Mecon is a leading manufacturer of coil processing and handling equipment, brake press tooling and special purpose machines. From our beginning in 1962, Mecon has provided rugged designs, quality workmanship, quality materials and reliable products.

- In house engineering and design with licensed professional engineers
- Fully equipped factory
- Large assembly and testing area

We take pride in offering the finest in equipment and workmanship.

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# SUGGESTED SYSTEM ARRANGEMENTS

Mecon Industries Limited manufactures a variety of coil processing systems.

Many factors should be considered when determining the optimum arrangement:

- **Budget**
- **Coil Weight**
- **Plant space available**
- **Crane capacity**
- **Lift truck capacity**
- **Mark sensitivity**
- **Material thickness**
- **Material width**
- **Material strength**
- **Coil handling**: loading and unloading partial coils, or run full coils to end
- **Coil inside diameter**
- **Coil outside diameter**
- **Production required**: feed length, speed, feed angle, feed time
- **Duty Cycle**: hours per day / days per year
- **Process type**: progressive stamping, blanking, blank and transfer, cut to length, pre-punch, etc.

## LINE 1
- **Back tension uncoiler**
- **Powered straightener**
- **Press-mounted servo roll feeder**

## LINE 2
- **Motorized uncoiler**
- **Powered straightener**
- **Servo roll feeder**

## LINE 3
- **Powered travel & lift coil car**
- **Back tension uncoiler (with jog motor)**
- **Threading stand**
- **Powered straightener**
- **Servo roll feeder**

## LINE 4
- **Motorized uncoiler**
- **Hold-down arm**
- **Servo feeder-straightener**

## LINE 5
- **Motorized uncoiler**
- **Under paddle loop control**
- **Servo feeder-straightener**

## LINE 6
- **Powered travel & lift coil car with idle rolls**
- **Motorized uncoiler with loop control**
- **Overarm with coil guard**
- **Servo feeder-straightener (with threading option)**

## LINE 7
- **Powered travel & lift coil car with idle rolls**
- **Back tension uncoiler (with jog motor & side shift)**
- **Poll-off pinch stand with over-arm**
- **Coil guard**
- **Feeder-straightener (with threading option)**

## LINE 8
- **Coil cradle**
- **Coil threading and prebender**
- **Servo feeder straightener**

## LINE 9
- **Coil storage ramp**
- **Coil cradle straightener**
- **Servo roll feeder**

## LINE 10
- **Coil cradle straightener (with threading option)**
- **Floor-mounted servo roll feed**

## LINE 11
- **Servodriven coil-cradle-straightener-feeder**
- **Heavy duty dekinker and coil threader**
- **With coil staging ramp**
- **Side shift base**
It helps to understand the nature of the input material and how it got that way. Most strip or coiled material begins its final processing phase as a slab. The slab was reduced to the final gauge by rolling, then wound into a large coil. It has grown greatly in length and nominally in width. High internal stresses in the material are often created during the rolling process.

The internal stresses often vary from the outer wraps to the inner wraps and from the center to the edges. The strip is unwound, slit to width and rewound. Center slit material often yields the best material, edge cuts often yield the worst. When the internal stresses are not balanced, the slit material will have camber. The greater the stress imbalance, the worse the camber. In some instances, additional processing will be necessary to balance the internal stresses and eliminate camber. Poor material is a leading cause of difficulty in tracking the strip through the entire system. Camber problems will consume your profits!

To avoid many coil-handling problems, insist on quality material, reject that which does not meet your standards, and use the proper uncoiling system.

Productivity

Selecting the proper options for your system will provide big paybacks in productivity gains.

- Eliminate waiting time for overhead cranes or lift trucks by installing coil cars and coil storage ramps. Coils can be staged when convenient and are ready when the system needs them
- Reduce handling time and increase safety with coil clamping arms and threading equipment
- Use dual spindle uncoilers when feeding high demand systems like rolling mills or systems using partial coils
- Use variable speed loop controls to smooth the uncoiling - straightening process, maintain proper loop geometry, and deliver more consistent material to the feeder
- Use a side shift base on the uncoiler to allow easy coil alignment and adapting for camber during processing
- Purchase the best material possible to ensure good quality, consistent parts
WHICH UNCOILING METHOD IS BEST? ..... REEL OR CRADLE
Both types of uncoiler have advantages and limitations. In general, a reel works best with thin to medium-thick material, the cradle works well with thicker materials.

Consider the Reel if:
- Material is sometimes thinner than 0.080"
- Rewinding full or partial coils
- Precise tension control is necessary
- Material marking is critical
- Straightener is pulling the material off the coil
- Powered uncoiling of materials thinner than 0.150"

Consider the Cradle if:
- Material is always thicker than 0.080"
- Rewinding is not important
- Tension control is not important
- Material marking is not critical
- Powered uncoiling of materials thicker than 0.150"
REELS - Single and Dual Spindle

The reel is used in most uncoiling, recoiling applications. It can be fitted with a variety of drive and braking systems, combined with coil cars, pinch rolls, power straighteners, overarms, rolling mills or configured as a stand alone machine.

Reels are the best choice for thin, prefinished and other mark sensitive materials. They support the coil on the inside diameter and thus avoid stock deformation problems.

Advantages
- Suited to wide ranges of material
- Give precise control of the material
- Can unwind or rewind
- Available as single or dual spindle
- Quick coil change times using dual spindle versions
- Available with various drive and brake systems
- Prevents damage to soft, prefinished, and mark sensitive materials
REEL and CRADLE UNCOILERS

REEL UNCOILER OPTIONS

- Light to heavy duty braking systems
- Hydraulic or mechanical mandrel expansion
- Outboard spindle supports for heavy, wide coils with, small inside diameters
- Traveling or fixed position
- Coil clamping arms with idle or driven wheels
- Combination with coil car, or coil elevator
- Quick release coil keepers
- Laser loop controls

MODELS

- D - Dual spindle
- B - Overrun brake
- BT - Back tension brake
- BTJ - Back tension brake with jog motor for threading
- M - Motorized
- CR - Cradle style uncoiler

CRADLE UNCOILER OPTIONS

- Easy, fast loading of coils is the single most important benefit offered by cradle-type uncoilers.

- Rugged heavy duty steel construction
- Self centering coil keeper plates
- Lifting points for crane
- Forklift truck lifting tubes
- Motor driven cradle rolls
- All rolls hardened to 55RC
- All lubrication points marked and easily accessible
- Capacities from 0.060" to 0.375" mild steel, 12" to 72" (larger sizes call for quote)
- Standard payout speed of 0 to 80 fpm. Rewind of unused material may be difficult
- Not recommended for use with thin, prefinished, or mark sensitive materials

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<th>6.000</th>
<th>10,000</th>
<th>15,000</th>
<th>20,000</th>
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</table>

N = not available, O = optional, D = derate to next lower weight.
The combined cradle-straightener offers easy handling of medium to thick materials, great use of space, and a simple design. Combining the straightening and uncoiling function in one machine simplifies the control and the drive system, reduces the number of components and is less costly than a combination reel and power straightener. The material flows from the coil, through the straightener and into the loop. The straightener is inclined downward to shorten the loop distance and improve material flow.

**PROS:**
- Simple control and drive system
- Confinement of coil helps control of thick materials
- Easy and safe coil loading
- Self contained, easy to relocate and setup

**CONS:**
- Rewinding of unused material may be difficult
- Not recommended for use with thin, prefinished, or mark sensitive materials

**Features of Mecon Cradle-Straighteners:**
- Rugged heavy duty steel construction
- Self centering coil keeper plates
- Lifting points for crane
- Forklift truck lifting tubes
- Driven cradle and straightener rolls
- All rolls hardened to 55 RC
- All lubrication points marked and easily accessible
- Capacities from .060” to .375” mild steel. 12” to 72”
- Standard payout speed of 0 to 80 fpm
- Digital indicators show straightener roll position
- Standard straightener head with entry and exit pinch rolls, and 7 straightening rolls
- Other sizes available to suite application
OPTIONS:
- Combine with coil staging ramp
- Laser loop control
- Automatic lubrication systems
- Coil clamping and threading systems
- Drive Upgrades
- Straightener Upgrades
- 60" or 72" maximum coil outside diameter

**Max thickness in steel, Yield Strength less than 30,000 psi**

Use maximum material thickness for guidance only. Provide Mecon with application data. Actual capacity is dependent on process requirements (speed, range of materials, material hardness, system response time, etc) Upgraded drives, straightener support rolls and other features are available.
POWERED STRAIGHTENERS

Power straighteners are selected on the basis of the material to be processed. The thickness, width, material type, hardness, and other factors.
For most materials and flatness requirements, use straightener with five to seven rolls. For some materials, and high flatness requirements, more rolls may be necessary.

Features of Mecon Cradle-Straighteners:
- Smooth operation, no sudden stops and starts
- Automatically match process demand
- Rugged heavy duty steel construction.
- Driven pinch and lower straightener rolls
- All rolls hardened to 55 RC
- Standard payout speed of 0 to 80 fpm
- Entry side guide rolls
- Entry and exit support rollers
- Capacities in mild steel from .010" to .450", 12" to 72" wide
- All lubrication points marked and easily accessible
- Digital indicators show straightener roll position
- Standard straightener head with entry and exit pinch rolls, and 7 straightening rolls
- Lifting points for crane
- Forklift truck lifting tubes

Options:
- Entry and exit threading systems
- Laser loop control
- Automatic lubrication systems
- Drive upgrades
- Straightener support rolls
- 9, 11, or more straightener rolls
- Power roll adjustment
- Inclined or horizontal material flow

<table>
<thead>
<tr>
<th>Machine</th>
<th>Roll Diameter</th>
<th>Thickness*</th>
<th>12&quot;</th>
<th>18&quot;</th>
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<th>30&quot;</th>
<th>36&quot;</th>
<th>48&quot;</th>
<th>60&quot;</th>
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<td>0.375</td>
<td>0.340</td>
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<td>0.250</td>
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</table>

Use maximum material thickness, for guidance only. Provide Mecon with application data. Actual capacity is dependent on process requirements (speed, range of materials, material hardness, system response time. Etc.). Upgraded drives, straightener support rolls and other features are available.
New Rules New Tools

Stronger thinner materials are becoming more common. The stronger materials frequently may have more complex stress conditions such as: crossbow, twist, wrinkle edge and pocketing. The standard coil feed systems are designed to remove “coilset” that is curvature in the material from being wound into a coil. The presence of crossbow indicates that stresses also exist in the across the width direction. In order to remove these issues, the straightener must be constructed to allow deeper work roll settings.

Solutions may involve:
- More work rolls
- Variable Geometry
- Closer roll centers
- Support rolls

Consult Mecon Engineering for the best configuration for your material
416-751-1901
Mecon offers a variety of systems to make threading safer, easier and quicker.

Coil overarms clamp the coil to prevent "clock springing" when the retaining bands are cut.

Peelers extend out to the coil to direct the start of the material toward the straightener.

Deflectors guide the material into the straightener pinch rolls.

Prebenders flatten the leading edge of thicker materials to allow better flow into the straightener.

Exit threading tables pivot up to span the space between the straightener and the feeder and direct the material into the feeder.

**Standard Arrangements:**
- Medium duty system includes straightener mounted overarm, peeler and deflector.
- Heavy duty system includes straightener mounted overarm with power driven wheel, peeler, deflector, and prebender.
- Consult Mecon when selecting a threading system.

**OPTIONS: COIL ELEVATORS, CARS AND STORAGE RAMPS**

Allows the material handler to load the next coil as the current coil is in process. The new coil is held in position and as soon as the current coil runs out, the new coil is ready for loading.

Available in width capacities matching the uncoiler from 2,500 lbs to 60,000 lbs.
ROLL FEEDS and FEEDER-STRAIGHTENERS

Mecon feeders use Servo motors and controls, precision drive systems, and heavy-duty components to provide quick, accurate indexing of material. They are designed to pull from an Accumulation loop (not directly off the coil), and accurately position the material each feed cycle.

Fast, Flexible, Operation

- The controls are located on a console or pedestal for convenient entry of job settings. Set up time is reduced to seconds, just enter the values using the keypad.
- Very accurate roll positioning can be achieved with Mecon servo driven roll feeds. (The drives provide precise control of position, speed, acceleration, and deceleration.)
- Diagnostic display of operating status and faults
- Feed before press or press before feed modes
- Both feed rolls are driven using a constant mesh 4 gear train, gears are hardened 4140 steel
- Hardened vertical side guide rolls align the strip to the tooling
- Entry ramp rolls support material to ensure smooth flow from loop into feeder

Optional Mountings include:

- Press mounting
- Floor base
- Rolling base
- Powered jack
- Self centering guide rolls, Etc.
Series ‘F’
- Standalone Feeder
- Suited to wide range of materials and process speeds
- Highest output speeds
- Full pilot release of pinch rolls
- Dual air pressure pinch system allows gentle touch on sensitive materials to firm grip for difficult materials
- Feed rolls are hardened, precision ground, surface treated and chrome coated for a hard, high friction surface giving excellent grip and long life
- Rolls are supported by precision, permanently sealed and lubricated ball bearings

Max. Thickness at full width

<table>
<thead>
<tr>
<th>Machine</th>
<th>Roll Diameter</th>
<th>MACHINE and MATERIAL WIDTH</th>
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<td>0.140 0.125 0.110 0.090 0.070</td>
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Series ‘F-S’
- ‘F’ series feeder with a 5 or 7 roll pull-thru straightener
- Suited to materials needing limited correction
- Lower capacity and performance than series ‘FS’
- P225str pull-thru straightener for thin materials
- P3str pull-thru straightener for thicker materials

Max. thickness in steel, Yield Strength less than 30,000 psi. Use maximum material thickness for guidance. Provide Mecon engineering data. Actual capacity is dependent on process requirements (spm, feed length, range of materials)
SERVO ROLL FEEDS and FEEDER-STRAIGHTENERS

Series ‘FS’ and ‘FSP’
- Combined feeder and straightener
- Straightener rolls and entry pinch rolls are driven
- 6 roll straightener with support rolls ***
- Higher capacity than ‘F-S’
- Better flatness than ‘F-S’

** straightener support rolls on all machines except:
325fs series
400fs12
400fs18
400fs24

Series ‘FSP’
- ‘FS’ feeder-straightener with full pilot release of straightener
- Same thru-put as FS series
- Pilot release improves feeding performance and reduces die problems
- Optional servo driven pilot release

Example 600FSP48 with Servo Pilot Release

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<tr>
<th>Machine</th>
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<td>0.375</td>
<td>0.335</td>
<td>0.290</td>
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Mild steel-yield strength less than 30,000 psi

** http://mecon.com/uncoiler-straightener-capacity-charts-including-high-strength-steel/
Side Shifting Feeders
Mecon offers roll feeds with servo driven shift base to allow optimum use of material. The standard control has 3 pre-programmed patterns. Shift and Feed distance are simply keyed in at the operator’s console. Select the pattern, press start and the machine is ready to run.
Combination Cradle-Straightener-Feeder model 200csf18-8
Coil staging ramp, Cradle, Threading system, Feeder-Straightener with Servo pilot release, Worm screw jack lift systems
Main features are:
- Single operator
- Easy to load
- High capacity - high performance
- Compact - save floor space

SPACE SAVER
The choice when plant space is limited, Requires far less overall floor area than conventional systems.

Complete Press Feed System:
Coil Car, Motorized Uncoiler with Over arm, Laser loop control, Threading system, Floor mount Servo Feeder-Straightener, Control console, Safety fencing
Mecon Industries is equipped to help solve your challenging production problems. Our objective is to design and build equipment which maximizes productivity, ensures operator safety, and improves return on investment. Reduced downtime for coil change overs may make the difference between profit and loss. Fast loading, easy operation make for a streamlined, safe and profitable operation.

NO Marks Allowed Cut to Length Line
Coil car, Uncoiler with Overarm, No Mare threading table,
Straightener, Shear, Pick and drop No Mare stacking system,
Adjustable stacking table.
Mecon offers many other products and services.

- Coil upenders
- Tube Handling systems
- Crop shears
- Punching Systems
- Edge conditioners
- Cut to length systems
- Special purpose machines
- Brake press tooling
- Fabrication & machining services
- Machine rebuilding & updating

20,000lbs Pipe Uncoiler
Straightener System

400F18HDG Feeder system,
75 Ton press with 12 Punch locations
Shear for .25" HSLA Steel
Upenders 6,000lbs to 60,000lbs

Shears

End Pivot Threading Table

Multifunction pendant

Coil cars 20” and 24” lift

Overarms

Stacking systems

Material guidance systems

See all available options: Http://mecon.com/options/
Mecon has the facility, equipment and workforce capable of handling large or small projects. In-house design and manufacturing allows Mecon to maintain control of the production schedule and completion dates. Mecon manufacturing combines fabricating, conventional and CNC machining, grinding and material handling up to 15 tons. All design, cutting, machining, and assembly is done to Mecon’s exacting standards.
Machine designs are constantly reviewed to incorporate the best methods and technology. Modern electrical control systems, variable speed and servo systems are integrated with rugged mechanical components to achieve long service life and high uptime.

Mecon’s large assembly area allows setup and complete operational testing of the system. All machines are inspected and tested before being released to the customer.

With a fully equipped factory and successful experience in many fields we are able to offer solid designs, and economical hard working equipment. Mecon offers a variety of services and materials for your metal handling needs: Engineering, General Machining, Fabrication, Brake Press Tooling, Coil Processing Machines, and Custom Build/Rebuild Machinery.
Most systems require an accumulation loop. The accumulation loop is used to allow the uncoiling process to payout at a nearly continuous rate while the feeding equipment stops and starts. Ideally the loop will accumulate at least 2 feed lengths of material. Thickness, material yield strength, and feed length are important factors to consider when determining loop geometry. The loop must store sufficient material to allow smooth operation. The material must not be curved smaller than the minimum bend radius to ensure that the proper loop shape is maintained and kinking does not occur.

- Ramamp rolls should support the material as it enters and exits the loop.
- The loop length should be 1000 to 1400 times the material thickness.

A pit is recommended if the required LOOP HEIGHT, is greater than the process height.
### Steel Coil Weight Calculator

**Material weight factors**

- Aluminum x 0.35
- Brass x 1.08
- Copper x 1.14
- Stainless x 1.00

multiply CHART VALUE by COIL WIDTH eg: 714 lbs/in x 10" wide coil = 7,140 lbs

### Typical Tensile Strengths Common Metals

<table>
<thead>
<tr>
<th>Material</th>
<th>Yield Strength</th>
<th>Ultimate Yield Strength</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PSI</td>
<td>Mpa</td>
<td>PSI</td>
</tr>
<tr>
<td>Aluminium alloy 6061-T6</td>
<td>35K</td>
<td>241</td>
<td>44K</td>
</tr>
<tr>
<td>Aluminium alloy 2014-T6</td>
<td>60K</td>
<td>414</td>
<td>70K</td>
</tr>
<tr>
<td>Brass</td>
<td>29K</td>
<td>200</td>
<td>80K</td>
</tr>
<tr>
<td>Copper 99.9% Cu</td>
<td>10K</td>
<td>70</td>
<td>32K</td>
</tr>
<tr>
<td>Cupronickel 10% Ni, 1.6% Fe, 1% Mn, balance Cu</td>
<td>19K</td>
<td>130</td>
<td>51K</td>
</tr>
<tr>
<td>Steel, 1090 mild</td>
<td>36K</td>
<td>247</td>
<td>122K</td>
</tr>
<tr>
<td>Steel, 2800 Maraging steel</td>
<td>380K</td>
<td>2617</td>
<td>391K</td>
</tr>
<tr>
<td>Steel, AerMet 340</td>
<td>313K</td>
<td>2160</td>
<td>352K</td>
</tr>
<tr>
<td>Steel, AISI 4130, water quenched 855 °C</td>
<td>138K</td>
<td>951</td>
<td>161K</td>
</tr>
<tr>
<td>Steel, API 5L X65</td>
<td>65K</td>
<td>448</td>
<td>77K</td>
</tr>
<tr>
<td>Steel, high strength alloy ASTM A514</td>
<td>100K</td>
<td>690</td>
<td>110K</td>
</tr>
<tr>
<td>Steel, stainless AISI 302 - cold-rolled</td>
<td>75K</td>
<td>520</td>
<td>125K</td>
</tr>
<tr>
<td>Steel, structural ASTM A36 steel</td>
<td>36K</td>
<td>250</td>
<td>58K-80K</td>
</tr>
<tr>
<td>Tungsten</td>
<td>136K</td>
<td>941</td>
<td>219K</td>
</tr>
</tbody>
</table>
WARRANTY

Mecon Industries warrants to the purchaser, the design and manufacture of standard equipment for the following periods, from the date of delivery:

- Frame and Chassis components, the sooner of 24 months or 4000 production hours.
- Moving components produced by Mecon, the sooner of 12 months or 2000 production hours.
- Electrical, hydraulic, or pneumatic components, the sooner of 12 months, or 2000 production hours.
- Components not produced or modified by Mecon, per individual manufacturers’ warranty.

Mecon promises to repair or, at Mecon’s option, replace any component which, during normal use, proves to be defective in material or workmanship during the warranty period.

The original purchaser will be responsible for all shipping costs, and the cost of dismantling and reassembling the warranted equipment as necessary for the repair or replacement.

This warranty shall not extend to any equipment which has been improperly installed, subjected to misuse, neglect, accidents, modified, or repaired by unauthorized personnel.

This warranty is not transferable. In the case of equipment sold through a dealer the warranty is extended to the initial user only.

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Mecon Industries Ltd is a leading designer and manufacturer of Coil Handling Equipment, Tooling for Press Brakes, and Custom equipment.

With a wide range of experience in many fields, we are able to create cost effective designs and long lasting equipment. Mecon offers a variety of services (and materials) for your projects and manufacturing challenges: Engineering, Custom Build, General Machining, Custom Fabrication, Brake Press Tooling, Coil Handling Systems (Processing), and Rebuild of Machinery.

Call us today at +1 (416) 751-1901 to find out more information about Coil Handling, Press Brake tooling or Custom Equipment design.
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CRADLE STRAIGHTENERS

SERVO ROLL FEEDS

HSLA STRAIGHTENERS

COMPLETE PRESS FEED LINES

CUSTOMIZED COMBINATIONS

CUSTOM MACHINE DESIGN

IN-HOUSE MANUFACTURING

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