Choosing The Right Inspection System, Screener Or Separator

Chem.Info [1] recently spoke with Jeffrey Kaveney, Manager — Product Marketing at Eriez Magnetics, about how chemical, food and pharmaceutical processors can choose the best quality control technology—inspection/vision systems, screeners, separators—for their specific applications.

Chem.Info: What inspection systems are available to processing plants?

Jeffrey Kaveney: For the detection of all metal types, customers can choose either a metal detector or an X-ray inspection system. The advantage of an X-ray system over a metal detector is that it will generally be able to detect smaller pieces of metal in conductive products as well as other foreign objects, such as glass, stone and some plastics. An X-Ray System can also be utilized for packages or containers that have foil seals. If a customer is only looking to remove ferrous contamination , they can choose from a variety of magnetic separators.

CI: Which applications are these systems best suited to?

JK: The inspection systems can be used in a wide range of applications. They can be used to scan dry and wet raw materials at the beginning of a processing line, at various locations throughout the plant that have been deemed critical control points or at the end of the line when the product is in a packaged form. Product testing by a manufacturer of inspection systems will enable the right piece of equipment to be chosen.

CI: Do you find that there is any packaging that hinders the ability of the inspection system to detect foreign objects?

JK: If a customer is looking to purchase a metal detector to inspect packaging or containers that have foil seals or are manufactured from aluminum, the metal

detector will have to “phase out” the signal generated by the seal or container and this will result in poor sensitivities with the metal detector. Packaging made from recycled paper can also affect the size of detectable metal. If the customer is a food or pharmaceutical processor, they most likely will be looking to detect metal in the millimeter range. As mentioned above, this is why someone would gravitate towards an X-Ray Inspection System.

CI: What are the latest technological advancements in screeners and separators?

JK: With regard to the magnetic separators, Eriez is always reviewing its designs to determine what improvements can be made to enable us to offer the strongest magnets on the market. As for screeners, the majority of the screens we use have a pretensioned frame that ensures that the designated open area is maintained across the screen surface, which improves the screening operation.

CI: Can screeners and separators be used in conjunction with inspections systems?

JK: Yes. Depending on the composition of the product, the customer may install a screener ahead of an Inspection System to refine the product prior to being fed to either a magnetic separator, metal detector or X-ray system. If a customer knows that they have a high percentage of ferrous contamination in their products, it is highly recommended that they place a magnetic separator ahead of a metal detector or X-ray system to minimize the amount of rejects and good product loss.

CI: What are the limitations of these systems (e.g. particle size etc.)?

JK: The limitation of a magnetic separator is that it is only capable of removing ferrous particles and some work-hardened 300 series stainless steel. A rare earth magnet would have to be used to accomplish the latter. As for a metal detector or X-ray inspection system, the limitations are dependent on the product being scanned, the size of the product, packaging, environment in which it is installed, etc.

CI: For plants that are short on floor space, how can inspection systems, screeners and feeders be incorporated with the smallest possible footprint?

JK: When horizontal spacing is an issue, a screener could be placed above the metal detector, provided that there is room vertically. Also, a feeder could be designed to accommodate a screening area and a metal detector.

CI: Is there anything else that can help plants choose the best inspection/vision systems, screeners or separators?

JK: We have been very successful in assisting our customers in choosing the best equipment for their facilities by conducting a plant audit for them and running material tests on the appropriate equipment at our Test Lab.

For more information, visit www.eriez.com *[2].*

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