

# Handling solution for new TQ-Lab plastic packaging testing station

Torus Technology Group has partnered with Festo to create a purpose-designed integrated handling solution for its new TQ-Lab modular plastics packaging testing station. By Brian Wilson, Engineering Director at Torus

**T**orus offers a range of custom-designed automated inspection and testing systems that enable customers to control high-speed processes, reduce costs and maintain quality in demanding environments. TQ-Lab is a unique, total quality testing station for plastics packaging such as bottles and jars, typically used for soft drinks, health supplements, cosmetics and domestic cleaning products.

## Expanding horizons

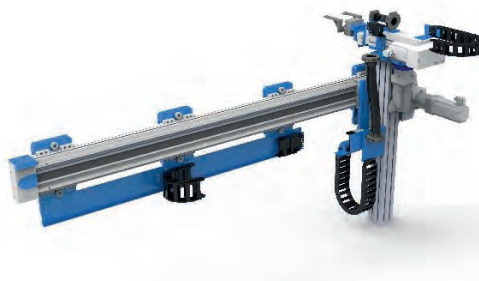
Plastics packaging requires precision measurement of aspects such as material thickness, outer body and neck physical dimensions, neck diameter and volume, as well as load testing for crushing and pressure.

The TQ-Lab is a unique concept that can undertake all the necessary tests on both empty and filled containers or preforms in a single system. Once batches of containers are placed onto the turnaround conveyor, the operator simply selects the relevant program and can walk away. A bespoke vision system locates the position of the neck, and an intelligence force feedback gripper and a multi-axis pick-and-place system transfer the product from the conveyor between measurement modules. The system is fully customisable, so customers can select the Torus test modules to suit their particular test requirements and budgets. Controlled via a single interface, TQ-Lab delivers reliable data to the network with no operator influence.

Its development is a major diversification for Torus. Traditionally, the company has focused on developing test stations for metal packaging, but TQ-Lab extends its expertise to the plastics packaging sector. Its in-house expertise enabled it to transfer its testing technology from metals to plastics packaging.

## Partnering for customer benefits

Accurate handling and repeatability were key to delivering the customer benefits Torus envisaged for TQ-Lab: such as reduced time



*Festo engineers, supported by powerful sizing and simulation software, created a versatile, modular and integrated handling solution*

and labour costs, the potential to collect a large amount of measurement data, and a reduced footprint to save valuable floor space.

Torus investigated the option of sourcing components to build the handling system itself, but there were issues with compatibility and reliability using multiple suppliers. It also considered the option of using an off-the-shelf robot solution and modifying it. However, this involved considerable design modifications and specialist automation skills that lay outside its core expertise. It recognised the need for an automation expert to work alongside them to optimise the system design, so it turned to Festo.

Festo had been a supplier of electric drives, handling components and valve terminals to Torus for many years and, now, for the first time, it offered its design support services.

## Handling with care

The final TQ-Lab was developed over twelve months and Festo was involved from an early stage. It helped significantly shorten the design lead times, for example by using its software tools and experience to identify the best components for the handling system specification. The final design helped to simplify the handling system into a single integrated solution instead of multiple bespoke parts from separate suppliers.

Using the recently introduced Festo ELCC cantilever axis, Festo engineers also replaced the original custom-built vertical module with a technically neat and commercially attractive single part. The highly technical specification

and complexities of movement also made it crucial to test that the design would work in principle before completing the build of the final system. Festo's dedicated sizing and simulation software tested different configurations and proved to Torus that the final design would deliver the desired performance in terms of accuracy and repeatability.

The automation expertise available from Festo enabled Torus to reach a final design more quickly and delivered a fully-optimised solution. Festo then built and delivered the complete handling solution for installation in the TQ-Lab.

Festo also made it easier for Torus to order the handling system in future by assigning it a single order number, which automatically generates a comprehensive list of all the necessary components. This streamlines purchasing and stores, while still supporting any repair or replacement needs. Festo also has a global network of service centres that enables Torus to offer its customers local support with commissioning and any troubleshooting.

The handling solution is also future-proof, allowing reprogramming to suit changes in packaging design.

## Total package

Festo's complementary automation expertise and online software tools further improved the design and development of the TQ-Lab, significantly reducing the component selection and prototyping phase.

For Torus, Festo engineers were there from early concept discussions through component selection and system design, to testing and commissioning, fine-tuning and then completion. With Festo's support, Torus delivered a unique automated testing solution at least six months earlier than predicted – giving Torus and its customers a real competitive advantage.

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