Inside the Port of Tauranga: From Gate to Stow



Meet Richard Torlesse

Richard Torlesse the Tauranga Area Manager at QUBE, is based in the Bay of Plenty. QUBE provides specialised logistics services to New Zealand's forestry industry, supporting the movement of logs from forest to port and ultimately to international markets.

QUBE uses technology to support log marshalling, log stevedoring and export documentation. This technology helps ensure that every log can be accurately measured and traced throughout the export process. It provides greater transparency and accuracy, helping everyone involved understand exactly which logs are being exported, where they came from and how they are managed through the port.

What Happens at the Port?

When the logs reach the port, the next stage of their journey begins. During a visit to the Port of Tauranga, Richard Torlesse from QUBE showed us the equipment and processes involved in loading logs onto ships.

Stevedores are responsible for loading the vessel. Each stevedoring gang works with an excavator fitted with a large grapple, which is used to pick up groups of logs and place them into the ship's holds.

Richard also explains how logs are checked and recorded as they move through the port. An Auto Scaling station photographs the logs, providing a record of the cargo as it passes through the system.

Seeing the equipment operating on the wharf gives a real sense of the scale of log exports. A single vessel can carry tens of thousands of tonnes of logs, meaning that loading the ship is a major logistical operation that requires careful coordination between the port, stevedores, shipping company and other people involved in the supply chain.

From Wharf to Ship

The journey of a log doesn't end when it reaches the port. It must be stored, checked, moved and loaded efficiently into the vessel.

For a shipping manager, this is where the different parts of the supply chain come together. The right logs need to arrive at the right port at the right time so that the vessel can be loaded and leave on schedule.

The Auto Scaling Technology Takes the Load

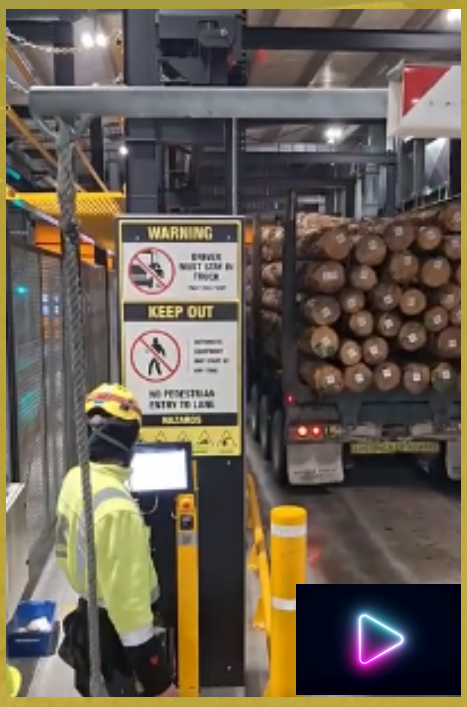




The Auto Tally in Action: Smart Tech Meets Timber

Auto Tally: Kiwi Innovation Goes Global

The Auto Tally technology was developed in Te Puna, New Zealand, by Robotics Plus used by Qube across the ports in in New Zealand.









The crane is the machine that moves the load; the grapple is the machine that holds the load. Together, they turn a 22-tonne bundle of logs into a load that can be picked up, moved through the air and accurately placed inside a ship.

The crane has to deal with the weight and gravitational force of the logs, while the grapple has to generate enough gripping force to keep the logs together during lifting and movement.

How it works

Logs are prepared on the wharf
Logs are brought alongside the ship and arranged into a bundle or lift. An excavator or other machinery can help position and organise the logs.

The crane positions the grapple
The crane operator moves the large mobile harbour crane's boom and lowers the grapple onto the bundle of logs.

The grapple closes around the logs
The specialised timber grapple grips the bundle securely. Modern systems such as the SMAG timber grabs used with Liebherr LHM 550 cranes are hydraulically powered and specifically designed for bulk timber handling.

The crane lifts
Once the grapple has a secure hold, the crane lifts the entire bundle. The crane's cables, boom and hydraulic systems work together to control the enormous load.

The crane swings the load over the ship
The crane operator rotates the crane and positions the load above the ship's hold.

The grapple releases the logs
The grapple opens and the logs are placed into the hold. An excavator working inside the ship can then arrange the logs so that the cargo is packed efficiently and the ship remains properly balanced.

How Technology Has Changed

Port technology has evolved significantly, with Qube's Auto Tally technology helping to mechanise processes such as log measurement and handling that were previously carried out manually, improving efficiency and reducing physically demanding work. At the same time, modern crane technology has increased the scale and speed of log loading: Tauranga's Qube Liebherr LHM 550 cranes are fitted with SMAG timber grabs capable of lifting up to 35 tonnes, compared with the previous method of using wire to lift log loads. This method required stevedores to be slinging wires around loads on the wharf. These technologies demonstrate how automation and engineering innovation have transformed the way logs are processed and loaded for export.

Curriculum Links
Technology, Science and Global Trade

Technology

- Technological systems: Explore how the AutoTally and other port machinery operate as interconnected technological systems.
- Mechanics and automation: Investigate how hydraulic/mechanical systems enable logs to be lifted, moved and loaded efficiently.
- Digital technologies: Consider how scanning, tracking and data systems are used to identify and manage individual logs.
- Technological outcomes: Students could investigate how technology improves efficiency, accuracy, safety and traceability in log handling.

Science – Physics

- Forces and motion: Investigate the forces involved in lifting, moving and loading logs.
- Mechanics: Explore how machinery such as the AutoTally uses mechanical principles to move heavy loads.
- Energy: Consider the energy required to move logs from the marshalling yard onto a ship.

Mathematics & Statistics

- Measurement: Log dimensions, volume, weight and load capacity.
- Rates and efficiency: Calculate how many logs can be handled or loaded within a given period.
- Data: Explore data generated through scanning and log-tracking systems.
- Statistics: Analyse operational data and consider factors that affect productivity at a port.

Geography /Economics

- Geography: Investigate how natural resources move through a supply chain from plantation forest → truck → port → ship → international market.
- Economic activity: Explore forestry as an export industry and the role of ports in New Zealand's economy.
- Global connections: Investigate where New Zealand logs are exported and why international markets matter to the forestry industry.
- People, places and environments: Consider why ports develop in particular locations and how infrastructure supports regional and national economies.

English

- Listening and interpreting: Use Richard and Jon's explanations to identify key information about marshalling, stevedoring and ship loading.
- Communication: Examine how industry professionals explain complex processes to different audiences.
- Speaking: Explain the journey of a log from forest to ship using appropriate industry vocabulary.

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WIDE TRUST

The Wood Industry Development and Education (WIDE) Trust is a charitable trust established in 2018 with the mission to support development and education in the forestry and wood industry sectors through the provision of grants and scholarships to New Zealand students and institutions.

FOREST GROWERS LEVY TRUST (FGLT)

The Forest Growers' Levy Trust collects the commodity levy paid on harvested wood material from forest growers and acts as the custodian of those funds. The Trust ensures the levy is invested in research, development, biosecurity, promotion and other industry-good activities that benefit New Zealand's plantation forest sector.