



## **Integrated Metal Detector Conveyor Systems**

Application-specific solutions

Choice of Metal Detectors

Ensuring due diligence



## **Complete Conveyor System Solutions For In-line Metal Detection**

# Fully Integrated Solutions

## Maximum Reliability and Efficiency

**A metal detector conveyor is much more than a modified transport conveyor. The design of both conveyor and auto reject device will have a major impact on the effectiveness of your overall metal detection program. Purchasing an integrated metal detection solution from METTLER TOLEDO ensures you maximize your equipment performance.**

Conveyorized metal detectors provide flexible, integrated handling solutions capable of operating in almost any working environment. Whether your product is wet or dry, chilled or frozen, loose or packed, METTLER TOLEDO Safeline's range of metal detection conveyor systems can resolve your food inspection challenges.

### Application-specific solutions

- Choose from an extensive range of Safeline metal detectors with a long-standing reputation for reliability and stability
- From standard conveyor designs through to fully tailored solutions, we can ensure your conveyorized metal detection system meets all your production and compliance needs

### Robust construction, reliable operation

- Robust construction standards manufactured to EHEDG principles
- Choice of finishes and sealing standards to suit the working environment
- Hazards are designed out to support safe production processes

### Increased productivity through enhanced performance

- Automated reject system options ensure efficient removal of contaminated product from production processes
- Audible alarms and visual warnings alert operators to events requiring immediate attention to minimize downtime
- Components are configured for ease of cleaning and use, to support productivity improvement aims



Integrated product handling solutions provide reliable, consistent on-line performance regardless of the working environment



Photogated air blast reject device

### Choice of reject mechanisms

Our range of conveyor solutions includes simple stop-on-detection systems through to fully-automated detect-and-reject systems, using a wide range of product removal devices including:

- Photogated air blast
- Photogated punch / pusher
- Photogated overhead single or dual action sweep
- Lift flap or drop flap
- Single diverter arm
- Retracting band



Application-specific solution

### Choice of system designs

Complete conveyor systems provide flexible inspection solutions to suit a wide range of light to heavy-duty food and non-food applications.

Application-specific designs with the ability to configure feature sets to suit your processes and incorporate failsafe systems ensures that your metal detection solution can meet your needs now and into the future.



Safety considerations are inherent in the design of our integrated systems

### Safety is built-in

To protect operators during production and support safe maintenance practices, attention is paid to every detail of the conveyORIZED system design, including:

- Guards manufactured from clear, shatter-proof material without sharp edges
- A safety valve is fitted as standard on all pneumatics
- Fully-enclosed in-feed roller assemblies with no risk of finger traps
- Safety circuits designed to comply with EN ISO 13849

# Meeting Production Challenges Designed for High Performance

**METTLER TOLEDO Safeline’s metal detection conveyor systems provide flexible inspection solutions to suit a wide range of light to heavy-duty food and non-food applications. Systems can be designed and built to suit your specific process requirements. Choose from simple stop-on-detection systems through to fully automated detect-and-reject systems, customized with the most suitable Safeline metal detector for your application.**



### Series 30

Compact solutions for small spaces

- Compact footprint enables installation to take place in the smallest spaces
- Optimized width and height of conveyor design

### Series 40

Standard solution for light to medium weight applications

- Optimized width and height of conveyor design
- Failsafe and system monitoring sensor packs for retailer and food standards compliance

### Series 80

Flexible solution for packed or loose products

- Customizable reject options
- Suitable for a wide range of environments with a choice of modular belt or food-grade, flat, Polyurethane (PU) belt
- Failsafe and system monitoring sensor packs for retailer and food standards compliance

#### Compatible tunnel metal detectors

Profile Compact, Profile Vent Tube

Signature, Signature Touch, Profile Compact, Profile & Profile Advantage

Signature, Signature Touch, Profile Compact, Profile & Profile Advantage

#### Metal Detector Aperture sizes

Standard range of sizes

Standard range of sizes

Configurable combinations

#### Reject Devices Available

Stop on Detect; Air Blast; Pusher

Stop on Detect; Air Blast; Pusher

Stop on Detect; Air Blast; Pusher; Lift-/Drop-Flap; Overhead Sweep; Diverter Arm; Retracting Band

#### Conveyor Dimensions

Choice of set lengths, widths and height

Choice of set lengths, widths and height

Flexible choice of lengths, widths and height options

# Tailored System Design To Suit Your Requirements

From a choice of metal detector heads, to reject mechanisms, detector finishes and due diligence enhancements, we can customize your integrated metal detection conveyORIZED solution to optimize performance and ensure you meet your compliance requirements.

For the most highly specialized applications, take advantage of our in-house design capabilities to create a unique solution that will meet your production challenges. Tailored solutions can include requirements such as multi-level conveyors, dual or triple-headed solutions, custom-built transport systems with specialized reject mechanisms and more. Your local METTLER TOLEDO Sales Representative will work to understand your needs and develop a solution that delivers tangible benefits for your business.



## Series 90

Wide retracting band solution

- Specially designed for the inspection of light to medium weight, multi-lane or randomly presented bakery and confectionery products and packs
- Sensor guided automatic belt tension and tracking system
- Failsafe and system monitoring options available

## Series 200

Optimized for bulk product inspection

- Choice of food grade flat, Polyurethane (PU) or heavy duty modular belt to suit all applications
- Failsafe and system monitoring sensor packs for retailer and food standards compliance

## Bespoke Systems

Highly tailored solutions to suit your requirements

- Tailored design service combined with decades of industry expertise to meet the most challenging metal detection applications
- Our bespoke inspection system solutions enable you to meet your quality assurance standards every time

Signature, Signature Touch and Profile

Configurable combinations

Wide Retracting Band

Flexible choice of lengths, widths and height options

Signature, Signature Touch, Profile, Profile Advantage & Profile RB

Configurable combinations

Stop on Detect; Pusher; Lift-/Drop-Flap; Overhead Sweep; Diverter Arm

Flexible choice of lengths, widths and height options

Signature, Signature Touch, Profile Compact, Profile, Profile Advantage & Profile RB

Configurable combinations

Choice of options tailored to the application

Flexible choice of lengths, widths and height options

# Choosing a Metal Detector Tailored to Your Needs

A wide variety of Safeline R-Series tunnel metal detector heads can be combined with our conveyor systems to provide a fully integrated metal detection system. Proven Safeline detector technology and robust build quality are used to deliver unrivalled levels of detection sensitivity and stability to ensure that all types of metal contaminants are identified and removed from your process.



### Signature 300

For less demanding applications

- Simple, robust, push-button membrane key panel operating system
- Auto-Balance Control and on-board fault reporting combine to deliver a stable operating platform to reduce potential downtime.



### Signature Touch

Easy to use in less demanding applications

- Combines Signature technology with a full-color touchscreen interface for maximum operator efficiency
- High frequency coil technology and enhanced filtering provides stable long term performance



### Profile Compact

For small spaces

- For use in-process or end-of-line where space is at a premium
- Maximized operator efficiency through easy to use intuitive, full color touchscreen
- Advanced Condition Monitoring enables preventative maintenance planning to maximize uptime

#### Frequency

Dual Frequency - Up to 300 kHz

Dual Frequency - Up to 300 kHz

Dual - Up to 800 kHz

#### Finish Options

Painted Aluminum  
Bead Blast Stainless Steel

Painted Aluminum  
Bead Blast Stainless Steel

Painted Aluminum  
Bead Blast Stainless Steel

#### Languages

21

33

33

#### Connectivity Options

RS 232; EtherNet; OPC DA

RS 232/422; EtherNet/IP; Modbus TCP; USB; OPC DA; PackML; Profinet IO

RS 232/422; EtherNet/IP; Modbus TCP; USB; OPC DA; PackML; Profinet IO

#### ProdX-enabled

Yes

Yes

Yes

## Available R-Series Tunnel Metal Detector and Conveyor System Combinations

	S30	S40	S80	S90	S200	Bespoke
<b>Signature 300</b>	–	•	•	•	•	•
<b>Signature Touch</b>	–	•	•	•	•	•
<b>Profile Compact</b>	•	•	•	–	–	•
<b>Profile Vent Tube</b>	–	–	–	–	–	•
<b>Profile</b>	–	•	•	•	•	•
<b>Profile Advantage</b>	–	•	•	*	•	•
<b>Profile RB</b>	–	–	–	–	•	•

\*Restricted aperture sizes only



### Profile Vent Tube

For metal filling nozzles in filled bottles

- Maximized operator efficiency through easy to use intuitive, full color touchscreen
- Suitable for the inspection of multiple bottle products without the need for adjustment or program changes



### Profile

Optimized for dry product applications

- Tuned frequency maximizes detection performance
- Maximized operator efficiency through easy to use intuitive, full color touchscreen
- Product clustering feature minimizes downtime from product changeover
- Advanced Condition Monitoring enables preventative maintenance planning to maximize uptime



### Profile Advantage

For challenging applications

- Multi-Simultaneous Frequency and Product Signal Suppression overcome product effect in applications that are wet, warm, cooling, chilled, or where products are packed in metallized film
- Delivers exceptional reliability, improved ease of use and virtually eliminates false rejects



### Profile RB

Optimized for bulk product applications

- Using tuned frequency, delivers ultimate metal contamination detection sensitivity when inspecting large, heavy or bulk products
- Maximum performance, stability, reliability and on-line efficiency
- Easily integrated with a series 200 conveyor; ideal for use in dry environments

Dual Frequency - Up to 300 kHz

Bead Blast Stainless Steel

33

RS 232/422; EtherNet/IP; Modbus TCP; USB; OPC DA; PackML; Profinet IO

Yes

Multi, Ultra-high and Tuned Frequency - Up to 800 kHz

Painted Aluminum  
Bead Blast Stainless Steel

33

RS 232/422; EtherNet/IP; Modbus TCP; USB; OPC DA; PackML; Profinet IO

Yes

Multi-Simultaneous Frequency

Brushed Stainless Steel

33

RS 232/422; EtherNet/IP; Modbus TCP; USB; OPC DA; PackML; Profinet IO

Yes

Multi, Ultra-high and Tuned frequency - Up to 800 kHz

Painted Aluminum  
Bead Blast Stainless Steel

33

RS 232/422; EtherNet/IP; Modbus TCP; USB; OPC DA; PackML; Profinet IO

Yes

# Protecting Your Customers

## Configurable to Suit Your Application

Dimensions and Materials		Series 30	Series 40	Series 80	Series 90	Series 200
Belt Materials	Food Grade Polyurethane (PU)	Yes	Yes	Yes	Yes	Yes
	Food Grade Modular	N/A	Yes	Yes	N/A	Yes
Outline Dimensions (mm)	Conveyor Length	1000 or 1500	1400 or 1800	up to 4000	1500 - 4000	up to 4000
	Belt Width	200, 300 or 400	200, 300 or 400	100 - 650	750 - 1850	300 - 950
	Belt Height	750, 850 or 950	740, 820, 900 or 980	300 - 2000	800 - 2000	300 - 2000
MD Aperture Size (mm)	Width	250, 350 or 450	250, 350 or 450	up to 700	up to 1900	up to 1000
	Height - Rectangular orientation	100, 150 or 200	100, 125*, 150, 175* or 200	up to 500	up to 450	up to 550
	Height - Oversquare orientation	N/A	N/A	N/A	N/A	up to 1000
Conveyor Frame Materials	Mild Steel – White Painted	N/A	Standard	Standard	Standard	Standard
	Stainless Steel – Brushed	Standard	Standard	Standard	Standard	Standard

\*Profile Compact not available

Environment Conditions	Series 30	Series 40	Series 80	Series 90	Series 200
Standard Operating Temperature	-10°C to +45°C			-10°C to +30°C*	-10°C to +45°C
Storage Temperature	-10°C to +50°C			-10°C to +45°C*	-10°C to +50°C
Conveyor Ingress Protection	IP65				
Harsh Environment IP66 Upgrade	N/A	N/A	Option	N/A	Option

\*Higher temperature upgrades are available

Speed Configuration	Series 30	Series 40	Series 80	Series 90	Series 200	
Fixed Speed (m/min)	10, 15, 20, 30, 45, or 60	10, 15, 20, 25, 30, 40, 50 or 60	10, 15, 20, 25, 30, 40, 50 or 60	N/A	10, 15, 20, 25, 30, 40, 50 or 60	
Variable Speed (m/min)	5 to 15	N/A	N/A	N/A	Yes	N/A
	10 to 25	N/A	N/A	Yes	Yes	Yes
	25 to 40	N/A	N/A	Yes	Yes	Yes
	40 to 50	N/A	N/A	Yes	Yes	Yes
	> 60	N/A	N/A	Yes	N/A	Yes

Note: Speed value tolerance +15% / -10% for fixed speed options



## Configuration Options

Reject Mechanisms	Series 30	Series 40	Series 80	Series 90	Series 200
Stop-on-Detection	Standard	Standard	Standard	N/A	Standard
Photogated Air Blast (Medium Duty)	Option	Option	Option	N/A	N/A
Photogated Air Blast (Heavy Duty)	N/A	N/A	Option	N/A	N/A
Photogated Punch / Pusher	Option	Option	Option	N/A	Option
Photogated Overhead Single Sweep	N/A	N/A	Option	N/A	Option
Photogated Overhead Dual Action Sweep	N/A	N/A	Option	N/A	Option
Lift-/Drop-Flap	N/A	N/A	Option	N/A	Option
Single Diverter Arm	N/A	N/A	Option	N/A	Option
Retracting Band (up to 650mm belt width)	N/A	N/A	Option	N/A	N/A
Retracting Band ( $\geq 750$ mm belt width)	N/A	N/A	N/A	Standard	N/A

System Options	Series 30	Series 40	Series 80	Series 90	Series 200
Beacon Sounder	Option	Option	Option	Option	Option
Product Guides	Option	Option	Option	Option	Option
Pack Sensors	Option	Option	Option	Option	Option
Reject Bin	Option	Option	Option	Yes	Yes
Stop System Warnings and Alarms	Option	Option	Option	N/A	Option
Automatic Reject System Warnings and Alarms	Option	Option	Option	Option	Option
Retailer Compliant System Enhancements	N/A	Option	Option	Option	Option
Fault Warning Systems	N/A	N/A	Option	Option	Option
Inclined Belt	N/A	N/A	Option	Option	Option
Flighted Belt	N/A	N/A	Option	N/A	Option
Auto Belt Tracking	N/A	N/A	Option	Standard	N/A
Quick Release Belt design	N/A	N/A	N/A	Standard	N/A
Conveyor Upgrade for Double or Triple Detector Head System	N/A	N/A	Option	N/A	N/A
Enclosure Mounted Printer Port	N/A	Option	Option	Option	Option
Enclosure Mounted Ethernet Connection	N/A	Option	Option	Option	Option
USB Option (V4 Profile detectors only)	N/A	N/A	Option	Option	Option

Other belt options are available on bespoke systems, such as troughed or side-walled belts.

Product Applications	Series 30	Series 40	Series 80	Series 90	Series 200
Typical Inspection Applications	Light to medium duty for small spaces	Light to medium duty food and non-food applications	Packed and loose product	Multi-lane products	Packaged bulk dry product
Maximum Belt Load	9kg	18kg	15kg/m length	10kg/m <sup>2</sup>	30kg/m length
Maximum Product Weight*	9kg	9kg	15kg	N/A	30kg

\*Weight may differ depending on reject mechanism capabilities

# Enhanced Due Diligence To Meet Food Safety Standards

**The starting point for compliance with standards, regulations and legislation is conducting a HACCP audit, followed by the establishment of necessary critical control points (CCP's) to mitigate the risks identified. Once the need for a metal detection system is established, then attention should focus on specifying the system correctly.**

## **More than just a metal detector**

Installing a metal detector can reduce the potential for metal contamination reaching the end consumer. However, instances of product recalls due to metal contamination do still happen.

Research points to procedural and system failure rather than metal detector failure as the main cause.

The "due diligence" enhancement from METTLER TOLEDO Safeline improves the level of control and management of the inspection system.

This ensures the critical control point (CCP) delivers not only high performance metal detection, but also an increased level of failsafe functionality that improves the capability and performance of the complete system.



## **Meeting standards, minimizing costs**

Requirements differ from standard to standard. To be sure of meeting compliance needs and maximizing the opportunity to prove due diligence, a metal detection system should be correctly specified. A well designed system will include a high quality detector and an array of control equipment, sensing devices and failsafe systems.

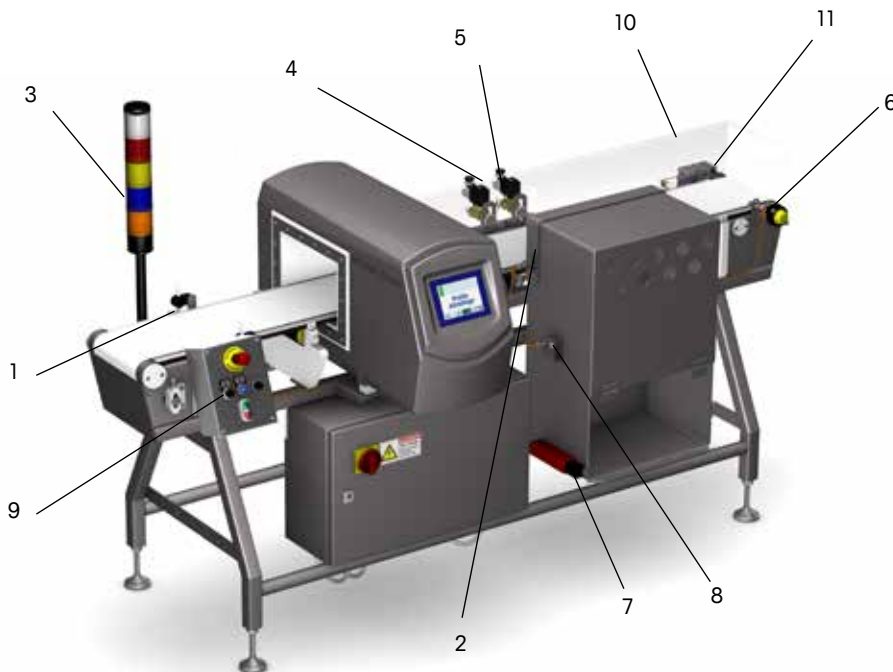
Even the smallest product recalls can be costly. As the scale increases, so does the potential for damage to your business. Physical recall costs are relatively easy to calculate. Much more difficult to understand is the hidden cost of damage to your brand and hard earned reputation.

## Supporting international retailers' standards

In addition to the standard features, system performance and security can be further improved by including additional failsafe system options to support compliance with specific international retailer standards.

## Choosing the right metal detector

Critical to the performance of any metal detection system, it is important to choose the right detector for your application. Profile and Profile Advantage systems feature Condition Monitoring technology, high security Operator Access and Event logging, and discriminated detection event logging as standard for increased uptime and enhanced compliance.



## Due Diligence Features

Feature	Description
1. In-feed Pack Sensor	Essential for the optimum timing and operation of the reject device. Ensures the correct contaminated product or products are removed from the line regardless of the size and position of the contaminant in question. This sensor also doubles as a pack rate monitor that can be set to alarm should the packing rate become too fast for the reject mechanism to guarantee accurate rejection.
2. Reject Confirmation Unit	Upon detection of metal contamination, the system can be configured to expect a further signal from the reject confirmation sensor that a product or number of products has been rejected. If confirmation is not received, the system will alarm and stop the conveyor.
3. Pedestal Mounted Lamp Beacon Stack	Provides a visual indication of various fault or warning conditions to quickly alert operators to specific fault conditions.
4. Air Failure Sensor	Provides a warning should the pneumatic supply fail or drop to a level that could prevent a successful rejection taking place.
5. Automatic Reject Mechanism	A choice of rejection mechanisms is available dependent on line speed, product weight, product dimensions and the nature of the packaging material.
6. Reject Check Sensor with Test Facility	Acts as a communication link with the In-feed Pack Sensor by checking the functionality of the Reject Sensor, which in-turn provides a check of the functionality of the In-Feed Pack Sensor.
7. Reject Bin With Bin-Locked Sensor	Reject bins are available on most models with a mechanical lock. An electro-mechanical lock option is also available on selected systems. The sensor indicates whether the bin is locked as an added safety feature.
8. Bin Full Sensor with Test Facility	If the reject bin becomes full the conveyor will automatically stop until the bin is emptied where the conveyor can be restarted.
9. Key Operated Reset Switch	Key operated reset switch provides additional security to minimize the risk of unauthorized re-start.
10. Tunnel Guard	Prevents access to a product as it leaves the metal detector and passes downstream towards the reject device.
11. Encoder	Tracks contaminated products through the system in conjunction with the In-feed Pack Sensor to improve reject accuracy, especially when using variable speed systems.

# Safe Equipment Design

## Supporting Operator Safety

**We have developed an Equipment Safety Process to ensure our equipment meets the needs of our customers around the globe. We build safety into our equipment and have trained our design personnel so they have in-depth knowledge of national and international standards. This allows us to provide solutions that meet global requirements as a matter of course, and not an extraordinary event.**

Safe equipment design is a fundamental component of all METTLER TOLEDO Safeline's metal detection conveyor systems.

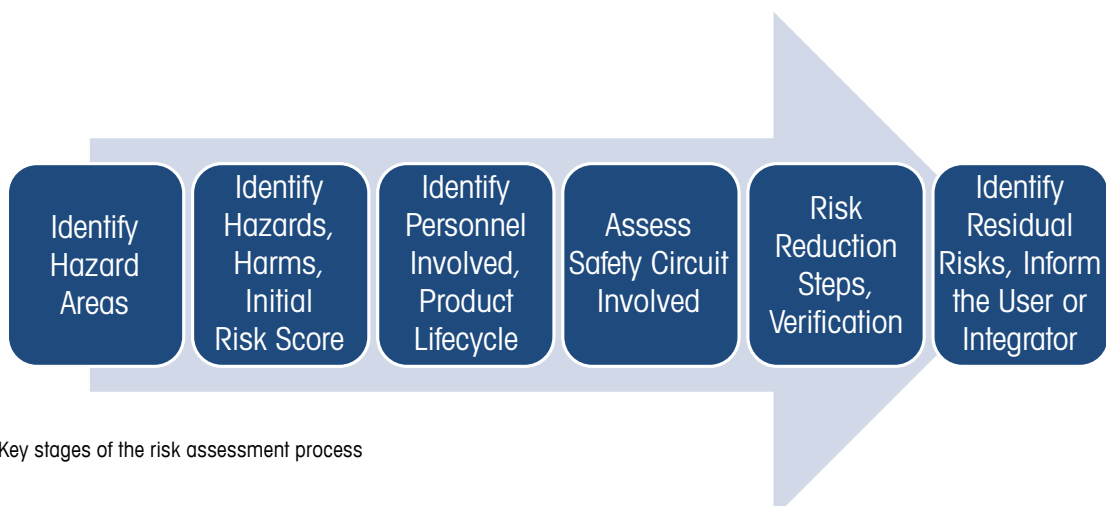
### **Hazards addressed at design stage**

Defined procedures in accordance with EN 12100 are used for identifying potential hazards and assessing the level of risk they present to users. Where possible these hazards are eliminated through Safe Equipment Design.

If a hazard cannot be fully removed through design then guarding is used to eliminate its risk or reduce it to a manageable level. Then ISO 3864 compliant safety labels are installed at potentially hazardous areas on the equipment.

### **Risk assessments**

A comprehensive EN 12100 compliant Safety Risk Assessment is carried out on every METTLER TOLEDO Safeline metal detection conveyor system.





### **Training to ensure safe operation**

Initial training is provided as part of the start-up service offered by METTLER TOLEDO.

More in-depth training is available via our modular training programme. Content and format can be tailored to specific user requirements on request. Specific modules are available for:

- Operators
- Quality personnel
- Maintenance staff

### **End user reference materials**

To make it easy for operators to use the equipment safely, METTLER TOLEDO Safeline's metal detection conveyor systems are supplied with instructions and safety information in a wide number of languages.

### **Supporting documentation**

METTLER TOLEDO Safeline's metal detection conveyor systems are supplied with a range of CE compliant supporting documentation including:

- User Manual
- Parts List
- General Assembly Drawing and associated recommended spare parts list
- EU Declaration of Conformity
- Electrical schematic



### **IPac Supports Verification Requirements**

All metal detection systems can be supported with a METTLER TOLEDO IPac startup and performance verification service. This provides the necessary documentation to support compliance with standards, prove due diligence has been exercised and simplify the task of meeting external auditor requirements.

# Easier Compliance

## Enhanced Levels of Automation

To comply with the latest regulations and quality standards, it is no longer sufficient to rely on paper based record keeping processes. **ProdX™** software delivers monitoring and data management, making processes more streamlined, more accessible and more efficient.

### Productivity

Centralized product set-up and changeovers reduce operator errors, shorten set-up time, and increase production uptime.

### Record keeping for compliance

**ProdX** software delivers an automated, reliable and comprehensive solution to performance monitoring record keeping. The latest metal detector regimes including those recommended by major retailer groups are incorporated into the software as standard.

Also included is the ability to enter incidents (rejects, alarms and warnings), along with a reason and corrective action.



### Quality

Dashboard monitoring provides early warning of key inspection process issues to ensure product quality is never compromised.

### Security

Events monitoring tracks device alarms, events, and changes for process security. Robust user management means only authorized personnel have access to critical product and production information.

### Clarity

Graphical user screens with machine state status icons, active reject monitoring by device, complete with comprehensive reporting capabilities ensure you have complete clarity of your product inspection program.



**ProdX** is scalable to meet your needs whether monitoring a single packaging line or monitoring numerous lines from multiple production sites and is supported by the largest team of Product Inspection sales and service professionals in the world.



# Service Support

## Where and When You Need It

**When you invest in a piece of METTLER TOLEDO equipment, you are assured of the highest build quality, consistent performance and maximum reliability, but that is just the start of the relationship.**

Our sales teams provide initial guidance on selecting the correct system solution to suit your needs. Once your system is up and running, you can be sure that a METTLER TOLEDO trained service expert is never far away. Our global team of expert service technicians is ready to give ongoing support throughout the life of the system.



### Full product lifecycle support for your metal detection equipment:

- Start-up support
- Certified test samples
- Initial & ongoing performance verification
- Spare parts & spares kits
- Equipment repairs
- Upgrades and refurbishment
- Operator, Quality & Maintenance training



## Visit our **Comprehensive** Online Expertise Library

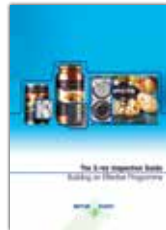
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For more information

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