# NELSON PINE COMBINES CONTROL AND SAFETY TO MINIMISE PRODUCTION DOWNTIME

#### Introduction

The Nelson-Marlborough region is one of New Zealand's major forestry areas, with 16 percent of the productive land area planted in production forests. Nelson Pine Industries has the capacity to process one million cubic metres per annum (40 percent of the region's annual harvest) and recently they were faced with the challenge to update control and safety systems to an integrated system that complied with safety standards and minimised production downtime.

Forest product processing technologies have recently undergone extraordinary advances with improvements being achieved in quality, recovery rates and safety. Nelson Pine is committed to maintaining compliance with evolving safety standards as well as utilising the latest control and safety technologies, and as safety standards continued to advance it was clear that an upgrade was required at the plant.

#### **Project Overview**

To help with this, Nelson Pine called on NHP and Rockwell Automation to develop a solution that integrated control and safety while minimising production downtime.

"The GuardLogix® PLC control system provides the technology benefits of the latest ControlLogix® system and also includes safety features that support Category 4/ PLe safety applications. The GuardLogix also offers integrated safety, discrete motion, drive and process control," said Kevin Jones, NHP's Account Manager for the project.

"Nelson Pine Industries have been particularly innovative in their approach. We often see safety systems bolted on to the control systems that may meet safety requirements but impact other business objectives, such as production rates and downtime. This type of solution was discounted early in discussions with Nelson Pine. The new GuardLogix system is being deployed across the whole site due to its effectiveness in achieving the safety category whilst enhancing productivity."

A large part of the Nelson Pine site where logs are unloaded from trucks for processing, the chip mill comprises of two pivot cranes and a drum debarker handling 300 tonnes of logs per hour. According to lan Craw, Automation Engineer at Nelson Pine Industries, control and safety are of paramount importance in the plant that operates 24 hours a day seven days a week, and the chip mill is no exception. With that in mind, the first stage of the upgrade involved replacing the existing PLC-5° hardware platform with a GuardLogix Integrated Safety System.

"The plant is aging. To upgrade the chip mill we decided to start at the whole backbone of control to take advantage of advancing technologies and meet current safety standards," said Craw. To allow for zone control, the chip mill building was split into two geographical safety zones, using some of the latest safety guard locking switches with RFID technology for controlling and monitoring zones.

The first safety zone incorporates a large drum debarker, which rotates the logs, removing bark before entering the chipper. Out-dated variable speed drives were replaced with eight, 90kW PowerFlex® 753 drives in a master/slave configuration.

They receive their speed/torque reference via the DLR and achieve a Stop Category 0, (via safe torque off) to Cat3/PLd.

The second safety zone incorporates safe speed monitoring of the main, 1.8MW chipper motor and safe position monitoring of the 11kV motor breaker, to confirm lockout/tagout (LOTO) has been performed, before access is granted into the hazard zone.

"When upgrading equipment it was a priority to meet current safety standards. We are well on the way to complying with the Machine Safety Standard, EN ISO 13849, with the goal to achieve PLd across most of the site in the coming years," Craw continued.

#### Solution

"One of the huge benefits of the solution is being able to have visibility remotely. We use PanelView™ Plus as the operator interface for fault finding and monitoring equipment out in the field. In our previous system we had to use multiple software systems to try to diagnose an issue, but now both the control and safety code are easily accessed and visible through ControlLogix."

In addition to the PowerFlex 753 drives, which are used on site, Nelson Pine is also using the PowerFlex 525 drives with safe torque off and ethernet capabilities, reducing commissioning time and fault finding time.

"Machinery in the chip mill operates 24 hours a day, so once we had GuardLogix up and running, we were able to add hardware and edit safety code on the fly which gave us significant production advantages," he said.

Upon completion of this site upgrade, Nelson Pine Industries have adopted production processes that are both safe and enhance productivity. As a result of the success of the new control and safety solution in the chip mill, Nelson Pine will continue to roll out the solution across the entire plant.

"NHP and Rockwell Automation have really partnered with us in providing valuable support and application knowledge that has enabled us to retrofit safety into the working plant. We have not only achieved a suitable performance level relatively easily, but also minimised production downtime which is of paramount importance to our plant," Craw concluded.



Case studies

## Fact File

**Project:** Nelson Pine Industries Plant Upgrade **Location:** Nelson-Marlborough Region, New Zealand

**Details:** Nelson Pine called on NHP and Rockwell Automation to develop a solution that integrated control and safety while minimising production downtime.

### NHP Products/Services:

- Allen-Bradley GuardLogix<sup>®</sup> PLC
- ControlLogix<sup>®</sup> system
- PowerFlex<sup>®</sup> 753 drives
- PowerFlex<sup>®</sup> 525 drives
- PanelView<sup>™</sup> Plus

