INTRODUCING

intell i mag®

THE REVOLUTIONARY INTELLIGENT MAGNET

MPI®

Magnets | Material Handling
Electronic Inspection | Service

Separation Equipment

MPI provides peace of mind by manufacturing reliable industrial magnetic and metal control equipment that removes contaminants, separates or conveys metal in your production process.

Highland, Michigan | 248.887.5600 | www.mpimagnet.com

Table of Contents

For more information & product data sheets visit us on the web at:
www.mpimagnet.com

683 Town Center Drive, Highland, Michigan 48356
1.248.887.5600 | www.mpimagnet.com

About MPI

Based in Metro-Detroit Michigan, MPI designs, manufactures, and services magnets, material handling, and electronic inspection systems. MPI products are designed to be complete metal and foreign contamination control solutions for food production and related industries. MPI's safe and reliable equipment and service programs help customers minimize downtime and protect brand integrity. MPI leads the industry in customer service and innovation, continuously expanding its offerings to meet the needs of a dynamic marketplace.

Company Timeline

2021
- **MPI patents Intell-I-Mag® the revolutionary next step in magnetic separation**
- Releases comprehensive Audit 2.0 program
- Celebrates 40 years

2019
MPI patents the Sanitary Toolless Drawer Magnet

2017
All MPI Regional Sales Managers become Certified Food Safety HACCP Managers

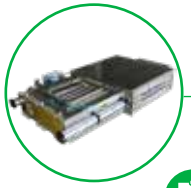
2015
MPI receives USDA certification for several magnet models

2014
MPI adds checkweigh and x-ray to its offerings

2011
MPI celebrates 30 years

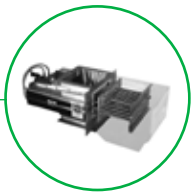
2010
MPI becomes the exclusive US distributor for Cassel

1993
MPI doubles capacity after relocating to a state-of-the-art manufacturing facility in Highland, MI



1991
MPI patents the Reciprocating Drawer Magnet

1983
- The first *A Magnet Is Not Just a Magnet* educational training is conducted
- **MPI introduces the first generation of self-cleaning magnets**



1982
MPI introduces its free magnet audit services

1981
MPI begins operations in Walled Lake, Michigan

Above: Keith Rhodes, MPI Founder & CEO, reveals the revolutionary next step in magnetic separation products. Intell-I-Mag®, the intelligent magnet, is Keith's latest patent, exclusive to MPI magnetic separators.

Below: Kyle Rhodes, Vice President - Business Development, shares his industry expertise during an educational training sessions for employees and Sales Channel Partners (SCPs).

Protecting and Moving the World Through Innovation

When you choose to buy from MPI you're not just buying a magnet. At its core, a magnet is designed to capture and retain unwanted tramp metal. When you choose an MPI magnet, you get so much more.

Over 40 years ago, MPI's founder realized that when he took time to explain magnetic technology, customers were delighted, and they obtained the results they were looking for. His vision was to start a company where both employees and customers were treated exceptionally well, and innovation was the new normal.

Thus, MPI was born, and today it is still under the same family ownership and unique set of values – treat people right, consistently develop high quality and innovative products, and lead the industry in customer education. We continuously invest in improving your business by developing new products designed to make a real difference to our customers. Through the years, MPI has invented innovative products, including the quick-cleaning and self-cleaning drawer magnets, as well as the electric low frequency shaker systems. We recently launched the world's first and only intelligent magnet, the Intell-I-Mag®!

MPI truly believes that it is our obligation to educate our current and future customers on magnetic technology. We say that *"an educated customer is an MPI customer."* We conduct presentations on the principles of magnetic separation for our customers, industry groups, and OEM manufacturers. The presentation qualifies as a course for Continuing Education Credits for Professional Engineers. In addition, our comprehensive, one-of-a-kind *"MPI Magnet Audit"* has given over a thousand companies valuable insights to help improve their metal control processes.

Not only are MPI products the best in the industry, but we also make it easy for our customers to do business with us. With over 300 years of collective industry experience, our proven process ensures you get the right product, every time. Delivering exceptional customer service, MPI's experienced representatives and Regional Managers around the world come to your facility to meet with you and better understand your needs.

MPI PROVEN PROCESS

APPLICATION INFORMATION

CONFIGURE SOLUTION

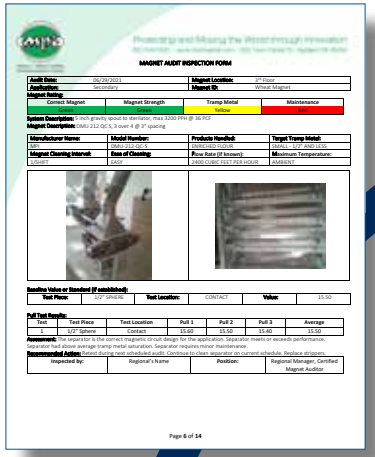
CUSTOMER CONSULTATION

EQUIPMENT SELECTION

DRAWING REVIEW

BUILD, SHIP AND INSTALL

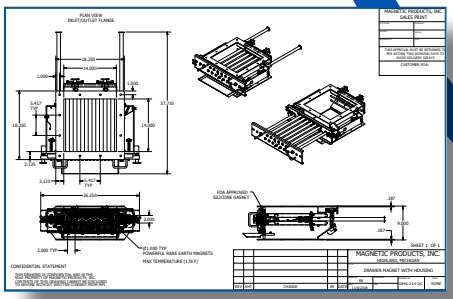
MAGNET AUDIT


MAGNET AUDIT INSPECTION FORM


MPI Request a Quote

MAGNETIC SEPARATION | MATERIAL HANDLING | METAL SORTING SYSTEMS | ELECTRONIC INSPECTION | SCHEDULE AN AUDIT OR ASSESSMENT


DMU-QC Selectable Options


MAGNETIC PRODUCTS, INC.
DRAWER MAGNET WITH HOUSING

MPI Promise

To assure you that choosing MPI can be done with complete confidence, we stand behind our products with the industry's best policies and guarantees that make doing business with MPI easy and risk-free. The MPI Promise is like a benefits package that starts the moment you first speak with us and extends long after your equipment installation. When you do business with MPI we promise:

COMPLETE SATISFACTION

Our equipment will achieve the results for which they were designed and manufactured. If you encounter any issue, we will make it right. Family owned and operated since 1981, we stand behind our products and treat our customers like part of the family.

EDUCATION

You have the right to understand the technology you are buying, including the alternatives. We pledge a continuous focus on delivering customer education that empowers you with the information needed to select what is best for your application.

LIFETIME SUPPORT

For as long as you own an MPI system, MPI Metal Control Experts are on-call to provide technical support regarding installation, start-up, optimization and testing needs for your entire metal control system. We will even assist with your non-MPI brands.

THE CHIEF

Really, our head honcho cares about your experience with MPI. If you have any feedback you'd like to share here is your open invitation to contact our Vice President - Business Development, Kyle Rhodes, at rhodes@mpimagnet.com.

THE BEST QUALITY

Our products are built with the best available designs, materials and workmanship to provide the best metal control results in your application. From concept to final product, we design our equipment to the highest standards with the lowest total cost of ownership.

24/7 SERVICE

2nd or 3rd shift need support? Our 24/7 service line connects you directly with an on-call MPI Expert. Call the main line at 1.248.887.5600 and press 9.

RELIABLE DELIVERY

Over the last 10 years, 99% of our shipments have been delivered on or before our promise date. If you need a product before our quoted lead time, let us know and we will do everything we can to make it happen.

FAIR PRICES

We are committed to providing premium products at the best value. If you receive a competitive quote with a lower price for an "apples to apples" product, we will match it - plain and simple.

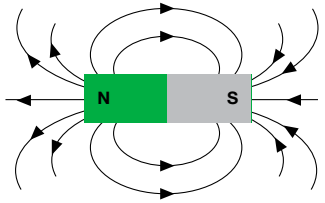
Magnets 101: How they work and where to apply them

Magnet Terms

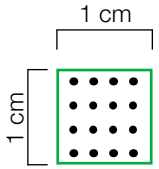
Permanent Magnets: Ceramic and rare earth permanent magnets should lose no more than 1% of their magnetic strength over a period of 100 years, provided they are specified and cared for properly. There are a few things that may cause your magnet to lose its strength, including heat, impact, welding, or liquid ingress.

MGOe (*Mega Gauss Oersteds*): The unit of measurement for maximum stored energy in a magnet. The maximum energy product is often abbreviated to BHmax.

Gauss: A term used to refer to the "flux density" or number of lines of flux measured per square centimeter. The "magnetic field strength" generally refers to the total flux available in an area of interest. This is primarily determined by the magnetic material used in manufacturing the magnetic cake. A magnet will only generate a finite amount of flux, depending on the style or geometry, size and material used.



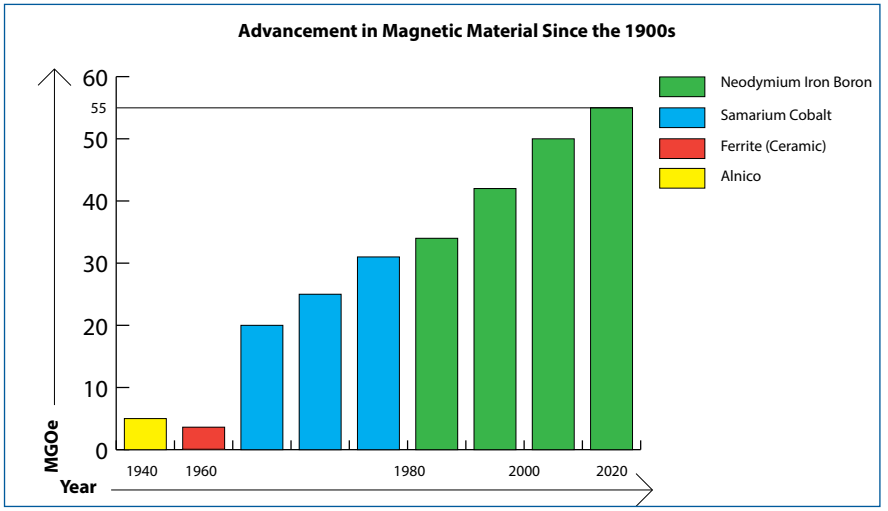
Lines of flux connecting north and south poles



Flux density (Gauss): Lines of flux in one square centimeter

Pull Test: In our industry, when we refer to the "pull value" of the magnet, we are referring to the amount of force (in pounds of pull) that is required to remove, or pull a certain size piece of metal away from the surface of the magnet. You can also understand this as "hold value." The larger the piece of metal used to test a magnet, the higher the pull value will be. We typically conduct pull tests with a ¼-inch to ½-inch ferrous ball.

Magnet Materials



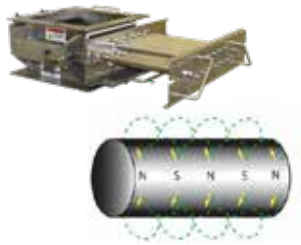
Every manufacturer has access to the same grades of magnet material built to International Magnetics Association (IMA) standards. The biggest difference between manufacturers is how they design their magnetic circuits and the composite construction materials used. Each magnet should operate at peak performance for the specified application.

Certified Food Safety HACCP Managers

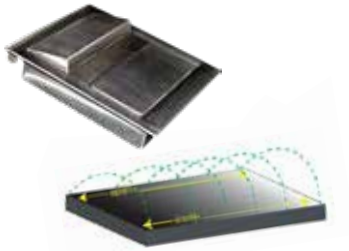
It is MPI's mission to support food manufacturers in promoting food safety and consumer protection. MPI's regional management team members are all **Certified Food Safety HACCP Managers** (CFSHM) through the National Registry of Food Safety Professionals.

Magnetic Circuitry

Type A Circuitry
Type A circuits can be used in applications where the highest level of product purity is required. The circuit utilizes a tube, or a series of tubes, to pull metal from free-flowing material that has come in direct contact with the magnets' working surface. This results in a very high level of tramp metal retention, which correlates to product purity.



Type B Circuitry
Type B Circuits are best suited to larger product flows where the magnet will need to "attract" tramp metal out of the product stream. The Type B Circuit is designed with more emphasis on the reach-out. To assist in holding, features such as steps on a plate magnet help pull tramp metal out of the product stream and keep it from washing back in between cleaning cycles.



Type C Circuitry
Type C circuits can be utilized in applications where there are very high levels of tramp metal present, high product flows are required or where shutting down for cleaning may not be possible. The ability of the magnet to continuously self-clean or retain large amounts of tramp metal through high product flows make it ideal in primary applications.

Where Do Magnets Go?

1. Primary Applications:
Receiving areas for removing incoming tramp metal and vendor monitoring

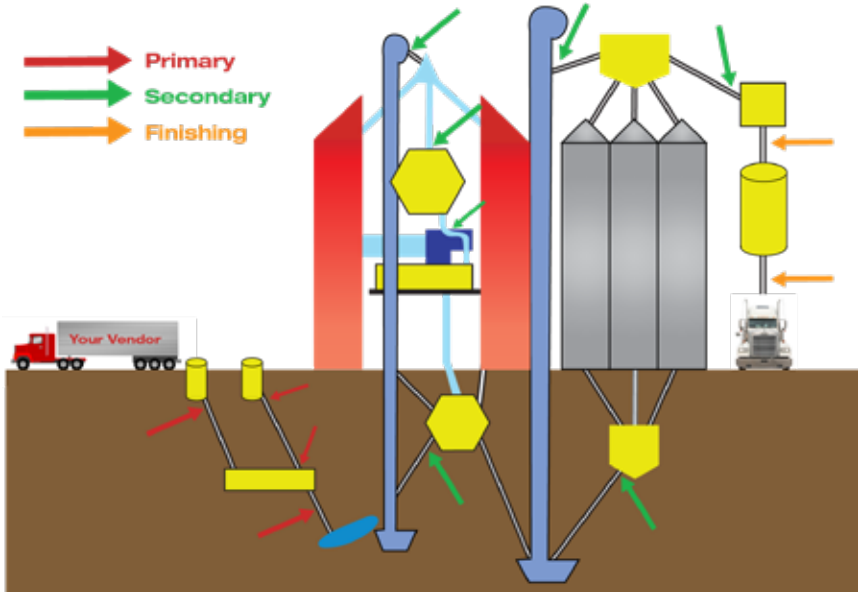
2. Secondary Applications:
Processing areas for equipment malfunction detection or protection

3. Finishing Applications:
Packaging and loading areas ensuring end-product quality

Magnetic separators are installed in any processing or production line where ferrous contaminants must be removed to:

- Ensure and protect product purity
- Prevent damage to machinery
- Eliminate hazards associated with tramp metal

Learn more how Intell-I-Mag will improve the efficiency of primary, secondary and finishing application magnets at www.mpimagnet.com/intellimag.



Testing Equipment and Magnet Audits

Pull and Gauss Test Kits

MPI's Pull Test Kit is the easiest and most accurate method to test the strength of your magnets in a production environment. Companies can purchase MPI Pull Test Kits or Gauss Testing Kits for internal testing and validation of their own separators. MPI provides customer training on how to properly test their equipment internally.

Alternatively, an MPI Certified Magnet Auditor can conduct a comprehensive test of related equipment and provide a report. All MPI Certified Magnet Auditors use NIST certified digital pull test scales and NIST certified gauss meters. In addition, all test spheres are certified carbon steel ball bearings that have been welded to a stainless-steel ring and coated in zinc to prevent corrosion.

Pull Testing vs Gauss Testing

Feature	Pull Test	Gauss Test
Accuracy	High	High
Testing Property	Holding Force	Flux Density
Repeatability (production)	High	Low
Cost	Affordable	Affordable
Durability	High	Low (Probe)
NIST Available	Yes	Yes

MPI Magnet Audit Benefits

The benefits of MPI Magnet Audits:

- Easy to read audit results with photos of each magnetic separator and a color-coded rating system that helps you identify the separator and areas for improvement
- Exclusive rating system using four (4) criteria to ensure your separators are operating at peak performance
- Makes regulatory audits easier by confirming the high quality of your current metal control program or identifying areas for improvement
- Regular audits provide a comprehensive picture of a facility's metal control system and proof of HACCP compliance with required documentation
- MPI's Auditor Training Program ensures our trained and certified auditors provide consistent report formats and findings
- Our HACCP Certified MPI Regional Managers are familiar with the quality programs used by each customer
- MPI's NIST certified Pull Test Kit replaces the need for a certified scale, as well as the time, resources and training need to conduct audits internally

The MPI rating system:

Correct Magnet: This rating is based on whether the separator is the correct type of separator as required by the application.	
Green	Correct magnet, no action required
Yellow	Consideration for improvement as noted
Red	Replace separator as recommended
Magnet Strength: This ensures that the magnet has the required strength for the application.	
Green	Magnet is testing at or above baseline values
Yellow	Magnet strength has decreased but within less than a 20% range
Red	Magnet is testing greater than 20% below baseline value
Tramp Metal: This rating is based on the amount of tramp metal saturation the separator has at the time it was tested.	
White	Pre-cleaned, magnet was cleaned before the auditor inspected the magnet
Green	Separator had minimal tramp metal saturation
Yellow	Separator had moderate tramp metal saturation with some capacity remaining
Red	Separator was fully saturated with tramp metal and at maximum capacity
Maintenance: This rating is based on the separators requirement for maintenance.	
Green	No maintenance required
Yellow	Maintenance required as noted
Red	Immediate action required as noted

Protecting and Moving the World through Innovation

800.544.5930 | www.mpimagnet.com | 683 Town Center Dr., Highland, MI 48356

MAGNET AUDIT INSPECTION FORM

Audit Date:	06/29/2021	**Magnet Location:**	3rd Floor
Application:	Secondary	**Magnet ID:**	Wheat Magnet

Magnet Rating:

Correct Magnet	Magnet Strength	Tramp Metal	Maintenance
Green	Green	Yellow	Red

System Description: 5 inch gravity spout to sterilator, max 3200 PPH @ 36 PCF

Magnet Description: DMU 212 QC S, 3 over 4 @ 3" spacing

Manufacturer Name:	Model Number:	Products Handled:	Target Tramp Metal:
MPI	DMU-212-QC-S	ENRICHED FLOUR	SMALL - 1/2" AND LESS
Magnet Cleaning Interval:	**Ease of Cleaning:**	**Flow Rate (if known):**	**Maximum Temperature:**
1/SHIFT	EASY	2400 CUBIC FEET PER HOUR	AMBIENT

Baseline Value or Standard (if established):

Test Piece:	1/2" SPHERE	Test Location:	CONTACT	Value:	15.50

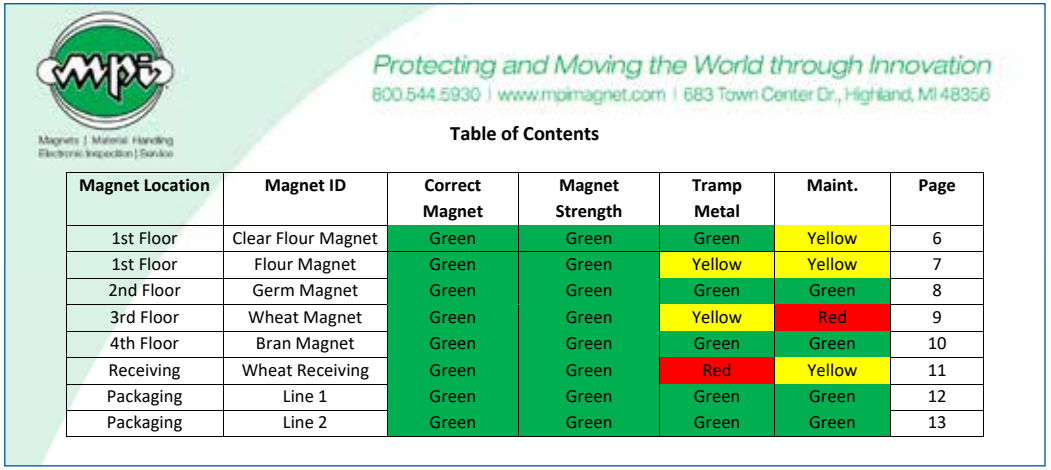
Pull Test Results:

Test	Test Piece	Test Location	Pull 1	Pull 2	Pull 3	Average
1	1/2" Sphere	Contact	15.60	15.50	15.40	15.50

Assessment: The separator is the correct magnetic circuit design for the application. Separator meets or exceeds performance. Separator had above average tramp metal saturation. Separator requires minor maintenance.

Recommended Action: Retest during next scheduled audit. Continue to clean separator on current schedule. Replace strippers.

Inspected by:	Regional's Name	Position:	Regional Manager, Certified Magnet Auditor



Protecting and Moving the World through Innovation

800.544.5930 | www.mpimagnet.com | 683 Town Center Dr., Highland, MI 48356

Table of Contents

INTRODUCING

intell-i-mag®

THE REVOLUTIONARY INTELLIGENT MAGNET

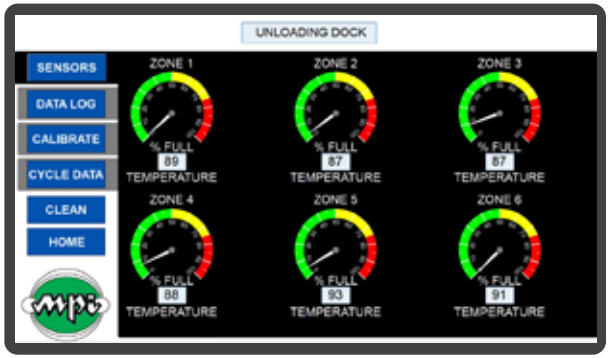
Patent #10,543,492

Intell-I-Mag® is the revolutionary next step in magnetic separation innovation and factory automation. It's the first intelligent magnet to self-monitor ferrous metal saturation in real-time and log system data.

The patented Intell-I-Mag monitors ferrous contamination of incoming ingredients, detects equipment malfunctions before scheduled cleanings, ensures fully saturated magnets are cleaned before metal events occur, reduces shutdowns for premature magnet cleaning, and ensures the separator is always working at peak performance, capturing weakly magnetic materials such as work-hardened stainless.

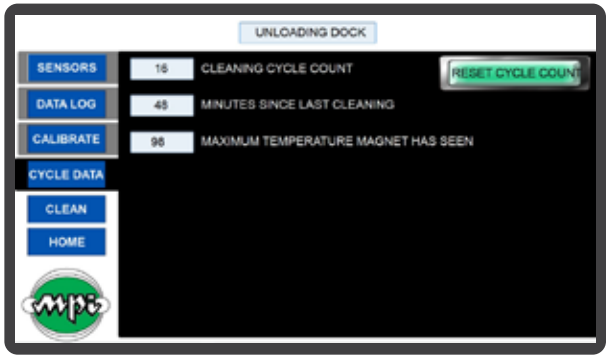
Real Time Monitoring for Peak Magnetic Performance

- Internal sensors monitor tramp metal saturation levels and alert staff before an incident can occur. Once a magnet reaches the designated level, it notifies plant personnel of required cleaning or can activate the automated self-cleaning system.
- Improve oversight of vendors during material unloading, resulting in earlier metal detection and a reduction in damage to the production process.
- Avoid challenges caused by equipment failures, inadequate magnet cleaning intervals or inaccessible equipment.



Customized Reporting for Quality Compliance Initiatives

- Data collection improves analysis of magnetic separator performance, including magnet saturation, cleaning alerts, temperature monitoring, cleaning cycles and position location.
- Operators can establish a higher level of metal control and create a stronger quality management plan for programs such as HACCP, ISO, BRC, IFS and SQF.



Industry 4.0 and IoT Ready - Magnet Metrics Controller

- The Industry 4.0 compliant PLC controller allows for communication between controller and network for remote magnet monitoring and control.

Built for the Harshest Environments

- Controllers are rated for appropriate installation environments, including liquid tight for washdown and hazardous classified locations.

Intell-I-Mag Controllers are Available Exclusively on Most MPI Magnetic Separation Products

Gravity Bulk Free Flowing Magnets

Pneumatic Conveying Magnets

Liquid Pipeline Magnets

Intell-I-Mag Controller Options	
Feature	***Option***
Target Metal	Fines, medium or large
Interface	7” HMI touch screen standard, larger screens available as well as remote interface
PLC Controller	MPI standard included, Allen Bradley and Siemens available
3 Color LED lights indicating level of metal build up	Included
Available Inputs	Clean magnet
Available Outputs	Magnet Saturation % Last Cleaning Cycle Time # of Cleaning Cycles Temperature Position Confirmations
Panel Rating	NEMA 12X, NEMA 4X
Controller / Magnet Connection	Standard network cable with RJ45 Cat 5 connectors

For more Intell-I-Mag information visit mpimagnet.com/intellimag

Saturation Level Indicators

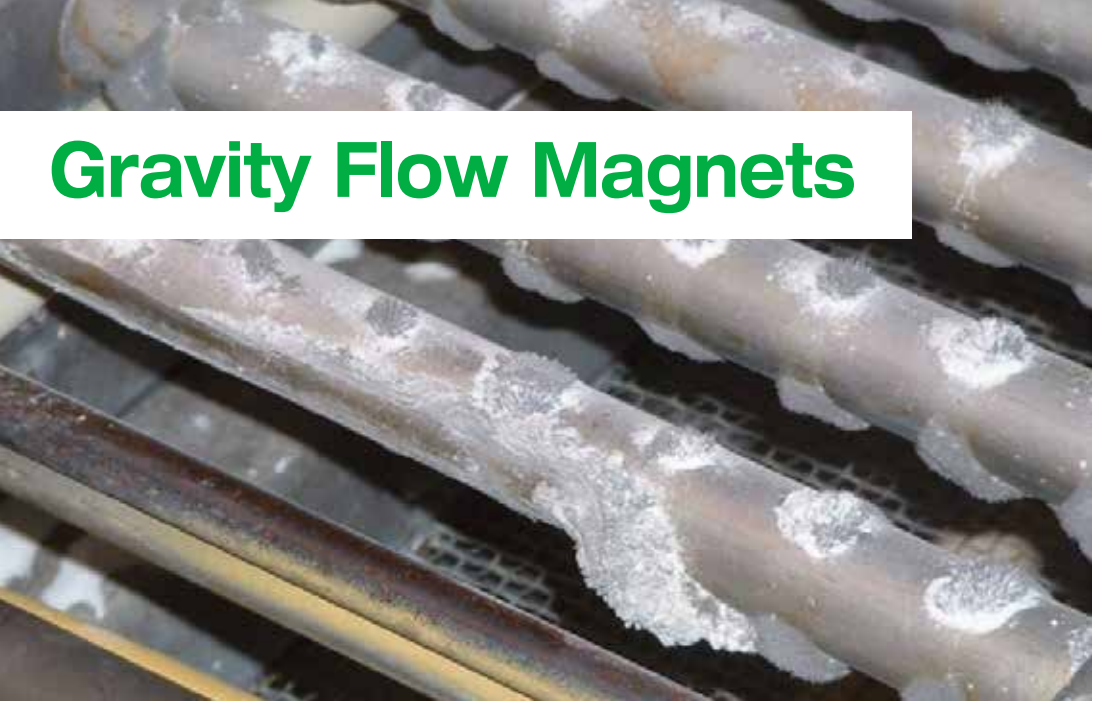
- As captured metal increases and magnetic performance decreases, LED indicators signal separator saturation:

Green	separator is operating at peak performance
Yellow	separator is near 50% saturation
Red	separator is 100% saturated, cannot retain additional tramp metal and needs cleaning immediately

- Alert limits can be set by designated personnel and password protected.

Intell-I-Mag Magnet Status - Saturation Levels	
	
	
	

Gravity Flow Magnets



Tube & Grate Magnets

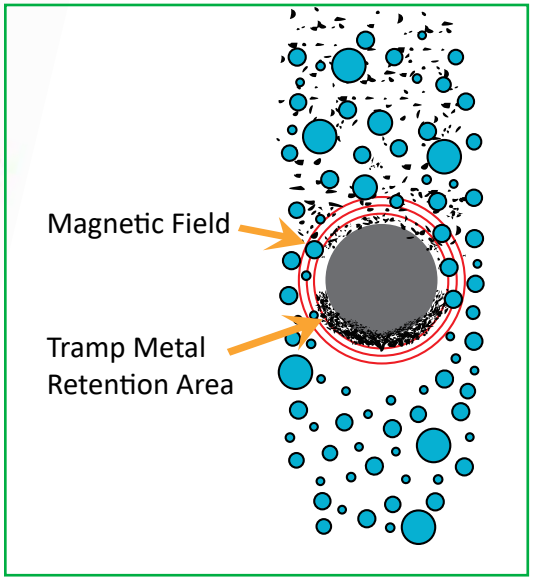
Tube and Grate Magnets offer efficient and c magnetic protection of processing equipment, while improving product purity.

- Industry's strongest available magnetic tube design
- The most economical method to purify product and protect processing equipment
- All tube ends are fully welded for the highest durability and sanitary design, no crimped or rolled ends
- Heavy wall thickness tube is more resistant to dings and dents common with grate style magnet applications
- Square, rectangular or round configurations
- Standard sizes available to ship within 48 hours
- Round standard sizes 6"- 36"
- Square/rectangle standard sizes 4"- 48"
- USDA approved certified sanitary (USDA AMS NSF / ANSI / 3-A14159-1 2002) available that certifies grate magnet to USDA standards for cleanability, corrosion resistance and durability

Sample Tube with Tramp Metal

YouTube

Learn how to pull test tube style magnets at youtube.com/MPIMagnet



Tube Style					
	Ceramic	**1" REN**	**1" Hi-G**	**1" Thin Wall****	**3" Hi-G**
1/4" Ball Pull Values*	0.3 lbs	5.0 lbs	5.8 lbs	6.5 lbs	6 lbs
1/2" Ball Pull Values*	1.2 lbs	13.0 lbs	16.0 lbs	16.5 lbs	26 lbs
Gauss Value*	2,500	10,000	10,800	12,000	12,000
Tube Durability	●●●	●●●	●●●	●	●●●
Price	●	●●	●●●	●●●	●●●

* Pull values are average on contact and gauss values are peak on contact.
** Always consult a magnet professional before selecting thin wall tubes. Thin wall tubes are not recommended for products with abrasive characteristics or in manual clean designs such as grates.

Common Designs:

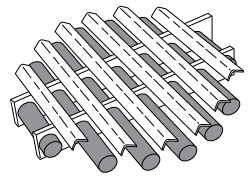
Bolt on Tube

Inside Frame

Outside Frame

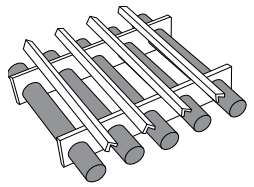
Type D2 Diverters:

Designed for fine, free-flowing product streams. This diverter design has a 90° bend to assure the maximum contact of product onto the magnetic tube.



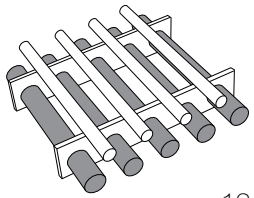
Type D3 Diverters:

Recommended for medium-size product streams. The 60° bend permits a smooth product flow while still forcing the product over the magnetic tubes.

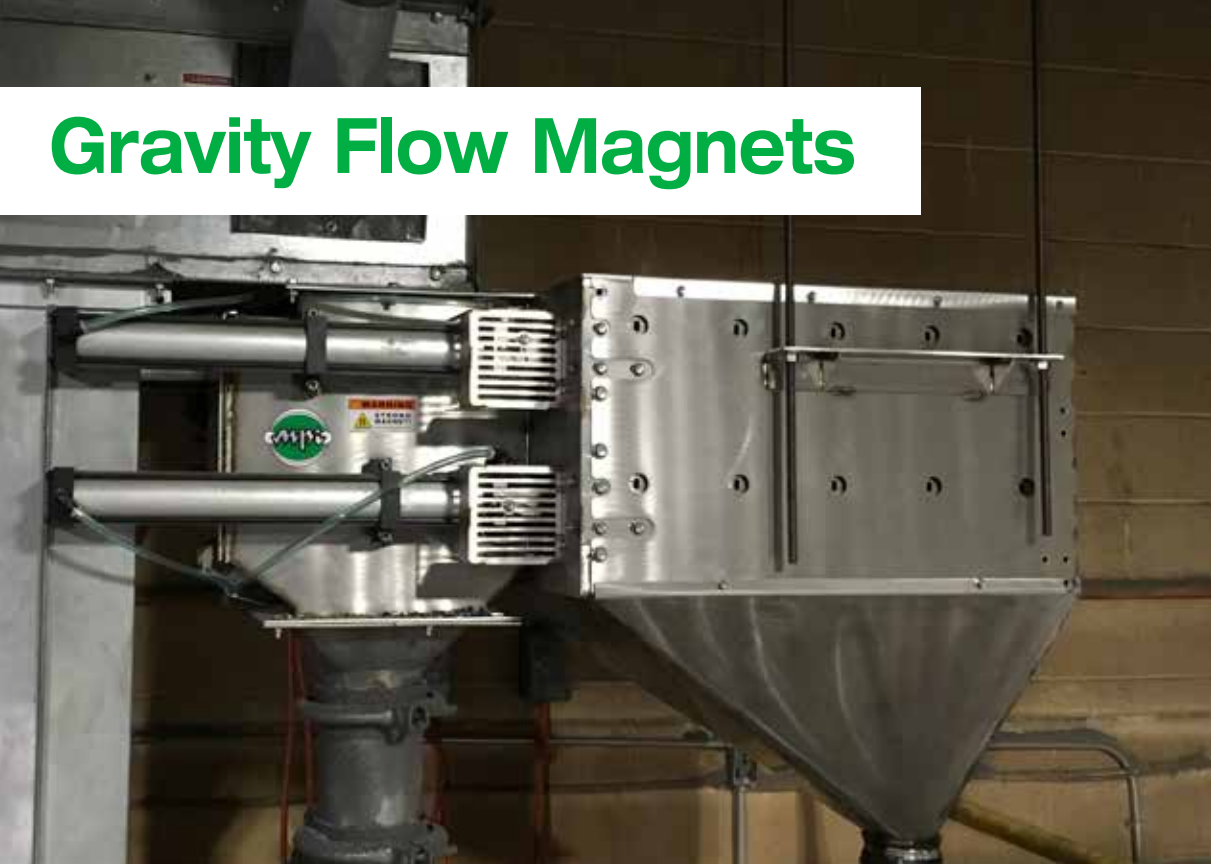


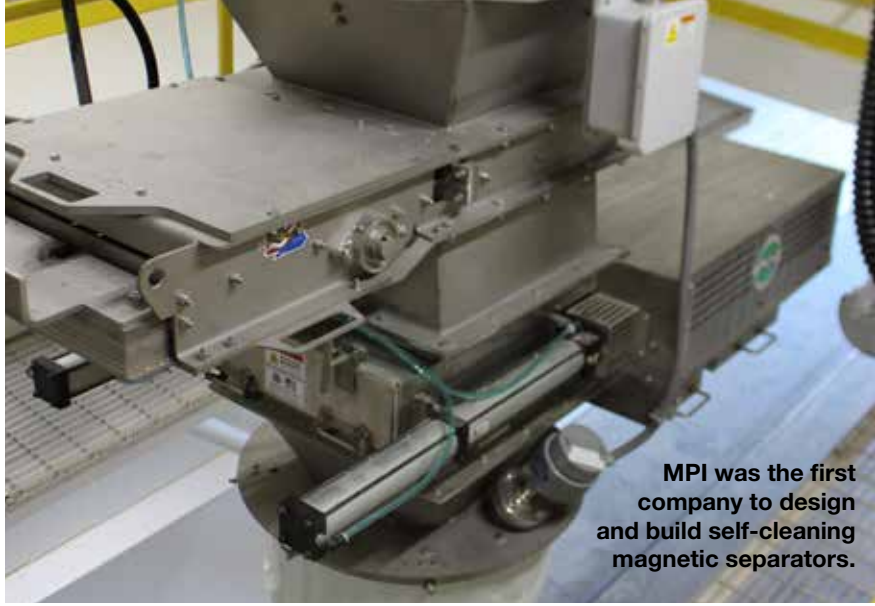
Type D4 Diverters:

Designed for coarse, granular product streams. These diverters are designed with stainless steel bars that are .375-inch in diameter, providing minimal product flow deflection.



Gravity Flow Magnets





MPI was the first company to design and build self-cleaning magnetic separators.

Drawer Magnets

MPI Drawer Magnets offer the highest level of magnetic protection in the industry. Our staggered, tiered tube configuration ensures direct contact of magnetic tubes in bulk, free-flowing product streams. MPI's designs also offer the safest cleaning method on the market, preventing operator injury*.

- Proprietary design prevents captured metal from being cleaned in product stream
- Exclusive Sani-TIGHT Seal gasket eliminates leaks and frequent replacements, and reduces dry time for adhesives
- Patented sanitary design available
- Our exclusive cleaning designs reduce maintenance and effectively remove tramp metal
- Optional 1" and 3" tube combination configurations

* On quick-clean and self-clean models only

** Only manual-clean models can be USDA-certified

Drawer Size	Flow Rate Bushels/Hr	Flow Rate FT^3/Hr
8"x8"	480	600
10"x10"	1,080	1,350
12"x12"	1,920	2,400
14"x14"	2,430	3,037
16"x16"	3,000	3,750
18"x18"	4,320	5,400
20"x20"	5,070	6,337

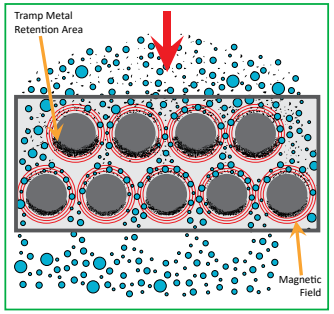
Note: Flow rates are for one inch tubes, on two inch centers, with two tiers. Not all sizes shown.

YouTube

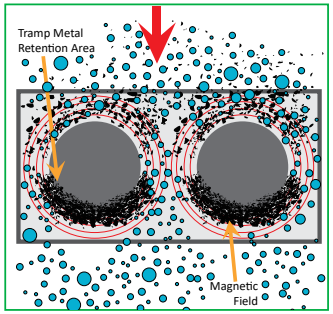
Learn how to pull test drawer style magnets at youtube.com/MPIMagnet

Tube Configurations:

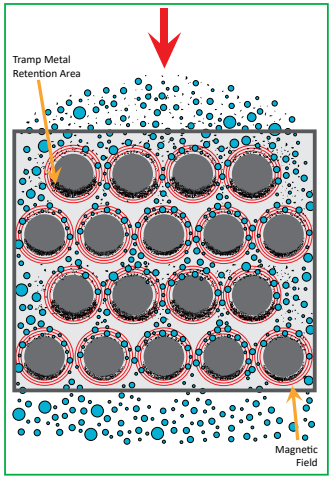
1" Tube



3" Tube

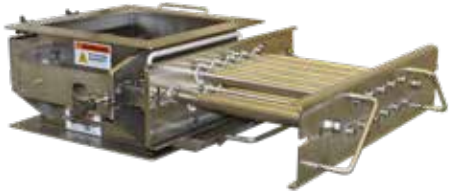


Continuous Flow

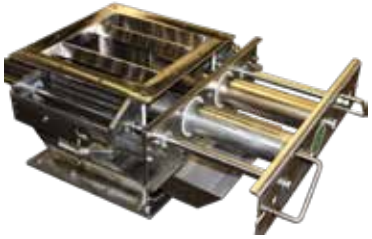


Drawer Magnet Designs:

Manual-Clean



1" Tube Manual Quick-Clean



3" Tube Quick-Clean

Round Spout

Pneumatic Conveying (details page 21)

Automated Self-Clean

Automated Continuous Flow Self-Clean

Sanitary Toolless

Gravity Flow Magnets

Picture submitted by customer of tramp metal removed from an MPI Hi-G Hybrid Plate Magnet after one week of production in plant receiving system.

Plate Magnets

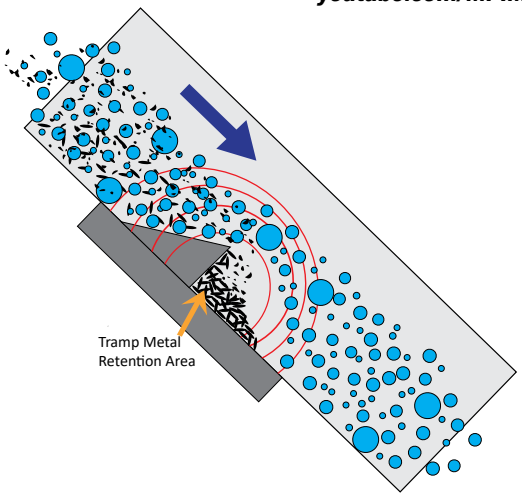
Plate Magnets are used in gravity-fed angled chutes. Single Step and Double Step Plate Magnets are designed to remove tramp metal from your product and eliminate the possibility of wash-off back into the product stream. Stainless steel pole areas maximize the holding power of the magnets. These Plate Magnets are easily installed and are supplied complete with sanitary hinges, latches and mounting hardware. The strong magnetic field is effective in product streams up to 8" deep.

- In addition to ceramic and rare earth designs, MPI's exclusive hybrid circuit (Hi-G Hybrid) is available for highest industry performance
- Custom engineered for the material burden depth in your chute, ensuring 100% protection
- Single and double step options optimize tramp metal collection and prevent wash-off
- Options include quick-clean and self-cleaning designs

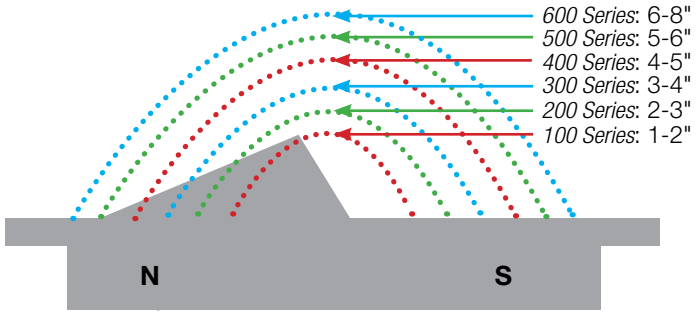
Note: Not recommended in slopes greater than 60°.

YouTube

Learn how to pull test plate style magnets at youtube.com/MPIMagnet

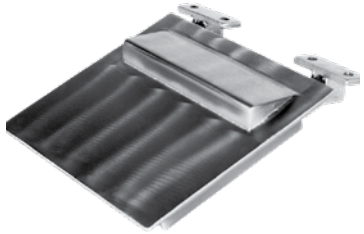


Magnet Type	Tramp Metal	Max Burden Depth	Size / Weight
Ceramic	Large	6-8"	Medium
Rare Earth	Small to Large	3-4"	Low
Hi-G Hybrid	Small to Large	6-8"	High



Step Options:

Flat Face



Single Step

Double Step

Plate Magnet Configurations:

Hump

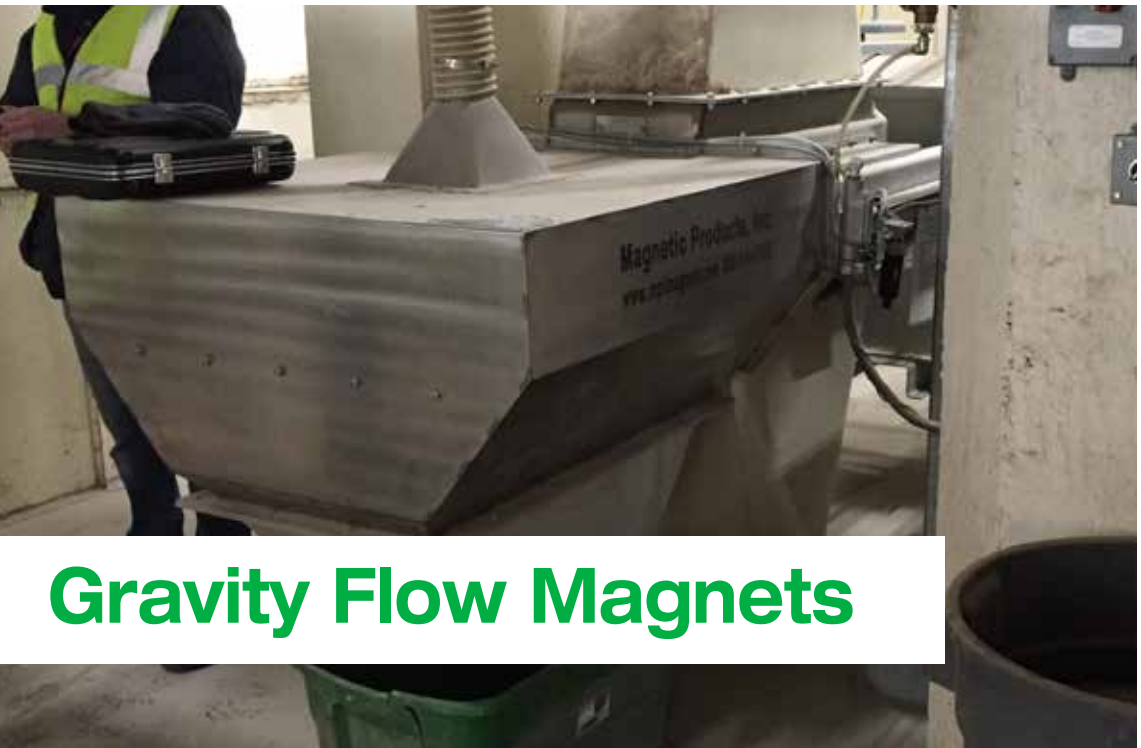
Suspended

Automated Self-Clean

Manual Quick-Clean
Shown with optional counter weights

Abrasion Resistant

MPI exclusive 3-Cell Design (optional)



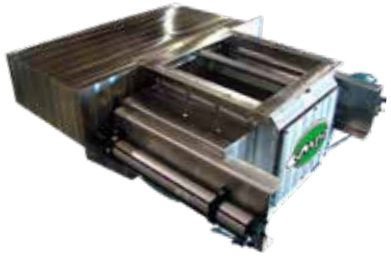
Gravity Flow Magnets

Chute Magnets

Manual Clean

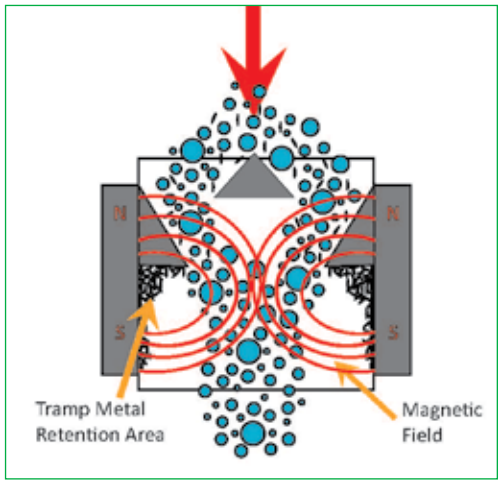
Manual Drawer Quick-Clean

Manual Hinge-Mount Quick-Clean



Automated Self-Clean

Magnetic Chute Separators capture ferrous tramp metal in heavy product flows that would otherwise bridge or choke if filtered through magnetic tubes. Magnetic Chutes are also well suited for abrasive products that would quickly wear through the thinner walls of tubes.

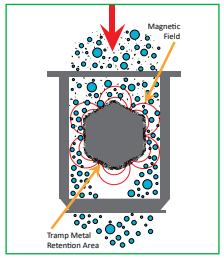


- Ceramic and rare earth designs with exclusive hybrid available for industry's highest magnet performance
- Exclusive Sani-TIGHT Seal gasket design eliminates leaks and reduces gasket replacement
- Single step optimizes tramp metal collection and prevents wash-off
- Options include quick-clean and self-cleaning designs

Free-Flow Magnets

Manual Quick-Clean

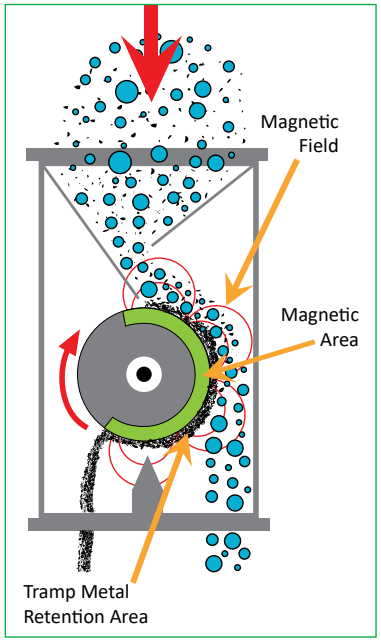
Automated Self-Clean



Free-Flow Cylinder Magnets capture tramp metal from high-volume, abrasive, vertical gravity-fed product streams, such as plant receiving areas.

- Exclusive hexagon-shaped center magnet element holds large quantities of tramp metal between cleanings, preventing wash-off
- Replaceable cleaning shell preserves magnet in abrasive product streams
- Options include quick-clean and self-cleaning designs

Drum Separator



MPI's Magnetic Drum Separators are designed to provide trouble-free continuous cleaning of tramp metal from heavy flows of large and abrasive materials, such as sugarcane, wheat, etc.

- Ceramic or rare earth magnet material
- Easy removal of drum from drive side access panel for service and maintenance (if required) without removing housing from line
- Gear reduction drive motors with inline torque limiter, 230/460 volt, 3 phase, 60 cycle
- Optional explosion-proof motor for dust producing applications
- Continuous self-clean

Pneumatic Magnets

Pneumatic Tube Magnet

Pneumatic Tube Magnets effectively remove inbound contaminants from product streams conveyed by air in horizontal or vertical processing transfer lines. Typical applications include powder or granular food products, pharmaceutical, plastics and chemicals.

- Easily installs into an existing product conveying line
- Maintains continuous flow through the housing with no reduction in product velocity
- Quick release tri-clover clamp for easy magnet cleaning
- Solid nose stainless steel cone diverts the product stream
- Durable rubber seal ensures positive seal
- Powerful rare earth magnet material

Inline Magnetic Tube

Inline Magnetic Tubes offer an economical, yet effective way to protect products conveyed in dry bulk or liquid process lines. ILMTs are an ideal solution for existing process lines that are not easily modified to accept conventional magnetic separation equipment.

- Easy to install into compact spaces
- Available for pressurized lines
- AAA sanitary welded construction
- Custom magnet tube lengths to fit any size application
- No tools required to operate quick release clamp for magnet cleaning

Inline Plate Magnet

MPI's Inline Plate Magnets are designed for use in gravity-fed chutes and pneumatic conveying systems.

- Exclusive Sani-TIGHT Seal gasket eliminates leaks, reduces gasket replacement
- Single and dual magnet designs with single and double step magnet faces
- Replaceable abrasive resistant face plates
- Hinge mounted quick-clean magnet face
- Self-clean designs available

Available in vertical or horizontal installations.

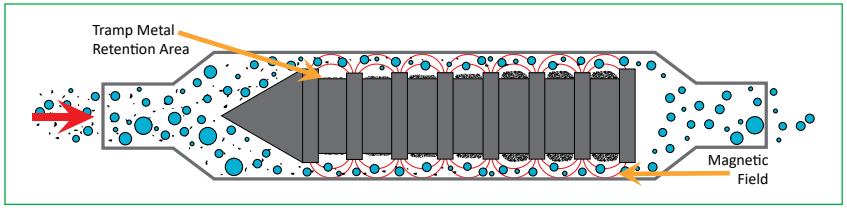
Pneumatic Line Magnet

Pneumatic Line Magnets remove inbound tramp metal from products in dilute phase pneumatic conveying lines. Easy to install in vertical or horizontal piping, our exclusive seven (7) raised pole design keeps product in the magnetic field for longer, and prevents tramp metal wash-off once captured. The quick-clean removable magnet element allows for rapid and easy removal of tramp metal.

- Exclusive 7-raised pole design results in the highest tramp metal retention in the industry
- Exclusive Sani-TIGHT Seal gasket eliminates leaks and reduces gasket replacement
- DE-STA-CO clamps and hinged access door in exclusive quick-clean design features a quick-release magnet for easy cleaning
- Standard sizes available to ship within 24 hours

YouTube

Learn how to pull test pneumatic style magnets at youtube.com/MPIMagnet



Inline Pneumatic Drawer Magnet

Inline Pneumatic Drawer Magnets are designed for use in gravity-fed chutes and dilute phase pneumatic conveying systems.

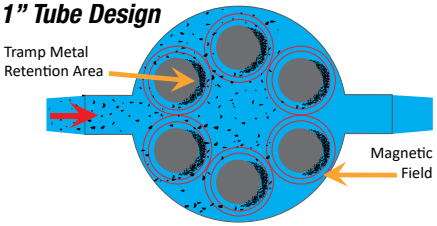
- Patent pending sanitary design
- Manual quick-clean and automated self-clean designs for easy cleaning
- Flush mount design for installation against wall
- Exclusive Sani-TIGHT Seal gasket eliminates leaks, reduces gasket replacement
- Proprietary dual stripper block design

Available in vertical or horizontal installations.

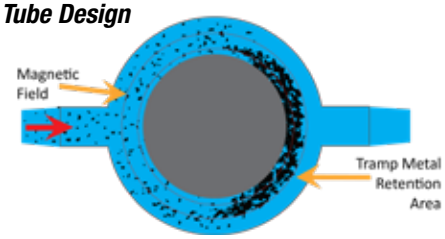
Liquid Magnets

3" Tube Design

1" Tube Design



3" Tube Design

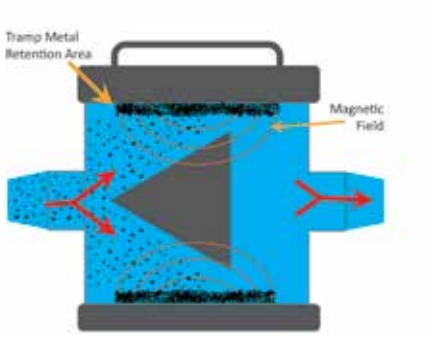


Liquid Finger Trap

Liquid Finger Trap Magnets protect product in liquid lines and pumps by magnetically removing ferrous contamination. Suitable for viscous slurries, including liquids, pureed products, sauces, etc.

- Industry's strongest magnetic tube design available
- Welded magnetic tube support frame maintains spacing and increases service life
- Pressure designs from 75 PSI to 150 PSI (HP-LFT)
- Available with rare earth magnet material with maximum temps up to 550°F
- Available for line sizes from 1½" to 10" diameters

Dual Plate Design Housing (magnets removed)



Liquid Plate Trap

Liquid Plate Trap Magnets protect product in liquid lines and pumps by magnetically removing ferrous contamination from solid, thick or chunky slurries.

- Single or double magnet design available
- Pressure designs from 75 to 150 PSI
- Available with rare earth magnet material with maximum temps up to 550°F
- Available for line sizes from 1½" to 10" diameter

Combination Screener

1" Tube with Filter Assembly

3" Tube with Water Jacket

Combines magnet and screen filter into one assembly for quick and easy access compared to traditional screeners. The triple rod screener is ideal for installation after bulk silos.

- Increased tramp metal protection compared to traditional screeners
- Non-magnetic particles are trapped by gravity in a strainer (located under magnet element)
- Includes magnet and screener in one common system
- Lid with clamping device ensures proper seal and easy maintenance
- Sanitary construction for food processing
- Optional lockable lid for protection against tampering and outdoor installations

USDA Certification Available

MPI has USDA certification on several products including:

- Plate Magnets
- Grate Magnets
- Drawer Magnets
- Round Spout Drawer Magnets
- Liquid Finger Traps
- Liquid Plate Traps

USDA certification is granted in recognition in having achieved all strict sanitary hygiene requirements on equipment design and function.

Metal Sorting Systems

Quick-Clean Suspended Permanent Magnet

Designed to remove large and medium tramp metal from suspension heights up to 10” (with bucking option) and conveyed belt speeds up to 250 feet per minute.

- Economical solution for equipment protection
- Includes four (4) eye bolts for suspension
- Optional bucking magnet design increases reachout of magnetic field by 25%
- Quick-clean stripper removes metal from working surface when pulled towards operator
- Ceramic, Rare Earth and exclusive Hi-G hybrid designs available

Quick-Clean Suspended Electromagnet

Powerful oil-cooled electro-magnets are designed to remove large and medium tramp metal from conveyed product with large burden depths.

- Extremely powerful magnetic design: Manufactured with a high gradient balanced magnetic circuit
- Coils manufactured with Class “H” (or better) anodized aluminum strap for the “best in class” coil insulation performance
- Breather valve to allow expansion and contraction without using an external expansion tank
- Durable Nomex and Glastic materials to extend coil life

Drum Separator

Provides automatic extraction of tramp metal from heavy flows of large size and abrasive materials such as coal, aggregates, ores, sugarcane, wheat etc.

- Adjustable, 220 degrees of stationary magnets ensure the highest rates of tramp metal separation
- Adjustable feed gate assembly allows manual control of product flow
- Stainless steel housing construction
- Removable access panels for testing and inspection

Self-Clean Suspended Permanent Magnet

Designed to remove large and medium tramp metal from suspension heights up to 10” (with bucking option) and conveyed belt speeds up to 250 feet per minute. Self-cleaning belt automatically removes captured tramp metal from magnets working surface.

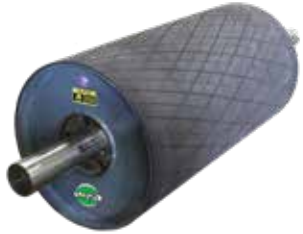
- Extra wide belt helps prevent tramp metal damage under the belt, extending belt and component life
- Crowned pulleys for accurate belt tracking
- Optional bucking magnet design increases reachout of magnetic field by 25%
- Picture shown with optional motion sensor
- Ceramic, Rare Earth and exclusive Hi-G hybrid designs available

Self-Clean Suspended Electromagnet

Powerful oil-cooled electromagnets are designed to remove large and medium tramp metal from conveyed product with large burden depths. Self-cleaning belt automatically removes captured tramp metal from magnets working surface.

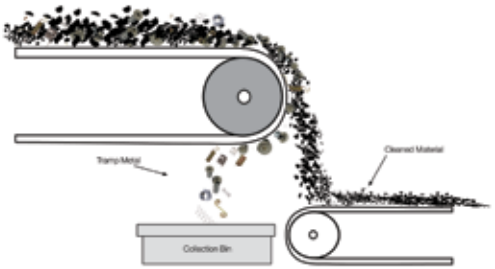
- Extremely powerful; manufactured with a high gradient balanced magnetic circuit
- Coils manufactured with Class “H” (or better) anodized aluminum strap for the “best in class” coil insulation performance
- Breather valve allows expansion and contraction without external expansion tank
- Durable Nomex and Glastic materials extend coil life
- Extra wide belt helps prevent tramp metal damage under the belt, extending belt and component life
- Crowned pulleys for accurate belt tracking

Head Pulleys/ Separation Rolls



Removes both large and small ferrous tramp metal contaminants from product streams in belt conveyor systems. Separation Rolls provide a continuous, 24/7 automatic removal of tramp metal from the product flow.

- Ceramic, rare earth and exclusive Hi-G hybrid designs available
- Widths from 8” to 62”
- Diameters from 4” to 36”



Magnetic Belt Feeder

Magnetic Belt Feeders are designed for applications where weakly ferrous material, such as stainless steel or imbedded contamination, need to automatically be removed from a product stream. The system uses a high intensity rare earth magnetic design that increases the gauss on the surface of the belt compared to a magnetic head pulley design.

- Standard belt widths from 10" to 60"
- Ultra thin belt designed to reduce air gap, increases magnetic performance on the surface of the belt
- Adjustable splitter gate to fine tune separation
- Optional feeders available to ensure full product distribution across the belt, optimizing separation rates

Detection Sorting System

Detection sorting involves separating metals from a product stream by measuring conductivity or ferrous permeability of the products. The system uses reliable metal detection technology to monitor the product stream. When a conductive or ferrous metal enters the system, the sensor will detect the metal and activate a reject gate or air blast downstream to automatically remove the metal. The Detection Sorting System can be partnered with MPI's Cross Belt Separator's, Magnetic Head Pulley's or Eddy Currents for a complete turnkey solution to remove all ferrous and nonferrous metals.

- Various segmented sensor sizes available to match the application requirements
- Segments reject gates or air blast reject mechanism available
- Maintenance-free - auto calibration and digitalized circuitry that counters the effects of temperature and humidity, ensuring years of reliable performance
- Digital noise filters eliminate undesirable signals such as vibrations and shocks
- Multi-channel technology allows optimum recognition of metals
- User-friendly intuitive operation and on-board "teaching assistant" - control panel shows only the information that is required and the software is self-explanatory

Commingled Sorting System

MPI's Patented Commingled Sorting System is designed to achieve industry leading separation rates on highly commingled materials where ferrous metal has to be reclaimed. Common applications include tire recycling, municipal solid waste, crushed batteries and brake pad compounds.

Mixed product containing ferrous metal is fed into a hopper. A vibratory conveyor then evenly distributes the product on to the main conveyor belt. Mounted above the main conveyor belt is a magnetic rail with another conveyor belt moving over its working surface.

The magnetic rail, which is the length of the main conveyor, moves across the belt edge to belt edge. While the magnet is moving back and forth, captured tramp metal is agitated, releasing entrapped non-ferrous material. The ferrous metal travels down the belt until it is released in a separate collection bin from the non-ferrous metal.

For increased magnetic separation, including some grades and types of stainless steel, a magnetic head pulley using MPI's Arch Technology can be installed at the discharge of the non-ferrous conveyor. MPI offers designs for abrasive applications. All other specifications are customized to each application.

Eddy Current Separator

Eddy Current Separators remove nonferrous metals such as aluminum, die-cast metal and copper from nonmetallic material. An ultra-high-strength magnetic rotor that houses rare earth magnets spins at a high RPM. The magnetic rotor, attached to a motor driven shaft, spins independently and at a much higher speed than the conveyor belt pulley, creating a high-frequency reversing magnetic field. When nonferrous product, such as aluminum, passes over the rotor, the spinning magnets generate an eddy current. This causes the aluminum to be repelled and "thrown" by the separator. Product, such as plastic, glass or other materials which are not conductive, simply fall off the end of the separator into a bin.

- Three standard belt widths to choose from (20", 30" and 40")
- Standard REN designed for larger metal separation and High Intensity ECX design for small or fine metal recovery
- Tile coated fiberglass shell minimizes ferrous burnout
- Thin and durable urethane belt with corrugated sidewalls keeps material on the belt and close to the magnetic field

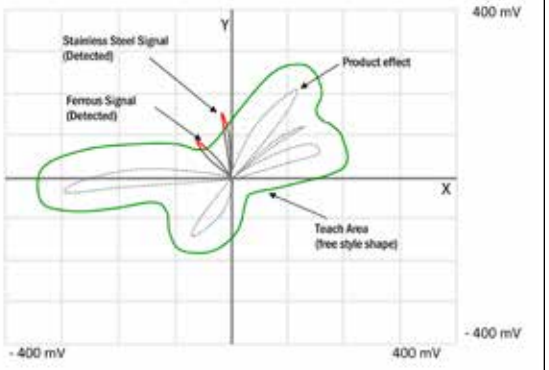
All units are CE
and ETL Certified

Metal Detectors

CASSEL

MPI is the exclusive US distributor for Cassel inspection systems. All Cassel sensor heads are manufactured in a state-of-the-art German facility. Extremely reliable and technologically stable, Cassel metal detectors feature four-quadrant technology developed and introduced by Cassel. Cutting edge four-channel DDS (direct digital synthesizer) and DSP (digital signal processor) technology eliminates costly maintenance. Once set, the metal detector will not require further adjustment from the manufacturer, reducing the cost of ownership. Utilizing these technologies, Cassel metal detection systems provide extreme sensitivity that far surpasses the reach of competitive products.

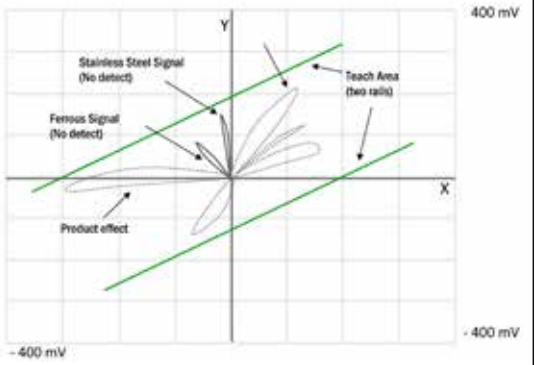
Cassel's Metal Shark 2



Free-Style Teach Area

Four-quadrant technology allows a 360° analysis of the product "signature." Because the metal threshold follows the signature, Cassel metal detectors are able to detect metal in areas of the product where other competitive units cannot. Metal Shark 2, partnered with an easy-to-use interface, provides superior performance without the need for technical personnel.

Other Metal Detectors



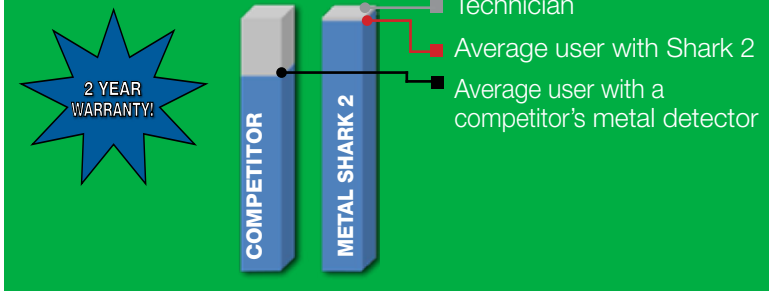
Two Rail Teach Area

Competitive metal detectors use a parallel threshold or "two-rail" technology to pre-determine the teach area. Some metal signals will not be detected because they fall between the two thresholds.

Sensitivity and Stability

- Direct Digital Synthesizer (DDS) replaces traditional quartz or analog oscillating chips used to generate frequency by digitally generating a consistent and stable frequency hat Digital Signal Processor (DSP) provides a precise digital signal allowing the metal detector to distinguish smaller metal objects
- Digital Dynamic Noise Filter reduces or eliminates electronic and vibration signals in the environment, creating a more reliable signal

Maximum metal detector performance achieved:



Intuitive Design

- Intuitive menu structure with step-by-step prompts delivers a simple operation for reliable performance and no expensive service calls to adjust settings
- Multiple languages available for operation
- Four-level password feature: operator, manager, technician and service

Zero Maintenance Electronics

- All solid state electronics housed on one main board, ensuring years of reliable performance offering the lowest cost of ownership on the market
- Digital balance control feature adjusts for temperature and humidity fluctuations by monitoring coil balance more than 200 times per second
- 2-year standard warranty

Documentation and Traceability

Metal detectors are considered a critical control point, and continuous checking is required to meet standards. Cassel metal detectors can be programmed to automatically remind the operator to test equipment performance at pre-set intervals. Information -- such as metal contaminant detections and any changes in parameter settings -- are stored with date and time stamps. This list can be viewed on screen or downloaded to a Windows-based PC. Data will not be lost in the event of a power outage.

Cassel metal detectors offer the latest features in metal detector design to deliver the highest performance systems for your process, reducing the risk of product contamination and protecting your brand. We stand behind our products and offer this satisfaction guarantee. ***Put simply, the unit will perform as specified or we will return it for a full refund.***

Conveyor Metal Detector

Traditionally integrated onto conveyor belts, readily adjustable settings ensure equipment sensitivity, stability and reliability. A variety of reject mechanisms (e.g. pusher, belt stop, alarm, etc.) are available to alert operators of a “find” or to divert contaminated product.

- Hygienic food industry design available to ensure compliance with good manufacturing principles
- Harsh environment rating as standard on sensor head to maintain stability regardless of the environment
- Semi-flexible aperture lining, which resists thermal shock due to temperature change, protecting the sensor for maximum operating life and minimal downtime
- Typical options include wash down up to IP69k, reject devices, proximity sensors, alarms and special belting

High-Sensitivity Detector

Typically used at the outlet of a tablet press, this unit provides the highest performance in detecting magnetic and non-magnetic metals. As the tablets fall through the metal detector, the reject flap removes the smallest foreign metal objects, promptly separating them from the product stream. This unit features a maintenance-free design and high quality construction for reliable operation in the most challenging environments.

- Detection capabilities to Fe 0.10 / NFe 0.25 / SS 0.30 (mm) sphere
- Designed to achieve the highest detection performance
- Solenoid driven stainless steel reject diverter mechanism
- Adjustable support stand and sanitary design for quick and easy cleaning

Liquids Metal Detector

Designed for liquids and slurries, this unit boasts a rugged stainless steel sensor and housing, and is appropriate for use in the food industry. With a maintenance-free design and high quality construction, users enjoy reliable operation even in the most challenging industrial environments.

- Pipe diameters from 1.5” to 4.0”
- A variety of stainless connections are available, including tri-clamp, milk-thread and aseptic flanges
- Standard hose is able to withstand up to 220 PSI and has been designed for harsh environments, high temperatures and CIP/SIP systems
- Hygienic frame is easy to clean, with tubing closed welded on all sides; designs include floor stands (with/without casters) or custom frames fitted to accommodate existing equipment
- Optional test ball insertion port allows an operator to regularly and easily test metal detector performance

Meat Metal Detector

Compact metal detector for sausage pumps and stuffer machines. Mobile frame with gas spring for easy height adjustment and installation between stuffer and clip machine.

- Hygienic food industry design to ensure compliance with good manufacturing principles
- Provided pipe connections and link cables are compatible with the stuffer type
- External device cables are plugged in between the filling and the clipping machine
- Housing filled with epoxy and fabricated to IP68/NEMA6P standards, suitable for daily wash down in harsh environments
- FDA quality product pipe, max. 50 bar (725 PSI), Rd80 pipe thread

Flatplate

Flat (FL) sensor for installation below or above conveyed material to provide the highest performance in detecting magnetic and non-magnetic metals. Typically, the FL types are used in fleece, textile and foil production.

- Conveyor installation below or above conveyed material is typically done horizontally, but each angle is applicable.
- Sensing width – 200 – 4000 mm (4 in – 13.2 ft)
- Sensor head – stainless steel housing
- Compatible with the METAL SHARK 2A to provide high quality inspection

Tunnel (TU)

Tunnel (TU) Detector features a divisible sensor head which allows for installation on an existing conveyor belt without requiring the belt to be cut. Typical applications include mining, aggregates and recycling.

- Does not require belt to be cut for installation
- Ideal for installation on troughed belt conveyors
- Wall mounted controller available
- Optional low pressure washdown design available

C0680 Large Bag Metal Detector

Large bags of flour, grain, spices, powders, food additives and healthcare products require highly sensitive detection. The heavy duty metal detector senses ferrous and non-ferrous metals as small as 2 mm stainless steel. The sturdy stainless steel conveyor belt easily maneuvers 50-100 lb. bags. A variety of reject mechanisms (e.g. pusher, belt stop, alarm, etc.) are available to alert operators of a "find" or to divert contaminated product.

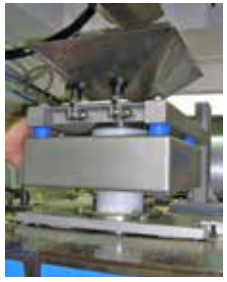
- Designed for detection performance of 1.5 mm ferrous, 2.0 mm non-ferrous and 2.0 mm stainless steel in large bags, typically 50-100 lbs.
- Hygienic food industry design available to ensure compliance with good manufacturing principles
- Harsh environment rating as standard on sensor head to maintain stability regardless of the environment
- Typical options include wash down up to IP69k, reject devices, proximity sensors, alarms and special belting
- Compatible with the METAL SHARK 2A to provide high quality inspection

Gravity Feed Metal Detector

Ideal to monitor unwanted metal contaminants in continuously flowing granules or powders, such as sugar, flour, cornmeal and spices. As bulk material flows through the metal detector, reject flaps promptly separate even the smallest metal contaminants from the product stream. A rock-solid sensor head and mounting frame design ensure consistent and reliability and performance. This unit is even suitable to be installed near machines that vibrate.

- Available in compact design with a 25% lower overall height requirement
- Pipe diameters are available from 3" to 24"
- Mounting frame with integrated metal-free zone allows for exceptionally quick and easy installation
- FDA quality PVDF plastic downpipe with various options including: white PVDF (with FDA), black anti-static pipes (with FDA), nylon and ceramic
- Optional test ball insertion port

Gravity Packaging Metal Detector



Intended for free falling product in vertical packaging installations. This unit is ideal where space is limited, such as above form, fill and seal machines. If there is very little space in your application, this detector is cost-effective option that does not require a mounting frame or inlet/outlet tubing. Once installed, bulk material falls through the metal detector. If any metallic contaminant is detected — magnetic or non-magnetic, the metal detector sends an alert to remove the contaminated package after it passes the fill and/or seal stages (depending on application installation).

- Unit dimensions: L 12.125" x W 12.125" x H 5.9"
- Product flow opening diameter: 3.9"
- Detects ferrous, non-ferrous and stainless steel
- IP65, optional IP66 or IP67
- Maintenance-free sensor automatically and continuously calibrates itself for best performance

Pro-Tector Systems

In one compact unit, Pro-Tector systems combine the excellent ferrous separation performance of a magnet with the non-ferrous and stainless detection of a metal detector. Through this combination system, users are able to achieve higher separation performance while reducing the amount of product loss from metal detection alone.

- Magnetic separator has the ability to capture and remove sub-micron ferrous contaminates that would otherwise be undetectable by a metal detector, increasing overall protection of processing equipment and end-customers.
- Removal of ferrous contaminants prior to the metal detection process reduces the overall amount of lost product
- Compact design requires less installation time and less production space than independent systems

Pro-Tector Combination Options

Gravity-Flow Pro-Tector combines a gravity-flow magnet with the Gravity-Feed Metal Detector

Liquid Pro-Tector combines a liquid magnet with the Liquids Metal Detector

Pneumatic Pro-Tector combines a pneumatic magnet with the Gravity-Feed Metal Detector and pneumatic reject device

SHARKNET® 2 Software

SHARKNET®-2 Software networks all Cassel metal detectors and x-ray machines to one Windows-based computer. The software simplifies reporting for FSMA, HACCP, GMP, BRC and IFS compliance. The software collects all required data and prints out any user defined report requests (requires Shark 2 controller).

- Managers can monitor real-time inspection results and actively manage their product inspection equipment from a central computer
- Remote maintenance capability by operators and Cassel technicians
- All data is stored in an SQL database for easy export or integration, if needed
- Traceability of all operational data, including metal alerts, parameter changes, PVS results, errors and product passes
- Auto printing – HACCP-SQF 2000-BRC-GMP-IFS5-FSSC 22000/PAS 220

X-Ray Electronic Inspection Systems

X-Ray inspection is sorting based on product density. An X-Ray inspection machine takes an image that is pixel based. The machine compares pixel density to stored pictures of “good” product to detect defects and contaminants. If the density of a product falls outside of acceptable range the reject mechanism removes the contaminated product out of the product flow.

MPI Cassel X-Ray electronic inspection system advantages at a glance:

- Cassel X-Ray devices ensure foreign body inspection with total safety for the health of your operational staff. TÜV approved.
- High quality components guarantee years of hassle-free operation, resulting in low cost of ownership.
- Brilliant, large touch screens along with the clearly structured X-Ray software are user friendly for the operator to intuitively set up products.
- Sophisticated inspection features offer superb inspection sensitivity, achieving first-rate detection results with complex products.
- Compact design and large inspection area allows the inspection of larger products.

- German engineering and manufacturing deliver proven results in long-term reliability, endurance and safety. High quality components selected for even the smallest of details, following the strictest quality standards.
- Magnetic safety switches at cabinet doors and tunnel hatches ensure radiation is immediately switched off when a door is opened. The PILZ safety circuit provides full and independent safety in any case.
- X-Ray generator designed specifically for industrial product inspection and long running time.
- Advanced and efficient cooling system designed for a wide range of component requirements. The cooling system circumvents that the X-Ray generator overheating, resulting in a long, life time for X-Ray tubes and other components.
- Minimized downtimes with easily replaceable and readily available spare parts.
- The sophisticated software is specifically developed for X-Ray product inspection, providing a perfect combination of high-quality image processing and intuitive operation.

Packaged Products

Packaged Products X-Ray is ideal for packaged food or non-food products in big sizes, for example in boxes with plastic packaging or with metal foils or metal cans.

- X-Ray detector diode size 0.8 mm, optional 0.4 and 0.2 mm
- X-ray source is 1 pc. high power x-ray generator, with max. 120kV (400W), variable in voltage + current, integrated closed oil cooling circuit
- Polyurethane belt white (FDA) conveyor
- Conveyor speed by product 30-60 m/min

Bulk Products

Bulk Products X-Ray system is predominantly used for food or non-food products in bulk, such as unpacked nuts, dried fruits or sweets.

- Two options for X-Ray detector — low noise 307 or 407 mm line scan CCD, diode pitch 0.8 mm, integrated x-ray beam stop
- X-ray source is single beam x-ray generator with max. 60kV (50W), variable in voltage + current
- Magnetic safety switches at cabinet doors and tunnel hatches, emergency stop push button. Emergency stop in/out interfaces to safety circuits of production line, x-ray off key switch, PILZ safety circuit

Liquid Pipeline

Liquid Pipeline X-Ray is particularly suitable for pumped food or non-food products in pipelines. Through the pipeline quick release, the pipe can be removed in a few easy steps for cleaning.

- X-Ray detector is low noise 408 mm line scan CCD, diode pitch 0.4 mm, integrated x-ray beam stop
- X-ray source is single beam x-ray generator with max. 80kV (480W), variable in voltage+ current
- Stainless Steel pipe type 304 and POM white (FDA)
- Pump flow speed of product is 0.05 to 2 m/sec

Glass, Jar and Can Line

Referred as the “side up,” this line works best for food or non-food products in glass or plastic containers, including jars or bottles.

- X-Ray detector is low noise line scan CCD, diode pitch 0.8 mm
- X-ray source is single beam x-ray generator with max. 120kV (400W), beam shoots sideways through the product, variable in voltage + current, integrated closed oil cooling circuit
- Conveyor speed by product 0.3 to 0.8 m/sec (7 fixed speed steps)
- Conveyor type is modular chain link belt, Stainless Steel
- 250 different product set-ups
- Flow rate maximum 100 pieces per minute
- Maximum product dimensions 150mm 0x250 mm height

Magnets | Material Handling
Electronic Inspection | Service

MPI Headquarters
683 Town Center Drive
Highland, Michigan 48356

Customer Service
1.248.887.5600
info@mpimagnet.com

Website
www.mpimagnet.com
Live assistance available!

Working for You

MPI service programs are designed with the customer in mind. Each package is customized to address all major points of concern when maintaining metal control equipment.

MPI has an option for every customer need, requirement and budget to make protecting your investment affordable and attainable.

24/7 Support
248.887.5600

Local MPI Representative: