Compac Sorting Equipment system masters mandarins

The Auckland-based company is blazing a trail for the grading industry with the successful application of its blemish-sorting technology to mandarins

COMPAC Sorting Equipment, a leading manufacturer of sorting systems for fruit and vegetables, has become the first company to complete the commercial installation of a blemish sorting system for mandarins, says marketing manager James Flocchini.

Compac's Invision 9000 Blemish sorting technology was developed locally out of a demand from fruit packers to reduce packing costs, overcome the labour shortages inherent in fruit packing and enhance the consistency of graded fruit.

Blemish sorting technology uses cameras and computers with colour recognition software to identify blemishes in fruit and grade it accordingly. But the industry has found it difficult to apply the technology to mandarins due to their unique shape and size characteristics.

However, Compac has overcome these hurdles. The company has already made one successful installation of its Invision 9000 Blemish system for sorting and grading mandarins in Spain.

Now, it is in the process of fitting a huge mandarin sorter in California that is set to go into operation in November.

Commissioned by Sun Pacific, the machine will be the largest of its kind in the world, taking up more than 2,000m2 and using over 6km of grading conveyor chain

It incorporates a 40-lane blemish grader and 12 lanes of sizing machines that will fit out a state-of -the-art packing plant which Sun Pacific is building in the San Joaquin Valley.

Compac entered the US market four years ago when the California Navel orange industry was seeking more efficient sorting systems to reduce wastage levels from a badly frost damaged crop. Having established a strong foothold with these sorting systems, the company began to develop business for its blemish grading operations.

"To date, Compac has completed the installation of more than 40 lanes of InVision 9000 Blemish grading technology for oranges in California, with operators typically reporting a 50 per cent reduction in grading labour requirements," said Mr Flocchini.

The success of these systems in California led to recent order for a mandarin sorter of unprecedented proportions.

Compac beat off high-tech competition from the US and Europe to win the order, according to Mr Flocchini. “Sun Pacific did its own research and evaluated other systems,” he noted. “But they decided that Compac had the best fruit sorting technology in the world.”

The company’s high-tech blemish sorting technology – like that of its competitors – uses cameras to view the surface of a fruit as it rotates through lighting cabinets. The captured images are processed by a computer, thereby picking out blemishes in the fruit and grading it accordingly.

Some of the main design features and functions that make the InVision system different to competing products relate to the way in which images are captured via the position of the cameras, according to Mr Flocchini. “The system also captures many more images of each piece of fruit, allowing it to view and grade the product more effectively,” he added.

While hard citrus lines have responded well to blemish sorting technology, mandarins are very difficult to grade in this way, as Mr Flocchini explains.

“Mandarins can be round or flat and have loose or tight skins, which means they many not rotate evenly,” he told Asiafruit. “This makes them very difficult to grade. Many of our competitors have attempted to apply the technology to mandarins, but none of them have been successful to our knowledge.”

Large mandarin packers have also reported problems in trials of such systems, with machines mistaking depressions in the skin of the fruit for blemishes.

However, Compac installed an eight-lane Invison 9000 Blemish system for mandarins in Spain ahead of last year’s mandarin season, and the results were very successful, according to Mr Flocchini. “The entire Compac system does handle mandarins very well to the point where we can say we have a commercially successful system,” he commented.

Compac’s imaging system for citrus blemish uses multiple high definition cameras to provide a view of 100 per cent of every fruit surface, says Mr Flocchini. “The geometry of the design ensures uniform lighting of rotating objects,” he noted. “This prevents the perception of colour differences caused by shadow.”

The InVision 9000 significantly grades only on blemish severity rather than classification of blemish type. “The latter approach conventionally limits the speed and accuracy of competitor systems,” said Mr Flocchini, who noted that the rapid throughput of Compac’s model is one of its key attributes.

“InVision consistently achieves more accurate grading than machines that work on operating speeds of 12 fruits per lane per second,” he stated. “Even one of our modest four-lane machine can process 1m pieces of fruit in an eight-hour shift.”

Compac's InVision 9000 Blemish system is currently released for installation to grade oranges and mandarins. The company also plans to release it for other citrus fruits as well as apples, potatoes, stonefruit and tomatoes in the future.

Three systems are currently in operation in Australia for oranges, with two other projects under development there for apples and potatoes.

Although it has not yet fitted any machines for sorting mandarins in Australia, Compac believes it will only be a matter of time before it receives orders from the industry there. "We have been running a demo machine in Queensland to show what the InVision 9000 Blemish technology can provide," said Mr Flocchini. "We've had very positive feedback from the demonstration."

Compac has now installed grading machines in 17 countries worldwide, including Invision systems and more basic models that sort on weight and size only.

Mr Flocchini estimated that the company already has a 65-70 per cent share of the sorting and grading market in New Zealand and an 80 per cent share of the new installations being made there each year. It also boasts a strong and expanding presence in Australia. "We have a 30 per cent year to year market share there and we expect this to become much stronger in the next few years."

The company has earmarked great potential for its products in a number of markets worldwide, with North America, Europe, South America and Asia high on the list of target regions.

"As far as the Asian market goes, we already have several machines in South Korea for mandarins, kiwifruit and onions and we see growth coming from China in the future," Mr Flocchini stated.

Compac believes it will continue to achieve year-on-year growth rates in the order of 20 per cent for many years to come. "For direct installation of other blemish grading systems, we believe that we're only just starting. There is a lot of fruit out there and Compac's technology provides more benefits to users than other systems," he remarked.

One moderating factor in the company's expansion into new markets is its policy on after sales support. "Our after sales service is another key to Compac's success," said Mr Flocchini. "Without a planned customer support system in place, we will not enter a market. Our customers must be looked after. To accomplish this, we have a good mix of distributors, agents and direct service staff."

Compac has a network of agents worldwide that includes representatives in Israel, Korea, Spain, USA, South Africa, France and Chile. "We continue to work on expanding this network and further announcements will be made when agreements are reached," said Mr Flocchini.

While the InVision 9000 Blemish system is fuelling Compac’s growth, other key products in its portfolio include the InVision 3000 IR (a system for diameter sizing of dark fruit), the InVision 5000 (Compac’s most widely installed vision system for colour grading) the Compac weight sizer and NIR technology for sweetness sorting.