

What is Metal Detector:-

Metal Detector is an equipment to identify and remove products with foreign metal object contamination in food, pharmaceutical and cosmetic industry.

Metal detectors are traditionally used as a first line of defence in detecting ferrous, non-ferrous and stainless steel contamination in packaged food products, tablets, capsules, soaps, detergents, powdered products, spices, granules, etc. before these products leave the manufacturing / processing plants.

Importance of Metal Detector in Food/Pharma Industries :-

Despite maximum care metallic contaminations of food products during the production process cannot be fully excluded. Metal particles that enter the product during the production process or already are contained in the raw material may cause serious injuries of consumers. The consequences for the producing company are numerous and serious and include compensation claims and expensive recalls. Even bigger and longer-lasting damage is caused by the negative brand image and the loss of consumer trust caused by impure food products.

The benefits of using Industrial metal detectors :-

Detect Ferrous , Non-Ferrous and stainless steel particle .

Prevent damage to machinery and production downtime.

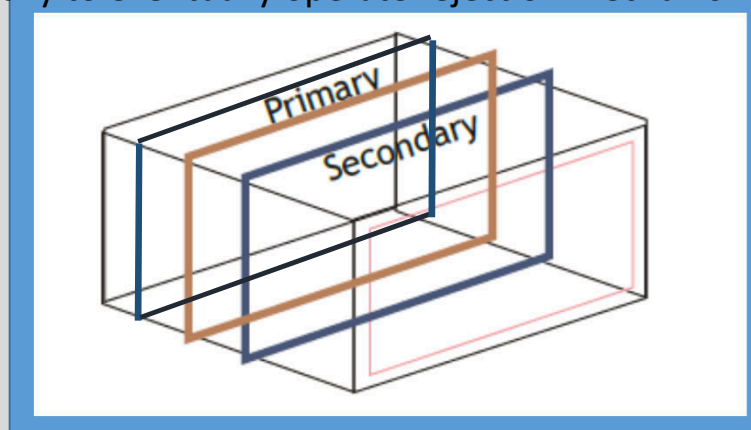
Ensure product quality in line with the required standards and certifications

Protection against customer complaints and recalls

Working Principle of Metal Detector :-

Principle of Operation

Metal detectors operate by generating electro-magnetic fields in the product being tested, and analyzing the response to such fields from possible metal contamination. At the heart of a metal detector is a set of coils wound to form an aperture through which the product to be tested is passed. Shown below is a simplified version of such a coil. A primary coil sets up the electro-magnetic field at a certain frequency. A secondary coil picks up the response to this field. Any metal particle passing through the coil absorbs energy from the excitation due to eddy currents induced in the metal volume. This minuscule perturbation is picked up by the secondary coils, and processed electronically to eventually operate rejection mechanisms.



Product range - Metal Detector



Pharma Metal Detector
- Tablets/Capsules



Combo – Metal Detector +
Deduster – Pharma Tablets



Gravity Feed Metal Detector
Sizes – 2" to 8"

Powder/spices products



Conveyorised Metal Detector

Packed products

Pharma Metal Detector

Suitable to check the metal contamination in tablets and capsules

Preferably to install after tablet Deduster in tablet compression line and /or after capsule filling machine.

Aperture sizes – 95mm X 22mm with output up to 10,000 tablets/capsule per minute.
(Various other aperture sizes available for bigger diameter tablets)

Sensitivities :-

SS30 Model :- 0.3mm ferrous , 0.3mm non-ferrous and 0.5mm stainless steel

Gx 30 model :- 0.25mm ferrous , 0.3mm non-ferrous and 0.4mm stainless steel.

Quick acting rejection mechanism to reject contaminated tablets/capsules

Various safety interlocks to ensure proper rejection of contaminated products.

All validation documentations like IQ , OQ , PQ are available for the compliance with FDA , GAMP and GMP specifications.



De-duster

De-duster does deburring of pharmaceutical tablets edges and removes dust from tablet

Patented drive unit.

Upward conveying of tablets

Options available – 10 , 18 and 24 layer to accommodate different height of tablet press machine outlet and IPC (Tablet collection container) inlet height.

vibrations can be controlled through frequency and power available on control panel. Independent adjustment of power and frequency.

The process can be monitored visually at all times through a glass window

The outlet can be rotated 360° independent of the inlet. The De-duster is easily adjustable to various tablet press discharge configurations.

Patented drive unit ,Low maintenance

Very high conveying capacity , up to 10,000 tablets/minute.

Compact design, minimum footprint , easy assembly and disassembly



Conveyor Metal Detector

Suitable for all types of packed products and also suitable for products like biscuit , confectioneries , candies, chocolate ,meat ,frozen fish.

Different aperture sizes to accommodate various applications

Multiple product memory for rapid product changeover and data storage.

Modular conveyor system .easy for cleaning and belt tracking.

Stainless steel SS304 / 316 construction suitable to the applications.

Different types of rejection mechanism – Air blow , Pusher /puller , Diverter , conveyor retractable(for biscuit /confectionery /chocolate line) ,flap etc.

Special infeed system for bottles.



Combo – Metal detector and De-duster

High quality De-dusting and Metal Detection

Control of De-duster will be operated through Metal Detector HMI.

Effect of vibration on Metal Detector is nullified to get an optimum sensitivity.

Dual frequency options for normal and iron tablet/capsules

Height adjustment to accommodate various tablet press discharge and IPC (Tablet collection container) configurations.



Gravity Feed Metal Detector

Suitable for powder , spices product , granules , pigments , insectibles etc.

Aperture sizes – 2” to 8”

Quick acting rejection mechanism .

Compact design to accommodate in online/offline applications.

Options available as complete system with rejection mechanism + stand or only coil to be mounted on FFS machines .



SR. NO.	Coil Aperture Diameter	Detection Sensitivity		
		FE	NFE	SS
1	GF-50	0.4 mm	0.5 mm	0.6 mm
2	GF-75	0.6 mm	0.8 mm	1.0 mm
3	GF-100	0.8 mm	1.2 mm	1.5 mm
4	GF-150	1.2 mm	1.5 mm	1.8 mm
5	GF-200	1.5 mm	2.0 mm	2.5 mm

Metal Detector – Important Features

Two models are available in Metal Detector – SS and Gx , following ae common features among both the models.

Digital Signal Processing



Digital signal processing for accurate adjustment of phase angle – To minimize the product effect and get the optimum metal detection sensitivity.

Auto Product Tracking



The machine tracks the product phase to compensate the product variation thereby eliminating chances of false rejection during inline production

Fail Safe Mechanism



Safety interlocks to ensure proper and fail safe separation of metal contaminated product from the good product.

Auto Product Learning



Adjusts the product signal and product threshold automatically. Different settings can be stored in memory for multiple products

E-Signature



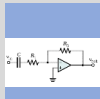
Electronics signature for the test samples ensure that no manipulation of validation samples can be done (Standard test samples are calibrated for metal spherical balls of desired sizes

Event Time Stamping



Real Time stamping of event logs available

Digital filter and gain



To avoid electronic noise to be interfered in the Metal Detection sensitivity

Additional features in Gx series

7" touch screen display

Real X-Y plot / Numerical + Graphical display

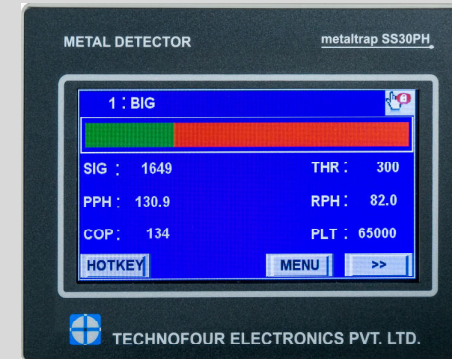
5 years batch data storage

IIoT compliance

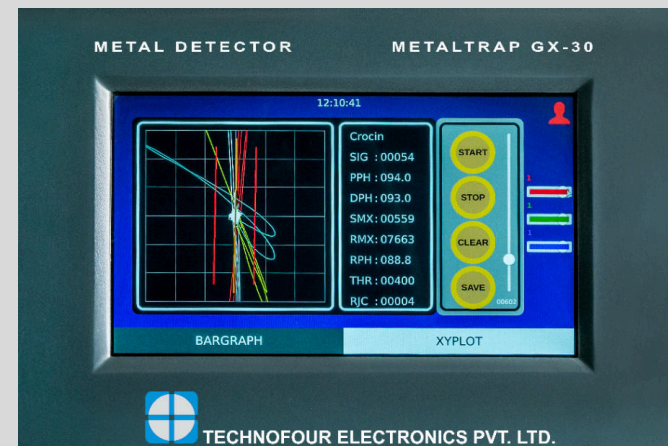
Multilevel password

Finger print sensor

21 CFR part 11 compliance



MD SS series display



MD Gx series display

Thank You for your attention