INTELLIGENT IDENTIFICATION

Most of us enjoy the great taste of nutritious tomatoes – as pure and fresh crops, tomato sauce, or with pasta. Around 20,000,000 Australians eat 22 kg of processed tomatoes per head annually. Founded in 1899, the Japanese tomato processor KAGOME boasts more than 100 years' experience in the tomato growing and processing industry. Since 2010, KAGOME Australia's factory based in Echuca, cultivates and processes tomatoes, by providing high-quality tomato products to food companies in Australia and other nations. RFID technology from SICK allows KAGOME to ensure product traceability and leads to increasing efficiency in the production process.

>> In reference to the Australian Food and Grocery Council (AFGC) website, "The protection of the health and safety of consumers is a fundamental requirement and a legal obligation of all companies involved in the production and sale of food and grocery products." Quality control covers KAGOME's entire process, from tomato seed management and growing crops through to in-store displays. The minimized use of agrochemicals and the maximized use of natural pollination ensure that the tomatoes supplied are grown in a manner that is friendly to people, the crops themselves, and the environment. Today, cultivating and processing tomatoes is a matter of automation and it can be a logistic challenge to get the tomatoes from the fields to the factory in the most efficient way.

Looking for an automated identification solution

On the Echuca fields, KAGOME operates 12 harvesters loading tomatoes into more than 300 huge bins, each with a capacity of 14 tons. Once a bin is full with fresh tomatoes, it is unloaded at a bin pad waiting for one of 12 trucks to pick up and return to the factory. One trip from the fields to the KAGOME factory takes approximately 90 minutes and each truck can load three bins – that is an average of around 42 tons of tomatoes per truck. A truck arrives to the bin pad; the bins are loaded up and taken to the weighbridge close to the factory. Three years ago, there used to be long truck queues at the weighbridge and the truck drivers had to wait for 12 minutes until they could get out of the truck to have the tomatoes weighed. As part of KAGOME's quality control process, three samples from each bin had to be processed in the laboratory because it was not obvious which tomatoes came from a KAGOME farm. In addition to that the drivers had prepared paper work to document the harvesting process as well as the quantity and quality of the yield. The process increases the potential for human error in a paper-based quality control system which can result in contaminated products reaching the consumer, conceivably creating widespread foodborne illness. So to ensure traceability it was time for KAGOME Australia to look for a paperless automated identification solution to be implemented at the weighbridge.

Harvester loading tomatoes into a bin

Guaranteeing traceability: What is the best solution for identifying tomatoes?

Food traceability is the process of tracking a product's history and sharing that data along the entire processing path – so called "farm-to-fork" or "paddock-to-plate." While traceability has always been important for the food and beverage industry, in recent years the need for real-time recalls has increased in Australia, due to plant processing errors or recalls from Food Standards Australia New Zealand (FSANZ). While the ultimate situation would be no need for product recalls, in the event of a recall, minimizing the impact is a major focus of any food manufacturer's program of compensation. An effective tracking and tracing program comprises a number of components, starting with accurate and fast identification. For years, the identification workhorse has been the ubiquitous bar code. As foodstuffs move through the production process, they are identified by a unique code; on containers when in process, on packaging for the finished product, on cartons and pallets during transport and on shelves when they finally hit retail stores. The KAGOME specialists were looking for a real-time identification solution that can handle mud and tomato juice as well as heat, wind, and rain.

Streamlining harvesting processes with RFID

RFID technology (radio frequency identification) is increasingly found in food tracing as technology improves and prices come down. Implementation is not uncommon in the case of large containers containing raw products and in the mixing of bulk materials. It offers companies a number of ways to streamline and manage their capacities, focusing particularly on the issues of traceability and process reliability. Using wireless technology for identification purposes opens up a new dimension in automatic data recording. The automotive industry has been utilizing RFID for years, where a tag is attached to the car body and is encoded with data options for each vehicle. RFID tags offer more

functionality than bar code technology, as they are read/write devices and no visual contact of the tag is required. Moreover, they are very robust so that they can even survive harsh ambient conditions such as high temperatures, mud, or wetness.

Jean-Michel Maclou (Industry Sales Manager) and Christian Herr (Sales Engineer) from SICK Australia presented the RFU63x read/write unit to KAGOME

in 2012. The device is an ultra-high frequency (UHF) RFID solution for tracking and tracing of reusable containers that also offers the possibility of bulk detection. Furthermore, the RFU63x can be used as an intelligent stand-alone system. Integrated functions such as data processing and filtering ensure stable reading performance and short reading cycles. In January 2013, KAGOME installed six RFU63x units from SICK, each equipped with three antennas for

double stacked bins, at the weighbridge and discharge hill at the factory in Echuca. Resistant and stable RFID tags were attached to the tomato bins and accompanying them right from the start of the harvesting process. As a result, the RFU63x entirely meets KAGOME's requirements set out for paperless automated identification of tomatoes. In this way RFID helps to prevent the typical errors made during inbound and outbound goods processes, for example incorrect quantity and quality data, or missing accounting entries.

RFID allows real time identification of where the tomatoes come from. Due to paperless identification, no truck driver has to leave the truck at the weighbridge anymore and the driver safety is enhanced. This efficiency gain means that the truck is spending less time at the weighbridge and that truck jams in front of the weighbridge and the tomato drop hill have become a thing of the past. As the truck time at the weighbridge has been reduced from previously 12 minutes to two minutes, the truck driver can go for an extra trip per 12-hour-shift. With a fleet of 12 trucks and one truck loading an average of 42 tons of tomatoes, this means a productivity gain of 504 total tons which is achieved thanks to using the new RFID. Thanks to the increase in reliable real-time data made available by intelligent identification technology from SICK, KAGOME gained the possibility of making better decisions thereby increasing productivity and efficiency. *(ro)*

The RFU63x read/write unit by SICK does not require visual contact of the tag

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