

Toi Ohomai Institute of Technology update – new entry-level qualification for mechanised harvesting

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Cat FM log loader simulators

Toi Ohomai Institute of Technology has recently introduced a new forestry programme that focuses on mechanised harvesting. This entry-level programme uses simulator systems to speed up the process of getting operators to a position where they are 'work ready'.

Ever-changing industry

Our department is living within a world of change. During 2016, Waiariki Institute of Technology and the Bay of Plenty Polytechnic were merged to create Toi Ohomai Institute of Technology, now New Zealand's third largest polytechnic. Forestry and wood manufacturing has been recognised by our new institution as being of major importance to the region and New Zealand as a whole. As such, it

is one of Toi Ohomai's 'Centres' that focuses on key regional priorities. The challenge that we now face is to ensure that we meet the needs of an ever-changing industry, and in particular one that is moving rapidly to maximise the use of advanced technology for forest harvesting operations.

New skills set needed

In the past, our entry-level forest harvesting programmes have focused on manual (chainsaw) skills. While these skills will undoubtedly be needed to some extent in the future, the rapid move to mechanised harvesting means that a new skills set is also required. The forestry industry needs more professionally capable machine operators. However in-industry training for

mechanised harvesting is difficult to gain because contractors need their very expensive machinery to be used for production rather than time-consuming training. This has resulted in a void where trained operators are needed, yet training time is difficult to find.

To meet this challenge, Richard Stringfellow (our Programme Area Lead for forest operations) has developed and introduced a new programme of study in 'Basic Machine Operations' that is part of the (Level 3) New Zealand Certificate in Forest Harvesting Operations. Our qualification provides an entry-level opportunity for those wanting to work in forest harvesting. It contains core compulsory courses (focused on working safely as a professional in the industry) and three 'strands' (manual processing, quality control and basic machine operations), which can be completed individually or together.

Simulator-based and real machine training

But how to square the circle of the need to train when the cost of harvesting machinery is prohibitive? The answer lies in Nigel Hagger's *New Zealand Journal of Forestry* (2011, 56(2): 19) article that introduced the John Deere E-series harvester and forwarder simulator that we acquired in 2011. We have now purchased four more simulators – two Cat FM log loaders and two Waratah harvesters/processors. These provide a game-changing opportunity, as we can offer initial training in a simulated 'virtual' environment.

All the simulators have controls that are found in actual machines, allowing operators to become confident in their use in a completely safe virtual environment before driving the real thing. For example, Cat's FM log loader simulator has a series of lessons that include:

- Control familiarisation
- Machine walk-around
- Log handling
- Loading and off-loading the machine from a low-boy trailer
- Shovel logging
- Loading and unloading the log trailer
- Sorting.

The system is also able to automatically track student progress, and compare individual performance to those previously trained using a benchmarking approach. This benchmarking supports development of real work-ready skills and allows the tutor to ensure that real-world capabilities are being developed. These simulators provide substantial cost savings for contractors by delivering realistic training without the need to take machines out of production, or risking machine wear-and-tear while training is being undertaken by novice operators.



Cat FM log loader simulator

Following simulator-based training, students will gain time in a real tracked machine before the programme is completed. This will allow them to become familiar with the behaviour and movement of the real thing, and provide time to practice log loading and other key skills to maximise their professional effectiveness.

Unit standards

Students also complete a range of unit standards, using newly developed training material from Competenz, including the following which are important for gaining employment within the industry:

- Demonstrate knowledge of, and undertake, basic repairs and maintenance on a forest industry machine (24568)
- Demonstrate knowledge of forest industry machines (27964)
- Operate a forest industry machine (27965).

We now intend to develop further programmes for advanced training needs, and particularly those that focus on optimising the use of processing/harvesting heads for value recovery. We also hope that innovative ways of teaching such as this will encourage people to join and work within the forestry industry, which clearly offers such great career opportunities.

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