

# Guardian 900mm Bandsaw

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## 1.0 Executive Summary

The project objectives were to utilise existing Guardian Bandsaw intellectual property and technology to design, manufacture, test and install a larger 900mm bandsaw. Fletchers International Exports in Dubbo New South Wales have requested KANDO to build the machines and are the site for the installation of the first 900mm machine.

Guardian Bandsaws have safety systems to detect operators gloved hands. When the systems detect the operators gloved hands the bandsaw stops the blade in a few milliseconds. This project brought this technology into the larger 900mm bandsaw so that the full range of different sized safety bandsaws would be commercially available to meat processors in Australia.

The approach taken was to design a bandsaw to achieve a cutting width of 900mm. This is a larger four-wheel machine than previously built by Guardian (all other models are two-wheel) and so in order to ensure the safety systems worked to specification calculations were carried out so that the correct size wheels were manufactured. With the wheel size known then the frame could be designed to fit all the bandsaw equipment inside it, and it was known that the braking system would stop the blade without damaging the blade.

The findings and conclusion of the product was that the Guardian Bandsaw intellectual property and technology successfully scales with increasing bandsaw size and a 900mm bandsaw was designed, built, tested and installed at Fletcher International Exports. This means that safety on bandsaws can be increased through use of the Guardian Bandsaw technology on all the sizes of bandsaw used in meat processing operations.

## 2.0 Introduction

Bandsaw injuries in the meat processing industry can be severe and are all too frequent. Injuries on bandsaws often result in lifelong change to those directly affected and until relatively recently methods of guarding the exposed blade have not been effective in reducing the industry risk or practical to operate the bandsaws.

The purpose of this research project was to design, manufacture and install a Guardian 900mm bandsaw at Fletchers International Exports in Dubbo, New South Wales. Background intellectual property was used in the 900mm from the other sized Guardian Bandsaws which have been in use at Fletchers since November 2018.

The Guardian 900mm saw uses the same safety principles as the other Guardian bandsaws. A four-camera vision system provides a three dimensioned zone of safety around the blade for the full length of the blade. Upon detection of the operators blue coloured gloves the saw activated a safety system which applies a brake to the blade. The blade is brought to a stop in a few milliseconds. Footage from each safety event as well as other performance data from the bandsaw is uploaded to a web portal to enable operator up-skilling on bandsaw operations.

The scope of the research was to design, manufacture, test and install a Guardian 900mm bandsaw which contained the safety features that exist within the other size ranges of Guardian Bandsaw.

## 3.0 Project Objectives

The objective of this project is to design, engineer, build and install a Guardian 900mm bandsaw that embodies Guardian technology to matching infrastructure on-site at Fletcher International Exports, Dubbo. A 900mm bandsaw will allow operators to cut carcasses in a safer, more user-friendly manner as the average size of carcasses continues to rise. At project completion the goal is a 900mm bandsaw installed and operational at Fletcher International's processing plant in Dubbo.

## 4.0 Methodology

The methodology for this research followed engineering principles of design and manufacture followed by testing. Existing intellectual property was used at each step of the methodology.

The steps followed were:

1. Design of the frame – detailed Solidworks design of Guardian 900mm frame to support bandsaw components (four-wheel bandsaw)
2. Design the table – detailed Solidworks design of the table for heating and to be functional for operations (easy open for blade change, cleaning and sanitation etc.)
3. Prototype drawings – dimensional drawings and renders for the Guardian 900mm
4. Software – write the software code for Guardian 900mm
5. Develop the prototype – assemble the bandsaw and carry out factory acceptance testing. Test safety system on larger saw and longer blade
6. Prototype demonstration – demonstrate bandsaw functions and features to Fletchers International and AMPC
7. Site installation – ship bandsaw to Fletchers International in Dubbo, New South Wales
8. Site testing – install bandsaw on site, connect services, operate machine and train operators

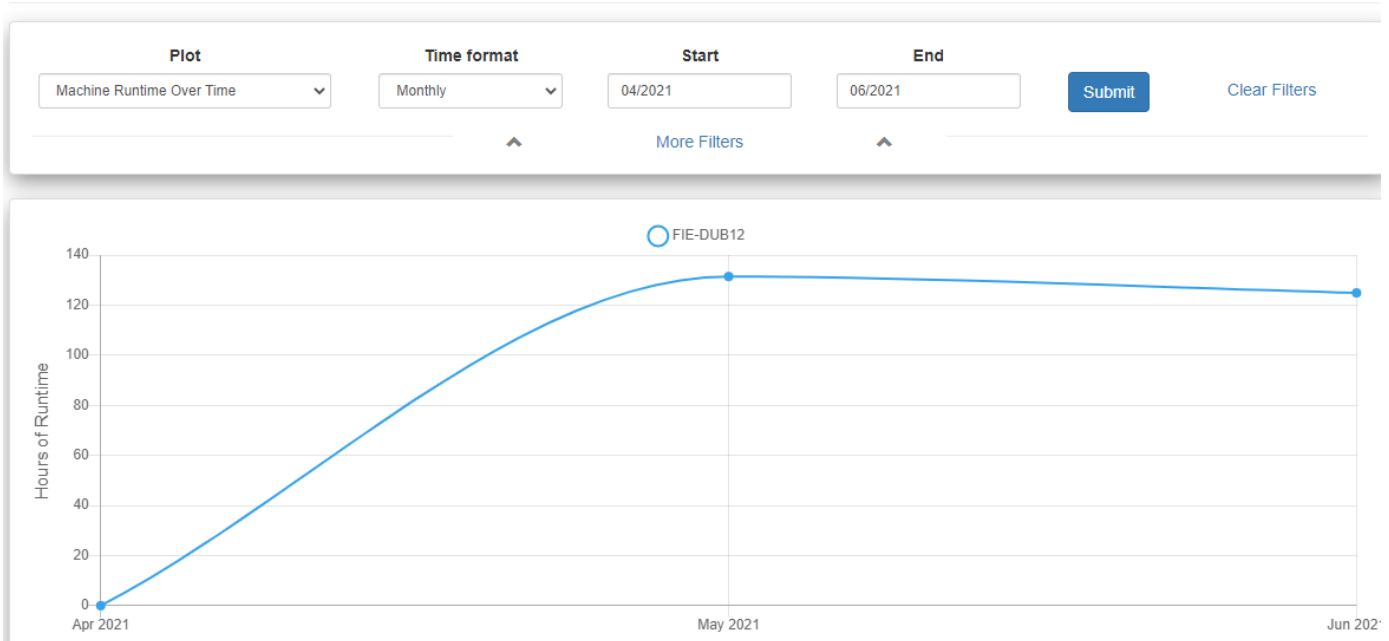
## 5.0 Project Outcomes

The Guardian 900mm bandsaw was designed, manufactured, and tested before installation at Fletchers International Exports, Dubbo New South Wales. The 900mm bandsaw rounds out all of the different size machines used on site and so Fletcher's objective of using only safety bandsaws has been delivered.

The meat processing industry now has an option with the larger 900mm bandsaw to further reduce potential and actual injuries.

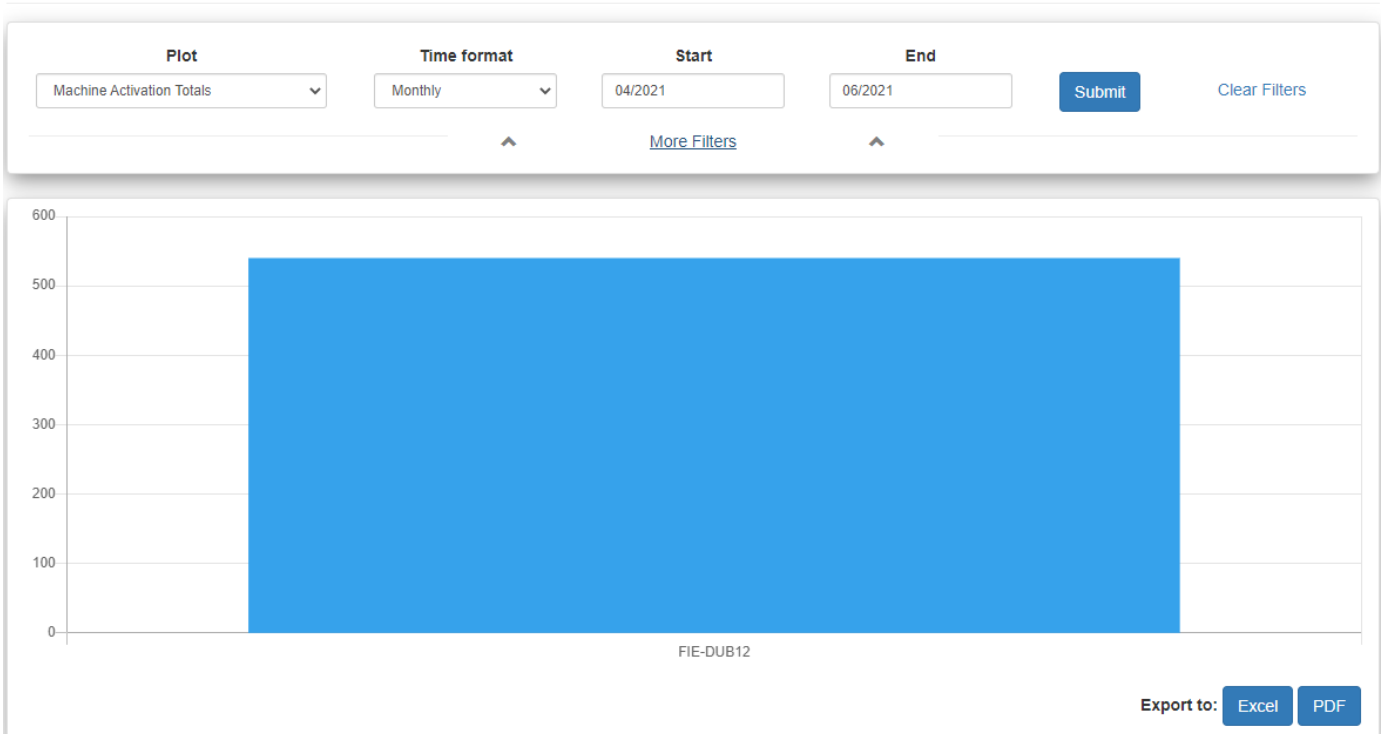
The chart below shows the runtime to date for the 900mm bandsaw since it has been installed. This will increase as Fletchers staff become used to working with the bandsaw.

## Runtime Charts



The chart below shows the number of safety activations on the 900mm bandsaw since its installation. To date the machine has performed 540 activations.

## Activation Charts



## 6.0 Discussion

The objective of this project was to design, build, test and install a Guardian 900mm bandsaw at Fletchers International Exports plant in Dubbo, New South Wales. This objective has been achieved and the 900mm machine is reducing the risk to Fletcher's bandsaw operators from the risk of severe injury.

The photograph which follows shows the 900mm machine in operation at Fletchers Dubbo site. The operator is using the full cutting with offered by the 900mm saw. Until the development of this model, safe bandsaws were not available in this size.



## 7.0 Conclusions / Recommendations

An aim of this project was to show that the safety equipment that had been developed for 300mm, 400mm and 600mm Guardian Bandsaws would scale up to the 900mm bandsaw and offer operators the same level of protection and risk reduction that the smaller Guardian bandsaws achieve. Working in conjunction with Fletchers International, Dubbo, New South Wales. This has been successfully achieved.

In summary the objective was to design, manufacture, test and install a Guardian 900mm bandsaw at Fletchers International so that a solution was made available so that Fletchers could choose to replace their non-safety bandsaws with Guardian Bandsaws and offer consistent protection and injury risk reduction to their staff, in particular bandsaw operators.

The Guardian 900mm bandsaw is now a successful commercially available bandsaw offering business protection and injury risk reduction for their bandsaw operators. The safety systems built into the Guardian 900mm bandsaw are essentially the same as the other sizes of bandsaw of bandsaw proving that the Guardian technology is able to scale to all of the different sized machines used in the meat industry.