



**CASE STUDY**  
Network Site Visit

POWERED BY

**CallaghanInnovation**  
New Zealand's Innovation Agency

PROGRAMME PARTNERS

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**INDUSTRY4.0**  
Network

Decisions on the Fly: Adapting in Seconds Flat

About

Breadcraft is an 80-year-old family-owned company in its third generation. With around 160 staff onsite, it is the third-biggest employer in the Wairarapa region. Breadcraft specialises in all things bread with a large portfolio containing artisanal breads, bagels, burger buns, flatbreads, paninis, tortillas, gluten-free products and more.

Background

One of Breadcraft's house brands is Rebel Bakehouse, with a range of bagels and tortillas that can be found in all retailers. The tortilla manufacturing plant at Breadcraft is state-of-the-art with capability to run over 20,000 tortillas per hour. This plant operates by hot pressing dough pieces into the required size before baking, cooling, and packing the product for purchase and consumption.



This plant uses Industry 4.0 technology to capture tortilla sizes and send that real-time data to a system that can make size adjustments on the go to ensure all product stays within specification and of the highest quality.

The problem

When things go wrong on a high-speed manufacturing line, they go wrong quickly and the magnitude of an issue compounds quickly too. The cost of quality is significant, with a constant flow of valuable raw materials consumed and wasted and the scrap pile getting bigger by the second.

Processes are usually quite stable when running. However, batch to batch variation between raw materials, and even in batch variability, can trigger a process to suddenly spiral out of control. This is especially common in processes relying on natural ingredients.

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Breadcraft produces up to 20,000 tortillas per hour through their wheat-based tortilla manufacturing plant. There are many variables throughout the production process, from the composition and quality of the flour and other raw materials, dough temperatures and even the ambient air temperature and humidity, these all play a large roll towards processing and achieving product quality.

### The Solution

Tortillas are made by pressing balls of dough into the characteristic flat round shape before they are baked in an oven and packaged, ready to eat.

To compensate for the infinitely variable natural products, the tortilla press is equipped with two vision systems, one on the infeed and one after

the baking process.

The first camera sits just after the press operation, scanning and monitoring the size and shape of each tortilla that has been pressed. Due to the variable elasticity of the dough the tortillas can shrink, or simply not be pressed enough to create the right sized product. The smaller tortillas will be thicker and may not bake properly, which has a significant impact on quality.

The camera measures each tortilla. If there are three Out of Tolerance readings, the camera calculates the required adjustment to the press and adjusts accordingly while continually monitoring the critical quality parameters. If it over-adjusts within another three cycles it can recalculate the fine-tuning required. 3 cycles on the press takes about 9 seconds, so this is more accurate, faster and less wasteful than relying on operators to make the adjustments.



## Decisions on the Fly: Adapting in Seconds Flat

**Key Takeaways**

The first camera is a great example of Industry 4.0 technology, as the images captured are not only inspected, but the result of the inspection is used to adjust the process to mitigate future errors. The camera covers three of the SIRI assessment dimensions:

1. Shopfloor automation – making the adjustment for the operator
2. Shopfloor connectivity – by having the camera system able to communicate with the press
3. Shopfloor intelligence – where the camera system can make a decision automatically without human input

The impact this has had on Breadcraft's process is:

- Reducing waste from ~3% down to less than 1%
- Reduced the need for specialist press operators
- Empowered the team to challenge the way things have always been done with the power of data and analysis



## 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

**EMA**

+64 (9) 367 0900  
manufacturing@ema.co.nz

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