

Introduction

Interference from any number of sources can cause false alarms in your Weapons Control System. There are a number of reasons for this. Metal Detectors are sensitive sensors of electromagnetic fields that are all around us. These electromagnetic fields, depending on their intensity, can affect a metal detector by triggering a false alarm. There are a number of sources that should be looked at in your installation.

Power Line Interference

Interference in the form of voltage spikes on the AC power line produce electromagnetic waves, which can cause false alarms. These voltage spikes are interpreted by the metal detector as a signal generated by an electromagnetic field around a metal object. The frequency of false alarms is increased as the metal detector sensitivity is increased. Higher sensitivities must be used to detect a small object, which means that noise becomes a limiting factor in these applications.

Airborne Interference

Airborne interference can originate from photocopiers, arc-welding equipment, defective fluorescent light ballasts, X-ray equipment, mobile radios, computers, monitors, among others. In a number of cases our Dealers and Installers have had transmission towers cause interference with the metal detection system.

Mechanical Movement of Metals

Generally considered mechanical interference, vibration or any metal movement within or near the structure can cause false alarms. Isotec's weapons control systems are designed to minimize these effects through the use of structural isolation between critical joints, thereby significantly reducing any Eddy currents that may cause these false alarms.

Ground Loop Interference

Many false alarms seem to have no obvious cause and are very difficult to diagnose. A possible source for ground loops is loose screws in the structure. Make sure all screws are tight.

Check List of Possible Problems

Even the best metal detector will fail to operate properly if it is not located in an area that minimizes outside interference. The Quick List below will help in a few examples found to be a problem in the past.

Furniture

Any furniture containing moveable metal in close proximity of the metal detector could be a source of a problem, if moved or sat on. In one application a couch placed on the side of the entry lane caused the metal detector to activate anytime someone sat or moved around on the seat. A metal frame with springs, that when sat on, moved the springs thereby setting up an Eddy field which in turn was picked up by the metal detector.

Fluorescent Lights

Fluorescent lighting does not directly cause problems with a metal detector but faulty ballasts have been noted to cause interference with the metal detector. It is best to avoid fluorescent light above the metal detector if at all possible. These devices could eventually cause problems that require an un-scheduled service call.

Inductive Noise

Any nearby inductive device which has an unshielded motor can be a source of inductive noise. Elevators use large motors that cause interference up to 10-15 feet away. Check the area for these noise sources and systematically monitor their operation in relation to the alarm.

Heating and Air Conditioning Ducts

Any nearby metallic air ducts in the wall or above the metal detector are susceptible to generating an Eddy field. This generally is caused the flow of air through the ducts or the movement of the ducts from opening the door through pressure changes in the building.

Plumbing

Metal pipes in close proximity to the metal detector can cause false alarms. One incident found a restroom next to the installation and

every time the toilet flushed the pipes vibrated setting off the metal detector.

Metal Stud Walls

Many commercial buildings use steel studs in the construction of their walls. These metal studs are potential sources for interference, especially if vibrations, amplified by closing doors are transmitted from several feet away.

Thresholds

Thresholds are not provided with Isotec products. Once installed it is critical that it doesn't touch the frame of the portal. This creates a conductive loop around the door frame every time the door is opened.

Under Floor Electrical

Any electrical wires and conduit running under the metal detector can be a problem. Check with the building owner or architectural plans to confirm routing of such power wires.

Metal Detector Anchoring

All metal detectors are shipped with a set of brackets to anchor them to the floor/ceiling. These anchors are critical to stabilizing the metal detector and thereby eliminating false alarms by wind passing through the entry lane or the bumping of the side coils.

Structural Anchoring

As with any moving metal the structure must be properly anchored to the floor and wedged in the opening to prevent movement. Follow the recommended anchoring process in the installation section of the manual.

Loose or Missing Screws

Loose or missing screws have been noted as a source for faulty system operation. Check all fasteners especially the door headers. Loose screws can allow the structure to move from the weight of the door when it is open and closed. In many cases this appears to be a door problem but it is actually the structure moving from one or more improperly tightened screws.

Drop Ceilings

There have been a number of reported problems with drop ceilings. Drop ceilings, in many commercial building, are fabricated from a steel or aluminum frame suspended by wires with acoustic dampening panels. When the door is opened, air can rush in, causing movement in the frame, thereby causing an alarm.

Power Line Grounding

Older buildings or new ones incorrectly wired can be a source of problems. This can be checked with a Receptacle Tester that checks for faulty wiring in grounded receptacles and GFCI receptacles. This tool is available in any hardware store for under \$20.

ATM Machines

In one application the system was installed next to an ATM room. The ATM machine emitted a signal that could be picked up by the metal detector. This was easily corrected by changing the frequency of the metal detector.