EDDYWISE
Innovative NDE Solutions

- *Sharing data with MES*
- *Reporting*
- *Automation support for defect detection, sorting, and marking*
- *Compatibility with diverse production setups*
- *High-speed operation*

EDDYLINE II

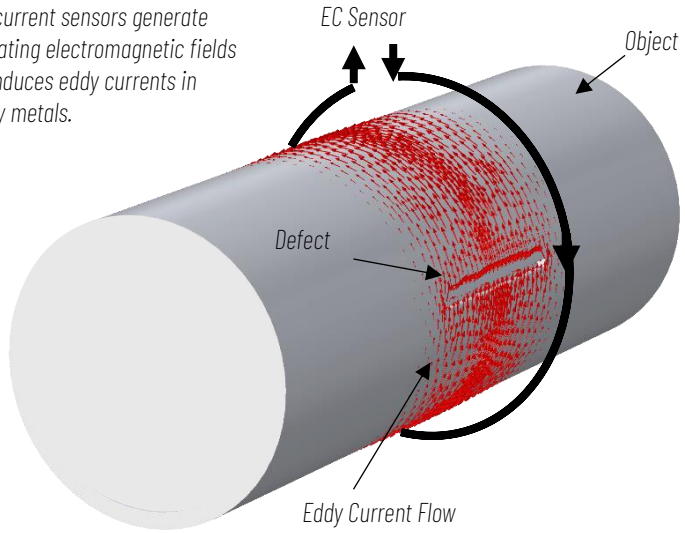
Transforming Eddy Current Testing into Manufacturing Excellence

Introduction

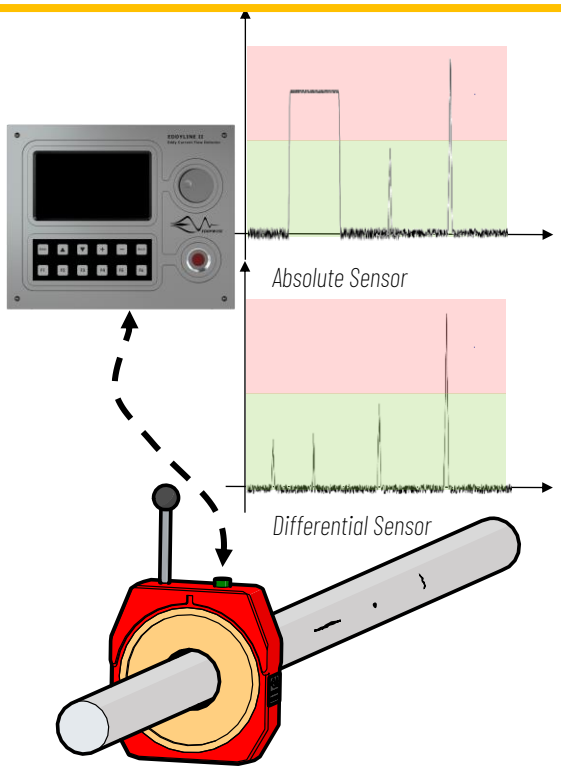
In today's competitive manufacturing landscape, inspection is no longer just about defect detection—it's about enabling continuous improvement and operational efficiency. Semi-finished product manufacturers must balance meeting quality standards with maintaining high throughput and minimizing waste. Without integrated and proactive inspection systems, defects can remain undetected, leading to inefficiencies, costly rework, and reputational risks in critical industries like automotive, aerospace, and oil and gas.

EddyLine II goes beyond traditional inspection methods, serving as a proactive enabler for manufacturing excellence. By integrating seamlessly into production lines, EddyLine II provides real-time feedback that empowers manufacturers to adjust processes as issues arise, reducing waste and improving efficiency. Its advanced automation capabilities—spanning defect detection, marking, sorting, and statistical reporting—allow manufacturers to make informed decisions that drive continuous improvement.

Eddy current sensors generate alternating electromagnetic fields that induces eddy currents in nearby metals.



Any defect can disturb eddy current flow and thus can be detected by eddy current sensor

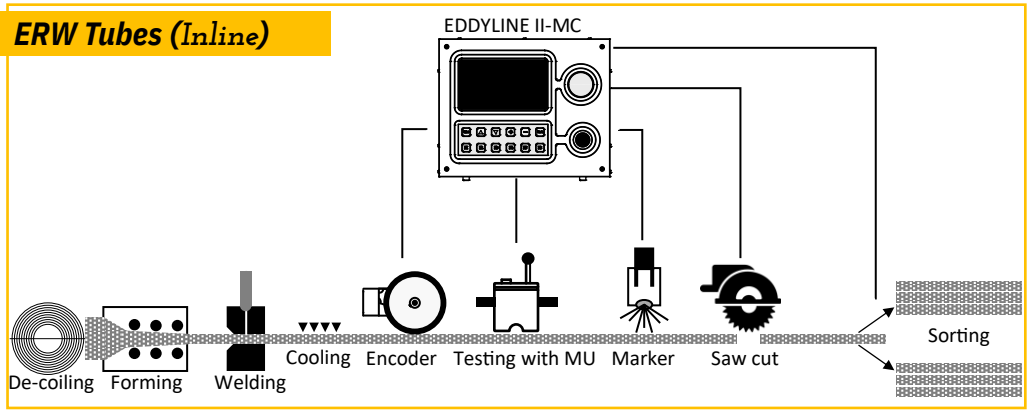


Advantageous

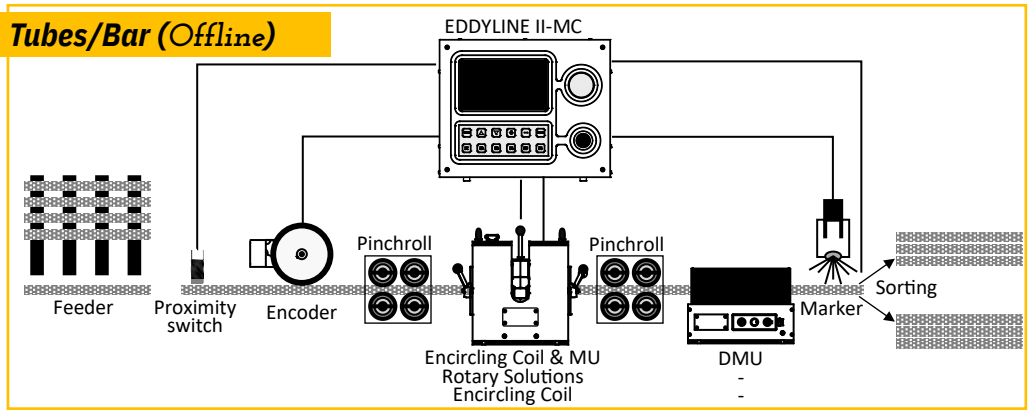
- *Comprehensive Integration into production lines*
  - *Sharing inspection data with manufacturing Execution Systems (MES)*
  - *Real-time synchronization to factory LANs for centralized monitoring and control*
  - *Full support for inline, continuous, and offline testing processes*
  - *Minimizes downtime with easy-to-integrate setups and reliable performance*
- *Automated Processes*
  - *Automatic defect detection and evaluation*
  - *Up to 3 sorting categories, acceptable, reject, and rework*
  - *Predefined and stored setups during line changes or product transitions*
  - *Ordering marking unit, sorting, and saw-cut based on defined setup*
  - *Provides immediate defect statistics for process optimization*
- *Testing Capabilities*
  - *Configurable for a wide range of semi-finished products, including wire, bars, and tubes with high-speed capability up to 12,000 m/min for inline applications*
  - *Support encircling coils, and segment probes*
  - *Supports various test configurations, including single and dual-channel setups, absolute and differential channels, and rotating systems*
  - *Quick setup and calibration for varying product types*
- *Meets ASTM, ISO, DIN, and API standards, ensuring compatibility with global requirements and customer specifications*
- *Intuitive touchscreen interface and user-friendly operation*
- *Software*
  - *Impedance Plane and Sweep Mode Display.*
  - *Real-time data visualization, reporting, and long-term storage.*
  - *Statistical tools for monitoring trends and optimizing process.*
  - *Network connectivity and remote access for centralized management*
  - *Built-in Error Indicators to help operators quickly identify issues such as incorrect configurations, connectivity problems, or Electrical faults*
- *Robust design for harsh industrial environment, mounted in a 19-inch rack with industrial cooling for reliable operation*

Applications

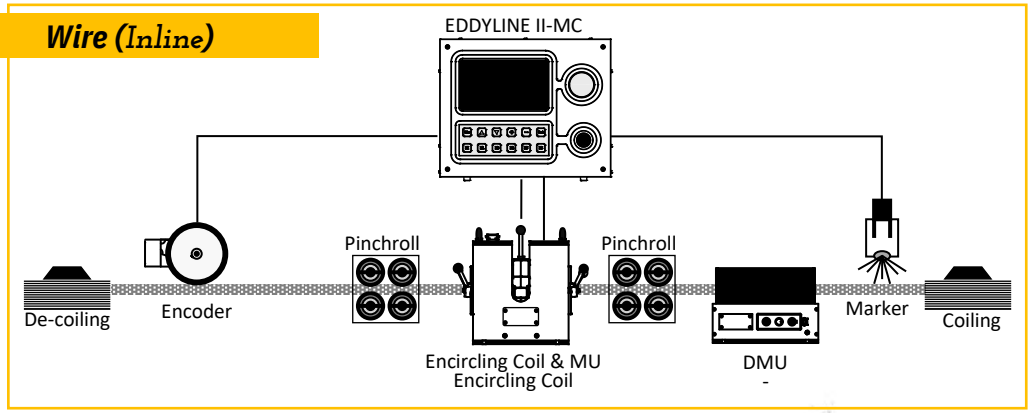
ERW Tubes (Inline)



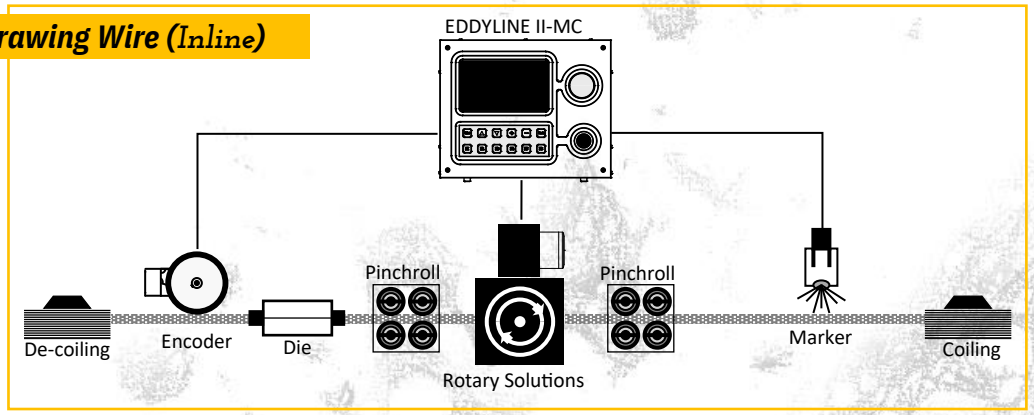
Tubes/Bar (Offline)



Wire (Inline)



Drawing Wire (Inline)



Smart Software for Superior Operation

Intuitive touchscreen interface

Use the touchscreen to set up parameters and to quickly access testing and reporting options

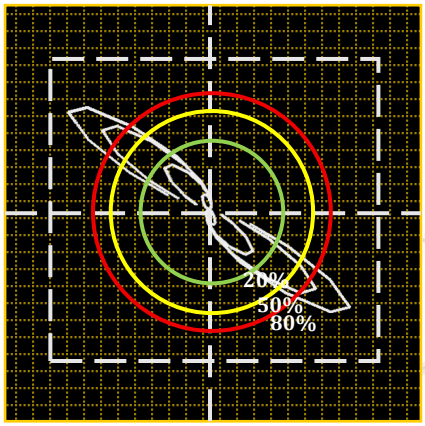
Angular Knob

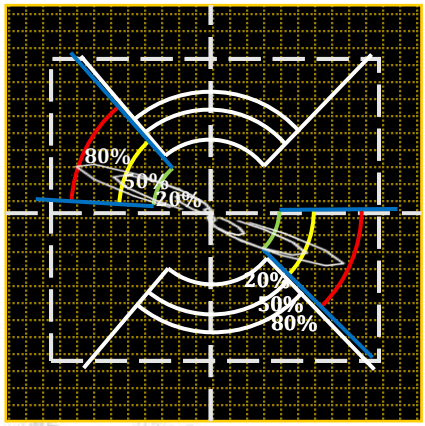
Rotate the Angular knob to set parameters after selecting them on the screen

Device Panel

Use the keypad to navigate and input commands for device operations

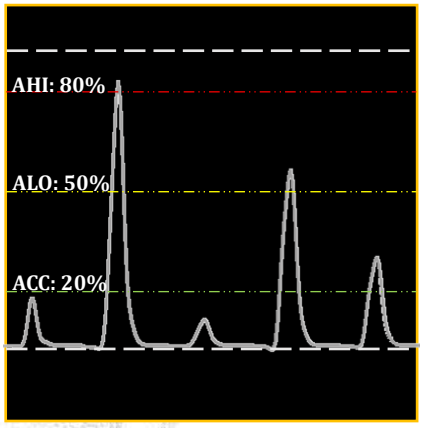
Real-Time Displays





Impedance Plane

The Eddyline II boasts advanced features for eddy current testing, including two impedance planes (one for each channel) that graphically display the relationship between resistance and reactance of the test coil. This helps in analyzing material properties and detecting defects. Additionally, it includes circular masks to evaluate signal amplitude and sector masks to differentiate signals based on phase angles, enhancing the accuracy and reliability of the inspection process.



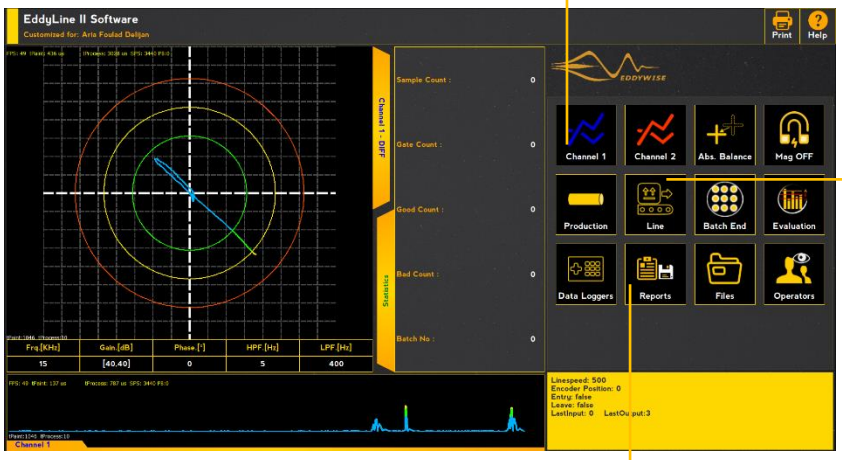
Sweep Mode

This is based on time or position, providing a dynamic view of the inspection area. It also includes a gain feature for sorting, which enhances the ability to differentiate between various signal strengths, ensuring precise and efficient inspections.

Software & Reporting

Channel Parameters

Eddyline II simplifies channel parameter setup with an intuitive interface. Clear icons and straightforward adjustments for gain, frequency, phase, filtering, and masking empower users to quickly optimize tests for various applications and materials



Line Parameters

Eddyline II software offers a function to define line parameters, enabling communication with external devices and achieving desired results. This function encompasses various applications, including marking and warning signals, saw distance and encoder settings for inline operation, proximity switch distances and untested zones for offline operation, and saw distance, feed length, and station/reject part counts for stop-and-go applications.

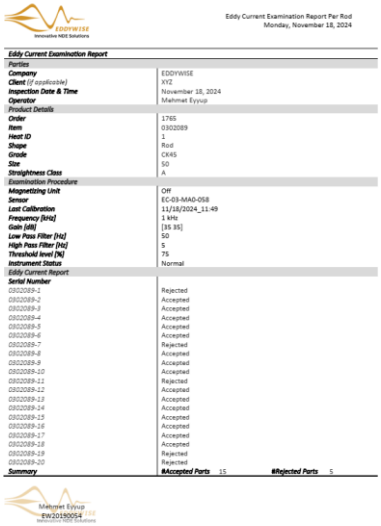
Reporting

The EddyLine II system incorporates robust reporting capabilities to ensure comprehensive quality control and facilitate data-driven decision making. We recommend generating two types of reports:

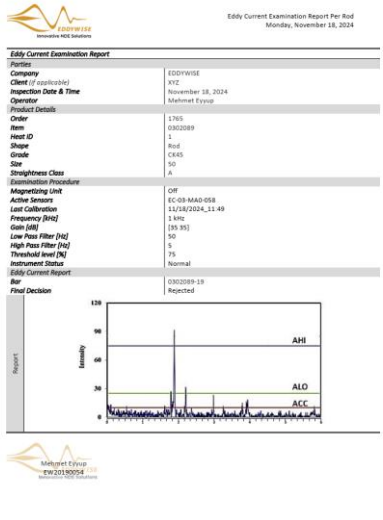
- ***Inspection Reports:*** *Capture critical information for each unit, including inspection date/time, operator identification, product details (part number, material), test methods used, equipment details (including calibration records), and detailed test results (e.g., defect locations, measurements images).*
- ***Summary Reports:*** *Aggregate data from detailed reports for defined periods (e.g., shifts, batches). These reports summarize key performance indicators (e.g., defect rates, pass/fail rates), identify trends and patterns, and enable statistical analysis to support continuous improvement initiatives.*

Furthermore, both detailed and summary reports can be automatically exported in various formats (e.g., .csv, .xlsx, .pdf) for seamless integration with Manufacturing Execution Systems (MES) or other data analysis tools, enabling real-time data analysis and improved efficiency in quality control processes.

Reports



Summary Report



Inspection Report

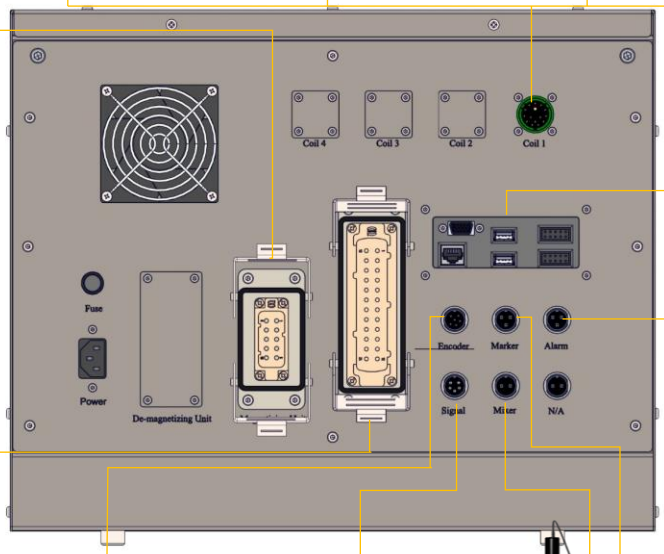
Magnetizing Unit

Rotary Solutions

EddyDesk

Segment Coils & Probe

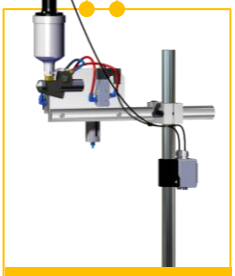
Encircling Coils



Sorting

Encoder

Alarm/Warnings



Marker

Proximity Switch

Industry 4.0 - Connected Inspection System

MES Integration:
Stream real-time data to MES for predictive maintenance, proactive quality adjustments, and improved overall equipment effectiveness.

Remote Access:
Securely access and control the system from any location with internet connectivity.

Data Storage:
Utilize robust data storage solutions to ensure data security, facilitate centralized management, and enable efficient data access and retrieval.

Data-driven Dashboards:
Visualize key performance indicators (KPIs), identify root causes of defects, and optimize production processes based on real-time and historical data.

Open API:
Integrate seamlessly with smart sensors, robotics, and other Industry 4.0 technologies through an open API.

Predictive Maintenance:
Leverage data analytics to predict potential equipment failures, allowing for proactive maintenance scheduling and minimizing downtime.

EddyLine II Specifications

Eddy Current Specifications

Sensor Types: Absolute and Differential in either bridge or reflection configuration. The instrument is fully compatible with EDDYWISE probes.
Sensor Connectors: *15 Pins Military*
Frequency Range: *10 Hz to 2 MHz*
Gain: *0 dB to 90 dB in 0.1 or 1 dB increment*
Rotation: *0° to 359.9° in 0.1° or 1° increment*
Sweep: *Variable from 0.005 s to 10 s per division*
Filters:

- *Low-pass: 0 Hz to 1000 Hz*
- *High-pass: off or 2 Hz to 1000 Hz*
- *Continuous null (Low-Freq. HP filter): 0.2 Hz, 0.5 Hz, 1.0 Hz*

Probe Drive: *HIGH (20 V) into 100 Ω.*
Display Erase: *0.1 s to 60 s*
Available Alarm Types: *3 simultaneous alarms. POLAR (circle), SECTOR (pie), SWEEP (time-based)*
A/D Resolution: *16 Bits*
Number of Channels: *1 Differential +1 Absolute*
Signal Resolution: *16ksps*

Applications

Field of Application: *tube, bar, wire, strip, cable sheathing, extruded sections: (roll forming, tube mills, drawing machines) for any metal section (ferrous or nonferrous)*
Max Speed: *500 m/min*
Production Lines:

- *Inline (Welding Lines)*
- *Offline (Tubes/Bar)*
- *Stop and Go (Cold Forming)*
- *Continuous (Drawing Lines)*

Coil Monitoring

Break and Disconnect Monitoring: Yes
Short Circuit Monitoring: Yes
Smart Sensor: Yes

Data Processing

Signal Processing and Defect Evaluation:
Signal evaluation with masks and 3 alarm thresholds:

- *Circular mask*
- *Mirrored sector masks*
- *2 pair/channel Mirrored sector masks with the remainder*

Test Results:
Compilation on 3 levels: Test piece (or section for continuous applications), batch, shift

Hardware

Screen: *10.1" diagonal color display*
Input: *Touch Screen, Knob, Keypad, Standard Keyboard*
Data Storage: *SSD*
Shielded Housing: *Yes*
Power requirements: *90-250 VAC / 50 Hz to 60 Hz / 1000W*
Dimension (Width × Height × Depth): *440 mm × 350 mm × 610 mm*
Weight: *approx. 35 kg*

Software

User interface:

- *Touchscreen operation using icons*
- *Multitasking real-time operating system*
- *Archiving of testing parameters for later retrieval*
- *Sample test mode: testing of individual lengths for quality control checks and parameter verification*
- *Software in English*
- *Online help for each menu, available in English*
- *Password-protected supervisor level for adjusting basic testing parameters and locking parameter access in the main level*

Reporting Software

- **Data Logger:** *Recording/viewing signals and data (opt.)*
- **EDDYWISE Viewer:** *Graphic display of defect locations and defect statistics.*

Data Transfer: *Standard LAN: Ethernet (TCP/IP)*

Input and Output Terminals

General Inputs: *8× Opto-Isolated Inputs*
General Outputs: *4× N.O/N.C Outputs*
Special Outputs:

- *Marker (Delayed)*
- *Alarm (Undelayed)*
- *Signal Tower Light*
- *Color Mixer*

Encoder: *Incremental Rotary Encoder*
External Display: *1×VGA interface for external monitor*
Network: *1× Ethernet (TCP/IP)*
USB: *2× USB connectors*

Environmental Conditions

Operating temperature: *0°C to 50 °C (32°F to 122°F)*
Internal cooling unit: *Fan cooling*
IP rating: *Designed to meet the requirements of IP40.*

Magnetization Control Unit

Mode of Operation: *DC*
Power Control: *Auto Tuning*

Website: http://www.eddywise.com/

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