



# MULTIPLE ADVANTAGES

A bold design breakthrough enables a single metal detector to deliver game-changing performance attributes

A metal detection system positioned at the end of a packaging conveyor line may not seem like an obvious spot for unlocking substantial cost-savings at a busy food plant, but not all metal detection systems are created equal.

For Toronto-based industrial metal detector manufacturer **Fortress Technology Inc.**, offering its food industry clients a cost-effective means of detecting and removing tiny metal particles from the final product has been a key core competence since the company was founded in 1996.

Renowned in the industry for their speed, accuracy and simple operation, Fortress-made systems are used widely across a growing range of global food industry sectors, including bakery, meats, ready meals, dairy, confectionery, fresh foods and frozen foods—with thousands of successful installations across the globe.

Nowadays operating as a truly global enterprise providing worldwide market coverage from its manufacturing facilities in Canada, U.K. and Brazil, the privately-owned company's technical competence and expertise is aptly matched by its *Never Obsolete Commitment* philosophy that makes sure all its new technology is developed to be backwards compatible, i.e. accessible without having to purchase an entirely new system.

But for those applications that do require a new systems installation, the company's expertise in custom-manufacturing metal detectors to match its customers' exact needs, application and specifications while ensuring optimal performance is second to none.

It was, in fact, one of those custom jobs that recently prompted Fortress to design a game-changing multiaperture, multilane metal detector range that can greatly assist food manufacturers of all types to reduce factory footprint, investment and ongoing operating costs.

Already installed in two-, four- and five-lane configurations at several food factories around the globe, the design enables just one multiaperture system to perform high-accuracy, high-speed metal detection, with potential to improve the system's TCO (total cost-of-ownership) by up to 65 per cent, depending on application.

Featuring a single metal detector mounted across multiple food packaging and processing conveyor lines, the new Fortress unit is uniquely divided into individual apertures to set a new industry standard for performance, according to the company.

Since each aperture is smaller, the machine has the ability to detect metal fragments as small as 0.8-mm ferrous, 0.8 mm nonferrous and 1.2-mm stainless-steel, regardless of the number of lanes travelling through the unit.

In addition, the smaller aperture copes better with orientation and product effect.



The multiaperture, multilane metal detector cuts the overall equipment footprint by 50 per cent and TCO (total cost-of-ownership) by over 65 per cent.

Consolidating this multi-aperture technology into one unit spanning multiple lanes, as opposed to individual metal detectors, also cuts the equipment footprint by over 50 per cent and optimizes factory floorspace.

The unit also sharpens operational efficiencies, reducing initial investment costs for food processors and packers by up to 40 per cent—compared to purchasing individual metal detectors for each line.

With just one system to maintain and manage, a five-lane multiaperture unit can improve total cost-of ownership (TCO) by over 65 per cent longer term, considering reduced maintenance and parts requirements.

Meat burgers, chilled salads, personal care products, and spices are among the applications already benefiting from Fortress' multiaperture, multilane technology.

Many of today's food factories are working around legacy equipment and have severe space limitations—making compact design an increasingly important consideration for new capital investment.

Until now, high-speed packing operations had limited multilane contaminant detection options.



According to Fortress Technology, the smaller aperture is more sensitive to smaller metal particles and copes better with orientation and product effect.



All lanes run independently to increase production efficiency, with all the collected data analyzed and monitored side by side.



Dutch bakery Borgesius inspects 14,000 fresh loaves of bread per shift on its twin aperture system.

As one option, they could try to channel multiple lanes through a much larger single metal detector aperture, but that comes at a significant trade-off in terms of sensitivity levels.

Having a larger aperture when looking for metal contaminants in multiple products and dealing with multiple signals simply makes it less sensitive.

In addition, any reject system used in this set-up will remove an entire line of product across all the lanes being checked—ultimately resulting in higher volumes of false rejects and creating unnecessary waste.

In comparison, the Fortress multi-aperture system only inspects and rejects contaminated products from the individual conveyor, which in a five-lane system can reduce false product rejects by 400 per cent.

The other alternative—inserting individual metal detectors between each conveyor—is a costlier investment

option, both in terms of the initial outlay and in maintenance costs over the lifetime of each machine. It also doubles the system's footprint, even when the metal detectors are staggered.

With the Fortress unit, a single control panel manages all lanes—streamlining operator access and enabling production managers to select and view data by individual lane, as well as analyze comparative lane data side-by-side.

To increase production efficiency, each lane is programmed to run independently from each other. Thereby, if one lane stops working or requires maintenance, the remaining lanes continue to run as normal—therefore minimizing process interruption.

When measured over five conveyors, food factories can save up to 50 per cent of the space required by individual metal detectors, around 17 per cent of the installation cost, and up to 65 per cent of the total cost of ownership.

One of Europe's largest bakeries was the most recent customer to install a Fortress multi-aperture unit.

Rather than having one metal detector head spanning two lanes, **Borgesius** wanted to be able to measure if there was a metal contaminant issue in the individual line.

Logistically, having two metal detectors would not have been feasible, as it would have prohibited the bakery from running two conveyors so closely together.

Not prepared to compromise on metal detection sensitivity, the Dutch bakery requested a minimum of 1.8-mm ferrous, 2.8-mm non-ferrous and 4.0-mm stainless-steel detection capability, which the individual Fortress apertures easily accomplish.

Because each aperture on this unit measures just 200-mm in height and 450-mm-wide, the bread loaves pass right through the center point of the metal detector.

This means the inspection system can cope better with orientation and product effect.

The ability to separate rejected product was a decisive factor for the Amsterdam-based factory. If there's an issue on one line, the production team can now quickly identify and address it, which helps to reduce product waste and false rejects.

Commenting on the installation, Borgesius plant manager Willy Boneschanker says: "The twin-lane metal detection technology enables us to maintain our European reputation for the highest quality bread and continue meeting the stringent retailer Codes of Practice."

"To keep pace with the growing number of supermarket and convenience store orders, we need an efficient automated inspection process," Boneschanker adds.

"The twin-aperture metal detector from Fortress is integral to this effort and has proven reliable and easy to operate."

As another world first, Fortress has also applied the technology to create a customized "ferrous-only" five-lane multiaperture metal detector.

This totally unique application, deemed an engineering triumph, was customised to inspect foil spice packs and integrated with a five-lane checkweigher.

It comprises a transport mechanism that automatically separates metal contaminant rejects from weight rejects and places them in accessible **BRC (British Retail Consortium)**-approved lockable bins.

While several food inspection companies have attempted to design a multilane system of this kind, Fortress Technology has been the first to succeed.

By challenging the *status quo*, the company has generated a truly innovative system that marks the end of food factories compromising on any performance criteria, including TCO, space optimization, and metal detection sensitivity. 🍁

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