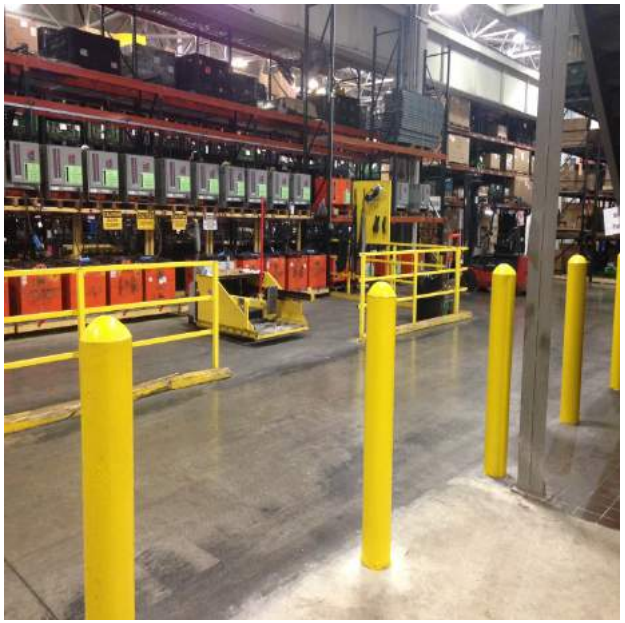
Iowa-Illinois Safety Council Safety Award Program

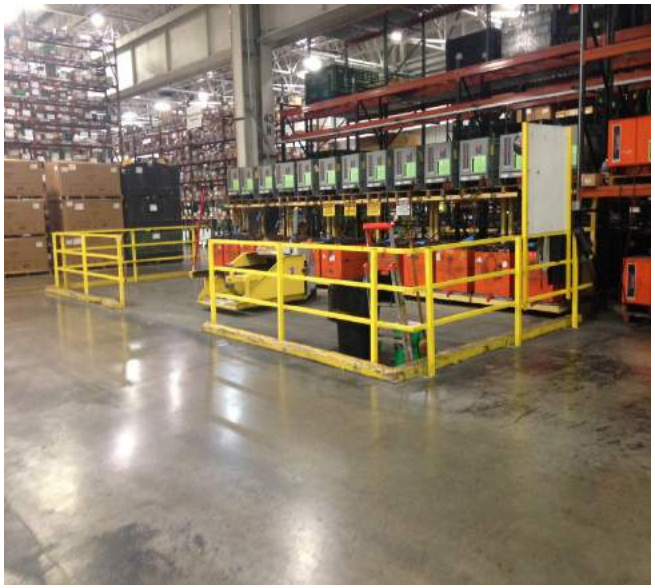
Exemplifying and Representing Continuously Improving Organizations

Submissions from 2015 – Part 2
(Awards given at the 2016 PDC)

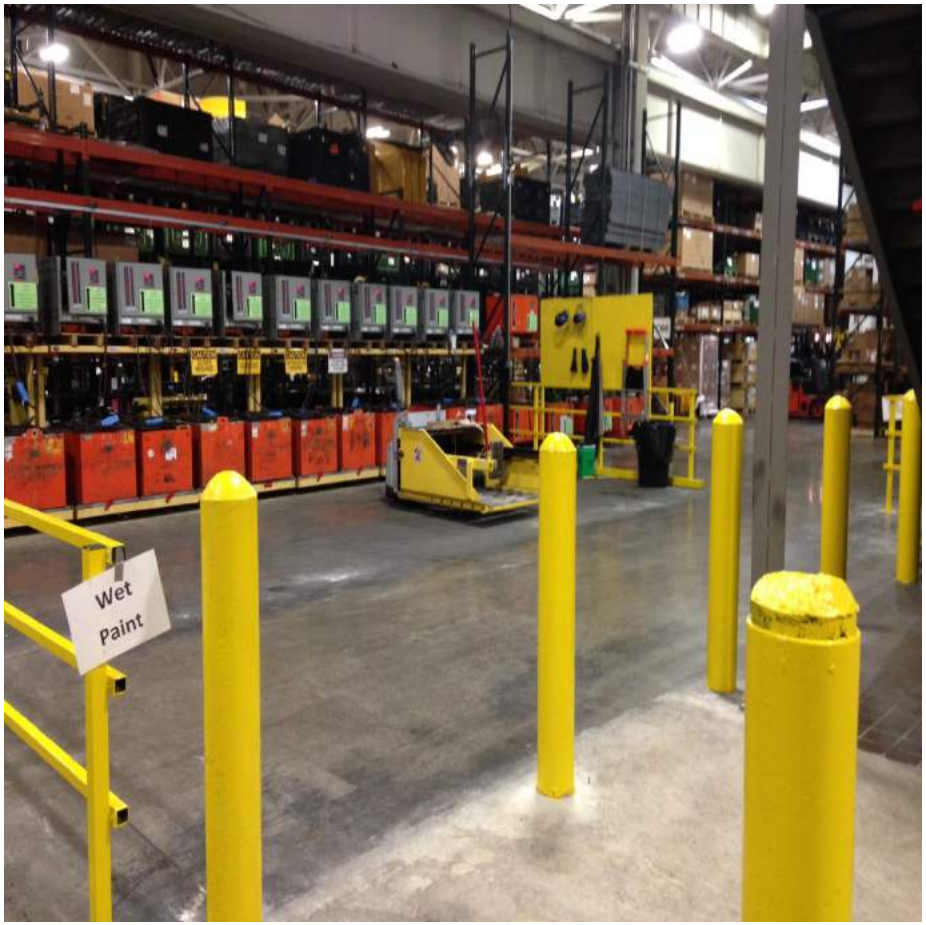
Iowa-Illinois Safety Council
Chapter of National Safety Council
Your Safety & Health Leader

Before





After



Battery Changing Station

We added square footage to the battery location at our facility. Before the addition, technicians were having a great deal of difficulty moving batteries for production. It was taking several movements to successfully achieve the daily task.

With limited space in which to work, it was becoming a safety hazard in this location because of the danger to the batteries. Technicians were hitting guard rails as a result. By creating the extra space, it is much safer for all technicians who work near and around our Battery Station.

Our scale house has two means of egress from the bottom level but only one from the top level (which is occupied most of the time).

Before:

We installed a second means of egress from the upper level by adding a set of stairs coming down from the truck balcony.

After:

Our large dumpster previously sat in a gravel area off our main road. While this was a good spot because it was a low traffic area, it created problems in the spring or after substantial rains. The area around the dumpster created problems for employees trying to access the dumpster and also for pick-up and drop-off of dumpsters.

Before:

To help eliminate the issue, we poured a concrete pad that the dumpster sits on. The pad is big enough for a truck to load and unload dumpsters and also has room for employees to access the dumpster for safety dumping.

After:

Before:

The hoist is used to change baskets/ strainers in the line when they are plugged. They are extremely heavy and contain hot liquid. Operating a manual hoist, in this location, puts the employees at a greater risk for injury.

After:

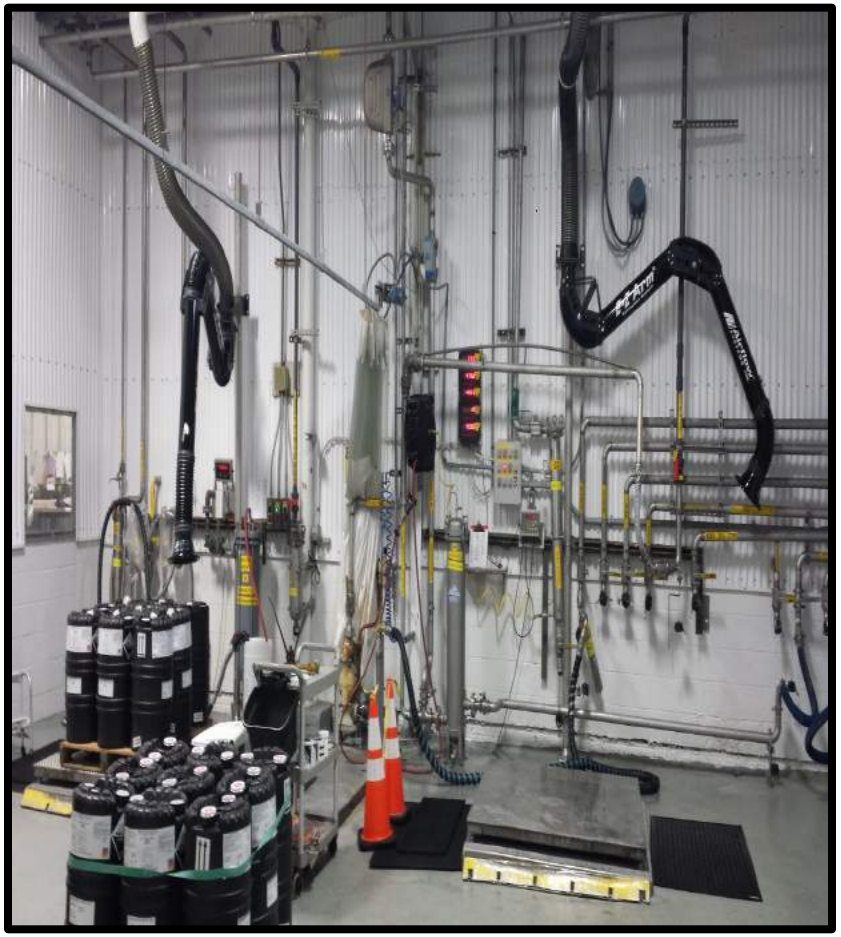
We installed an air-operated hoist that allows the employees to quickly and safely change the baskets/ strainers.

Added Portable Fall Prevention Platforms for Trailer Access - Access was added to the top of trailers using trailer access ladders (Picture on left). It was difficult to maintain three points of contact on a ladder while holding tools, sample bottles or other items. Hydrite purchased and is utilizing two portable fall prevention platforms to improve access to the top of trailers around the site. These portable units can be moved around the site as needed. This has significantly reduced the risk of injury from a fall.

Slide Gate Railings – Previously, access to mezzanines was done by manually removing railings from sections of the mezzanine (Picture on left). This created fall issues that put personnel close to the openings. We installed several slide gate railings in the mezzanine access locations to allow our personnel to open the railing without being near the railing openings. This has greatly reduced the risk of injury due to falls.

Electronic Chock Placement Verification - Chocks are required on trailers to prevent trailer movement while accessing the inside of trailer during loading/unloading. To ensure chocks are in place for the personnel entering/exiting the trailer, dock electronic chocks have been installed . These provide indicators if the chocks are in place (Inside on dock: Red with audible alarm indicated chocks not in place, green and no alarm sound indicated safe to access trailer. Outside: Red indicator light that chock is in place correctly). This addition has greatly reduced the risk of injury to personnel by preventing a truck from driving away with employees on forklifts inside the trailer.

Articulating Ventilation in Fill Areas – Previously, the spot ventilation consisted of a flexible hose that had to be manually held in place during the filling operation which was not efficient at removing fumes (Picture on left). This year, articulating ventilation arms were installed in two fill areas (Picture on right). Ventilation at point of filling chemical containers draws away hazardous fumes during the fill operation. The articulating arms shown below are able to be placed exactly at the fill point and stay in place during the filling process. This has greatly improved ventilation in our container filling operations while reducing risk from chemical exposure.



Fixed Fall Prevention Platforms for Trailer and Rail Car Access – Accessing the top of trailers and rail cars using an access ladder (Picture on left) made it difficult to maintain three points of contact when holding tools or sample bottles. Hydrite installed three fixed stair-platform systems to eliminate this hazard (two stair-platforms shown below on right). This significantly reduces the risk of injury from a fall.

Beneficial Reuse

- Shawn Walsh has identified a vendor with a beneficial reuse outlet for bulk solvent stream that was previously categorized as our bulk hazardous waste stream.
- This will benefit IDT by reducing administrative burden, cradle to grave liability and disposal costs and benefit the environment by eliminating the need for virgin solvent use and disposal by the company that is using our material.

Self Closing Door to Reduce HVAC Load

Before

The thermostat in our office is linked to an HVAC unit on top of our office workspace making it an independent temperature regulated work area. Before when we left our office door from the rest of the office would mix with air in our work area creating a temperature swing which would cause our HVAC unit engage to heat or cool the hallway and corridors of the Skokie office.

After

We installed a spring loaded door hinge to keep the door closed. Then we added weather stripping on our door to reduce air flow allowing our HVAC unit to function optimally with our thermostat and not attempt to regulate hallway air temperature and supersede other office HVAC units.

Potential Slip/Fall or Ergonomic Strain

Employees were carrying these 40# bags of borax up the stairs to the starch tanks.

We now put the pallet of the bags up on the platform next to where they use them. No more carrying them up the stairs.

Ergonomics – Reduce back strain

We used to get multiple buckets of ink. 90 Black was the most used. Employees would have to shuffle through all the buckets to get what they needed.

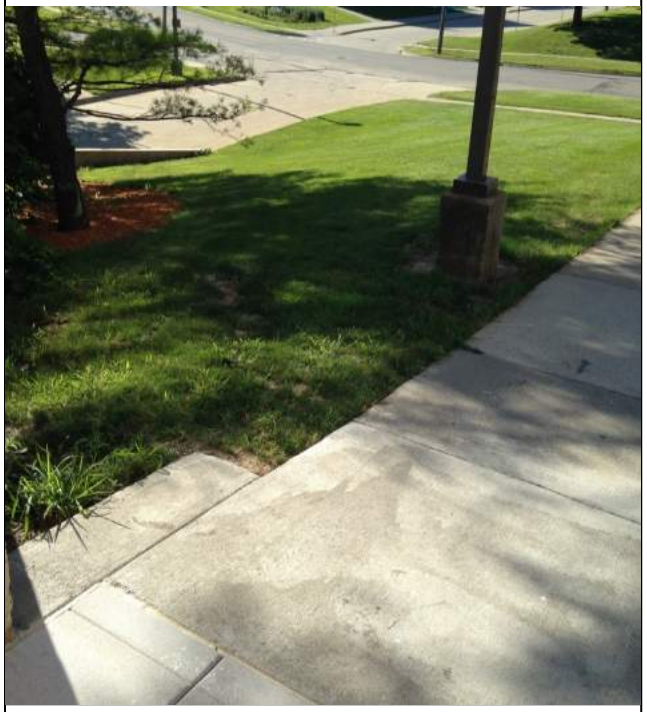
Now we get 90 Black in bulk. Less shuffling through the buckets, and less picking up 40# buckets that aren't needed.

DATE: January 26, 2016

LOCATION: Iowa Department of Administrative Services, State of Iowa Hoover Building

HAZARD: Employees slipping and falling when taking shortcut down steep slope

Before Photo



Several employees experienced slips, trips, and falls when they used a steep slope as a shortcut to and from the east entrance of the Hoover Building to an adjacent parking lot.

After Photo

An installed railing discourages employees from taking the shortcut. It also provides support when the sidewalk becomes slippery due to weather conditions. Installing the railing cost around $6,000, which is the approximate cost of one injured worker. It has helped decrease slip, trip, and fall incidents. It has also provided relief from recurring incidents and costs associated from workers' compensation claims.

In the livestock industry there is a lot of manual movement of animals as well as products. It has been this way a very long time. One of the things employees were/are asked to do is get animals out of the barns when they have expired. In this industry the standard is the blue cart on the left, and two people if they are available. Iowa Select Farms has made the decision that industry average isn't good enough. In our sow farms, to start with, we are moving to the machine on the right. It is self propelled, has an electric winch, has a telescoping mast and a 180 degree turning head to help with these issues. This will help eliminate any potential scenarios of back and shoulder strains/injuries that are common within the industry while performing this kind of work.

REMOVING RIBS

The equipment used in our Rib removing process was not being as functional due to design and mechanical integrity This process required our employees to work harder to remove the ribs from the bellies. We replaced both lines with a new spike style design to help in the process of holding product while the ribs are being removed from the belly.

- The risk ranking was impacted from a past state of 75 to a present state of 40.
- Better product quality was also a result due to less miss cuts and a more stable working surface.

AIR MONITORING EQUIPMENT

Our old hand held air monitors were due to be replaced. We decided to upgrade our handhelds with new MSA Altair 5x monitors with 6 gas sensors. These monitors are very simple to use, durable, and reliable.

We also added a new calibration docking station which allows us to easily bump test the monitors daily and automatically calibrate every month. The docking station gives us the ability to upload calibration and monitoring data for easy record keeping.

CO2 BLENDER RELOCATION

We relocated our CO2 blender for variety meats from the cold side onto the Slaughter floor. After processed, 100 lbs. containers are loaded onto a transfer cart that holds approximately 1600 lbs. Two employees then manual push the cart from Slaughter to Coolers. The distance is approximately 260 feet and through 5 sets of doors. With the relocation of the blender they operator only have to travel 75 feet and go through one door way.

BEFOR E

AFTER

LOADING DOCK LIGHTING UPGRADE

A section of our loading dock area had poor lighting. This makes it more difficult to see and possibly could cause a trip and fall hazard. The light themselves were also outdated and inefficient.

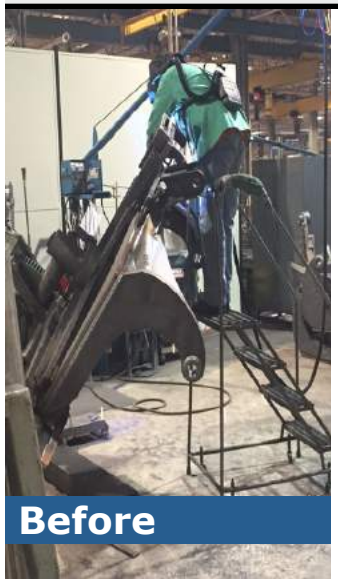
- We recently installed 90 new florescent lights to that area.
- Work area now has Average 730 ft - cd

Hazard Control Submission – Davenport Works

Job Task	John Deere Motor Graders – Cooling Package Assembly
Key Issues/ Solution	**Ergonomic Hazards** –Assembler had difficulty holding 24mm back up wrench while using ratchet clicker to secure cooling package to engine frame. **Safety Hazards** – Awkward Posture and Hand Strain **Solution** –Worked with tool room to develop reaction bar which would eliminate the need of holding the back up wrench while torqueing and allows for easy removal.

Hazard Control Submission – Davenport Works

Job Task	John Deere Motor Graders – Circle Weld Spin Station
Key Issues/ Solution	**Ergonomic Hazards** –The employee was previously required to work in an elevated and unsecured working position. The majority of the welding tasks were performed while working in this position. The operator was also required to travel up and down the ladder several times during each cycle and he/she had to spin or rotate the circle in an elevated position. **Safety Hazards** – Fall hazard, trip hazard, ergonomic reach and motion risks – The welder was required to reach beyond the preferred ergonomic motions and loads. The welder was also at risk for tripping and falling off the ladder. **Solution** –New Z-Axis positioner – A new z-axis positioner with weld tooling was installed and programmed. LED Flood lighting and safety scanners complete the safety package. The ergonomic reach and motion problems have been eliminated and currently a 5% female can perform the job with utilizing only a one step ladder. The previous scenario needed a four step ladder and 75% male to be able to reach all the aspects of the job.



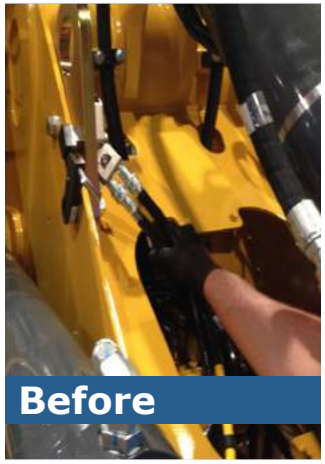
Before

After

RPN Scoring Criteria	Severity	Exposure	Vulnerability	RPN
Pre Assessment	**3**	**5**	**4**	**60**
Post Assessment	**1**	**1**	**1**	**1**

Hazard Control Submission – Davenport Works

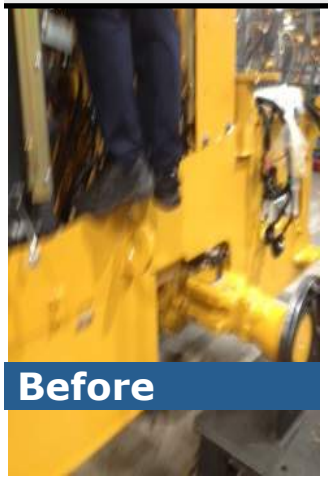
Job Task	John Deere Utility Loaders - Lift Hook Securement
Key Issues/ Solution	**Ergonomic Hazards –** Employee was previously required to work in an awkward position with a heavy tool (17.6 pound impact gun) held above employee's shoulder and extended. (Horizontal Reach, Back Flexion with Heavy Load Risk Factors) **Safety Hazards –**The impact gun requires a reaction bar that works against another bolt to tighten the bolt to specified 460 FT LBS torque value. This reaction bar also created risk should the reaction bar slip off and come into contacts with any part of the body creating potential for a significant crush injury. A manually held backup wrench was also required to hold the bolt back while the reaction bar impact tightened the nut to 460 Foot Pounds. **Unique Challenges -** High torque value required, design of machine and location of bolt and nut presented fixed challenges with access while manufacturing requirements required large awkward tooling with inherent risks of crushing, to accomplish the task previously. **Solution** – After working with multiple suppliers, and working through several iterations, a Rapid Torc tool, weighing only 6 pounds and self supporting releasable backup wrench were customized to the application eliminating all previously identified risk (RPN 32 to RPN 1) in performing this task.

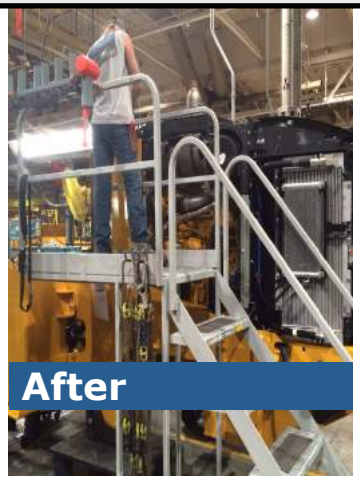


RPN Scoring Criteria	Severity	Exposure	Vulnerability	RPN
Pre Assessment	**4**	**2**	**4**	**32**
Post Assessment	**1**	**1**	**1**	**1**

Hazard Control Submission – Davenport Works

Job Task	John Deere Utility Loaders – Super Structure Installation
Key Issues/ Solution	**Ergonomic Hazards –** Employee was previously required to work in an elevated, unstable, unsecured working position. Several tasks were performed while working in this position, including attaching a large, heavy frame onto the Loader without achieving the desired working windows of correct height and secure maneuverability for lifting. **Safety Hazards –** Fall Hazard - The assembler was required to access the desired, elevated (~4') work area and establish footholds on the engine frame (~1 ¼" width) and or the engine itself with uneven surfaces and gaps to the floor between the engine frame and the engine. **Unique Challenges -** Providing an elevated work platform capable of positioning the operator into or along the desired work envelopes. Establish correct heights and access windows to position the operator's body to enable desired lifting and positioning of parts in a stable, flat work platform environment while avoiding elevated, uneven, slippery protrusions/components of the unit. **Solution –**After trialing various ladders and step devices with the operator's feedback, a cantilevered work platform was designed to the desired heights, widths and other defined safety requirements to provide the operator with a stable, secure work platform. This has eliminated the fall hazard and improved the ability to work in the desired ergonomic windows.



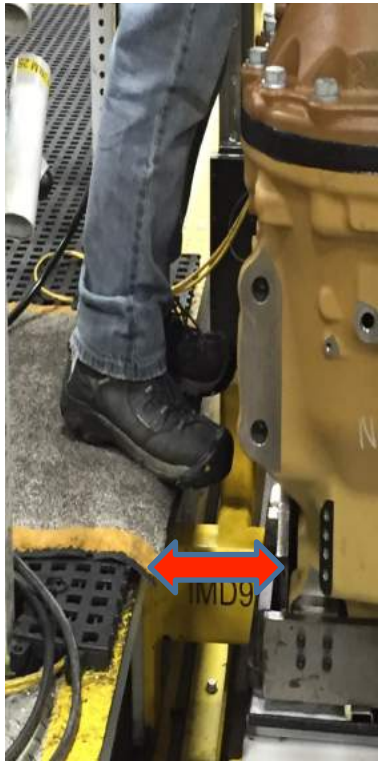


RPN Scoring Criteria	Severity	Exposure	Vulnerability	RPN
Pre Assessment	**5**	**3**	**4**	**60**
Post Assessment	**1**	**1**	**1**	**1**

SERA

John Deere Drive Train Operations
Extension Step

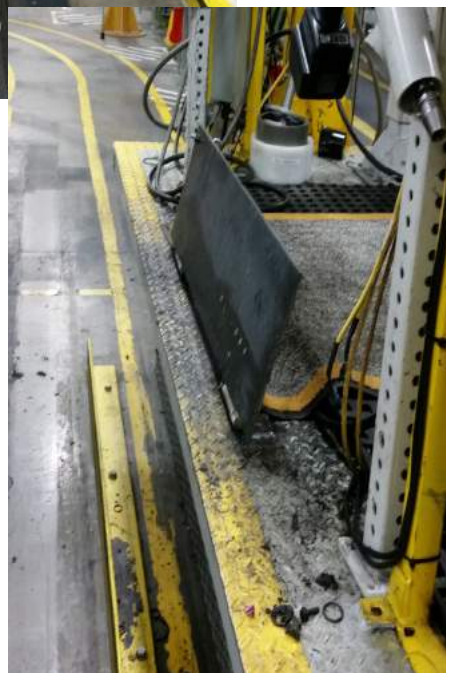
Operator working on a housing while he stands up on a platform. They need enough room between the platform for the carts to pass through, which leaves a 6” gap which operators feet hang over to reach. There is a potential to slip which could cause a sprain, break, or contusion.



Pre-SERA Score: 48

Installed a hinged toe extension to allow operator to get closer to his work without the fall hazard.

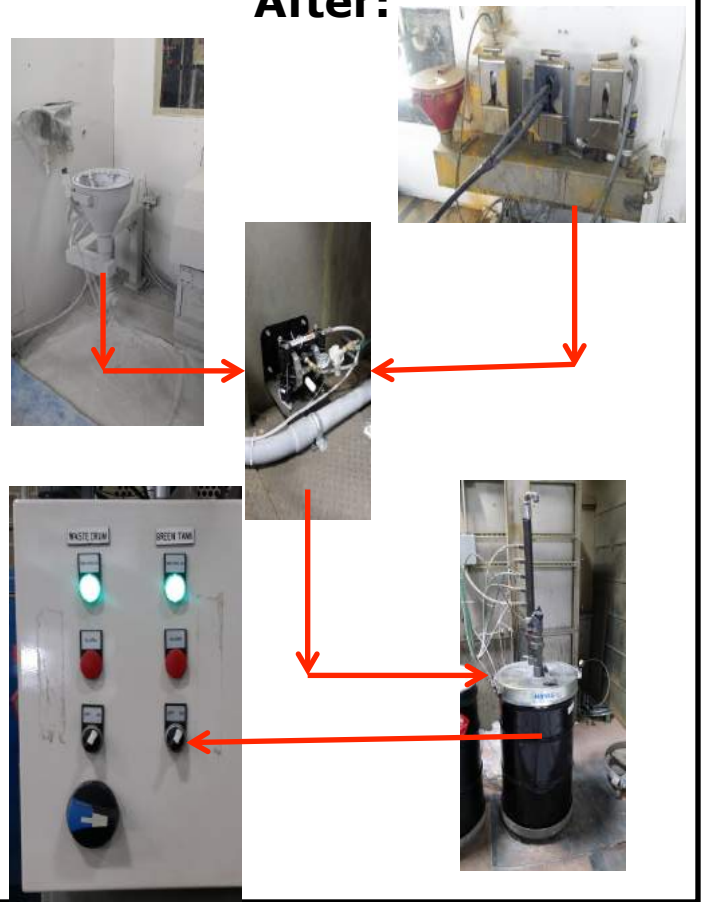
Post Score: 8



Title:	Automatic Waste Removal System	Category:	Environmental Hazard Elimination
Hazard:	• Robots and Touchup paint guns are purged into 5 gallon buckets throughout the day. When the bucket is full “multiple times/day”, Airways was contacted to empty the bucket into a 55 gallon drum. To safely perform this, the buckets need to be grounded during	Solution:	• We installed a waste removal system that automatically pumps all of the waste paint & solvent directly to the 55 gallon drum. This allows us to install hardwired grounds at each point in the system and not rely on human interaction to make sure we have proper bonding and grounding every time. • Environmental Impact – Removes the chance for spilling or overflowing solvent and waste paint by integrating level sensors into the waste barrel. When the drum is 75% full a red indicator

Before:

After:



Title:	Maintenance Platform	Category:	Fall Protection
Hazard:	• Maintenance workers have to work while standing on the tracks of a machine. There was an injury that occurred when the employee's foot got caught in the tracks, resulting in a fall. Maintenance employees work in situations like this often, increasing the chances of another fall occurring.	Solution:	• The maintenance team worked with our Continuous Improvement team to develop a platform that covers the tracks and provides a guardrail system to eliminate the risk of falling.

Title:	Weld Robot Touch Sensors	Category:	Robot Safety
Hazard:	• A Near-miss occurred when a mainframe fell out of the robot fixture when it was attempting to roll over. Had an employee been standing in the line of fire, a severe injury could have occurred.	Solution:	• The Weld NTA & Weld Engineers got together and programmed the robots to touch sense in three spots. It first checks for a safety pin and then checks both of the hydraulic clamps. The safety pin is important should the hydraulics lose pressure the pin ensures they will not open. If any of those 3 check points do not check out the system throws an error and notifies the operator to call a Weld NTA for help to restart

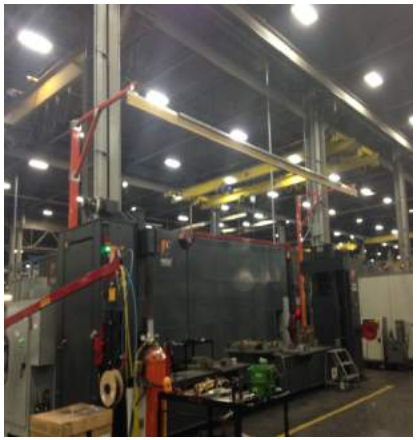
Before:

After:

Title:	Fall Protection System	Category:	Fall Protection
Hazard:	• Employees are required to weld on top of the machine frames. They had been climbing onto the frames without any protection. The risk of them falling was great.	Solution:	• A fall protection system was implemented that uses a retractable lifeline to catch employees in the event of a slip/fall. It swings in and out away from the wall so we are

Before:

After:



Installing Sensor Harness

Before

Operator was installing sensor to a bracket by pushing with their thumbs. The possible injuries to the thumb could have been Sprain/Strain and Soft Tissue

After

Created tool to spread force across palm

Installing Valve Stems

Before

Operator had to push on 24 valve stems per engine head. Potential for a Soft Tissue Injury

After

Tool spreads force across palms

Moving Manhole Covers

Before

Possible sprains/strains, awkward postures and pinched fingers

After

Using a heavy duty magnet dolly improves ergonomics, reduces chances of sprains/ strains and pinched fingers

Moving Rolled and Square Steel

Before

A maintenance worker pinched their hand maneuvering a piece of round steel

After

By using Oil filter pliers removes hand from pinch point area and they are able to still manipulate the steel to take on and off of material rack

John Deere Foundry
Slag Paddle Cleaning

Before Condition

- Operators required to clean paddles during furnace operation, but were required to shut off the furnace to enter a caged-in area to clean up the slag that falls to the floor.
- This was required 30-70 times a day per furnace
- Using a broom and shovel was inefficient to clean debris from the slag paddles
- Debris was often heavy and difficult to push

Solution:

- Shaker Pan below the Slag Paddles to Automatically remove the Debris from the Furnace Deck.

Criticality:

- Do not have to shut furnace power off temporarily
- Better usage of employee time
- More Ergonomic for Employee
- Less Chance of Injury

Mitigation

Risk was lowered in Risk Assessment process by 63 points

Non-Value Time Results:

- Cleaning time before project = 200 minutes of downtime per shift
- Cleaning time after Project = 40 minutes of downtime per shift
- Overall Time Savings = 160 Minutes

Before: The Operators used force (+ 100 lbs.) in an awkward posture to push/pull grain tank to next station (manually push for 5 stations) potentially causing back or shoulder strain.

JOHN DEERE SERA Project Tracking

Welcome Josh Nowicki

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SERA Project

Safety and Ergonomic Risk Assessment

SERA

* Factory Unit: HX00 - Harvester Works

Project Number: 13-00671

* Business Unit: Body Module

Hazard Category: Ergo-Push/Pull > 50 lb Initial

CI Team:

Unique ID:

* Department: 954

Non Compliance: ○ Yes ◉ No

Work Center: 95416 - GT ASSEMBLY STAT 4 LH

RPN Scoring Criteria

	Severity	Exposure	Vulnerability	RPN	
Pre Assessment	4	1	5	20	Edit

HX Harvester Works Body Module

Post Assessment	1	1	1	1	Edit

After:

Engineering installed new dollies with the implementation of operators using pushers to advance the grain tanks the Risk of Back Injury was Eliminated

SERA

	RPN Scoring Criteria				
	Severity	Exposure	Vulnerability	RPN	
Pre Assessment	6	1	3	18	Edit
Post Assessment	1	1	1	1	Edit

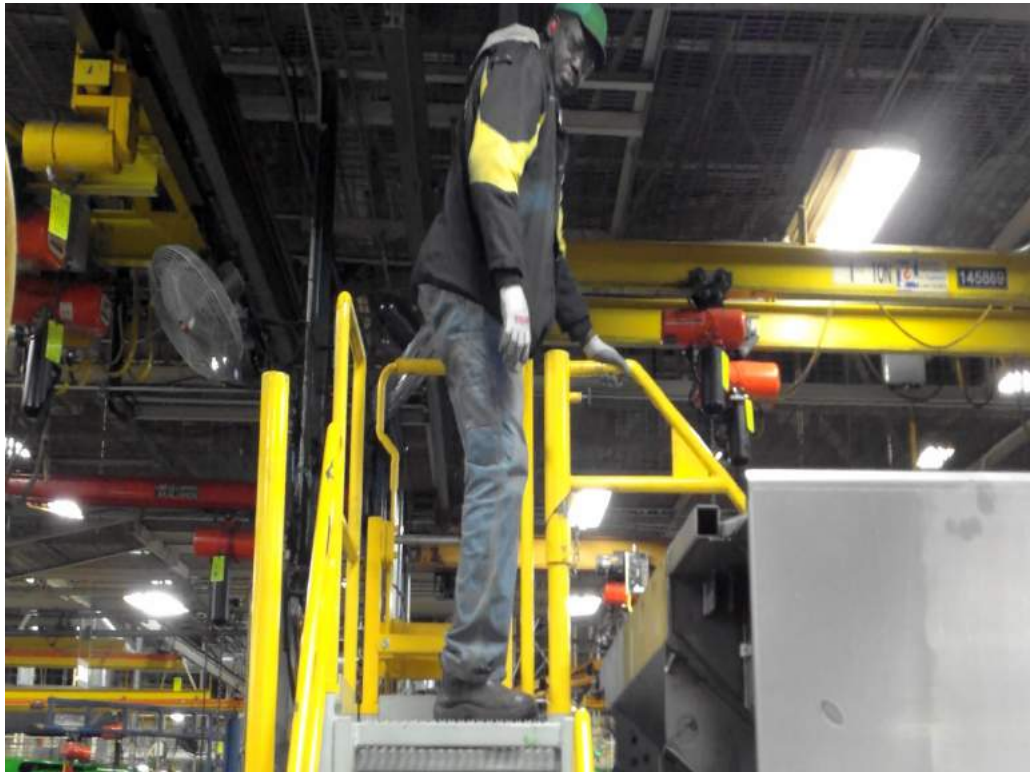
Before: Operators using the ladder attached to the dollies have the potential of falling off of the ladder because the handrails are short. Operators could potentially trip over the step when stepping out of the grain tank and fall over the short handrail causing multiple injuries or even a fatality.

Benefits of new Dollies

After: Engineering had new dollies made with taller hand rails which are within spec. Brand new dollies that are not damaged and that are up to date to meet JD Harvesters fall protection specs.

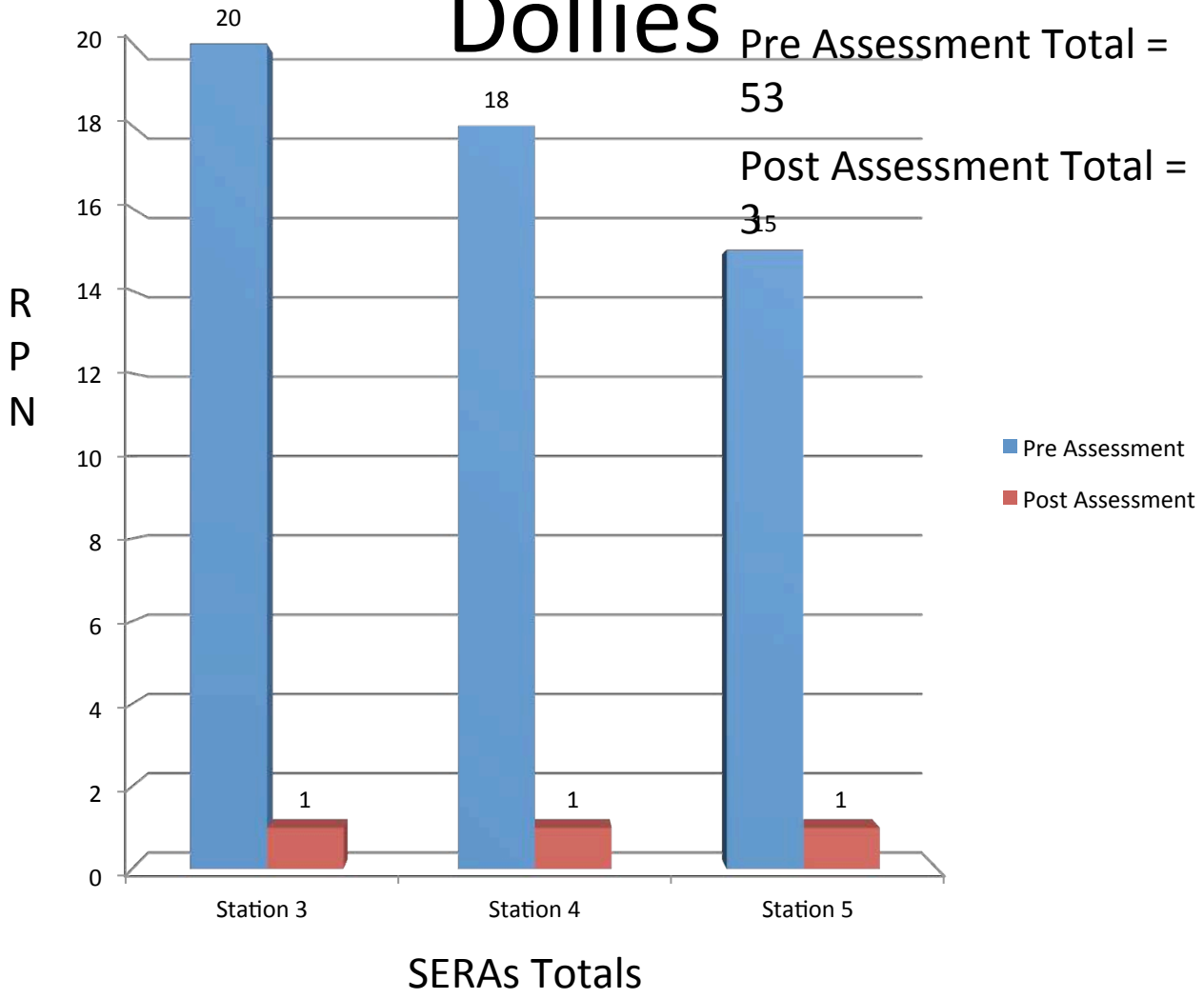
SERA

t Assessment	1	1	1	1	Edit



HX Harvester Body Module

SERA 954 scores for new Grain Tank Dollies



David Dunn, John Deere Harvester Works, 563-343-2607

Lift Table and Powered Trunion Addition to Weld Fixture

Before

Welders were required to manually rotate trunions on weld fixture and secure pin to lock fixture in place

After

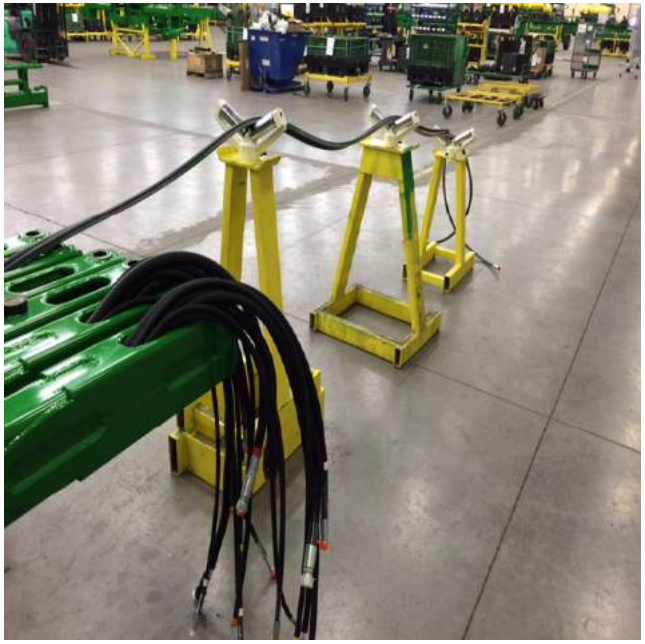
Lift tables and powered trunions were installed to automate process; Locking pin is no longer required

Hazard Control Project

Before Mitigation

Hydraulic hoses on floor and are pulled through part by pulling and tugging. Strain on shoulder and arm.

After Mitigation



New design to reduce friction when tugging on hoses (V-Rollers) and elevated to “ergonomic friendly height”

Hazard Control Project

Before Mitigation

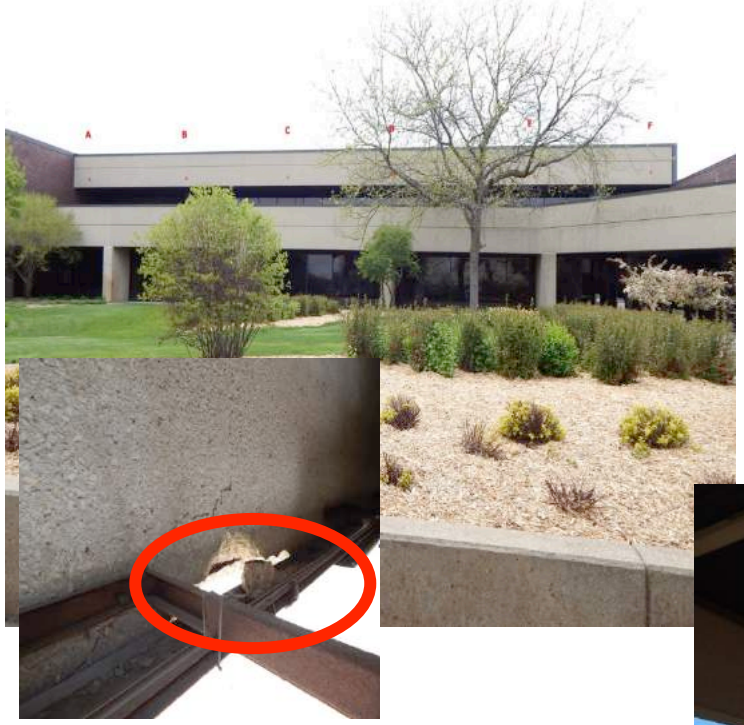
Pin supporting jack-stand had potential to shift, causing load to tip

After Mitigation

New Pin and safety clip to assure pin does not shift.

John Deere Product Engineering Center

Roof Fascia Project



5 Sections of concrete over the cafeteria was deteriorating

- 130,000 pounds of concrete
- Cracking off of the soffit
- Cracks were found in the beam

HAZARD: roof collapse

Completed with light weight fascia

- 400 ton crane used to lower concrete fascia beams
- New lighter steel framework to replace concrete beams
- New roof and skylights

John Deere Service Parts Operations

Tool Torque Procedure

Implemented throughout departments

When changing tooling operators use a hammer and a wrench to loosen collet due to over tightening. Potential strain or hand injury.

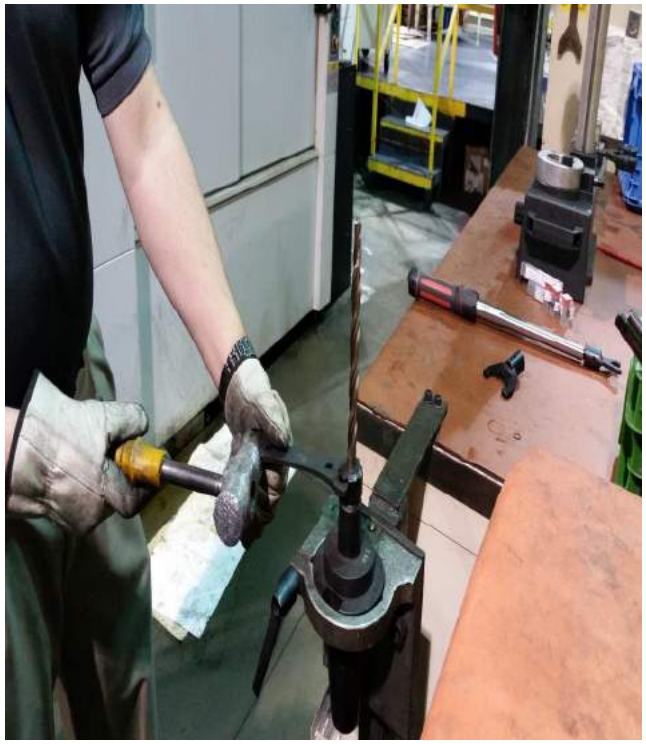
Pre-SERA Score: 24

Total points for depts. = 96

Implemented click wrenches to allow for optimal tightness to eliminate the need for hammers and over tightening and straining to knock loose.

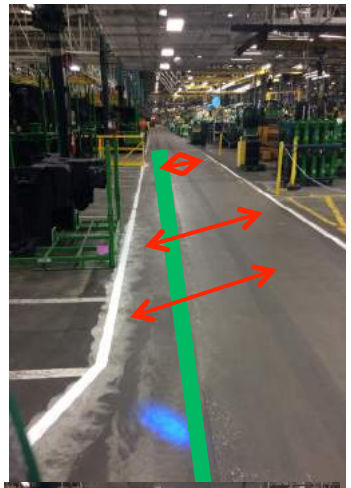
Post SERA Score: 4

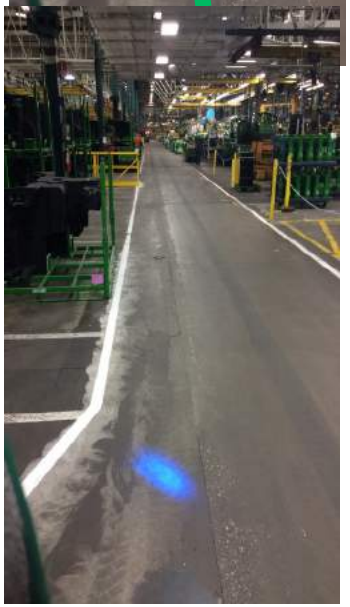
Total point reduction for depts. = 80



John Deere Tractor Cab Assembly Operations

Mobile Equipment and Pedestrians

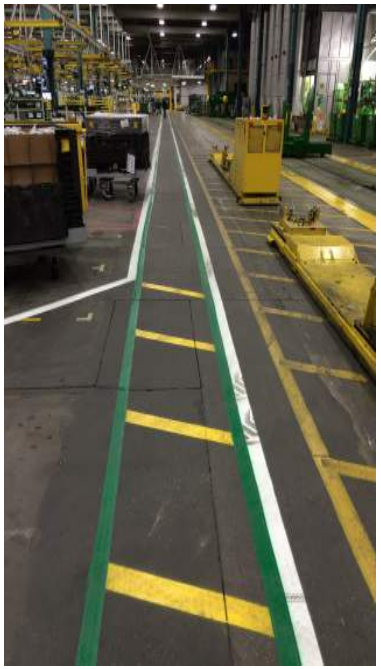




- Main aisle way down the center of the facility
- Traffic flow included pedestrians and mobile equipment
- Placed pedestrians in pathway of mobile equipment that replenished on either side of the aisle.

- Green Pedestrian aisle was removed
- Only mobile equipment allowed down main aisle
- Incident of Pedestrian strike by eliminated

- Pedestrian Green aisle diverted to the outside of the production line on either side



Evaluate Need

Issue:

- Gain an understanding of potential hazards, by conducting JSA's.
- Through these JSA's we found that employees can and will experience some type of back strain or sprain by placing product on pallets within their cells.

Implement Control

Project

- To ensure our employees were not going to experience any ergonomics concerns, we spent several weeks analyzing different lifts for all of our cells. In doing so, we needed a lift that was easy to use and would adjust automatically.

- After evaluating different lifts, we came up with the ultimate solution to eliminate potential injuries. This solution would be to purchase pallet pals for all of our cells that would automatically adjust to an ergonomic height.

Evaluate Need

Issue:

- Work stations for our employees were not adjustable for each specific worker.
- This caused strains on our operators neck and back.

Implement Control

Project

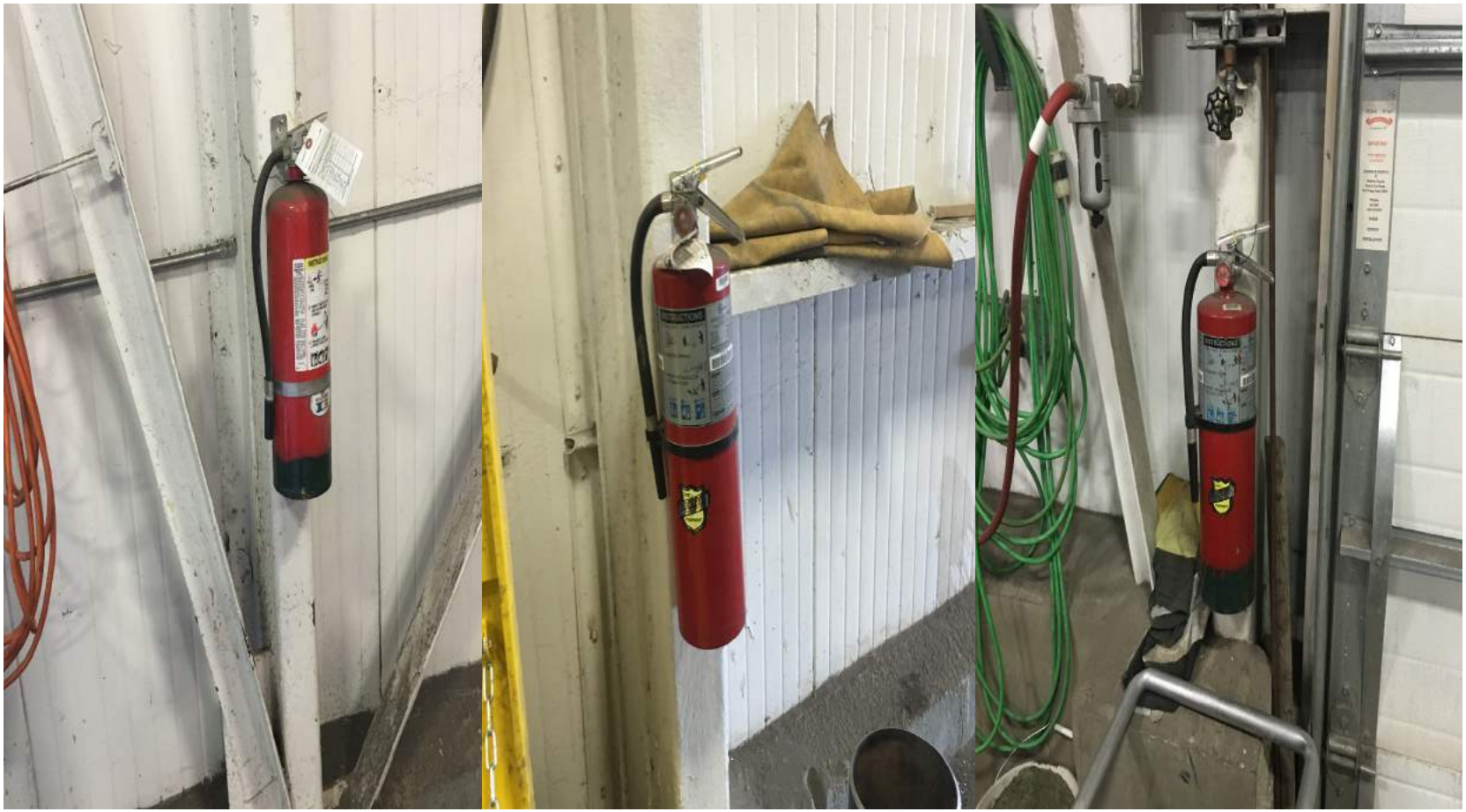
- Find a way to adjust the cell to the worker
- Purchasing table lifts for our employees, that would accommodate the different heights to help eliminate sprains and strains.

Safety Issue: Fire Extinguishers were falling over and tags and pins were tearing off and coming out.
Solution: We fabricated a stand holder that keeps them in place and safe. We created a holder for both 10lb and 20lb.

Safety Issue: Extreme heat and overheating while we are at remote locations.
Solution: We installed an AC unit in the front office of our shutdown trailers and now allow our workers a cool off time where they can grab a water from the fridge and sit in the air conditioning.

Safety Issue: Our bottles were being left loose and being mixed into other contractors. We also wanted a secure way to unload bottles and move them.
Solution: We fabricated a bottle cart to move bottles and also a cage to transport them. Our colors are green and yellow so we painted them.

Safety Issue: We expanded our fabrication capacities this year and had not covered our shop space with the needed fire extinguishers.
Solution: We added 6 extinguishers to our shop fab area and back room. We also added fire extinguishers to our break room and kitchen.



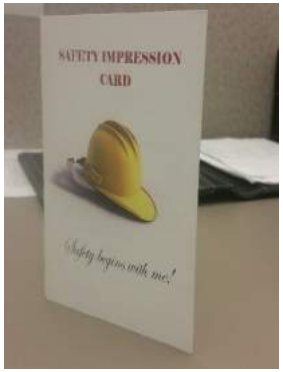
Safety Issue: Our handrail, platform and stairs leading into our shop were a dark brown color and rusty. The step leading into the shop was noticed to be a tripping hazard.

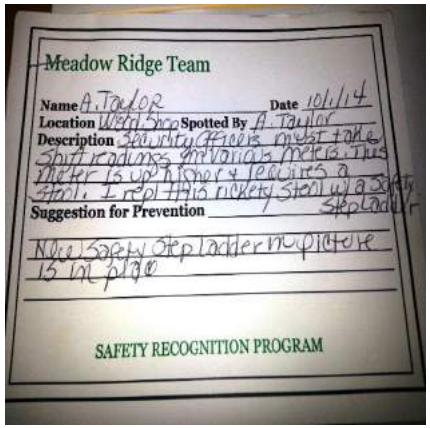
Solution: We sanded and painted our handrail and platform, we also painted the step.

NEAR MISS CARDS

Many LCS managed communities have implemented a near miss reporting system that is led and promoted by the safety committee and supported by leadership. Key components of this system include hazard recognition, employee involvement and fun. Each community involved in this initiative develops a card /form that incorporates a fun safety theme, slogan, mascot, etc. All employees are encouraged to get involved and offer solutions. The cards are reviewed as they come in and again at the monthly safety committee meeting(s). Hazards, solutions and deadlines are established and documented on a hazard log.

The safety committee also recognizes at least one employee monthly based on the quality of the near miss and/or solution offered. All employees are followed-up with as to the status of their card, what is being done and why. The cards are oftentimes displayed on the safety bulletin board before being given to the supervisors for additional follow-up and recognition. Benefits include; prevention of future incidents, opportunity for employee recognition, helps strengthen the safety culture and captures ample data for trending and performance measurement.





Job Observations

Many LCS communities are performing job observations. This is a great way to get employees thinking about safety before, during and after a task is completed. This process is fairly simple and offers many benefits such as hazard recognition, self-awareness (good and bad behaviors), and the opportunity to recognize people on many levels. This is a hands-on process that has the potential to include all staff and allows for focus in certain areas if need be.

Guidelines

- ✓ Always ask the person or people you want to observe if it is okay to observe them.
- ✓ Do not record the name of the person you are observing.
- ✓ NEVER punish for performing a task wrong.
- ✓ You do not have to watch the entire task.
- ✓ Always give feedback, both positive and corrective.
- ✓ Always thank the person(s) you are observing.

LCS Job Observation Card

Date and time: 7/10/14, 10:30am
Department: Plant
Task: Shutting water valve in ceiling
Shift: Day

Factors	Safe	Risk	N/A
Eyes on task	X		
Assistance from others	X		
Pinch points	X		
Rushing		X	
Complacency	X		
Fatigue			X
Frustration			X
Stress			X
PPE		X	
Walking/working surface	X		
Elevated work		X	
Proper tools	X		
Ergonomics/lifting			X
Housekeeping	X		
Other			X

Description of task and risk: While rushing to shut a water valve in the ceiling, ee was at risk of falling due to improper ladder usage. Debris was falling from ceiling and could have gotten in eyes. Ee could have cut hand when sawing into the roof or on a sharp object in the ceiling.

Solution/Action: Fill out PJHA prior to performing job. Re-training on ladder safety. Obtaining and using proper PPE (gloves and safety glasses).

Observer: Kandy Olinger

Heated Sidewalks, Steps and Ramps

One of the things we've been doing to reduce Slips, Trips and Falls for our staff and patients is to install heated sidewalks, Steps and Ramps coming into our buildings.

We have been doing this for our new facilities and when we update or replace existing sidewalks.

As you can see in the pictures below the sidewalks stay clear during a normal snow and will be clear and dry within a few hours after the snow stops.


SECURED
ENTRANCE

If You Can't Stop Them, Protect Them

Even though we have a sidewalk coming up to the building a half a block south of this location (see pictures slide below) we had people constantly walking from the sidewalk along the street into the vehicle entrance putting them in danger of being hit by turning traffic. (see arrow #1)

Arrow #2 and arrow #3 are looking at the same area from different directions.

Arrow #3 shows the sidewalk that was installed to protect pedestrians from turning traffic.


2
1


3

Making Street Crossing Safer

We have locations on both sides of this street. (see slide below)

All there was for a crosswalk here was two parallel lines. We went to the city and got approval to add the more distinctive street marking and pedestrian signage as a temporary fix (see arrows #1and #2) The city agreed as long as we paid for them.

As a more permanent fix we added a push button flashing pedestrian cross walk sign. (see arrow #3) Again the city agreed as long as the two businesses involved paid the cost.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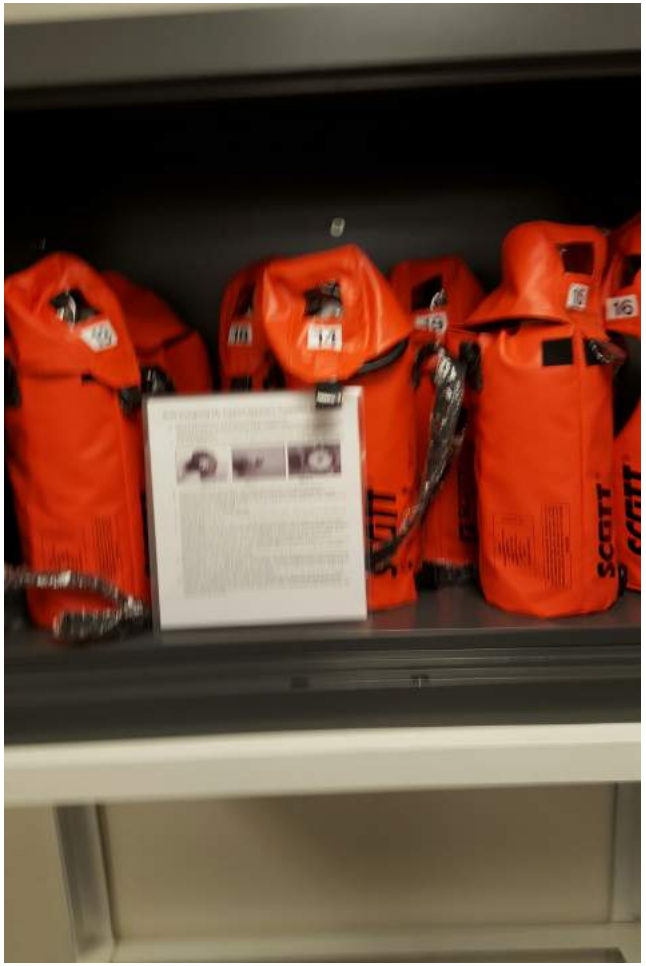
Culture Shift: Grab the Moment is

taking a few seconds to evaluate the safety hazards associated with the task at hand.

- **BEFORE:** Various Safety activities and initiatives were separate programs, evaluated separately, not tied together very well, directed mainly toward hourly service technicians, tracking and reports focused heavily on trailing indicators, little cross departmental involvement, labor intensive for direct supervisors, and offered limited direct, personal accountability. No significant cultural impact noticed.
- **IMPLEMENTATION**: Inserted Grab the Moment hazard control process into all aspects of daily operations much like a multi-layered marketing campaign in order to impact the culture for Safety.
- **AFTER: Grab the Moment** was implemented as the primary safety initiative which runs through all aspects of our business from new hire orientation, job training, incentives and rewards, performance reviews, daily job duties, newsletter articles, CEO's conf. calls, updates and revisions to the printed forms, requirements to record hazards and corrections on the forms, tracking/reporting on how well Grab the Moment is executed on each single work order, and publicized through weekly executive reports per location and per person. Cultural impact evident in singular focus and general vocabulary used throughout enterprise.
- 2015 results are better enterprise understanding, 98% program execution rate, a reduced RIR by 11%, and reduced DART rate by 60%.

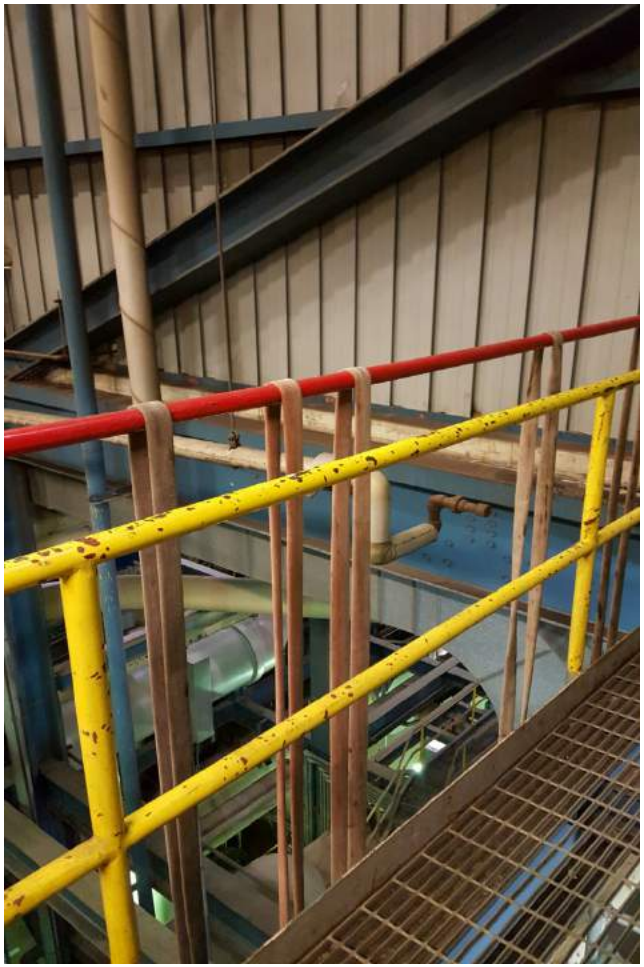
MidAmerican Energy Neal Plants



Neal Energy Plants Elsa Updates

- In 2015 both Neal North and Neal South updated and increased the amount of Elsa escape packs in each plant.
- New designated cabinets were place in each plant. They are labeled to assist employees on their locations.
- Instructions on how to use and inspect the units were placed in each cabinet.
- Training on the correct way to use the units was given to employees.
- A system for monthly inspections was created and placed into the cabinets. This was also place into a computer data base for tracking purposes.

MidAmerican Energy Neal Plants



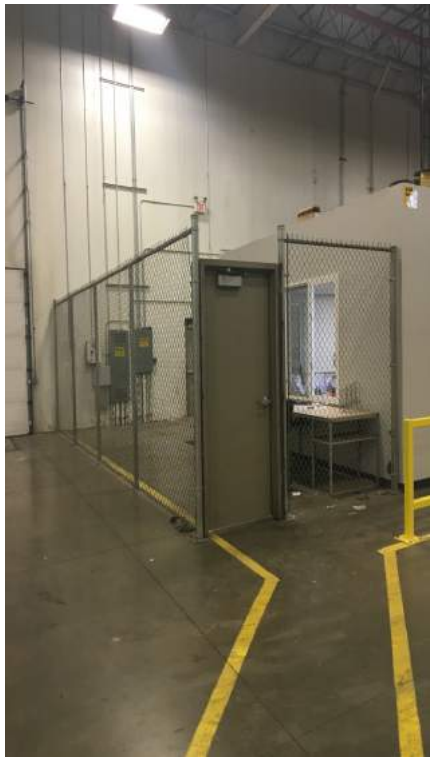
Hose drying racks Neal Energy

- Drying and cleaning hoses has been a problem for years, the floor or handrails had been used in the past.
- Workers were looking for a place that would be safe and out of the way to dry hoses.
- Various places were looked at and the area around the handrails was found to be both safe and out of the way.
- Due to the cross draft and updraft, the air movement in this area was the best place in the plant to assist with drying the hose lines.
- Using this rack and area would allow the workers to safely place and remove the hoses.
- The rails were color coded red and employees were trained to recognize them as a drying rack and not part of the handrail system.

Cages for Trucker Entrances

Before - Truckers had access to the buildings as soon as they walked in the doors which were kept unlocked so they could get inside. This resulted in truckers wandering the dock area and sometimes even wandering through the building and in the racking areas.

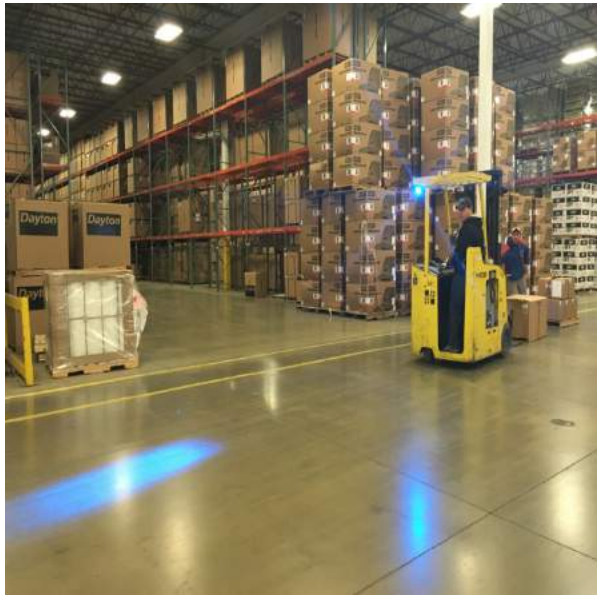
After – Cages were built at the entrances truckers used so the doors could still be kept unlocked but now once they get inside, they do not have access to the rest of the building unless someone lets them through. They still have a place to wait while their trucks are being unloaded or loaded and to fill out their paperwork.



Blue Back-Up Lights on Fork Trucks

Before – We previously relied on back up alarms to alert others that a fork truck was backing up but with all the other noise in the buildings sometimes it was hard to hear the alarm and some people were able to tune out the alarm. This put employees as well as other fork trucks at risk of colliding.

After – We installed blue LED lights on fork trucks that shine out behind them about 15 feet and they are activated when the fork truck is in reverse. The lights have shown to get effectively get peoples attention even if they are walking while looking at the ground thus reducing the risk of someone not seeing a fork truck.

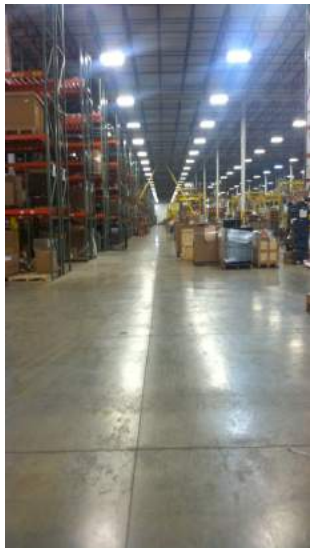


Mi-T-M
CORPORATION

Pedestrian Walkways

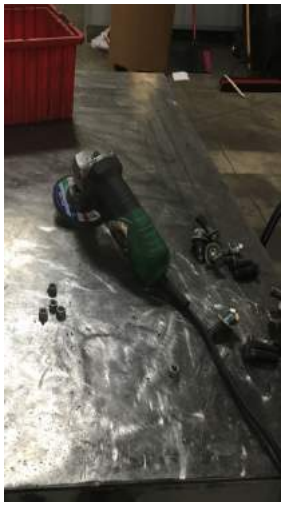
Before – There weren't any areas designated for pedestrian walk paths. Pedestrians were walking through racking and in busy fork truck areas to get to their destination which put them at a high risk of getting hit.

After – Walkways were painted throughout the buildings for pedestrians to follow to get to their destination. This gives fork truck drivers an area where they know to look out for pedestrians and pedestrians a safer route to their destination.



Face Masks & New Grinders for Welders Using Cut Off Wheels

Before – Welders used cut off wheels on grinders with RPM's higher than the rating on the cut off wheels. This occasionally caused the wheels to break off becoming a hazard to the employees if they were hit by one.

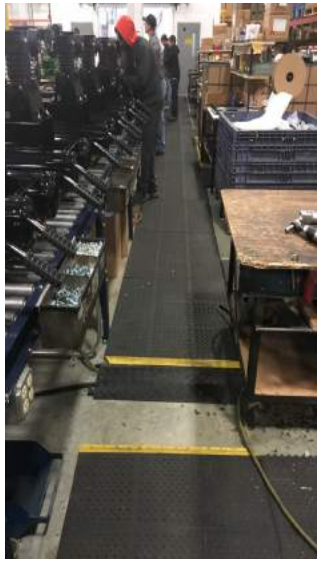


After – Welders were given face shields and new grinders with lower RPM's that are designed to be used with cut off wheels. We implemented a new policy that states only those grinders are to be used with cut off wheels and face shields must be worn while using them.

Cord/Hose Protectors

Before – Air hoses ran across employee work areas especially on the production lines which made for a tripping hazard.

After – Air hoses are run underneath cord protectors eliminating the tripping hazard but still allowing the employees to use the cords where they would like them.



PRIOR TO BEING TESTED, ASSEMBLED PARTS MUST BE CLAMPED INTO “HOLDING” FIXTURES:

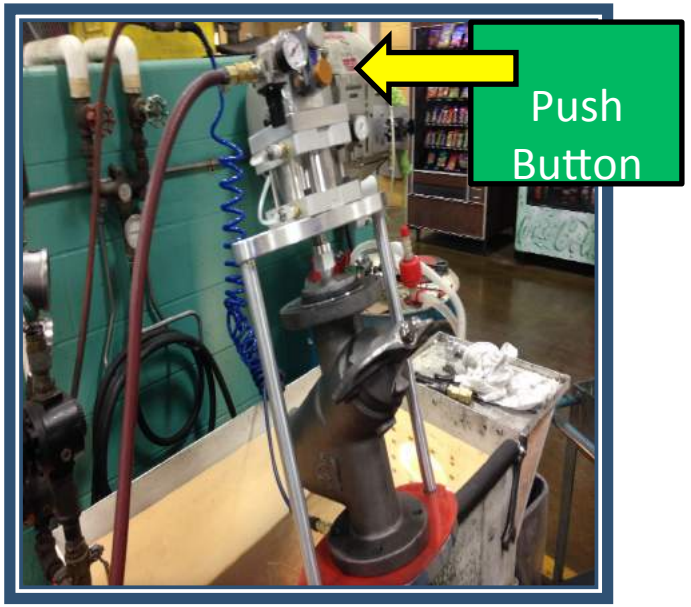
Previously, the assembled parts were clamped into these fixtures manually to test; a process that required the employee to hand crank and perform repetitive wrenching motions. This exposed the employee to sprains, strains, and chronic ergonomic injuries, as well as potential hand injuries from the wrench slipping.

New air fixtures have been engineered and fabricated. This allows the employee to clamp the parts by the push of a button. This improved method instantly clamps the nozzles in place. The new air fixtures weigh less than the older fixtures and are a lot easier to handle as well.

In addition to eliminating the above mentioned hazards, this new process enhances production, and boosts employee morale.

Before

After

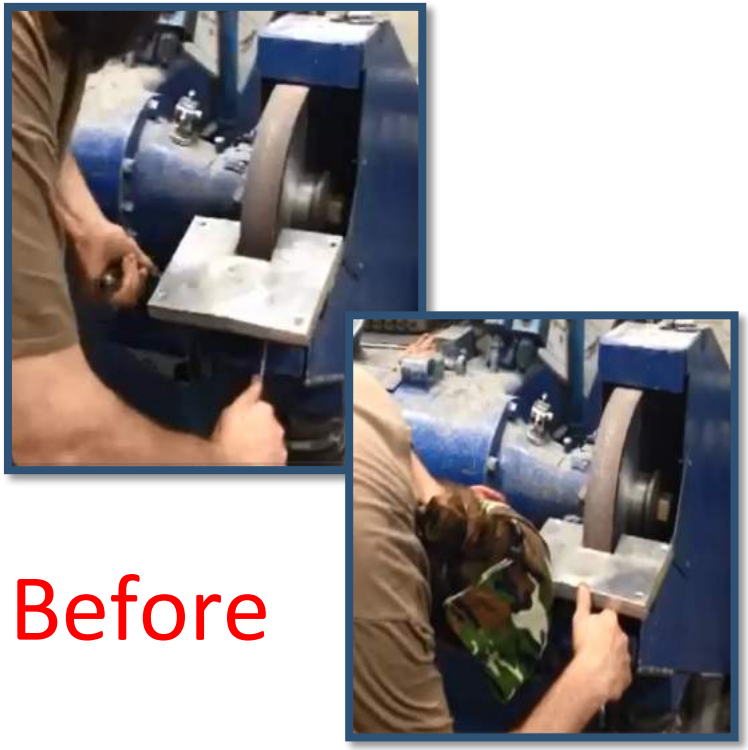


REMOVING TOOL POSTS TO CHANGE OUT GRINDING BELTS:

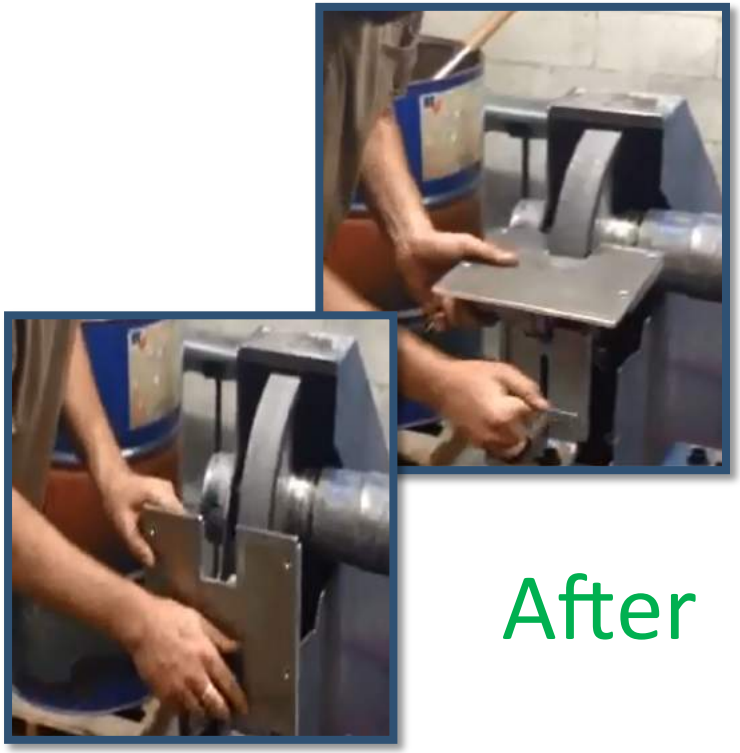
Previously, to change out a grinding belt, the operator had to first remove the tool post. This required the operator to perform repetitive wrenching motions as well as exposing the operator to poor postures, sprains and strains, etc.

New adjustable tool posts have been engineered and fabricated. The new tool posts are completely adjustable, allowing the operator to easily positon it into place with two hand clamps. It can also flip up while the operator changes out the grinding belt.

In addition to eliminating the wrenching motions and other ergonomic hazards with this process, it saves a lot of time and increases production.



Before



After

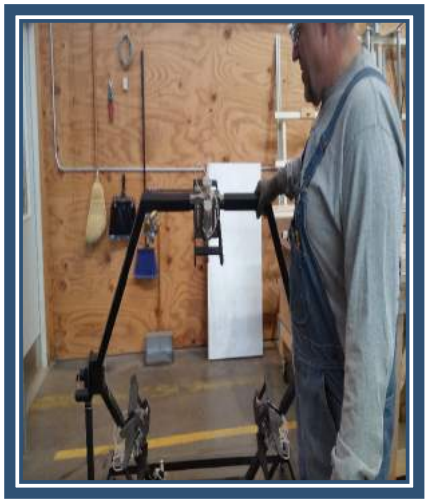
Manhole cover Polyurea spray operation:

38” and 44” wooden manhole covers are sprayed with a Polyurea coating. After the top and sides of the cover are sprayed, the cover needs to be flipped to spray the underside.

Manhole covers can weigh up to 90 pounds. Our current vacuum lift could lift the covers, but did not have the ability to flip them completely over to set them onto a conveyor. Two employees had to flip the covers manually exposing them to sprain and strain injuries.

So we engineered and fabricated a “Flipper” that we could use our existing vacuum lift with. The flipper easily rotates on pins, and distributes the weight of an object equally. The employee uses the vacuum lift to place the manhole cover onto the flipper. Air cylinders then clamp the cover in place with a push of a button. The cover is then flipped over using very little effort.

Not only did the Flipper eliminate the above sprain and strain exposure, it allowed us to utilize only one employee in the process and increased production.

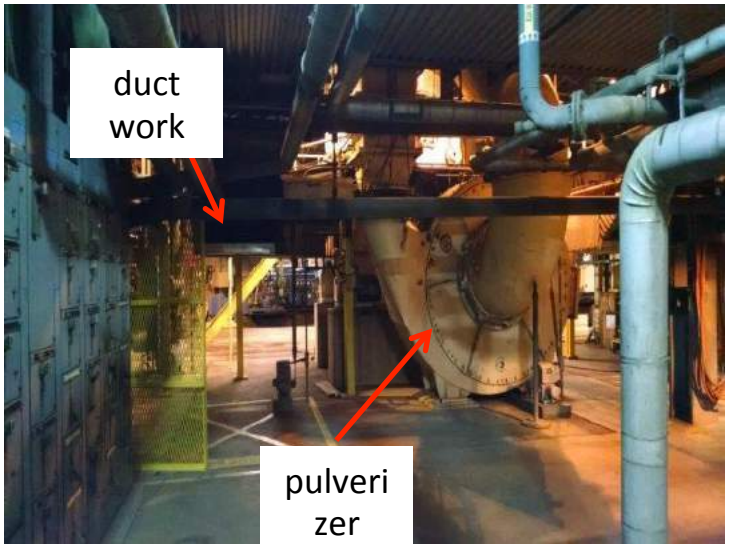


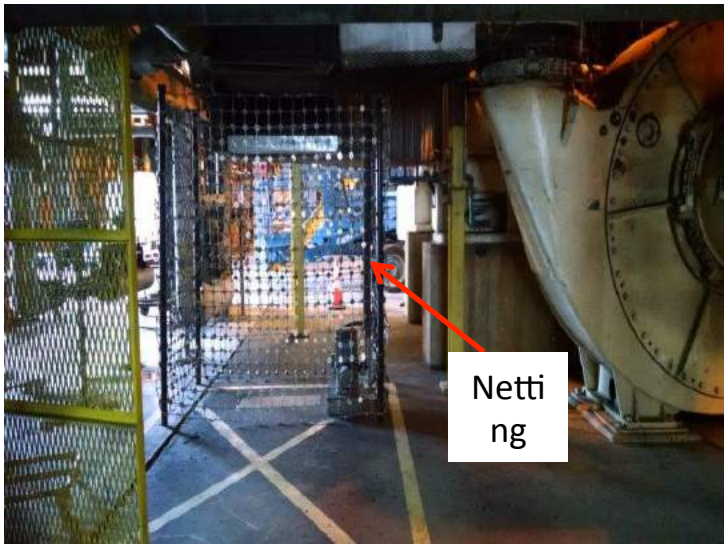
Before - out of date maintenance shop was cluttered with many slip, trip, and fall hazards including extension cords and air hoses running across the floor. The shop was no longer being used as it was originally intended for.

After – designed as a tear down area for pumps and motor rebuilds. We installed a trolley for lifting and moving equipment, along with adding retractable electrical cords and hose reels to eliminate trip hazards. The room was leaned, and redesigned to include new paint for better illumination. This has made for a safer more productive environment.

Before – when coal is crushed in the pulverizer it has the potential for a combustible dust explosion at low loads when the dust inside the pulverizer enters the explosive range (industry problem). Damper projects out of the duct work when explosion happens creating a serious impact hazard. Employees are to stay clear from the area, but there are operational functions that could put employees in harms way.

After – there has been continual improvements in the operation to limit the number of incidents, but they have not been completely eliminated. Engineered netting used on aircraft carriers to catch aircrafts have been installed on all four of our pulverizers to catch flying projectiles protecting equipment and employees.





UTILITY DISCONNECTS

- After an assessment of our power controls we discovered not all of our power sources were identified in the event of an emergency…….
- We now have ALL utilities located and identified and have updated our contingency plan for powering down our facilities in the event of an emergency.

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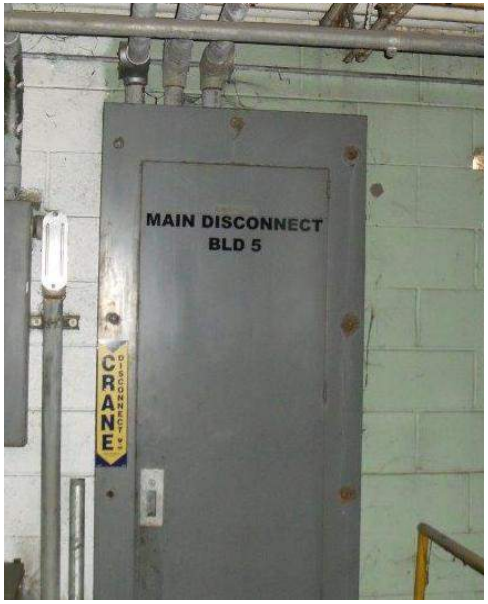


Natural Gas Isolation: When entering dryer for weekly inspection, operators where required to isolate the natural gas line with a double-block and bleed and remove a spool. The spool location, size and weight exposed workers to various injuries. This process also had a high potential for leaks upon returning the line to service.

The safety committee researched options and recommended a swinging spectacle blind. Now the operators only have to turn a cam and rotate the blind into place. The new procedure is safer, simpler and quicker and reduces the potential for gas leaks when returned to service.

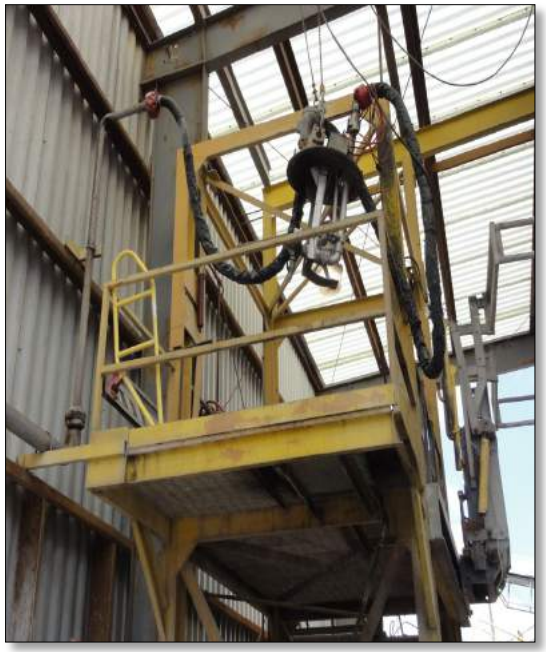
Before: Double block and bleed and removing spool.

After: Swinging spectacle blind

Tank Car Washing: When emptied, tank railcars are washed with an acid solution. The feed line to the mechanical washer was 3" hose that was difficult to maneuver, hard to access, and had failed a few times causing acid to spray all over the work area.

Operators asked the safety committee to work on a solution. The result is an engineered mechanical arm that swings and pivots into place with much less operator effort, greater reliability and less potential for hazardous materials spill.

Before: Rubber hose



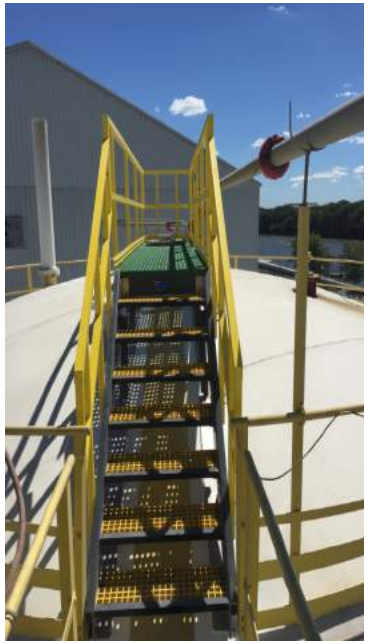
After: Engineered stainless steel pipe arm

Acid Tank Inspection: Operators are required to manually check acid tank levels periodically to verify electronic sensor calibration. To access the test port, they walked up the stairway to the tank brim, then walk up the domed lid to the man way. The walkway had been painted with grip paint, but during rain, snow and wind, the risk of slip and fall was increased.

The safety committee recommended a catwalk be welded to the dome lid to provide access. Together with engineering and management, a fiberglass walkway was designed that provided safe, level and secure access without corrosion potential or adding the add weight of steel to the dome.

Before: Walkway on domed tank lids with no handrail.

After: Fiberglass walkway with steps and handrails.



Screen Lancer Line-of Fire Elimination

Before

Parts were being held in lancing machine by operators hands to ensure the proper location of a slit being cut into the screen channel. This created a potential line-of-fire issue and risk of injury.

After

Machine was redesigned to hold the part for the application. The operator must now activate a two handed trip

Previous Hand Location

Current Hand Location

Glue Pot EP Press

Before

Refilling the glue pot and maintenance was very difficult and not ergonomically friendly due to the fencing around the conveyors which was needed to avoid the risk of getting body parts or clothing caught.

After

Relocated glue station off line and now pump the glue through a hose placed under barriers on the ground. This eliminated an ergonomic reach risk and eliminated the need to lift 5 gallon buckets of glue.

Previous location surrounded by fencing

New Location

Paint/Stain Booth Conveyor Slip Clutches

Before

The roller conveyor system in the paint booths required cleaning which required team members to scrap rollers while they were moving. The paint buildup would prevent rollers from slipping and if a team members hand slipped, it created a potential rotating shaft hazard.

After

Slip Clutch was added to all the roller systems. If the rollers get locked up, the clutch will stop the system, preventing any risk to the operator.

Safety ProActive Suggestion Program

Before

Always had a strong employee suggestion program – where Team Members could turn in "*wants and needs*" to help improve their task with Productivity, Quality and Safety in mind.

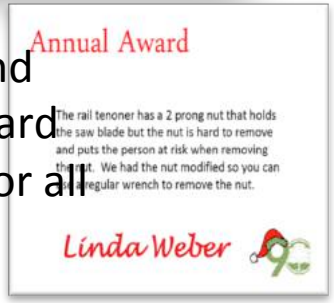
After

New program to single out Safety Suggestions. To minimize and remove potential risk in the Team Members task. Track and shared with Team Members weekly.

2016 Safety Strategies

	2015 # incidents	2015 YE Rate	2016 # incidents	2016 Obj.	2016 Act.
Proactive Suggestions	260	5.00	24	5.50	2.40

Monthly and Annual Award Drawings for all Entries.



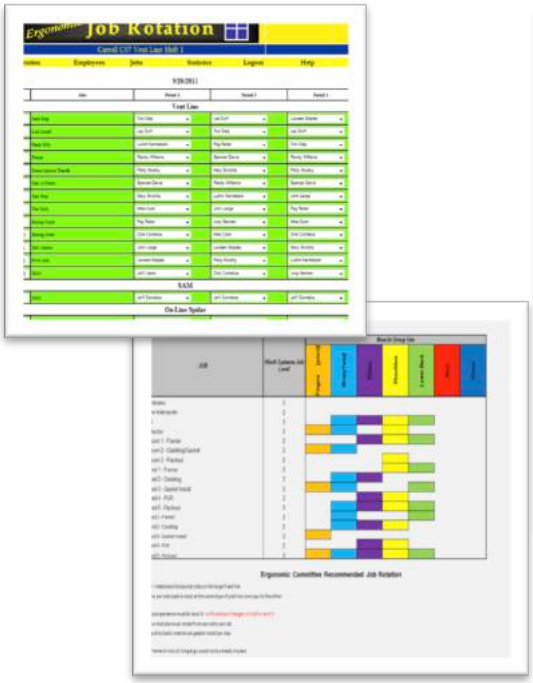
Ergonomic Job Rotation

Before

Software rotated Team Members into different jobs, yet did not keep us from putting them in high Bill Brough score task back to back.

After

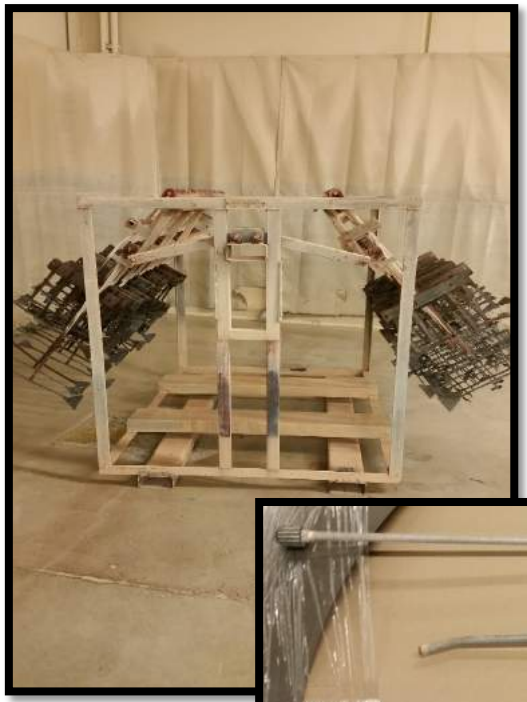
Developed software adding **large muscle groups** to ensure Team Members where not rotating into same muscle task. Software will alert the producer if Team Member is placed into a repetitive position with the same high BB score.



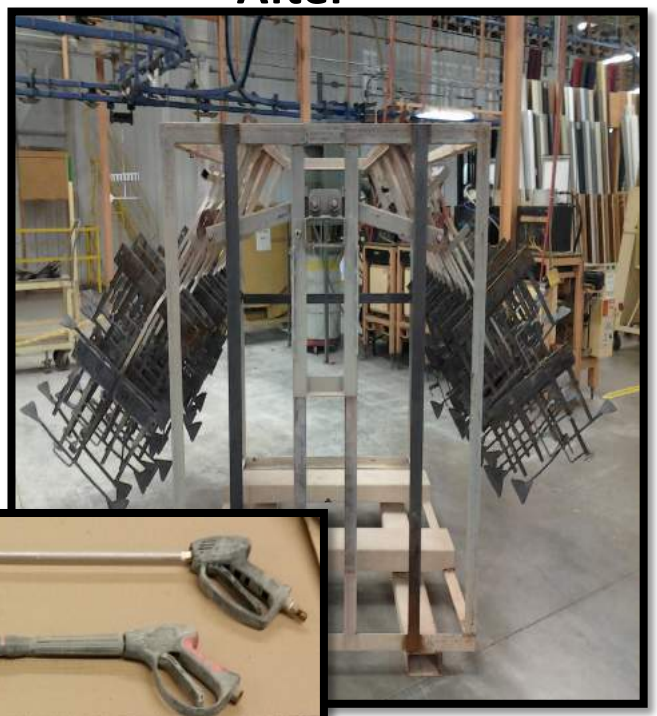
Old software issues and added muscle groups gave direction for the new software.

Power Washing Hanger Burn-off Racks

Before



After



Team members power washing paint hanger racks were having a hard time reaching the back side of the hangers. A near miss was reported as one team member was inside of the racking area, washing the hangers because they could not reach all of the hangers. A longer power washer wand was installed along with some guarding to prevent team members from going inside the racking.

Dumpster Rope Handles

Before

After

Forklift operators emptying dumpsters have to pull the rope in order for the dumpster to dump, sometimes the rope is slick and they lose grip so they wrap the rope around their hand.

A handle was installed on all dumpsters to eliminate the risk associated with wrapping the rope around their hand.

Edgeband Router

There were separate power sources for the dust collection and the router and the router would operate without dust collector on, increasing risk of sawdust in the blowing in the air.

Installed a single power source Dust collection turns on when router is on turns off when router is off, thus ensuring proper dust collection during parts-making process

Before

After

Rolling Machine Trip Hazard Elimination

Before

After

Team members would walk back and forth, N. to S., at this work station and navigate over the machine wires and cover plate. When setting up the machine, they had to stand on or near the electrical wires, creating a tripping hazard and poor ergonomic conditions by having to work on an uneven surface. A bridge was built to house all wires overhead resulting in the removal of a tripping hazard and improving ergonomics.

Roll-forming Tooling Rack

Before

In order for team members to pick up or put away the tooling; they had to push a rack into the aisle and turn it completely around to get to the other side.

After

The racking was modified to where the base was stationary allowing the top of the rack to spin 360 degrees and providing easy access to the rollform tooling.

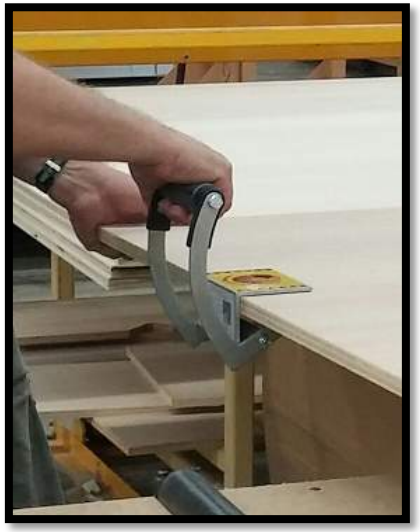
Transferring Plywood Material

Previously, team members would have to move the large sheets of plywood onto the transfer table by using a pinch grip to grab onto the outer edges of the material and pull it onto the table. This would require that his arms be extended out from his body while he pinched and pulled the large sheets of material toward him.

A suggestion was made by a team member to use a gripping tool that is commonly used in the construction industry to move similar products. This panel gripping tool provides a non-slip, comfortable grip on the material while allowing the team member to keep his arms near the core of his body during the transfer process.

Before

After



Utility Knife Replacement

Opening boxes in the stockroom with a utility knife was standard practice and an accepted risk until we found this ceramic knife. It reduced the cut exposure while providing proper ergonomics.

Sound Reduction Project on CNC

The sound level reading before enclosing vacuum pump was 96dB. We designed and installed an enclosure with soundproofing material around the pump. After the enclosure was installed the dB reading dropped to approximately 82 dB.

Before

After

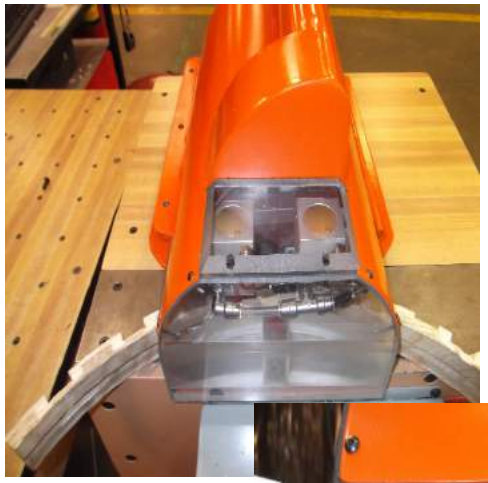
Drill Press eliminated

Before:

- **Operator would have to install metal plate to protect weather strip and then manually operate drill press.**

After:

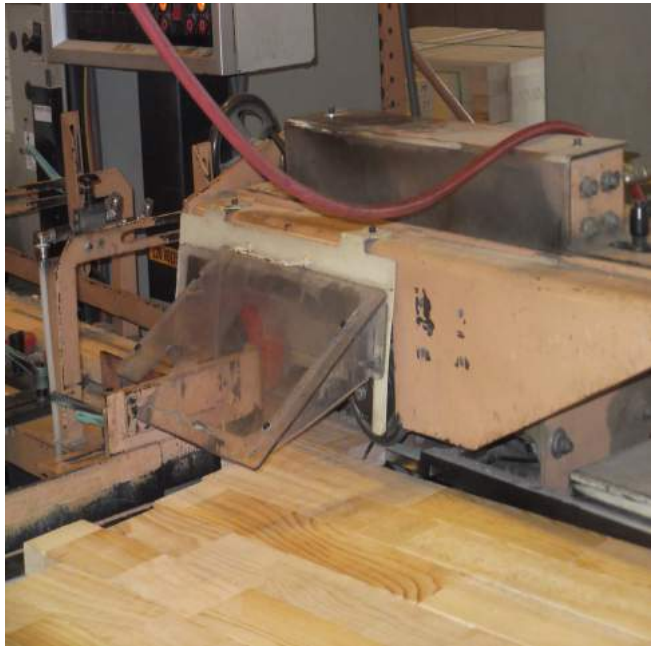
- **New machine was designed and installed that provided improved guarding and eliminated the need for the drill press.**



Moulder Infeed Guarding

Before:

- **Feed table into feeder. Feeder guard was one height and team members could put hand under guard.**



After:

- **New guard automatically adjusts to the height of the part being processed, thus preventing a possible significant injury.**

Value Add Table 3 Safety Improvement

We have had issues in our Value Add Department with smaller units tipping over and either falling against the operator or on to the floor causing minor injury or damage. In 2014, 17 incidents were reported and in 2015 we had nearly 30 incidents reported.
We held numerous teams and events to come up with solutions. We implemented at least 4 different types of changes with little or no improvement.

Thinking outside the box we came up with a new idea. By changing the center of gravity and adding a slow release cylinder to the roller table we have nearly eliminated these issues.

Before

After

A2 Sash to Frame Safety Improvement

Bill Brough Before Change

- **Hands and Arms = 62**
- Elbow and Forearm very poor having to lift fixed units
- **Lifting Task = 42**
- Lifting fixed units
- Twisting units into test rack

Bill Brough After Change

- **Hands And Arms = 42**
- 33% Improvement
- Improved Arm position for fixed units; vented units closed on pop up, allowing units to float on air table to test rack, reducing grip force and twisting
- **Lifting task = 16**
- 62% Improvement
- No lifting of fixed units; fixed pins installed with horizontal fixture; Air flotation minimizes effort to move unit

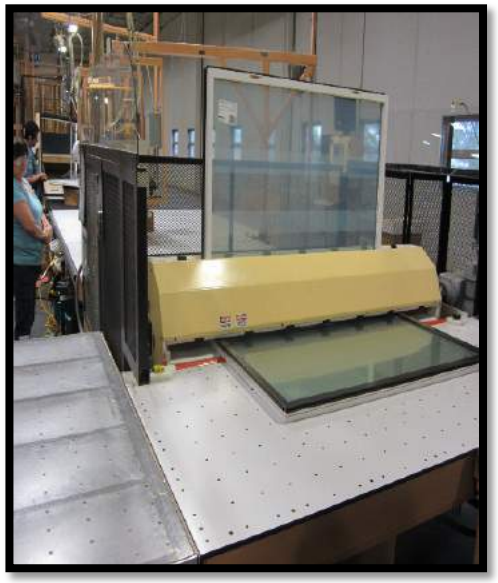
Cl1 Sash Flipper

Team member would have to flip sash manually every cycle before it was sent to the next station. This occurred around 310 times a day and caused strain to wrist, arms and shoulders. This process was the cause of a RI in the year 2014.

We added a mechanical flip to the line. It is machine driven with air tables on both the infeed and outfeed tables. This eliminated all need for manual flip of the unit.

Before

After



Cl1 Frame Clamp

Before

Two operators share work across two stations. One operator could release a unit from a station while another unit could be sitting in the next station. This potentially created a pinch point, parts falling on the floor or parts jamming in equipment.

After

A sensor was added to the bottom plate to not allow a unit to be released from the first station if another unit was already present at the second station. This was a proactive suggestion from team member before an injury occurred.