



ADVANCED DETECTION SYSTEMS

Metal Detector Trouble Shooting Guide

Metal detector troubleshooting can be a frustrating experience. There are many factors that can interfere with the proper operation of the metal detector. Quite often the “metal detector” problems are found to be caused by outside influences rather than the metal detector itself. The following are the most common causes of poor metal detector performance:

Power Line Interference

Today's metal detectors are sophisticated electronic devices. They require a power source that is free from large fluctuations in line voltage. Power line “noise” is another possible source of problems for metal detectors. The noise or voltage spike, can be caused by a variety of other equipment running on the same power source as the metal detector. The most common sources of these spikes are motors, heaters, sealers or any other high current load. Metal detectors have some noise suppression circuitry built into them but if the spike is large enough it will cause the metal detector to false trigger.

Excessive Vibration

Most metal detectors can handle quite a bit of vibration without loss of sensitivity. Severe vibration, especially sudden jarring bumps, can cause false triggers.

Twisting or Straining of the Metal Detector Head

It is very important for metal detectors to be mounted on a flat surface. An incline, decline or vertical mount is not the important consideration as long as the surface is flat. An uneven surface will cause the metal detector body to twist or strain when the mounting bolts are tightened. This causes the metal detector to be unstable and can cause false triggers or drifting. Also, if the metal detector is mounted to a conveyor or support stand it is important for the feet of the conveyor to be firmly on the floor. If the conveyor or stand rocks it can create the same effect.

Changing or Inconsistent Product

In food processing applications, if the metal detector is set up to run frozen product and occasionally a semi-thawed product comes through; this will cause a false trigger. This is because the metal detector is set up to recognize the signal from the frozen product as a normal signal. The signal from the semi-thawed product is conductive, therefore the metal detector interprets the signal change as a metal contaminant. Similarly in mining applications, varying levels of iron or copper in ore can cause the metal detector to false trigger, if its sensitivity is set too high.

Radiated Signal Interference

Because the metal detector is made of a transmitting and receiving antenna, it is susceptible to other signals that might be present in the area. False triggers can be caused by such things as microwave type sealers or heaters, two-way radios, or variable speed drives. Any machinery that can cause a burst of electrical energy is a possible

source of interference. The best method to minimize the interference is to place a shield around the source and electrically ground the shield.

Ground Loop Interference

Many false triggers of a metal detector seem to have no obvious cause and can be very difficult to diagnose. One such case is a ground loop. When two pieces of metal make intermittent contact in the area of the metal detector it can cause a false trigger. Because the metal detector consists of a transmitter and receiving antenna, there is a very weak electrical field generated around the inspection head. The field will conduct itself through whatever is in its range, whether through the air or through any metal in the area. As long as the field remains stable, all is fine. If there is metal in the field that is making intermittent contact with another piece of metal, the shape of the field changes suddenly and the metal detector will give a false indication. Possible sources of ground loops are loose nuts or bolts, poorly designed reject devices, degenerating bearings in an idler or drive pulley, or even another piece of machinery bumping up against the metal detector system.

Systematically Narrow Your Search

While finding the exact source of the problem may take some time, it is relatively easy to narrow the search. If a metal detector starts to false trigger, remove any product from the system and turn off the conveyor. If the detector continues to trigger then the problem is more likely to be electrical interference or a problem with the metal detector itself. If the detector stops triggering it is normally safe to assume the metal detector itself is ok. Now start the conveyor and see if the detector begins to false trigger. If it does then the problem is in the conveyor, possibly metal embedded in the belt or some type of ground loop interference (see above). If all is still fine then begin to run product through the system. If the detector triggers on each product or on occasional product, the detector is not properly adjusted for that product and adjustments must be made.



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4740 West Electric Avenue, Milwaukee, WI 53219 USA

www.adsdetection.com

Phone: 414-672-1283

sales@adsdetection.com

Aftermarket Support with Customer Service Focus

Advanced Detection Systems outstanding metal detector service is a team effort. Our sales, engineering and service staff experts coordinate our support to meet your specific service needs.

Provide Customer Focused Service

Over the years, Advanced Detection Systems has developed a variety of services and training programs. These are designed to help our customers stay current in the best practice methods of use for their metal detectors, optimizing the value of their metal detection investment. Your purchase of a metal detector from Advanced Detection Systems includes expert technical support for the life of the equipment. This includes installation, start-up and the testing needs for your metal detection system. Some of the services we offer are: Verification Services for any make/model metal detector, On-site Field Service, Metal Detector Training, Software Upgrades and FREE Product Testing with guaranteed detection levels. Service is provided from our service technicians, factory sales and local representatives that are HACCP (Hazard Analysis Critical Control Point) certified. Our engineering, factory sales staff and local manufacturer's reps are also on standby to assist our customers.

Free Product Testing

Use our free product testing service to ensure that you are investing in the best possible metal detector for your application. Advanced Detection Systems product testing service is conducted promptly at our factory lab in Milwaukee, WI - USA. Our up front product testing leads to trouble free start-up of the metal detection system at your facility. This service allows us to build the metal detector for optimum performance and reliability for your specific products. When you utilize our product testing service, you will receive a factory Sensitivity Guarantee indicating the optimal ferrous, non-ferrous and stainless-steel detection levels for your specific products.

Metal Detector Verification & Services

Advanced Detection Systems HACCP (Hazard Analysis Critical Control Point) certified factory service technicians and certified local representatives conduct verification and calibration services on-site and are compliant with most QA programs, audits, HACCP and GMP (Good Manufacturing Practices) standards.

As your metal detector usage comes under scrutiny applied by government regulations, auditors and your customers; there is an opportunity to meet expectations and improve your competitive advantage by being proactive in verifying your metal detectors on an annual basis. These services are offered on any make/model metal detection system or equipment.

Metal Detector Training

We recognize the importance of quality training for our customers to ensure optimal use of their metal detector. Our training programs are conducted by certified factory service technicians and local representatives on-site or if preferred, online for our customer's convenience. Advanced Detection Systems can also customize any training program to meet your specific needs. Our training programs can include information on: Metal Detector 101 - How They Work, Security Features - Protection from Unauthorized Tampering, supervisory personnel setup and clearances, electrical power supply and operation of the metal detector, accessing and managing data settings/change, Product Monitor, use of reject devices and settings, touchscreen calibration and menu options and any specific topic per your application or industry.

Replacement Parts

Advanced Detection Systems offers replacement parts and spare parts lists for your equipment. Our factory trained service technicians, engineers and sales staff are experts on our metal detection systems. Metal detectors are a Critical Control Point and therefore must remain in service. Ask us about developing a spares part list for your specific metal detection system to prevent downtime that can be expensive and disastrous. Our staff is available to assist in identifying parts needed for your metal detector and we can easily look up the information in our system. Many parts are currently in stock and available for same day shipment, including electronic replacement parts that are unique to your specific metal detection system.

Field Service

We have responsive HACCP (Hazard Analysis Critical Control Point) certified service technicians and local representatives at your service. We offer a variety of plant level metal detector services that will ensure consistent metal detector performance and employee familiarity with the operation of your metal detection systems, such as: on-site trouble shooting for metal detectors, conveyors and reject devices, metal detector start-up and employee training, verification services, metal detector software upgrades and metal detector testing.