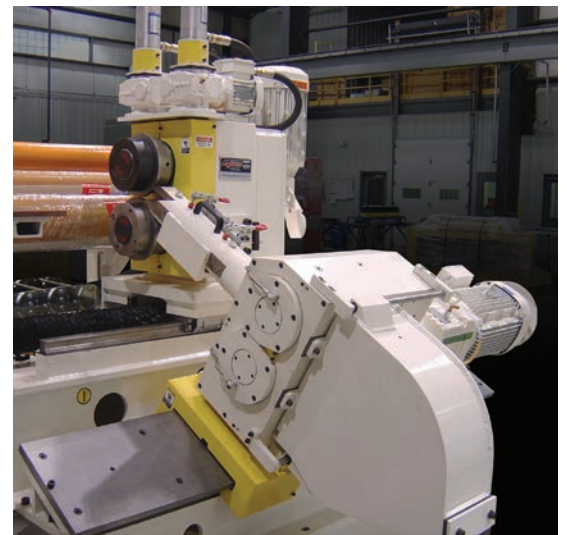


Customized Choppers for Slitting Line Applications



Customized Replacement Chopper Heads

Machine Concepts specializes in custom designed scrap choppers to accommodate all your slitting and side trimming scrap handling needs.



At Machine Concepts our capabilities include new machine development, upgrades and retrofits into existing lines.

Scrap Choppers



Retractable Chopper for Existing Heavy Gage Slitting Line



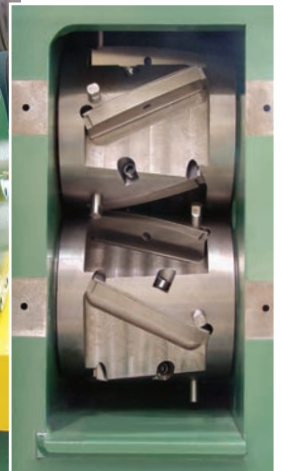
Chopper for Existing Heavy Gage Narrow Width Slitting Line

Scrap Chopper Standard Features

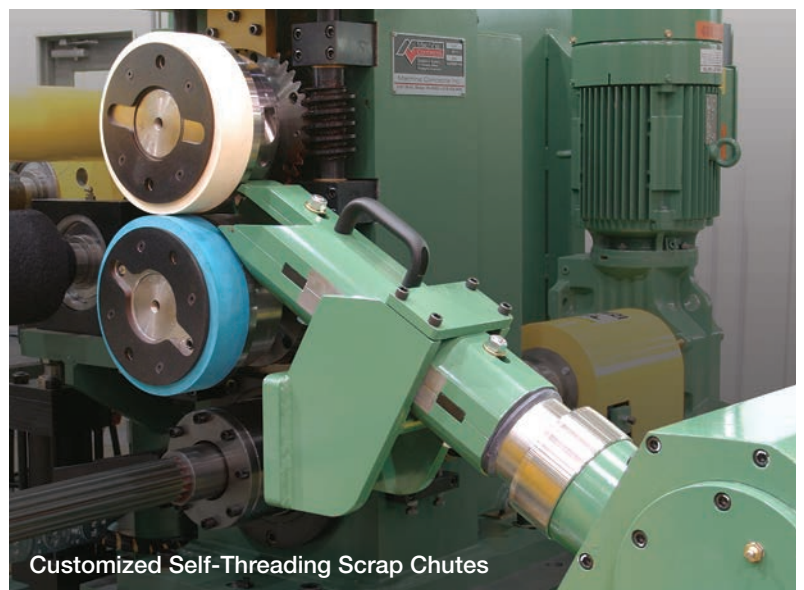
- ▶ Dual drum with raked blade cutting action – Optional straight blade available
- ▶ True elliptical knife profile to maintain constant knife clearance throughout the cut
- ▶ Each knife has four cutting edges
- ▶ Quiet operation and reduced peak drive torque
- ▶ Arbors supported on both sides of cut via precision tapered roller bearings
- ▶ Easy access, setup and maintenance of knives
- ▶ Broad gage range with no setup change
- ▶ Shorter scrap lengths
- ▶ Anti-backlash helical gearing
- ▶ Heavy-duty welded steel housings



Raked Blade Setup



Custom Chopper Drives & Drive Systems



Customized Self-Threading Scrap Chutes

Coilers and Mandrels



Lateral Adjust Recoiler with Over and Under Wind Capability



Mill Duty Brass Wearplate
Lateral Adjust Movement



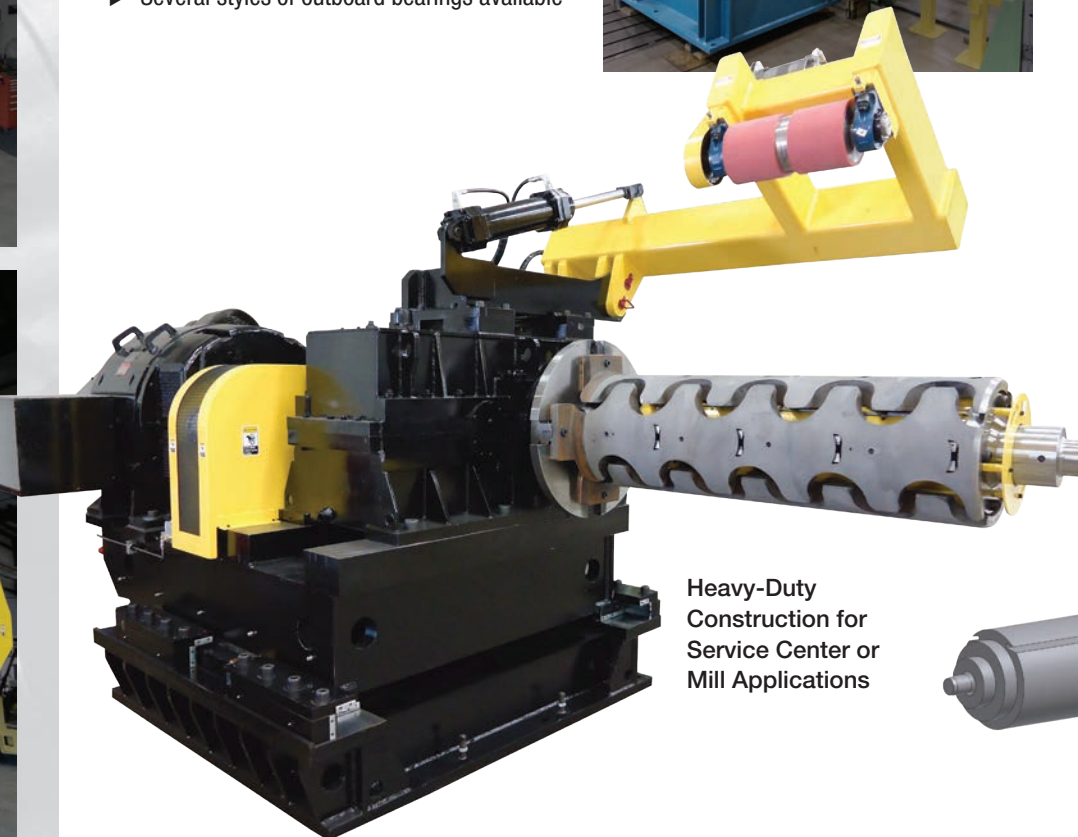
Pivot Style Belt Wrapper
on Lateral Adjust Recoiler



Pivot Style Belt Wrapper –
Alternate View

Coiler Options

- ▶ Fixed bases or lateral adjust capability
- ▶ Edge guiding or center guiding systems
- ▶ Integrated hold down arms
- ▶ Complete separator arbor assemblies and tooling packages
- ▶ Paper or PVC interleaving equipment
- ▶ Several styles of outboard bearings available



Heavy-Duty
Construction for
Service Center or
Mill Applications

Coilers and Mandrels



Low Friction Cam Roller Lateral Adjust Movement



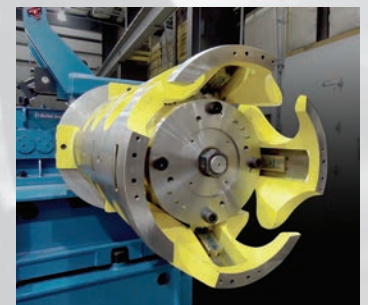
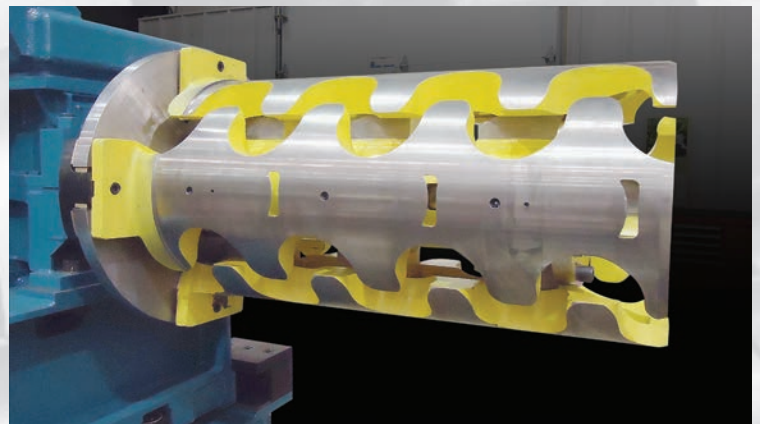
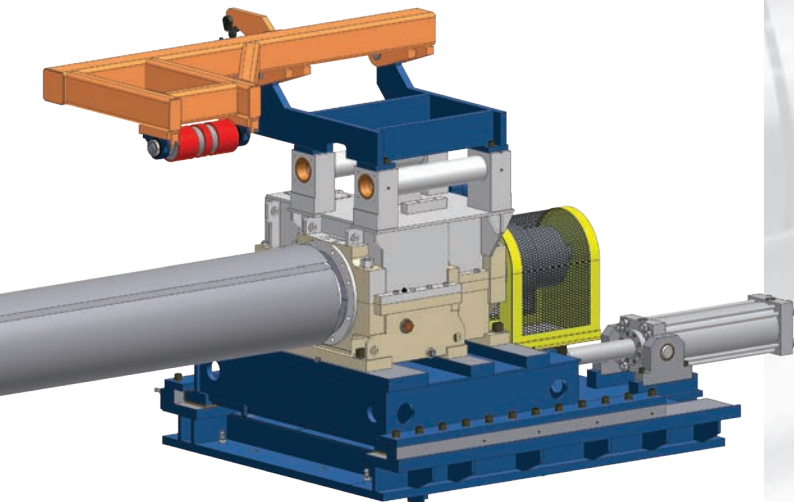
Unwind Mandrels with Full Circle Segment Retaining Ring

Mandrel Options

Machine Concepts designs and builds several types of unwind mandrels to fit our customer's needs. We also source and install custom rewind mandrels as required.

Standard Unwind Mandrel Features:

- ▶ Barrel type design with one piece expand wedge
- ▶ All wear surfaces are manufactured from solid bronze or aluminum bronze
- ▶ Cast iron segments with interlocking serpentine edges to prevent coil tails from getting under segments
- ▶ Large expand ranges – Custom expand ranges and face lengths upon request
- ▶ Full circle segment retaining ring with brass wear plates
- ▶ Several outboard bearing nose options available



Lateral Adjust Recoiler

Terminal Equipment and Shears



Side Guides with Automatic Setup



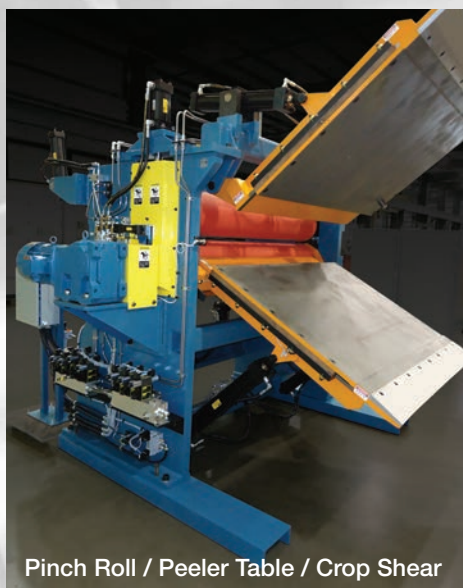
Strip Diverter Equipment



Hydraulic Crop Shear

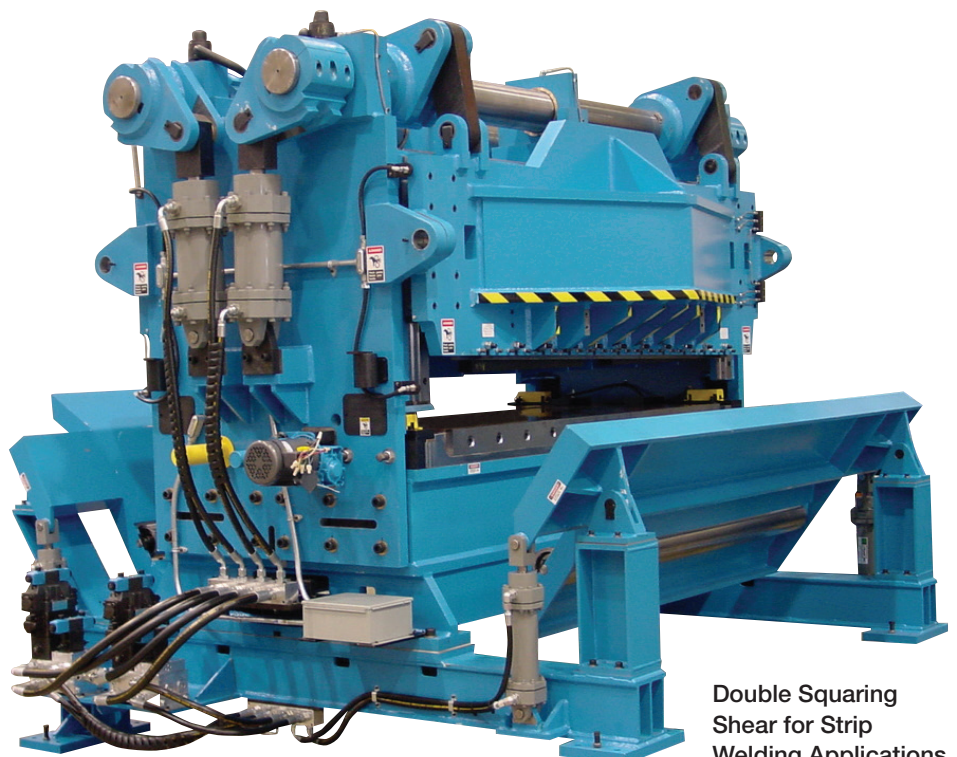


Heavy Gage Hydraulic Crop Shear



Pinch Roll / Peeler Table / Crop Shear

Machine Concepts designs and builds a wide range of coil processing terminal equipment. We have extensive experience in both mill and service center applications. We can provide high quality engineered solutions for the most demanding requirements.



Double Squaring Shear for Strip Welding Applications

Terminal Equipment and Shears



Pinch Roll / Peeler Table with
Integrated Center Guide System



High Performance Equipment
for Specialized Applications

Pinch Rolls

- ▶ Roll configurations to suit any line layout or application
- ▶ Sliding journal block or pivoting frame designs
- ▶ Electric or hydraulic drive systems
- ▶ Many roll and roll covering options available:
 - ▶ Standard polyurethane or nitrile
 - ▶ Hardened steel
 - ▶ Custom spray weld coatings
 - ▶ High temperature rubber covering
 - ▶ Nonwoven compressed fiber
 - ▶ Special applications

Shears

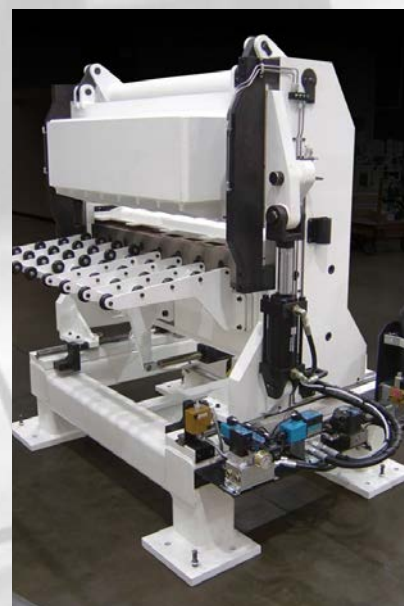
Pinch roll and shear combinations are one of Machine Concepts standard machine packages. Dual peeler table or strip feed options are also available.

Crop Shears

- ▶ Hydraulic and mechanical designs available
- ▶ Single rake or double rake cutter bars
- ▶ Up or down cut capabilities
- ▶ Simple compact designs allow retrofit into existing lines
- ▶ Heavy-duty welded steel construction
- ▶ Squaring shears for strip welder applications

Flying Shears

- ▶ Hydraulic and mechanical designs available
- ▶ Hydraulic or servo line speed matching controls, custom for your application
- ▶ Adjustable knife gap options available
- ▶ Complete controls packages as requested by our customers



Flying Shears for New Installations or Retrofit into Existing Lines

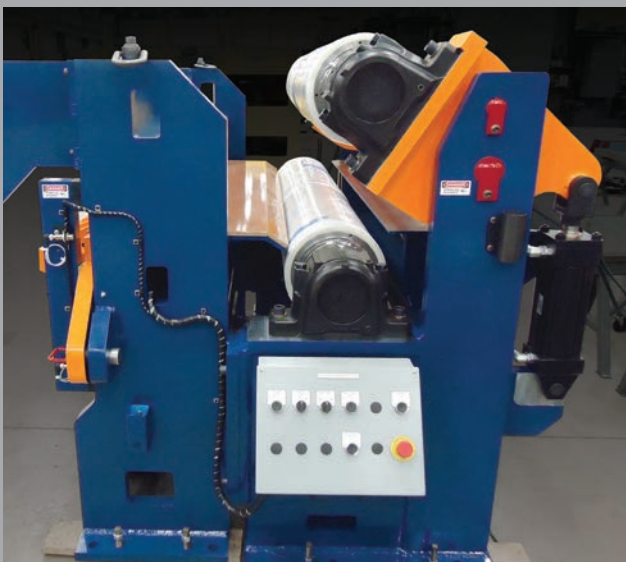


Compact
Zip Shears can
be Installed in Many
Areas with Limited Space

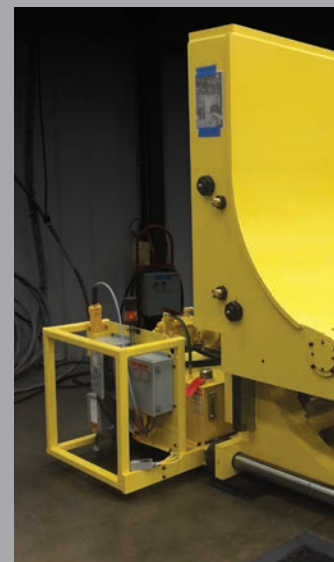
Tension Stands and Coil Cars



Drag Board Tension Stands with Variable Zone Pressure Control and Integrated Side Guides



Tension Roll Stand with Simple and Rugged Upper Pivoting Frame



Quick Open Upper Frame for Easy Threading



Adjustable Strip Support Rolls

Exit deflector rolls and other specialized entry and exit equipment are also available. Contact our engineering group for more information.

Tension Stands

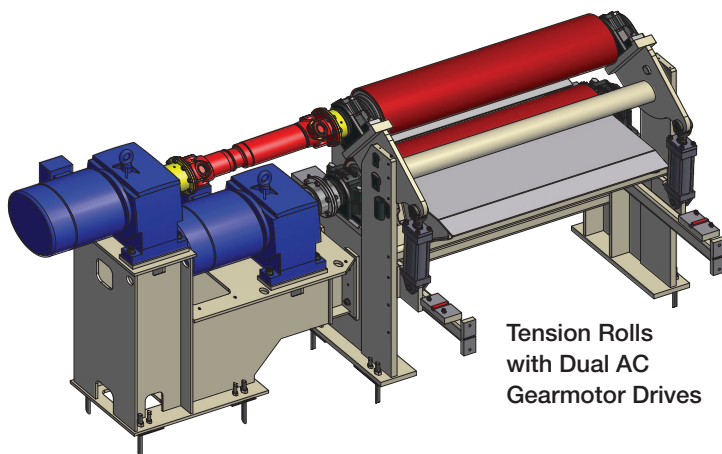
Tension roll and drag board designs are available. Tension stands can be supplied with specialized entry or exit equipment to suit unique lines or applications. Contact our engineering group to discuss your requirements.

Tension Roll Designs Include:

- ▶ Pivoting roll frame with hydraulically regulated pinch pressure control
- ▶ One or two rolls driven to suit your application
- ▶ Accurate strip tension control via AC motors or drag brakes
- ▶ Many roll covering and covering finish options available:
 - ▶ High performance rubber coverings with standard finishes or custom textures
 - ▶ High friction nonwoven fiber
- ▶ Quick open and close for efficient threading

Drag Board Designs Include:

- ▶ Heavy-duty pivoting upper frame opens for easy threading
- ▶ Single board and multiple board designs available
- ▶ Reliable strip tension control via manual or electronic pressure regulators
- ▶ Options available for variable pressure control on individual boards
- ▶ Quick change slide out boards on operator side
- ▶ Simple velcro strips secure felt to removable boards



Tension Rolls with Dual AC Geared Drives

Tension Stands and Coil Cars



Custom Designed Mast Car to Match Customer's Existing Line and Foundation



Compact Mast Car Designs

Coil Cars

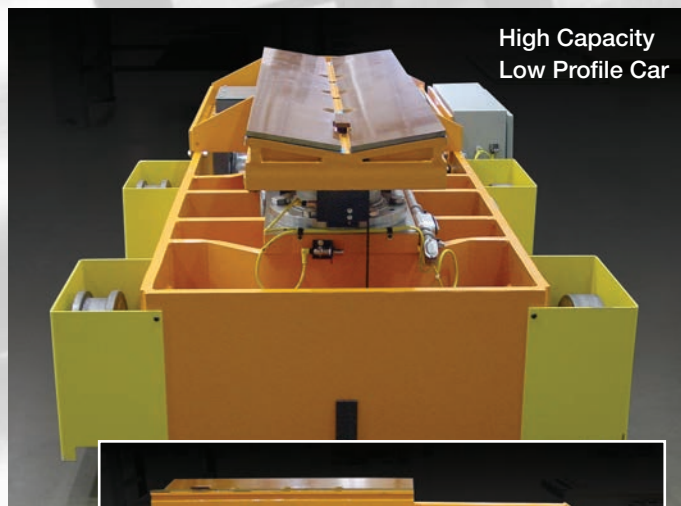
Quality coil cars and coil handling equipment are essential for the safe handling of coils. Our coil cars are always designed with operator safety and coil stability in mind.

Features:

- ▶ Mast and low profile designs available
- ▶ Weight capacity from 5,000 to 100,000 lbs.
- ▶ Heavy-duty construction throughout
- ▶ Typically all four wheels driven
- ▶ Electric or hydraulic drive systems
- ▶ Onboard hydraulic power unit or connect to external hydraulic source
- ▶ Custom controls available with high levels of automation
- ▶ Custom designs to match customers existing rails or floor configuration
- ▶ Many options available including: rotating cradles, driven blocker rolls, load cell scale systems, custom coil restraining arms, wireless controls



Onboard Hydraulic Power Units



High Capacity Low Profile Car



Custom Rotating "V" Cradle



Custom Equipment



Upenders for Large Coil Diameters



Integrated Sliding "V" Cradle



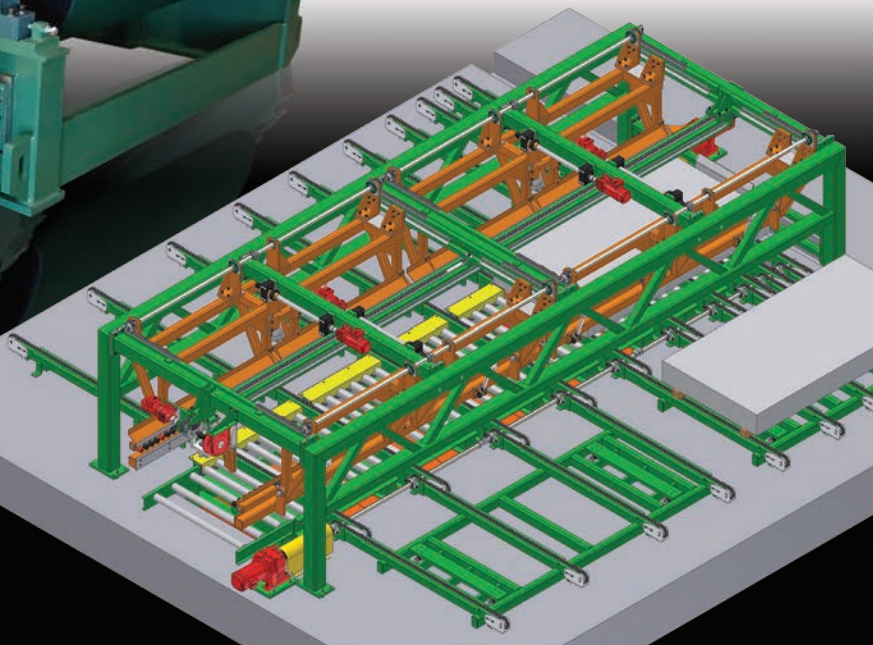
Mill Duty Coil Lifts

Machine Concepts is an engineering based company that specializes in custom design/build projects. We have the expertise to address unique requirements and help our customers solve problems.



Complete
Bridle and Bridle
Drive Packages

Stackers to
Suit Customer's
Specific Needs



Custom Equipment



Custom Bridge Designs for Special Applications



Complete Coil Storage & Handling Solutions

From conceptual design to operational equipment, Machine Concepts will work closely with you to determine the best mechanical or automated solutions for your custom equipment needs. Below are a few examples of custom equipment that we routinely handle.

Coil Storage and Handling

- ▶ Custom designs for service center or mill applications
- ▶ Heavy-duty robust equipment
- ▶ Fully automated coil retrieval and storage systems available

Sheet Stackers

- ▶ Drop or air float systems available for ferrous and nonferrous applications
- ▶ Custom end stops with many adjustment and shock absorbing options
- ▶ Chain-type side conveyors
- ▶ Driven roller conveyors
- ▶ Custom scissors lifts
- ▶ Weigh scale systems
- ▶ Custom controls for integration into existing lines

Coil Upenders

- ▶ Specialized designs for large diameter coils
- ▶ High weight capacity
- ▶ Automatic pallet clamping and centering
- ▶ Driven roller conveyors
- ▶ Sliding "V" cradles to minimize or eliminate coil O.D. damage
- ▶ Integration into existing packaging lines

Tension Bridles

- ▶ Simple heavy-duty designs
- ▶ Custom drive systems to suit customer's application
- ▶ Integrated tension measurement capability

Service Center Style
Upenders for Coil
Packaging Lines



Mill Duty Upenders
for Pack and Ship
Applications

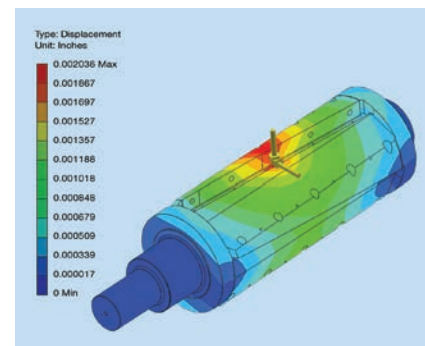
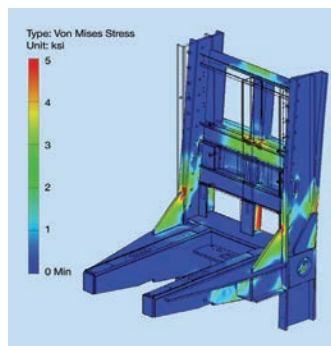
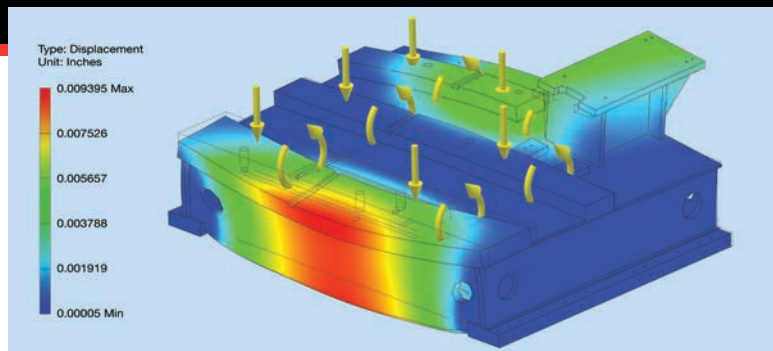


Capabilities

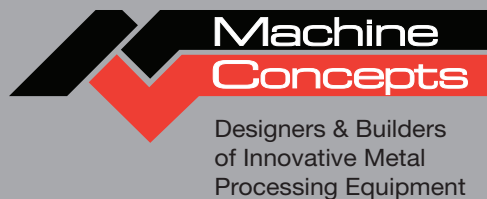
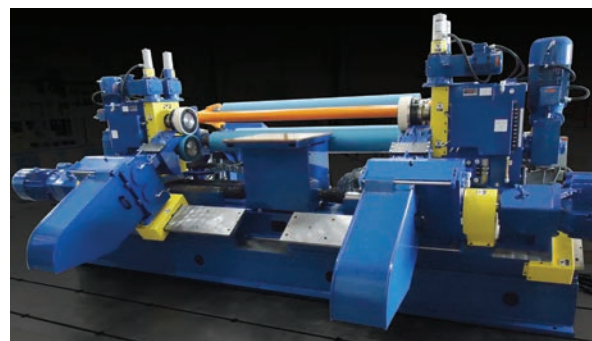
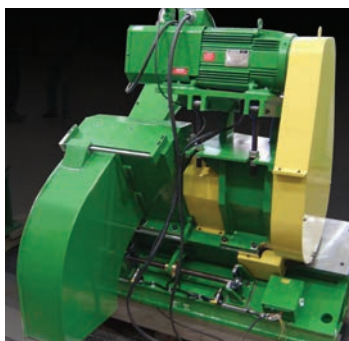
Broad Capabilities

Machine Concepts is an engineering based company that specializes in custom equipment and retrofit projects. We use the latest technology available to help our customers solve or avoid problems. Some of our capabilities include:

- ▶ Custom machine design based on customer's requirements
- ▶ High quality, robust equipment that is built to last
- ▶ Project integration and management, both mechanical and electrical
- ▶ Mechanical and electrical engineering/design groups in-house
- ▶ Multiple PLC control system platforms available
- ▶ Latest 2D and 3D CAD systems with FEA analysis
- ▶ High precision CNC machining and large boring mill capacity
- ▶ Complete machine assembly, piping, and wiring done in-house
- ▶ Detailed machine testing and data collection



Machine Concepts has extensive experience with many types of coil processing equipment including slitters, side trimmers, scrap choppers, coilers and mandrels, terminal equipment and shears, and custom equipment.



Machine Concepts Inc. modern engineering and manufacturing facility