Reliable detection of insects and weeds – Tomra introduces sorters with new software and optical technology

Tomra Food has redesigned its sorters so that no defects are overlooked when processing leafy vegetables and lettuce. The result: The detection and rejection parameters of the machines can now be easily and precisely tailored to each new product batch, which minimises downtimes between the individual batches and maximises yields.

The use of various fault detection technologies make the sorters from Tomra suitable for various applications. (Photo: Tomra Food)

Flexible sorting machines

The use of chemical weed killers in the cultivation of lettuce and vegetables is meanwhile controversial and will be further restricted if the German federal government has its way. The other side of the coin: "As a result, the share of weeds in the product increases, which must be sorted out accordingly", says Oliver Ludwig, Area Sales Manager at Tomra Food. For lettuce and vegetable processing, this means: Producers must recalibrate their machines with each new batch on the line in order to detect various defects and take varying quality levels into account. This does make the daily processing business more difficult, however no exceptions can be made: "For regardless of to what degree or how often the conditions on the processing line change, defects must be detected and products rejected", says Ludwig.

The result of the Tomra further developments is a current generation of sorters that operates with sophisticated software solutions for pre-programmable machine controllers and optical and mechanical technologies.

The sorters examine lettuce using software and optical technology.
(Photo: Tomra Food)

Designed for intelligent use

On the software side, the programs that control the automatic functions of the sorters, can be manually preset by the operator with the touchscreen. With this function, the detection and rejection parameters of the machines can be easily and precisely tailored to each new product batch, which minimises downtimes between the individual batches and maximises yields.

Another advantage lies in the fact "that the machines are becoming more intelligent", says Ludwig. One example of this is the web-based platform Insight. "As a result, the systems become connected machines that generate data, which can then be processed to useful information." SCADA (Supervisor Control and Data Acquisition) systems connect the sorting systems to a control centre in which warnings are immediately output and can be reacted to from a distance. Ludwig is convinced that "these developments are ushering in a new era of machine networking and self-learning that will further improve the sorting efficiency".

Laser technology versus cross-contaminations

Not only the software, but also the sorters themselves were developed for various applications and can carry out all types of sorting tasks at various positions of a processing line. This diversity is enabled by various fault detection technologies. The choice of options includes: pulsed LED light sources, high-resolution cameras, near infrared cameras and lasers that can be used on the machines. About these Christian Hofsommer, Area Sales Manager at Tomra Food says: "At this time, cross-contaminations cannot be reliably optically distinguished from the good product with cameras in some cases. Our laser technology with the ability to distinguish objects based on their differing chlorophyll or liquid content provided the decisive added value here."

Cameras detect insects and weeds

A sorter that is well-suited for leafy vegetables is the Tomra 5B. The sorting machine can be used in processing lines both before and after washing. While the product is being transported on a conveyor belt, defects and foreign bodies, including insects and potentially toxic weeds, are detected by inspection cameras mounted over the conveyor and also by lasers. The cameras enable a complete view of the product and can detect defects with a size of one millimetre. The off-belt laser box, which operates with six receivers and four lasers, is said to detect up to 99 percent of the foreign material.

The Tomra Act graphic user interface simplifies the operating process with intuitive touchscreen tools and enables the user to see important information and process data in real time at a glance. Quick adjustments are therefore possible at any time.

Additional information and contact

TOMRA Food, Compac, and BBC Technologies
Belgium
Marijke Bellemans
Marketing Communications Manager
T: +32-(0)16-742817
marijke.bellemans@tomra.com
www.tomra.com/food