Coil Handling & Processing Equipment
MECON INDUSTRIES LIMITED

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

Our designers, welders, machinists, millwrights, assemblers and inspectors, work together, to create the best combination of function, price, quality and service.

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

We take pride in offering the finest in equipment and workmanship.
### Suggested System Arrangements

Mecon Industries Limited manufactures a variety of coil processing systems. Many factors should be considered when determining the optimum arrangement.

- Plant space available
- Crane capacity
- Lift truck capacity
- Material thickness
- Material width
- Material strength
- Coil weight
- 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.
- Mark sensitivity
- Coil handling:
  - load and unload partial coils, or run full coils to end
- Budget

### System Lines

**Line 1**
- Non-Motorized Uncoiler
- Powered Straightener
- Press-Mounted Servo Roll Feed

**Line 2**
- Power Travel & Lift Coil Car
- Drag Uncoiler (with Jog Motor)
- Threading Stand
- Power Straightener
- Floor-Mounted Servo Roll Feed

**Line 3**
- Motorized Uncoiler
- Hold Down Arm
- Press-Mounted Feeder-Straightener

**Line 4**
- Motorized Uncoiler
- Under Paddle Loop Control
- Floor-Mounted Feeder-Straightener

**Line 5**
- Powered Travel & Lift Coil Car with Idle Rolls
- Motorized Uncoiler with Sonar Loop Control
- Overarm with Coil Guard
- Floor-Mounted Feeder-Straightener (with threading option)

**Line 6**
- Power Travel & Lift Coil Car with Idle Roll
- Drag Uncoiler (with Jog Motor & Side Shift)
- Pull-Off Pinch Stand with Over-Arm
- Coil Guard
- Floor-Mounted Feeder-Straightener (with threading option)

**Line 7**
- Coil Storage Ramp
- Coil Cradle Straightener
- Floor-Mounted Servo Roll Feed

**Line 8**
- Coil Cradle Straightener (with threading option)
- Floor-Mounted Servo Roll Feed

**Line 9**
- Servo Driven Coil-Cradle Straightener-Feeder
- Heavy Duty Dekinker and Coil Thresher with Coil Staging Ramp

**Line 10**
- Cut To Length and Multifunction System
- Powered Uncoiler with Sonar Loop Control
- Servo Roll Feed, Straightener, Punch, Notch, Shear
THE MATERIAL

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 sonar 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, the reel works well with thin to 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
MECON

![Image of a machine]

### Coil Series (Capacity in 100 Lbs)

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N = not available, o = optional, D = derate to next lower weight

### Models:
- D - Dual spindle
- B - Overrun brake
- BT - Back tension brake
- BTJ - Back tension brake with jog motor for threading
- M - Motorized

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

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 controls, the drive systems, 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
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.

Options:
- Combine with coil staging ramp
- Single or multi-mode sonar loop control
- Automatic lubrication systems
- Coil clamping and threading systems
- End pivot threading tables
- Drive upgrades
- Straightener upgrades
- 60" or 72" maximum coil outside diameter
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 straighteners with five to seven rolls. For some materials, and high flatness requirements, more rolls may be necessary.

Features of Mecon Powered Straighteners:

- Smooth operation, no sudden stops and starts
- Automatically match process demand
- Rugged heavy duty steel construction
- Lifting points for crane
- Forklift truck lifting tubes
- Driven pinch and lower straightener rolls
- All rolls hardened to 55 RC
- All lubrication points marked and easily accessible
- Capacities in mild steel from .010” to .450”, 12” to 72” wide
- 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
- Entry side guide rolls
- Entry and exit support rollers

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<th>machine</th>
<th>roll dia.</th>
<th>min. thick.</th>
<th>12”</th>
<th>18”</th>
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<th>48”</th>
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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.

Options:

- Entry and exit threading systems
- Single or multimode sonar loop control
- Automatic lubrication systems
- Drive upgrades
- Straightener support rolls
- 9, 11, or more straightener rolls
- Power roll adjustment
- Inclined or horizontal material flow
**THREADING SYSTEMS**

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:**

- Uncoiler mounted overarm.
- 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.

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**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 2500 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.

Roll positioning accuracy of +/-.002" 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
- Upper feed roll is 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, etc.
**Series ‘F’**
- Feeders with no straightener
- 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

<table>
<thead>
<tr>
<th>Machine</th>
<th>roll</th>
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<th>18&quot;</th>
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**Series ‘F-S’**
- ‘F’ series feeder with a 5 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

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max. thickness at full width

Use maximum material thickness for guidance. Provide Mecon engineering with application data. Actual capacity is dependent on process requirements (spm, feed length, range of materials)
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

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<th>min. thick.</th>
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<th>18”</th>
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</table>

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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.
SPACE SAVER

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

Main features are:

- Single operator
- Easy to load
- High capacity - high performance
- Compact - save floor space

Feeder-Straightener
Coil Peeler Deflector
Motorized Reel with
Sonar Loop Sensor
Coil Car

Servo driven combination
Cradle-Straightener-Feeder
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.
OTHER PRODUCTS

Mecon offers many other products and services:

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

Uncoiler with Punching & Shear Station

Horizontal Processing System
Inhouse Manufacturing

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.

CNC Machine tools reduce setup time and improve repeatability

In-process inspection is used to assure high accuracy

Final check and testing of equipment is completed before shipping

Computer aided design and manufacturing allows fast design updates to suit customer needs
ACCUMULATION LOOPS and PITS

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 or kinking may occur.

To ensure that the proper loop shape is maintained and kinking does not occur:
- The loop length should be 1000 to 1400 times the material thickness.
- Ramp rolls should support the material as it enters and exits the loop.

A pit is recommended if the required LOOP HEIGHT is greater than the process height.

<table>
<thead>
<tr>
<th>Loop Height (H)</th>
<th>MAXIMUM FEED LENGTH</th>
</tr>
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<tbody>
<tr>
<td>135&quot;</td>
<td>130 117 106 96 88 81 75</td>
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<tr>
<td>120&quot;</td>
<td>111 99 89 80 73 66 61</td>
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<tr>
<td>105&quot;</td>
<td>92 81 72 64 58 53 48</td>
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<tr>
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<td>74 64 56 50 44 40 36</td>
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<td>30&quot;</td>
<td>12 9 6 6 5 4</td>
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<table>
<thead>
<tr>
<th>max. fd. length</th>
<th>accum.</th>
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<tbody>
<tr>
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<tr>
<td>70&quot;</td>
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<td>20&quot;</td>
<td>30&quot;</td>
</tr>
<tr>
<td>10&quot;</td>
<td>15&quot;</td>
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MINIMUM LOOP LENGTH

<table>
<thead>
<tr>
<th>MINIMUM LOOP</th>
<th>LENGTH OF LOOP (L)</th>
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<tr>
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<tr>
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<td>10&quot;</td>
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The values shown above are for guidance only. Consult Mecon for confirmation of loop and pit dimensions.
STEEL COIL WEIGHT CALCULATOR

<table>
<thead>
<tr>
<th>Outside Diameter</th>
<th>LBS/INCH</th>
<th>Material Weight Factors</th>
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<tr>
<td>72&quot;</td>
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<td>1067</td>
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</table>

INSIDE DIAMETER OF COIL

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

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.

EXCEPT AS EXPRESSLY PROVIDED HEREIN, THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

In no event shall Mecon Industries Limited be liable for special, indirect, incidental or consequential damages, however arising.