X-RAY INSPECTION CHECKS FRUIT BARS INSIDE AND OUT

Case Study
Viba Sweets

Facts and figures

- Its high-capacity line can reach a maximum output of more than 500 fruit bars per minute.
- Defective packs are reliably rejected without causing delays to the process, as the stainless-steel curtains move so smoothly that touching them has no effect on the fruit bars.
- The touchscreen on the machine immediately provides information on the nature of the foreign bodies and exactly where in the product they are hiding.

A leading German manufacturer of pocket-sized fruit bars has replaced its x-ray inspection equipment with an Ishida IX-EN x-ray model to ensure more efficient and accurate detection of foreign bodies. In addition, the new system can identify other defects such as cracks, deformation and double packs. Viba Sweets manufactures a diverse array of fruit bars comprising over 60 recipes in various pack sizes with fill weights ranging from 8g to 50g.

Challenge

Its high-capacity line can reach a maximum output of more than 500 fruit bars per minute. Since it is a natural product, the dried fruit mixture between the wafers can sometimes contain impurities such as tiny stones or fragments of glass, so before end-of-line packing, x-ray inspection technology is used to check the healthy snacks for foreign bodies.

The x-ray inspection system that Viba Sweets had previously used was no longer able to meet the manufacturer's standards, as process and project engineer Francisco Taberner explains: "Because the fruit bars are very light, their positions and the gaps between them on the conveyor belt would change as a result of them coming into contact with the curtains at the infeed to the x-ray system. That meant that there was a risk of contaminated products not being reliably rejected." There was also a need for more information to help determine the types of foreign bodies and to pinpoint their locations in the product to identify the causes.

Solution

After exhaustive tests of machines from several suppliers, Viba Sweets selected the IX-EN x-ray inspection system from Ishida.The machine is now working at high speed in two-shift and three-shift operations. Defective packs are reliably rejected without causing delays to the process, as the stainless-steel curtains move so smoothly that touching them has no effect on the fruit bars. Special reject confirmation software provides an extra layer of safety, stopping the system directly if product deemed contaminated is not detected by a sensor in the reject container within a defined time frame.

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Viba Sweets is achieving excellent detection rates for stone, glass, dense plastic and metal. For example, stones and glass fragments measuring 1mm and above can be reliably detected even at high inspection speeds. The system also employs a weight-checking function as an indicator of additional defects that would previously have gone unnoticed. Deformed and broken fruit bars can be identified, while any packs that have accidentally been filled twice can be taken off the line. A data log collects all the important information. The reports are also useful in identifying causes and eliminating recurring sources of contamination

The IX-EN x-ray inspection system is especially well suited to fruit bars because it was developed specifically for checking thin, lightweight and comparatively homogeneous products. It searches for foreign bodies by measuring the density of the product. The x-ray beam passes through the fruit bars onto a line sensor. Depending on the strength of the returning x-ray beam, a grey-scale image is produced. Any particles denser than the product itself appear as dark spots on the image. “The touchscreen on the machine immediately provides information on the nature of the foreign bodies and exactly where in the product they are hiding,” says Francisco Taberner.

The Ishida x-ray inspection system also meets the need for high accuracy. “The software is much more powerful than our previous machine, as well as being better than the other machines that we tested,” reports Francisco Taberner.

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The patented technology behind Ishida’s IX-EN x-ray inspection system is based on software featuring an intelligent genetic algorithm. By analysing image data over a number of generations, the machine achieves an extremely high level of accuracy. Since similar contaminants are usually found again and again in food manufacture, it is possible to create an increasingly accurate comparison log with each inspection procedure. The system can be calibrated quickly and easily by passing an x-ray beam through a test object two to three times.

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It did not take long for the employees at Viba Sweets to familiarise themselves with the IX-EN. According to Francisco Taberner, the machine is “very easy to use”. After an automatic set-up process, the system is ready for use within 90 seconds, and fine adjustments can subsequently be made during actual production. Up to 200 programmable pre-sets allow product changeovers at the touch of a button – a crucial feature given the variety of products involved.

“New recipes can be loaded in just a few minutes, and the easy access to all mechanical parts makes cleaning much quicker,” confirms Francisco Taberner. As a result, the new Ishida x-ray inspection system saves a lot of time and enables Viba Sweets to make its processes more efficient.

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