

BULK MATERIAL METAL DETECTORS

PRINCIPLES OF OPERATION, APPLICATIONS & SYSTEM DESIGN

Understanding electromagnetic detection, sensitivity, product presentation, automatic rejection, validation, and line integration for powders, granules, flakes, grains, and other dry bulk materials.



-  **PROTECT YOUR PRODUCT**
-  **PROTECT YOUR EQUIPMENT**
-  **PROTECT YOUR BRAND**
-  **PROTECT YOUR BUSINESS**

**ENGINEERED TO DETECT.
DESIGNED TO PROTECT.**



POWDERS

GRANULES

GRAINS

FLAKES

PELLETS

CHEMICALS

From powders and spices to plastics, grains, nutraceuticals, chemicals, and pet food ingredients, bulk material metal detection helps protect products, customers, and downstream equipment before contamination reaches packaging or the marketplace.



INSPECT
Every Particle



DETECT
Metal Contaminants



REJECT
Contaminated Product



VERIFY
System Performance

HOW THE TECHNOLOGY WORKS

ELECTROMAGNETIC DETECTION PRINCIPLES

InspeX bulk material metal detectors use balanced electromagnetic fields to identify and reject metal contaminants as product flows through the detector aperture.



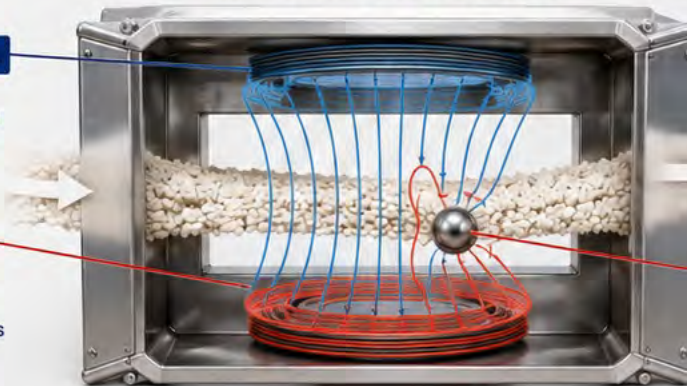
BALANCED COIL DETECTION

TRANSMITTER COIL

Creates a stable electromagnetic field across the aperture.

RECEIVER COIL

Monitors the field. In a clean product flow, the field remains balanced.



PRODUCT FLOW

Bulk material passes through the detection zone.

METAL CONTAMINANT

Conductive metal disturbs the electromagnetic field. The balance is broken.

1 CREATE THE FIELD



The transmitter coil generates a consistent, low-frequency electromagnetic field that fills the detection aperture. The receiver coil is tuned to this field and balanced to ignore it.

2 SENSE THE DISTURBANCE



When metal enters the field, it induces eddy currents that oppose the original field. This change is detected by the receiver coil as a shift in amplitude and phase.

3 TRIGGER THE RESPONSE



The detector analyzes the signal. If it exceeds the set threshold, an alarm is generated and the reject system is activated to remove the contaminated material.



SENSITIVITY MATTERS

Detection sensitivity depends on product characteristics (conductivity, moisture, density), contaminant type, aperture size, and system settings. InspeX systems are engineered and tested to deliver reliable detection across a wide range of bulk materials.



CLEAR. FAST. CONFIDENT.

Real-time HMI feedback keeps operators informed with clear alarms, event history, and system status for rapid response and maximum uptime.



NO CONTACT

No wear parts in the detection zone.



HIGH RELIABILITY

Balanced coil design minimizes false rejects.



APPLICATION FLEXIBILITY

Engineered for dry bulk powders, granules, flakes, grains, and pellets.



EASY INTEGRATION

Built for seamless integration into new or existing lines.

WHY BULK MATERIAL METAL DETECTION EXISTS

Product Protection Starts Before Packaging

Metal contaminants can enter your product at multiple points across the dry bulk handling process—long before it reaches the package.

Detecting metal early protects your product, equipment, and brand while reducing costly recalls, downtime, and rework.



1 RECEIVE

Raw materials arrive and may contain metal contaminants from the supply chain.



2 PROCESS

Materials are conveyed, milled, blended, screened, and stored—increasing risk.



3 DETECT

InspeX metal detectors identify contaminants before packaging or final discharge.



4 PROTECT

Protect products, equipment, people, and your brand—before they reach customers.



PROTECT PRODUCT SAFETY

Remove harmful metal contaminants to ensure product integrity and consumer safety.



PROTECT EQUIPMENT

Prevent damage to mills, extruders, dryers, conveyors, and other downstream equipment.



ENSURE COMPLIANCE

Meet regulatory requirements and industry standards with confidence.



BUILD CUSTOMER CONFIDENCE

Deliver consistent, high-quality products that protect your reputation and brand.

WHY DETECT METAL IN BULK MATERIAL?

- ✓ Contaminants can enter at any point in the process
- ✓ Early detection is more effective and cost-efficient
- ✓ Prevents contaminated product from advancing
- ✓ Minimizes recalls, waste, and downtime
- ✓ Protects your bottom line and brand equity

CONTAMINATION CAN ENTER AT MULTIPLE POINTS



RECEIVING
Raw materials and transport equipment



CONVEYING
Belts, buckets, augers, and transfer points



MILLING / BLENDING
Size reduction and mixing equipment



SCREENING
Screens and separators



STORAGE
Bins, silos, and hoppers



TRANSFER / PACKAGING
Weighing, filling, and bagging



Detect early. Protect everything that comes next.

INSPEX METAL DETECTION—BUILT FOR BULK. DESIGNED TO PROTECT.

PRODUCT PRESENTATION & FEEDING

Stable Flow Improves Detection Reliability

Consistent product flow and proper presentation maximize detector sensitivity and reduce false rejects. Uneven, off-center, or surging flow can create detection gaps and reduce the ability to find small contaminants.

Design your feeding system to deliver an even burden depth across the entire aperture, centered in the opening, with minimal vibration and interruptions.



✓ DO: CORRECT PRODUCT PRESENTATION



- ✓ Even burden depth across the aperture
- ✓ Centered flow
- ✓ Steady, continuous feed
- ✓ Minimal vibration
- ✓ Proper chute and conveyor design

✗ DON'T: COMMON ISSUES THAT REDUCE PERFORMANCE

OVERFILLED FLOW



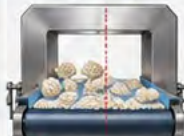
✗ Excess depth reduces sensitivity and can cause false rejects.

OFF-CENTER FLOW



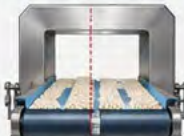
✗ Product not centered creates detection gaps on the low side.

SURGING FLOW



✗ Surges and clumps cause inconsistent detection.

INTERRUPTED FLOW



✗ Stops or feed interruptions create blind spots.

✓ BEST PRACTICES

- ✓ Maintain consistent, even product depth.
- ✓ Center the product in the aperture.
- ✓ Use smooth, vibration-controlled conveyors.
- ✓ Design chutes with adequate length and angle.
- ✓ Avoid product build-up, surges, or clumping.
- ✓ Verify performance with real product.

🎯 REAL-WORLD IMPACT

Proper product presentation ensures maximum sensitivity to detect small metal contaminants, protecting your brand, your customers, and your equipment.



INSPECT
Every Particle



DETECT
Metal Contaminants



REJECT
Contaminated Product



VERIFY
System Performance

**BETTER PRESENTATION.
BETTER DETECTION.**

SYSTEM DESIGN & LINE INTEGRATION

Engineering the Right Bulk Detection Solution

A metal detector is only as effective as the system it's integrated into. InspeX engineers complete solutions that align with your process, product, facility, and operational goals—ensuring reliable detection, minimal disruption, and maximum protection.

TYPICAL BULK PROCESS FLOW



KEY DESIGN CONSIDERATIONS



QUESTIONS TO ANSWER BEFORE SELECTION

- Where is the last point of potential metal contamination?
- What is the product type, density, and flow rate?
- What is the required level of sensitivity?
- How will the system be cleaned and maintained?
- What reject method best fits our process and facility?



INTEGRATION MATTERS AS MUCH AS THE DETECTOR ITSELF.

A well-designed system ensures consistent detection, protects product quality, reduces downtime, and supports regulatory compliance.



CONTAMINANT TYPES

FERROUS, NON-FERROUS, AND STAINLESS STEEL

Metal contamination can occur at any point in the process—from raw material handling to final packaging. While all metal contaminants are undesirable, their composition impacts how easily they can be detected and the level of risk they pose. Understanding the three main types of metal contaminants helps you select the right detection technology and strengthen your food safety and quality programs.



1 FERROUS (MAGNETIC)



Contain iron and are magnetic. Easiest to detect with metal detectors and magnets.

EXAMPLES



Iron fragments Steel shavings Nails Bolts

COMMON IN

Equipment wear, carbon steel fasteners, screen wire, mild steel components, upstream damage.

2 NON-FERROUS (NON-MAGNETIC)



Do not contain iron and are non-magnetic. More challenging to detect than ferrous metals.

EXAMPLES



Aluminum fragments Copper wire Brass shavings Zinc pieces

COMMON IN

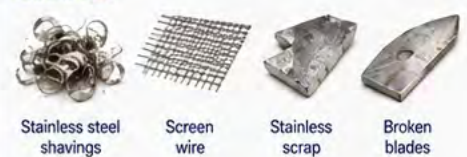
Electrical wiring, brass fittings, aluminum components, copper tubing, non-ferrous fasteners and parts.

3 STAINLESS STEEL (NON-MAGNETIC)



Non-magnetic and work-hardened. Most difficult to detect due to lower conductivity and work-hardening.

EXAMPLES



Stainless steel shavings Screen wire Stainless scrap Broken blades

COMMON IN

Stainless steel equipment wear, screen wire breakage, blades, tools, fasteners, and upstream process damage.

DETECTABILITY COMPARISON

Relative detectability with metal detectors under similar conditions.



Actual detectability varies based on contaminant size, shape, orientation, product type, moisture, and equipment settings.

TYPICAL CONTAMINANT SOURCES



MACHINE WEAR
Bearings, shafts, gears, and moving parts



SCREEN WIRE & MESH
Broken or worn screen media



FASTENERS
Bolts, nuts, screws, washers, and clips



BLADES & CUTTING TOOLS
Dull, broken, or damaged edges



TOOLS & MAINTENANCE
Hand tools, tool wear, and stray parts



UPSTREAM DAMAGE
Transport, handling, or supplier issues



ALL THREE TYPES CAN CONTAMINATE YOUR PRODUCT.
THE RIGHT DETECTION TECHNOLOGY PROTECTS YOUR BRAND.



InspeX metal detection systems are engineered to detect ferrous, non-ferrous, and stainless steel contaminants—every time.

UNDERSTANDING SENSITIVITY

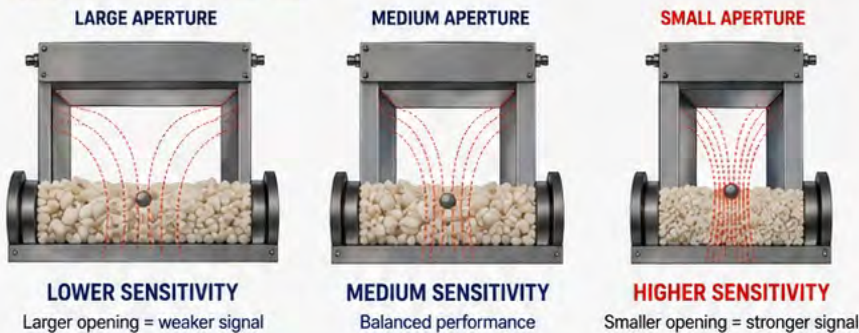
What Determines Detection Performance

Sensitivity is the ability of a metal detector to detect and reject small metal contaminants in a dry bulk product.

It is influenced by system design, product characteristics, and operating conditions.

APERTURE SIZE vs. SENSITIVITY

The aperture (throat opening) is a key design factor. Smaller apertures increase the detector's ability to sense small metal contaminants.



SMALLER APERTURE
= **HIGHER SENSITIVITY**

Reducing the aperture concentrates the electromagnetic field through less product, increasing the ability to detect smaller metal contaminants.

However, very small apertures may reduce throughput and are more sensitive to product effect.

RIGHT SIZE. RIGHT PERFORMANCE.
RIGHT PROTECTION.

KEY FACTORS THAT IMPACT SENSITIVITY



APERTURE SIZE

Smaller apertures increase sensitivity but may reduce throughput.



PRODUCT DEPTH

Deeper product beds weaken the signal. Keep depth consistent and within design limits.



FLOW CONSISTENCY

Steady, uniform flow improves performance. Surges and voids reduce sensitivity.



CONTAMINANT TYPE

Size, shape, and orientation of metal affect detectability. Ferrous vs. non-ferrous materials behave differently.



ENVIRONMENT

Temperature, vibration, electrical noise, and humidity can impact detector stability and performance.



PRACTICAL ENGINEERING DECISIONS

- ✓ Match apertures to product characteristics and required detection level.
- ✓ Maintain consistent product depth and flow.
- ✓ Select the right detector technology for the application.
- ✓ Validate performance with test pieces.

ENGINEERED TO DETECT.
DESIGNED TO PROTECT.

VALIDATION & PERFORMANCE CHECKS

Proving the System Is Working

Routine verification and validation ensure your metal detection system continues to protect products, your brand, and your customers. A strong program confirms performance, meets compliance requirements, and provides confidence every day.

A COMPLETE VALIDATION PROGRAM INCLUDES:



TEST PIECES

Use certified test samples that represent real-world contaminants and sizes.



CHALLENGE PROCEDURES

Run documented challenge tests at defined locations and orientations.



START-UP CHECKS

Verify sensitivity, reject system, alarms, and interlocks at the beginning of each run.



DOCUMENTED FREQUENCY

Follow a written schedule based on product, process risk, and regulatory requirements.



HACCP & QUALITY SUPPORT

Validation supports CCP monitoring, food safety plans, and quality programs.



TRACEABLE RECORDS

Maintain records that are accurate, reviewable, and audit-ready.

THE 3-STEP VALIDATION PROCESS



CHALLENGE

Run certified test pieces at established challenge points.



CONFIRM

Confirm detection, reject performance, and system status.



RECORD

Record results with date, time, operator, and observations.



CERTIFIED TEST SAMPLES



316 STAINLESS STEEL



BRASS



CERAMIC



FERROUS (IRON)

USE THE RIGHT TEST PIECE

- Matches product effect
- Certified and traceable
- Correct size and shape
- Valid within certification date

EXAMPLE VALIDATION SCHEDULE

TASK	FREQUENCY	M	T	W	T	F	S	S
Start-up Checks	Each Shift	✓	✓	✓	✓	✓	✓	✓
Test Piece Challenge	Each Shift	✓	✓	✓	✓	✓	✓	✓
Reject Verification	Each Shift	✓	✓	✓	✓	✓	✓	✓
Full System Check	Daily			✓				
Documentation Review	Weekly				✓			
System Audit	Monthly						✓	

OPERATOR TRAINING & AUDIT READINESS



TRAINED OPERATORS

Ensure operators understand procedures, challenge points, and their critical role.



CLEAR PROCEDURES

Documented work instructions drive consistency and reduce variability.



AUDIT READY

Complete, accurate records demonstrate control and simplify audits.



GOOD RECORDS. STRONGER PROTECTION.

Consistent validation and performance checks reduce risk, prevent escapes, and deliver the confidence that your metal detection system is **doing its job** — every time.



**VALIDATE TODAY.
PROTECT ALWAYS.**



Consistent
Performance



Regulatory
Compliance



Risk
Reduction

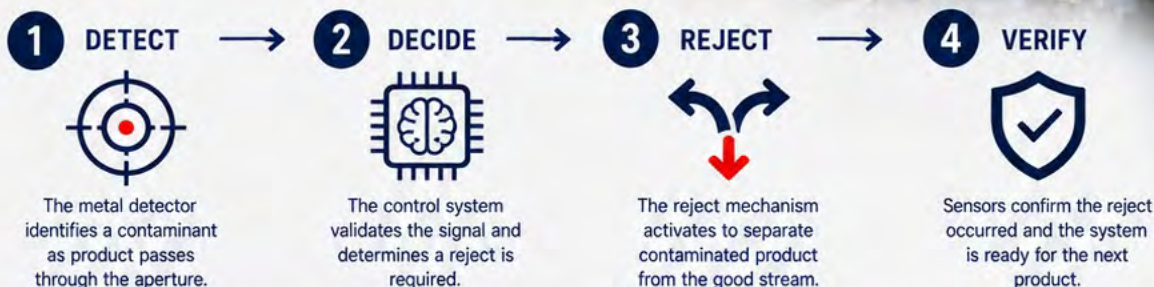


Customer
Confidence

REJECTION & FAIL-SAFE OPTIONS

Detect, Separate, and Verify

When contamination is detected, the system must act immediately and safely. InspeX systems use proven rejection mechanisms and intelligent controls to remove contaminated product from the process flow—then verify the reject occurred.



COMMON REJECT MECHANISMS



DIVERTER GATE
Pneumatically actuated gate diverts contaminated product into a reject container. Ideal for free-fall applications.



FLAP (PADDLE) REJECT
High-speed flap pushes contaminated product off the end of the conveyor into a reject bin.



DROP-THROUGH REJECT
Section of belt opens or is removed, allowing contaminated product to drop through while good product continues.



OTHER OPTIONS

RETRACTING CONVEYOR

Belt retracts to create a gap for the contaminant to fall.

PNEUMATIC DIVERSION

Air blast directs contaminants into a dedicated reject line.



FAIL-SAFE DESIGN MATTERS



Fail-Safe Logic

System defaults to reject on power loss, signal loss, or fault condition.



Bin Full Protection

Bin full sensors stop the line or alert operators to prevent overflow.



Reject Confirmation

Photo eyes or position sensors verify the reject occurred.



Continuous Monitoring

System health is constantly monitored for reliable operation.



The right rejection method depends on your product, packaging, and process. InspeX engineers design and validate the optimal solution for your application.



PROTECT
YOUR PRODUCT



PROTECT
YOUR EQUIPMENT



PROTECT
YOUR BRAND



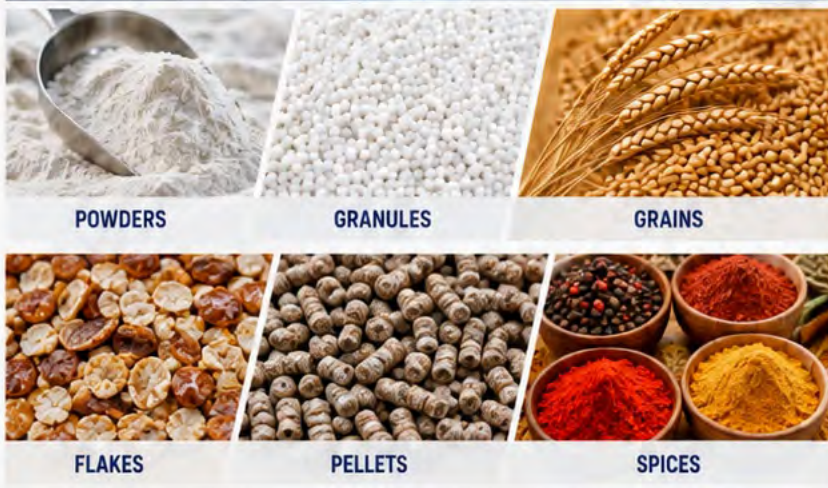
PROTECT
YOUR BUSINESS

WHERE BULK MATERIAL DETECTORS ARE USED

Applications Across Dry Material Processing

InspeX bulk material metal detectors are used across a wide range of dry material applications to protect products, safeguard equipment, and ensure brand integrity—typically installed inline before packaging or at other critical control points.

DRY BULK MATERIAL APPLICATIONS



NUTRACEUTICALS



CHEMICALS



PLASTICS



PET FOOD
INGREDIENTS

COMMON INSTALLATION POINTS



AFTER SIFTER / SCREEN

Detects contaminants that may pass through screening.



AFTER BLENDER / MIXER

Ensures blended materials are free from metal contaminants.



AFTER MILL / GRINDER

Protects downstream equipment from metal damage.



BEFORE HOPPER FILLING

Prevents contaminated material from entering storage.



BEFORE BAGGING / PACKAGING

Final line of defense before product reaches the customer.

INLINE INSPECTION. PROVEN PROTECTION.

Installed at critical points in your process, InspeX bulk material detectors provide continuous, automatic inspection with immediate reject or stop signals—helping you maintain product safety, protect equipment, meet compliance standards, and deliver quality with confidence.



DETECT
Every Particle



PROTECT
Equipment & People



ENSURE
Product Quality



COMPLY
With Standards



PERFORM
With Confidence

PRODUCT EFFECT IN BULK MATERIALS

How the Product Itself Can Influence Detection Performance

Even in dry bulk materials, the product itself can create a signal within the detector's electromagnetic field. This "product effect" can reduce sensitivity or cause false rejects if not properly managed.

Understanding what drives product effect helps engineers tune the system for reliable detection, maximum sensitivity, and consistent throughput.



PRODUCT EFFECT LEVELS: EXAMPLES

✓ LOW PRODUCT EFFECT



Sugar, dry pellets, low-moisture powders

Minimal signal. Allows highest sensitivity for small metal contaminants.

⚠ MODERATE PRODUCT EFFECT



Grain blends, cereal flakes, nutraceutical granules

Moderate signal. May require adjustments to maintain sensitivity and reduce false rejects.

❗ HIGHER PRODUCT EFFECT



Mineral-rich powders, salty or moist powders

Strong signal. Can significantly reduce sensitivity and increase false rejects if unmanaged.



ENGINEERING GOAL

The goal is to tune the detector to distinguish the "normal product signal" from the signal caused by true metal contamination.

Proper setup ensures high sensitivity with stable operation and minimal false rejects—protecting both product integrity and productivity.

WHAT INFLUENCES PRODUCT EFFECT



MOISTURE CONTENT

More moisture can increase conductivity and signal strength.



MINERAL / SALT CONTENT

Minerals and salts increase conductivity, raising product signal.



TEMPERATURE

Temperature changes can affect conductivity and detector response.



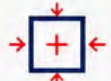
PARTICLE DENSITY

Denser materials often produce a stronger detectable signal.



PRODUCT CONSISTENCY

Variability in size, shape, or composition can cause signal changes.



APERTURE SIZE

Smaller apertures concentrate the field, increasing product signal.



TUNE. VALIDATE. PROTECT.

Every application is unique. InspeX engineers validate product effect during commissioning and provide settings that balance maximum metal detection with stable, reliable operation.

WHERE BULK MATERIAL DETECTORS SHOULD BE INSTALLED

Choosing the Right Control Point in the Process

The best detector location balances contamination control, equipment protection, and final product quality assurance. Installing at the right control point ensures metal contaminants are identified and removed before they can impact product safety, damage equipment, or reach customers.



COMMON INSTALLATION POINTS



AFTER SIFTER / SCREENER

Detects contaminants that may pass through screen openings and ensures clean product enters the next stage.



AFTER BLENDER / MIXER

Ensures blended materials are free from metal contaminants before further processing.



AFTER MILL / GRINDER

Protects downstream equipment from metal damage and keeps product safe.



BEFORE SURGE HOPPER OR BAGGING

Prevents contaminated material from entering storage or bulk packaging operations.



BEFORE FINAL PACKAGING

Provides the last line of defense to keep contaminants out of the final product.

WHAT TO CONSIDER



PRODUCT FLOW CONSISTENCY

Install where flow is steady and uniform for optimal detection sensitivity.



ACCESS FOR TESTING

Choose locations with safe, convenient access for test piece validation and inspections.



REJECT HANDLING

Ensure space and design support proper rejection of contaminated material.



PROTECTION OF DOWNSTREAM EQUIPMENT

Place detectors before critical machinery to prevent damage from metal contaminants.



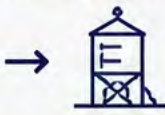
CRITICAL CONTROL POINT STRATEGY

Align detector placement with HACCP plans and quality assurance requirements.

TYPICAL BULK MATERIAL PROCESS FLOW



RECEIVING



PROCESSING



BLENDING



DETECTION



REJECTION /
ACCEPT



PACKAGING



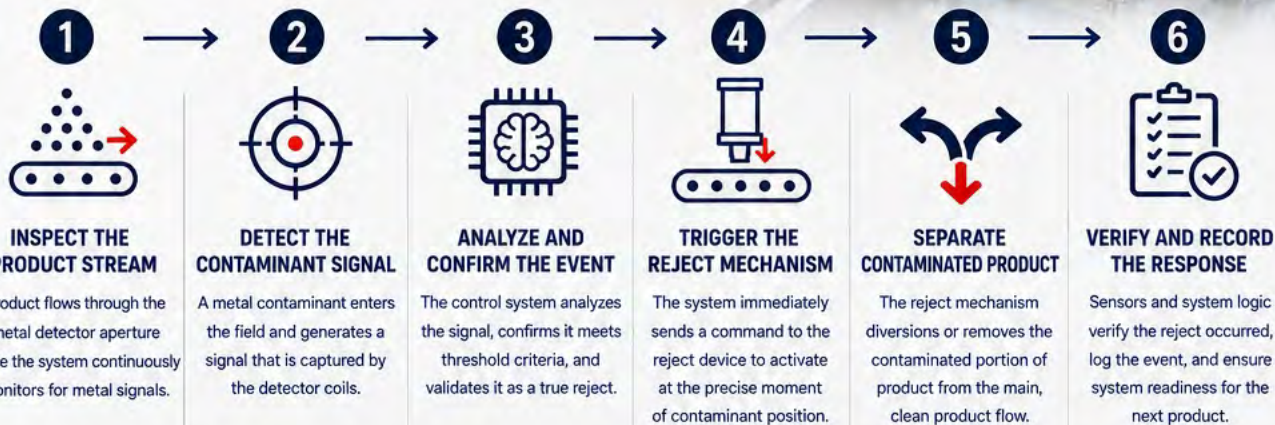
THE RIGHT LOCATION IMPROVES PROTECTION, RESPONSE, AND VALIDATION.

Strategic detector placement helps stop metal contaminants early, protect equipment from damage, reduce false rejects, and ensure only safe, high-quality product reaches your customers. Work with InspeX engineers to design the optimal installation plan for your process.

HOW THE SYSTEM RESPONDS WHEN METAL IS DETECTED

From Signal Recognition to Controlled Product Rejection

InspeX bulk material metal detectors do more than find contaminants—they take action. From the moment a signal is detected to the moment contaminated product is removed, every step is engineered to protect your product, equipment, and brand with speed, accuracy, and confidence.



A COMPLETE RESPONSE DOES MORE THAN DETECT

Reliable metal detection is a system—control, rejection, and verification must work together to ensure product safety, protect equipment, and maintain compliance.



DETECTION WITHOUT CONTROL IS NOT ENOUGH.

InspeX systems combine advanced detection, intelligent control, and proven rejection to deliver total protection—every time.

MAINTAINING DETECTION BEST PRACTICES

Simple Habits That Protect Sensitivity and System Reliability

Regular care and consistent verification keep your InspeX metal detection system performing at its best. Following these best practices helps protect detection sensitivity, reduce downtime, and ensure food safety and product quality.



ROUTINE BEST PRACTICES



1. KEEP APERTURE CLEAN

Remove product residue and dust from the aperture, conveyor, and surrounding area to prevent sensitivity loss.



2. INSPECT REJECT DEVICES

Check diverter gates, flaps, and air cylinders for smooth operation, wear, and proper alignment.



3. CONFIRM STABLE PRODUCT PRESENTATION

Ensure steady, uniform flow and proper centered product positioning through the detector.



4. VERIFY AIR PRESSURE OR ACTUATION

Confirm air pressure is within specification and actuators respond quickly and reliably.



5. CHECK WIRING AND GROUNDING

Inspect cables, connectors, and grounding for tight connections, damage, and corrosion.



6. RUN CERTIFIED TEST PIECES

Verify detector performance with certified test pieces on the right frequency for your application.



7. DOCUMENT VERIFICATION CHECKS

Record test results, corrective actions, and observations to support compliance and traceability.



8. TRAIN OPERATORS ON ALARMS & RESTART

Ensure operators understand system alarms, safe restart steps, and when to escalate for support.

SUGGESTED CHECK FREQUENCY



EVERY RUN

- Visual check of aperture and conveyor area
- Confirm product presentation is centered and stable
- Confirm reject bin is empty and functional



DAILY

- Run certified test pieces and record results
- Check air pressure or actuation
- Inspect reject devices



WEEKLY

- Inspect wiring, connectors, and grounding
- Clean aperture, conveyor, and reject area
- Review system event log for recurring alarms



MONTHLY

- Full system inspection including mechanical components
- Verify firmware/date-time settings and backups
- Review maintenance logs and trends



Validation frequency should be based on a risk assessment, product type, process environment, and your site's quality and food safety procedures.



**CONSISTENCY IN MAINTENANCE
CREATES CONSISTENCY IN DETECTION.**

Small daily actions preserve detection sensitivity, reduce downtime, and protect your product, your brand, and your customers.

VALIDATING SYSTEM PERFORMANCE

How Bulk Material Detection Supports Quality and Compliance Programs

Metal detection is a critical control point in many bulk material processing operations. Validating and verifying system performance ensures your detector consistently meets defined standards—supporting product safety, regulatory compliance, and customer confidence.



COMMONLY SUPPORTED PROGRAMS



HACCP / HARPC

Identify and validate metal detection as a critical control point.



FSMA PREVENTIVE CONTROLS

Establish and verify effective foreign material controls.



GOOD MANUFACTURING PRACTICES

Ensure equipment performance supports safe, consistent production.



Meet clause requirements for foreign body management and validation.



SQF CODE

Demonstrate control of physical hazards with documented validation.



CUSTOMER-SPECIFIC CCP REQUIREMENTS

Fulfill unique customer or contract validation and documentation needs.

WHAT VALIDATION SHOULD INCLUDE

1



DEFINED SENSITIVITY STANDARDS

Establish required detection thresholds based on product risk and regulatory or customer requirements.

2



CERTIFIED TEST PIECES

Use certified, traceable test pieces that represent real-world contaminants and specified orientations.

3



CHALLENGE-TEST FREQUENCY

Perform routine challenge tests at defined intervals and after changeovers or operational events.

4



REJECT VERIFICATION

Verify that contaminants are accurately rejected and do not pass through to the good product stream.

5



CORRECTIVE ACTION & RECORDS

Document results, investigate deviations, and implement corrective actions promptly to maintain control.

AUDIT-READY CONTROL

A strong validation program combines proven procedures, trained personnel, and reliable equipment. This ensures your metal detection system consistently detects, rejects, and protects.



ESTABLISH

Define sensitivity standards and test procedures.



TEST

Run challenge tests using certified pieces.



VERIFY

Confirm performance meets standards and rejects.



DOCUMENT

Record results, actions, and next steps.



Validation frequency and documentation should align with product risk, regulatory requirements, and your quality management procedures.



DETECT • VERIFY • DOCUMENT • IMPROVE

A validated metal detection system is your assurance of product safety, regulatory compliance, and customer trust—every day, every batch.

INSPEX ENGINEERS THE CONTROL POINT

Beyond Detection: Application Engineering, Rejection, Verification, and Integration

Successful bulk material inspection isn't just about detecting metal—it's about engineering the entire control point for real-world performance. InspeX engineers partner with you to design, validate, and support complete solutions that protect your product, your brand, and your customers—every day.

We combine advanced technology with practical engineering to deliver systems you can trust from installation to long-term operation.



THE COMPLETE INSPEX APPROACH



ELECTROMAGNETIC DETECTION

High-sensitivity metal detection technology optimized for your product and process conditions.



APPLICATION ENGINEERING

In-depth analysis and site-specific solution design for maximum detection performance and reliability.



PRODUCT PRESENTATION

Guidance on product flow, depth, density, and consistency to ensure optimal detectability.



AUTOMATIC REJECTION

Engineered reject mechanisms that safely remove contaminants and protect good product flow.



REJECT VERIFICATION

Sensors and controls confirm contaminants are removed—preventing false rejects and missed contamination.



FAIL-SAFE LOGIC

System defaults and interlocks protect product and operators during power loss, alarms, or system faults.



VALIDATION SUPPORT

IQ/OQ guidance, test protocols, and sample testing to validate performance and meet compliance standards.



DATA & TRACEABILITY

Event logging, performance metrics, and reporting tools for accountability and continuous improvement.



**DETECTION IS ONLY THE BEGINNING.
WE ENGINEER THE RESPONSE.**

COMPLETE SOLUTIONS ACROSS YOUR PROCESS

BULK MATERIAL



PIPELINE



CONVEYOR



CHECKWEIGHING



COMBINATION SYSTEMS



PARTNERS IN PROTECTION. ENGINEERED FOR CONFIDENCE.

Trust InspeX to deliver complete control point solutions that keep your products safe, your operations efficient, and your brand protected.