

## Automated LogID Tagging and Tag Reading

Forests cover 31% of New Zealand's land, with plantation forestry taking up 7% of the total land area. Forestry exports are the 3<sup>rd</sup>-largest export earner for New Zealand, behind the dairy and meat industries. New Zealand is one of the world's largest exporters of softwood logs.

The Forestry Growers Levy Trust (FGLT) is the largest industry funder of research and development for the New Zealand forest-growing sector. Forest Growers Research Ltd (FGR) manages the research programmes approved by the FGLT.

The main goal of one of the research programmes is to address growing labour shortages in the sector through the application of robotics and automation technologies, thereby, achieving significant improvements in labour productivity and reduced harvesting costs, which are major constraints for the industry. Funding (NZ\$29.4 million = Euro17.3 million) for the programme over a seven-year period is jointly provided by the New Zealand government and the forest industry (through both the FGLT and direct investment by forest growing companies and manufacturing companies).

One of the projects included within the Automation and Robotics programme is **the Automated LogID Tagging and Tag Reading project**. Application of unique ID log tags is expected to occur in-forest when trees are being cut into logs. Tag reading is expected to take place at multiple locations between the forest and delivery to customers within New Zealand or overseas.

An international review of tagging technologies identified three technologies which were likely to be most suitable for New Zealand national and international supply chains; *radio-frequency ID tags (RFID), ink-jet printing, and punch-code tagging*.

Punch-code tagging was selected for further development due to its relatively low costs and because it requires no consumables (RFID tags or ink), which means time is not required to refill RFID or ink canisters. Additionally, the tags will be read using computer vision (CV) technologies; CV is also being considered for four other projects within the Automation and Robotics programme.

The Swedish company, **OTMETKA**, has invested in research and development over a long period tagging and have patents related to punch-code tagging. In early 2020 FGR and Otmetka formalised an agreement to develop automated tagging and tag reading technologies suitable for New Zealand harvesting equipment and New Zealand supply chains. The technology is expected to be jointly developed by **OTMETKA New Zealand Inc.** and New Zealand manufacturers.

At the end of 2020 there is a strong commitment to the project. It is now indirectly funded through FGLT and directly funded by the NZ government, six of New Zealand's largest forest owners, the two largest port logistics companies, two machinery manufacturers, and two companies supplying software services.

New Zealand currently has readability trials, supply chain mapping, and economic analyses underway. Stakeholder sub-groups to address tag marking, tag reading and data management design issues have been established.

Our goal is to have alpha prototypes of log tagging and tag reading solutions developed in New Zealand and tested by the end of 2021. The slightly longer-term work plan includes development of six beta prototypes, and commercialisation and deployment of the solutions by the end of 2025.

Dr Glen Murphy

Project Leader – Automated LogID Tagging and Tag Reading Project

Forest Growers Research Ltd, New Zealand