



# TASMAN BAY

Revolutionising Juicies: Automated Packing  
for Increased Efficiency and Profitability

**CASE STUDY**  
Network Site Visit

POWERED BY

**CallaghanInnovation**  
New Zealand's Innovation Agency

PROGRAMME PARTNERS

**Beca**



**INDUSTRY4.0**  
Network

Revolutionising Juicies: Automated Packing for Increased Efficiency and Profitability



## About

Over 30 years ago founder Brian Hirst had a vision to create an innovative food production business using healthy and delicious produce from the Nelson region. One of the first products developed was Juicies - freshly pressed Nelson apple juice blended with other fruit juices into sachets. Juicies were originally designed as a lunchbox drink, but school children had other ideas and started the trend of eating them frozen. Over the past 30 years they have been increasing in popularity and sales.

Tasman Bay Food Co. is still a family-owned business and are still in the business of making Juicies as well as other Juicies products, Moosies and a large selection of baked and unbaked products. Juicies are sold in three formats original ambient Juicies, frozen Juicies (sold as a bulk or retail products) and Juicies in a tube. Frozen Juicies are sold in New Zealand and Australia. Juicies Tubes are sold into nine export markets. Tasman Bay Food Co. employs around 40 staff and is based in Brightwater Tasman.



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**Background**

Tasman Bay Food Co., the company behind the Juicies and Moosies brands, are experiencing ongoing, growing sales and needs to maintain competitiveness in the market while ensuring profitability. They are facing challenges such as potential price competition, increasing material and labour costs, and the need for continuous process improvement. Historically, Juicies were packed by hand into retail boxes, requiring six people to handle the process. This manual process was labour intensive and the pre-formed retail boxes were expensive. The boxes were also susceptible to damage in the retail stores. This posed a risk to potential loss of competitiveness and profitability.



**Solution**

To address these challenges, Tasman Bay Food Co. implemented a staged process to improve efficiencies and packaging quality on the frozen Juicie line. They worked closely with RML throughout this process and had an “end goal” vision.

Initially the change for the retail products was from a crashlock box that was filled by hand - crashlock boxes are the most expensive style of box. This box had a hand closed top with a locking tab on it. The product could be tampered with through the sides, and they were easily ripped when removing from the shippers. The first change was to use a skillet system box that was glued on site as part of the process. One side of the skillet box is glued by the supplier, with the other side glued by Tasman once the product is packed. There was no staffing reduction as part of this change.

The second stage was to move from the skillet and poor ergonomic packing set up to use a self-erect box for the retail product. The self-erect box is the cheapest form of box as it arrives flat from the printer, and it is formed and sealed all on site. An erector and closer as well as an ergonomically designed hand packing station was installed. The redesign included placing of the erector, conveying systems for the part-made box, juicies being moved from fillers to the packing area and taking packed boxes to the closer. This system reduced staffing by two. Savings were made on packaging; a third filler could also be added into the feed but three staff were still required to hand pack the juicies after the box had been formed by the erector. Then after packing it was fully sealed in the closer.

Through the first and second stage the bulk boxes (40 juicies per box) were hand packed.

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This final stage was an automated robot system for packing Juicies into retail boxes. The system consists of a three-robot cell that picks individual Juicies and places 10 in a retail box.

The Juicies are fed into the robot cell passing under a camera, the robots using a vacuum pick head pick up product that is the right shape and place them in the retail boxes. The robots use vacuum pick heads and vision technology to identify the products and determine their location and colour.

Implementing the system also required reconfiguring the line to eliminate the need for lining up the products, leading to significant improvement in the efficiency and consistency of the packing process. One filler was moved to fit the robot cell into the area. It was repositioned and became part of the line. They were then able to align the three fillers to feed into the robot packing cell for maximum production. The erector was turned 180 degrees, conveyors were modified, as were guards to suit the automation system.

The automation system eliminated the need for lining up as the products fall directly onto conveyors. The camera sends signals to the robots – robots will not pick up Juicies that are the incorrect shape or in the wrong position. All three robots can pick up Juicies and pack into retail

boxes allowing up to 1,000 retail boxes of Juicies to be packed per hour. Installing the robot system has increased productivity and efficiency.

The robot system can also pack the 40 Juicies per box that are sold into schools. Two of the robots are dedicated to picking Juicies and packing them into the shipper. The third robot has a “head change” which allows it to remove the flat blanks from a gravity magazine, ploughs to assist the robot in folding the bottom flaps, a glue gun to apply glue to the base of the RSC and a compression punch to press down on the flaps to set the glue. The box is put on the conveyor to allow the other two robots to count 40 into the shipper. Once filled, the cartons are pushed off the carton conveyor onto a conveyor that takes them to an operator for manual closing of the top and taping.

The robots and associated conveyor are enclosed within an interlocked safety cell to ensure operator safety. There are alarms and a light stack to indicate issues and when magazines of packaging are running low. There are two computer screens for trouble shooting and more in-depth info.

The system can also be used to pack Moosies where the camera picks up the colour of the Moosie it is programmed to pack four chocolate and four strawberry into a retail box.

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### Key Benefits:

The implementation of the proposed automation system for packing Juicies has brought several benefits to Tasman Bay Food Co.

- **Mitigating threats of uncompetitive pricing and increasing labour costs:** The automation system has improved manufacturing operations and reduced reliance on human resources, allowing the company to run the production line with less people, thereby reducing labour costs. The increased efficiency and accuracy of the automated system has also helped to maintain competitive pricing of the products in the market, protecting the company's profit margins.
- **Improved process efficiency and product quality:** The automation system has eliminated the need for lining up the products, reducing the chances of products getting out of shape and improving the overall process efficiency. The use of vision technology for product identification and colour determination has ensured accurate and consistent packing, resulting in improved product quality.
- **Enhanced safety:** The interlocked safety cell enclosing the automation system has ensured operator safety, reducing the risk of accidents and injuries during the packing process.

### Key takeaways:

1. **Cost and ROI:** Evaluate the upfront cost of the automation system and compare it to the expected return on investment (ROI) in terms of labour savings, increased production capacity, and improved product quality.
2. **System integration:** Plan and coordinate the integration of the automation system into existing production processes, equipment, and systems to ensure seamless operation and avoid disruptions. Work closely with equipment suppliers from the start and stage the process where possible and if time allows.
3. **Training and workforce implications:** Plan for training programs and workforce development to ensure employees are skilled in operating and maintaining the automation system and consider potential workforce implications of automation.
4. **System flexibility and scalability:** Design the automation system with modularity and flexibility in mind to accommodate future changes in production requirements, product variants, and market demands.
5. **Safety and compliance:** Thoroughly assess and address safety considerations, including machine guarding, lockout/tagout procedures, and compliance with industry standards and regulations.
6. **Supplier selection and support:** Choose a reliable automation equipment supplier based on expertise, track record, customer support, and establish clear communication channels and support agreements.
7. **Change management:** Have a well-planned change management strategy in place to address potential resistance to change, communicate the benefits of automation to employees, and facilitate a smooth transition to the new automated system.

## About the site visits and Industry 4.0

The purpose of the Demonstration Network is to drive uptake of Industry 4.0 technologies among New Zealand manufacturers with the aim of increasing their productivity and global competitiveness. The Network of Site Visits (NSV) are part of the [Industry 4.0 Demonstration Network](#), which also includes a mobile showcase and smart factory showing cutting-edge Industry 4.0 technologies in action. The NSV takes selected companies through a fully-funded assessment process to help them accelerate their own journey towards Industry 4.0, and sees them share their knowledge with other manufacturers.

### Further questions?

To find out more please contact

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