



BETTER, FASTER, SMARTER



Strip Handling Solutions for the Metals Industry

Guiding, Tension Measurement and Vision Inspection Solutions
for Metals Processing

INTRODUCTION

About Maxcess Metal Processing 3
 Typical Steel Processing Lines 4

STRIP GUIDE APPLICATIONS

Intermediate Guiding 6
 > Offset Pivot Guides / OPG 6
 > Kamberoller 7
 Uncoiler Guiding 8
 Recoiler Guiding 8

CONTROLLERS

D-MAXE Series Web Guide Systems 9

SENSORS

Sensors for Detection 10
 > Capacitive Sensor
 > Inductive Sensor
 > Radar High Temperature Sensor
 Optical Sensors 12

ACTUATORS

Hydraulic 13
 Electromechanical 14

STRIP TENSION MEASUREMENT

MTS Tension Measuring Unit 14
 Amplifiers 15

INSPECTION

VisionMAX AI 15

CONTACT

How to contact us 16

About Maxcess Metal Processing

Optimize Metal Processing Efficiency

When it comes to metal processing, the demands can be harsh. That's why you need equipment that can withstand the challenges ahead. Our range of products, engineered by Fife, MAGPOWR, Tidland, and Webex, are specifically designed to meet the unique needs of the metals industry.

What sets us apart is not only the durability, accuracy, and reliability of our equipment but also the seamless integration of all our components. By ensuring everything works together seamlessly, we enable faster line speeds, minimize waste, and ultimately drive increased productivity.

Worldwide Service And Support

Trust our expertise to provide you with the cutting-edge solutions that enhance metal processing efficiency and deliver tangible results. Many factors affect the proper selection of automatic guiding products and systems. It is often necessary to make in-plant assessment prior to recommending the right products for your operations.

Expert Solutions For Precise Strip Handling

Off-tracking problems can force slower line speeds and cause damage to your equipment, roll coverings, and even the strip itself. With over 80 years of hands-on experience, our expertise is unmatched when it comes to strip handling products, applications, installation, and customization. We provide solutions designed to keep your strip tracking straight, even on your most challenging problems.

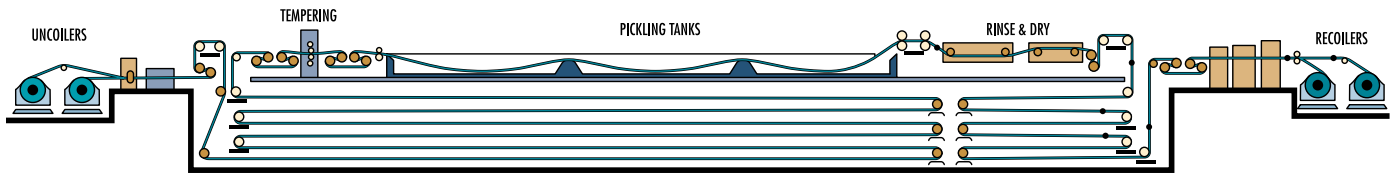
Our basic guiding system consists of a sensor, controller, actuator, and strip guide assembly. In general, sensors monitor the exact position of the moving strip and transmit that information to the controller. The controller then sends a signal to the actuator to adjust the strip positioning assembly to maintain accurate alignment of the strip.



Typical Steel Processing Lines

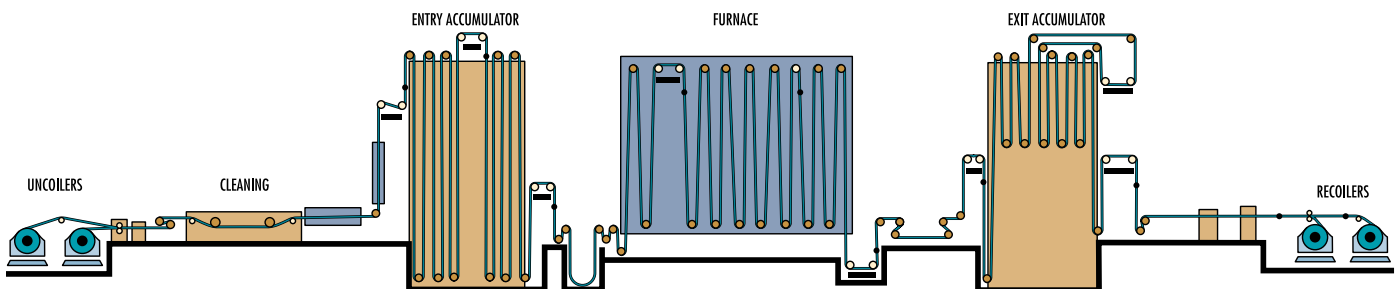
Continuous Pickling Line

Continuous Pickling Lines are used to remove surface impurities from metal strips by way of running the strip through tanks, usually containing acid. The strip is then washed and dried to prepare it for the next process.



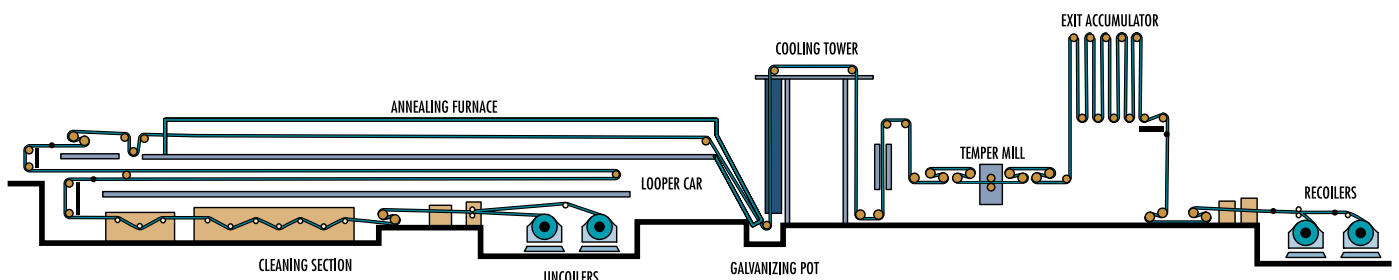
Continuous Annealing Line

Continuous Annealing Lines are used to treat the surface to vary various physical or chemical properties of the metal strips. This is done by heating the strip to a specific temperature and for a specific duration, depending on the desired properties.



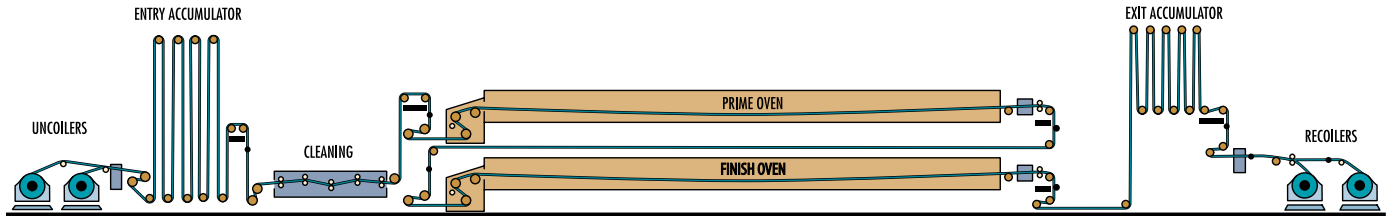
Continuous Galvanizing Line

Continuous Galvanizing Lines heat the metal strip and coat it with molten Zinc to protect the strip from rust and corrosion.



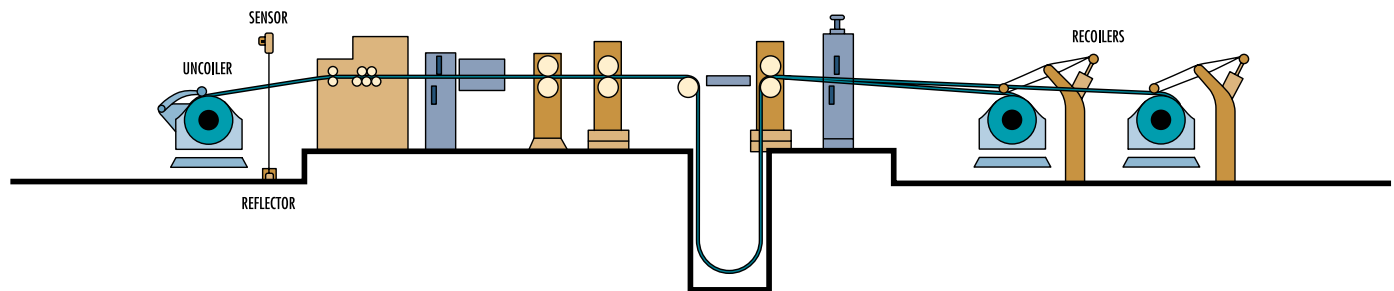
Continuous Painting / Coating Line

Continuous Painting/Coating Lines treat the surface of the metal strip by either applying paint, powder coating or film/laminates, adding value to the finished product.



Continuous Side Trimming / Slitting Line

Continuous Side Trimming / Slitting Lines are used to modify strip widths or remove unwanted product from the outer edges of the strip. Cut to Length Lines cut the strip into flat sheets of a desired width.



Legend



OPG Guiding Frame



Single Roller OPG Guiding Frame



Kamberoller Guiding Frame



Single Roller Kamberoller Guiding Frame



Uncoiler Guiding



Optical Sensor Uncoiler Guiding



Optical Sensor Recoiler Guiding

Intermediate Guiding

In seeking dynamic equilibrium, a strip will tend to track perpendicularly to each roll and can be subject to factors of rigidity, stress distribution, inertia, friction, and load distribution. The right intermediate guiding equipment will help to overcome many of these issues.

Fife control systems are available for both edge and center guiding. Most intermediate guides come equipped with a center guide sensor, making adjustments for strip width changes unnecessary.

To determine the entry and exit spans of an offset pivot guide, the following formula is used:

$$D_1 \text{ OR } D_2 \text{ (MIN)} = 0.00357 W \varnothing \sqrt{\frac{WEt}{T}}$$

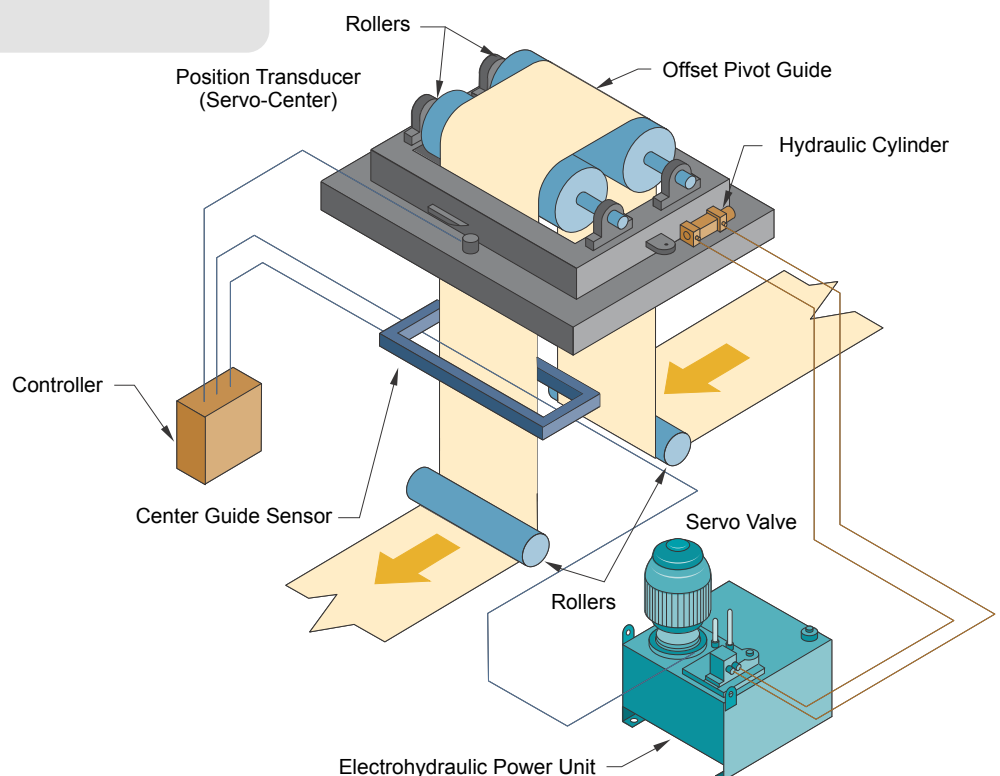
| | |
|---------------|---|
| D_1/D_2 | = Entering/Exiting Span (mm or inches) |
| E | = Material Modulus of Elasticity (N/mm ² or psi) |
| C | = Correction (mm or inches) |
| L | = Guide Span (mm or inches) |
| \varnothing | = Guide Angle (grade or degrees) $\varnothing = \text{SIN}^{-1}\left(\frac{C}{L}\right)$ |
| T | = Tension (N or lbs) |
| t | = Strip Thickness (mm or inches) |
| W | = Strip Width (mm or inches) |

Offset Pivot Guides / OPG

Our heavy-duty offset pivot guide assemblies in the metals industry are specifically designed for edge or center guiding applications where short entry and exit spans are required. The entry and exit spans are twisted to allow for shorter spans. These guides deliver precise correction by displacing the strip angularly through the span of the guide.

The offset pivot guide assembly can be centered, locked, or manually positioned to facilitate setup operations, emergency stops, and width changes.

- Recommended guide for short entry and exit spans
- Fast, accurate strip positioning for strip widths and wide tension ranges
- Precise, backlash-free actuators (electric or hydraulic)
- High-strength tube construction provides low-maintenance and long-lasting reliability
- Accommodates all threading styles
- Optional Servo-Center available to speed setup and threading
- Wide selection of mounting brackets, stands, sensors, and controllers available to ensure quick and easy installation



Kamberoller

This innovative steering guide delivers precise strip position by laterally bending the strip through a long entering span. This versatile guiding assembly provides immediate lateral correction for transient errors, while at the same time it compensates for the strip steady state errors.

Fife's Kamberoller Steering Guides are designed for dependable operation in the most demanding environments. They can accommodate high tensions and large variations in strip widths.

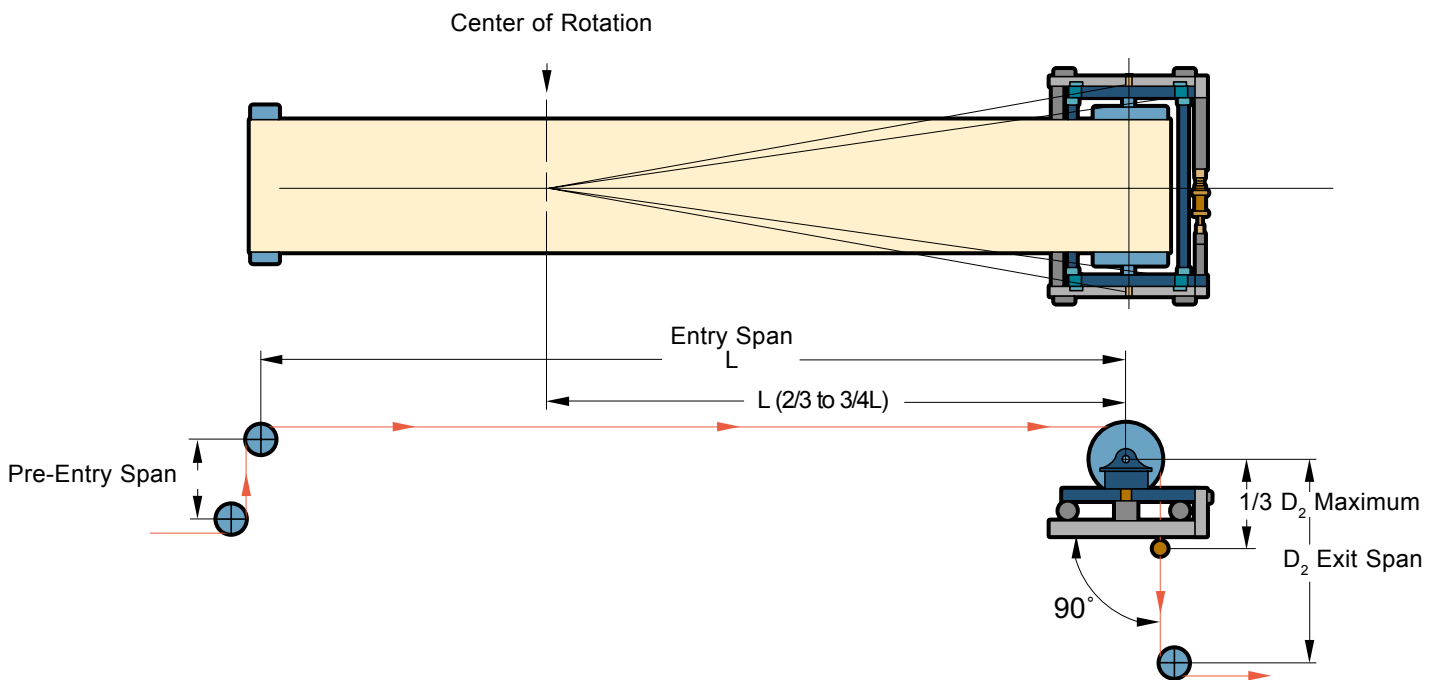
- Recommended for strip steering in long entry spans
- Strip positioning is fast and accurate
- High strength tube construction provides low-maintenance and long-lasting reliability
- Wide selection of mounting brackets, stands, sensors, and controllers available to ensure quick and easy installation

The required entry span and correction capacity of a steering guide can be determined using the following formulas.

$$1. C = \frac{9T}{tE} \left(\frac{L}{W}\right)^2 \quad 2. L = \frac{W}{3} \sqrt{\frac{CE}{T}}$$

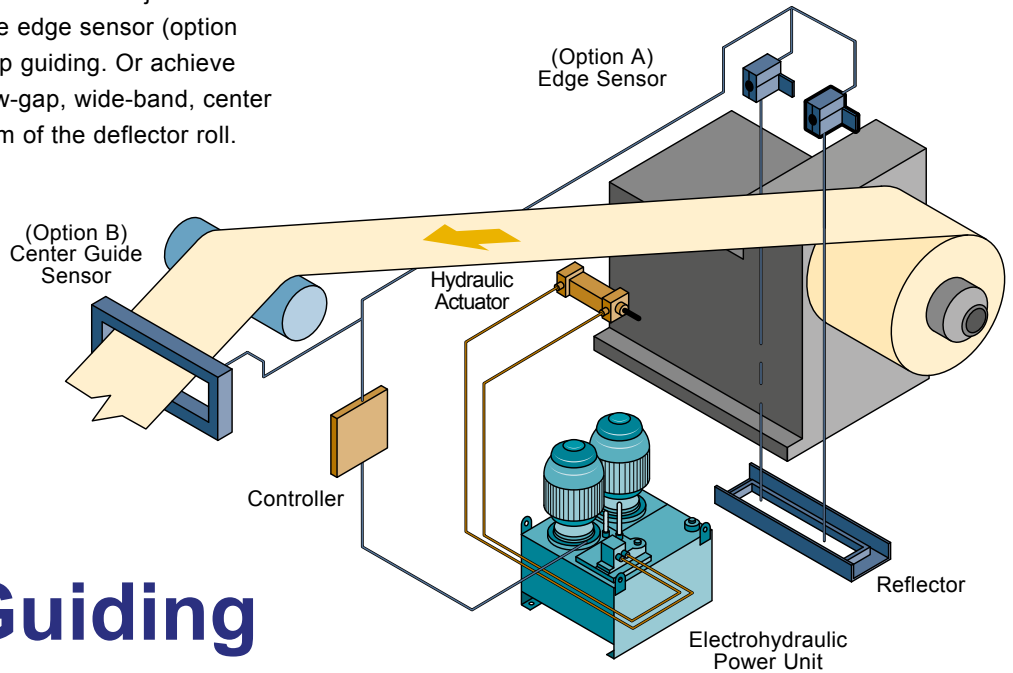
- C = Correction (inches or mm)
- T = Tension (pounds or N)
- E = Material Modulus of Elasticity (psi or N/mm²)
- L = Length of Entry Span (inches or mm)
- t = Strip Thickness (inches or mm)
- W = Strip Width (inches or mm)

The exit span (D_2) of a steering guide can be determined using the same formula as used for an offset pivot guide.



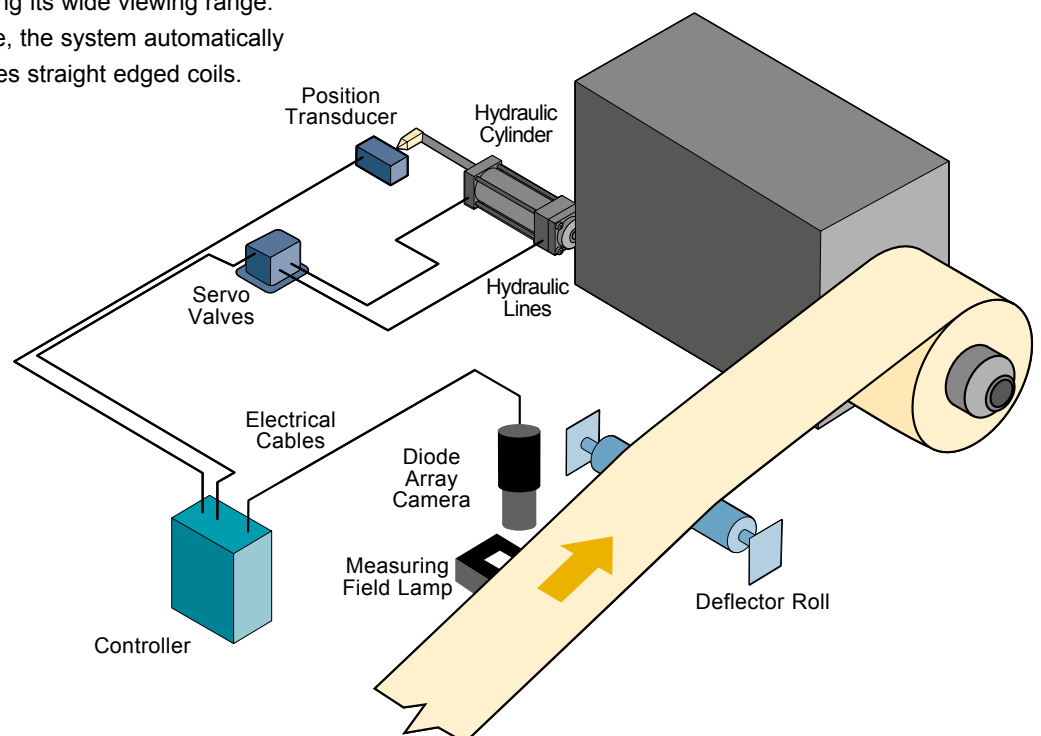
Uncoiler Guiding

Uncoiling systems allow the strip to be continuously and accurately payed-off means the strip is unwinded to a predetermined point. With the ability to utilize either edge or center guiding sensors, these systems are flexible enough to handle most applications. Located adjacent to the uncoiler, our wide-gap reflective edge sensor (option A) delivers stable and accurate strip guiding. Or achieve similar results by installing a narrow-gap, wide-band, center guide sensor (option B) downstream of the deflector roll.



Recoiler Guiding

Recoiler systems help to ensure evenly wound coils every time. A Diode Array Camera sensor is fixed mounted on the entry side of the deflector roll, positioned so that it is able to sense the incoming strip position from the minimum to the maximum strip widths using its wide viewing range. Instantly detecting the strip edge, the system automatically aligns the strip edge and provides straight edged coils.



D-MAXE Series

Web Guide Systems

The D-MAXE Controller fulfills at best the most complex requirements of strip guiding applications on metal processing lines. With the Fife D-MAXE Controller, operators can easily, for example, fine-tune the stagger to match a desired profile with access to rate, plateau, and period of transition.

Based on a modular architecture, the Fife D-MAXE is always the most efficient solution to improve your roll quality. The Fife D-MAXE system features excellent networking capabilities, with Ethernet based communication protocols such as Modbus TCP/IP, ProfiNet and Ethernet/IP available embedded in the controller, as well as the most common field buses such as Profibus DP and Device Net.

Several operator interface solutions are available, that combine intuitive graphics and texts in several languages on advanced control panels, featuring touch screen displays, to simplify setup and operation.



OI-TS
Touchscreen



D-MAXE



OI-Network (OI-N)

Key Features

- The advanced D-MAXE strip guide controller delivers highest strip guiding accuracy and thanks to its compact package, it is easy to integrate in any existing line control panel
- Intuitive setup and user-friendly operation reduces downtime between runs
- User interface available also as touch screen display. It combines texts in your language and intuitive graphics for easy setup and operation
- IP65 protection for harsh environments
- Compatible with the wide range of Fife sensors and controllers for Metal applications
- It does not require any preventive maintenance
- Versatile software, customized to fit all your specific requirements
- Heavy-duty industrial enclosure
- Easy to troubleshoot
- All I/O connectors are to terminal strips or connectors
- Output drives hydraulic servo valve, electromechanical actuator, or both
- Available interface: DeviceNet, Modbus TCP/IP, EtherNet/IP, Profibus, Profinet and more

Sensors for Detection

Capacitive Sensor

Durable and reliable, the capacitive sensor is protected from all external interference: ambient light, magnetic fields, dust.

- Ideal for use in harsh environments
- Virtually maintenance-free, requires no operator attention
- Perfect for inaccessible locations
- Capable of handling high temperatures, such as heating sections of annealing processes



GSC-1000
High Temperature Version

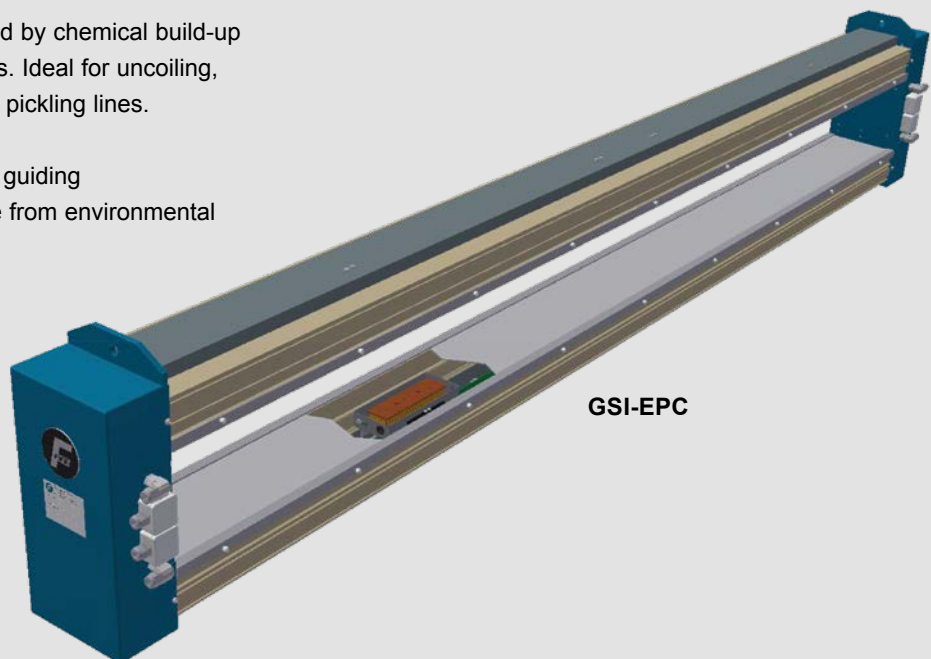


GSC-100
Standard Version

Inductive Sensor

These rugged sensors are unaffected by chemical build-up or interference from foreign elements. Ideal for uncoiling, recoiling and intermediate guiding in pickling lines.

- Can be used for edge or center guiding
- Shielded to prevent interference from environmental or application elements



GSI-EPC

Fife ERW Sensor

Electromagnetic High Temperature Sensor

The Fife **E**lectromagnetic **R**adar **W**ave (ERW) Sensor is used in treatment lines for non-contact detection of the centre position of metallic strips. It is an alternative to the well-known capacitive or inductive strip center sensors used today in continuous process furnaces.

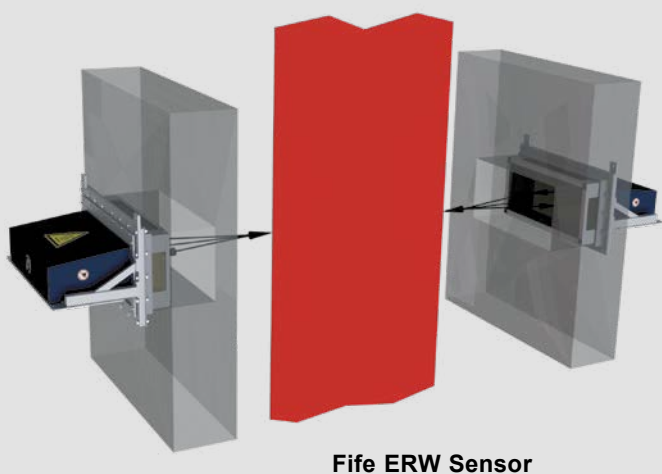
A system of two radar measurement devices is used, each through a furnace window. With non-conductive thermal insulation, detecting the position of the metal strip from outside the furnace. For the installation of the furnace window, an opening on each side of the furnace wall is required, level with the position of the metal strip. With the corresponding assembly flanges, these furnace openings remain air tight. The furnace windows can also be adapted to existing assembly flanges so that a conversion without significant mechanical modification on the furnace is possible. A radar measurement device consists of a set of antennas and evaluation electronics.

The transmitting antenna emits electromagnetic radar waves, through the furnace window onto the side of the metal strip.

The waves reflected from the side of the strip are picked up by the receiver antennas and this signal is processed in the sensor electronics. By evaluating the time taken for the radar wave to return, the position of the metal strip is determined. A digital signal processor calculates the strip's center position from the signals of both measuring devices and controls in real time the position of the strip from the control cabinet.



Fife ERW Sensor



Fife ERW Sensor

Key Features

- Completely maintenance-free and self-monitoring
- Insensitive to pollution of all kinds
- High accuracy
- No contact of the antennas with the furnace atmosphere, thus:
 - > High operational reliability
 - > Long life span
 - > Operates at furnace temperatures up to 1100°C
 - > Easy installation and alignment
 - > No direct cable connection between the sensors at either side of the furnace necessary
 - > Simplifies service work
 - > Quick replacement without production downtime in most cases
- Simple conversion of existing capacitive and inductive sensor installations

Optical Sensors

DAC-005 Diode Array Camera Sensor

DAC-005 is the ideal solution for applications where a wide field of view and the highest precision is required. Thanks to the robust IP-65 metals housing with drying cartridge, digital sensing and contamination monitoring, the DAC-005 is the right choice when dust, oil or condensing humidity is present.

- 5.150 pixels (7.725 interpolated) linear array camera to offer the highest accuracy with widest field view.
- Wide range of lenses - Extremely flexible in terms of distance to the web and width of field of view.
- Optional integrated field of view illumination for close up applications with tight space constraints.
- Designed for harsh environments - Highly resistant to contamination from dust, oil, vapor and condensing humidity.
- Optional local control panels for easy set up.
- Ethernet interface for easy networking with the Fife D-MAXE processors or Customer controllers, using the supported protocols ProfiNet, Ethernet/IP or TCP/IP.



DAC-005

Applications

- Edge or center guiding with one camera
- Width measurement with one or two camera
- Fixed sensor for recoiler

Sensing Capability

- Senses up to 31 edges out of 255

Analog Output

- 0mA to 10mA for 2 edges

Digital Output

- Ethernet, supporting MaxNet, ProfiNet and Ethernet/IP protocols
- 2 open collector outputs

Power Supply

- 10VDC to 30VDC

Temperature

- 0 - 50 °C

Protection Class

- IP-65 (DIN 40050)

SE-20 Wide-Gap Sensing

This heavy-duty sensor is engineered for gaps up to 4000mm. Using a polarized LED, the wide-gap sensor is unaffected by ambient light, making it ideal for highly reflective strips.

- Either edge or center guide sensing
- Regulated lamp voltage power supply for improved accuracy
- Fully proportional
- Rugged dust-tight and oil-tight enclosure
- Simple to set up



SE-20



Actuators For Guiding

Hydraulic Power Unit

Specifically designed for strip guiding, these power units are rugged, reliable, and responsive. They provide simplicity of design, operation, and employ modular motor-pump assemblies for ease of use and speed of maintenance. Equipped with their own hydraulic reservoir, pump, filter, and servo valve, a single power unit can simultaneously, yet independently, power one or more separate guiding systems.

- Provides superior response and control for any strip guiding application
- Spool-type servo valve provides exceptional sensitivity and stability
- Compact, modular construction minimizes exterior tubing and provides maximum ease of servicing
- Totally enclosed, explosion-proof motors available
- Units are equipped complete with hydraulic fittings and cables. Electrical cables are multiconductor shielded.

Hydraulic modular block and stand

Servo valve packages are available, so line hydraulics can be used as a hydraulic supply delivering the same reliability and performance as a Fife power unit.

- Pressure line inlet filter for long servo valve life
- Mounting stand or no mounting stand for ease of installation



Proportional Servo Valve

Our two-stage, high-resolution, spool-type servo valves provide precise, proportional control regardless of material or load requirements.

- Subplate-mounted valves for multiple guiding systems with a single power unit
- External mechanical null adjustment
- Rugged construction with heavy-duty aluminum body
- Fail-safe valve blocks all hydraulic flow on loss of electronic signal

Electromechanical Actuators

Electromechanical actuators are available for light- to heavy-duty applications when hydraulic is not desirable. Driven by a servo motor, they provide outstanding performance.

- Low power consumption
- Low maintenance requirements
- Ball screw and nut design for low friction, efficient operation, high positioning accuracy
- Wide variety of mounting, strokes and forces available
- Easy replacement of hydraulic cylinders



MTS Tension Measuring Unit

Accurate Load Measurement In Rugged Environments

When installed at both ends of a sensing roll, MTS tension measuring units accurately measure the total strip tension force acting on the roll, independent of strip width or location. Built for extreme environments, the MTS family are ideal for applications ranging from 20kN to 200kN. IP67 Protection ensures reliable operation in applications where wash-downs are required.

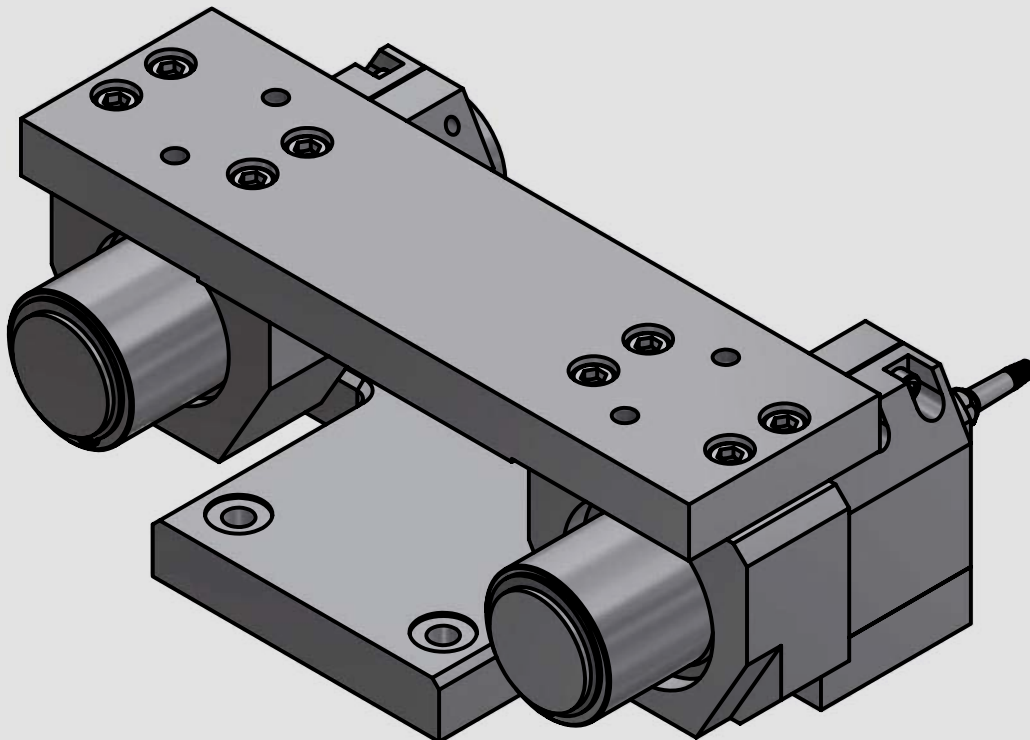
MTS tension measuring units are easily added to an existing line. Customized top plates or top plate adapter kits are also available for special applications.

Standard MTS pillow block load cells consist of bottom plate, customized top plate and two load cells. Design with one dummy instead of load cell is possible.

Due to the cylindrical design of the load cells, the measuring direction can be exactly oriented to the strip tension resultant.

Key Features

- Three sizes with five sensing ranges from 20kN to 200kN
- Rugged construction and IP67 rating for harsh environments
- Full Wheatstone Bridge ensures the highest levels of accuracy to reduce scrap and increase efficiency
- Pre-drilled and tapped top plate for easy mounting to existing pillow block bearings
- Compatible with all MAGPOWR load cell amplifier of the series DLCA-NET to provide strip tension from left side, right side and sum over communication of EtherNet/IP, PROFINET, Modbus-TCP or EtherCAT



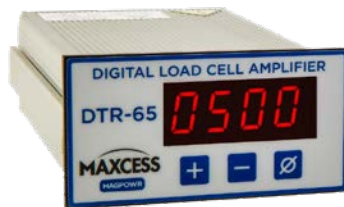
Digital Strip Tension Signal Amplifier

MAGPOWR's digital signal amplifiers DLCA and DTR-65 are compact in size while still incorporating ease of use, setup with three push buttons, a four-segment display, fully programmable low pass filter for each output, tension alarm set points, quick and easy calibration, and even weightless load cell calibration as alternative to factory strip tension measurement calibration.

The DLCA and DTR-65 provide analog outputs of 0-10V and 4-20mA as a tension reference to a drive or PLC for remotely displaying or controlling tension.



DLCA



DTR-65

Key Features

- DLCA: DIN-rail mounting, power supply 24VDC \pm 10 %
- DTR-65: front door mounting, power supply 115/230VAC or 24VDC \pm 10 %
- Setup and calibration through 3 push buttons and digital display
- Weightless load cell calibration on site or strip tension measuring system is supplied factory calibrated.
- 0 to 10VDC and (0) 4 to 20mA outputs
- Outputs and display with adjustable and separate digital filtering
- One push button for re-zeroing, with optional input for remote re-zeroing
- Alarm output for high tension or either low tension or high or low tension



VisionMax AI For Metals

With state-of-the-art Industry 4.0 technology, our operator-friendly vision system solutions allow you to automate workflows, reduce waste, improve quality and yields, and work better, faster and smarter. The new VisionMax AI uses artificial intelligence to work smarter: it easily detects defects before they become critical and expensive.

Common defects: Edgefault detection, dent detection, scratch detection, stain detection, hole detection, fold detection and more.



Benefits

- Run faster while improving productivity through automated smart converting
- No more returns and rework
- Reduce downtime and waste

HOW TO CONTACT US



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