

At Frigemo, the Eye on Product Quality is Optyx

From farm to fork, the Fenaco Group maintains a sharp focus on superior quality product. To satisfy its discerning customers, the company relies on [Optyx®](#), an economical vision inspection system that automatically removes defects and foreign material from the product stream to assure final product quality meets specifications.

Fenaco's dedication to superior quality product begins with more than 52,000 farmers that belong to the formidable Swiss cooperative. But it's Fenaco's processing division, Frigemo that sees this dedication through to the final packaged product. With five production facilities in Switzerland that manufacture a range of frozen potato products and a variety of frozen vegetables such as peas, carrots and green beans as well as other foods, Frigemo relies on the best technology to produce the best product.

"At Frigemo, we have very high standards and a long-standing reputation for quality," noted Bruno Zehnder, a member of the board at Frigemo. "Optyx sorters help us in our continuous drive to improve quality." Since 2004, Frigemo has installed four Optyx sorters on its production lines – three [Optyx 3000 Series Sorters](#), which each feature a 610-mm wide belt, and one [Optyx 6000 Series Sorter](#), which features a 1220-mm wide belt.



Christof Stillhardt (left) and Urban Reifler with some Frigemo products

Depending on the specific needs of each application, Optyx can be equipped with high-performance color, monochromatic and Vis/IR (visible infrared) cameras, as well as the new [Raptor Laser Technology](#). The sensors can be located above and/or below the product stream. As product passes through the sorter, it is launched off the end of the belt for in-air viewing by the sensors. Using the US manufacturer's proprietary image processing technology, the sorter quickly analyses the images, comparing each object to previously defined accept/reject standards. When defective product is identified, the system activates the high-speed ejector system. While the defective object is still air-borne, the

sorter pinpoints the defect and activates one or more air jets to remove the defect from the acceptable product stream. This is all accomplished at very high production speeds – the Optyx 6000 on Frigemo's potato strip line can handle up to 11,000 kg per hour and the Optyx 3000 on Frigemo's vegetable processing line can handle up to 3,000 kg per hour when sorting peas.

"The precision of the new Optyx 6455 is a real asset for us. Compared to the sorter we previously had on the potato strip line, our defect removal accuracy is at least three times better. We're able to focus the sorter to precisely identify the kinds of defects we want to reject," noted Urban Reifler, plant manager at Frigemo's Weinfeld plant, which produces a variety of frozen potato products. Bruno Zehnder added, "While our quality level was already good, the new Optyx made our quality even better. The sorter has exceeded our expectations."

Frigemo's Optyx 6455, which features four top-mounted color cameras, inspects potato strips, detecting and removing product with black spots, green spots and remaining peel. The old sorter they replaced featured monochrome cameras, which cannot identify green spots as accurately as color cameras.

The high level of quality achieved at Frigemo helps set them apart from the competition. In the french fry market in



Frigemo's product range is very specialized



The icon-based graphical user interface is easy to use.
Photos: [Key Technology](#)

Switzerland, Frigemo has earned a 58 percent market share. McCain Foods, the exclusive supplier of french fries to McDonald's worldwide, licenses Frigemo to produce french fries under the McCain brand. With a sizable proportion of its product destined for McDonald's, Frigemo constantly proves its ability to achieve the most exacting product specifications.

Rejecting defects is crucial but minimizing the removal of good product is also important. Frigemo strives to achieve both objectives simultaneously, rather than trading one for the other. "The manufacturer was willing to give us specific guarantees for the performance of the sorter," noted



Optyx ejector system on potato strip line

Reifler. "For example, they guaranteed that we would not have more than ten percent of good product landing in the reject stream. In fact, we've had less than three percent. By fine-tuning the system, we're able to improve our yield."

Frigemo's decision to install the Optyx 6455 in 2005 was based, in part, on the company's experiences with three Optyx 3000 Series Sorters, which were installed in 2004 to replace manual inspection. "Compared to manual inspection, a vision inspection system is not subjective in its judgment and it never gets tired," explained Zehnder.

The smaller-volume Optyx 3000 Series Sorters offer a smaller price tag and



Optyx assures final product quality meets specifications



Infeed to Optyx of potato strips



Discharge from Optyx on potato strip line



Optyx in use on shredded potato line



Discharge from Optyx on shredded potato line

a smaller footprint. At Frigemo, an Optyx 3355 inspects a variety of potato products, including shredded, sliced, diced and small whole potatoes (up to 40 mm diameter) and two Optyx 3755 sorters inspect a range of vegetables, including peas, carrots and green beans.

“The requirements of the sorters on the vegetable lines are completely different from those on the potato lines,” noted Zehnder. “Color recognition is still important, but here, shape recognition also plays a big role.” Both peas and green beans can arrive at the sorter with green plant material such as stems, leaves, pods and knuckles. These same-color defects and foreign material, which are commonly found mixed with peas and green beans, are detected and rejected from the product stream with the sorter’s shape recognition



Product settings can be stored and retrieved for easy product changeover

capability. Brown blemishes and other slight color variations that traditionally challenged monochrome sorters are

easily detected and removed with color recognition.

But the most challenging sort at Frigemo is handled by the Optyx 3355, and the challenge comes not from the inspection itself but from the product handling that leads to the inspection. On this line, Frigemo handles a sticky shredded potato product called Röstli that is very difficult to spread. And without spreading the product evenly at the infeed, an inspection system is unable to view the product sufficiently and is therefore unable to achieve a successful sort.

With an expertise in product handling as well as sorting, The company was able to combine a number of elements to satisfy the demands of the challenging



Infeed of shredded potato

Rösti application. They designed an [Iso-Flo® Vibratory Conveyor](#) to evenly spread the shredded potato product as it enters the sorter. And the transport belt within Optyx was customized to assure the product would not stick within the sorter. Previously, this challenging product required manual inspection.

“Before we installed this sorter, we had six to eight people on the line manually inspecting the flow of shredded potato product. By eliminating this hand sorting, Optyx gave us a very rapid payback,” noted Reifler.

It was Frigemo’s continuous drive to enhance product quality and improve production economics that initially led them to search for new automated inspection systems.

When considering which sorters to install, they looked for technology that would best improve defect removal accuracy while simultaneously reducing the good-to-bad ratio. Production



Optyx in use on potato strip line

efficiency was also a major factor. Additionally, Frigemo scrutinized the supplier, looking for a high degree of dedication to after sales service and support, including the ability to easily upgrade the sorters in the future as technology advanced. Ease of use was another critical consideration given

the extremely sophisticated nature of automated inspection systems.

“We have achieved our goals with the Optyx sorters,” concluded Bruno Zehnder. Urban Reifler added, “In fact, it is now unthinkable to do without the Optyx sorters.”



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