BACKGROUND

Mesh & Bar is one of Australia's leading manufacturers of reinforced steel and mesh products with manufacturing plants and offices along the east coast of Australia.

At the Mesh & Bar site in Derrimut, Victoria, there is an item of plant known as a "MEP Mini Syntax Machine" ("Machine") which bends and cuts steel bars. When the Machine was delivered to the Derrimut site, there was no guarding fitted to or around the danger area of the machine, namely, the cutter and bender (spindle) assembly.

On 14 November 2018, an employee of Mesh & Bar was injured when his right hand accessed the danger area of the machine.

The incident caused Mesh & Bar to reconsider the hazards and risks that may arise from the interactions between personnel and plant, especially when operating heavy machinery, and the measures that could be taken to achieve a higher level of risk control.

PRE-START CHECKS

Conducting pre-start checks before operating any plant or equipment is a well-known risk control measure to identify hazards, maintenance problems or any damage before the plant or equipment is used, reducing the risk of accidents or failures during use. Although paper-based pre-start checks are useful, they are an administrative control that relies on human behaviour which may result in instances of the plant or equipment being operated when it is not safe to do so.

To enhance the safety outcomes achieved through pre-start checks on its machines, Mesh & Bar engaged a software developer to create an electronic pre-start check application that interacts with the existing safety features of the machine and ensures that the machine cannot be operated until all pre-start checks have been completed.

OVERVIEW AND HOW TO ACCESS

The application designed for Mesh & Bar features a pre-start inspection checklist that requires the operator/user to answer a series of questions prior to the use of off coil machines, shear lines, benders and radius machines. To avoid the risk of operators adopting a “tick and flick” approach, the sequence of questions is randomised each time and requires the operator to answer a variety of multiple choice and yes/no questions.

If a question is answered incorrectly, the safety interlock will not be released and a supervisor must address the incorrect answer with the operator and ensure that they understand the question before manually allowing the machine to start. A further safety feature is the de-energisation of the machine if the questions are not answered correctly within a set amount of time.

The application electronically records the details of the pre-start check, including the identity of the operator, to enhance record keeping and auditing processes.

The application can be used in a wide variety of businesses and is expected to enhance the safety outcomes in the steel and reinforcement industry.
All of the components of the application as designed for Mesh & Bar can be downloaded, for free, at this link:
https://prestartchecklist.meshbar.com.au/

Alternatively, a copy of the source code can be downloaded, which will allow a computer programmer to modify the application to suit specific business requirements. A computer programmer will be able to tailor the application to suit a variety of other manufacturing machines and business needs, such as offering questions in other languages so that non-English speaking operators can use the application with confidence. A copy of the source code can be accessed at this link:
https://github.com/veritecaus/Plant-and-Machinery-Pre-Start-Check