Discover Hidden Profit In Your Rejected Bulk Flow Product

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Did you know that every time your metal detector rejects a contaminant, good product is eliminated as well? How much product goes into the trash depends on your equipment. Certainly, ***some*** rejected product is an essential cost of protecting your brand and customers. But the right equipment can significantly minimize the amount of rejected product and thereby reduce the daily costs of keeping your food supply safe.

What do you need to know as you consider metal detection equipment?

THE MISCONCEPTIONS

A magnet will catch all types of metal.
True or false?

With food quality becoming a higher priority among consumers and government regulators, the presence of food contaminants can destroy trust in a brand. News of contamination spreads faster today than ever before. You may think you are protecting your food by using a magnet, but magnets have limitations. A magnet can catch ferrous steel, but it will not find stainless steel or other metal items commonly detected in food, such as a piece of aluminum can, foil from a bottle wrapper, or brass or gold wedding rings. A metal detector can catch all metal. **(The correct answer above is false.)**

Let's consider the example of a grain mill that uses a magnet, but not a metal detector. The magnet can catch a piece of metal that breaks off of the ferrous mill and falls into the product. What the magnet won't catch is a stainless-steel sliver that falls into the product from a conveyor chain.

All metal detectors have the same capabilities.
True or false?

The concept of ***how*** metal detectors work has not changed significantly in the past 25 years. But that is not the whole story. Significant changes with periphery electronics and technology now allow metal detection equipment to function more efficiently. The electronics improve deciphering of information and the analytics improve the equipment's decision-making capability. Therefore, some brands and models of metal detectors run more efficiently than others, reducing your daily costs of keeping your brand and customers safe. **(The correct answer above is false.)**

One area where metal detection technology has advanced is "gate open time." When metal is detected, a gate opens and the piece of metal is expelled — along with a certain amount of perfectly good product. The gate remains open for a defined period of time, normally seconds, but this is where the new technology can help. Reducing the gate open time will minimize the amount of rejected product.

What if you could reduce the gate open time from seconds to milliseconds?

CONTROLLING THE OPEN GATE TIME

A powerful pneumatic drive is a new technology being used to control the open time of the reject gate. In addition, positive speed control assures the gate activates at a precise time and only stays open for milliseconds instead of seconds.

In the chart below, you can see how having the shorter open time minimizes the amount of product lost. As an example, the highlighted boxes show the amount of product rejected (pounds) when the product flow rate is 50,000 pounds per hour. If the reject gate opens for 1 second, you lose over 19 pounds of product every time metal is detected. If the reject gate opens for 3 seconds, you lose over 57 pounds of good product. At a flow rate of 50,000 pounds per hour, you can save 38 pounds of good product from being rejected by reducing the gate open time from 3 seconds to 1 second. As the gate opens many times over the course of a day, you can imagine how the amount of saved product adds up.

AMOUNT OF REJECTED GOOD PRODUCT PER METAL DETECTION EVENT

FLOW RATE (pounds/hour)	GATE OPEN TIME (seconds)			
	.5	**1.0**	**3.0**	**5.0**
5,000	0.7	1.4	4.2	6.9
50,000	9.7	19.2	57.9	96.4
100,000	267.9	535.8	1,607.5	2,679.2

How can you determine the value of minimizing the open gate time for your product?

With a few key pieces of information, you can compare the value of "open gate" time differences for various equipment brands and models. You will want to know your product flow rate (pounds per hour), the number of seconds the gate remains open, profit per pound of the product, average number of metal detection occurrences per day, number of operating days per year, and expected lifetime of the equipment.

ADVANCED PRODUCT LEARNING REDUCES FALSE REJECTS

Advanced technology can also minimize waste of good product by reducing your false rejects. This occurs by way of improved product learning.

Why is it important for the detector to learn your product? Each product has its own ***product effect***, meaning unique properties that can cause the detector to signal the presence of metal when in fact none is present. Moisture, temperature, and chemical makeup are a few examples of properties that can alter the metal detector's recognition of your product. If the detector does not recognize normal variances in your product, too much good material can be rejected. This is also known as a "false trip." With every false trip, good product is lost.

All detectors have some degree of product learning. But this is another area where technology has advanced, and product learning will vary among equipment. If you have a product that gives false readings of metal — meat products such as poultry or beef or product with a high salt or moisture content — it can be wise to invest in equipment with advanced technology for learning.

THE BEST METAL DETECTION SOLUTION FOR YOU

The best metal detector solution for you will vary based on a number of factors. The decision will be different for each situation and will depend on factors such as: product composition, environmental factors, targeted contaminants, flow rate, the amount of space you have (tight space is a common issue) and more.

As you consider the cost of metal detection, the equipment itself is a one-time fixed cost. The amount of good rejected product is an ***ongoing variable cost*** you will want to minimize since it will impact your profitability for the lifetime of the equipment.

In the metal detection industry it is very common for customers to request a site visit from a metal detection supplier to assess the whole picture of your production environment. After that, the supplier can provide a demonstration of the right type of metal detector — whether that is a flow-through gravity style, pneumatic, or tunnel style mounted on a conveyor, to keep your brand and your customers safe, at the lowest cost to you. ●

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About Bunting Magnetics Co.

Since the company's 1959 founding, Bunting® Magnetics Co. has led the industry in innovation, durability and performance in its line metal detection, magnetic separation and material handling equipment as well as printing cylinders for several global markets: Recycling, food packaging and processing, feed and grain, plastics, pharmaceuticals, chemicals, offset printing, metal stamping, automobile manufacturing and more. Bunting Magnetics Co. Global Headquarters are located in Newton, Kansas with facilities in suburban Chicago, Illinois; DuBois, Pennsylvania; Redditch, England, and Berkhamsted, England.

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