

The following Good Safety Practices were developed from the Innovation in Safety Award submittals.

2021 Reports

[Jump to 2020 Reports](#)

[American Laminators Safety Matrix Report Board](#)

The Hazard Hunt is performed monthly by various and rotating employees, and the before and after pictures are taken and posted by the Plant Manager. These findings are shared in the Monthly Safety Meeting, and then discussed with each department's teams with their leaders.

[BC Florien Pedestrian Walkway Mobile Equipment Warning Lights](#)

These images alert/remind employees of the hazard of Forklift Traffic in the area.

[BC Homedale Finish to Work Center Safety Overhaul](#)

Allows associates to stay in their primary workstations and not have to travel by foot across the department to trim each beam.

[BC Homedale Lockup Jigs Reverse Camber](#)

The plant created a reverse camber book, an orange binder, for the scheduler and layup department to glue all beams in the south rack with the opposite lamination layup as the north rack, which eliminated the need to flip every beam from that rack.

[BC Thorsby Reman Pinch Wheel](#)

The safety team wanted to do something that would reduce or even eliminate the risk of strains and abrasions from having to push boards manually.

[BC Medford Ply Lighting Significance](#)

This lighting protocol provides visual cues to help teammates and supervisors interpret needed responses or to be aware of certain hazards. As an example, a blue light highlights an area where forklifts and pedestrians may have to be even more alert to mutual interaction.

[BC Rogue Valley Ply Implemented Fire Prevention Action Plan](#)

The Safety Committee got together and worked out what was outdated and not in place. Emergency Evacuation Plan, which also includes the locations of all fire hose/extinguisher and PI Valve Locations and added evacuation routes leading from major work centers and also locations of Evacuation Staging Areas.

[BC White City EWP Cold Press Billet Marking](#)

To enter the Billet marking station, the operator must lift the Proximity arm, which locks the transfer chains, as well as activate the kill switch prior to making mark on Billet. The kill switch was installed to ensure there could not be an accidental activation of the transfer chains if the proximity arm closed unknowingly.

[BC White City Veneer Secondary Safety Hooks](#)

The device acts as a blocking wedge to prevent the safety hooks from coming loose and falling.

[Forex DO2 Packaging System](#)

The DO2 packaging system is an automatic bundle packaging machine.

[LP Newberry Chainsaw Safety Program](#)

The 18v battery operated pole saw allows us to do most of our wood cutting from the deck outside of the equipment, this helps to minimize trip hazards, and gets the operator away from the chain on the saw.

LP Newberry Pedestrian-Forklift Safety Innovations

This application for three different solutions that were completed in 2021 and compliment the desired result, decreasing pedestrian/forklift interaction

LP Two Harbors Automatic Tote Dump

An automatic tote dumping operation was implemented so operators could allow equipment to take on the burden of heavy lifting and keep operators from exposure to associated environmental hazards.

Resolute-LP Larouche 306 Degree Risk Analysis

Within regular operation circumstances, when workers must intervene into the manufacturing process, they must apply a blockage procedure before everything else.

Resolute-LP St-Prime Trolley for Bench Loading Head

A trolley has been developed to avoid technician to lift with their hands the loading head.

RFPC Chester Improved LOTO Processing Using 270 Degree Laser and Cameras

The solution that was developed and implemented was the installation (2) 270-degree lasers to allow a much more efficient way for team members to lock out the equipment prior to inspecting LVL billets.

RFPC Coquille Plywood Panel Retention in Press

Panels no longer float out of the press unloaders, they stay within the press unloader away from where any team members could be working.

RFPC Coquille Plywood Storm Water Outfall Safety Catwalk

A catwalk with multiple features was added to one of our site discharge points in order to ensure safety while observing and sampling storm water.

RFPC REW Guard Pin Project

Fabricated a poka yoke to prevent guarding pins from being misplaced during routine maintenance tasks.

RFPC Riddle PLY Custom Magnetic Latch Guarding

Installed magnetic latched Plexiglas shields at the plywood plugging robots replacing bolted on steel guards to facilitate operator maintenance.

RFPC Weed Outside Mobile Equipment Pedestrian interface

High traffic in the log yard resulted in the potential for serious incident of vehicles striking vehicles and vehicles striking pedestrians. A cross-functional team was created to analyze log yard traffic.

ROM Chopin Lessons Learned

In an effort to reduce severe injuries and engage front line leadership and production team members in the problem-solving process.

ROM Corrigan Belt Winder

The Belt Winder is a custom designed piece of equipment made to assist plant personnel in pulling the main belt onto the forming line.

ROM Corrigan Plexiglass Hatch Install

The plexiglass hatch/door installation was made to assist plant personnel in trouble shooting equipment without needing to take on any additional risk around moving gears or requiring down time for the system.

Tolko Armstrong Area Based Lockout Matrices

Based on interviews with workers and new hires the JHSC identified an opportunity to improve lockout training and had an idea to create an entirely new lockout system in the process.

Tolko Athabasca OSB The Pink Panther

A team of maintenance employees at Tolko's Athabasca OSB plant developed an innovative solution for testing hydraulic cylinders that reduced the frequency of seal failures, hydraulic oil fires and subsequent injury risks associated with removing and rebuilding press cylinders.

WY Kalispell Early Detection Spark Camera

Since installation in early 2020 our two camera systems have detected over 25 fires/fire conditions that resulting in zero injuries and zero equipment damage by being able to respond immediately to the situations.

WY Kalispell Dryer Thermal Stress Reduction

A wet-bulb globe-temperature (WBGT meter) was used to capture thermal stress data which was compared to the American Conference of Government Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) for thermal stress.

Safety Matrix Report Board

American Laminators

Contact: Derek Vaughn, Plant Manager
Email: derek@amlam.net

1. Describe in detail the innovative/novel solution that was developed and implemented.

The Safety Matrix Quarterly Report Board is located in the center of our manufacturing facility. Although this board is also designed to post the Monthly Safety Topic, and departmental safety meeting minutes in a quarterly rotating fashion, its primary function is to serve as a feedback to all employees of the Monthly Hazard Hunt and its results (blank Hazard Hunt Form attached). In previous years, feedback was found to be a bit redundant for non-compliant safety related issues during these inspections. This Hazard Hunt form is designed to be looking for specific safety and non-compliance issues. Each month, 2 departments within the facility are walked thru and searched for issues. It is preferred to have at least 3 employees from other departments completing the hunt. By the end of each quarter, all departments have been searched for issues, and the process repeats. Each month as/if they are found, a picture is taken of the issue. The idea is that before the next months walk-thru, this item has been driven to a root cause (if there is one), and fixed to increase the safety of the employees, and be in OSHA compliance. A picture is then taken of the after repair/implementation and posted. As you can see in the pictures attached to this document, this would be a blocked walkway before and after to a fire suppression hose, a ladder that was too steep and too wide, and a reclaim water bucket that was not labeled ; are examples over the last 3 months.

2. How was this innovation developed and implemented?

The idea was introduced to the Leadership Team in the Fall of 2019 by the Plant Manager and implemented in December of 2019. The Hazard Hunt is performed monthly by various and rotating employees, and the before and after pictures are taken and posted by the Plant Manager. These findings are shared in the Monthly Safety Meeting, and then discussed with each department's teams with their leaders.

3. Describe the improvements that have been achieved by the implementation of this innovation.

See Innovation in Safety Award 2021 Entry Form Question Sheet attached.

The Hazard Hunt itself has increased the awareness of safety related issues not only to the inspectors of each area, but to all employees. The before and after pictures provide feedback to all employees of the efforts being made to provide an even safer working environment. Examples of improvements that have been made since this system has been implemented are:

- Walkway between 2nd trim and the stacker (instead of climbing up and down ladders).
- SDS Center with a Master Binder system and online -vs- MSDS books in all departments that were out of date.
- Improved walkways to Fire Suppression areas.
- Improved walkways to emergency exits.
- Replacement of non-compliant air nozzles.
- Removal of sharp objects or welding burrs.

- Improvement of non-labeled containers and secondary containers.
- Improvements in general housekeeping.
- Removal of trip Hazards.
- Addition of LED Emergency Evacuation Signs.
- Implementation of growing ongoing monthly safety checklists for the entire facility.

4. When was this innovation implemented and when were positive results first apparent?

The Safety Matrix Board was implemented in December of 2019. Immediate results were found each month as we continue to strive to make our facility a continuously improved workplace.



Safety Matrix Quarterly Report Board



Committee Agenda

Agenda for the Safety Committee meeting, detailing topics to be discussed.

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Safety Meeting

Minutes and notes from the Safety Meeting.

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Hazard Hunt

Records of identified hazards and their status.

Records of identified hazards and their status.

Records of identified hazards and their status.

Issue Identified



Issue Resolved



Committee
Agenda

Safety
Meeting

Safety Committee / Safety Meeting Agenda

Company Name: American Laminators
Date: January 2022
To: Each member, alternates, and bulletin board

Safety Questions or Needs call: Paul A. Wood (541) 331-1188 cell or e-mail at paul@eafety.com

Order of Agenda Items

- Old business
 - Review last meeting recommendation(s)
 - Describe follow-up on uncompleted safety items and inspection results
 - New information since last meeting (see OSHA 300 Log)
 - Other unfiled business
 - Close Calls and Near Misses
- New business

Resolution: Safety 247 - On and Off the Job

We must all live by the motto - "If you have done it, it is not so important as what you are about to do." The future is what does it... and the opportunities, risks, and accomplishments made good are the resources of our business. All of us in the working world must practice the following:

- We must care about the best of working time and money of the country
- We must know the value of safety and health
- We must possess the ability to make a difference

Driving lines and preventing injuries and illnesses must be a paramount and strategic part of the way we do business in the upcoming year and in all the years to follow.

Emphasis on workplace safety and health has been increasing for over a century and much of the progress has been realized when the Occupational Safety and Health Act, or OSHA, came into being over 50 years ago.

Over the last 50 years, and because of the hard work of safety professionals, management and safety leaders, working in industry -- mechanical facilities have been not a hell and occasional injury and illness have been down 40 percent.

The good news is occupational injuries and illnesses keep declining but the reality is -- for many workers, we are still going home hurt or sick, and more than 3000 die yet not going home at all. We have to work to stop the safety statistics into the future.

Monthly Safety Meeting
January 2022

OSHA 300 Log Worksheet 3020
Present: Steve F., John L., Andy S., Debbie S.

OLD BUSINESS:

- Review driving statistics / job location
- New temporary employee safety orientation completed due to transient weather
- Safety inspection for areas / Maintenance PM Schedule (Status)
- Be aware of potential slips, trips, falls or trips to check in case of leaves
- Deadly slips in overhead crane lifts (Status)

NEW BUSINESS:

- Check OSHA if getting up and down use employees fire alarm
- Close remote facilities / PM schedule
- Check up on safety process which starts with PM. Don't bring unannounced visitors
- Keep by hourly protocol up
- Remember to wear the proper PPE for the job
- It is not recommended to wear gloves PPE or to share driving results
- Remember to get marker for required OSHA 300 and OSHA 302

PRELUDE / LAPTOP CRASH
Present: Debbie S., Jeff T., A.J. M.

OLD BUSINESS:

- Check for updated work-around working machinery
- Don't get out on lifts or OSHA without securing ladder ladder to safety for lifts
- Monitor to start and make the shift. Be ready to stop work and call back work.

NEW BUSINESS:

- Don't drink or eat anything without at least notifying the operator and taking out items and when it is possible. OSHA notification is not needed so

PRELUDE / OSHA
Present: Steve F., John L., Andy S., Debbie S.

OLD BUSINESS:

- Make sure you are wearing the proper PPE for the job at least OSHA, MRO, proper training procedures
- Be careful of new employees and use verbal commands when starting. Don't turn on lifts or equipment. Please note: 1. No safety station and the change box don't work

NEW BUSINESS:

- Pay attention when using ladders or hoists

Safety Committee / Safety Meeting Agenda

Company Name: American Laminators
Date: February 2022
To: Each member, alternates, and bulletin board

Safety Questions or Needs call: Paul A. Wood (541) 331-1188 cell or e-mail at paul@eafety.com

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- New business

Plan on Going Home Tonight

Do you plan on going home tonight?

It's probably something you don't really consider as you go about your day. And if someone asked you, you might think, "What a silly question," and then say, "Yes, of course."

But stop for a moment. Think about those words. Do you plan on going home tonight? You probably think you do the job, and then you walk back out that door to go home. But is someone working and leaving you at what? Head on wheels? Head in a bucket?

There is not a job -- in fact, not having a job is exactly what you do on the job. It is an accident. But, not every accident is a "never" planning to have an accident. Yet they are still happening. So, if you are planning on going home tonight, do you really have to go home? Where is the accident?

This will, when we talk, we discuss the possibility that we can reduce what we want. We plan that operation, we plan that business, we plan for our employees and

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NEW BUSINESS:

- Pay attention when using ladders or hoists

Hazard
Hunt

Issue
Identified

HAZARD HUNT

Department: Warehouse Date: 11-1-21

Inspector: John Brown

Hazard Hunt Checklist for Warehouse

General Conditions & Electrical Hazards 100.00.000

1. Are all electrical enclosures locked?
2. Are all electrical signs, labels, or surface printed or stenciled, legible, or otherwise, not present?
3. Are electrical enclosures properly labeled? (See the original enclosure inspection worksheet)
4. Are electrical and portable conductors in accordance with applicable standards?
5. Are electrical signs in working order and non-fluorescent?
6. Have electrical enclosures been inspected and signed?
7. If applicable, have all signs been removed?
8. Are electrical signs, labels and charts, identified?

Signatures are shown according to the following:

Inspector: _____ Supervisor: _____
 Electrical worker: _____ Electrical maintenance: _____
 Maintenance/inspector: _____ Electrical safety: _____
 Other: _____

Machinery Hazards 100.00.000

1. Are all guards in place, substantial, and tight? (See checklist, damaged or inoperative)
2. Is a red stop/pending control?
3. Do not modify or tamper with safety control?

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HAZARD HUNT

Department: Warehouse Date: 11-1-21

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Issue
Identified

Issue
Resolved







Committee Agenda



American Laminators

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**Issue
Resolved**

Resolved



**THIS PLANT
HAS WORKED
9416 ^{3/8} DAYS
WITHOUT
A LOST TIME
ACCIDENT**

Be Part of the Solution

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Pedestrian Walkway Mobile Equipment Warning Lights

Boise Cascade Company

Florien, Louisiana

Contact: Charles Derr, Safety Coordinator

Email: charlesderr@bc.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

In two areas of our facility, we purchased and installed Safety Cast Virtual overhead projectors which shine a rotating safety image down onto the floor of pedestrian walkways. These images alert/remind employees of the hazard of Forklift Traffic in the area.

2. How was this innovation developed and implemented?

In a collaborative effort with Management, IE's, Maintenance employees, and the safety Department, Safety Cast Virtual projectors were purchased, and installed, to increase awareness of potentially hazardous intersections in our facility.

All employees entering the facility see the moving image projected into the walkway, which alerts pedestrians of areas with possible high forklift traffic. And also assists forklift operators in identifying potential areas where pedestrians and Mobile equipment interact.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Increased awareness of high forklift traffic areas. Employees stop and look for forklift traffic before traveling through the area where the image is projected onto the walkway to ensure no forklift traffic is present before continuing on past the guardrails and light to their destination.

Forklift operators are more focused on possible pedestrian traffic in the area's where these projectors are located.

4. When was this innovation implemented and when were positive results first apparent?

Implemented in January 2021.

Improvements noticed in January 2021.



We have installed 2 projectors that project signs which rotate onto the pedestrian travel path to increase awareness of forklift traffic.



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2. How was this innovation developed and implemented?

The plant formed an action team consisting of the CSC, operators from the area, Controls Engineer, Industrial Engineer, Supervisors, Safety Coordinator and Plant Manager to address the recognized hazards. The team worked together to identify the ideal layout for controls and walkways. When this was completed the flyover staircase was designed by the plant's Industrial Engineer and fabricated by the Maintenance Department. This group also identified guarding mounting locations and worked together to install the four-inch straps all the way around the exterior of the roll cases.

When the order of operations was identified the plant worked hand in hand with contractors to build the controls logics for the beam conveyance and trimming. Hardware was installed and the plant worked with electrical contractors to install a new MCC and land field devices as well as equipment for the entire department. When the new MCC was in place the associates in the department worked with the CSC to develop the new LOTO procedures for the department.

3. Describe the improvements that have been achieved by the implementation of this innovation.

The result of this project was eliminating the potential for associates to walk between roll cases and allows the associates in the Finish 2 Department to perform their jobs from their primary workstations without the requirement to travel to flip and trim each beam. This project has greatly reduced the manual toll on the associates in the Finish 2 Department.

4. When was this innovation implemented and when were positive results first apparent?

09/2021 Results were realized immediately, and the effort was a success with no unintended safety or quality issues.

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Lockup Jigs Reverse Camber

Boise Cascade Company

Homedale, Idaho

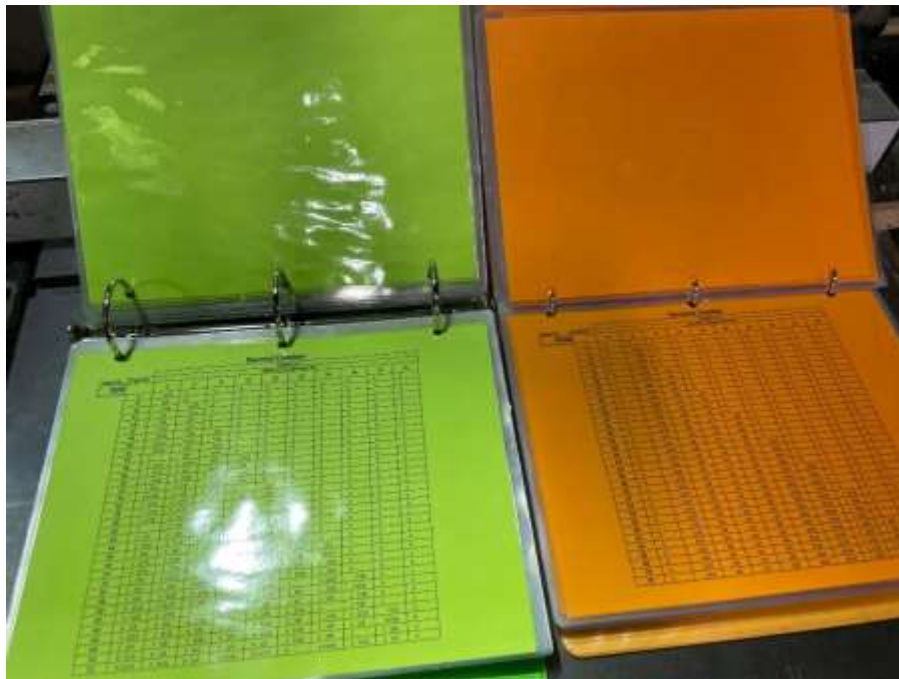
Contact: Justin Nield Safety Coordinator

Email: justinnield@bc.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Rack configuration in the Homedale Beam plant consists of 2 parallel 120-foot jigs with a lamination feed roll running directly in the center of the two. Historically the mill has scheduled and laid up all beams with the face of the beam closest to the jig upright, regardless of which rack the beam is glued up in. As a result, each beam in the south rack was required to be flipped via hoist by the planer feeder for the face of the beam to be squared up in the planer.

The plant created a reverse camber book, an orange binder, for the scheduler and layup department to glue all beams in the south rack with the opposite lamination layup as the north rack, which eliminated the need to flip every beam from that rack. The annual piece count from that rack that was previously flipped by hand and hoist prior to feeding into the planer is between 11,000-15,000 beams. The plant painted the two racks, north green and south orange, to identify which rack utilizes the corresponding camber book of the same color.





2. How was this innovation developed and implemented?

The plant formed an action team consisting of an operator from the layup department, Quality Coordinator, Controls Engineer and Industrial Engineer to calculate the reverse camber values for the operator who cuts camber blocks. The team created two books; the first was to replace the existing camber book with a green binder with green pages, the second was an orange binder with orange pages for the reverse camber layups. The team then painted the corresponding jigs green and orange to help the associates in the layup department easily and clearly identify the correct camber and layup combinations.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Overnight the plant was able to eliminate the need for an operator to hoist and flip every beam laid up in the south rack. This removed the operator from being in the line of fire of a potential hoist failure and the result of the falling beam.

4. When was this innovation implemented and when were positive results first apparent?

05/2021 Results were realized immediately, and the effort was a success with no unintended safety or quality issues.

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Re-Man Pinch Wheel

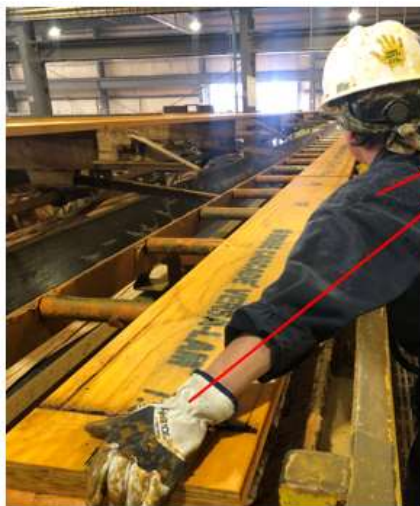
Boise Cascade Company
Thorsby, Alabama

Contact: Ronnie Morris, Safety Coordinator
Email: Ronniemorris@bc.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

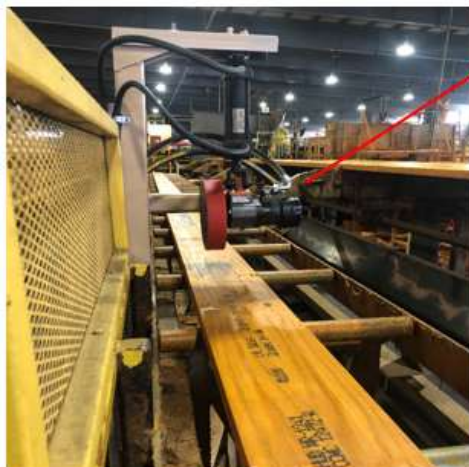
Plant safety committee members from our sawmill team brought forth a concern in one of our committee meetings. Team members were having to use significant force to move the larger sized boards down the reman roll case to be processed. The safety team wanted to do something that would reduce or even eliminate the risk of strains and abrasions from having to push boards manually. The result was a small Hydraulic system with a pneumatic cylinder added to the roll case that operators can use to move the board along the rollers basically without touching the boards.

Below you will see before photos and photos of the wheel that was implemented that greatly reduces the potential risk.



Stress points

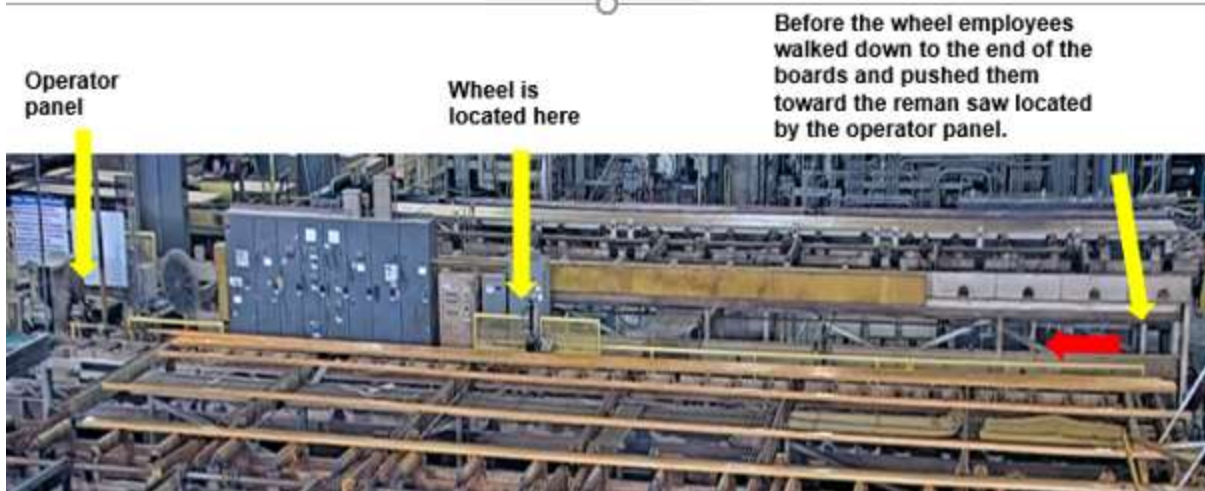
Boards have to manually pushed down the rollers, potential for abrasions, strains and hand injuries.



Hydraulic motor with adjustable speed control Mounted on a pneumatic Cylinder to hold pressure On the boards.

Controlled by two switches that were added to the control panel.





2. How was this innovation developed and implemented?

With input from our hourly maintenance and safety team the idea became a reality. Most of the parts needed to complete this were already onsite. We had the support of our facility manager to proceed with the project. It was carefully planned and installed during down days in phases to eliminate risk of down time. Once the equipment was installed members from our safety team proved it out. The safety coordinator developed an SOP for training. We installed guards to prevent pinch points. Sawmill teams completed the training and began using the pinch wheel immediately. We had positive feedback from all operators.

3. Describe the improvements that have been achieved by the implementation of this innovation.

The pinch wheel started adding value the first day it was implemented. It eliminates employees having to use excessive force to move or push each board down the roll case. This reduces the potential for injuries from strains and even abrasions. In addition to not pushing the boards manually the wheel eliminated employees from having to walk up and down the catwalk (up to 66') to get to the end of the boards so they push them. The wheel saves time, energy and has been well accepted by sawmill team members. When leadership supports safety improvement ideas like these it shows our employees that we really do care about safety. It gives employees more reasons to look at ways to improve from the support they receive.

4. When was this innovation implemented and when were positive results first apparent?

The Wheel was implemented on 3/21/2021. Positive results started immediately by reducing the chance of overexertion which can lead to injuries. It saves time by not having to walk up and down the catwalk to push the boards. The Wheel has required very little maintenance and is reliable due to its simple design. We received no injury or near miss reports at the reman area since this has been installed. Prior to the wheel we had two first aids, a strained wrist and an abrasion to the Arm.

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Lighting Significance

Boise Cascade Company

Medford, Oregon

Contact: Peggy Jackson, Safety Specialist

Email: peggyjackson@bc.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

We had a variety of colored warning lights that were installed over time to gain attention or alert applicable personnel of emergency situations, hazards or operation issues. Most were intended for safety of operations. However, there were no specific colors established for the alert meaning. Different functions throughout the mill could have different colored lights with similar meanings which could create potential confusion. As a result, we developed a consistent colored lighting system to identify significant issues and to reflect the magnitude of different hazards. By changing lighting to associate hazards with a particular color of light, we are more readily alerted to hazards that need to be responded to in a safe and efficient manner. This lighting protocol provides visual cues to help teammates and supervisors interpret needed responses or to be aware of certain hazards. As an example, a blue lights highlight an area where forklifts and pedestrians may have to be even more alert to mutual interaction. The photos below show the random lighting colors:



Current indicator lights on Hog System. BLUE for Metal Detector. AMBER for Hog System Trouble. Should be changed to GREEN for Metal Detector. CLEAR for Hog System Trouble



Roll up door cross walk next to maintenance. Current indicator light is RED. Should be BLUE for Hyster Pedestrian Interaction.

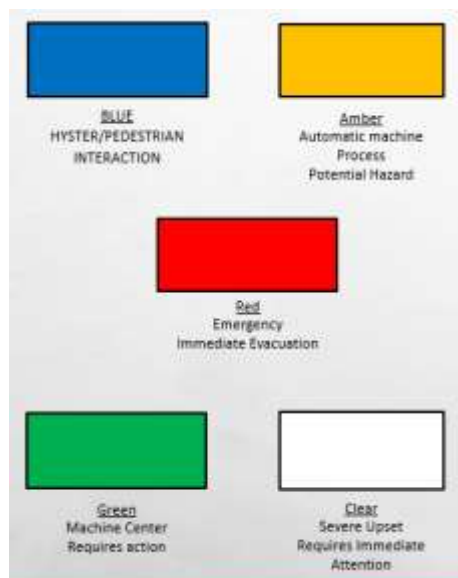


Current indicator light for LVL Hydraulic room is RED. Should be CLEAR to indicate severe upset Requires immediate attention.



Current indicator light for RTO is BLUE and current indicator light for spark detection is ORANGE. Should be Green for RTO upset and CLEAR for Spark detection immediate attention.

This chart shows the new warning light protocols:



2. How was this innovation developed and implemented?

Kalyn Tracey, a very safety-oriented electrician, who is a safety committee member, noticed the potential confusion that the existing lights could cause and made a proposed warning light change to ensure the color of the lights would have specific meaning. The safety committee reviewed the proposal and incorporated plant leadership in an agreement to make the change. A project was implemented by Kalyn Tracey to begin the transition. Since we used blue warning lights on forklifts, it was decided to stay with blue for forklift and pedestrian interaction points. The remaining colors were associated by common warning indicators and available light colors.

3. Describe the improvements that have been achieved by the implementation of this innovation.

One of the best examples of the safety effects of the lights is the pedestrian/forklift interaction points. While we have rerouted forklift traffic for safety over the years, there are always some forklift travel areas that interface with pedestrian crossings. We have removed or controlled as many of these areas as possible, but total elimination is not possible. At the crossing areas, we have signs and gates, but wanted to use additional measures to alert pedestrians of the potential for a forklift hazard. We installed barriers at rollup doors which ensure personnel can't walk right in front of the door, rather they would have to walk 20 feet or so away from the door as they passed the opening. Then we installed blue lights on the end of the barriers that are activated by a sensor detecting the forklift presence. This way the pedestrians are far away from the door and they receive timely notification via light activation that a forklift is approaching the area. The other lights tell us the emergent status of the protected system. It is clear that if a hog starts to become plugged up, the sooner we respond to it the safer the work is at removing the plug up. The, green and white/clear lights help us to know the status and to what degree the issue is before we even engage it.

4. When was this innovation implemented and when were positive results first apparent?

The light change plan began as part of the years safety plan and was complete in May of 2021. Signs and pocket cards were made and provided to all team members along with contractors and guests. Knowing the significance of the warning light color is how we can help everyone understand the hazard that may be present, or the action required.

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Implemented Fire Prevention Action Plan

Boise Cascade Company
White City (Rogue Valley), Oregon

Contact: Chris Bucher
Email: Phoenix4x4@msn.com

1. Describe in detail the innovative/novel solution that was developed and implemented

Rogue Valley Plywood when re-opened in 2013 did not have a very active fire prevention plan, so over the last 2 years we have been working on creating one.

2. How was this innovation developed and implemented?

Safety Committee got together and worked out what was out dated and not in place. Emergency Evacuation Plan, which also include the locations of all fire hose/extinguisher and PI Valve Locations and added evacuation routes leading from major work centers and also locations of Evacuation Staging Areas. Also implemented Fire Extinguisher / Fire Hose Training and PI Valve Training. All Employees have a active role to the plan.

3. Describe the improvements that have been achieved by the implementation of this innovation.

No Incidents have occurred but we have annual training and re-evaluate bi-annually and any new Employees to mill go thru the training as well.

4. When was this innovation implemented and when were positive results first apparent?

Plan was initiated in January of 2020 which was a struggle with dealing with Covid, was finished by October of 2020 with all agenda items completed.

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Cold Press Billet Marking

Boise Cascade Company
White City (EWP), Oregon

Contact: Kyle Valley, Safety Coordinator II
Email: kylevalley@bc.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

The innovative/novel solution we are submitting occurred within our Layup department. Within the layup department, we have a 67-foot by 5-foot Cold Press. Panels of PLV blanks, that have been jointed together to a specific length, are transferred to our Layup Rack and stacked/glued together to again, a specific dimension. From here, these stacked PLV panels or Billet, is transferred to our Cold press where hydraulic rams compress the billet at 2,300 PSI for approximately 30 minutes. While the Billet was under pressure, the Cold Press operator would mark the Billet with ink which includes information such as Date the product was finger jointed, press load #, grade, thickness, and length. The operator would accomplish this by physically breaking the plain of operation of the machine with approximately half their body on the East side of the Cold Press. This unfortunately had gone unrecognized and had become common practice. Actions that followed included updating the procedure for the task, installing additional guarding, a Proximity arm and kill switch.

The updates to the job procedures included no longer marking the billets from the East side of the Cold Press. Instead, we created a Billet marking station on the opposite side of the Cold Press (West side) beneath an elevated walkway and is now marked after the Billet leaves the press via the transfer chains. Not wanting our operator exposed to any moving parts, we installed a guard rail surrounding the marking station thus keeping the operator at a safe distance from the transfer chains. Additionally, we created a redundant safety system which includes the installation of a proximity arm and kill switch. Both completely lock the transfer chains from moving when activated. To enter the Billet marking station, the operator must lift the Proximity arm, which locks the transfer chains, as well as activate the kill switch prior to making mark on Billet. The kill switch was installed to ensure there could not be an accidental activation of the transfer chains if the proximity arm closed unknowingly.



2. How was this innovation developed and implemented?

implemented?

The development of this new process took collaboration between several departments. The hazard was initially recognized by an EWP team member observing fellow employees performing normal job tasks. The team member recognized the potential hazard and reported back to leadership. Once the hazard was brought forth to the leadership team, we immediately began brainstorming possible controls. This included members from the maintenance department, Safety Coordinator, Cold Press operator, Safety Committee members, and leadership. Once the controls moving forward were decided upon, the installation of the additional controls was immediately scheduled within our maintenance department. Between Leadership, safety Coordinator and Cold Press operator, the SOP was updated and revised reflecting the changes to the task in question. The controls were put through our management of change (MOC) process and meetings were held at the beginning, middle, and end of the process to ensure nothing was overlooked. Additionally, each member of the department was coached on updated procedure and observed performing new procedures by supervisors and/or safety coordinator for several weeks.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Improvements in safety following the implementation of these controls were recognized immediately. In the case of the Cold Press operators, they are no longer being exposed to the potential exposure/injury of entering a machine. The implementation of this improvement has spread further than the Cold Press in our Layup department. As a company, we have a Golden Rule of not entering any machinery prior to Lockout/Tagout being performed. However, it is understandable how certain practices can become foggy with time. In response, we have created a Lockout/Tagout sub-committee that continually review and revise our procedures ensuring best practice approach is implemented continuously. This has led us to a greater awareness of some blind spots within the program which have or are being addressed. In addition to the Lockout/Tagout sub-committee, we have established an improved training program for both new hire and job transfers that outlines Lockout/Tagout procedures that must be trained and audited. These identified Lockout/Tagout procedures are broken up into weekly tasks and all are completed within the first 30 days in the position.

4. When was this innovation implemented and when were positive results first apparent?

This innovation was implemented in August 2021. Positive results were apparent immediately.

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Secondary Safety Hooks

Boise Cascade Company
White City, Oregon

Contact: Jerrad Miller, Plant Manager
Email: jerradmiller@bc.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

The secondary pendulum/core drive safety device was developed to provide a more robust measure to insure the COE safety hooks (hook lock) remain in position (photo 1) and do not unintentionally come unlatched. The device acts as a blocking wedge to prevent the safety hooks from coming loose and falling.

2. How was this innovation developed and implemented?

It was developed in response to an incident that occurred when a positive engagement of safety hook locks failed on a core drive. All Boise lathes were required to install a secondary safety device to prevent risks. The secondary device that was most common was a chain or secondary hook, both of which had potential downfalls. Our maintenance superintendent was not comfortable with the thought of a chain that could fail if the lathe was unintentionally energized. The COE safety hooks are engineered to prevent the core drive/pendulum from moving if engaged (photo 2). There are two hooks, the second (photo 3) being a redundant safety device. The intent of this device was to utilize the safety hooks that already exist and create a way to prevent them from coming unlocked. This device accomplishes this feat. The concept was introduced to the operators and was well received due to its simple design.

3. Describe the improvements that have been achieved by the implementation of this innovation.

This hook lock device has eliminated the potential risk of the safety hooks coming loose and dropping the pendulum/core drive. All other secondary safety devices that could adequately support an energized system would not be feasible. This small light weight design utilizes the existing system and provides a confident measure for locking the safety hooks.

4. When was this innovation implemented and when were positive results first apparent?

The safety devices were implemented in early 2021 and provided immediate results. The safety locks have been effective in keeping the locks in place and no issues have occurred since implementation.

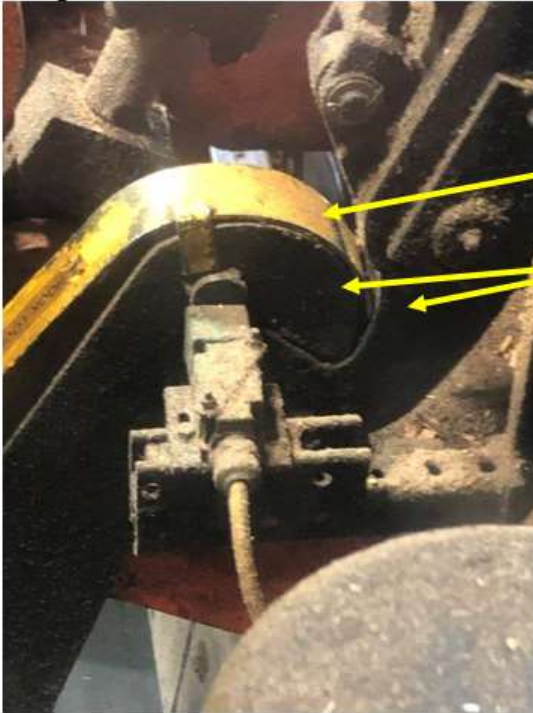


Photo 1: ¶
¶ Secondary Hook Device Added ¶
¶
¶ Pendulum/Core Drive Safety Hook Engagement ¶



Photo 2:
Secondary Safety Hooke



Photo 3:
Redundant safety device

DO2 Packaging System

Forex Amos, Inc.
Amos, QC, Canada

Contact: Stephany Thiffault
Email: S.THIFFAULT@FOREXINC.CA

1. Describe in detail the innovative/novel solution that was developed and implemented.

The DO2 packaging system is an automatic bundle packaging machine. The DO2 is equipped with conveyors that bring and transport the wood bundles from the entrance to the exit of the packaging machine. This new machine is equipped with several robotic arms (4) to wrap and staple the bundles. It also has a system for printing labels directly on the paper wrap. We also have an overhead trolley that changes the paper rolls when they run out.







2. How was this innovation developed and implemented?

We evaluated this opportunity in January 2021. After several incidents causing minor injuries and a lot of lost time, we asked ourselves the right questions and thought about the best solution for the health and safety of our employees. From there, the idea of implementing the DO2 automatic packaging machine was born. The process went quickly with the project team that we put in place with the supplier, we were able to install it in October 2021.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Before the installation, we packed the bundles of wood by hand. We put them in bags specially designed for bundles. We stapled them with a hands stapler and/or a air stapler. In addition, the Forex Inc. label was printed separately and stapled to the wrapping paper. The injuries incurred were: staples in thighs, hands and fingers. Stretching of ligaments, back, arms, legs and repetitive motion. In terms of production, the speed of execution was not up to expectations and there was a lot of time lost due to injuries. We were inefficient, financially, due to materials and labor. Since we implemented the packaging machine, the risk of injury, as mentioned above, has been minimized (since October, there have been no injuries). There was often confusion with multiple forklifts at the same time in the same location, now we have one forklift doing the packaging transport. The machine is also easy to maintain. We are now efficient with materials and labor. The packaging paper used is of better quality, it protects the finished product from variable weather conditions. The return on investment was quick and efficient. In addition, since the logo is printed directly on the wrapping paper, it creates a nice image for our company.

4. When was this innovation implemented and when were positive results first apparent?

The DO2 packaging system was commissioned in November 2021. The results were immediate with everything working well. Injuries were eliminated and the return-on-investment start in the second week. Production was significantly accelerated. We are proud to have reduced the health and safety risks for our employees while having better results in our productivity. In addition, we were able to transfer our workers to other positions thanks to the automation of this machine.

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Chainsaw Safety Program

LP

Newberry, Michigan

Contact: Steve Maki
Email: Steve.maki@lpcorp.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

When looking at chainsaw safety statistics we see that a high number of injuries happen during the starting process. One thing that we have come up with to eliminate that risk is to use electric chainsaws that don't need to be started. We ordered a Milwaukee 18v battery operated chainsaw and a Milwaukee 18v battery operated pole saw. The pole saw allows us to do most of our wood cutting from the deck outside of the equipment, this helps to minimize trip hazards, and gets the operator away from the chain on the saw. Some other things that we have done to improve safety around chainsaw use is to lock all the saws up and have a supervisor present before getting them out and during use, we have also asked that we look for alternate methods of removing stuck or crooked logs before getting the saws out, we have pike poles, cant hooks, come a longs and hoists available to use instead of a chainsaw, we've asked the supervisors to be present during any situation that might require the use of a chainsaw to ensure we are looking for other methods before we unlock and use the saws. We still have gas saws available for big logs if needed, but they are kept locked up along with the Milwaukee tools.



2. How was this innovation developed and implemented?

This was implemented through team meetings and driving the question “Is there another way?” By taking the time to think about other ways of problem solving rather than just using a chainsaw, it has greatly reduced our chainsaw use. All of the green end operators have been involved in discussions about going from minimizing chainsaw use to eliminating chainsaw use. They were also involved with the electric chainsaw training. Once those things were completed, we put the saws on lockdown, and implemented the need for a supervisor to be present before saw use can happen.

3. Describe the improvements that have been achieved by the implementation of this innovation.

By implementing this new chainsaw safety program we have seen far less chainsaw use, employees are looking for other ways to move/remove logs with out the use of chainsaws. With the addition of the pole saw we are also seeing the amount of time spent inside the machines has gone down, now we have an option for cutting small logs with out entering the slasher deck or debarker where fall potential and trip hazards are very high, also the battery operated chainsaws are a much safer option than the gas operated saws because we’ve eliminated the risk of injury while starting them, also the gas saws are much heavier and require handling and storage of gasoline.

4. When was this innovation implemented and when were positive results first apparent?

Implementation took place in May of 2021 with positive results taking place immediately. The change in thinking was as big as the change of the type of saw we used.

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Pedestrian/Forklift Safety Innovations

LP

Newberry, Mississippi

Contact: Nathan Rahn, Plant Quality Supervisor

Email: nathan.rahn@lpcorp.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

I'm submitting this application for three different solutions that were completed in 2021 that all compliment the desired result, decreasing pedestrian/forklift interaction. I will list all these solutions below in order of cost/complexity/effectiveness.

The first solution is simple, and PPE based. At all entrances to the Finishing/Shipping area of the mill we have placed reminders on the floor that state that high vis clothing is required (first photo below). This policy is enforced and ensures that individuals entering high forklift traffic areas are visible from the start.

The second solution is hazard elimination. We sacrificed one of our rows in our warehouse and turned it into a shipping route. Previously all our shipping traffic went through the area that our packaging station is located. This was a highly congested area with pedestrians and forklifts both, our shipping department can now avoid that area altogether. This cuts forklift traffic in the area by 50%, and it is now just the packagers themselves. (photo 2 and 3 below)

This third solution is also hazard elimination. We have never had a permanent barrier along our train bay corridor, this was identified as a risk for forklift traffic (there is roughly a 4' drop to the tracks). Our new shipping route also doubles the amount of traffic that passes near the train bay area. While the project was being planned/designed for an engineered barrier we had a lift back into the bay and fall against a railcar (see report below). An engineered barrier is now in place that will not only protect forklift users, but also protects our pedestrians that use that bay for offloading rail cars.

2. How was this innovation developed and implemented?

The first solution with the taped reminders on the floor for high vis was developed and implemented by the Pedestrian Safety SIF (serious injury & fatality) Committee at the mill.

The second solution was initiated by our plant manager and put into place by our shipping department and one of our crews on shift. Afterward it was communicated out to the mill by our plant manager with pictures and a description of the plan, along with a thank you to the teams that worked to get the area cleared and marked for use.

The third solution was initiated by our plant manager and the mill business team. Back in 2020 we added 100k in our plant budget at the request of regional management to reduce or eliminate SIF potential hazards within the mill. The guardrail was found by Mark Leicht our project manager and presented to the mill business team. With mill approval the project was started in May of 2021 and due to material delivery issues was not installed until December of 2021 by Miron our installation contractor.

3. Describe the improvements that have been achieved by the implementation of this innovation.

The first solution has increased awareness around wearing high vis in areas requiring fork lift traffic. Now not only do the workers that are in the area wear high vis, but also anyone that travels through the area. These individuals do not take off the vests when leaving the area (because they may need to travel through it again), leading to more prolific use of high vis throughout the facility.

The second solution has not only increased safety but has also decreased congestion around our packaging area. This has led to a better flow through the packaging process since the individually packaging and putting away units do not have to wait on shipping lifts to pass by. Since flow has improved, and the packagers do not need to wait as often, there is less rushing around. So not only has this decreased the overall presence of lifts in the area but it has also decreased the risk of slips trips and falls as employees struggle to keep up with production.

The third solution is the easiest to quantify. Before we had the barrier in place along the train bay we had one incident and are lucky it did not result in a significant injury or fatality. With the barrier in place that risk is eliminated.

4. When was this innovation implemented and when were positive results first apparent?

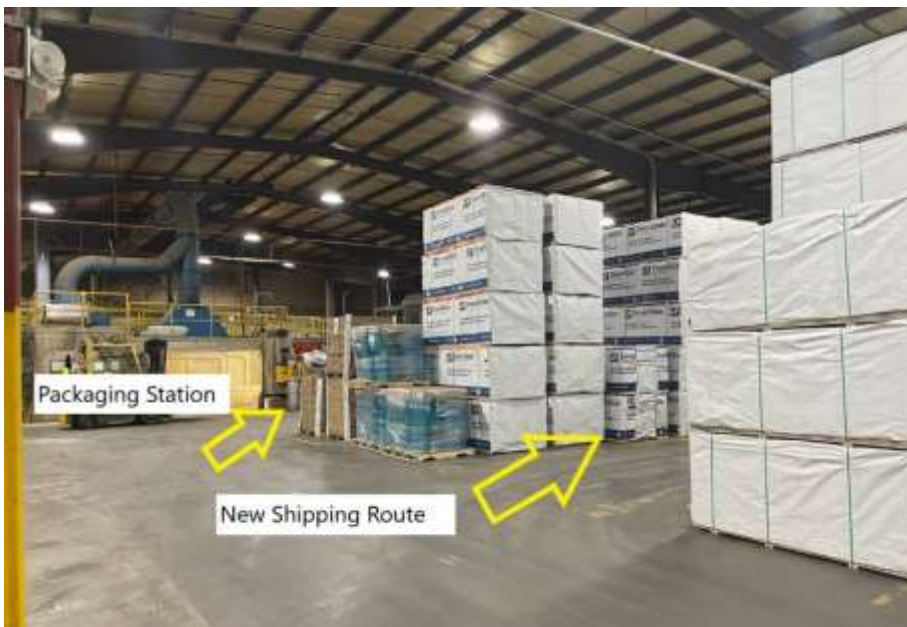
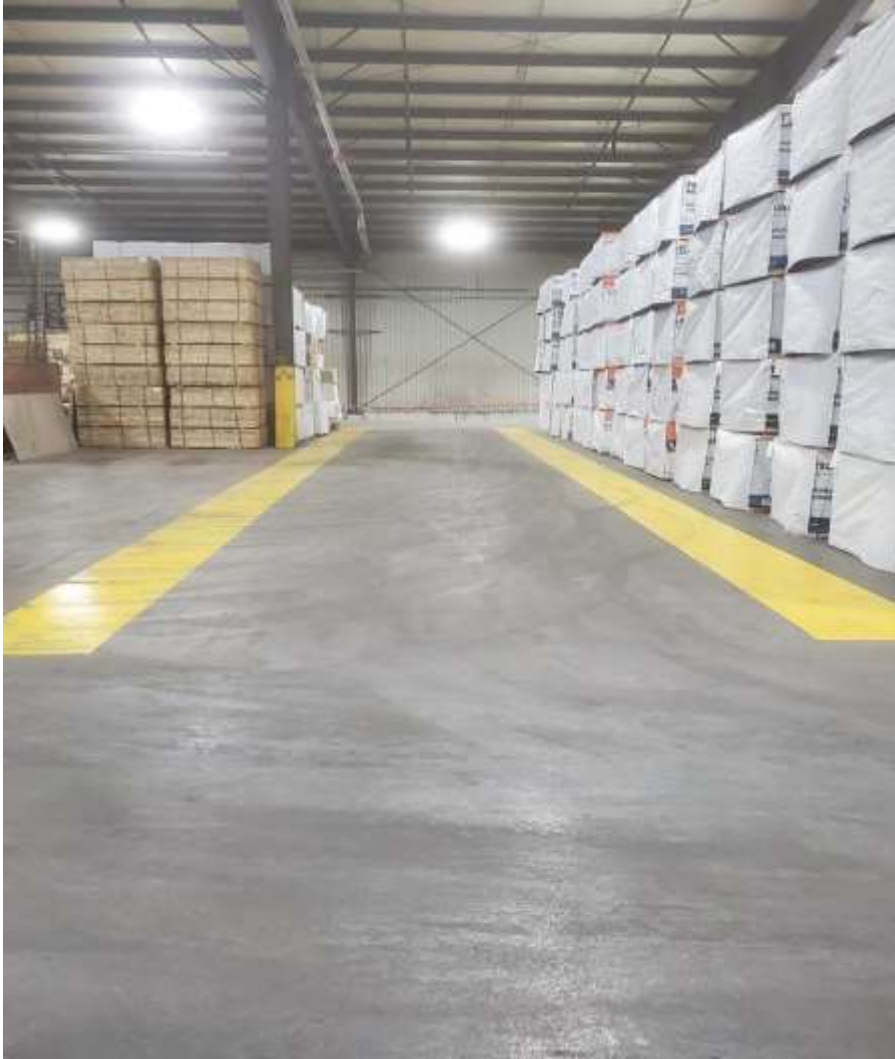
The first solution was implemented in August 2021. Results were apparent immediately and reminding individuals for the need for high vis has almost been a non-issue at this point.

The second solution was implemented in March 2021. Positive results were again apparent immediately with the decrease in forklift traffic around the packaging station. It would be impossible now to go back to the way we did things before.

The train bay barrier was put in place in Dec. 2021. The elimination of that hazard was an immediate benefit. This solution was shared LP wide on our bi-weekly safety call. Multiple other facilities have now shown interest in installing a similar barrier.



Solution One. Put into place to increase use of hi vis in areas of forklift traffic.



Solution Two. Put into place to reduce forklift congestion around our packaging area. Removing the forklift/pedestrian risk while also increasing mill efficiency.

UPDATE – NEWBERRY/MOBILE EQUIPMENT

Description of Incident:

Summer 2021-Forklift operator misjudged his turning radius; his left rear wheel slipped off the edge of the platform, causing the forklift to partially drop into the train bay.

Fall 2021-Engineered barrier completed (project was approved in early 2021)

SIF Determination Criteria:

- Mobile Equipment

Root Cause(s):

- Lack of barrier on leading edge



LP BUILDING SOLUTIONS

Solution Three. This report was presented to the entire company to promote prevention of similar issues in other LP mills. We have had multiple mills already in contact with Newberry looking to install a similar barrier.

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Automatic Tote Dump

LP

Two Harbors, Michigan

Contact: Nathan Maen, Superintendent, Plant Operations

Email: Nathan.Maen@lpcorp.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Various operators around the facility have had to handle totes that collect material from conveyor pulleys, conveyor transfers and other collection points. Totes can weigh up to a couple hundred pounds and would be required to be manually tipped over for dumping where mobile equipment would come and collect the material. Tipping/dumping was a hazard for injury due to the weight of the totes. Additionally, operators would have to move the totes through exit doors, sometimes with high negative pressure, exposing them to temperature extremes and other environmental hazards to tip/dump the totes. This activity would take place up to 8 times per shift for some operations.

An automatic tote dumping operation was implemented so operators could allow equipment to take on the burden of heavy lifting and keep operators from exposure to associated environmental hazards. Once dumped, the material is then conveyed into a separate clean-up conveyor and combined with other normal process material.





2. How was this innovation developed and implemented?

Departments collaborated, including maintenance, electrical, engineering, operations and safety, to conceptualize, design, and install the equipment.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Operator's exposure to heavy lifting while dumping totes, operator's exposure to negative air pressurized doorways, ice, snow, other temperature extremes were greatly minimized with the addition of the Automatic Tote Dump.

4. When was this innovation implemented and when were positive results first apparent?

Automatic Tote Dump was installed in December of 2020 and operations started in January of 2021. Feedback was immediately very positive from operators and impacted parties. Operators have stated things like "It is worth its weight in gold".

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306 Degree Risk Analysis

Resolute Engineered Wood
Larouche, Quebec City, Canada

Contact: Jessica Dubois-Martel
Email: Jessica.dubois-martel@resolutefrp.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Within regular operation circumstances, when workers must intervene into the manufacturing process, they must apply a blockage procedure before everything else.

By doing this, we ensured that basics safety precautions and good working methods are applied by the concerned people before any physical intervention. Within our facility, this is called a «360 degree analysis safety form». On many matter like, neutralize energy sources, posture, force applied needed, need of tools, cleanliness of the site etc. (See picture #1) our «360 degree analysis safety form» do the job quite good.

One of the instrumentation and control technicians and team members informed management that the "360 degree risk analysis" was insufficient for the complexity of the physical maneuvers required for a large-scale unlocking operation. After having seen this opportunity in the factory during certain complex unjamming situations, the management team realized immediately that the remark previously made by our electrician was quite true.

Shortly after finding that an update to the "360 degree risk analysis" specifically for more complex releases was needed, a first version of what is now called the "complex release permit" was introduced at the factory for trial and error.

After a few adjustments, we then trained all the plant's personnel to use the new tool. Also, we planned and taught the team members the conditions for using the "complex release permit" to differentiate it from the "360 degree risk analysis".

Examples of when the "complex release permit" should be used include:

- When an employee is experiencing this type of unlocking for the very first time.
- When three (3) people are required to perform the unlocking.
- When a tool used by the maintenance department is required for the intervention.

With this approach, each time that individuals uses the "complex release permit", the supervisor in charge of the team must also participate and finally sign off on it in order to approve and consent to the corrective measures put forward by the workers concerned. Of course, the supervisor takes advantage of this moment to also suggest preventive measures when necessary.

With the use of this tool, which is better adapted to these particular situations considered more complex or, for the worker who for the very first time encounters a situation of process disturbance at his workstation, the range of risks to be analyzed is much more detailed. In concrete terms, this requires the application of concrete preventive measures applicable to each condition (risk) that could lead to a danger during the execution of the upcoming maneuvers.

In fact, not only does the "complex release permit" cover all of the risk factors contained in the "360 degree risk analysis", but it also addresses the risks associated with:

- The movements that the equipment could produce once the material is released by the worker.
- Risks of falls when accessing the equipment.
- Risks of falls from the same level while the worker is moving while performing the maneuver.
- The risk of hitting structures in confined spaces.
- The risk of being hit by the tool used by the worker during the intervention.
- The risk of being hit by a part that is under tension once it is released.
- And much more...

It should be noted that the "complex release permit" has twelve (12) sections including an average of three (3) sub-questions (Picture #2), not counting part No. 13 intended for the closing of the permit, once the intervention is completed.

Speaking of the last section of the "Complex Release Permit" is the part called "Closing the Permit". This section have a major importance in improving the security of the site because it asks the people involved about the following points:

- Is it possible to fix this blockage so that it does not occur in the future?
- Is it possible to modify the production equipment so that this blockage does not occur in the future?

The objective of these issues is of course to reduce at the source any possibility of recurrence of disturbance situations and blockages requiring the physical intervention of employees in the manufacturing process. Therefore, over the years, there is reason to believe that the organization of work will continuously improve, ensuring an increasingly safe environment for operators of production equipment in addition to increasing the productivity of the plant.

Picture #1: 360 degree analysis safety form» mainly for usual task.

Picture #2: new complex release permit developed at the request of worker and specific for interventions in the process requiring a more physical approach

2. How was this innovation developed and implemented?

The "complex release permit" was introduced into the plant's prevention system at the request of an employee from the maintenance department. It was developed by the team responsible for coordinating workplace safety prevention activities and then tested to gather comments and suggestions from users (from all departments of the plant). Once the adjustments were made, we had the permit printed on a suitable medium to ensure proper circulation and handling of the permit in the plant (to avoid it tearing or being pierced when writing on the various surfaces).

3. Describe the improvements that have been achieved by the implementation of this innovation

The improvements are significant. The critical moment remains the risk assessment prior to the execution of any intervention in a process. When this part is adequately done, the worker is not exposed to any surprise. This results in a planned intervention in a significantly calmer context. The fact that all the aspects to be considered are well controlled has significantly lowered the risk of injury to workers. The last section of the permit section will not only improve the safety of the employees but will also reduce the amount of recurring blockages in the operations. It is therefore a continuous improvement mechanism.

Also, this initiative is now the subject of a corporate procedure in the "wood products" division. All of the group's plants have now imported this procedure into their operations because of the results it generates.

4. When was this innovation implemented and when were positive results first apparent?

This innovation was introduced at our Larouche plant a few years ago. The results were immediately noticeable. Indeed, in addition to ensuring a planned and precise intervention of the operators, this also brought out recurring problems with our production equipment. Many of these problems have been completely resolved over the years.

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Trolley for Bench Test Loading Head

Resolute Engineered Wood
St-Prime, Quebec City, Canada

Contact: Jessica Dubois-Martel, General Manager

Email: jessica.dubois-martel@resolutefp.com

1. Describe in detail the innovative/novel solution that was developed and implemented..

When the lab technician was doing the I-joist Moment testing on the bench test, there was safety issues. They have to remove the loading head, which is very heavy and they do not have a lot of free space to manipulate it. There was hazard for finger crushing or lost the hold of the piece. They also needed to be 2 people to manipulate this piece because of the weight.

A trolley has been develop to avoid technician to lift with their hands the loading head.

Trolley has wheels so it can be moved easily. It is right the height needed to slide the loading head from the bench test to the trolley (or vice versa).

So the loading head is never on the technician hands. Technicians no longer has to force by themselves. There isn't any risk to drop the loading head or to crush fingers while manipulating.





The trolley is placed right above the bench test.¶
 The loading head can be slide right on the trolley.¶
 ¶



2. How was this innovation developed and implemented?

Following a near miss (drop the loading head on the floor due to heavy weight + finger crushing hazards) on this procedure, the mechanical supervisor had the idea to develop a trolley so nobody has to take the part in his hands. He designed on cad his idea then he shared it with the team (lab technician, supervisor, mechanical chief). Everybody loved his idea, so we put it in manufacturing by our mechanical team. Conception started in September 2021 and by the end of October 2021, trolley was in place and the new standard operation procedure was in place.



3. Describe the improvements that have been achieved by the implementation of this innovation.

As soon as the trolley was in place it has given immediate results. Risks are completely eliminate since we do not need to put hands for manipulation and the piece can be slide on the trolley instead of lifting it. risk of entrapment have been completely eliminated. There isn't any coactivity, since technician can do it alone. The trolley also improve the time necessary to do the job.

4. When was this innovation implemented and when were positive results first apparent?

Innovation was implemented in October 2021. Expected results has been instantaneous. Since the trolley is in place, no near miss has been reported.

Improved LOTO Processing Using 270 Degree Laser and Cameras

Roseburg Forest Products Company
Chester, South Carolina

Contact: D. Wade Ratcliff, Jr., CSP – Eastern Regional Safety Manager
Email: wader@rfpco.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

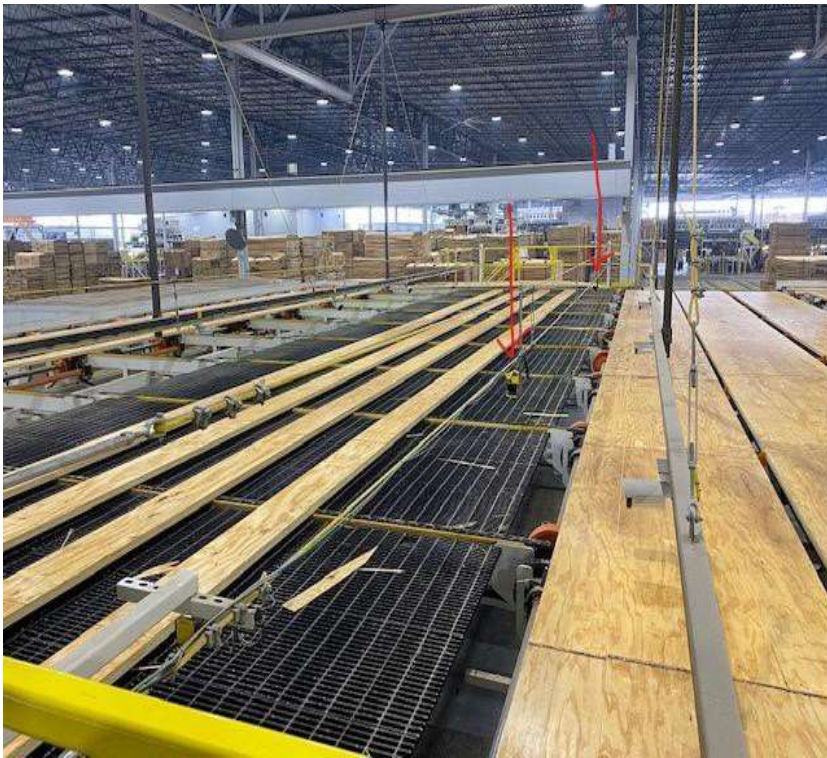
The solution that was developed and implemented was the installation (2) 270-degree lasers to allow a much more efficient way for team members to lock out the equipment prior to inspecting LVL billets. The goal was to reduce the billet inspection time per billet while still locking out the inspection deck per OSHA LOTO requirements. The project was a success and has now allowed the inspection personnel to exponentially increase billet throughput in a 12-hour shift. Additionally, (10) Axis 4K cameras were added on the inspection deck infeed and outfeed. The (10) 4K cameras feed monitors are located at the inspection deck operator station. The inspection deck team members can now see things at their workstations that were impossible to see before without having to take extra time to inspect the billet. The 4K cameras reduced the number of times team members had to walk out on the deck by 75%. Prior to the LOTO laser eyes the inspection deck team members would have to throw a LOTO disconnect several hundred times each shift to inspect billets. If a hands-on inspection is required, team members can simply push a button, open a gate, go out on the deck and inspect the LVL billets, and return to the inspection operator station when done and push a button to start the line back up. Before commencing the new process, OSHA was called to the plant to review the laser LOTO methods being used and found that these methods were consistent with requirements by OSHA in the LOTO regulations and therefore met all LOTO criteria required.



One of (2) 270 degree LOTO safety lasers mounted 6 inches from the grating



The safety LOTO laser scanner placed high enough off the inspection deck so it will not get false readings from the LVL passing by. However, the lasers are low enough to detect a team member even if they are laying on the grating.



The inspection deck in the above picture depicts the area where team members must walk out to inspect the LVL billets. The safety LOTO lasers detect the presence of personnel and eliminate the line from being operated.

2. How was this innovation developed and implemented?

The Safety laser LOTO innovation was developed by members from the maintenance team, plant management, and engineering. The process was introduced to the Regional Safety Manager where it was examined and reviewed for effectiveness. The laser LOTO project was scrutinized heavily to ensure that it met the OSHA requirement for the “Control of Hazardous Energy” (LOTO). Once approved at the Roseburg Corporate Safety level, South Carolina OSHA was invited out to the plant to witness the Safety Laser LOTO Project in action during normal production scenarios. OSHA approved the Laser LOTO stating that it met all the requirements for the Control of Hazardous Energy as required by the LOTO standard.

3. Describe the improvements that have been achieved by the implementation of this innovation.

The Laser LOTO Project innovation has made the billet inspection task safe by ensuring that the grading station chains are locked out and de-energized so the line will not operate during billet inspection. The safety of the entire process of billet inspection has improved because the operators no longer have to think and remember to go pull the disconnect—the safety lasers stop and prevent the line from being started for them. The Laser LOTO Project along with the

4K cameras has exponentially increased production in this area and improved the flow, reliability, and safety of the production process. Due to production data being proprietary, the increased billet count cannot be provided; however, the increase in billet production was noticed immediately.

4. When was this innovation implemented and when were positive results first apparent?

The LOTO Safety Laser System for the billet inspection deck was implemented in July 2021 and the first positive results were noticed immediately. Due to production information being proprietary, the increased production billet count cannot be disclosed; however, billet count was immediately increased exponentially.

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Panel Retention in Press
Roseburg Forest Products Company
Coquille, Oregon

Contact: Ben Nelson, Safety Technician
Email: benjaminn@rfpc.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

We were made aware of a serious industrial incident that occurred at another company with plywood presses similar ours. We set up, started video monitoring at our press unloaders, and discovered that we had the same issue with panels floating out of the unloaders and dropping uncontrolled to the floor. The press operators started tracking of how many times this happened, and noted the time to give us the ability to go back and study video of each occurrence. To prevent the panels from falling uncontrollably we installed an 18" wide, 3/8's thick industrial belt, and 25' long, with a 10lbs weight on the bottom between the "goal posts". The belt is free hanging so the panels could not float out of the unloaders. It also allows the maintenance team easy access to the area buy having the belt free hanging.

2. How was this innovation developed and implemented?

We put a team together that consisted of operators, maintenance, engineers, safety and admin staff. We reviewed videos of the incidents and brained stormed solutions to correct the issue. As a team, we reviewed the ideas gathered during the brain storming session. The tram focused on the ideas that did not interfere with the operation or maintenance of the press. We then talked with the equipment manufactures to make sure the proposed solution would not cause any mechanical or structural issues. We got the go ahead to do it.

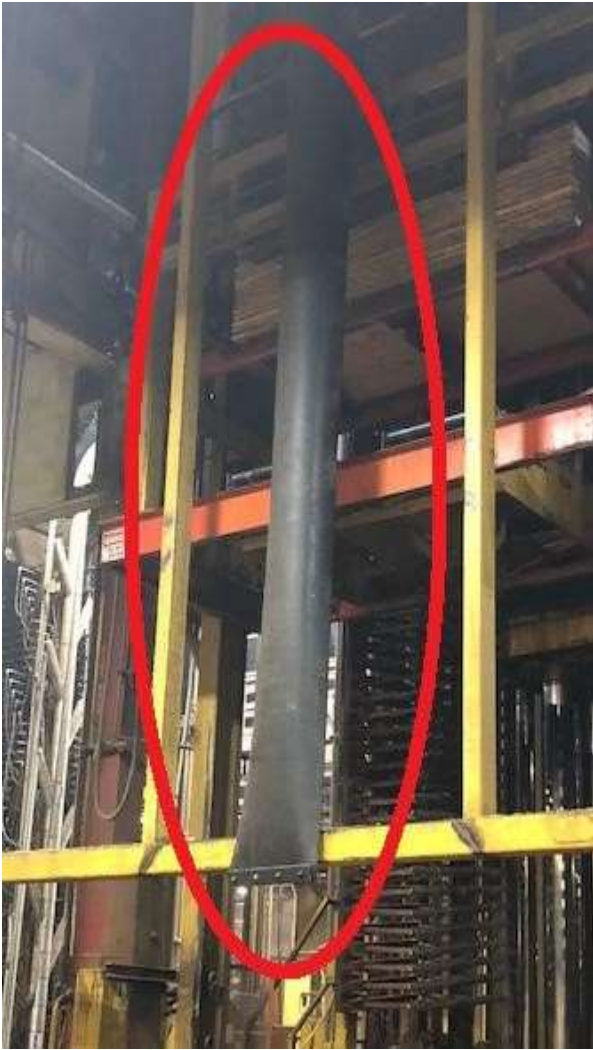
3. Describe the improvements that have been achieved by the implementation of this innovation.

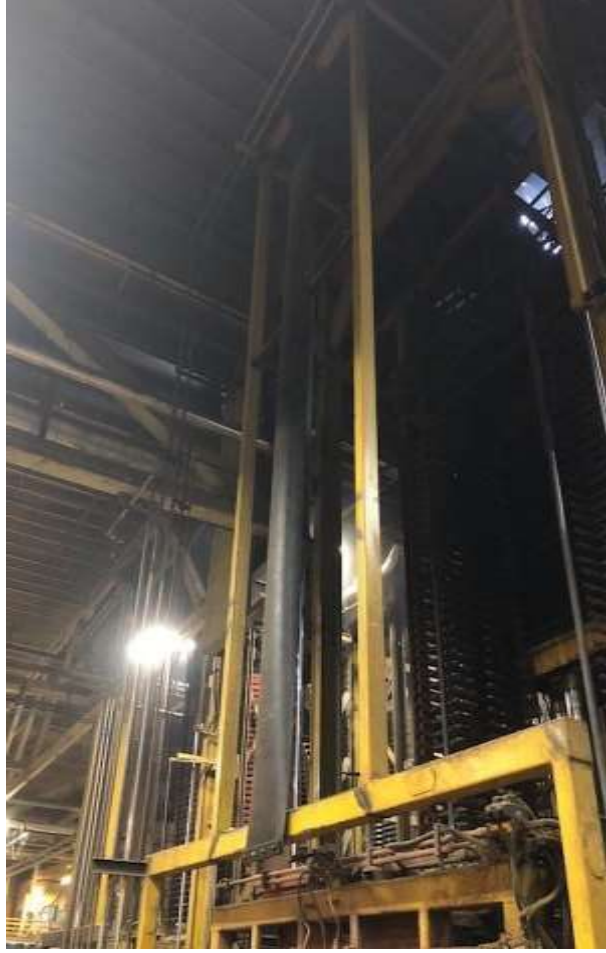
Panels no longer float out of the press unloaders, they stay within the press unloader away from where any team members could be working.

This new device not only keeps our team members working at the presses safer, it additionally does not interfere with any of their daily tasks and can be easily removed for maintenance. We have watched videos of panels floating out and the belt guides them down in a safe direction to a safe location.

4. When was this innovation implemented and when were positive results first apparent?

The belts were installed in September of 2021 and the results were immediate.





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Storm Water Outfall Safety Catwalk

Roseburg Forest Products Company
Coquille, Oregon

Contact: Ben Nelson, Safety Technician
Email: benjaminn@rfpco.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

A catwalk with multiple features was added to one of our site discharge points in order to ensure safety while observing and sampling storm water. The catwalk extends out from the bank and around overlooking the outfall itself. Features of the catwalk include a staircase with a pulley system allowing it to raise up and out of the water, but can be lowered to walk down if necessary, such as maintenance. Right over the outfall point the floor of the catwalk has a removable piece in order to pull water samples with a pole.

2. How was this innovation developed and implemented?

The environmental team had brought this process to the safety team's attention seeking suggestions and assistance developing a solution. After observing the process, it was concluded that this process was unsafe and a catwalk was needed. The environmental and safety teams then collaborated with the maintenance department to develop a solution.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Stormwater Outfall 001 is somewhat secluded from the mill. It is located roughly 100 yards north of the mill along the railroad tracks. There is no traffic or production in that area so when environmental team members inspect and sample the outfall cannot be seen. The team members inspect the outfall weekly and sample multiple times a year, which consists of one of them climbing down a rocky hillside of approximately 3-4 feet with no steps or a ladder and the other being an observer. Previously sampling for pH and temperature is taken by crouching down on a sloped rocky surface and placing pH meter in the flow of water, and holding it there until it displays a steady read. The Team Member then would climb back up the rocky hillside to the bank.

There were several risks in this task that had been tolerated for many years. Slipping or tripping down the bank is the obvious ones, but also not being able to get out or get help if that person was hurt, especially if alone. The risk of hitting their head with a fall and of course the worst circumstance, possibly drowning if unconscious.

The catwalk prevents all of those risks and allows the team members to pull water with a pole and test right up on the catwalk. They have all the access they need by either pulling the removable piece of the catwalk floor up or reaching down along the side the catwalk. The staircase allows access down to the water if maintenance is needed. This also allows one team member to perform inspections safely if necessary.

4. When was this innovation implemented and when were positive results first apparent?

The catwalk was installed in October of 2021. With a couple of alterations, the team members had immediate positive results.





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REW Guard Pin Project
Roseburg Forest Products Company
Riddle, Oregon

Contact: Britany Garate, REW Safety Professional
Email: britanyg@rfpco.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

We fabricated a poka yoke to prevent guarding pins from being misplaced during routine maintenance tasks. This mistake-proofing concept was backed by the simple design feature of adding 1/16th inch cables to guard pins, to prevent them from walking away once guarding was removed.

2. How was this innovation developed and implemented?

The problem was introduced through review of hazard identification submissions. In 2022 we had identified 50 hazard Id's surrounding the removal of guarding pins. In 2021 We established a cross functional team to review this hazard, identify causes and discuss potential actions. During the review of this problem it was found that the guarding pins once removed did not have a home and therefore, would walk away or be misplaced. Thus introducing the hazard of missing pins. A simple yet innovative idea that was suggested was to install cables to the guard pins; so that once guarding was removed, they would remain with the equipment and not be misplaced on carts or in pockets.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Since January of 2021 when this project was implemented there has been a 94 percent reduction in hazards in relation to missing guard pins and a 20 percent decrease in hazards pertaining to guarding in general.

4. When was this innovation implemented and when were positive results first apparent?

The process was implemented in January of 2021. Immediate results were apparent with in quarter 1 of 2021. Within the first quarter of 2021 there were 14 hazards identified in relation to guarding and only one of those pertained to a guard missing a pin.







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Custom Magnetic Latch Guarding

Roseburg Forest Products Company

Riddle, Oregon

Contact: Mark W. Scott, Safety Professional
Email: marksc@rfpc.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Installed magnetic latched Plexiglas shields at the plywood plugging robots replacing bolted on steel guards to facilitate operator maintenance.

2. How was this innovation developed and implemented?

The innovation was developed by our maintenance team, in response to operator input, on the difficulty and frequency of removing the bolted on guards at the plug feeding stations. It is required to remove the guards during "Lock Out Tag Out" conditions for routine cleaning and observation. Development of the magnetic latches required weeks of testing and trials to achieve the optimal magnetic force to prevent inadvertent opening of the guard yet insuring the average operator could exert enough force to open the hinged guard.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Installation of the magnetic guards has reduced the chance of guarding not being correctly removed or installed due to lack of proper tools at the operator level. It also has allowed visual inspection during normal operation to observe plug feeder operation due to the see thru nature of the Plexiglas.

4. When was this innovation implemented and when were positive results first apparent?

The guards were initially installed in June of 2021 with immediate positive feedback from the operators.





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Outside Mobile Equipment Pedestrian Interface

Roseburg Forest Products Company
Roseburg (Weed), Oregon

Contact: Ben Hornsby, Safety Manager
Email: Benjamin.hornsby@rfpco.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

High traffic in the log yard resulted in the potential for serious incident of vehicles striking vehicles and vehicles striking pedestrians. A cross-functional team was created to analyze log yard traffic.

Examples of traffic include:

- Heavy equipment moving logs from trucks and to the barker
- Chip site equipment moving chips and ash
- Log trucks bringing in logs
- Chip trucks bringing and receiving chips
- Scalers driving around scaling logs
- Team Members parking personal vehicles near scale shack
- Team members walking to scale shack to use the time clock
- Team Members cutting through log yard as a shortcut to the time clock and powerhouse.

The cross-functional team came up with a multi-step process to reduce traffic in log yard. Actions include

- Add a time clock to the truck shop and move time clock from the scale shack to the powerhouse. (reduces need to be in the log yard)

Set designated parking areas. Limit parking to designated areas only Add a barrier wall to separate parking area at powerhouse from chip site. Require high visibility clothing in the log yard and chip site high.

2. How was this innovation developed and implemented?

A cross functional team made up of Team Members from the log yard, Leadership team and Safety Committee met to review safety observation data collected and to develop solutions.

3. Describe the improvements that have been achieved by the implementation of this innovation.

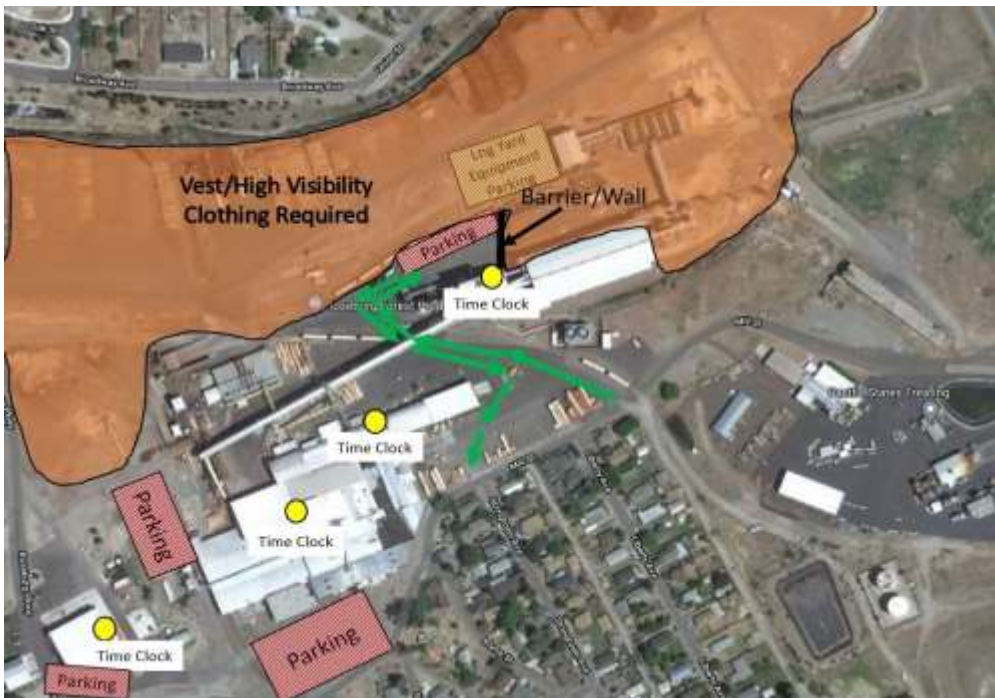
Reducing traffic in the log yard to only essential vehicles has greatly reduced the likelihood of vehicle to vehicle, and vehicle to pedestrian collision.

4. When was this innovation implemented and when were positive results first apparent?

Positive results were observed immediately and have been sustained



Example of barriers put in place to eliminate drive through traffic



Graphic of the solutions developed by the cross functional team addressing log yard traffic.

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Lessons Learned

RoyOMartin
Chopin, Louisiana

Contact: Joey Norment, Safety Manager
Email: joey.norment@royomartin.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

In an effort to reduce severe injuries and engage front line leadership and production team members in the problem-solving process. The Safety Department developed a Lessons Learned concept around High Potential Near Miss and First Aid events that actively engaged the team members and shift leaders in asking themselves: (1) What did we learn from this event (2) What would the team member do differently in the same situation (3) How do we share this knowledge in a short – engaging format with our teams.

2. How was this innovation developed and implemented?

The Safety Department developed a one-page template called “Lessons Learned” that allowed the Shift Leader – Team Member to review and ask questions around the Near Miss / First Aid event that focused simply around: Production Process / Equipment Utilized / Materials Involved / Tools Utilized / Possible Environment Settings / PPE and Employee Corrective Suggestion around the Near Miss / First Aid event.

3. Describe the improvements that have been achieved by the implementation of this innovation.

This information could efficiently be gathered from the incident by the Shift Leader with assistance from the team members involved and template utilized to document the events and lessons learned that could be covered with the immediate crew; within the department itself across all shifts and across the facility and even the entire company to try and further prevent someone else from repeating the incident.

4. When was this innovation implemented and when were positive results first apparent?

The Lessons Learned was implemented in the first quarter of 2021 by the Safety Department and introduced to the Leadership Group. It was quickly adopted as a tool for improvement – employee engagement, involvement, and knowledge share across all levels on High Potential Near Misses and First Aids to reduce potential - serious injuries. The Safety Department initiated training with Shift Leaders – Safety Committee Members and begin the Lessons Learned process across the Chopin Facility.

The Lessons Learned was a success at Chopin in 2021 and was shared with Corporate Leadership during Central Safety Meetings for knowledge share and use across the company.

<u>Incident Date</u> 8/12/21	<u>Incident type:</u> First Aid Injury	<u>Injuries:</u> Metal Struck Lip	<u>Equipment:</u> Dryer 5 Interior
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Brief Summary of Incident:

TM was using the plug up saw to cut veneer that had a tube in a bind. As he was cutting the saw blade came in contact with the tube in the dryer and broke off a piece of the blade sending it towards the PTM. The small piece of metal imbedded into the PTM's upper lip. It was removed by the HS nurse and TM returned to work without issue.



INCIDENT ANALYSIS

Immediate Information:

- *TM stated he was wearing all required PPE.*
- *TM was cutting veneer inside the dryer and the blade came in contact with metal and broke a tip of the blade.*
- *Incidents immediate causes are:*
- *Metal on metal contact between the blade and a tube*
- **Corrective Actions: (1) Review of incident with all shifts. Emphases with team about proper cutting procedures in plug ups. (2) Mandated the use of a face shield when using the plug up saw as shown in 2nd picture above (3) Discuss with leads of communicating and monitoring team members when in plug ups and the Face Shield is being used for proper safety gear to prevent injury.**

Basic or Root Cause(s):

Process

- *Cutting plug up out of the #5 Dryer*

Equipment

- *Pole saw and metal equipment*

Materials

- *Cutting Veneer with Pole Saw*

Environment

- *Working within the Dryer to remove plug up with saw*

PPE

- *Standard PPE required for removing plug ups: gloves safety glasses, arm guards*
- *Face Shield to become standard PPE moving forward*

SITE CORRECTIVE ACTION SUMMARY

1. *Cover Incident with crew in Shift Safety Meeting for Safety Awareness*
2. *Leadership – TM Review of Incident for Lessons Learned / Corrective Actions*
3. *Share Information across the Department for coverage of Incident on ALL Shifts* *Shift Leaders (A-D)*
4. *Develop Lessons Learned for Knowledge Share across the Facility - ROM* *Leadership Team - Safety*

Incident Date 5/21/21	Incident type: High Potential Near Miss Fan Fell from Ceiling	Injury - Damage: Equipment Damage	Equipment: Sonic Air Fan
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Brief Summary of Incident:

At 12:15 am on Patch Line # 2 a Sonic Air fan fell from the ceiling landing on the operator side catwalk. No one was hurt and the fan was safely removed from the patch line. Dalton Baker took possession of the fan, it appears the all thread broke and as the fan fell the safety cable or support cables broke also. The fan landed on the catwalk approximately 5 to 6 feet from a TM that was patching. This is directly in line with TM's patching area and exiting the patch line work area.



Sonic Air Fan Fell from Ceiling

INCIDENT ANALYSIS

Immediate Information:

- TM's working at Patch Line completing normal tasks required at the time of the incident.
- The fan fell within about 5-6' of the nearest TM.
- Initial investigations show immediate causes are: Structural failure of the fan mounts and cable attachments.
- **Corrective Actions: (1) Review of incident with all shifts (2) Complete Near Miss Form (3) Shut Down Sonic Air Fans within department – facility as necessary until deemed safe for operations (4) Conduct LL / RCA of the incident and share across the facility**

Basic or Root Cause(s):

Process
Sonic Air fan positioned above Patch Line # 2 to reduce dust accumulation within the area.

Equipment
Sonic Air Fan mounted from the ceiling

Materials

- Sonic Air Fan held up with fan mounts and 3 cables

Environment
Patch Line # 2 TM's operations places them traveling around and beneath the fan that fell from the ceiling.

SITE CORRECTIVE ACTION SUMMARY

1. Shut Down Sonic Air Fans until investigation completed	5/21/21
2. Complete LL / RCA on the incident for knowledge share	5/24/21
3. Share Information with crews – facility and across ROM	5/21/21
4. Share outcome of RCA – Corrective Actions as applicable	5/31/21

LESSONS LEARNED – KNOWLEDGE SHARE

Incident

- Plant: Chopin Plywood
- Event: Sonic Air Fan Failure – Fell From The Ceiling
- Timeframe: Friday – May 21st - 2021
- High Potential Near Miss
 - Sonic Air Fan Fell From Ceiling – Landing on Patch Line Catwalk
 - Main Support Structure and Safety Cables Failed

Basic - Root Causes:

Process

Sonic Air fan positioned above Patch Line to Reduce Dust Accumulation Within Area.

Equipment

Sonic Air Fan mounted from the ceiling

Materials

Sonic Air Fan held up with fan mounts and 3 cables

Environment

Patch Line # 2 TM's operations places them traveling around and beneath the fan that fell from the ceiling.

Immediate Information:

- *TM's working at Patch Line completing normal tasks required at the time of the incident.*
- *The fan fell within about 5-6' of the nearest TM.*
- *Initial investigations show immediate causes are:
Structural failure of the fan mounts and cable attachments.*



Corrective Actions:

- Shut Down Sonic Air Fans until investigation completed 5/21/21
- Complete LL / RCA on the incident for knowledge share 5/25/21
- Share Information with facility crews and across ROM 5/31/21
- Update / Share Outcome of LL - RCA Corrective Actions / Solutions as applicable 5/31/21



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Belt Winder

**RoyOMartin
Corrigan, Texas**

Contact: Zach Thigpen – Safety Manager
Email: Zachary.thigpen@royomartin.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

The Belt Winder is a custom designed piece of equipment made to assist plant personnel in pulling the main belt onto the forming line. The forming line belt is a single belt going down and back the length of the forming line at approximately 12ft wide. This device incorporates a control panel, motor, gear box, and [not pictured] a separate stand, removeable roller for the belt to wind up on, and shield to guard the operator from chains/gears.

2. How was this innovation developed and implemented

This innovation was developed and implemented with a variety of Team Members ranging from our production, maintenance, and special projects departments. This team was instrumental in prototyping the idea to use a spare motor and roll to make the device.

3. Describe the improvements that have been achieved by the implementation of this innovation.

We have seen drastic improvements in ergonomics and exertion for our Team Members while greatly reducing the installation time. The previous processes to change out the forming line belt required upwards of 20 team members, the use of a skid steer to pull out the old belt and pull in the new one, and tremendous effort from those involved. The process contained hazards ranging from ergonomic risk, slip hazard with dust on the concretes, potential collision with mobile equipment, and took hours to complete. The task now takes fewer than 5 people, far less manual effort, and can be completed in less than an hour plus belt cook time.

4. When was this innovation implemented and when were positive results first apparent?

The belt winder device was first implemented in March 2021 and duplicated at the Oakdale facility shortly after.



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Plexiglass Hatch Install

RoyOMartin
Corrigan, Texas

Contact: Zack Thigpen, Safety Manager
Email: Zachary.thigpen@royomartin.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

The plexiglass hatch/door installation was made to assist plant personnel in trouble shooting equipment without needing to take on any additional risk around moving gears or requiring down time for the system.

2. How was this innovation developed and implemented?

This innovation was developed and implemented with a variety of Team Members ranging from our production, maintenance, and special projects departments.

3. Describe the improvements that have been achieved by the implementation of this innovation.

We have seen improvements from our ability to troubleshoot equipment issues while greatly reducing the risk for our team members by eliminating line of fire and pinch point risks. It has also reduced the need for downtime when an upset within this system occurs.

4. When was this innovation implemented and when were positive results first apparent?

The plexiglass doors were installed in March 2021. Instantaneous results were seen in reducing hazards, increasing uptime, increasing the ease in troubleshooting, and increasing millwright efficiency for maintenance tasks, especially visual PM's.

Before



After



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Area Based Lockout Matrices

Tolko Inc.

Armstrong, British Columbia, Canada

Contacts: Jason Zaffino, Regional Safety Supervisor, Plywood
Email: jason.zaffino@tolko.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

The innovation began with the Armstrong Plywood Joint Health and Safety Committee (JHSC). Based on interviews with workers and new hires the JHSC identified an opportunity to improve lockout training and had an idea to create an entirely new lockout system in the process.

The final lockout system is an area-based lockout matrix that includes 4 different elements (Appendix A).

- a. The top section on the lockout matrix includes a schematic of the equipment with color coded lockout areas. Included in this section are the labelled equipment components which are color coded to their respective energy source (electric = yellow, hydraulic = purple, air = blue).
- b. The top left section provides a legend to locate the isolation points. For example, all the components listed next to yellow lock #1 can be found at yellow lock #1 on the schematic.
- c. The bottom left section provides procedural steps for deenergizing and reenergizing the equipment.
- d. Lastly, the bottom matrix section prescribes the necessary isolations to safely work in the respective colorcoded area of the schematic. If a worker is required to complete a task in the pink area of the schematic, they would find the pink area in the matrix and lockout all the isolation points in that row.

2. How was this innovation developed and implemented?

During routine JHSC meetings, employee concerns were growing over discretionary lockout, inconsistent lockout training and the frequency of events where equipment was locked out differently. These learnings initiated conversations by the JHSC and the recommendation was made to create a lockout system for the Plywood plant. The recommendation was met with full support by the Plywood Superintendent (Management Co-Chair) and the Plywood Plant Manager.

Once the project received support the next task was designing the lockout system.

The JHSC began brainstorming what they wanted the program to accomplish. They wanted,

- workers to have a better understanding of energy sources
- workers to have a better understanding of their equipment components.
- workers to easily be able to find isolation points, and
- clear lockout boundaries that ensured workers were 100% safe.

The first step was to review and research other lockout systems being used across our industry and other industries. Members of the JHSC toured other internal and external operations, researched lockout systems from other industries and past industrial experience. During this stage different area-based lockouts and matrix lockouts were reviewed. When the JHSC reviewed these lockout systems they felt the systems did not meet their needs.

Feedback from the JHSC and workers were that the systems were “bulky”, “hard to understand” and the areas were “not practical”. Once many samples were collected and reviewed the JHSC discussed which program elements they liked best and collaborated to create a template of the Lockout Matrix. This template was then presented to a small group of workers to collect additional feedback. After many revisions the JHSC decided on the template presented.

Once a template was chosen the development of the system began. The JHSC utilized their own internal subject matter experts; Chris Mitchell (Millwright, JHSC member) and John Bisson (Electrician, JHSC Co-Chair). Working with the divisional safety advisor the team began drafting lockout matrices for each machine center regularly reviewing the drafts with the JHSC, operators and area supervisors to receive feedback. One of the concerns with an area-based system was having

clear start and end points to the areas easily identifiable in the field. Throughout the development and review process the lockout boundaries were examined to ensure clear equipment breaks were used and where not available alternate forms of boundary indications were used. This ensured the lockout boundaries were clearly understood by workers and significantly reduced / eliminated the risk of lockout boundary errors.

When the team had a final draft of a lockout matrix, they would perform a field level review with the Production and Maintenance Superintendents. Through this process it was identified that many isolation points were not conveniently located to perform a 100% safe upstream & downstream lockout. The Superintendents would then approve the necessary work to move isolation points to simplify the lockouts and improve compliance.

Once approved the lockout matrices were printed on large poster boards and posted at the machine centers (Appendix B). These poster boards would go on to be an incredible training tool that improved worker understanding of the equipment and energy sources while providing a prescriptive lockout standard for each machine center.

When the Armstrong lockout system was approximately 50% complete other parts of the company began taking notice. The Vice President of Strand Based Business reviewed the lockout matrices and saw an opportunity to adopt the matrix program across the OSB divisions. Following a review with his team, development of the lockout matrices began in all three OSB divisions. The remaining two Veneer divisions also followed and began their own development of area-based lockout matrices. The lockout matrices in Armstrong have been in place for 12 months and the remaining divisions are on pace to have their own lockout matrices completed in 2022.

The process undertaken by the Armstrong JHSC to research, collaborate and receive feedback from workers has created an original lockout system with full worker engagement and excitement. The positive impact on the operation was almost immediate and the adoption by other Tolko divisions has exceeded everyone's expectations.

3. Describe the improvements that have been achieved by the implementation of this innovation.

During the development of the lockout matrices the following safety deficiencies were noted:

- equipment and isolation labelling needed improvement.
- equipment energy sources were not fully understood by production workers (electric vs hydraulic).
- equipment interlocks were not understood by production workers.
- workers would lockout equipment differently depending on the task and their experience.

It was identified that the combination of these deficiencies placed workers at risk of lockout error and serious injury.

Immediately all labelling was replaced and once implemented the lockout matrices corrected the other identified deficiencies:

- all component energy sources were included in the lockout schematic so workers could easily identify what powered each component and how to isolate it.
- All equipment interlocks were reviewed during development and the required isolations included in the matrix
- the lockout matrix prescribed the required lockouts considering all the powered components in the immediate area and included upstream/downstream components. This removed all subjectivity to lockouts and created a prescriptive lockout standard regardless of task and/or experience.

The implementation of the lockout matrices has improved safety awareness, advanced the lockout program, and significantly reduced the risk of lockout errors at Armstrong Plywood. With the expansion of the program to the rest of the panel divisions we look forward to similar safety improvements across two sectors and three provinces.

4. When was this innovation implemented and when were positive results first apparent?

The first lockout matrices were implemented in Armstrong Plywood in February of 2021 and positive results were immediate.

- Trainers and Supervisors had a very clear lockout standard and a system to guide their training and competency program.
- During this training, workers developed a thorough understanding of their equipment components, the energy sources, and the isolation devices.
- The system eliminated all subjectivity and discretion from worker lockouts.

Feedback from workers included:

"I wish we had this 10 years ago"

"It's so easy to follow. I feel well informed and safe every time I need to lockout"

"When I'm training a new worker, I have all the information in front of me. It's easy to explain and easy to demonstrate in the field"

Appendix A- Lockout Matrix Explanation

Below is a legend to identify the location of isolation points. Ex. the components at yellow lock 1 are electrical disconnects located at yellow lock 1 on the schematic.

On the below schematic, workers will identify what area they are required to work in and then find the color-coded lockout requirements in the bottom matrix.

All components are color coded to their respective energy sources.
 yellow = electric
 blue = pneumatic
 purple = hydraulic
 orange = gravity or mechanical control

Lockout Procedure

Isolation Point	Energy Source	Lockout Method	Lockout Location	Lockout Device	Lockout Label	Lockout Color
1	Electric	Lockout	Panel 1	Lockout Device	Lockout Label	Yellow
2	Electric	Lockout	Panel 2	Lockout Device	Lockout Label	Yellow
3	Electric	Lockout	Panel 3	Lockout Device	Lockout Label	Yellow
4	Electric	Lockout	Panel 4	Lockout Device	Lockout Label	Yellow
5	Electric	Lockout	Panel 5	Lockout Device	Lockout Label	Yellow
6	Electric	Lockout	Panel 6	Lockout Device	Lockout Label	Yellow
7	Electric	Lockout	Panel 7	Lockout Device	Lockout Label	Yellow
8	Electric	Lockout	Panel 8	Lockout Device	Lockout Label	Yellow
9	Electric	Lockout	Panel 9	Lockout Device	Lockout Label	Yellow
10	Electric	Lockout	Panel 10	Lockout Device	Lockout Label	Yellow
11	Electric	Lockout	Panel 11	Lockout Device	Lockout Label	Yellow
12	Electric	Lockout	Panel 12	Lockout Device	Lockout Label	Yellow
13	Electric	Lockout	Panel 13	Lockout Device	Lockout Label	Yellow
14	Electric	Lockout	Panel 14	Lockout Device	Lockout Label	Yellow
15	Electric	Lockout	Panel 15	Lockout Device	Lockout Label	Yellow
16	Electric	Lockout	Panel 16	Lockout Device	Lockout Label	Yellow
17	Electric	Lockout	Panel 17	Lockout Device	Lockout Label	Yellow
18	Electric	Lockout	Panel 18	Lockout Device	Lockout Label	Yellow
19	Electric	Lockout	Panel 19	Lockout Device	Lockout Label	Yellow
20	Electric	Lockout	Panel 20	Lockout Device	Lockout Label	Yellow
21	Electric	Lockout	Panel 21	Lockout Device	Lockout Label	Yellow
22	Electric	Lockout	Panel 22	Lockout Device	Lockout Label	Yellow
23	Electric	Lockout	Panel 23	Lockout Device	Lockout Label	Yellow
24	Electric	Lockout	Panel 24	Lockout Device	Lockout Label	Yellow
25	Electric	Lockout	Panel 25	Lockout Device	Lockout Label	Yellow
26	Electric	Lockout	Panel 26	Lockout Device	Lockout Label	Yellow
27	Electric	Lockout	Panel 27	Lockout Device	Lockout Label	Yellow
28	Electric	Lockout	Panel 28	Lockout Device	Lockout Label	Yellow
29	Electric	Lockout	Panel 29	Lockout Device	Lockout Label	Yellow
30	Electric	Lockout	Panel 30	Lockout Device	Lockout Label	Yellow
31	Electric	Lockout	Panel 31	Lockout Device	Lockout Label	Yellow
32	Electric	Lockout	Panel 32	Lockout Device	Lockout Label	Yellow
33	Electric	Lockout	Panel 33	Lockout Device	Lockout Label	Yellow
34	Electric	Lockout	Panel 34	Lockout Device	Lockout Label	Yellow
35	Electric	Lockout	Panel 35	Lockout Device	Lockout Label	Yellow
36	Electric	Lockout	Panel 36	Lockout Device	Lockout Label	Yellow
37	Electric	Lockout	Panel 37	Lockout Device	Lockout Label	Yellow
38	Electric	Lockout	Panel 38	Lockout Device	Lockout Label	Yellow
39	Electric	Lockout	Panel 39	Lockout Device	Lockout Label	Yellow
40	Electric	Lockout	Panel 40	Lockout Device	Lockout Label	Yellow
41	Electric	Lockout	Panel 41	Lockout Device	Lockout Label	Yellow
42	Electric	Lockout	Panel 42	Lockout Device	Lockout Label	Yellow
43	Electric	Lockout	Panel 43	Lockout Device	Lockout Label	Yellow
44	Electric	Lockout	Panel 44	Lockout Device	Lockout Label	Yellow
45	Electric	Lockout	Panel 45	Lockout Device	Lockout Label	Yellow
46	Electric	Lockout	Panel 46	Lockout Device	Lockout Label	Yellow
47	Electric	Lockout	Panel 47	Lockout Device	Lockout Label	Yellow
48	Electric	Lockout	Panel 48	Lockout Device	Lockout Label	Yellow
49	Electric	Lockout	Panel 49	Lockout Device	Lockout Label	Yellow
50	Electric	Lockout	Panel 50	Lockout Device	Lockout Label	Yellow
51	Electric	Lockout	Panel 51	Lockout Device	Lockout Label	Yellow
52	Electric	Lockout	Panel 52	Lockout Device	Lockout Label	Yellow
53	Electric	Lockout	Panel 53	Lockout Device	Lockout Label	Yellow
54	Electric	Lockout	Panel 54	Lockout Device	Lockout Label	Yellow
55	Electric	Lockout	Panel 55	Lockout Device	Lockout Label	Yellow
56	Electric	Lockout	Panel 56	Lockout Device	Lockout Label	Yellow
57	Electric	Lockout	Panel 57	Lockout Device	Lockout Label	Yellow
58	Electric	Lockout	Panel 58	Lockout Device	Lockout Label	Yellow
59	Electric	Lockout	Panel 59	Lockout Device	Lockout Label	Yellow
60	Electric	Lockout	Panel 60	Lockout Device	Lockout Label	Yellow
61	Electric	Lockout	Panel 61	Lockout Device	Lockout Label	Yellow
62	Electric	Lockout	Panel 62	Lockout Device	Lockout Label	Yellow
63	Electric	Lockout	Panel 63	Lockout Device	Lockout Label	Yellow
64	Electric	Lockout	Panel 64	Lockout Device	Lockout Label	Yellow
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66	Electric	Lockout	Panel 66	Lockout Device	Lockout Label	Yellow
67	Electric	Lockout	Panel 67	Lockout Device	Lockout Label	Yellow
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74	Electric	Lockout	Panel 74	Lockout Device	Lockout Label	Yellow
75	Electric	Lockout	Panel 75	Lockout Device	Lockout Label	Yellow
76	Electric	Lockout	Panel 76	Lockout Device	Lockout Label	Yellow
77	Electric	Lockout	Panel 77	Lockout Device	Lockout Label	Yellow
78	Electric	Lockout	Panel 78	Lockout Device	Lockout Label	Yellow
79	Electric	Lockout	Panel 79	Lockout Device	Lockout Label	Yellow
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83	Electric	Lockout	Panel 83	Lockout Device	Lockout Label	Yellow
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87	Electric	Lockout	Panel 87	Lockout Device	Lockout Label	Yellow
88	Electric	Lockout	Panel 88	Lockout Device	Lockout Label	Yellow
89	Electric	Lockout	Panel 89	Lockout Device	Lockout Label	Yellow
90	Electric	Lockout	Panel 90	Lockout Device	Lockout Label	Yellow
91	Electric	Lockout	Panel 91	Lockout Device	Lockout Label	Yellow
92	Electric	Lockout	Panel 92	Lockout Device	Lockout Label	Yellow
93	Electric	Lockout	Panel 93	Lockout Device	Lockout Label	Yellow
94	Electric	Lockout	Panel 94	Lockout Device	Lockout Label	Yellow
95	Electric	Lockout	Panel 95	Lockout Device	Lockout Label	Yellow
96	Electric	Lockout	Panel 96	Lockout Device	Lockout Label	Yellow
97	Electric	Lockout	Panel 97	Lockout Device	Lockout Label	Yellow
98	Electric	Lockout	Panel 98	Lockout Device	Lockout Label	Yellow
99	Electric	Lockout	Panel 99	Lockout Device	Lockout Label	Yellow
100	Electric	Lockout	Panel 100	Lockout Device	Lockout Label	Yellow

If workers are required to work in the pink area (identified on the schematic) they will find the pink area on the matrix and lockout all the components identified in that row.

Appendix B- Lockout Matrices at Machine Centers

TOLKO #1 Dryer Infeed Lockout Procedure

Permitted Person: [Name]

Lockout Points: [Diagram showing lockout points on the machine]

Lockout Procedure:

1. Stop the machine.
2. Lock out the machine.
3. Verify the machine is locked out.
4. Perform the maintenance work.
5. Remove the lockout.
6. Test the machine.
7. Report the work to the supervisor.

Lockout Matrix:

Lockout Point	Lockout Device	Lockout Location
1	Yellow	Control Panel
2	Blue	Emergency Stop
3	Red	Power Switch
4	Green	Interlock Switch

TOLKO #3 Dryer Infeed Lockout Procedure

Permitted Person: [Name]

Lockout Points: [Diagram showing lockout points on the machine]

Lockout Procedure:

1. Stop the machine.
2. Lock out the machine.
3. Verify the machine is locked out.
4. Perform the maintenance work.
5. Remove the lockout.
6. Test the machine.
7. Report the work to the supervisor.

Lockout Matrix:

Lockout Point	Lockout Device	Lockout Location
1	Yellow	Control Panel
2	Blue	Emergency Stop
3	Red	Power Switch
4	Green	Interlock Switch

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The Pink Panther
Tolko Industries
Slave Lake (Athabasca), Alberta, Canada

Contact: Marsha Bell, Regional Safety Advisor
Email: Marsha.bell@tolko.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

A small team of maintenance employees at Tolko's Athabasca OSB plant developed an innovative solution for testing hydraulic cylinders that reduced the frequency of seal failures, hydraulic oil fires and subsequent injury risks associated with removing and rebuilding press cylinders.

When hydraulic cylinders fail, the press was cooled so maintenance workers could enter through the press platens to remove, repair and replace. Once rebuilt, the hydraulic cylinders were pressure tested to 90psi of available pneumatic pressure. Once reinstalled in the press and pressured up to 5000psi however, cylinders would often blow a seal and fail immediately. On 4 occasions in 2020/2021 hydraulic cylinders failed upon re-pressurizing. These failures were exposing workers to falls, forceful exertion, heat exposure, pinch points and air quality concerns. Additionally, the hydraulic fire risk, and production downtime was identified by the maintenance crew as a problem they would like to tackle before the September 2021 annual shutdown, where 130 hydraulic cylinders were scheduled for rebuild.

In early 2021, a mechanical engineering co-op student, Moez Khadim, and some maintenance crew members designed a testing bench that could test cylinder seal pressure of up to 660,000psi. Eric Knudsen (welder) fabricated the testing bench, and a professional engineer approved the design. The bench consists of a platform, frame and cap whereby the cylinder is hoisted onto the bench and the cap is pinned in place.

The cylinder is then pressurized with a portable hydraulic ENERPAC to test seal integrity.



The testing bench has a cap that is secured by pins. A crane is used to take the cap off, and then to position the cylinder inside the bench.



The crane is then used to place the cap back on, and the unit is secured with safety pins. The bench is then pressurized using a portable hydraulic ENERPAC unit. Dwight McGlynn and Mitchell Raymond work on developing a testing process.



The bench is then pressurized using a portable hydraulic ENERPAC unit.



Once built, the team asked their Supervisor what colour it should be painted. The supervisor said, "I don't have a preference...you can paint it pink if you want!" They decided pink was the perfect colour, and the bench has earned the name **"The Pink Panther"**

How was this innovation developed and implemented?

The maintenance workers pitched the idea to their Supervisor and Superintendent, who then provided the resources, materials and time to create the bench. After fabrication, the plant millwrights developed a testing protocol and pass criteria, along with a plan for testing all 130 hydraulic cylinders over the 2 week shutdown in September 2021. The heaviest cylinder is 1200lbs and must withstand a total of 660,000 psi. All 130 rebuilt cylinders were testing using the testing bench, during the 2 week shut down, and none failed upon repressuring.

2. Describe the improvements that have been achieved by the implementation of this innovation.

In the year prior to using the testing bench, hydraulic cylinders were replaced weekly, and 4 hydraulic cylinders failed upon re-pressuring. Since the bench was introduced in July, none of the 130 cylinders installed during the shut-down failed upon re-pressuring indicating an immediate benefit. The bench has improved reliability and confidence in the hydraulic cylinder repair, and reduced downtime of up to 8h to cool, remove, repair and reinstall. By reducing these failures, the risk to maintenance workers to perform this task has been dramatically reduced, along with the fire risk associated with high temperature ignition of hydraulic fluid.

3. When was this innovation implemented and when were positive results first apparent?

The innovation was implemented in September during the annual shut. Prior to implementation, repressurizing failures occurred every 2-3 months on weekly cylinder repairs meaning that roughly 1 in every 12 cylinders would fail upon repressurizing (10% failure rate). Since the testing bench was introduced 5 months ago, 130 cylinders were installed and zero have failed (0% failure rate). During the next shutdown, the remaining 130 cylinders will be removed and replaced, completing the project, and allowing a safer, better planned and more reliable method of equipment maintenance. Additionally, The Pink Panther has caught on! The local fabrication shop in Slave Lake was so impressed with the design, they have since fabricated their own testing bench.

Dryer Thermal Stress Reduction

Weyerhaeuser
Kalispell, Montana

Contact: Kyle Cram, Complex Manager
Email: kyle.cram@weyerhaeuser.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Kalispell dryer associates reported thermal stress concerns when clearing plug-ups at the dryer infeed.



Wet Bulb monitor



Wet Bulb



System in action



Cart Set-up



SOP attached to the cart for understanding and execution

2. How was this innovation developed and implemented?

With the assistance of our safety team, we used a wet-bulb globe-temperature (WBGT meter) to capture thermal stress data which was compared to the American Conference of Government Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) for thermal stress. The team assembled a cart consisting of a large fan, a timer, and an extension cord outfitted with a GFCI.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Prior to working on a plug up at the dryers, the fan carts are turned on to blow air on the dryer openings for 10 mins. This simple solution reduced exposures by 32.5°F (WBGT, thermal stress) and resulted in exposures below the ACGIH Action Level.

4. When was this innovation implemented and when were positive results first apparent?

The success of this device was a significant win for the dryer team that resulted in reduced thermal stress risk and improved employee comfort and morale.

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Early Detection Spark Camera

Weyerhaeuser
Kalispell, Montana

Contact: Kyle Cram, Complex Manager

Email: kyle.cram@weyerhaeuser.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

At our dryers, we wanted a way to be able to detect sparks and smolders as early as possible in dryers. Historically, fires usually start at the floor area and by the time they are detected with process controls and other means, the fire is well established. We came up with the idea to use a night vision camera. We modified the camera using silicon to black out red light and installed a fan to the system to ensure the ambient heat does not ruin the camera. This was mounted this system in the middle of a hollow tube covered by high temperature glass, with metal shades fabricated to the system to keep light out of the system to ensure the camera remains effective. Sparks, flames, and smolders show up as white light on a monitor in direct line of sight our dryer crews in the control shack.



Multicomp Fan



Lorex Night Vision Camera



System installed on the Dryers



Camera Feed to Dryer Shack, White Hot indicates Fire/sparks

2. How was this innovation developed and implemented?

This was a joint effort spearheaded by our dryer crews. With the help of the safety department, electrical and maintenance team, we were able to fabricate this system and have it installed on our dryers. Not only is this system extremely efficient in identifying fires or fire conditions early, but it was also extremely cost effective to install. We were able to install this system on both of our dryers and the process took less than a week to complete for less the \$5,000 in parts in labor to do inhouse. We used a Lorex model MC7711 camera, purchased off the shelf from COSTCO; Silicone was on hand with our site; and fan model was a Multicomp MC19684 AC 115 V 0.26/0.24 A fan.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Since installation in early 2020 our two camera systems have detected over 25 fires/fire conditions that resulting in zero injuries and zero equipment damage by being able to respond immediately to the situations. This system can be easily replicated with other sites. Not only does this allow for early detection to allows us to use our mist fire suppression system, often times this does not prevent us from stopping production or potentially damaging our equipment and veneer by using our deluge systems to fight a larger fire.

4. When was this innovation implemented and when were positive results first apparent?

We saw immediate results with detection of fires shortly after implementation.

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****END OF 2021 PRACTICES****

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2020 Reports

[Boise Cascade Co. - SawStops](#)

Reduced human to product contact by replacing table saws with the SawStops

[Boise Cascade Co. - Self Retracting Lifeline](#)

The two-track system allows teams of two to tamp and tighten down bolts while providing fall protection for all associates involved in the evolution

[Boise Cascade Co. - KPF Info Safety Application](#)

Safety application for a cell phone and tethered it with a mass texting program we call KPF Info

[Boise Cascade Wood Products, LLC - Lock-Out Simulator Training Board](#)

Help new hire team members understand how to control the risk associated with energy sources

[Norbord Inc. - Safety Devices in High Risk Pedestrian Areas](#)

Designated pedestrian walkways with safety gates and safety signals at pedestrian crossings

[Resolute LP Larouche - Miniature Nester](#)

Developed a specialized tool for this task to eliminate crushing hazard

[Resolute LP St-Prime - IJ Positioning Tool](#)

Tool makes the right space to insert an I-Joist

[Roseburg Forest Products Co. - Laser Light Curtain](#)

Laser light curtains stops the line anytime a team member breaks the plane of the laser while standing on the ergonomic floor mats and wrapping LVL billets

[Roseburg Forest Products Co. - Plywood Boiler Safety Gear](#)

Reduced recordable and DART rate at the facility and improved moral of team members with safer / more comfortable work environment, and improved ergonomics for the task of cleaning grates

[Roseburg Forest Products Co. - Plywood LED Safety Whips](#)

Safety teams identified the LED whips as one of the best options available to increase the profile of mobile equipment throughout the facility and developed an action plan to install them mill wide

[Roseburg Forest Products Co. - Oregon COVID Control Plan and Training](#)

How Coquille Plywood will be adhering to State of Oregon and Oregon OSHA requirements

[RoyOMartin - OSB Pin Removal Bracket](#)

Device to improve the safety of the job task to remove pins from arms to the press

[Tolko Industries Ltd. - Pandemic Response Team](#)

Tolko's Pandemic Response Team (PRT) was activated to respond to Canada's federal government and provincial health authorities declaration of COVID-19 pandemic

[Tolko Industries Ltd. – Restructure and Stabilize Logyard Terrain](#)

The log yard was excavated and restructured to improve overall stability of the ground

[Weyerhaeuser - Bucket Heater Reset Tool](#)

The reset tool was fabricated to help reset the heaters without having to open the bucket

[Weyerhaeuser - DSE Hot Oil Valves](#)

Installation of electric powered shut off valves for hot oil primary pump inlet piping

[Weyerhaeuser – Metal Wall](#)

Construction and implementation of a metal wall to prevent 20' long falling logs to enter travel/work area

[Weyerhaeuser – Vat Fall Protection](#)

Installed overhead gantry style fall protection systems for out Vat area

[Weyerhaeuser – Use of Drones to Eliminate Hazard Areas](#)

Utilizing drones in innovative ways to remove people from the action and to eliminate hazard exposure

Boise Cascade Co. – Saw Stops

Contact: Justin Nield, Safety Coordinator
Email: justinnield@bc.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Homedale Beams was able to replace three table saws with SawStops. The plant manager and members of the CSC team had the thought and goal of reducing as much human to product contact as possible for the year 2020. Although replacing table saws with the new SawStops didn't eliminate the human to product contact, it did make it safer for associates using them.





2. How was this innovation developed and implemented?

Associates of Homedale Beams that use the table saws daily, knew the risks involved with using table saws and the possibility of cut fingers and or hands, with the possibility leading up to amputations of fingers depending on the severity. Associates, CSC members and members of management got together and discussed what work areas were utilizing table saws the most and were able to come up with three specific areas. SawStops were purchased and swapped out with the old table saws. Once the SawStops were in place, the plant was shut down for training and commission on the saws. There was a demonstration done by using a hot dog that represented a finger.

3. Describe the improvements that have been achieved by the implementation of this innovation.

By replacing the old table saws with the new SawStops, it has improved the safety systems on equipment that is utilized numerous times a day for various jobs. The risk of a cut finger is always there, and everyone knows it, yet the associates still use these new SawStops with great caution and respect.

Associates feel safer when using these saws due to demonstrations that were shown during the training portion of introducing the new SawStops to our plant.

4. When was this innovation implemented and when were positive results first apparent?

Positive results were from the get-go with associates witnessing firsthand what happens to a hot dog when it touches the blade. The information gathered from associates during and after the demonstration was that they immediately felt safer knowing the reaction time of the saw stop getting actuated when the hot dog touched the saw blade, then for all associates to see that there was only a tiny mark on the hot dog reassured them of their safety and that Boise Cascade will do what it takes to make Homedale Beams a safer workplace. Safe because we care.

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Boise Cascade Co. - Self Retracting Lifeline

Contact: Justin Nield, Safety Coordinator
Email: justinnield@bc.com

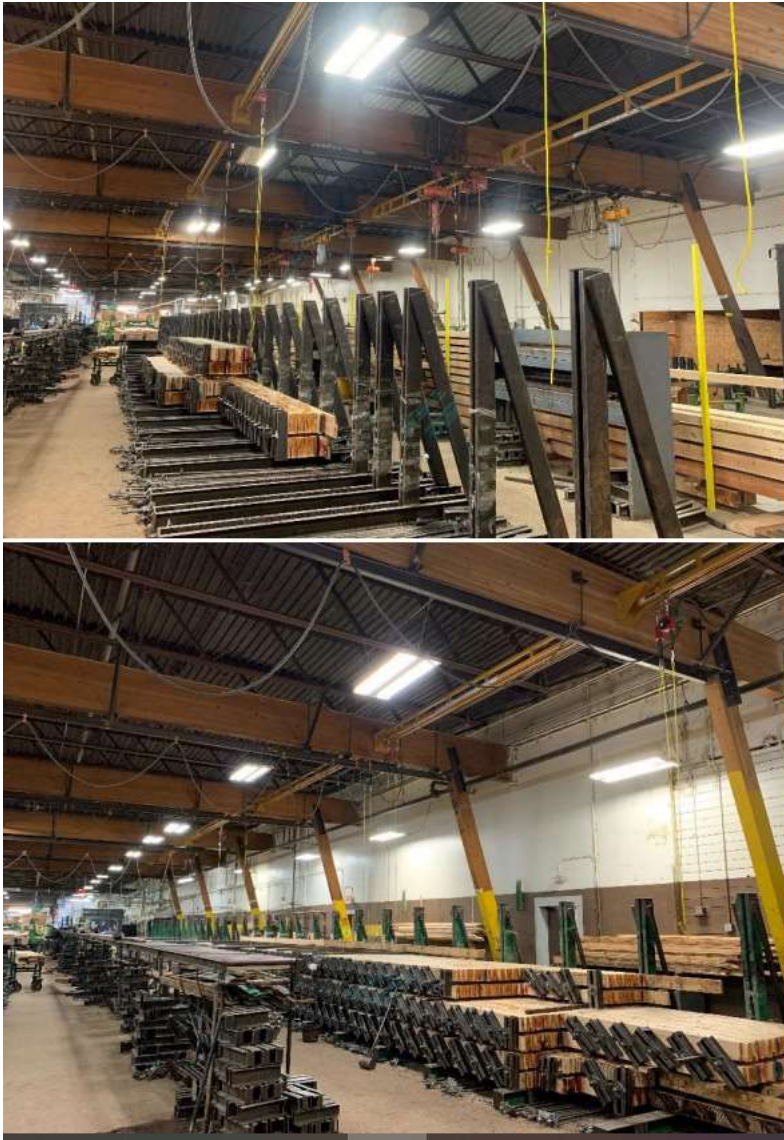
1. Describe in detail the innovative/novel solution that was developed and implemented.

In 2020 Homedale Beams implemented a fall protection plan for the associates working in the Layup Lockup area. Due to multiple lock ups being stacked on one another, associates were constantly having to climb on top of them, putting themselves above four feet and not having any type of fall protection.

Due to the complexity of the process flow, a fall protection system could not be placed at the same level as the hoists. Beams are glued in the racks and pulled from the racks with hoists that run perpendicular to the racks. Anything mounted below the bottom on the hoists would block the conveyance of the beams from racks to the next work center. Beams range from 8' – 80' or longer; this length spans greater than the distance between sets of hoists.

The mill was forced to find an option that would keep our associates safe and not stop production, we landed on a recessed and sectional fall protection system. The two-track system allows teams of two to tamp and tighten down bolts while providing fall protection for all associates involved in the evolution.





2. How was this innovation developed and implemented?

The associates in the Lockup Department and supporting staff white boarded multiple options over a 12– 18-month period to no avail. Options evaluated included a fold down platform, fold down retainer bar, suspended wire with tension and many other ideas. Someone on the team found a track system and the idea to mount them recessed was born. The facility contacted two vendors and one was awarded the job to come mount the two-track system.

The vendor was brought back after the installation was completed to conduct multiple crew trainings as part of the commissioning process. The crews were issued harnesses and taught how to wear them properly. To remove any possibility of associates violating the OSHA regulated four foot height, the crews decided on a rule of two or more lockups high requires being strapped into the fall protection system.

3. Describe the improvements that have been achieved by the implementation of this innovation.

A few of the improvements for us here is being compliant with OSHA for working at heights, reducing the potential of injury if someone was to fall from climbing, working on, or descending from a lock up. The Self Retracting Lifeline (SRL) is on a two-track system allowing the associates to move along the lockups and keeping the SRL above them, eliminating the hazard known as "swing path" if an associate was to fall. So, the harness and SRL catch them and there really is no swing path with how it is designed. We are not willing to risk anyone's safety for doing the work that requires working at four feet and above.

Being able to be Proactive and noticing the potential for a fall by any associate vs reactive and fixing a problem after the fact was what we had in mind here at Homedale Beams.

4. When was this innovation implemented and when were positive results first apparent?

Training on Fall Protection was done by Boise Rigging once the rails were installed and the Self Retracting Lifeline (SRL) were in place. Harnesses were purchased and issued out to each associate involved in Layup Lockup. Associates were also trained on inspections of harnesses and the SRL. Now every time they climb on a lockup that is four feet or greater, they inspect their fall protection before each use. Safe because we care.

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Boise Cascade Co. - KPF Info Safety Application

Contact: Tim Walker, Safety Coordinator
Email: timwalker@bc.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

The team at Kettle Falls plywood partnered with a local app developer to create a safety app for a cell phone and tethered it with a mass texting program we call *KFP Info*. Covid-19 restrictions and distancing struck at the core of our safety success, employee engagement and communication. To combat these restriction, the team at Kettle Falls plywood leveraged current technology and partnered it with their successful “All-In-One” safety card program to create an efficient way employees can record identified hazards, communicate those hazards, perform observation, and conduct a variety of other safety check activities. The application interface was specifically designed to look and “feel” just like the current All-In- One safety card. Sections of the safety application are intuitive and follow along in the similar format of our card stock version of the safety card. The objective was to embrace the use of current technology and marry that familiar technology to our current safety program. The second critically important component to maintaining employee safety communication during 2020 was the use a third-party mass texting program we term as *KFP Info*. This mass texting program is an off-the-shelf item used at Kettle Falls Plywood to communicate out critically important aspects of site safety and safety events. This all voluntary mass text program started off with approximately 50% of our employees volunteering to be included but within weeks, we had over 85% of the remaining employees ask to be included (The others we believe don't have cell phones). The mass text program is critical in maintaining that communication link to our people on topics including hearing protection reminders, incidents on site, snow-plowing plans, contact tracing standards, congratulations to 1500 days safe for our graveyard crews, and other important pieces of information our people need!

These innovative uses of technology were driven by the challenges we faced in 2020 but now have become integral in the way we conduct safety today.

2. How was this innovation developed and implemented?

As stated above, the app was a culmination of management partnering with the employees. The app took several months to develop and implement. The process started with a discussion on what would be the best way to share information with today's technology and that led us down a road of choosing cell phones as the medium of choice. The easy to use and understand user interface, drives a very powerful communication tool. As the app developed, the changes became more pinpointed and the app design morphed into a multi-functional tool instead of only for communicating hazards. The mass texting program in an off-the-shelf item adapted to our safety needs.

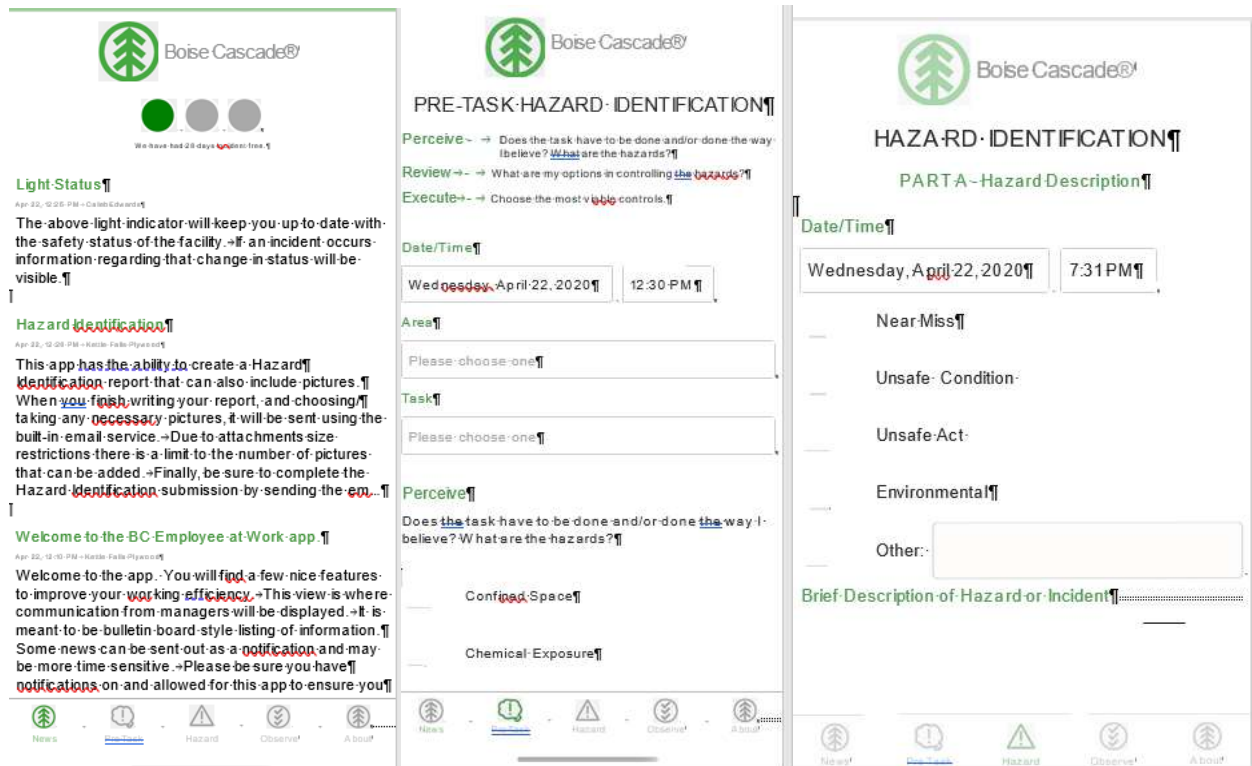
3. Describe the improvements that have been achieved by the implementation of this innovation.

Long before Covid-19 became a concern, site surveys have identified communication as the number one opportunity for correction. When the controls for Covid-19 were put into place in January 2020, communication became challenging. *KFP Info* mass texting program and the app has given employees a medium to connect with each other and to drive a safe work environment. The ability to share information from the

bottom up and top down during a pandemic has supported keeping our recordable incident rate low. When an emergency occurs, having an emergency checklist that supervisors can access 24-7 is important. To have a physical list and be able to act upon it, has demonstrated value with timely notification and response. One of the best features is the ability to communicate with shifts on and off site within a few seconds, with little effort.

4. When was this innovation implemented and when were positive results first apparent?

The application and mass texting implementation were completed and rolled out in late spring, May 2020. The results have included quicker response time on hazards that were not being reported on due to communication gaps. In the past, we would have daily meetings to discuss abatements, but communication barriers during the pandemic prevented open communication for the first few months until the app was launched. After the app was launched, personnel could communicate timelier about what they were seeing, and that knowledge moved our us from being reactive about hazards to be able to plan and be proactive. As the app spread by word of mouth and through success, more site personnel have started using the features, bettering communications. This app has helped us to keep employees safe and has positively impacted the site safety.





Boise Cascade®

OBSERVATION CHECKLIST

Mark all items where the observed is at-risk.

Date/Time

Wednesday, April 22, 2020 7:31 PM

Area

Please choose one

Shift

Please choose one

Type of Work

Type of Work

What was observed? Section Break (Next Page)



Boise Cascade®

Boise Cascade at Work 1.0 (13)

This application is designed to be a gateway for workplace activities for the employees of select Boise Cascade facilities.

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Boise Cascade Wood Products, LLC - Lock-Out Simulator Training Board

Contact: Ronnie Morris, Safety Coordinator
Email: ronniemorris@bc.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Our plant safety committee had a vision to build a lock-out training board to help new hire team members understand how we control the risk associated with energy sources. Part of the decision came from feedback they were getting; new hires needed more lock-out tag-out training before being assigned to their crew.

With the help of our maintenance department, we built what we call a Lock-out Simulator Board. The board is powered through a 120v system and is programmable, meaning we can make changes to allow the trainer to select different scenarios. Each lock-out point has a hidden switch which is connected to a PLC. During the verification phase of the lock-out procedure, the control panel will indicate any mistakes made by a team member when the test try button is pressed.

We have three different procedures written for the training board. They are written using the same format we use for the mill. The employee follows each line item on the procedure until the lock-out is complete including the energy verification. One of the written procedures has a built-in error, at the verification step a light will come on indicating the error. The idea is to get the team members to Stop, Think and Ask should they be exposed to this in the field.

2. How was this innovation developed and implemented? (How was it introduced, process used, people/positions/teams involved, etc.)?

When I explained the thoughts behind the lock-out board to our plant manager, he was fully supportive. He felt like was a great idea to improve lock-out training, especially to those with no prior experience. With his support the committee members went straight to work.

During our next monthly committee meeting, we discussed what we wanted the board to look like and how we wanted it work in order to give the user a realistic view of energy control and Arc flash safety. The next meeting, we developed a list of materials which some we had already had in supply.

Our millwrights started to assemble / build the frame and attached the plywood when their scheduled allowed them time. The committee members met again to decide where to position all our lock point components (manual valves, disconnects, control panel, lock box). Between the millwrights and electricians, they figured out unique ways to install small limit switches hidden behind the manual valves. Once the valve handle is in the off position the limit switch is made which feeds the signal to a small PLC. This gives us the ability to program different lock-out scenarios.

New hires are now using the tool during orientation. The lock-out board is also used as a training tool to teach employees where to stand to help minimize the safety impact should an arc flash occur. Some supervisors are using the board to complete annual refresher training. With help from our millwrights who built the frame and attached all the lock-out points and the electricians who completed the wiring and program all while using input from members of the safety committee this program has been successful.



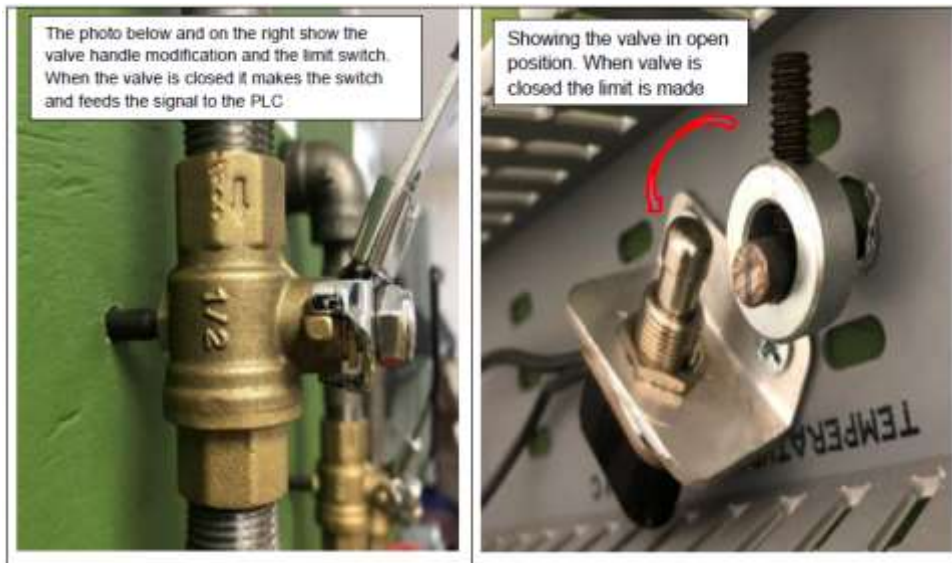
3. Describe the improvements that have been achieved by the implementation of this innovation.

The biggest improvement is giving employees an advantage to learn how to perform lock-out tag out while in a controlled environment with an instructor present. In this environment mistakes would not lead to an injury. When a newly hired employee starts his or her shift, they already have some exposure and it helps lower our risk involved in lock-out tag out by giving the added safety awareness. When a new team member is trained how to safely perform a lock-out they have some knowledge to recognize when a peer is not following procedure and can potentially intervene. We stress safety interventions and it's a big part of our safety culture.

4. When was this innovation implemented and when were positive results first apparent (provide month and year for each)?

We implemented the tool in June of 2020. We had positive responses immediately from new hires being able to practice and learn the safety impacts of lock-out tag out. We also include Arc Flash hazard awareness training as team member practice switching electrical disconnects using the correct PPE while standing to the side of electrical disconnect.

Below are photos showing how we modified the manual valves to allow the limit switches to work and feed a signal back to the PLC.



Push valve showing the modification and location of the limit switch in the open position



Showing the valve closed and limit switch is made.



Photo of the valve modification. When the valve is closed it threads through the plywood making the limit switch located on the back.





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Norbord Inc. - Safety Devices in High Risk Pedestrian Areas

Contact: Jamie Stavitski, EHS Manager
Email: Jamie.stavitski@westfraser.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Designated pedestrian walkways with safety gates and safety signals at pedestrian crossings.

2. How was this innovation developed and implemented?

This was developed and rolled out in our finishing area where there was the highest risk of pedestrian and mobile equipment interaction. A company was contracted to come in and place the walkway in layers and then the safety gates and handrails were installed. The Safety signals were installed and programmed after the walkways were completed.

3. Describe the improvements that have been achieved by the implementation of this innovation.

We have had no incidents or near misses in this area since the new walkways have been implemented.

4. When was this innovation implemented and when were positive results first apparent (provide month and year for each)?

This was implemented in November 2020. Positive results were seen by reaching year end with no incidents in this area. Employee reactions and feedback were very positive.



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Resolute LP Larouche - Miniature Nester

Contact: Jessica Dubois-Martel, Quality Superintendent
Email: jessica.dubois-martel@resolutefp.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

On the I-joist line rework station, there isn't any automatic nester. All bundles coming from rework station are handily nested. We already saw operators used a piece of lumber 2x4, to avoid hand crushing hazards. In the plant history, there are a couple safety events reporting hands and fingers crushing. Fortunately, there wasn't any serious incidents, but hazard still present. In deep depth I-joist, weight can go up to over 200 pounds. We developed a specialized tool for this task to eliminate crushing hazard and to prevent employee to force.

Here is the miniature nester:





We place the miniature nester on the I-joists bundle. We use it to raise I-joist and place it at the right location



Hook creates leverage effect

Hook

Leverage

With the hook and the leverage effect, I-joist comes easily at the right place it has to go.



2. How was this innovation developed and implemented?

After a safety near miss reported with I joist manipulation at the rework station outside in the yard, the team chief has imagined a simple and compact leverage concept. With the help of a mechanical employee they developed the miniature nester. A yard operator also has joined the innovation team to help them to test the new tool. They tested their tool to repair a bundle of 20 inches depth and 60 foot long I joist bundle, which is near the worst case scenario in terms of weight.

3. Describe the improvements that have been achieved by the implementation of this innovation.

The use of this tool completely eliminates risks related to hands in the process. Operators are now totally outside the operations. There isn't any contact between employee's hands and I-joist. Crushing and entrapment hazards are now zero. Also, operators doesn't have to use strength because the leverage effect does it for them.

4. When was this innovation implemented and when were positive results first apparent (provide month and year for each)?

First tests has been done in June 2020. After conclusive tests, the tool has been implemented in the mill. From the implementation until now, there isn't any incident related to this task that has been reported.

Positive results has been seen as soon as the miniature nester has been in place.

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Resolute LP St-Prime - IJ Positioning Tool

Contact: Jessica Dubois-Martel, Quality Superintendent
Email: jessica.dubois-martel@resolutefp.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

This innovation has been developed after an OSHA incident in 2020. It was outside in the yard, at the rework station. One of the employee had 3 stitches on his left hand after his finger has been crushed under an I-joist. This employee with a colleague were about to change a defected I-joist in a bundle. When it was time to insert the conform I-Joist in the unit, the space to receive the I-joist wasn't ready, one employee still had one hand in the needed space. The other employee didn't wait the call and flipped the I-joist on his partner's finger. After the incident, we needed to find something to make sure it won't happen again. A spacer was developed.

Previous procedure to insert an I-joist in a unit:



Space
created to
insert the I-
joist

At the moment of the event, the employee was creating the space to get the I-joist inside the unit. The space wasn't large enough and his finger got crushed by the I-joist pushed by his colleague.

Tool created to provide enough space to insert an I-joist without putting hands and fingers in the area:



The tool makes sure there is always the right space to insert an I-Joist. No need for the employee to create the space by himself with his hands.



I-joist only needs to be slide on the tool. No pinching hazard. Employee takes the tool with both hands. He pulls and the I-joist get at the right place without knocking. Hands are off the potential danger area.

2. How was this innovation developed and implemented?

The I-joint positioning tool has been developed and implemented with a team made of the Yard supervisor and employees from the workstation. The tool has been manufactured by a machining firm (Ferdek). After several tests, this new tool has been added to safety work procedures for the outside rework station. It has been and is used every day.

3. Describe the improvements that have been achieved by the implementation of this innovation.

With the use of this tool, pinching and knocking hazards are gone. Workers do not have hands right in the process. Since the use of the tool is required, there hasn't been any other injuries at this workstation,

4. When was this innovation implemented and when were positive results first apparent?

One week after the OSHA incident, the tool was already implemented and used by workers. There weren't any issues concurring with the use of the tool and the task to be complete. Time to rework a bundle stayed the same. The job is safer and pinching hazard is rendered harmless.

The I-joint positioning tool works so well that it has been implemented at the inside rework station a few weeks later.

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Roseburg Forest Products Co. - Laser Light Curtain

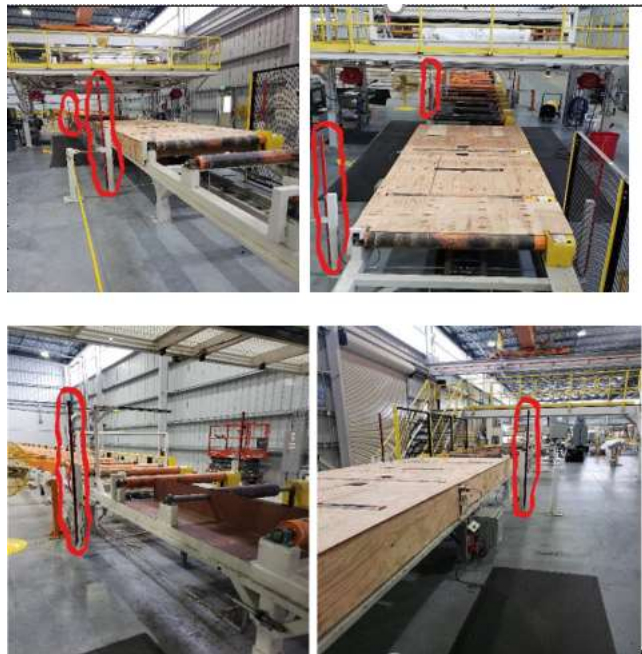
Contact: D. Wade Ratcliff, Jr. – CSP, Eastern Regional Safety Manager
Email: wader@rfpco.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

The Problem: Team members at the Roseburg Forest Products Chester Engineered Wood (CEW) plant were mashing fingers and hands at the wrapping station in the Finishing Department. Injuries were occurring when team members would reach under the LVL billets to fold the paper over and staple it to the bottom. Three injuries occurred in a 10-day period in January 2020. An initial solution was to revise the Wrapping Station JHA to state that the roll case must be turned off when wrapping and stapling the underside of the LVL billets. However, with the “Human Factor” still involved, team members would forget to turn off the rolls resulting in more hand and finger injuries.

Final Solution: Installation of laser light curtains at both manual wrapping stations in the Finishing Department. The purpose of the laser light curtains is to stop the line anytime a team member breaks the plane of the laser while standing on the ergonomic floor mats and wrapping LVL billets. The laser light curtains are placed such that if a team member is anywhere inside of the area where they stand to wrap and staple LVL billets—they break the laser plane and the roll case stops immediately and will not run.

Result: Since the installation of the laser light curtains in the manual wrapping station areas, no further hand and finger injuries occurred during 2020. Please see the pictures below:



2. How was this innovation developed and implemented?

The laser light curtain innovation was developed by Roseburg Forest Products Company site engineers; approved by Roseburg's Corporate Safety Department; and implemented by Chester Engineered Wood (CEW) Supervisors and Superintendents. The problem was identified and several brainstorming sessions were held to see what type of solution could be developed based on experience with other similar problems. The team at Chester Engineered Wood (CEW) came up with the laser light curtain idea with the help of in-house engineering

3. Describe the improvements that have been achieved by the implementation of this innovation.

The main improvement that has been achieved by the installation and use of the laser light curtains are there have been no more injuries at the manual wrapping stations during the last 12 months since initial installation. During January 2020, there were 3 hand and finger injuries in a 10-day time period—all at the manual wrapping station; all standing in the same place. Since the installation of the laser light curtains there have been no injuries at the manual wrapping stations. The line actually runs steadier and more efficient because team members can focus on getting LVL billets wrapped instead of having to spend so much time focusing on the location of the LVL billets in relation to the roll case rolls.

4. When was this innovation implemented and when were positive results first apparent?

The laser light curtains were implemented January 27, 2020. Improved safety results were noticed immediately. Since the installation of the laser light curtains, there have been no further injuries at the manual wrapping stations as of January 31, 2021.

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Roseburg Forest Products Co. - Plywood Boiler Safety Gear

Contact: Benjamin Nelson, Safety Technician

Email: benjaminn@rfpco.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Innovations / Best Practices:

- a. Lightweight heat reflective jacket. (Covers neck to knees, front and back protecting them from heat and flame)
- b. Cooling vest. (To be worn under the jacket to keep the team member cool)
- c. Electric powered wheelbarrow. (Removes the need of the team member to physically move or dump the wheelbarrow)
- d. Bright red "Danger" belt. (Keeps other team members out of the work area)
- e. Red flashing light on the outside of the building for alerting others in the area. (Alerts mobile equipment operators and other pedestrian that the boiler operator is traveling from the boiler to the bunker)

2. How was this innovation developed and implemented?

Talking with team members the second half of 2019 and beginning of 2020 we discovered some items that needed to be improved upon in regards to the task of cleaning grates at the boiler. The main issues discussed were:

- a. With the PPE being used at the time, team members were worried about possible skin burns while cleaning the grates. They could only work near the fire-box door a short period of time because the PPE would be extremely hot when the inside of the welding jacket touched their skin. Especially on the forearms and chest area. Jacket was stiff and restrictive.
- b. They worried about possible heat related illness due to heat, excessive sweating, and physical exertion.
- c. Worried about pedestrian & mobile equipment interaction hazards when they were taking the wheelbarrow from the boiler area to the bunker.
- d. Concerns about other team members, visitors, vendors, etc. entering the boiler area when the firebox doors are open and the team members are raking slag/debris out of the firebox.
- e. They were also concerned with the ergonomic aspects of manually moving/dumping the wheelbarrow multiple times a shift.
- f. Additionally, it was brought up that the process and tool for chipping/removing the slag "glass" buildup from the edges of the firebox needed addressed and improved upon.

These improvements listed on the form were a result of the communication and input from boiler operators and the management team. Whether it was new ideas, procedures, measuring work areas to verify new items would work/fit, or being open to these new ideas/tools/practices, the team did a great job. Fostering trust, communication, and the willingness to work together to make our facility a safer place to work, is a foundation for improving the safety culture at our facility.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Reduced recordable and DART rate at the facility. (Best year, in regards to safety, at the Coquille facility) Improved moral of team members, safer / more comfortable work environment, and improved ergonomics for the task of cleaning grates.

- Cooling vests help reduce the team members core temperature while performing this task keeping them comfortable and reducing the likelihood of heat related illness.
- Heat reflective jackets keep them safe from potential blowback from the firebox and at the same time greatly reduce the amount of heat they feel on their skin even when working close to the door opening.
- Danger barricade belt and flashing red light help keep the area safe for the team member and others working in the area.
- Powered electric wheelbarrow has multiple benefits.
 - a. Team members will no longer have to physically push/pull the loaded wheelbarrow, just guide it.
 - b. The “power dump” option, eliminates the need for the team member to physically perform that task. (Multiple times a shift)

These improvements have greatly reduced the injury potential for our team members. Heat related events, strains/sprains/repetitive impact/overexertion, pedestrian & mobile equipment interaction have all been affected in a positive way with these improvements.

4. *When was this innovation implemented and when were positive results first apparent?*

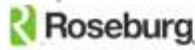
We began the implementation of these innovations in March of 2020. Throughout the rest of the year we continued to “fine tune” what we were doing to get the end result that we were looking for.

For the flashing red light and red “Danger” barricade belt, the results were immediate. People not performing the task were kept out of the work area and out of harm’s way with the barricade belt. The flashing red light alerted pedestrians walking through the area and mobile equipment operators driving past the boiler, that something needed their attention and to slow down/stop and look for hazards. (We communicated out to all our team members what the purpose of these items was) after the first team member used the vest and jacket, the team member called the safety office and thanked us for the items. The jacket protected them far better than the PPE they were previously using. They had more movement in the new jacket, more body coverage/protection, and were able to clean the entire firebox without feeling any excess heat from the inside of the jacket when it contacted their skin. Also, even though they still were going to sweat during this task, they felt it was now solely due to physical exertion and not the heat from the firebox. Additionally, the cooling vest, which may not be needed in the winter months, dramatically helped reduce the heat they felt on their body the entire duration of the task.

The powered wheelbarrow was a big hit with the operators at the boiler. After getting familiar with the controls and operation, they greatly appreciated the ability to just guide/steer the new wheelbarrow instead of manually maneuvering the old one. Additionally, the mechanical “dump” function on the new wheelbarrow eliminated the need to physically dump loads of slag. Both of these functions greatly reduced the injury potential for the operators and made their jobs better in regards to ergonomics and the physical toll on their bodies.

We will be making some adjustments to the wheelbarrow, making it wider at the front to prevent slag/debris from fall to the floor. Also, we are adding some additional heat protection at the bottom of the tub to protect the battery.

A new addition to this project is the lightweight power hammer. It has greatly reduced the physical impact on the team member’s bodies when they have to remove slag “glass” buildup. We are continuing to improve on the tool support device and implementation of this tool.



2020-Coquille-Boiler-Innovations/Best Practices



2020-IMPROVEMENTS-FOR-BOILER-OPERATOR

- Lightweight heat reflective jacket. (Covers neck to knees, front and back)
- Cooling vests. (To be worn under the jacket)
- Electric powered wheelbarrow
- Bright red "Danger" barricade belt.
- Red flashing light on the outside of the building for alerting others in the area

New addition is the lightweight power hammer for removing slag "glass" buildup at the edges of the firebox.

Roseburg

PPE-Comparison,-New-vs-Old

New:



LIGHTWEIGHT HEAT-REFLECTIVE JACKET
Column Brook



COOLING VEST
Column Brook

Old:



WELDING JACKET AND NO-COOLING VEST

Roseburg

Wheelbarrow

New:



Old:



Roseburg

STEPS-FOR-CLEANING-GRATES

- 1-Notify any team members that would be affected by the grates being cleaned
- 2-Set up the books for cleaning using the computer program
- 3-Set up tool and PPE for the task
- 4-Put on cooling vest. (if needed)
- 5-Put on required PPE
- 6-Block off access to the area with the red "Danger" barricade belt
- 7-Open desired firebox door
- 8-Position the electric wheelbarrow at the open door
- 9-Rake slag/detritus into wheelbarrow
- 10-Shut firebox door and turn on outside flashing red light to notify anyone working/driving in the area that you are about to exit the building with the wheelbarrow
- 11-Position wheelbarrow under the shower for 30 seconds to cool slag/detritus down. (Fire prevention step)
- 12-Travel over to bunker, and using to power dump option on the new wheelbarrow, dump the contents into the bunker
- 13-Repeat as needed until task is complete

Column Brook

Roseburg

NEW-PROCESS-FOR-CLEANING-GRATES



Roseburg

NEW-PROCESS-FOR-CLEANING-GRATES



Roseburg

NEW-PROCESS-FOR-CLEANING-GRATES



Roseburg

NEW PROCESS FOR CLEANING GRATES



Slag "glass" buildup on the edges of the firebox is a ongoing issue that is hard to avoid. Our old method of removing the buildup was hard on our team members because of the repetition, weight of tool, and force needed to manipulate the tool. In the picture to the right you can see our new tool for this task. A lightweight power harness that greatly reduce the strain on the team members. They can now, using the tool and tool support, remove the slag in a safe and controlled manner. This greatly reduces the injury potential for our team members.



Busaburg

BENEFITS OF THESE IMPROVEMENTS

- Cooling vests help reduce the team members body temperature while performing this task keeping them safer and more comfortable.
- Heat reflective jackets keep them safe from possible blowback from the firebox and at the same time greatly reduce the amount of heat they feel on their skin even when working close to the door opening.
- Danger barricade belt and flashing red light help keep the area safe for the team member and others working in the area.
- Powered electric wheelbarrow has multiple benefits.
 1. Team members will no longer have to physically push/pull the loaded wheelbarrow, just guide it.
 2. The "power dump" option, eliminates the need for the team member to physically perform that task. (Multiple times a shift).

These improvements have greatly reduced the injury potential for our team members. Heat related events, strains/sprains/repetitive impact/overexertion, pedestrian & mobile equipment interaction have all been affected in a positive way with these improvements.

Busaburg

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Roseburg Forest Products Co. - Plywood LED Safety Whips

Contact: Mark W. Scott, Safety Professional
Email: MarkSc@rfpco.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Identified and installed “Tribal Whips - Industrial LED Safety Whips” on all motorized and human powered mobile equipment (forklifts excluded due to alternate safety lighting).
[Pictures attached]

2. How was this innovation developed and implemented?

The LED safety whips were identified as a possible visibility aid during an investigation into a mobile equipment incident. One of the root causes of this particular event was a lack of visibility between the two vehicles involved. The operations and safety teams identified the LED whips as one of the best options available to increase the profile of mobile equipment throughout the facility and developed an action plan to install them mill wide.

3. Describe the improvements that have been achieved by the implementation of this innovation.

The LED safety whips have dramatically increased the visibility of our mobile equipment both in profile and height. Whether the vehicle is as small as a pedal trike or as large as a pickup the range in which it becomes noticeable has increased dramatically. There were eleven mobile equipment contact incidents in 2020, since the LED safety whips have been installed we have had zero.

4. When was this innovation implemented and when were positive results first apparent?

The LED safety whips were identified and the purchasing process was started in November of 2020. The installation is substantially complete at this time. The increase in visibility was immediate upon installation.



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Roseburg Forest Products Co. - Oregon COVID Control Plan and Training

Contact: Benjamin Nelson, Safety Technician
Email: benjaminn@rfpco.com



To: All Team Members **Changes to OR-OSHA rules**
From: Coquille Management **Subject: COVID Control Plan and Training**

COVID-19 remains an active threat to our health and our business. As of 10/19/2020, The State of Oregon and Oregon OSHA has issued new requirements regarding face coverings. Updated policies for how Coquille Plywood will be adhering to these requirements are outlined below.

Definitions

Face Coverings – A facemask or face covering is defined as an N95 or KN95 mask, surgical-type mask, or a two-layer cloth mask without exhalation valve.

Must cover the nose and mouth.

Individual Work Space – A designated workspace that is identified as such with means of segregation from a common space with a barrier (physical or visual) and signage (identifying individual workspace and notify operator before entry.) Can be, but is not limited to the following offices, cabs, control rooms, MCC's and any other designated space if not more than one person is present.

Common Area – Any area in P5 and P6 that is not identified as an individual work space, which includes indoor and outdoor walkways, common machine centers without designated individual work spaces.

1. Team members must wear facemasks or face coverings **at all times in all common areas**, unless an area has specifically been designated as an individual workspace and is occupied by no more than one person. This includes but is not limited to entering and exiting facility to and from parking areas, walkways, restrooms, parts room.

2. The following areas have been identified as individual workspaces and do not require a mask to be worn if occupied by no more than one person:
 - Rolling Stock (Wagoneer, 966, 950, Forklifts, Tractors, Utility and Company vehicles) upon exiting vehicle face covering must be worn.
 - All onsite offices
 - Barker Cab
 - Swing Saw Cab
 - Coe Lathe Cab
 - Coe Clipper
 - Coe Stacker
 - Lathe 2 Control area
 - Boiler office
 - Dryer In feeds
 - Dryer 1 Grader
 - Dryer 1 Stacker
 - Dryer 2 Round table work area outlined
 - Dryer 3 Grader
 - Skoog Round tables
 - Skoog
 - Robot Deck
 - Strip Cutter
 - Glue Kitchen
 - Welders
 - Core layers
 - Core feeders
 - Flying saw operator
 - Press operators – Only the hoist recognized as an individual work area
 - Fill line operators - outlined individual work areas
 - Sander/Grader Operators – Outlined individual work areas aa. Detail Saw deck
 - .Manual Patch line
 - Bander Operator
 - MCC rooms
 - Green Chain work area outlined
 - Pond Saw
 - Boat House
3. If individual work area is not listed above, a face covering is required by all team members.
4. A face covering must be worn in all individual work areas with more than one person.
5. Facemasks are not required while seated and eating as long as individuals are no less than 6' apart.

6. Specific maintenance activities requiring group work or harsh environments will be handled on a case-by-case basis with mitigation being addressed in the SAFER Work Permit process.
7. Facemasks are not required for team members **performing work outdoors** and not within 6' of another person.
8. Use of face shields is required to have a medical necessity and HR Approval. See HR office for details and questions.
9. If approaching someone let them know you are in the area and to put their mask on along with yours.
10. This signed document is to be turned into site safety.
11. Team members reporting illnesses will be asked questions based on the COVID-19 Questionnaire. The Roseburg response plan will be followed in the event of an illness or suspected illness. All team member call in's related to illness are currently being followed up and tracked by site HR or Site Safety.
12. All team members exposed or potentially exposed to COVID-19 will be notified by site leadership within 24hrs.
13. All visitors, Vendors or contractors are required to fill out the COVID 19 questionnaire prior to entering the facility. Any team member, vendor or contractor that answers yes to any question will not be permitted on site.
14. The OR-OSHA COVID-19 hazard poster has been posted throughout the facility.
15. All team members are expected to utilize proper hand washing, safe hygiene practices and proper utilization of face covering. See posted signage throughout facility.
16. Works stations have been gated off to allow team members to work at their own workstation. Radio, eye or verbal contact must be made prior to approaching team member to allow ample time for face coverings to be put on. See posted signage throughout facility.
17. Workplace hazards regarding COVID-19 will be reported to department supervisors and hazards will be addressed and communicated to team members.

The deep-seated culture of caring for one another and maintaining our health & safety remains at the center of everything we do. Every one of us has a role in this effort and in our success of remaining COVID-19 free.

I **acknowledge** that I have read and understand RFP's expectations around COVID-19 spread prevention and the specific requirements based on public health organization information.

Failure to follow these expectations can lead to disciplinary action.

Initials

I have read and understand the **Coquille COVID-19 Operating Plan**

I have reviewed and understand these expectations and I will contact my supervisor or manager if I have questions or concerns

Print Name _____

Sign Name _____

Date _____

Note: Supervisors submit signed documents to site safety.

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RoyOMartin - OSB Pin Removal Bracket

Contact: Robert Ryder, Safety Manager of the OSB Business
Email: Robert.ryder@royomartin.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

A millwright at Oakdale specializing in hydraulics and press maintenance identified the need to come up with a device to improve the safety of the job task to remove pins (Pic#1) from arms to the press. There are 4 arms (two on each side of press) with 13 large diameter pins at each level, holding the arms on the press. Team members in the past had to put a 30 ton port-a-power (hydraulic ram) on the end of the pin, then hold a backup pipe (one person having to hold both at the same time due to space limitations-Pic#2).



2. How was this innovation developed and implemented?

The millwright at Oakdale that specializes in hydraulics and press maintenance came up with the idea after becoming concerned about the positions team members were put in to take out the pins and the time it took to complete the task especially in summer time when team members are exposed to higher temps around the press and cutting down the time a task takes to complete is very important for team member safety.

3. Describe the improvements that have been achieved by the implementation of this innovation.

The old process of removing pins on the press arms would take several maintenance team members in awkward positions 12 hours to completely remove all 13 pins. With this new bracket, the job have been cut down to 1 ½ hours which greatly improves team member exposure to pinch points in tight places and working in elevated areas not to mention improved down time by 10 hours.

4. When was this innovation implemented and when were positive results first apparent?

The innovation was first implemented during an outage in June 2020 to replace a press arm. After removing press arm in 1 ½ hours compared to 12, it was apparent the bracket would greatly improve safety and decrease maintenance costs of the job task.

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Tolko Industries Ltd. - Pandemic Response Team

Contact: Troy Connolly, VP Solid Wood
Email: margaret.berube@tolko.com

- 1. Describe in detail the in detail the innovative/novel solution that was developed and implemented.**

Please see attached.

- 2. How was this innovation developed and implemented?**

Please see attached.

- 3. Describe the improvements that have been achieved by the implementation of this innovation.**

Please see attached.

- 4. When was this innovation implemented and when were positive results first apparent?**

This innovation/process was implemented March 2020. Results were immediately apparent.

AT THE READY: TOLKO'S PANDEMIC RESPONSE TEAM

"This pandemic is the worst public health crisis for a generation"... "This is the beginning of a long road ahead..."

Most of us have probably heard similar comments over the past few months. What began as a distant but growing concern in a country halfway around the world soon became a looming risk to our personal safety and the global economy. We are witnessing a public health crisis the likes of which most people today have never seen. Although a major event like a worldwide pandemic sounds like something out of a Hollywood movie, when it actually happens, it can spark disbelief, shock, uncertainty, and legitimate concern for our health, our jobs, our future, and our family and friends.

During its 64-year history, Tolko has faced and overcome many challenges, and as Brad has mentioned in his ongoing employee communications, it is by living the Tolko values of Safety, Respect, Integrity, Progressiveness, Open Communication, and Profit both at work and at home that we will make it through these difficult times together. It's important to plan ahead for a variety of potential situations, which is why Tolko had a crisis communication plan and an outline for pandemic response planning in place prior to COVID-19, so when it was officially declared a pandemic, we were ready.

When Canada's federal government and provincial health authorities officially declared COVID-19 a worldwide pandemic in early March, Tolko's Pandemic Response Team (PRT) was activated to respond to the ongoing situation. The PRT is made up of knowledgeable and experienced managers in strategic business areas including Operations; Woodlands; Safety; Sales, Marketing and Logistics; Purchasing and Supply Chain; Human Resources; Communications; Finance and Accounting; and Information Technology to ensure that employees are kept safe and well-informed during this emergency. We recently spoke with four members of Tolko's PRT to learn more about the team.



David Gillespie
General Manager, Operational Services

David's role in the PRT is ensuring that Tolko mills remain operational by providing front-line employees with the ability to work safely, manufacturing the products and co-products that contribute to the local, national, and global pandemic supplies required to help fight COVID-19.

His top priority as a member of the PRT is working with Marsha Bell and Scott Wynn, Regional Occupational Health & Safety Supervisors to provide employees with workplace infection measures and health and safety education materials.

"Employee education is the pillar that supports all COVID-19 workplace health and safety activities," says David. "Making sure that visitors to Tolko divisions have completed COVID-19 prescreening in advance of a visit is also extremely important. Visitors may not be aware of our health and safety precautions and expectations during these challenging times."

David believes that the PRT's most valuable contribution is enabling a more collaborative Tolko-wide approach that leverages our departmental strengths. This collaboration allows us to quickly implement operational COVID-19 infection prevention measures while adjusting these measures as required during a rapidly changing environment.

"For me, the COVID-19 pandemic has confirmed that staying committed to Tolko's values provided a solid decision-making foundation during an unprecedented and highly fluid operating environment."



Cathy Tucker
Manager, Total Rewards, Human Resources

For Cathy, the most important issue she has helped to address on the PRT has been to develop strategies to ensure that employees are kept safe wherever they work –whether it's onsite or at home. One of her responsibilities is to develop consistent, health authority-supported protocols for handling various scenarios, such as when an employee is exhibiting COVID-19 symptoms and when they're asymptomatic but need to self-isolate for other reasons.

"Having a cross-functional team has helped me better understand the issues we're facing," says Cathy. "We're able to share ideas, support each other, and make better informed decisions for the company as a result."

"I think Tolko has been quite nimble and quick to adapt to all the changes that have (and continue) to happen," adds Cathy. "Tolko is living our value of safety at work and encouraging employees to live this value at home and in our communities."

Cathy has been inspired by how quickly Tolko's managers and employees have pulled together and adapted to so much change in such a short period of time.

"In particular, living the value of open communication has meant that we've been providing our employees with the best information we have at the time we communicate," says Cathy. "Sometimes we've had to adapt our answers and approach on the fly, but I think employees understand how fluid the situation is and that we're doing our best to live the values of integrity and open communication every day."



Brett VanderHoek
Manager, People and Services

Brett has been with Tolko for eight years and oversees teams in Human Resources, Office Administration (OAC), and, more recently, Corporate Communications. His focus during the pandemic has been getting the right messages to the right people at the right time. "Employees are our most important audience, and we're doing everything we can to keep them informed, safe, and engaged," says Brett. "We're also communicating with external stakeholders such as our vendors, customers, and the communities in which we work and live to ensure they know that Tolko is operating safely and open for business."

The development of a pandemic communications strategy has been critical to deliver frequent messaging in a complex and ever-changing environment. The framework was developed with

Tolko's values in mind and a commitment to communicate information as it becomes available as well as solicit and acknowledge feedback from our employees and external stakeholders.

"We've really appreciated feedback from employees whether it's about something they liked, something we need to adjust or improve, or a question we hadn't considered that we can research, follow up on, and add to the FAQs," says Brett. "The benefit of having a PRT in place is having access to immediate feedback from all areas of the business so we can address concerns, keep pace with rapid changes and continuously improve our approach."

He also believes that it's because of the way Tolko operates that we're better prepared to face the pandemic. For example, the PRT members regularly refer to Tolko's values to guide key decisions and use change management best practices. Most importantly, Brett wants to sincerely thank his team and all of Tolko's employees for their perseverance and for continuing to work safely.

He adds, "We've been through a lot since 1956, and we've been able to plan and adapt to continue to operate safely and successfully. It's amazing what we're able to accomplish working together."



Glen Willms
Information Technology Manager

Keeping Tolko's employees connected and ensuring that the company's information and systems are kept safe, secure, and available is a challenging task during the best of times. In a situation where many employees are now working from home or have altered technology requirements, it takes an entire IT team to make it work.

For Glen, enabling remote work and collaboration tools for hundreds of people in a short period of time is the most significant issue he has helped address while on the PRT. He notes that when employees begin to work remotely, they quickly realize that a lot of their job activities require conversations with colleagues on a regular basis.

To support video meetings and conversations, IT has promoted Microsoft Teams, a secure online communication and collaboration platform that allows people to connect with their peers and managers using their computer and a webcam. Glen believes that technology advancements around the world and at Tolko have made responding to this pandemic a much less painful exercise than if it had occurred even just 10 years ago. If Tolko hadn't made the technology investments it did, we may not have been able to mobilize our workforce and keep Tolko's service groups and operations running effectively. He is extremely proud of his team and of how the IT department has responded quickly and efficiently to ensure that employees across the company have the technology support they need so that they can continue to do their jobs.

REAL-WORLD SCENARIO:

TOLKO'S CAPITAL PROJECT AND THE COVID-19 PANDEMIC

A multi-million capital project at Athabasca, which expands our Engineered Wood Products capabilities, was substantially complete before being put on hold when COVID-19 was officially declared a worldwide pandemic in March. Because our PRT had a response strategy in place, we were able to quickly react to the situation and implement several additional provisions to ensure the safety of our employees.

Here are some highlights:

- As of mid-March 2020, we required a signed self-disclosure form from our project contractors in advance of coming onsite, declaring they had not travelled to any high-risk areas in the previous 14 days and had not experienced any COVID-19 symptoms during that same period;
- We required the owner of each contracting firm to confirm in writing that everyone they were sending to site had not worked anywhere else in the last 14 days (inside and outside of Canada) and that they had not been in contact with anyone who had returned from travelling outside of Canada within the same 14 days. In one case, a contractor whose father had just returned from Germany and visited him and his wife in their home nine days previously was temporarily disqualified from coming onsite;
- Only one contractor group (up to a maximum of 12 people) is allowed onsite at any given time, provided they adhere to the appropriate social distancing guidelines. For example, we required our electrical contractors to commit to staying until their electrical work was completed, then after they left the premises, the mechanical team came in until their full scope of work was completed. Once the mechanical team left the premises, only then did the HVAC contractors come in to finish their work.”
- Contractors are to use separate entrances to our mills, with no interactions with Tolko employees. They also have their own meeting rooms, lunch areas, and washroom trailers. All areas must be cleaned regularly, and they are to use the wash stations and/or alcohol wipes that are provided in all rooms. Contractors have to follow the same social distancing rules as Tolko employees – no prolonged exposure within two metres of another person.
- During rare occasions where contractors must work closer to each other, they are required to complete a PASS card (pre-work assessment safety survey). This card must be approved and signed by a supervisor prior to commencing work. In all cases in areas of close proximity, minimum protection is a respirator and face shield. Working in close proximity is a matter of last resort to ensure the safety of all workers.
- Two of the contractor groups have voluntarily implemented daily temperature checks of their employees and have daily self-assessments of potential COVID-19 symptoms.
- Tolko reserves the right to require a contractor to leave Tolko's facilities immediately if any of these COVID-19 precautionary measures are not followed. While the above measures added some costs to the project, this is a matter of safety first, which is always a priority at Tolko. We appreciate the cooperation of our contractors and have been very pleased that there have been no safety incidents in the contractor group since this new program was implemented.

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Tolko Industries Ltd. - Restructure and Stabilize Log Yard Terrain

Contact: Phil Bean, Plant Manager
Email: phil.bean@tolko.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

The log yard was excavated and restructured to improve overall stability of the ground. This was accomplished by excavating a large portion of the upper layer ground and placing concrete supports created from concrete rail ties welded together as a foundation for the new rock and gravel mixture. Once the rail tie supports were in place, gaps were filled in with 3/4 crush and tamped down, geo mesh laid over top, and 8-12" of pit run rock was tamped down on top of that to create a firm, level pathway through the log yard.

2. How was this innovation developed and implemented?

This innovation was developed and implemented by our Veneer Superintendent, Roger McDowell, who had struggled with various problems with the logyard terrain over the past two years. Roger used the premise of rig matting for oil rigs and used the concrete ties as a better foundation. It was introduced as an inhouse plan to revive the logyard pathways and provide a stable roadway for truck drivers to drive through the logyard to be unloaded as well as for loaders to more effectively travel in the logyard. Roger utilized maintenance workers and contractors to weld together the old rail ties in between regular projects and begin laying out the welded concrete tie sections in 25' long strips by 26' wide (3 tie sections butted up). Once each section was completed, the 3/4 crush, geo mesh, and pit run rock was tamped in sequence.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Improvements from this innovation have helped reduce truck damage during unloading due to loaders driving into ruts/bouncing, improved the overall flow of the log yard, reduced the number of stuck equipment requiring extraction from muddy conditions, improved fuel efficiency, and provided more road space for managing truck unloading and log yard equipment mobility.

4. When was this innovation implemented and when were positive results first apparent?

This was completed over a 2-week period in October – November of 2020. Positive results were noticed immediately by both loader operators and truck drivers. Feedback was spectacular. Given the mild winter we had in Kamloops, this project showed significant value and prevented the likelihood of many stuck pieces of equipment due to the wet conditions throughout winter.



Concrete Rail Tie Sections



Madill with Log to Grade



Loader Placing Rail Tie Sections



Completed Section vs Previous Logyard

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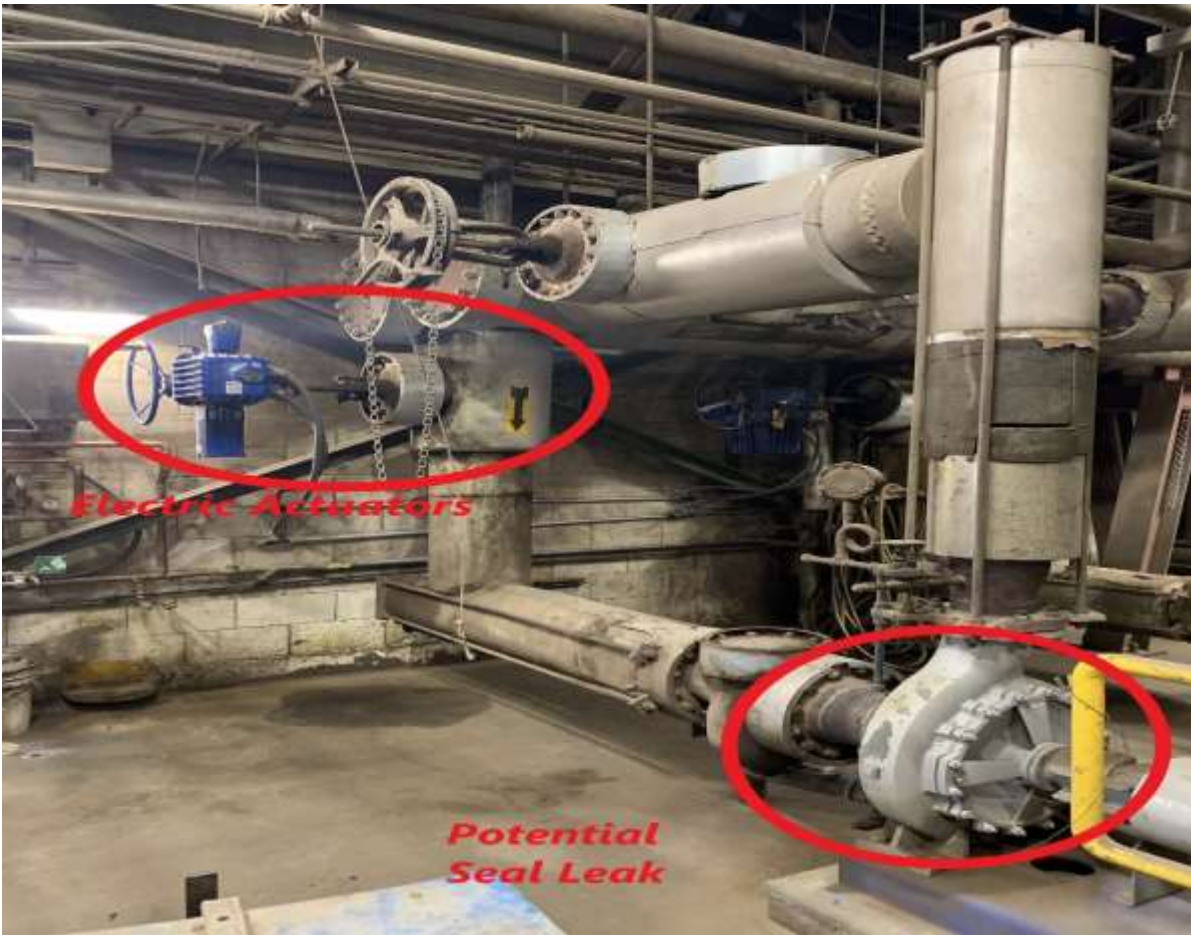
Weyerhaeuser - DSE Hot Oil Valves

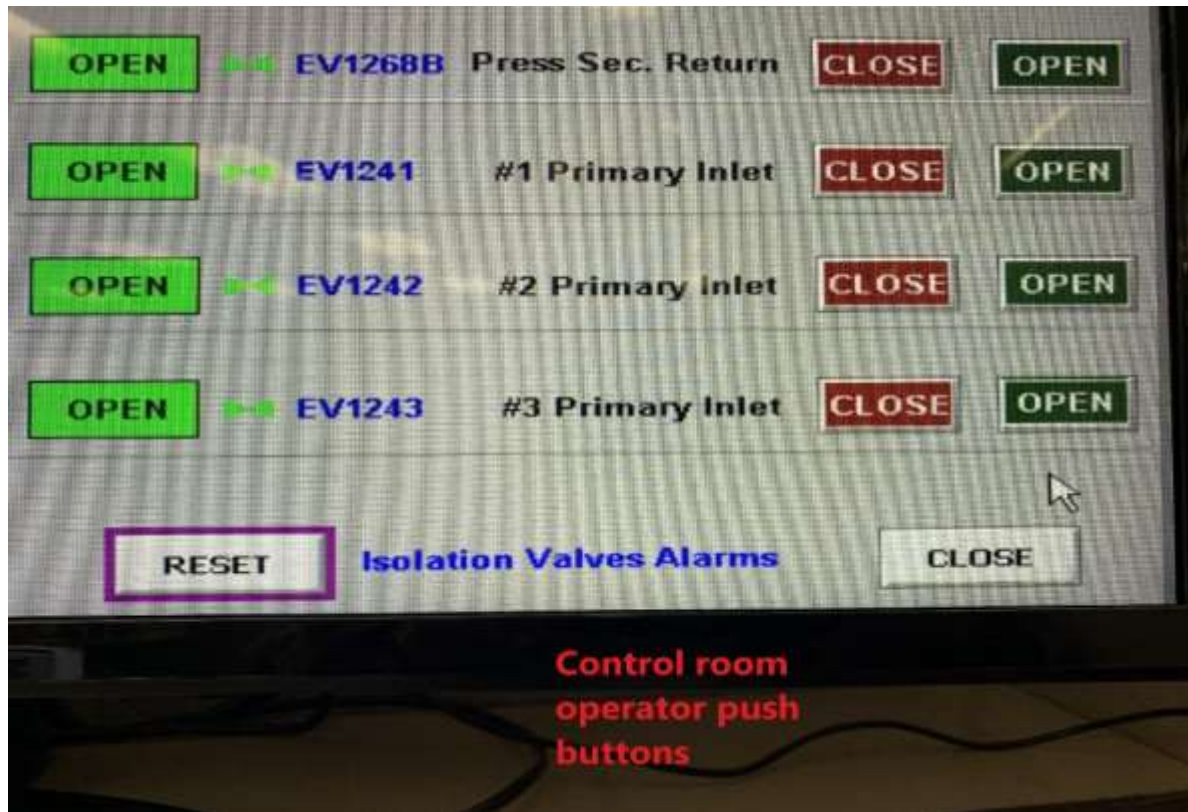
Contact: Jim Palmer
Email: jim.palmer@weyerhaeuser.com

1. *Describe in detail the innovative/novel solution that was developed and implemented.*

Installation of electric powered shut off valves for hot oil primary pump inlet piping







2. How was this innovation developed and implemented?

Awareness of personnel trying to shut this inlet valve by hand when hot oil (450 degrees) was leaking out of the pump seal nearby after seal had failed

3. Describe the improvements that have been achieved by the implementation of this innovation.

With the electric actuators we can now stay clear of the area and close the valve with the push of a button in the control room which will stop the leaking of hot oil onto the floor where the operator previously would need to be to access the manual valve

4. When was this innovation implemented and when were positive results first apparent?

Installation was in December of 2020, now any personnel can call to the control room to stop the leak if needed.

We have not had any seal failures to use them yet. They will be exercised quarterly to ensure they are ready for emergency use.

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Weyerhaeuser - Bucket Heater Reset Tool

Contact: Rick Johnson
Email: rick.johnson@weyerhaeuser.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Bucket Heater Reset Tool

2. How was this innovation developed and implemented?

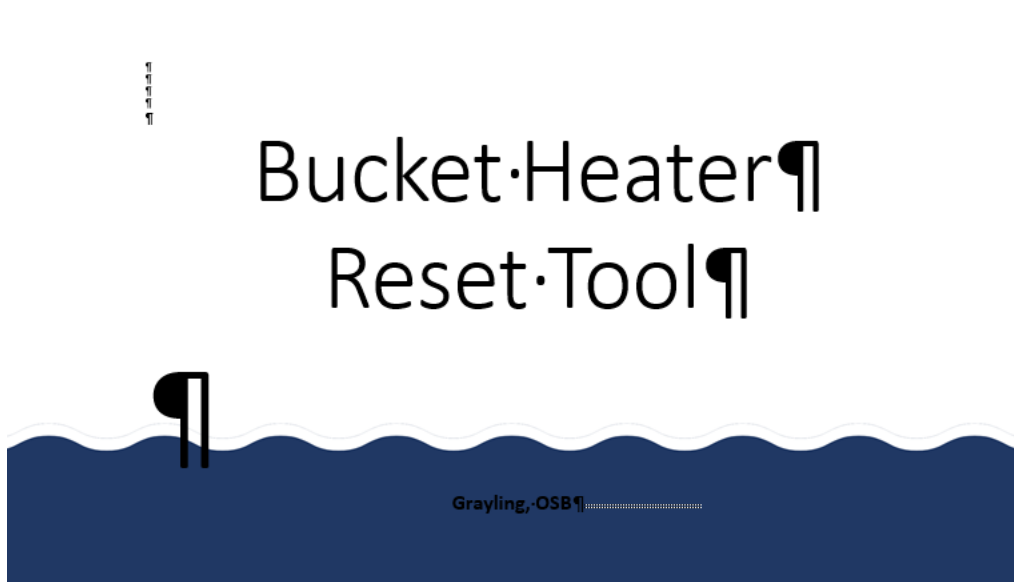
- The reset tool was fabricated to help reset the heaters, without having to open the bucket. This eliminates many potential electrical hazards of getting in the bucket to manually push the “reset” button.
- A heater will trip as a safety feature, if it is running in an overcurrent for too long and will then require a reset. Once reset, there is usually no further action needed.
- The reset tool is made up of a wooden handle
- After drilling out inside of the handle, insert a piece of limit wand (nylon rod).
- Optional– drill through the opposite end of the handle and attach a zip tie to allow for hanging in the MCC room.

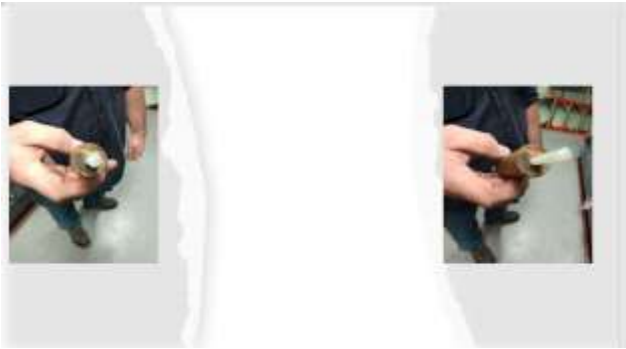
3. Describe the improvements that have been achieved by the implementation of this innovation.

Eliminates electrical safety hazards of an unqualified person opening a bucket to manually push the “reset button”.

4. When was this innovation implemented and when were positive results first apparent (provide month and year for each)?

Ongoing





How To Fabricate the Tool

- The reset tool is made up of a wooden handle
- After drilling out inside of the handle, insert a piece of limit wand (nylon rod).
- Optional—drill through the opposite end of the handle and attach a zip tie to allow for hanging in the MCC room.



What is it for?



- The reset tool was fabricated to help reset the heaters, without having to open the bucket. This eliminates many potential electrical hazards of getting in the bucket to manually push the “reset” button.
- A heater will trip as a safety feature, if it is running in an overcurrent for too long and will then require a reset. Once reset, there is usually no further action needed.

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Weyerhaeuser - Metal Wall

Contact: Jody Seaver, Safety Manager
Email: jody.seaver@weyerhaeuser.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Construction and implementation of a metal wall to prevent 20' long falling logs to enter travel/work area.

2. How was this innovation developed and implemented?

Unit Manager, Ross Gardner developed this idea and reached out to the Green End Manager, Jerry Pruitt. Together they responded by submitting a notification and selecting a contractor for the design and installation. The wall is 12' tall and 20' long constructed with steel plating on both sides to withstand impacts from logs. This project was installed in the north east corner of our debarker area. Commonly, logs are rejected from the process because they are out of specification or a detection of metal is present. Before the implementation of the metal wall, logs were "kicked out" of the process and fell into a reject log bunker. The major safety concern with this setup is they would often times bounce off the bunker into a roadway where mobile equipment and log trucks travel. This wall prevents the reject logs from "bouncing" out of the bunker, maintaining their position safely away from traffic.

3. Describe the improvements that have been achieved by the implementation of this innovation.

The metal wall was installed in October of 2020, since that time no logs have left the bunker area. This design has eliminated a potentially fatal injury.

4. When was this innovation implemented and when were positive results first apparent?

Immediately following installation.





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Weyerhaeuser - Vat Fall Protection

Contact: Daniel Murphy, Woodroom Function Lead
Email: daniel.murphy@weyerhaeuser.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

Installed overhead gantry style fall protection systems for out Vat area. One system over vats 1 and 2 and the second over vats 3 and 4. System allows for two team members to tie off independently and work with 100% tie off in entire length of any vat. Old system was a cable that ran the length of the vats.

2. How was this innovation developed and implemented?

We developed a team consisting of maintenance, operations, engineering, and safety. We discussed what the safety (fall protection) that are required when making entry and working on/in a Vat. We then researched different companies and found SkyLine Fall Protection out of Grand Rapids, MI. Our team working with them to come up with a design. From start to finish the process took about 6 months.

3. Describe the improvements that have been achieved by the implementation of this innovation.

Team members can enter a vat and work safety with 100% tie off with a certified system.

4. When was this innovation implemented and when were positive results first apparent?

This was installed in November of 2020. Since installation we have not had to utilize the equipment as we have not yet had an upset condition that has required vat entry.



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Weyerhaeuser - Use of Drones to Eliminate Hazard Areas

Contact: Jordan LeFever, Safety Manager
Email: jordan.lefever@weyerhaeuser.com

1. Describe in detail the innovative/novel solution that was developed and implemented.

The Weyerhaeuser Kalispell Plywood team has been utilizing drones in innovative ways to remove people from the action and to eliminate hazard exposure. Recently, the Kalispell Plywood team used a drone to perform scans of their rooftops for fall protection planning. This provided superior image quality and resulted in an immediate risk reduction as associates were not required to access the roof during the planning phase.



Drones have also proven useful in many other applications including emergency response and log yard inventory.

2. How was this innovation developed and implemented?

This was an employee-driven solution through the Safety Committee (“Safety Action Team”). The Kalispell Plywood team partnered with a local vendor to perform aerial scans.

3. Describe the improvements that have been achieved by the implementation of this innovation.

- The use of drones for rooftop aerial scans provided immediate risk avoidance through eliminating the need for associates to access the roof during rooftop fall protection planning.
- Log deck scanning provided accurate inventories much more efficiently. This also resulted in less foot traffic in the log yard, which during the winter months, is a significant risk reduction.
- During a recent emergency response, the drone provided much needed visibility to ensure safe resolution of the incident.

4. When was this innovation implemented and when were positive results first apparent?

This innovation was implemented in October 2020 and provided immediate risk reduction.

****END OF 2020 PRACTICES****

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