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## Orus scanning system is berry, berry good

Company specializes in assembly-line optic inspection with 3-D camera imaging

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The freshly picked blueberries dance the jitterbug on the conveyor belt as it bumps along at about 180 metres a minute to deliver them to their destination: plastic packages. To a casual observer, they all look identical and appear to follow all the same path.

Not so.

On closer inspection, a number of them seem determined to make a break for it by jumping into a stream peeling off in another direction.

"It scans 20,000 blueberries per second," said a proud Francois Simard, president, co-founder and co-owner of Orus Integration Inc., which specializes in assembly-line optic inspection.

"It" is the 3-D camera imaging system Orus designed and manufactured, which instantly - 20,000 times each second - decides which berry is not up to snuff.

"It checks for colour, form and many other (pre-programmed) criteria," Simard explained. "There are 218 air jets, to which the visual system issues commands - this one, but not that one. To each and every blueberry."

The company that bought the system tried to trip it up, inserting 15 contaminants like artificial blueberries, cranberries and even caterpillars in 15-tonne batches.

"Our system was judged 95 per cent accurate, compared to 67 per cent on average for the competition."

Orus, named after the Egyptian god of the sky's all-seeing eye, is an optics specialist, scanning fast-moving items for uniformity, quality and any other criteria that can be programmed into an inspection system via algorithms.

Items like buttons.

Michel Monette, plant manager at Canadian Buttons, a 121-year-old Montreal firm that is the lone remaining button manufacturer in Canada, a once-thriving sector, said that as the plant modernized to avoid being felled by Asian competitors, it needed a state-of-the-art inspection system to eliminate the plague of costly returns of defective merchandise.



CREDIT: MARIE-FRANCE COALLIER, THE GAZETTE  
Orus Integration Inc. manufactures inspection equipment used on assembly lines to check for quality. In photograph is co-founder Francois Simard next to a pharmaceutical bottle inspection system.

Between 800 and 900 buttons per minute pass by the assembly-line, "and I just can't afford to miss (detecting rejects) anymore," Monette said.

"We have to make sure there's the right number of holes, that they're all the same size, that they're all round, all this stuff that may seem trivial."

So, instead of a laborious process to measure them as they go by, Orus designed an ingenious system that catches the buttons in free fall - cameras and sensors poised above and below as the buttons drop off the line.

"In a millisecond, (the cameras) detect all the norms that have been pre-programmed, like 'this is what you must find to allow the button through,' " Monette said.

The acceptable ones continue their dash, while rejects are shunted off to the side "just like a railroad switch."

"I've done everything I possibly could to trap them, to trip them up," Monette said. "But I can't."

He also praised their technological developments, which "advance at a phenomenal speed."

"We're so pleased that we're now anxious to get their second-generation scanner, which will be in full colour."

"That was a key contract for us at the beginning, it helped us a lot," said Simard - especially since it allowed them to move out of his Laval basement.

Simard, 32, and his equal partner Louis Dicaire, 29, met at Systemes Robotiques, which was in a related field, and founded Orus in 2000.

"The writing was on the wall, they were going to shut down, and we asked ourselves: 'Is there a market for a firm that does only artificial vision?' " Simard said. "It turns out the answer is 'yes.' "

"In fact, it went much faster than we'd budgeted for. We were expecting contracts for machines in the \$20,000-to- \$25,000 range, but right off the bat, they wanted complete systems in the \$100,000-to-\$120,000 range."

Which explains the \$1 million-plus in annual sales, the nine employees, engineers and specialized programmers, and the fact that the company has been profitable from its very first month.

One factor for their success so far is that graphics specialists abound in Montreal, a key component for machines assembled by companies like Orus. Dorval's Matrox Industries, for instance, is a major Orus supplier.

"Their stuff is what's under our hoods," Simard said. "The 20,000 blueberries per second, for example, could very well have been 15,000 without a few modifications of some algorithms by Matrox, which we asked them to work on."

It also means Orus has several Montreal competitors, including Avera Technologies and Forensic Technology, whose device allowed Washington, D.C., police to hunt down the snipers during their shooting spree last year.

The next step is to spin off "one or two" manufacturing arms, Simard said.

"We'd like to develop the pharmaceutical and food business we have into larger units - they're big customers with huge potential, so ideally it will be Orus Pharmaceutical, and Orus Food and Beverages - something like that."

The manufacturing divisions would be established with investors, but Simard and Dicaire intend to retain Orus

Integration.

"The point is that we're an incubator for good ideas, and we'd give the manufacturing divisions the resulting technologies for mass production."

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