2016 HAZARD CONTROL AWARD SUBMISSIONS

Fire Alarm System Upgrade

- The system upgrades installed by SEi last April include many system enhancements from the fire alarm enunciators located at the key entrances to the main controller.

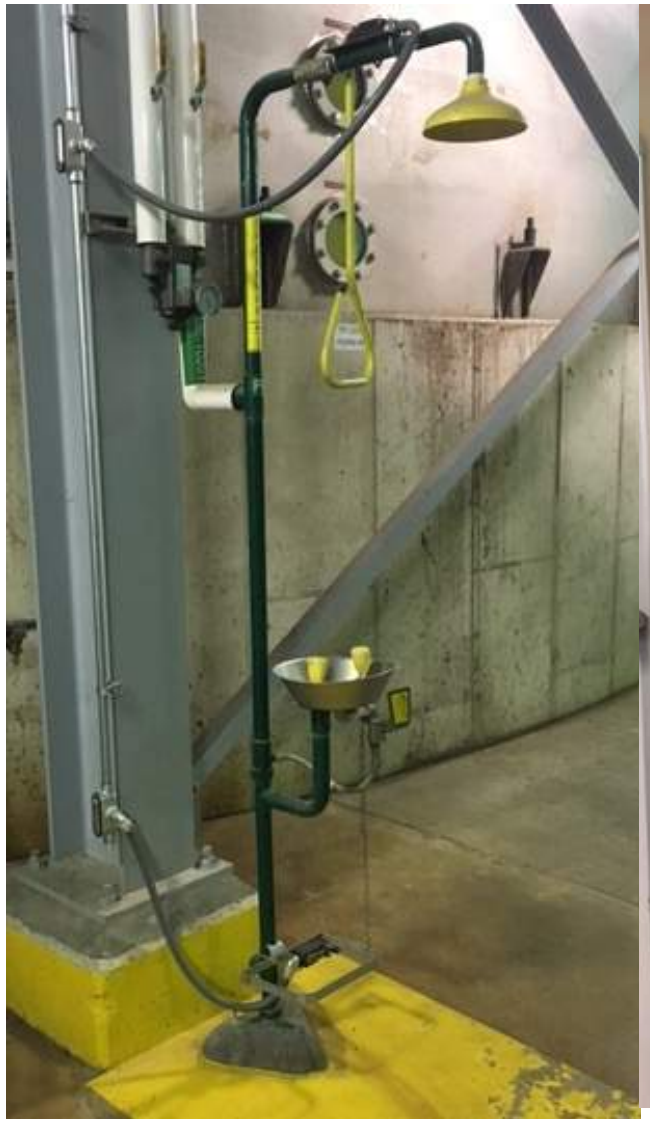
- The brains of the fire alarm system were upgraded with a new intelligent controller with built in Network and Cellular communications of the alarm signals. This controller communicates natively with the intrusion and card access control systems which allows the doors to unlock on alarm and provides a clear path of exit on any fire alarm signal. The controller also has a cloud interface allowing the ability to view alarms and to administer the system from anywhere. The upgrade also included new addressable identification for the field devices like the pull stations. The new identification allows for individual reporting of which device was activated, which will allow for a faster response and easier troubleshooting of where the initiation of the alarm occurred. The system annunicators were also upgraded with full alphanumeric displays, allowing users the ability to read and respond to system activations easily. New supervised power supplies were also installed in place of old antiquated boosters, which allows supervisory support of the buildings bells and strobes. The new electronics coupled with the new communications paths and added cloud services has provided a more secure, more reliable workplace for all Heska Employees.

Before:

Greasing bearings or making mechanical adjustments/repairs on our incline conveyors had to be done with the use of an extension ladder making it a fall hazard and a dangerous task to perform.

After:

We installed work platforms at all four of our incline conveyors to eliminate the need for working off a ladder and making the area much safer to conduct work.



Before:

Our safety showers and eye wash stations could be activated without anyone else knowing there could be a possible emergency.

After:

We installed an alarm system that alerts our control room any time the eye wash or shower is activated so they can respond in a timely manner to a possible emergency.

Before:

Employees and contractors would cross over the conveyors by walking over top instead of using the crossover platforms.

After:

We installed yellow safety chain to help remind employees that the conveyors shall only be crossed by using the crossover platforms.

Before:

During our shutdown, we CIP our vaporizer. In order to do this we have to install a blind in the flange to prevent the CIP from going down stream. In order to do this, we must use a man lift.

After:

We installed a working platform so employees no longer need to use the man lift to access this point.

Before – while performing combustible dust cleaning at our Power Plant employees sometimes would have to climb out on beams in order to reach where dust was accumulating. This created additional fall hazards and took extra manpower for set up and monitoring. Water could not be used due to damage to electrical equipment.

After – purchased a unit that sprays a low moisture foam which grabs the dust and drags it to the floor. Afterwards you can hose the floor down or let it dry and sweep it up. This also leaves a 90 day fire resistant residual on the surfaces that were cleaned. This has reduced labor and risk to the employees.

Before – while removing air heater baskets from the air heater on our boilers at our electrical generation plant the used baskets are lowered into a trailer with an overhead crane. Once lowered the employees would have to climb into the trailer using a ladder for access to release the baskets from the crane. This was a potential slip/trip/fall hazard climbing up and down a ladder and climbing over sharp metal baskets as the trailer fills.

After – a request to the scrap metal company was placed to receive trailers with swing out rear doors. A rolling staircase with guardrails and locking wheels was built to safely access the back of the trailer. The front of the trailer is loaded first so an employee can simply walk in from the back and release the baskets without additional hazards.

Frame Cart Swivel Assist

Before

98 pounds of force to start movement

After

16 pounds of force to start movement

- Before: exerting a lot of force to move the 2000-3000# wood cut stock carts.
- After: fabricated a dolly on the front of cart and removed swivel casters. Greatly reduced force needed to start the movement of the cart. Allowed operator to easily steer cart and guide it into position without force.

Frame Extrusion Removal Process

Before

In order to remove extrusion from a wood frame part, the process was to manually apply force to the wood using a bracket mounted to an I-beam (Pic 1). The operator pushed part away from them to separate wood and extrusion (Pic 2). This created both the potential for injury if the part would slip and it was not very ergonomically friendly.

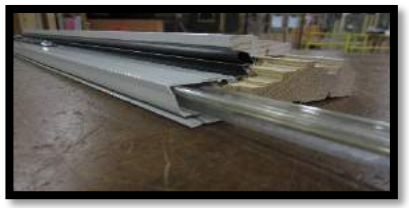

Pic 1


Pic 2

After

Developed a tool that expanded the metal extrusion with a plastic thin air bladder type tube. The tool is inserted in the hollow portion of the extrusion. When the compressed air fills the tube, it expands the extrusion allowing the wood to be easily removed.

This eliminated the hazard and improved ergonomics by eliminating manual force required to remove the extrusion. The process also reduces scrap material as the parts are reusable.



Automated Sanding

Before

Hand sanding parts is an inherently poor ergonomic practice when you look at the big 4 ergo risk factors

- Frequency
- Posture
- Duration
- Force

Sanded 200 parts/ day

After

100% Ergonomic improvement by eliminating manual sanding

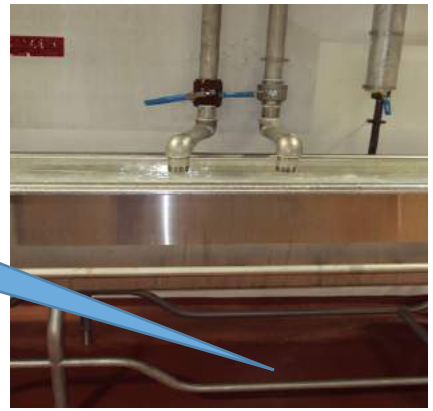
Improved consistency of parts that are sent to production lines

Increased capacity due to improved consistency.

Best of all…3 operators have progressed from conservative care since the manual sanding has been eliminated.

Moving chemical tank water valves

Before



Many parts used in day to day operations need to be cleaned in extremely large tanks filled with water and harsh chemicals, these tanks stand 3’7” in height and are 2’7” away from water valves located directly behind on wall, therefore many people were simply not tall enough to turn these valves on with ease, they would then improvise and stand on the piping of the structure frame (the roundness of these pipes and the fact that they were most times wet made for a bad combination) plus the fact that they were reaching across bubbling hot water that contained chemicals, we knew we needed to make some changes.

After

Now that these hand valves have been relocated, they are now accessible by all working in the area. We have eliminated the need for employees to stand on the wet, round pipe reducing the risk of a slip and an injury to themselves. We also have reduced the chances for chemical burns because employees are not having to stretch across a tank of hot, chemical filled water to turn water off and on.

Platform Installation

Before

- As part of a required shiftly inspection an employee was required to climb this ladder multiple times a day to view product through an inspection port approx. 10’ from floor. After each use the ladder would then need to be removed to keep the walkway along side of equipment clear. The only way to access top-side of machine was from the other side of the equipment which meant possibly rushing to other side when a problem or need arose.

After

- Employees now have a stable platform in which to use to view the required inspection port and also perform many weekly maintenance tasks on. These maintenance tasks used to have to take place on a ladder 10’ of the ground.
- This new platform now keeps the walkway clear at all times.
- The new platform now gives employees another point of access to top side of machine, helping to reduce rushing & the safety concerns that come with it.

Bagger Conveyor Crossover

Before

New bagger system (10 in total) are designed so that the product exits on conveyors that are directly at ground level. Operations are performed on both sides of machines, therefore employees always took path of least resistance and stepped across these conveyors – approx. 24”. The adjustable arms that hold guides in place often caught on pant legs and employees attention tends to be on the machinery when stepping across therefore presenting a trip hazard. Another safety concern that these floor level conveyors presented was the movable supports that the conveyors rest upon (seen in last picture) many times this support was used as a makeshift step to gain additional height when making adjustments to baggers, this presented yet another safety risk. At each bag size changeover these conveyors need to be moved, originally this entailed an employee leaning over to ground level to move these (easier said than done). The plant quickly became aware changes were needed.

After

Crossovers have now been designed for these floor conveyors, reducing the chances for slips and trips. They also safely elevate employees working on baggers. Yet another added benefit, these crossovers were designed so that they could be permanently be fixed to the conveyors so now when moving the conveyors at change overs the handrail can also be used to maneuver the conveyors in to place from a upright position.

The machine in use is a automatic band-saw. On a periodic basis an employee has to manually turn a crank handle to clear the chip tray located under the in-feed table. Employees were required to bend / squat in a non-friendly ergonomic position to forcefully turn the crank handle. A larger / ergonomic friendly crank was mounted on a pedestal to allow employees to turn the crank basically effort free.

Before

After

Employees would use a lift truck to bring a large two-wheeled cart containing a large steel barrel / debris body into the facility through an overhead door. This process was difficult to ensure the cart was centered in the overhead door way. Reflective tape was attached to the outside wall above the outer edges of the doors and yellow guidelines were painted on the ground to assist the lift truck operator to ensure proper alignment is maintained.

Before

After

Employees while carrying a 30 lbs. spool of weld wire would have to ascend a ladder to place the spool on a suspended welder on the end of a movable arm. As a result of a Safety Kaizen event, the weld wire spool was attached to a building support and the weld wire threaded through a flexible conduit to the suspended welder. Eliminating the need to ascend a ladder while not maintaining a 3-point contact technique and the requirement to lift the weld wire spool above shoulder / head height.

Before

After

Employees while welding an end-cap onto a barrel would have to stand on one or two ladders. This process would require constant ascending / descending of ladders to move them around the barrel which exposed the Welders to fall hazards. A moveable platform was designed and constructed to be placed entirely around the barrel to allow the Welders to move freely without a fall hazard.

Before

After

Date: 9-27-16
Work Area: Bin Site

Classification: Electrical Fire

Incident Summary:
Employee was prepping the portable conveyor to receive beans from the field. Upon plugging in the conveyor (480 outlet) the employee noticed it failed to start so the local electrician was notified to reset the breaker in the electrical hut on site. Meanwhile the employee tried another 480 outlet and immediately noticed smoke coming out of the panel on the conveyor so the employee unplugged it. The employee notified the electrician who arrived and opened the panel on the conveyor finding the inside of the panel charred and inoperative.

Key Factor(s)

- *Human* – Light was added to electrical box which caused opening for weather elements to enter the box (rain dripped around base of light fixture into electrical box)
- *System* – There was no inspection requirements for employees to check seals and ensure the electrical box maintained weather proof

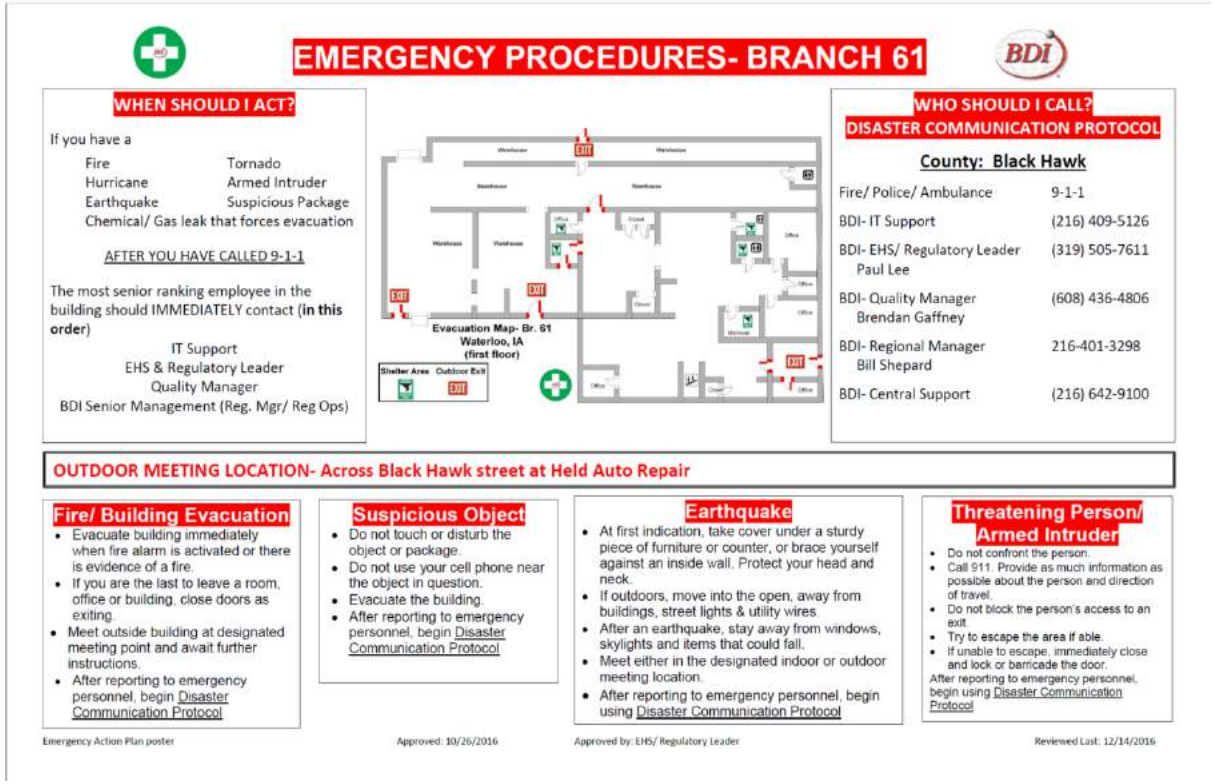
Corrective Actions/Opportunities:

- Inspected all the panels for loose wires on all portable conveyors through use of Thermal Imaging and will be performed annually on all portable conveyors
- Location added a panel inspection in the annual PM for the conveyors to be done by electricians
- Any additions to electrical panels (attachments etc.) will require approval from management before proceeding
- Shared our findings with other locations to avoid similar situations from occurring
- Will include incident during Hazard Recognition- continually ask the “what if’s” prior to performing work.

Hazard- no documented method for emergency escape

Created a simple poster incorporating-

- Layout of facility
- Contact phone numbers
- Common disasters and response plans
- Outdoor & indoor meeting locations



EMERGENCY PROCEDURES- BRANCH 61

WHEN SHOULD I ACT?

If you have a

Fire	Tornado
Hurricane	Armed Intruder
Earthquake	Suspicious Package
Chemical/ Gas leak that forces evacuation	

AFTER YOU HAVE CALLED 9-1-1

The most senior ranking employee in the building should IMMEDIATELY contact (**in this order**)

IT Support
EHS & Regulatory Leader
Quality Manager
BDI Senior Management (Reg. Mgr/ Reg Ops)

Evacuation Map- Br. 61
Waterloo, IA
(first floor)

Shelter Area Outdoor Exit

WHO SHOULD I CALL?
DISASTER COMMUNICATION PROTOCOL

County: Black Hawk

Fire/ Police/ Ambulance	9-1-1
BDI- IT Support	(216) 409-5126
BDI- EHS/ Regulatory Leader Paul Lee	(319) 505-7611
BDI- Quality Manager Brendan Gaffney	(608) 436-4806
BDI- Regional Manager Bill Shepard	216-401-3298
BDI- Central Support	(216) 642-9100

OUTDOOR MEETING LOCATION- Across Black Hawk street at Held Auto Repair

Fire/ Building Evacuation
- Evacuate building immediately when fire alarm is activated or there is evidence of a fire.
- If you are the last to leave a room, office or building, close doors as exiting.
- Meet outside building at designated meeting point and await further instructions.
- After reporting to emergency personnel, begin Disaster Communication Protocol

Suspicious Object
- Do not touch or disturb the object or package.
- Do not use your cell phone near the object in question.
- Evacuate the building.
- After reporting to emergency personnel, begin Disaster Communication Protocol

Earthquake
- At first indication, take cover under a sturdy piece of furniture or counter, or brace yourself against an inside wall. Protect your head and neck.
- If outdoors, move into the open, away from buildings, street lights & utility wires.
- After an earthquake, stay away from windows, skylights and items that could fall.
- Meet either in the designated indoor or outdoor meeting location.
- After reporting to emergency personnel, begin using Disaster Communication Protocol

Threatening Person/ Armed Intruder
- Do not confront the person.
- Call 911. Provide as much information as possible about the person and direction of travel.
- Do not block the person's access to an exit.
- Try to escape the area if able.
- If unable to escape, immediately close and lock or barricade the door.

After reporting to emergency personnel, begin using Disaster Communication Protocol

Emergency Action Plan poster — Approved: 10/26/2016 — Approved by: EHS/ Regulatory Leader — Reviewed Last: 12/14/2016

Syngenta installed an automatic sampling device at point of operation in seed bulk fill area to allow for safe handling extracting the seed. It is now ergonomically correct, in close proximity, and with increased visibility to evaluate the seed.

BEFORE:

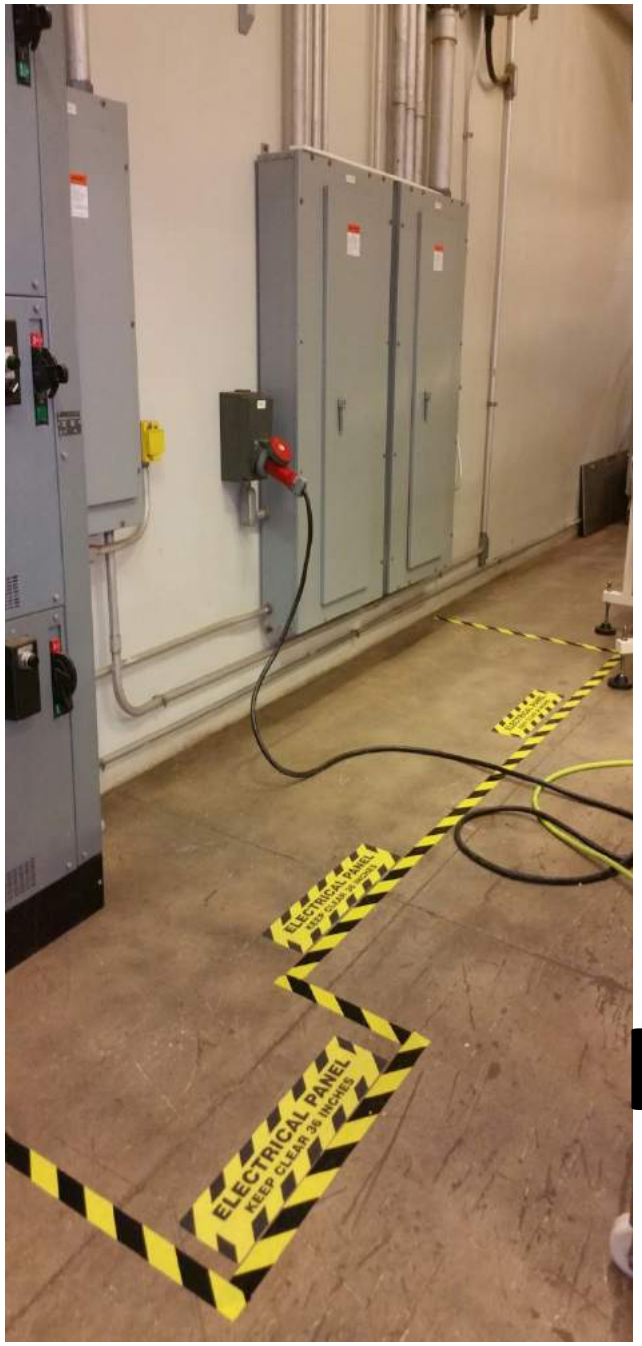
- Over 100 ft away from the process, crossing forklift truck traffic, multiple times performed to get desired sample.
- Previous manual sampling made for poor posture for the task and lifting over head to obtain sample from bulk seed containers.
- Area of sampling was not lighted well, some quality risk of contamination when seed gets hung up in hose.

AFTER:

- Sampling directly at the process, 2 x the size of the old one, hose fed straight from the product to the bucket next to the platform, no heavy lifting or overhead.
- Ergonomically correct sample viewing stand allows operator to work at correct height. The stand is designed with hinges to make for easy drop and clean.
- Premium lighting, no risk of contamination, gravity flow of seed.

syngenta

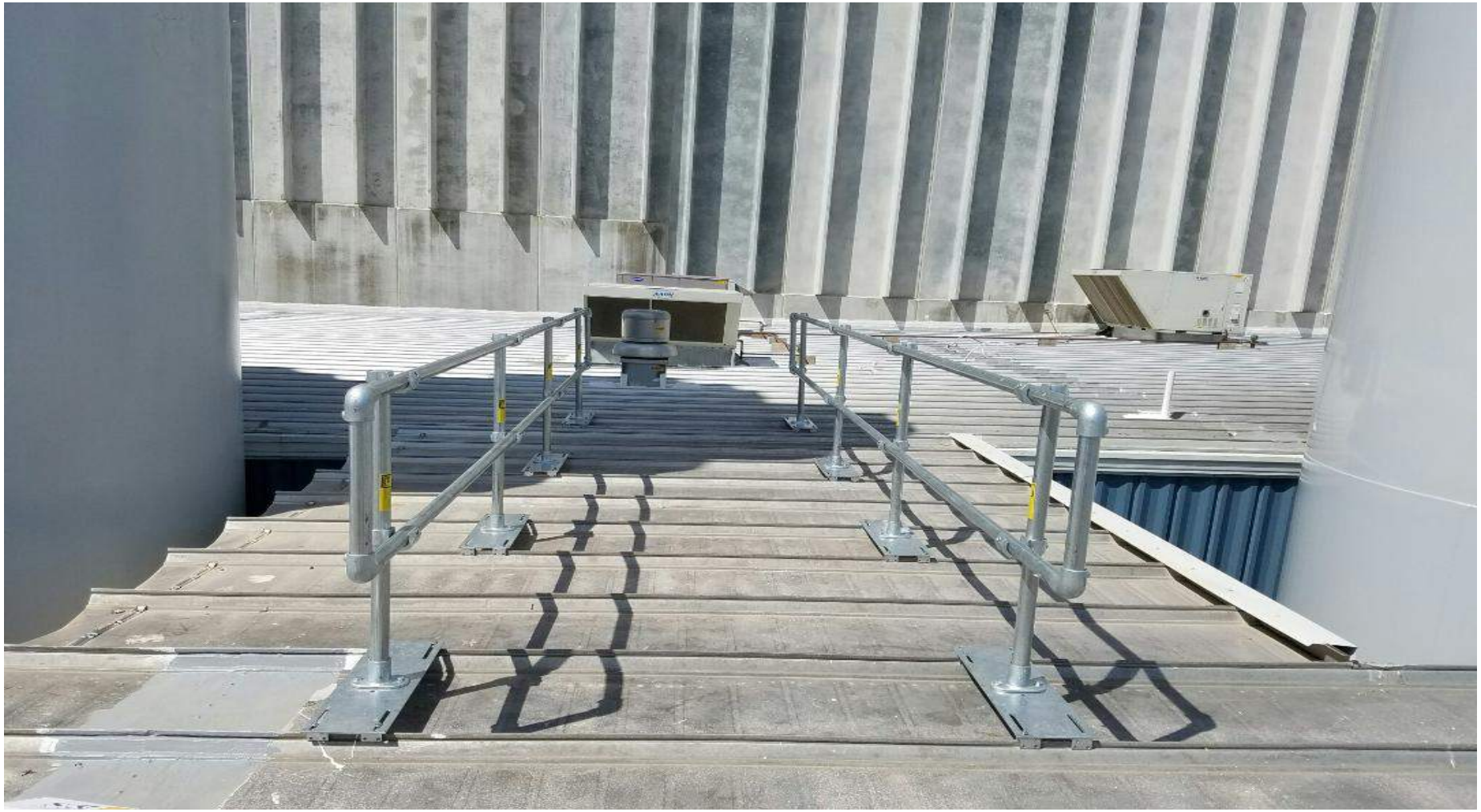
AGROPUR Hull installed a jib crane to help lift the vacuum receiver lid (seen in the picture) when performing maintenance and cleaning



Safety 5-S added to several areas of the AGROPUR Hull facility

Guarding Added Around Several Chemical Pumps

Roof Fall Protection – Guard Rails - Added



To improve forklift and pedestrian safety AGROPUR installed several domed mirrors at intersections and warehouse doors for better visibility.

Before

After

ESCO Group implemented a new item to help prevent eye injuries. To the left are generic safety glasses we supply our employees. To the right are Virtua Foam Back Clear Glasses or Spoggles. We have implemented in our policies that our employees use the Spoggles whenever doing overhead drilling or any other practices that could result with flying particles getting in their eyes.

Before

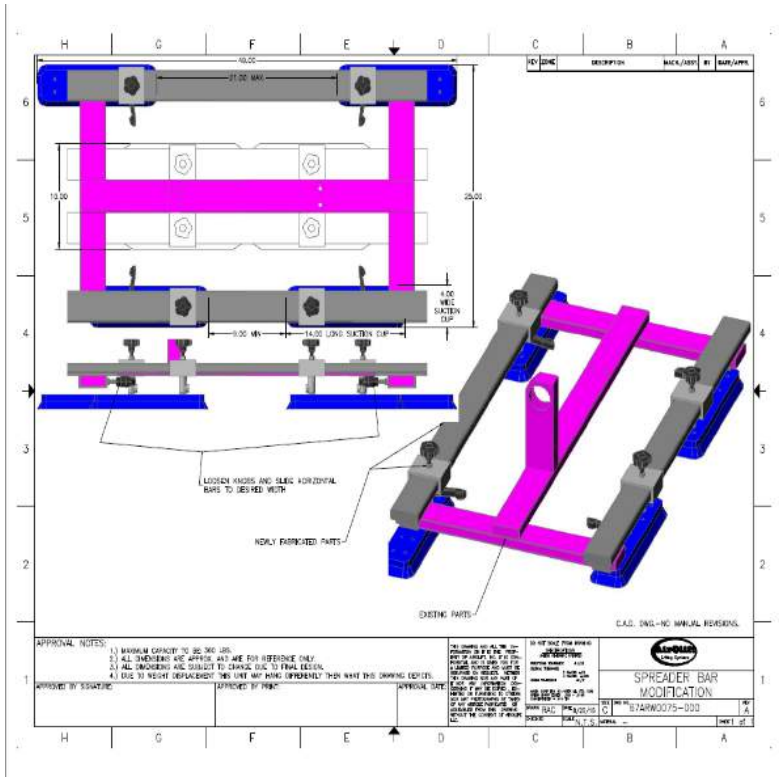
After

ESCO Group implemented a new system for our tool delivery team. On our tool delivery truck we have installed a Tommy Gate. The Tommy Gate system helps with the ergonomics of our tool delivery team and saves them from any strain of lifting heavy equipment or material.

Ergonomic Improvement

Before:
Team Members had to manually lift all glass under 50” x 50” due to placement of suction cups on glass hoist. Certain glass types can weigh up to 120 pounds and present a cutting hazard.

After:
Eliminated the need to manually lift glass by installing adjustable bars on the glass hoist that would accommodate all glass sizes.



Safety Improvement – PIV Approach Light

Before:

Forklifts would approach intersection and pedestrians may not see or hear a forklift emerging from rack aisles or while backing up.

After:

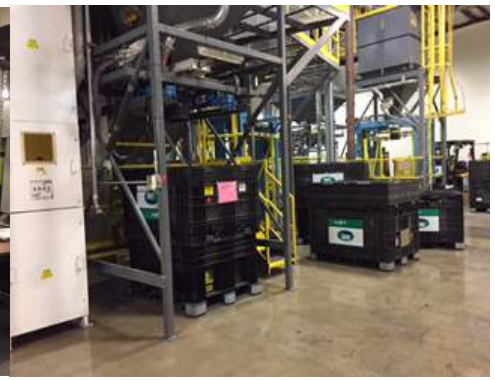
As the forklift or PIV travels, a bright blue light glides across the floor about 15 feet ahead of or behind it (depending on the mounting location). This lets pedestrians know that a fork truck is approaching. Since the light moves only when the vehicle does, pedestrians will also know if the vehicle is stationary or on the move.

SYNGENTA SEEDS “It’s Raining Beans”

At Syngenta Jefferson, we have 2 seed treatment towers (known as tower 1 and tower 2) For years on tower 2 we’d had a problem where treated seed would stick to the bucket conveyors and after time seed would fall and sometimes pour to the walking surface below. As a result much time was spent on clean up (to prevent someone from falling) and a lot of seed was lost and had to be discarded. We tried numerous ideas to fix the problem and although things got better, we were far from where we wanted to be. We finally started to compare tower 1 (problems) to tower 2 (no problems). The big differences was that tower 2 sat directly above their storage bins where there was no need for bucket elevators. Tower 2 was also on the 3rd floor where tower 1 sat on the 2nd floor allowing more opportunity for the seed treatment dry before being loaded into the bin for processing.

A team of key plant personnel, which included the Safety Lead, and Syngenta Engineering met weekly to plan and implement a 625k capital project to move treatment tower 1 up to the same floor level as treatment tower 2. Tower 1 was correlated with the storage bins directly below so that no bucket elevators are used at all. The set-up also allows more opportunity for the beans to dry.

Since the completion of the project, there have been no incidents of raining beans.



Pack-out walking surface

Before

Existing pack-out table design required electric & air line to come from front of machine under a guard in the middle of the work station/walk aisle, creating a tripping hazard.

After

Eliminated a tripping hazard with a new pack-out table design. The after picture shows the area clear of the tripping hazard and new floor mats. Power is routed to the side of the table under a conveyor.

Improved PPE for Team Members

Before

Used a Kevlar sleeve for glass handling that exposed team members to the following hazards:

- Arm Guards did not stay up on arm
- Were hot during summer months

After

Implemented new Contender black full length Kevlar Sleeves with Stayz-up armbands and thumbhole that…

- Higher cut resistance (ANSI A4)
- Cooler in hot conditions
- Better fitting and stays up on arm

FROM LISTENING TO WORKER SUGGESTIONS…
L & M PLACED ALL WORK SCOPE SAFETY PPE AND FORMS INSIDE NEW JOBSITE PRINT SHACKS.
THIS ALLOWS ALL WORKERS TO HAVE ALL SAFETY FORMS AND PPE AT NEEDED AREAS ON THE DIFFERENT JOBSITES!!

L & M BUILT A CONFINED SPACE TRAINER FOR USE DURING OUR RESCUE TRAINING.

Training to be safer and better!!

One of our clients asked us to handle a project that had asbestos removal involved, WE AT THE TIME COULD NOT HELP PERFORM THIS DUE TO SAFETY CONCERNS FOR OUR WORKERS. So we have now trained more than 10 workers and 6 as supervisors. We have completed more than a dozen jobs and our client has scheduled more for 2017!

L & m built and painted all new racks for better storage and safer delivery of gases after seeing a need to upgrade from years past ways gas was handled.

John Deere Engine Works Turbo Carts

- Before

Turbos were brought to the department on carts which required the operator to stage them for the manipulator on the cart’s edges. This created potential for strains, pinches and possibility of the turbo falling and striking the operator.

- After

Carts with inserts were fabricated to nest the parts in a specific orientation. These put the turbo in a position to be picked up by the manipulator and require no extra handling. Quality and productivity were also improved.

John Deere Engine Works Stamping Heads

- Before

An operator was required to hand stamp parts. This put the operator in an awkward position and created the chance for their hand to be struck.

- After

Engineers were able to add engraving the part number to the machining process- completely eliminating the hammer and stamp.

John Deere Engine Works Camshaft Carts

- Before

Pushing multiple containers of camshafts into the working station took upwards of 90 lbs. of initial push force. Protruding wheels created potential for leg injuries.

- After

Donut tread, polyurethane casters were added to the carts. The push forces were dropped nearly 70% to around 30 lbs. Modifications were made to tuck the wheels underneath the carts.

John Deere Engine Works De Rig

- Before

Residual fluids did not drain well into the fluid pit and would collect in areas. Matting had become worn and slippery.

- After

Grating with traction was added over the pit to allow for better drainage. A more robust matting with traction cleats was installed.

John Deere Engine Works Staging Gears

- Before

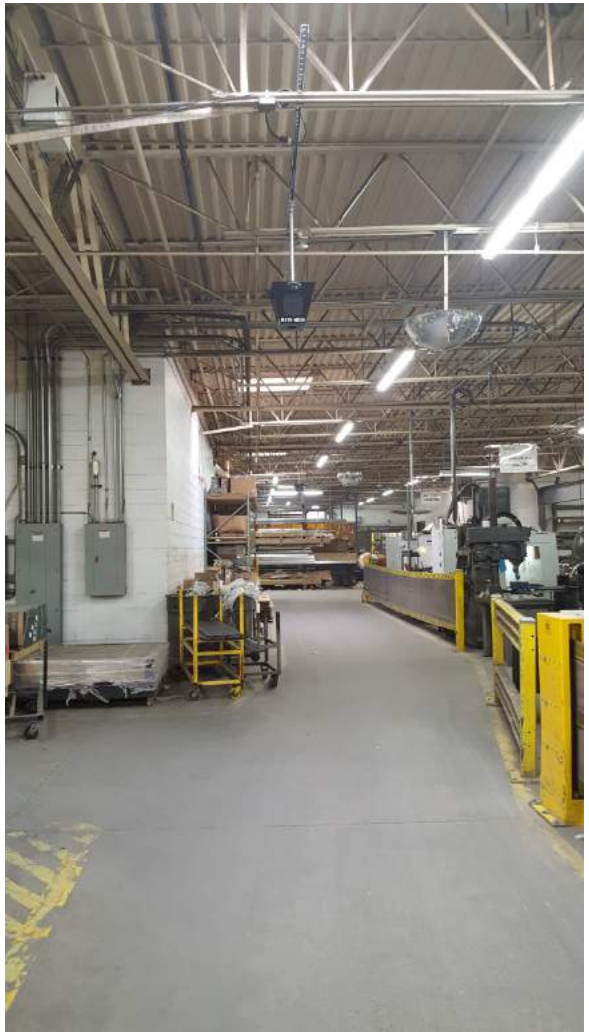
Gears were stacked on the edges of containers with the potential to fall off and strike the operator if the containers was bumped. The gears could also pick up debris from the containers.

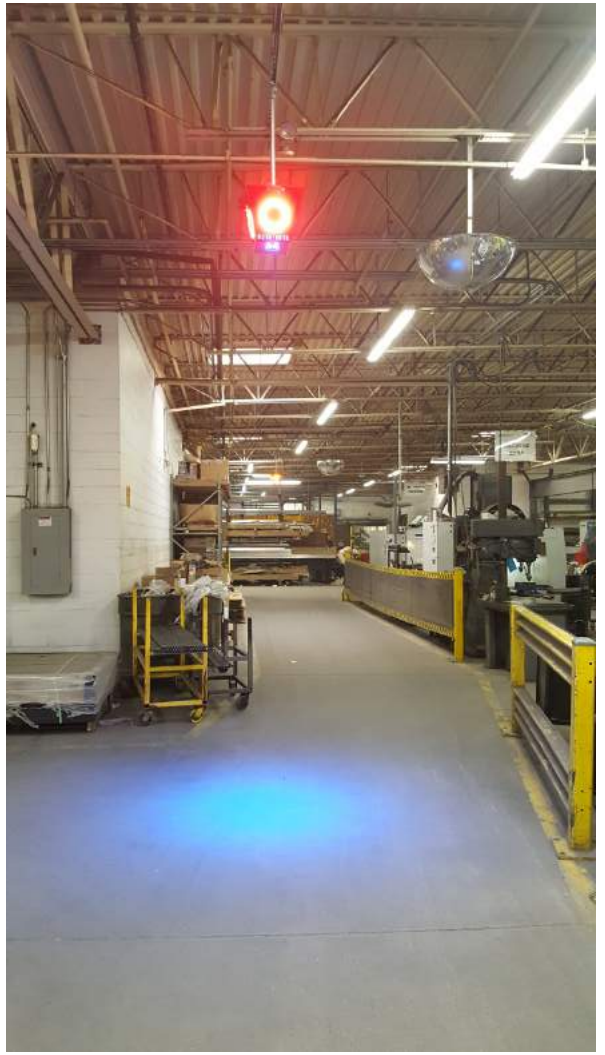
- After

Shelves that lock onto the containers were fabricated. This also reduces the chance of contamination.

In 2016 Iowa Select Farms made the decision to do complete remodels of their sow farms as well as some of their other farms. The remodels included a positive pressure ventilation system to increase the air quality in the farms. The picture below shows the filter bank wall, as well as the dormer extensions on one of the barns. Another large part of the remodels was; better electrical systems with better breaker systems and 100% hardwired fixtures, LED lighting , renovated walkways to reduce or eliminate trips and falls, hallway heating to remove the issue of hallways getting icy, and a better phone system. Iowa Select Farms is trying and becoming the gold standard in the hog industry for safety.

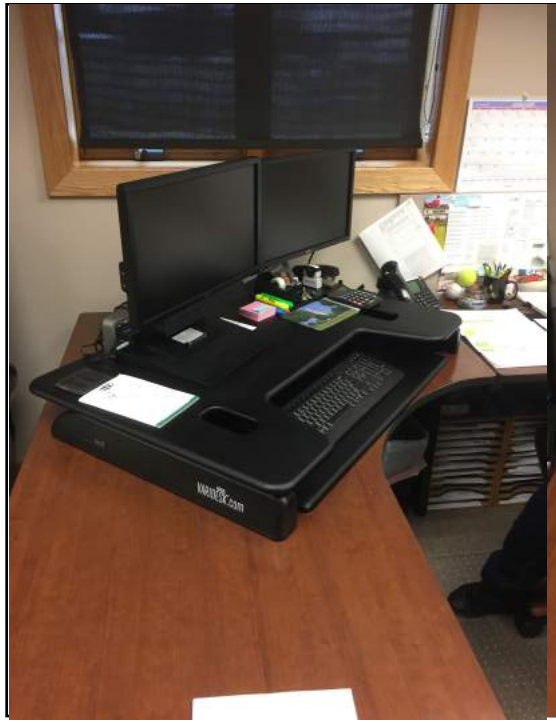
Heavy forklift and pedestrian area with blind corners. We developed and installed the new Rite Hite Safe-T-Signal Warning System. Signal gives off warnings when multiple pedestrians/forklifts are entering same space and shines a blue light on the floor to warn employees.





Installed new Rite Hite LED Countdown Timer on doors to make employees aware of direction of doors and when it is going to cycle closed.

Sitting at a desk for long periods of time has been identified as a serious health and ergonomic hazard.



United Suppliers has purchased several of the adjustable work stations that allow people to alternate sitting or standing at their work station. A very inexpensive way ($400) to help improve an employee ‘s health and workplace ergonomics.

Problem (Before)

Solution (After)

Previously, if an operator wanted to adjust the speed of the hand-coiler device that coils specific lengths of wire, they would have to reach past and through the moving parts of the hand-coiler to reach a gear box that allowed them to adjust speed. Through the input of our employee-owners who work closely with the machine, we decided to re-wire and move the speed dial to the outside of the machine so they no longer are required to reach past the moving parts of the machine. The end result was a small, but impactful change that helped us reduce the risk of a potential safety concern.

Before (Problem)

After (Solution)

Our truck drivers are constantly in and out of their delivery vehicles in heavy forklift and semi traffic areas. Thanks to input from our employee-owners, anytime a driver is outside of their delivery vehicle, they will be wearing these high-visibility vests. It will help them to be seen no matter the situation. In areas where fork-lift use is prominent it will give them an added piece of protection.

Before (Problem)

After (Solution)

Earlier in the year, we had two incidents of unwanted external individuals coming into our facilities breaking into lockers and stealing items from employee-owner's purses. To prevent further robberies or possibly worse, we improved security in all locations by requiring everyone to wear a badge with their picture on it. Along with the badges, all doors are locked and employees must use their badge to enter the location. Before the incidents, doors were not locked and badges were not required.

Pedestrian traffic and forklift traffic is heavy in our warehouse. The heavy traffic increases the likelihood of a dangerous accident. To improve the safety of all involved, we turned down the speed on ALL forklifts and pallet jacks. The speed of the forklifts were **11 mph and were turned down to 7 mph**. Employee-Owners took to this improvement very well and have seen a decrease in near misses since the change.

Blocked Fire Extinguisher

- During a resent lab expansion a refrigerator was placed blocking the fire extinguisher. Immediate corrective action was to move fridge, a work order was submitted and fire extinguishers have been relocated to permanently prevent this from reoccurring.

Emergency equipment tracking system

- In late 2015, the EHS department identified a need to better track safety equipment
- Over the course of 2016 we implemented and fine tune a simple tracking system using a scan to spread sheet app.
- We now have easy traceability of nearly 300 different pieces of equipment that is spread out over 6 buildings

1					NOTE: Upload to completed work order in maintenance connection when closing		
2	Numbe	Serial Nc	Building	Location	Latitud	Longitude	Last inspection
139	124		D-side 2nd floor	#124- 2nd FL Outside Server	41.696815	-91.61478039	12/27/16 12:27 PM
140	125		D-side 2nd floor	#125- 2nd FL Inside Server	41.696758	-91.61492133	12/27/16 12:42 PM
141	126		D-side 2nd floor	#126- 2nd FL Outside 606	41.696854	-91.61461741	12/27/16 12:26 PM
142	127		D-side 2nd floor	#127- 2nd FL Inside 606 Mech	#N/A	#N/A	12/27/16 12:44 PM
143	128		D-side 2nd floor	#128- 2nd FL Top of Main Stairs	41.696757	-91.61488253	12/27/16 12:28 PM
144	129		D-side 2nd floor	#129- 2nd FL Outside Exec Board Rm	41.696504	-91.61486048	12/27/16 12:28 PM
145	130			#130			#N/A
146	131		D-side 2nd floor	#131- 2nd FL By QA	41.696989	-91.61466762	12/27/16 12:26 PM
147	132		D-side 2nd floor	#132- 2nd FL Wellness CTR	41.69712	-91.61497699	12/27/16 12:25 PM
148	133		D-side 2nd floor	#133- 2nd FL Wellness	41.697183	-91.61491622	12/27/16 12:24 PM
149	134		ASC	2600 Bldg- #01- 1st FL Main Lobby	#N/A	#N/A	1/16/17 2:50 PM
150	135		ASC	2600 Bldg- #02- 1st FL Office	41.711958	-91.60717988	1/16/17 2:51 PM
151	136		ASC	2600 Bldg- #03- 1st FL Receiving Dock	41.711675	-91.60593191	1/16/17 2:52 PM
152	138		ASC	2600 Bldg- #05- 1st FL Office	41.711966	-91.60581356	1/16/17 2:56 PM
153	140		ASC	2600 Bldg- #07- 1st FL Emergency Exit by	41.711957	-91.60579545	1/16/17 2:57 PM
154	142		ASC	2600 Bldg- #09- 2nd FL Office	41.711629	-91.60582077	1/16/17 3:03 PM
155	143		ASC	2600 Bldg- #10- 2nd FL Mechanical	41.711746	-91.60586058	1/16/17 3:03 PM
156	144		ASC	2600 Bldg- #11- 2nd FL by Elevator	41.711825	-91.60578012	1/16/17 3:00 PM
157	145		Research	2660 Bldg- #12- Outside 106	41.713538	-91.60619418	1/13/17 4:03 PM

Nitrile Glove Recycling

- The biggest recycling effort this year, was the recycling stream for nitrile gloves.
- In 2016, the Coralville production facility has diverted 9,300 lbs. of nitrile gloves from the landfill.

BULK SALT

We recently implemented a bulk salt dispensing system in our Casings department to eliminate the need to lift 50 lb bags of salt and dump by hand.

Our old method required an employee to pick up the bag from a pallet, walk over to the salt table, open the bag, and empty it out onto the table.

The bulk dispenser can hold 2000 lbs of salt and uses gravity to empty out the necessary amount for use.

AFTER

SNOW AND ICE CONTROL

In the past we have used regular grass seed walk behind spreaders to disperse ice melt on our walkways.

This past winter we found this piece of equipment called a Vortex Ice Melt Spreader that utilizes a small engine and hoses and blows the ice melt onto the sidewalks.

This machine we have found is much more efficient in how it spreads the salt which in turn reduces the amount of bags that need handled and emptied and the amount of trips it takes to cover the same area.

BEFORE

AFTER

FTP BOXING / PROTEN INSTALL

We installed a piece of equipment that is called our Proten meat harvester and this machine takes the bones that are leftover and squeezes the remaining meat off of them.

While installing this new equipment, we had the opportunity to change the layout of the meat harvester boxing area to reduce the ergonomic risk of handling the product.

By turning the equipment away from our drive alley, we were able to eliminate the need to barrel the product, push the barrel to the boxing area, and hand scoop it into the box.
Now the product exits the equipment and drops straight into the box.

AFTER

SNOUT STARTER

Our old process of removing the snout from the skull of the hog required to team members to cut around the upper lip of the head and use their arm force to push the snout down over the skull to get it started to be removed further down the line. Two team members would alternate every other head on the line.

We installed a device that utilizes air pressure to grab onto the snout of the hog and uses the equipment weight on a counterbalance to push the snout down over the skull. One team member will still cut around the bottom of the snout to get it started, while the other operates the machine to peel the snout down.

We eliminated the need for each operator to manually push the snout over the head.

AFTER

Spring Loaded Safety Gates installed on all elevated platforms

We installed fourteen spring loaded safety gates at the openings of all elevated platforms to prevent falls.

Before these were installed some platforms had nothing and others had a chain across the opening which would be ineffective in preventing a fall, many of these platforms are over ten feet in elevation.

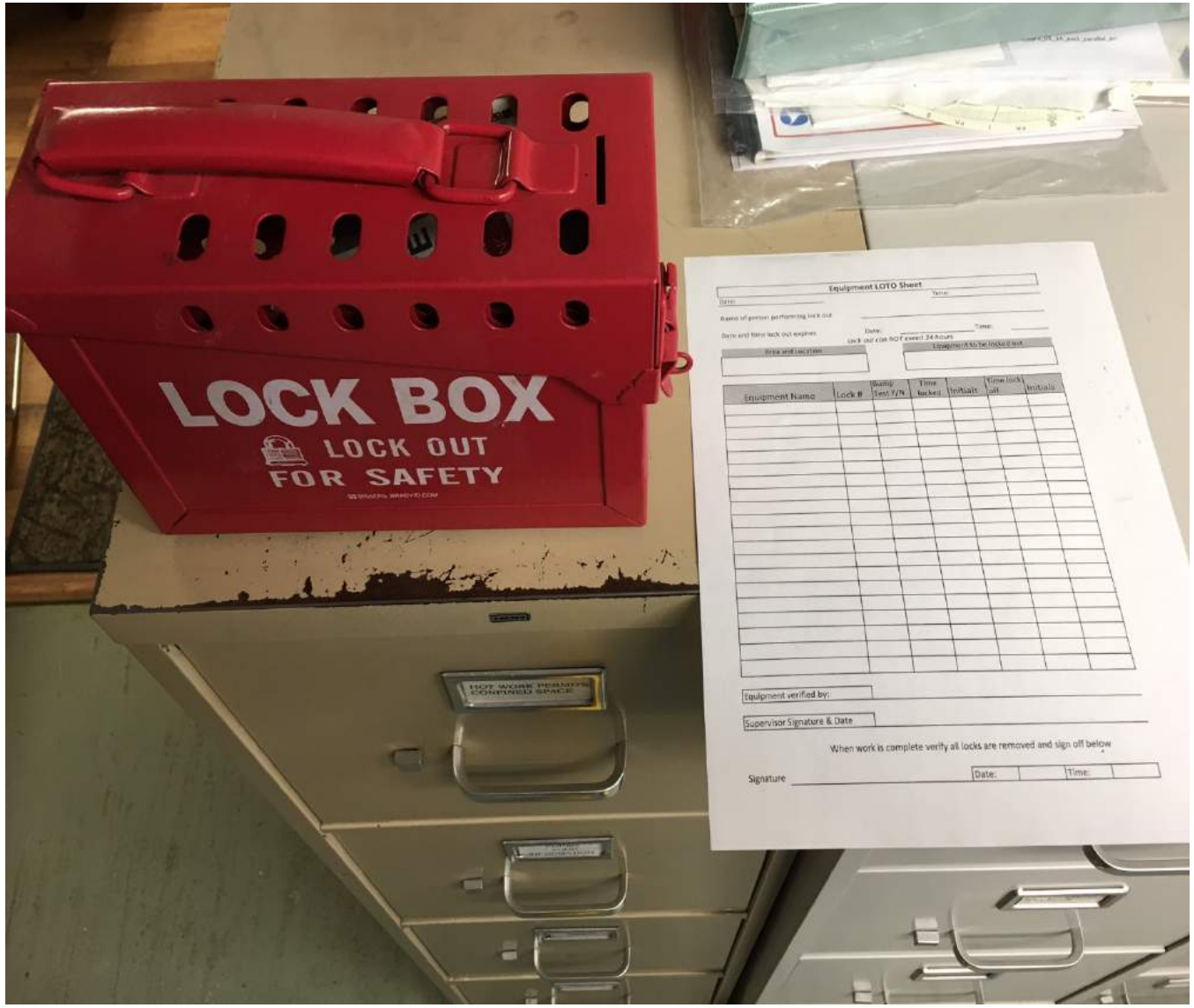
Group Lock Out Box

We have incorporated a group lockout box to our lock out tag out program.

This was done to insure all potential energy sources are identified and controlled when multiple locks are needed, and multiple personnel are working on the equipment.

All keys from equipment locks are deposited in the box, then the coordinator or Supervisor places their lock on the front main lid latch, all personnel working on the equipment will then place their personal lock on the box before “bump test” verification and work begins.

All corresponding equipment locks are recorded on the lockout sheet with location, lock number, time and date listed. The Supervisor will verify the lockout before work can begin.



Blind Corner sensors in high traffic areas

In our warehouse we have installed blind corner sensors to alert pedestrians when a forklift is coming.

When a forklift is coming down the loading ramp a bright led light starts flashing to alert personnel in the area of the danger so they can avoid any risk of a collision.

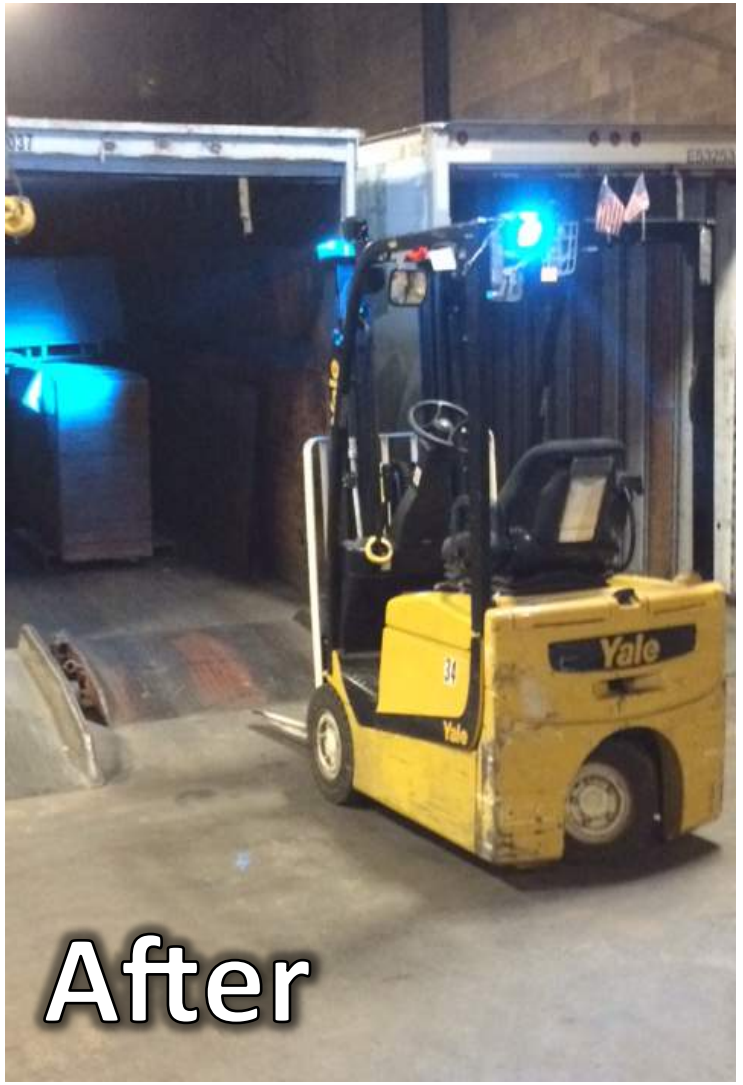
Self Retracting Life Lines

Personnel at this plant always had used lanyards when wearing their harness, many times when on a ladder they would not have had enough distance from the tie off point and ground to adequately protect themselves from injury due to the fall.

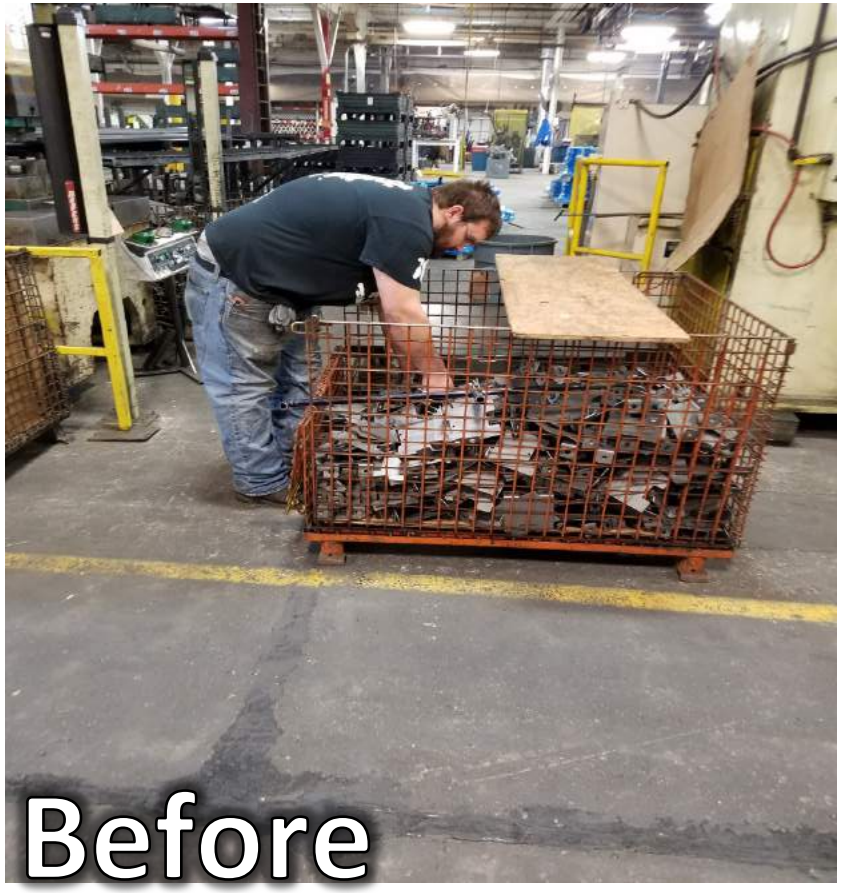
We purchased self retracting life lines and trained our personnel in the proper use and care of them. Now even when they are only a short distance in the air working they know they are protected in case of a fall because they don't have the deceleration length of a lanyard to take into account when choosing which lanyard to use.

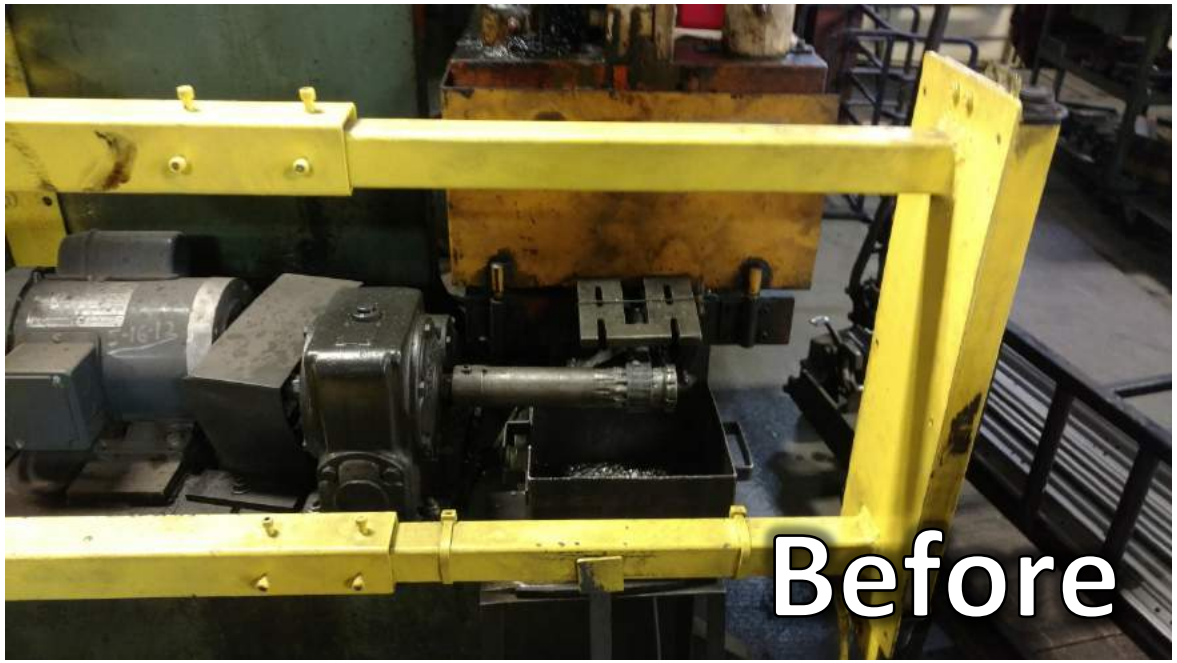
Here at Flexsteel, for many years these straight-blades were the standard issued tools. Recognizing there were many issues with cuts and potential injuries, we decided to replace with self-retracting safety knives.

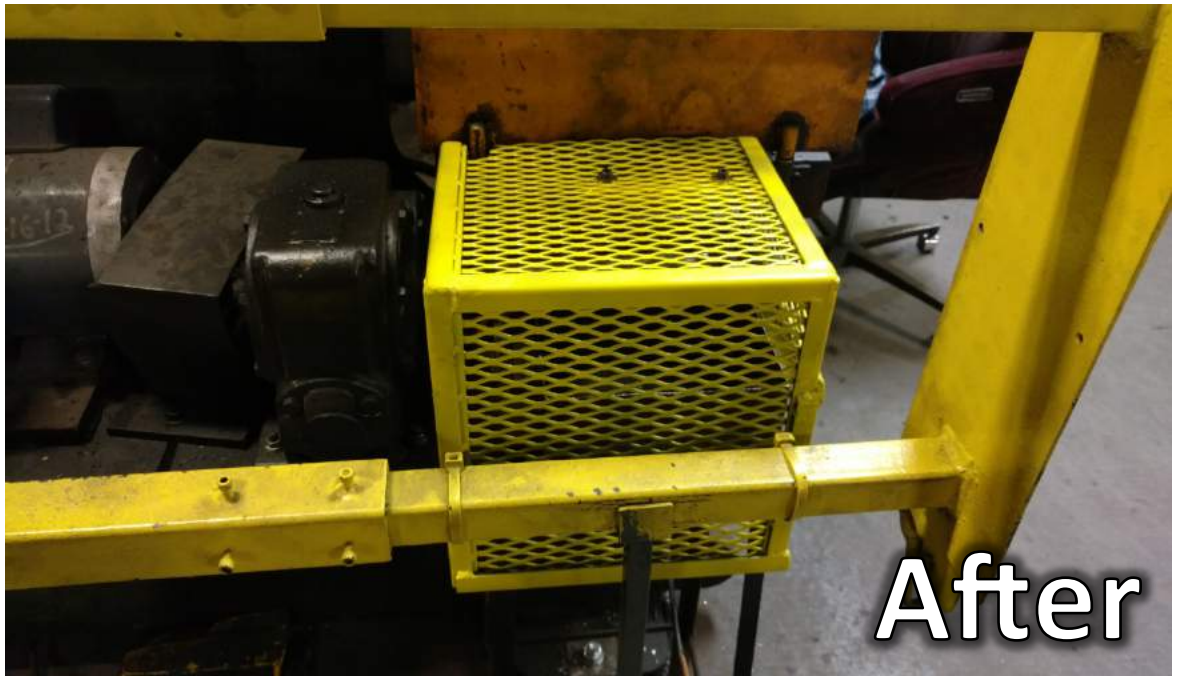
With many busy intersections and blind corners here at Flexsteel, blue safety lights that project a beam have been added to fork trucks to show the path of movement. These beams extend both back and forward a minimum of 10 feet to help warn any pedestrians of oncoming traffic.



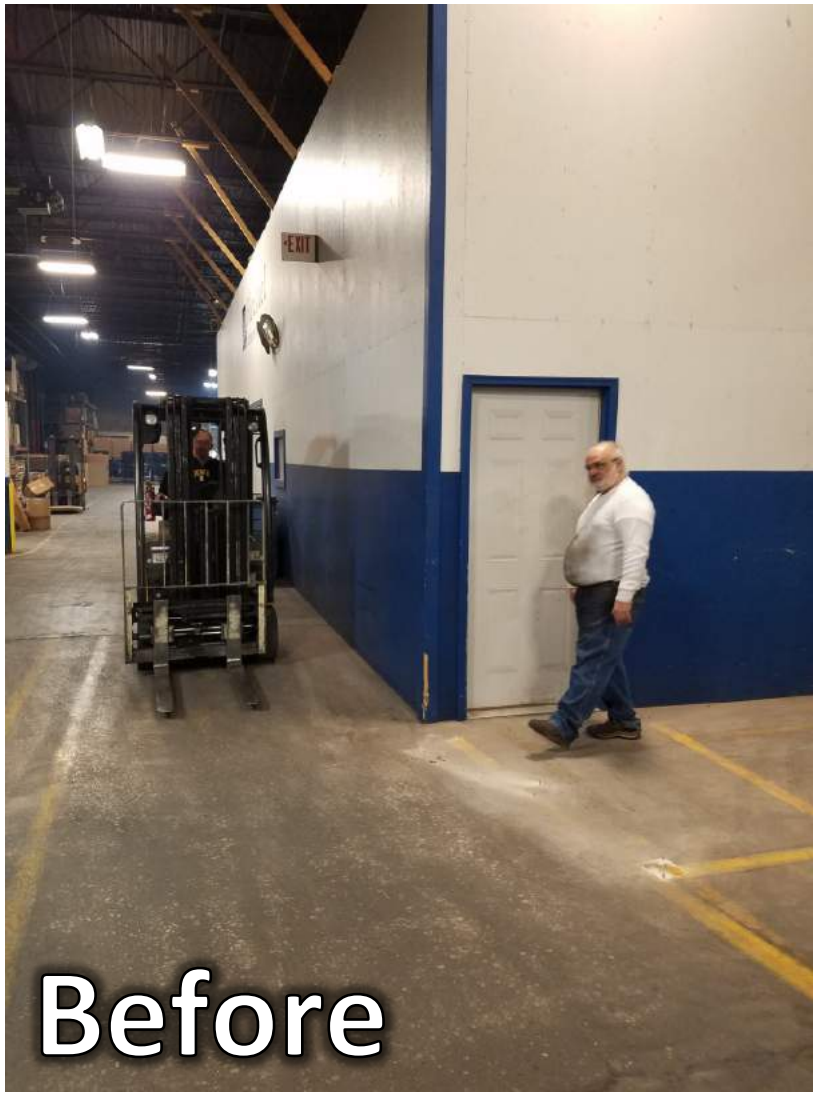
Here at Flexsteel, we run many small parts. Operators were bending out of their proper work envelope, causing potential for back strain. Carts were designed to raise baskets of parts to the proper ergonomic height.







At Flexsteel, this press break has a slow-rotating shaft for slug removal. Guarding was installed to eliminate pinch points.



Here at Flexsteel, there was concern that an operator would come out the door and around the blind corner into fork truck traffic. The handrail distances pedestrians from the blind corner and gives them a longer line-of-sight to see oncoming traffic.

Flint Hills Resources Dubuque Iowa

RISK

Dubuque team identified two areas in the facility that a posed a potential safety hazard due to being a “blind corner”. The roadways are shared with contractor vehicles, utility carts ,as well as pedestrian traffic.

MITIGATION

Our team used resources to find and purchase a mirror that would eliminate the blind spots in the areas. After the mirrors the were installed we have noticed people using them for their intended use.

Flint Hills Resources Dubuque Iowa

Risk

Drivers reported a slip trip fall hazard to our Dubuque team. When walking up and down the stairs to access domes to load Asphalt and Emulsion they reported that the wheel chalks were left in the walking area creating slips trips and falls for them.

Mitigation

One of our operators came up with a plan to install PVC pipe cut to the width of the stairs and mounted underneath of them. Giving drivers a area designated for the wheel chalks. We have seen buy in from the drivers and the wheel chalks continue to be stored properly.

Flint Hills Resources Dubuque Iowa

Dubuque terminal piloted a "what good looks like" audit in 2016. The audit identified hazards that had been mitigated through engineering controls, safe work practices and innovation. Over a hundred different items were identified, photographed and shared. By identifing good safe practices it has inspired hazard recognition and mitigation in other parts of the facility.

Flint Hills Resources Davenport Iowa

Inside of our Terminals elevated work is very common. Many of our safety systems and interlocks are on top of elevated tanks and piping systems. Many of these safety systems require monthly, quarterly and annual inspections and testing. By providing fixed stairs w/ fixed landings and railings to work from, FHR has reduced fall injury risk.

Fixed Stairs

With Landing & Railings

Typical work area with valves & controls.

In this situation there are valves, vents, tank fluid level critical alarm indicators, and sensors. Monitoring is part of our daily, weekly, quarterly and annual operating tasks. The operations technicians no longer need to work from extension ladders, order rental JLG's, or utilize fall protection PPE too provide the desired risk mitigation.

Drum Storage Containment

The below picture shows a containment pallet that was previously used to store 55 gallon drums. The drums weigh an estimated 450 lbs. and are typically replaced approximately 9 times annually. By using these containment pallets we identified some possible muscle strain and ergonomic risks when lifting these drums into place.

Through identification, knowledge sharing, and good communication practices our terminal was able to use a concept that was previously implemented at our Dubuque, IA terminal. As you can see below we recessed the containment into the concrete foundation, level with walking surface, to eliminate any previously discussed risks.

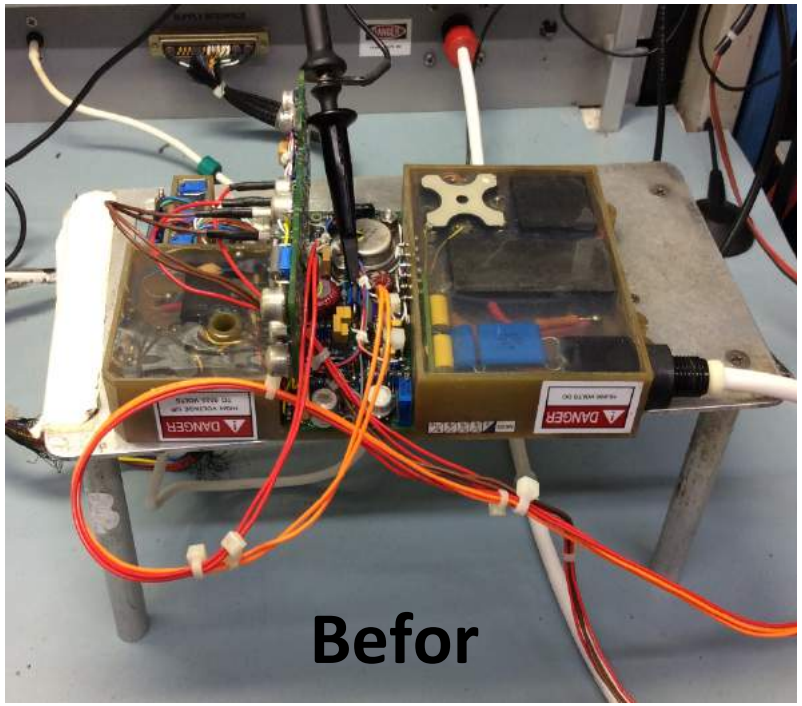
High Voltage Interlock Guard

Testing and Troubleshooting High Voltage Circuits has always presented risks

- Accidental short-circuits from probing
- Accidental contact between personnel and high voltage devices
- Possible arcing to personnel or other equipment

Design and Implementation of guarding that is considered “finger safe”

- Prevents any accidental contact with energized circuit
- Eliminates risk of arcing
- Allows High Voltage Test points to be brought out to test jacks on front of guard
- Built-in micro safety switch prevents unit under test from powering up unless guard is properly installed



Befor
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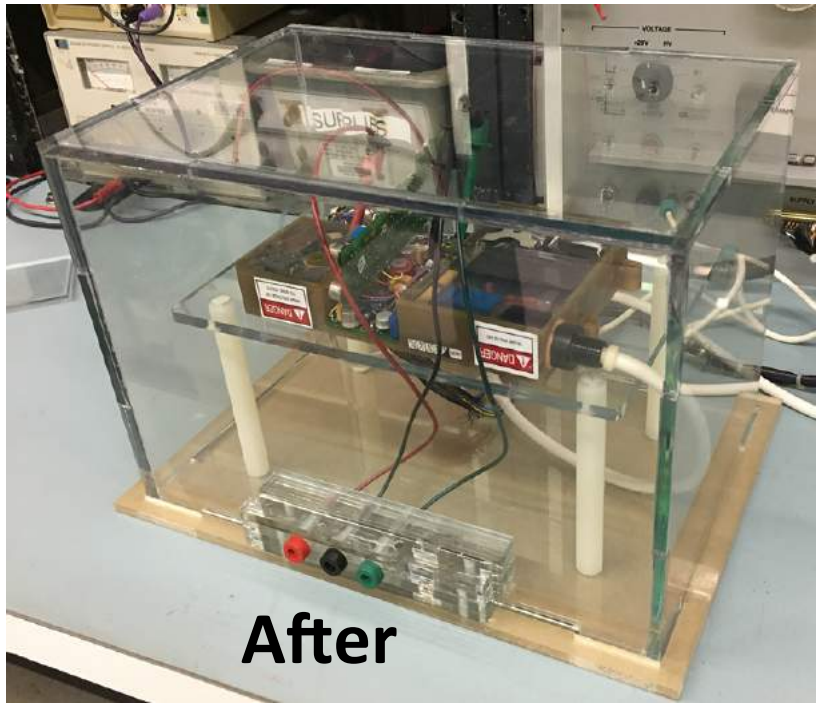


After

Fall Protection for a Pool (Before)

-Not being able to anchor a guardrail, employees built a makeshift guardrail and placed it 6’ back from the edge.

-This would still leave employees exposed when installing tile.

Purchased Free Standing Guardrail System (After)

- **This allows us to place guardrails right at the edge of the pool.**
- **The are not anchored down so they can be slightly adjusted when installing tile and still maintain fall protection.**

Winter Slips (Before)

- Working in winter conditions like snow and ice is a constant hazard during the winter months.

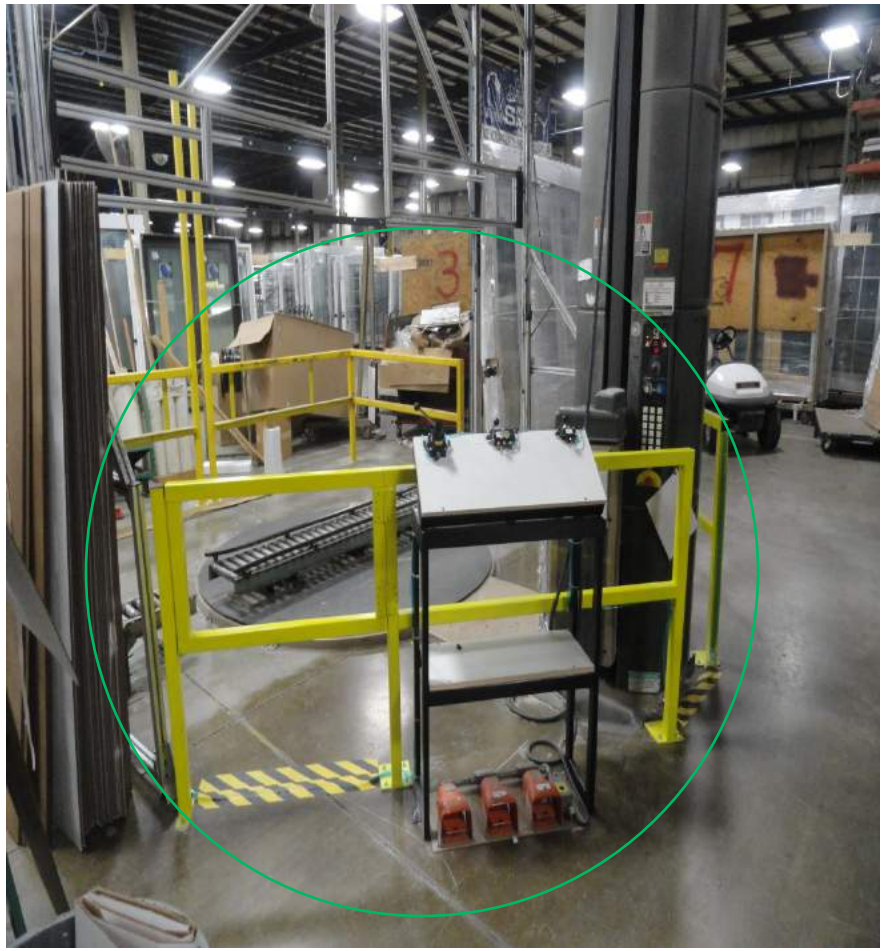
- We had several slips and were looking for ways to prevent them.

Winter Slips (After)

- **We purchased 2 different styles of traction devices for employees to wear.**

- **Now employees who have to work on snow and ice covered jobsites can wear these cleats to prevent slips.**

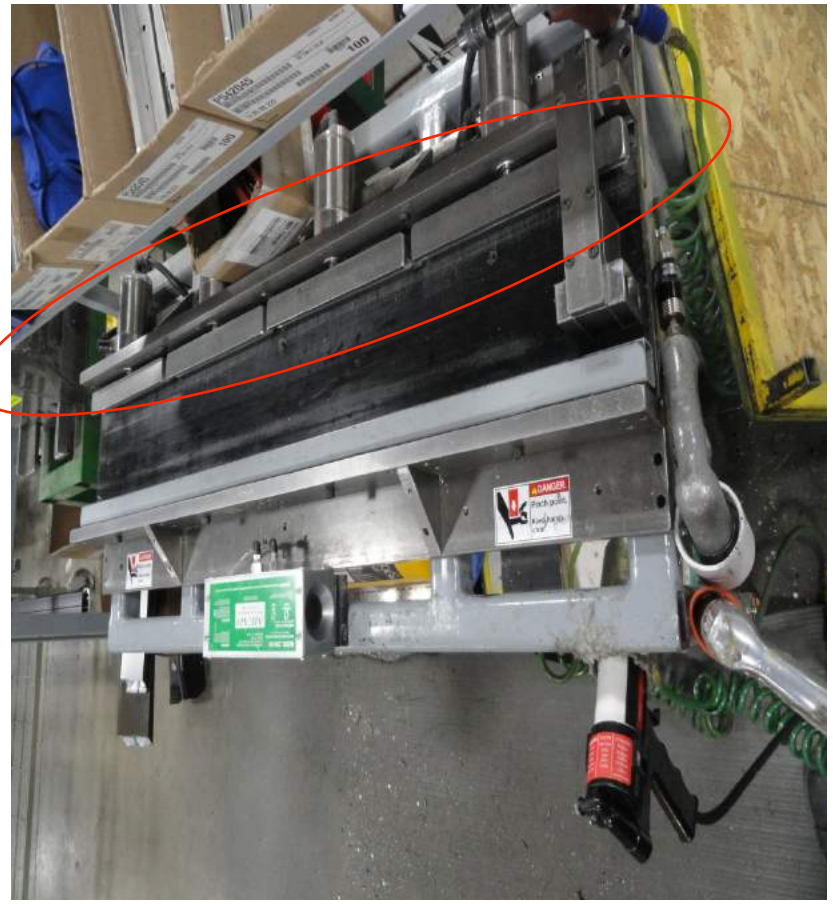
Adding guarding and moving controls outside of the hazard zone

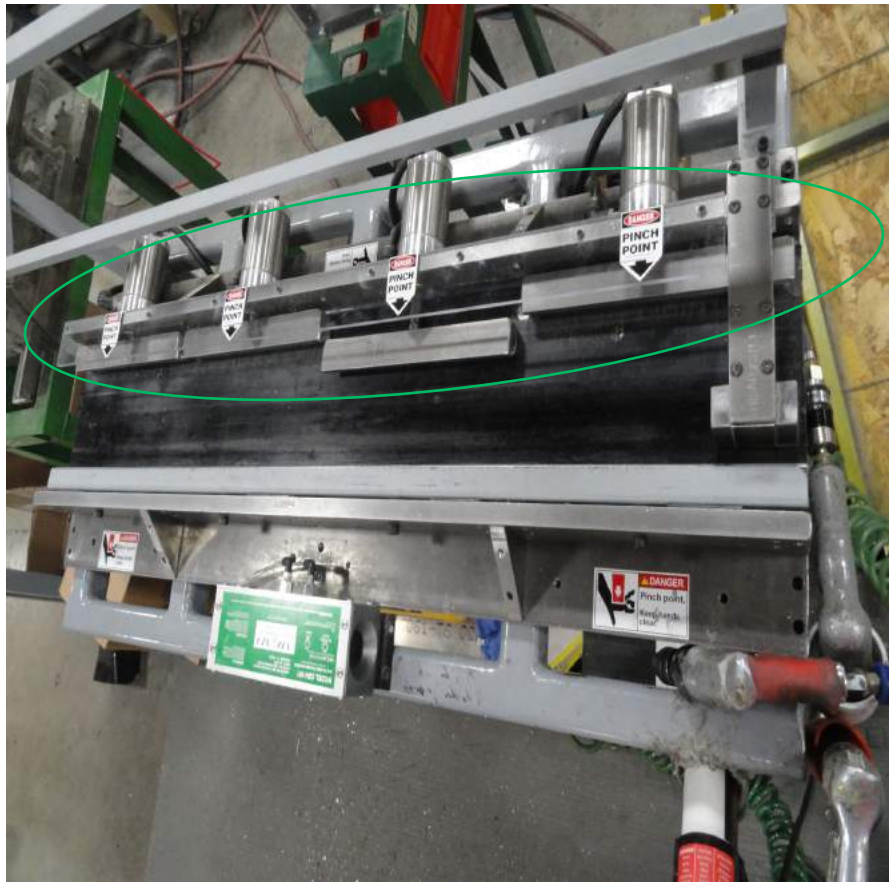


Reducing and eliminating sharp edges

Reducing slip trips and falls by installing hose reels

Adding pinch point labels and guarding to keep employees aware of the danger area





Stellar Industries Inc.
Allen Street Crossing

Problem; *Stellar Industries North Plant and West Plant are separated by the city of Garner's Allen Street.*

Solution; *Provide awareness for street traffic. With approval from the city, motion activated flashing crossings signs were install.*

Traffic was counted over several days: averages for a two hour period:

- *Number of Stellar employees crossing street: 31*
- *Forklifts crossing street: 22*
- *Other Stellar vehicles: 22*
- *Number of cars on Allen Street, Non-Stellar: 221*

In a 40 hour week Stellar Employees cross the street app. 1332 times

Stellar Industries Inc.

Problem; Supplied load gates were being shipped on wood pallets in pairs. When the shipping straps were cut the second load gate was free standing and would fall.

Solution; Working with the supplier we designed a reusable shipping stand that allows staff to remove one without the fear of the second one falling.

Attachable wheels also allow staff to move them on the shop floor without the use of a forklift

Before:
The receiving auger had no guard over it with the potential for an employee to reach in to unclog and get caught by the rotating augers.

After:
We installed a cover guard over the rotating augers eliminating the potential contact from worker's body or clothing in moving parts and protecting from foreign objects that could contaminate incoming product.

The external door had no numbers on them. We installed numbers above the doors to direct emergency responders to gain access through the door closest to the emergency scene. Easier to direct truck drivers dropping off or picking up materials.

Before

After

The rotating end of the incline auger shaft had no guard around it for an employee to walk past and get caught by the rotating shaft. We installed a guard eliminating the potential for an employee hands, arms, or any part of the body or clothing from making contact by the rotating incline auger shaft.

Before

After

The gas main on the SW side of the bone meal plant had no barricade to protect from potential employee injury. We installed a barricade in front of the gas main eliminating vehicles backing, sliding, or hitting with a potential of an explosion or gas leak.

Before

After

The receiving auger emergency button had no clear sign near it with the potential for an employee to shut off the equipment in case of an emergency. We installed a clearly label emergency stop eliminating the potential for injury, malfunction of the machine, unacceptable properties of the processed raw material, and human errors.

Before

After

Issue:

- Employees were having to use a small ladder to feed the colorant hopper on our injection mold machines.

- The ladder that they were using was small and inadequate for the job.

PROJECTWORK WITH OUR INDUSTRIAL ENGINEERS TO DESIGN A LADDER THAT COULD ATTACH TO THE MACHINE WITH MAGNETS AND PROVIDE A SAFE PLATFORM TO POOR COLORANT PELLETS INTO THE HOPPER.

- ENGINEERS WERE ABLE TO DESIGN THE LADDER AS SHOWN IN THE PICTURE TO HELP OUR MOLD OPERATORS SAFELY DO THEIR JOB.

Evaluate

Issue:

- Gain an understanding of our current gaps with 20 of our machines on site. Those machines consisting of the following:
  - Drill Press
  - Lathes
  - Mills
  - Sanders
  - Grinders

Implement Control

Project:

To ensure the safest machines, we were able to conduct a risk assessment that determined our gaps on the following standards:

- OSHA 1910.22
- ANSI B11
- NFPA 79
- NEC
- NEMA

From there, Kreg was able to work with several vendors to purchase and implement safety devices for our machines. Some of those items included:

- Safety Shields
- Emergency Stops
- Labeling

Safe Practices: Tool Storage

Following a string of first aid incidents and near misses specifically in regards to hands and fingers it was determined that there was an opportunity to improve our overall safe practices throughout our departments with proper tool storage to aid in reducing the prevalence of those occurrences. In one of our departments they determine they have a high risk situation involving sharp tools that are left exposed to employees. The employees and supervisors determined it would be helpful to place a plastic tote over the sharp tools when they are not in use to prevent an employee from puncturing their arms or hands.

Cut Resistant Gloves

In 2016 hand/finger lacerations were our most prevalent incident type. The source of the cuts varied from box cutters and oiler tops, to sharp edges on parts. We enhanced PPE requirements in order to minimize employees' exposure to this type of hazard. Our personal protective equipment procedure was updated with more detailed verbiage that requires cut resistant gloves to be worn any time you are working with sharp tools. This procedure was communicated and trained upon site-wide and we have seen a dramatic improvement to our incident reports in regards to finger/hand lacerations.

Reducing risks associated with trips, slips and falls is a continuous focus for our site. Our largest production department in the facility utilizes several hand tools which consist of long cords that were frequent trip hazards. Following evaluations of the work cells, hose reels were installed. The reels allow for proper storage of the cords when not in use.

Walking and Working Surfaces

Hose Reel Installation

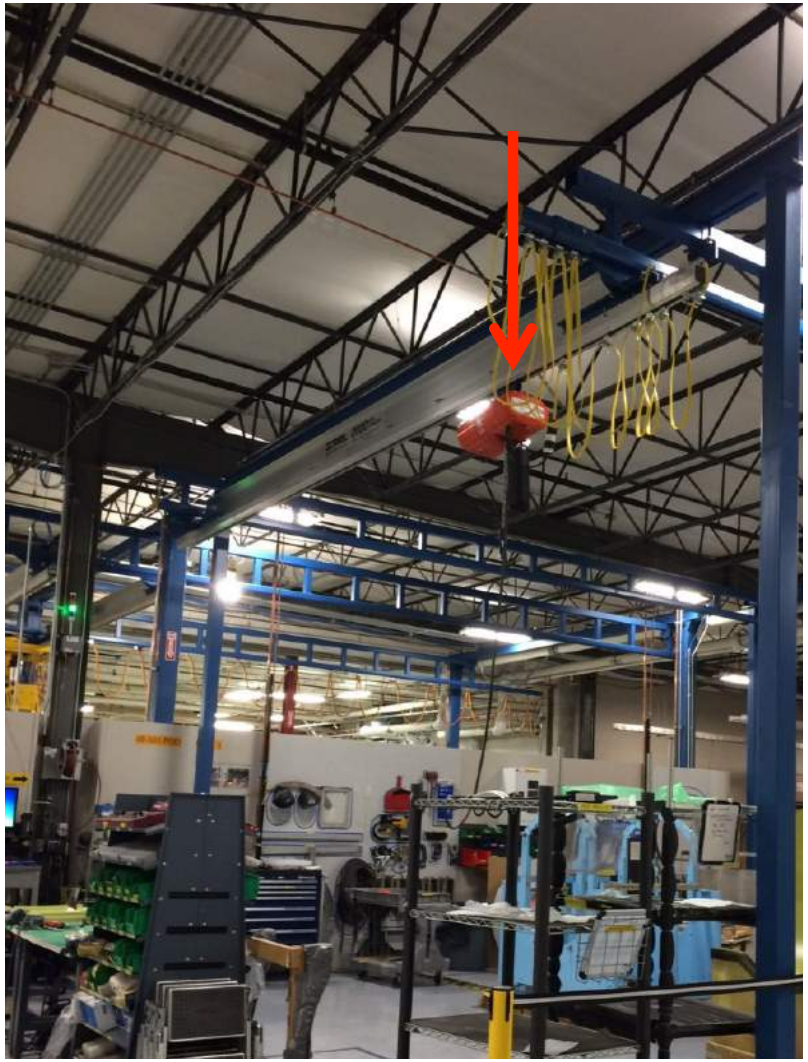
Tank Catwalk Installation

In order to reduce the risk of a fall while also improving the quality of work performance and ergonomics for our maintenance employees, a catwalk was installed around an outdoor fuel tank. Prior to the installation of the catwalk any inspection or repair required maintenance personnel to work from a tall step ladder. Due to the tank's surroundings, lift equipment could not closely access the top of the tank. With the installation of the catwalk, equipped with fixed ladders, maintenance personnel have safer access with fall protection anchorage points.

BEFORE

AFTER

Hoist Installation



Prior to the installation of this hoist employees were performing a manual lift of a product from a cart to a fixture. The weight of the product being transferred ranges from 80 - 170 pounds. Due to the weight and the large size of the product, the lift required up to four (4) employees to assist. This type of lift and transfer created an unnecessary risk for musculoskeletal injury specifically to the lower back and legs despite regular training on proper lifting techniques for our employees. With the hoist installed to assist with the product lift it has minimized the potential injury and has also showed a tangible increase in productivity for our affected employees.

Chemical Safety

Safety concern no arm protection

New chemical aprons with sleeves to protect the arms.

Ergonomics

Lifting bag to scale then lifting to conveyor.

Added a roller top to scale so bags can be pushed to conveyor.

Ergonomics

Lifting equipment above shoulder.

Added a hook to hold equipment in place without lifting above shoulder.

2016 Safety Improvements

Our employees have always manually pushed racks of glass. Unfortunately some of these racks are very heavy making them hard to push. We invested in a machine that we can hook directly to the racks now and move much easier.

2016 Safety Improvements

We were having issues finding a good cut-resistant glove for our packing crew that was able to maintain dexterity, cut resistance, and grip all in one. We called Magid glove in and we worked with them to design a brand new glove that would meet all of our needs for this area. They ended up designing a whole new glove for us, the Magid GPD586. Our employees love everything about it!

2016 Safety Improvements

We were having issues with employees walking through areas where people were working, which can lead to hazards of running into glass. Through extensive 5S, we have marked off the areas so anyone not designated to be inside the red and white Danger area now know to stay clear!

New LED Lighting Installed

Before

- Before the new lighting was installed there were a few areas where employees complained that it was hard to see if they were trying to read anything or working on small parts. This resulted in employees bringing lights in, using flashlights, or our maintenance department installing workbench

  lighting for certain

  areas.

After

- In both the fabrication and production buildings Mi-T-M installed new LED lights that have made a noticeable difference. Aisles are now brighter for fork truck travel as well as employees in work areas are able to see what they were doing better without needing the extra lighting.

Safety Glasses Required Effective January 1, 2016

Before

- Safety glasses were only required for welders and tank testers but not for anyone else before we had an official policy.

After

- With the new policy safety glasses are required to be worn in the entire fabrication building and on the production lines for the safety of the employees or employees around them. Signs are posted as reminders to employees as well as visitors. Mi-T-M supplies prescription safety glasses, reading safety glasses, and regular safety glasses to our employees.

Policy for Strapping Skids on Upper Levels of Racking

Before

- The engineering test rooms, service department, and special builds department all had items on skids that were unsecured above the first level of racking . These items were a risk to the employees in the aisles underneath them since they could fall or they could shift while they were being put into or taken down from the racking.

After

- Mi-T-M has a policy now stating anything with wheels on it, top heavy, or at risk of falling off the skid when it is moved, above the first level of racking, has to be strapped down on the skid before it is stored in the racks.

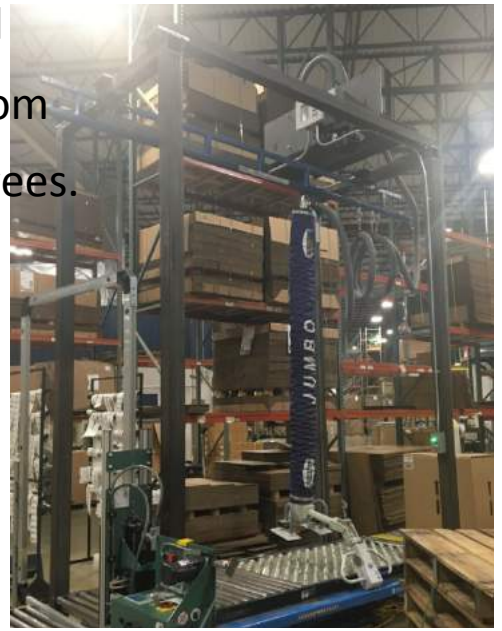
Vacuum Hoists Installed on Production Lines

Before

- Employees were using regular hoists which meant they would have to maneuver and hold the machine in place while lifting and lowering it into the box putting strain on their bodies. The machines would slide around on the slings if they didn't hold them in place. The awkward handling of machines meant employees were susceptible to strains and pulled muscles.

After

- Vacuum hoists were installed on lines where it was deemed beneficial to have them in their boxing areas to lift machines into boxes and boxes onto pallets. This eliminated awkward maneuvering of machines which reduced our pulled muscles injuries from boxing line employees.

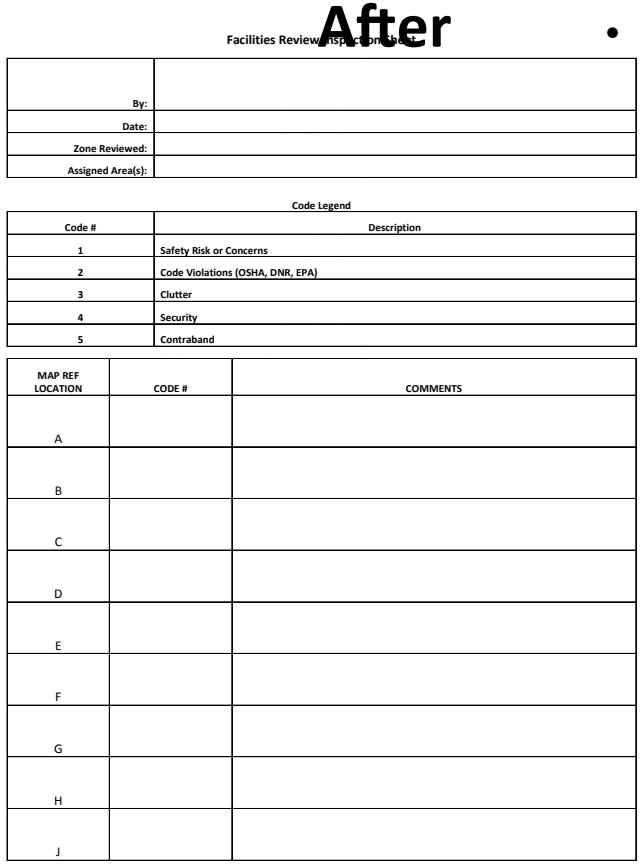


Bi-weekly Facilities Reviews of Zones

Before

- Mi-T-M had a program to complete facilities reviews of different zones with a group of people once a month but we weren't always able to complete a review every month with everyone's schedules. We have our buildings broken down in a total of 15 zones that we review so it would take a year and a half to two years to review the same zone again.

After



Facilities Review Inspection Sheet

By:	
Date:	
Zone Reviewed:	
Assigned Area(s):	

Code Legend

Code #	Description
1	Safety Risk or Concerns
2	Code Violations (OSHA, DNR, EPA)
3	Clutter
4	Security
5	Contraband

MAP REF LOCATION	CODE #	COMMENTS
A		
B		
C		
D		
E		
F		
G		
H		
J		

- With the updated program the safety department completes the reviews every other week. If others want to join the safety dept. for the review they are welcome to but we complete the review no matter what and they keep track of the findings and conduct the follow up to make sure things are being corrected. Doing the reviews biweekly allows us to get the zones reviewed twice a year now.

Tables in the pre-fabrication shop were fitted with wheels to create movable work stations. By doing so, this allowed employees to move the station to an ergonomic-friendly position for the material at-hand being assembled. This resulted in minimal reaching, bending, and twisting. The ability to easily combine two work stations also created a safer work environment for assembling larger material.

Razor Blade and Utility Knife Team

Due to ongoing incidents in the Windows Plant involving razor blades and utility knives, the plant held a team to investigate the usage of these tools in our production areas. The team reviewed 3 years of safety incidents involving razor blades from all of the Pella sites to determine what type of knives / blades were being used and how the incident could have been prevented. The team found the following:

- PPE was not required when using metal razor blades in the Windows Plant
- Team members with had access to ordering any type of utility knife, metal scraper, and razor blades from the stockroom
- We found team members were unnecessarily using blades/ knives for job tasks in the Windows Plant that did not require such a tool
  - 47 Metal Razor Blade Scrapers
  - 112 Utility Knives

The team established a listing of job tasks that must use blades and determined which type of blade will be used. These job tasks are now being audited for compliance. All requests for replacement blades and knives must now be ordered by the plant safety coordinator who verifies the request is for a job task on the established list. All blades and knives in each department are locked in a box to limit accessibility. PPE of cut resistant gloves and arm guards are required for team members using metal razor blade scrapers and non-auto retracting metal blade utility knives. We permanently removed 28 metal razor blade scrapers, 74 utility knives and over 400 individual metal scraper blades from the shop floor.

The Windows Plant has not received a laceration (year to date) due to a metal razor blade scraper or utility knife since the plant implemented the new process.

Items Now Being Used

Items Eliminated

Box-On-Demand (BOD) equals Safety and Ergonomic wins

All of the patio doors are prepped for shipping wrapped in cardboard for protection. Building live orders (not stock sizes) and offering special sized units creates issues with having correctly sized cardboard for shipping, specifically heights. This made it difficult to access the shipping handles to move units off of the production lines, staged in shipping, onto trailers, offloaded at job site, etc. Often times the cardboard would become ripped, creating awkward grips and increased risk of lacerations (see image below).

Enter the Box-On-Demand (BOD) machine. The machine infeeds large pieces of cardboard and cuts them to correct size, in the order the boxes are needed. The machine is capable of producing correctly sized shipping cardboard for all sizes we produce. The Door Plant has seen a reduction in shipping lacerations since the implementation of BOD, while allowing shipping team members to always have unobstructed access to the shipping handles.

Special sized shipping cardboard before

Special size BOD cardboard

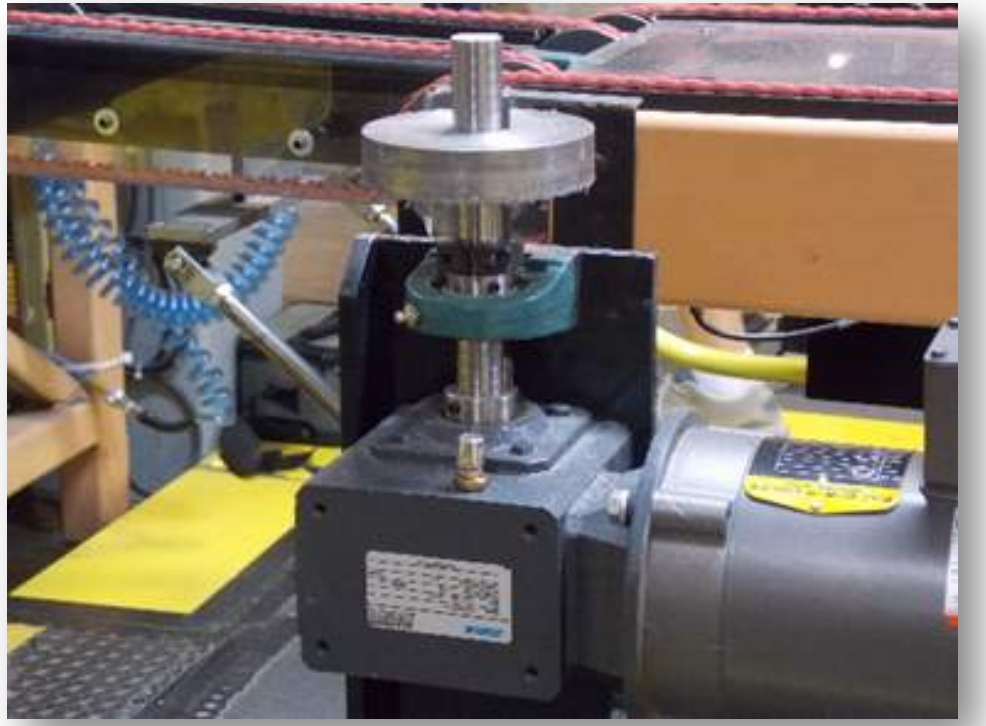
Production Improvement equals ergonomic gains

We had a process of installing a blue installation fin onto the frame of our windows. The previous method was to use a mallet to manually install the aluminum blue fin into a channel in the frame metal, every window, three sides of each frame; which equaled doing this same repetitive motion hundreds of times each day.

The units are transferred from station to station on motor assisted transfer belts. Knowing this, the idea was suggested to install a roller that would automatically seat the blue fin down the length of the channel as it leaves the work station. It decreased the installation time and was also a huge ergonomic win by decreasing the repetitive motion and strike force.

Previous Method

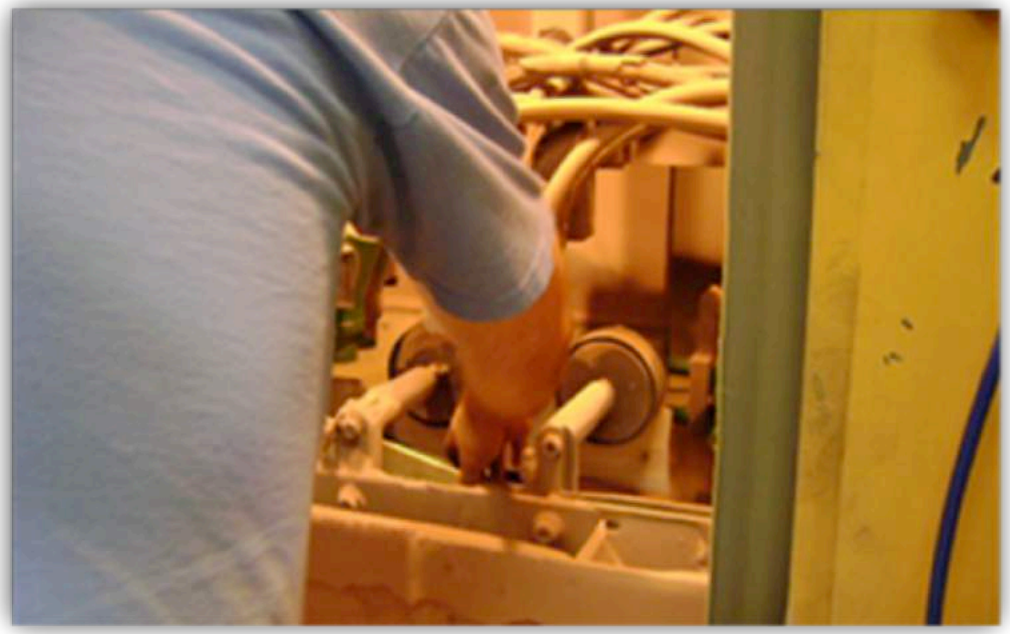
Automatic Roller Installed



Doors on booths redesigned to eliminate risks

Our prefinish team members were required to access their spray guns inside the booths multiple times throughout their work day. The doors were hinged at the top of the booth, which required the team member to lift the door above their heads to access the spray guns. This introduced multiple risks including shoulder and back strains from lifting the heavy doors, head injuries as they lift the door towards their bodies, and material and debris dropping into their eyes once the door was fully opened.

The solution was simple, yet effective. Instead of overhead doors, side hinging doors were installed onto the booths. This removed the many associated risks that the team members were experiencing with the previous design.



Inside the prefinish booth

Hinged Doors Installed

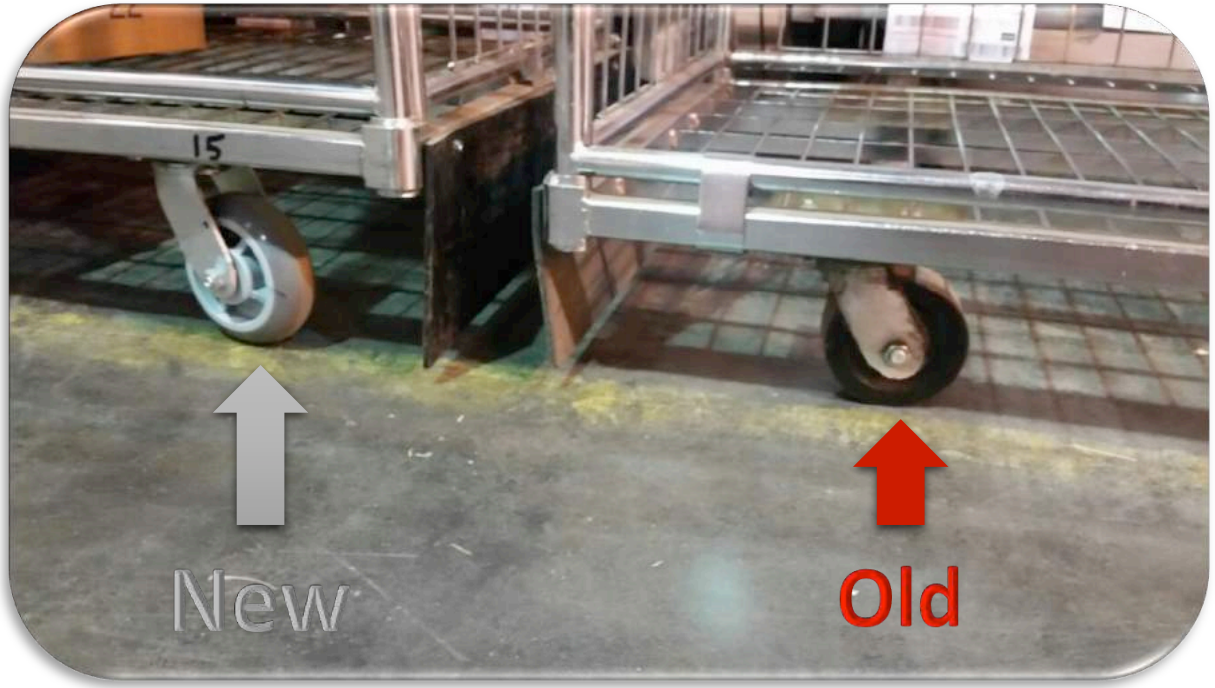
We use the cut off saw to cut copper leads off transformer cores. The cut time for each transformer is about 30 seconds and we only do a few at a time, then we finish breaking them down.
By embracing battery technology and using the battery powered saw:

- we save time with no start up procedure
- no exhaust fumes
- no gas cans to re-fuel
- less noise with no engine running
- less weight by 10lbs.

Before, Gas Powered Saw

Battery Powered Saw

Cart Wheel Improvement Plan



Colony Brands- Clinton utilizes over 50 carts to pick orders in their facility. The push/pull force of these carts ranged tremendously from 10lbs - 40 lbs. A study was conducted on wheel design and it was noticed that by purchasing a rounded wheel that was 2 inches larger a push/pull force reduction of 20-50% could be found depending on the cart. All carts have been or are in the process of being modified to utilize this ergonomic wheel improvement.

Ladder Safety

Old

New

Colony Brands – Clinton pickers used ladders that were oversized and underutilized due to their bulky size and mobility. It was found that smaller ladders, that rolled easier, and had decent hand rails were easier to use and more likely to be used. Also, the extra height of the old ladders was unnecessary to get products into the employees power zone. Since these ladders don't take up as much room, they can be sored in aisles increasing ease of use. This change has led to zero over-reaching injuries in 2016.

Employee Pass Under Aisles

Colony Brands – Clinton noticed the largest potential accident severity and biggest safety concern is the interactions between forklifts and pedestrians. To limit this interaction the Clinton facility added 6 pass under aisles to eliminate the forklift interaction with employees cart picking in the main forklift traffic aisle. Although this eliminated 48 pallet locations it significantly decreased potentially unsafe interactions between forklift drivers and pedestrians.

Clinton Returns Tote Modification

Colony Brands – Clinton Returns had a problem with their product totes sticking together when nested making them extremely hard to pull apart. These totes also weighed 7.5 lbs., and took up a significant amount of storage space which created clutter in the returns area. Clinton purchase 500 new totes that are 64% lighter at 2.7lbs. These totes nest easily, and take up over 75% less space. This decreases the potential for sprains and strains due to the lower weight and nesting abilities while also decreasing clutter that previously caused several trips and falls in the returns area.

Automatic Container Seal Cutter

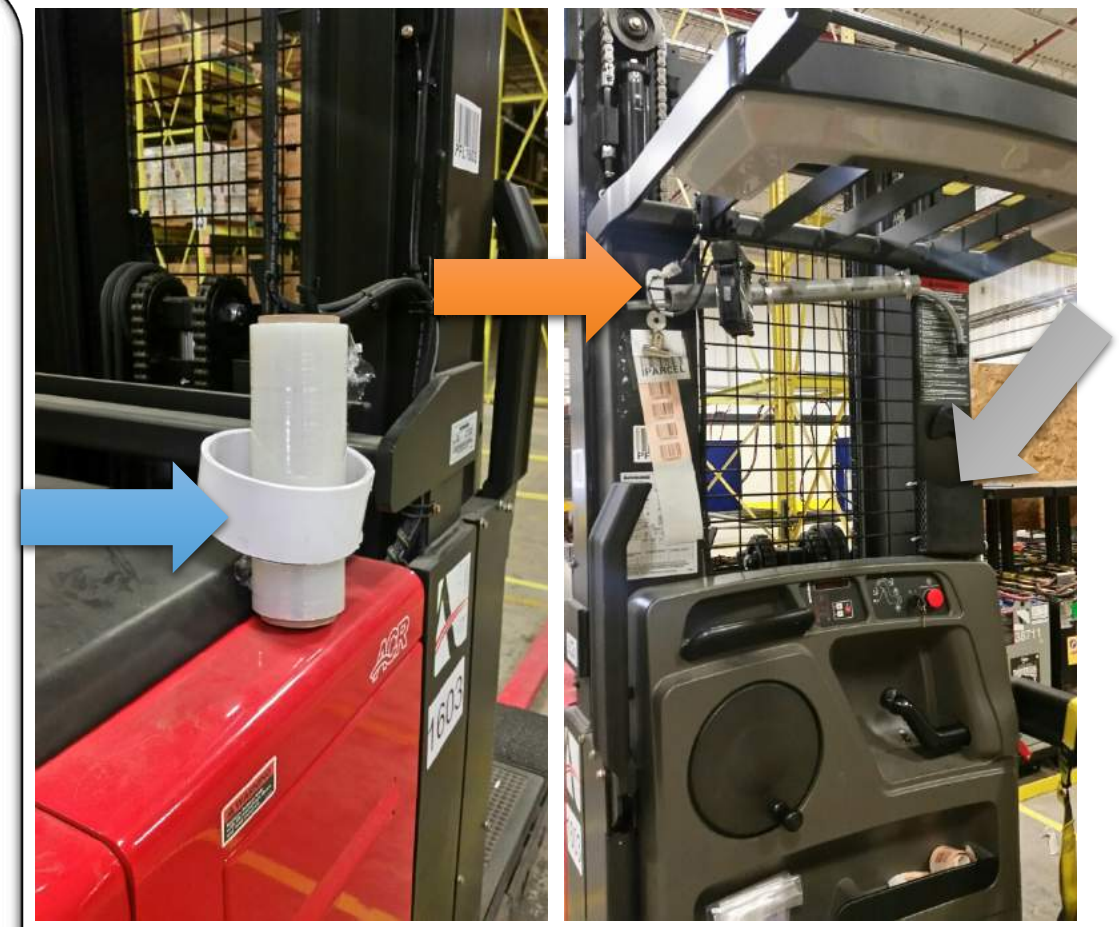
Old Version

New Version

In 2016 Colony Brands, Inc. Peosta cut 2,752 container seals. Employees complained about shoulder and lower back pain due to using an awkward posture and significant force of utilizing bolt cutters. Automatic battery operated bolt cutters were purchased, eliminating both the awkward posture and force required. We have had 0 employee complaints since implementation.

Orderpicker Lift Improvements

Colony Brands – Peosta picks elevated orders manually utilizing order picker lifts. Lift operators carry a roll of wrap on the floor of the order picker. Employees stuff labels into baskets covering the order picker visibility. Employees also over-reach to obtain product from racking. To decrease reach pick sticks were added as an ergonomic improvement. To give the drivers a place to put their labels a basket not blocking visibility was added. Lastly a wrap holder was added, so it wasn't on the floor of the lift.



Job Specific Physical Abilities Information

Colony Brands – Peosta has performed an ergonomic analysis on each job position to better inform applicants of the physical demands of the position. This includes frequency of bending, twisting, reaching, walking, crawling, lifting, etc. It also gives a breakdown of push/pull forces required and the percent of time lifting by weight ranges. This will allow applicants to better select positions based on their physical abilities and reduce workplace injuries.

Body Movements

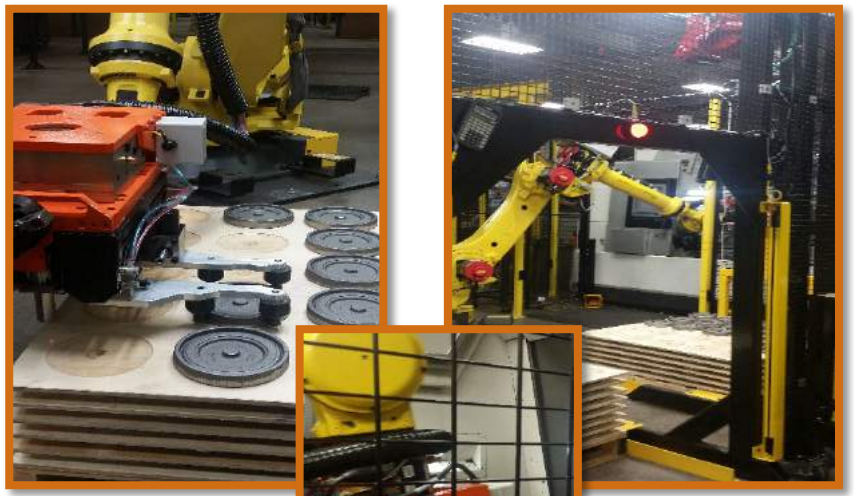
Body Movement Definitions:	Never=0%	Seldom=1-10%	Occasional = 11-33%	Frequent = 34-66%	Mostly 67%+
Bend (Waist/Back)	Never ___	Seldom _x_	Occasional ___	Frequent ___	Mostly ___
Bend (Neck)	Never ___	Seldom ___	Occasional _x_	Frequent ___	Mostly ___
Squat	Never ___	Seldom _x_	Occasional ___	Frequent ___	Mostly ___
Stairs	Never _x_	Seldom ___	Occasional ___	Frequent ___	Mostly ___
Twist	Never ___	Seldom ___	Occasional _x_	Frequent ___	Mostly ___
Kneel	Never _x_	Seldom ___	Occasional ___	Frequent ___	Mostly ___
Walking / Standing	Never ___	Seldom ___	Occasional ___	Frequent ___	Mostly _x_
Sitting	Never _x_	Seldom ___	Occasional ___	Frequent ___	Mostly ___
Driving	Never _x_	Seldom ___	Occasional ___	Frequent ___	Mostly ___
Grasp / Pinch	Never ___	Seldom _x_	Occasional ___	Frequent ___	Mostly ___
Wrist Deviations	Never ___	Seldom ___	Occasional _x_	Frequent ___	Mostly ___
Push / Pull	Never ___	Seldom ___	Occasional ___	Frequent _x_	Mostly ___
Fine Finger Manipulation	Never _x_	Seldom ___	Occasional ___	Frequent ___	Mostly ___
Reaching Above Shoulder	Never ___	Seldom ___	Occasional _x_	Frequent ___	Mostly ___
Elbow Flexion / Extension	Never ___	Seldom ___	Occasional ___	Frequent _x_	Mostly ___
Lifting / Carrying	Never ___	Seldom ___	Occasional _x_	Frequent ___	Mostly ___

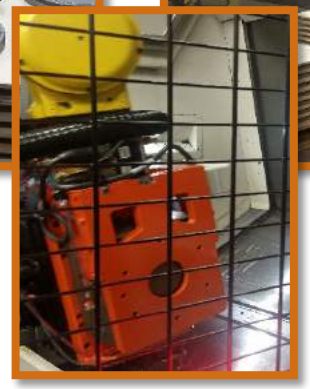
Weight Requirements

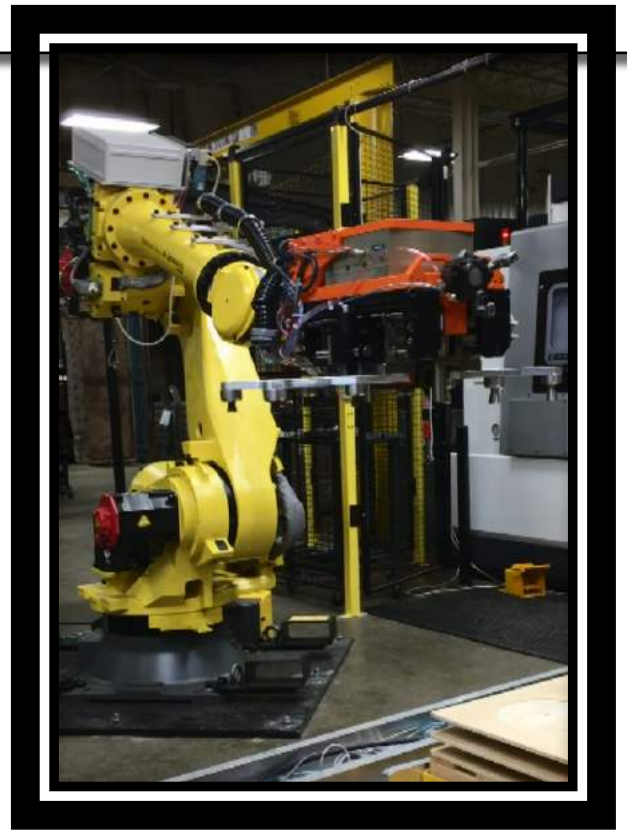
Lifting Weights by Percent of Product: **5lbs or Less:** 68.59% **5-10lbs**: 21.88% **10-20lbs:** 8.89% **20+lbs.:** 0.6%
Maximum Lifting Weight: Up to 50lbs. (99% of lifts under 20lbs)
Push/Pull Force Potential: 4-20lbs pulling a pallet jack.

The Maquoketa Company added a robot to its operation and eliminated up to 6 million pounds of handling!

Previously, machine operators would have to handle 244 covers multiple times. The covers would have to get machined, blown off, flipped, and set onto a small peg on a rack to be powder coated. The 244 covers weigh anywhere from 5 lbs. to 100 lbs. each. This was an ergonomic concern that we wanted to address. A robot was added to work with our CNC machine. The company worked with our vendors, and specialized pallets and stacking tables were fabricated. The robot now lifts the part from the pallet, and places it into the CNC machine. The part gets machined. Then the robot takes the part out of the machine, flips it, and places it onto the powder coating racks. Finally, the robot will stack the plywood dividers. The machine operator no longer has to handle the covers. This took care of our ergonomic concerns.







Morrison Bros. Co. has decided to revamp their entire shipping department.

Previously, the shipping area was congested. There was not a lot of room to store supplies, etc. A lot of ergonomic concerns were identified such as heavy lifting, reaching, etc. So multiple departments got together to completely revamp the space. The area was redesigned adding a conveyor system. The employees now set the items to be shipped in large totes and move them down a conveyor. Adjustable work benches, and computer stands were added. A motorized fixture to hold rolls of packing paper is also being fabricated. Not only did these changes eliminate our ergonomic concerns and make the area more safe, the department also became more efficient.

Before

After

DATE: February 2, 2017
LOCATION: Iowa Department of Administrative Services, State of Iowa Capitol Complex
HAZARD: Deteriorating Walking Surfaces, Stairs, and Parking Lots Increased Slip, Trip, Fall Hazards

Before Photo

A survey was conducted in 2016 to identify and prioritize the repair or replacement of deteriorating walkways, stairs, and parking lots. Priorities were based on the level of deterioration and the amount of traffic the area received. Phase 1 began this fall with $246,000 of new concrete and surface work completed.

After Photo

Phase 2 is scheduled to begin in Spring 2017, with an additional $100,000 for surface work. The improved walking surfaces and additional installed railings have decreased the potential for a slip, trip, or fall incident. It is also expected to provide relief from the significant costs associated with workers' compensation claims from slip, trip, and fall incidents.

Job Hazard Analysis Update

Hanlontown

Old form

POET biorefining — JOB HAZARD ANALYSIS

TASK:	
DEPARTMENT:	
PERSON(S) PERFORMING ANALYSIS:	
Reviewed by:	Date of Review:

ABBREVIATION KEY:	
SB	Struck By
CW	Contact With
O	Overexertion
E	Exposure
	Fall Same Level
FB	Fall To Below
SAG	Struck Against
CO	Caught in

CONTACT - where the victim is struck by or strikes against an object; or where the victim comes in contact with dangerous objects, such as hot pipes.

CAUGHT - where the victim is caught on, caught in, or caught between stationary or moving objects. Snagged skin, limbs pinned or becoming trapped in a boiler or pipes are examples of "caught."

EXERTION - where the victim experiences excessive strain or stress to the point of injury, such as a pulled muscle that results from incorrect lifting techniques.

EXPOSURE - where the victim either breathes or is exposed to harmful gasses or liquids over a period of time, such as asbestos. This is different, for example, than an acid burn, which is a "contact" accident.

FALL - when victim falls to ground level, or falls from one level to another lower level. This includes trips and slips.

PERMITS REQUIRED FOR THIS JOB:	ITEMS NEEDING TO BE LOCKED OR TAGGED OUT FOR THIS TASK

Job Steps	Potential Hazards	Recommended Safe Procedures

New Form

v2.9
6/9/2016

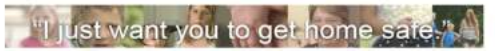
Job Hazard Analysis

Name (s)

Description of Task		Date	
Plant Department		Time	
Evacuation Route		Equipment ID	
Emergency Eyewash		Permit #	
Work Coordinator		PIV Inspection	
Job Lead			

STEP 1 - STOP	BEFORE YOU START WORK, THINK THROUGH THE TASK	Yes	No
	Are you fit and suitably competent to carry out all required task?		
	Contractor: Have you signed in and been trained on the site policies?		
	Poet Employee: Are you up to date with all assigned training?		
	Do you fully understand the task at hand and all steps to perform?		
	Do you have a work permit and work instructions/SOPs?		
	Do you have the correct PPE and tools for the task(s)?		
	Have all power tools, PPE, Fall Protection, lifting gear been tested/inspected?		
	Are First Aid/Eye Wash/Shower Location(s) known?		
	SPOT THE HAZARD(S)	Yes	No

Full Face Respirator | Resistant Gloves | Resistant sleeves



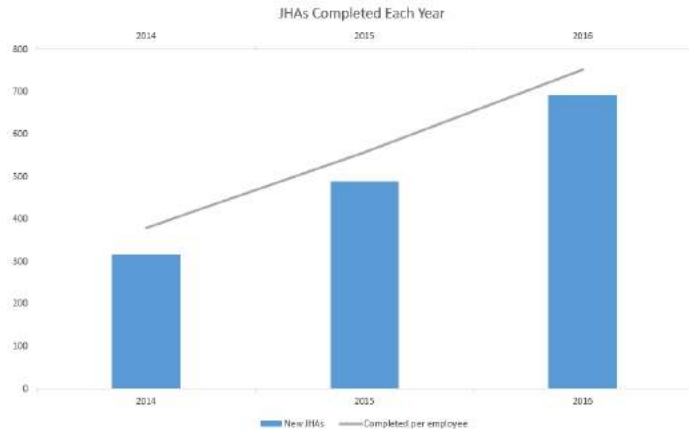
JHA signed by everyone performing task: _____

JHA Authorized by: _____

END OF DAY CHECKLIST

All Safety Devices Tested | Final Repair Procedures Reviewed | All Tools Accounted For

With an updated form and training use of the form has mitigates more hazards every day.



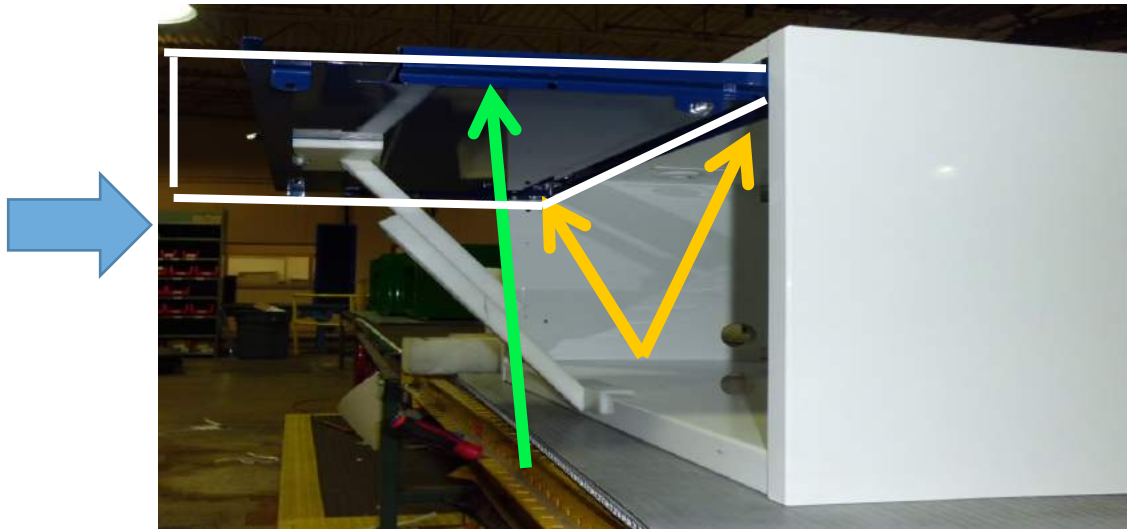
CONCERN: Employees use lifts on the Paint Line to assist with removal/hanging of product on overhead paint chains.
Employees had been instructed to secure a safety chain across opening once entering the lift.
Safety chain did not provide adequate fall protection for the employee in the lift. And, the employee had to remember to hook the chain over the opening once they were on the lift.
(Blue arrow points to safety chain.)

SOLUTION: Auto closing gates were added to the lift entrance.

This **eliminated the potential fall hazard** for employees using the lift.

The gates close automatically, so employees no longer have to "remember" to secure the lift opening once they are on the lift. The gate opens inward, eliminating the chance of an employee falling out of the lift if they would lean against the gate.

CONCERN: Operators were using poor ergonomic body postures when installing the door on overheads. They were attempting to support the overhead door (green arrow) with their body – while at the same time using a screw gun to secure the door to the unit. Yellow arrow shows where the screws need to be inserted. Note: white border outlines the shape of the door being supported by the employee's body before the solution.



SOLUTION: A **fixture was designed** and **made in-house by our employees**. Fixture was made out of poly plastic which made it light and easy for operators to maneuver.

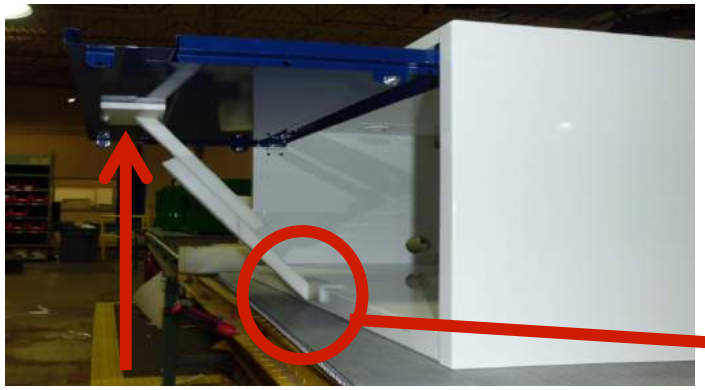
This fixture now supports the door and easily slips onto the bottom edge of the overhead. (Red Arrows).

This allows our operators to use two hands to install the screws which attach the door to the unit

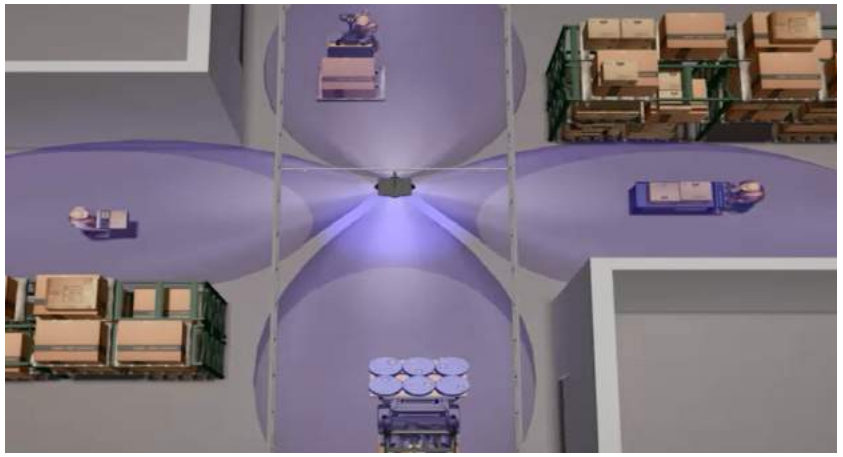
Our operators no longer need to use their head, shoulders or arms to support the door – ELIMINATING POTENTIAL INJURIES.

Fixture is adjustable so that it can be used on all sizes of overheads.

Red arrows show how fixture adjusts to the different sized overheads and fits snuggly against the door lock in order to stablize the door during assembly.



CONCERN: High vehicle and pedestrian traffic at our busiest intersections in the plant had a high potential for serious vehicle/pedestrian incidents and/or injuries. Stop signs had been placed at the end of the aisles but we were looking for a better way to control the traffic at this site and protect our employees.



SOLUTION: A SAFE-T-SIGNAL Warning System was installed to control traffic at this intersection. This System monitors traffic from multiple directions.

- When oncoming traffic is detected, whether in a single zone or in multiple zones, high visibility LED signals are activated.
- All approaching traffic – whether it is vehicular or pedestrian – are presented with a signal.
- The signal will be a “stop” symbol or a “yield” symbol dependent on how many zones have traffic approaching the intersection at that particular time.

The addition of this signal light has mitigated a potentially dangerous situation for vehicle drivers and pedestrian and made the intersection safe for all involved.

CONCERN: Employees had to remove large tool boxes from a conveyor and then manually push them down a busy fork truck aisle in order to package the units for shipment. This procedure had potential safety hazards associated with it when transporting the units down high traffic aisles and ergonomic issues pertaining to pushing the heavy units and having to manually wrapped the units with protective wrap.

SOLUTION: Employees developed following procedure: vertical wrap holders are placed at each side of the conveyor. Wrap stretches from one side of conveyor to the other.

A vertical bar holding a roll of wrap, is laid in opening on the top section of the wrap holders. (A)

The unit rolls down the conveyor coming in contact with the wrap. The wrap automatically adheres to the surface of the unit.

As the unit proceeds down the conveyor, the wrap is pulled tight along the front, sides & top of the unit. When unit is covered, the operators cut the wrap with a scissors & folds in the ends to seal the edges. (B) & (C)

Process eliminated safety hazards including– pinch points; excess force exerted; poor ergonomic body postures. Reduced risk of injury to employee's upper and lower body. due to excessive force and poor ergonomic body postures used to transport/wrap units..

Solution Pictures:

A.

B.

C.

Hazard:

When an employee is measuring the thickness and width of a plate at the gauge station area, it was observed that the employee could be in danger of being struck by a hot plate moving into the work space.

Before

After

Solution:

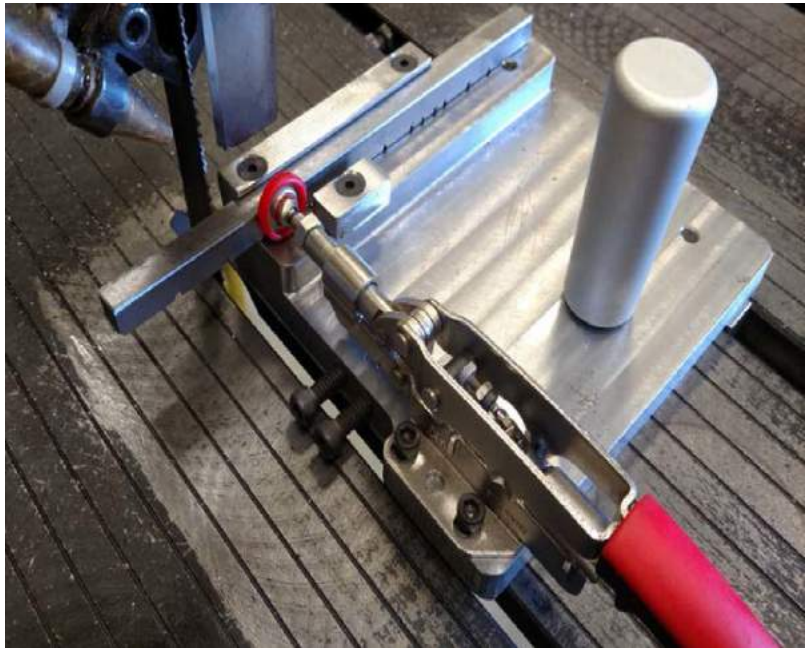
A barrier guard with a gate was installed with an interruption safety circuit switch built into the handle. When the employee opens the gate to enter the gauge station area to perform the measurements, all movement is interrupted until the area is exited and resets the switch.

Hazard:

Employees were required to cut samples to length by pushing the sample through the band saw. This requires the operator's hands to be in close proximity to the saw blade.

Before

After



Solution:

Design, fabricate and test a new fixture that keeps the hand(s) away from the blade.

Hazard:
To allow grease to flow from one tank to the other employees must climb a 12ft ladder wearing fall protection to open/close the control valve.

Before

After

Solution:
A ground level control air valve was installed, eliminating the need for ladder usage and fall protection.

Hazard:
A falling hazard is/was present while servicing the brakes and motors. A technician had to be tied off and climb on the handrail to perform PM's and repairs.

Before

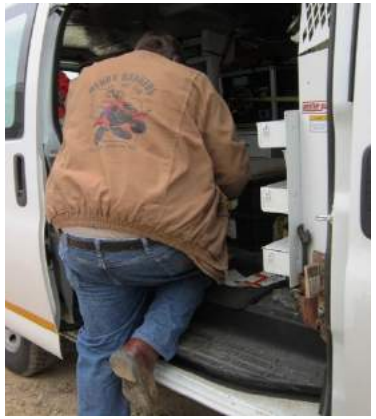
After

Solution:
A new access platform was designed and installed so the technician has room alongside the motor and/or brakes to perform work inside the platform deck**.**

Alliant Energy Electric Metering Vehicle Design Change

Limited storage created crowded areas and poor rear access.

Dedicated storage with walk-in rear access.



Excessive lower extremity contact stress and poor posture during ingress and egress.

Walk-in ingress and egress reduced contact stress and improved posture.

Low ceiling caused poor posture and limited access to storage.

Higher ceiling resulted in optimal working postures and improved accessibility.

Hazard Recognition

Problem: Pedestrians & other fork lift operators could not tell when a fork lift was backing out of a warehouse bay

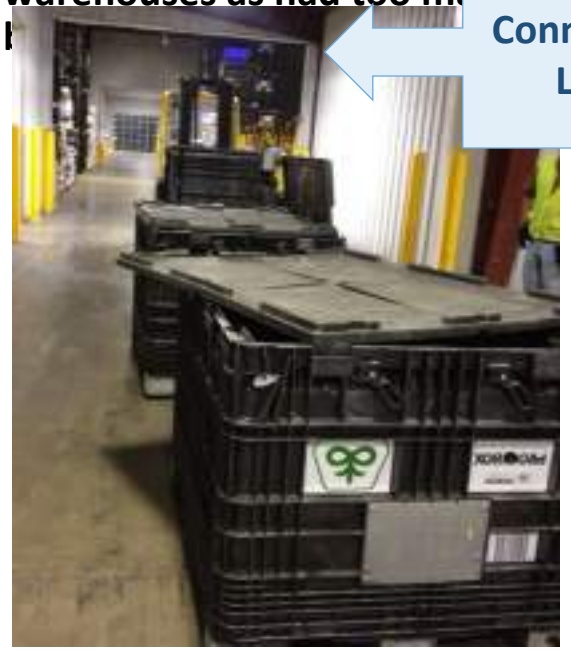
Do not know a fork lift is backing up in this top photo

See the blue lights in other photos so know fork lift is backing up and how close it is to the alleyway

Solution: Install Blue Lights on back on all fork lifts to signal when a fork lift was backing out into the alleyway.

Brief explanation of hazard : When moving ProBoxes from the Shipping Docks to warehouses, forklifts must pass through connecting links. If had too boxes on forks, top box would hit link causing it to fall off resulting in damage and possible serious injury to pedestrians.

Forklift Operator hit the connecting link between warehouses as had too ma



Connecting Link

- After Photo of the project may be in

Connecting Link

"Watchdog" Device

ef explanation of how the hazard was controlled.

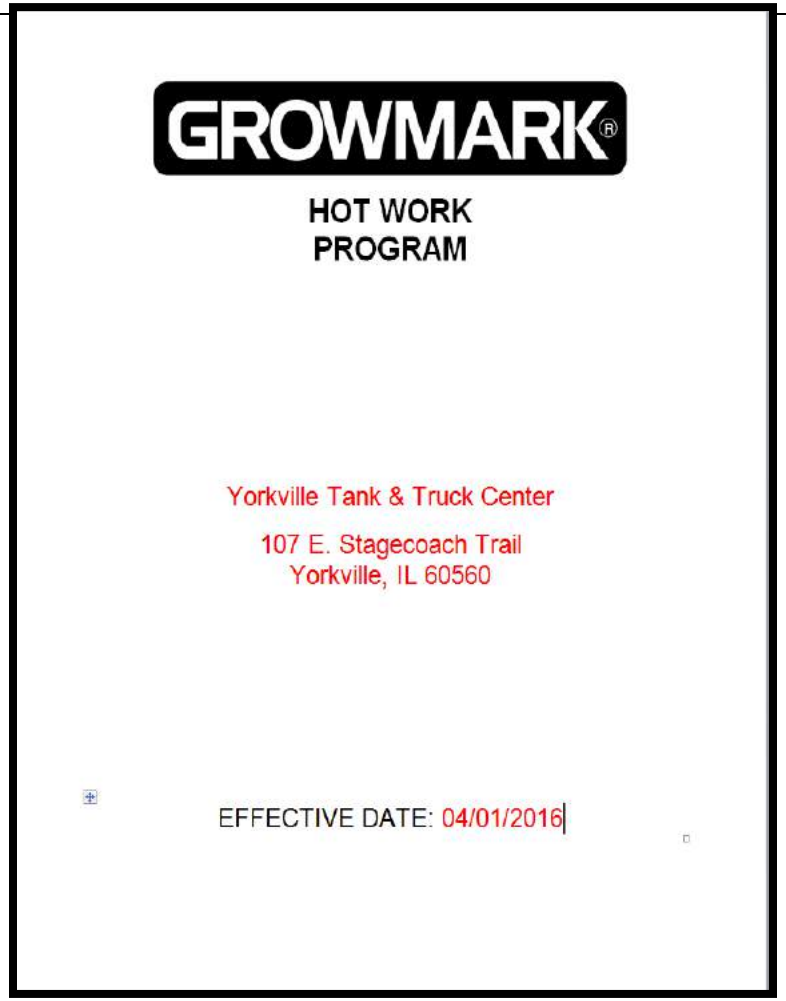
Installation of a warning devices called a "watchdog".

If operator has too many boxes on the forks of a lift, the top box comes in contact with the device and a warning siren is triggered.

These devices have been installed on each side of our connecting links and since installation, have not had an incident.

Hot Work

- Following a routine safety audit by location personnel, it was determined that the facility needed to develop and implement a written Hot Work program and to utilize a formal Hot Work Permit system in certain buildings on the site.


GROWMARK®

HOT WORK
PROGRAM

Yorkville Tank & Truck Center

107 E. Stagecoach Trail
Yorkville, IL 60560

EFFECTIVE DATE: 04/01/2016

Fire Protection

- Following a routine internal safety inspection it was determined that the original fire suppression system was no longer adequate for the increased fire load from products stored in the warehouse.

- New sprinkler heads with increased flow capacity were installed throughout the facility.

Confined Space

- Following a routine safety audit, it was determined that the facility needed to develop and implement a written Confined Space program

Emergency Planning

Corporate flight departments are not required to have a safety video, only industry standard safety briefing cards. Growmark took the opportunity to tailor safety information to our specific aircraft including use of a new lithium ion battery fire suppression bag and AED located on the aircraft.

- The video is emailed out to employees to watch before the day of the flight.
- The Growmark Flight Operations video:
  - https://vimeo.com/169291045

General Lighting

- New lighting was installed throughout the shop facility.
- The intent was to reduce eye strain on employees and to improve the overall atmosphere in the work area.
- An added feature is that the new lights are more energy efficient than the previous models.

Trip Hazards & Ergonomics

Shop personnel fabricated a rack to hold truck leaf springs. Prior to this point the springs were left on the ground, creating a slip/trip/fall hazard.

Additionally, the racking is more ergonomic in that the technicians can use better lifting technique than when they had to pick the springs up off the ground.

Emergency Preparedness

The terminal is located in an open and remote area and the existing structures are constructed of lightweight materials.

Location personnel recognized that severe weather could expose employees and transport drivers to significant risk so a pre-fabricated storm shelter was purchased for the facility.

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Ergonomics

The location purchased a new Diesel Exhaust Fluid (DEF) truck.

Because all deliveries must be constantly monitored, the time that drivers spend standing on concrete floors or exposed to the elements was reduced from 45 minutes to 15 minutes per stop due to increased efficiency in the new pump system.

Machine Guarding

A routine hazard inspection revealed that several pieces of stationary machinery were not securely anchored.

Location personnel promptly addressed the issue by anchoring the equipment to the floor.

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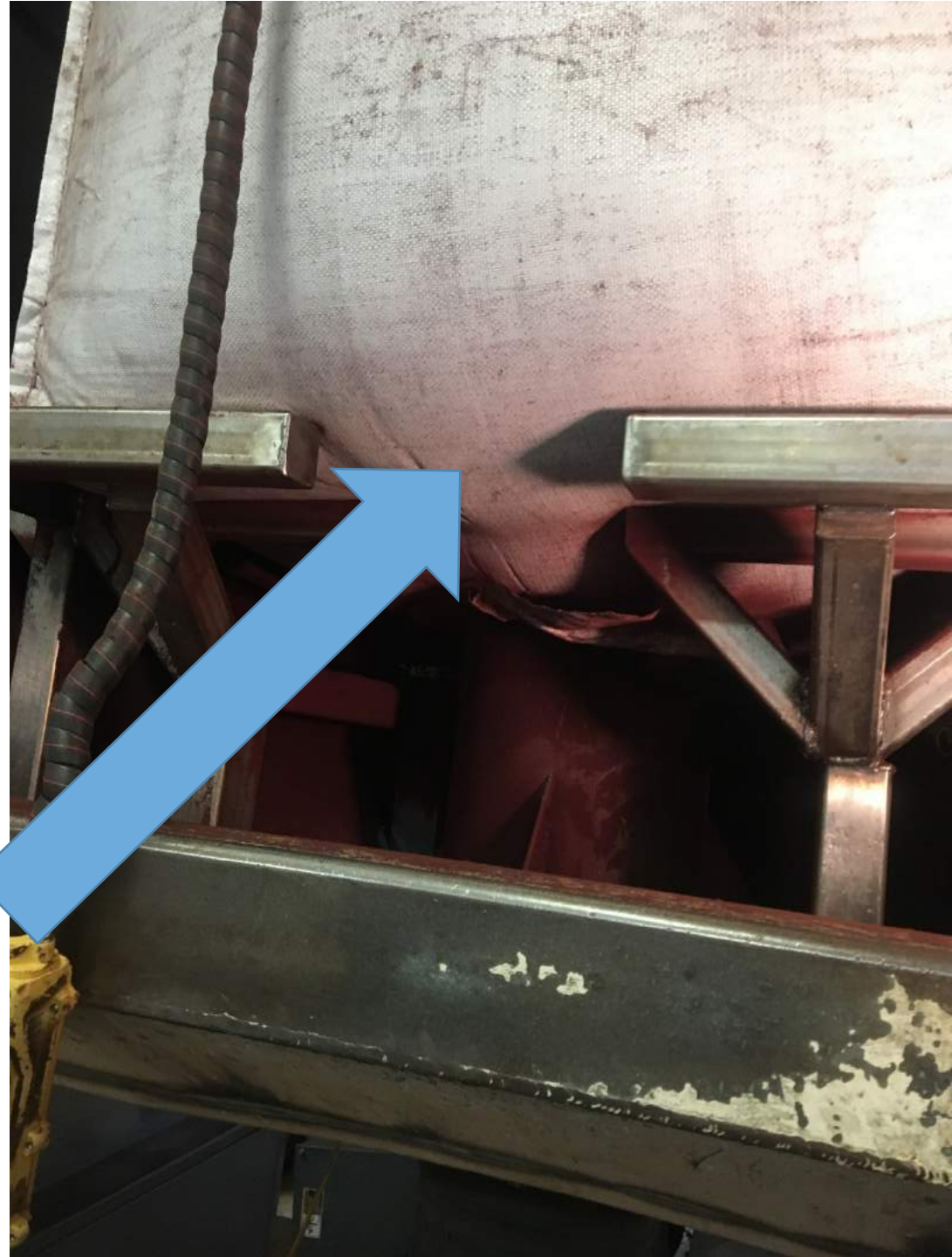
Walking & Working Surfaces

The location purchased portable ladder assemblies that can be attached to flatbed semi trailers to allow safe access to the trailer deck.

We modified our tote dump station to make it safer for employees to access the bottom of the tote to loosen the tote ties. The totes weigh 2,000 Lbs and there was not a good method for loosening the ties.

We cut an opening in the tote bracket to allow for access while loosening the ties, making it safer and easier for the employees.



American Packaging Corporation
Flexographic Center of Excellence

103 West Broad Street
Story City, Iowa 50248
(515) 733-1400

PRODUCT PROCESS SUSTAINABLE

HAZARD CONTROL:

Elimination of Outdated Cylinder Storage System and Upgrade to State of the Art Storage System

American Packaging Corporation's Flexographic Center of Excellence accomplished its 2016 goal of upgrading its printing cylinder storage system. The previous storage system was outdated and programming glitches in the system created a variety of near misses and demanded daily maintenance attention and troubleshooting. The new system is a state of the art cylinder storage system that has a smaller footprint than the previous system and has almost twice the capacity and efficiency. Cylinders are barcoded and registered to specific homes in the system and carts are loaded by an automated trolley. Employees simply load the cart into an interlocked portion of the system, close the gates, and interact with a computer to load and retrieve cylinders from the system. Also seen in the picture is one of APC's previous hazard control award submissions- ergonomic cart movers.

Engineering Control:

State of the Art Printing Cylinder Storage System

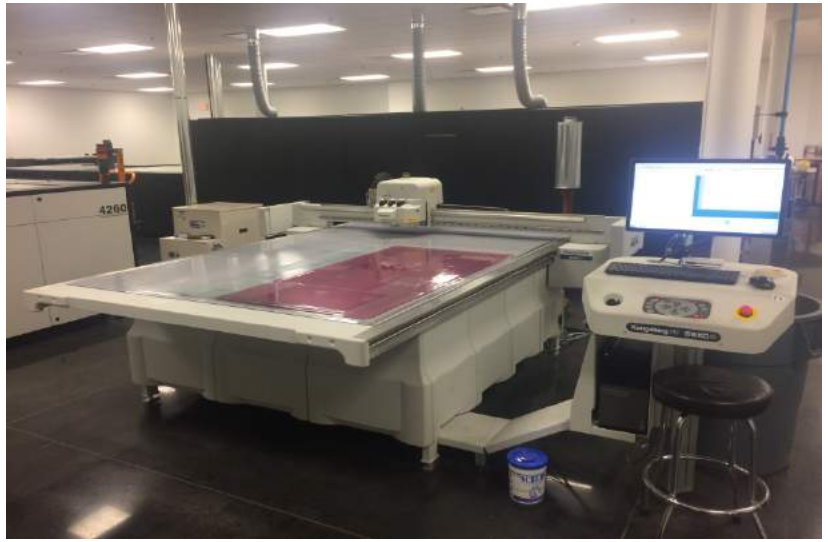
HAZARD CONTROL: Laceration Hazard and Repetitive Motion/Ergonomic Hazard Reduction from Installation of Automated Printing Plate Trimming Equipment

American Packaging Corporation's Flexographic Center of Excellence accomplished its 2016 goal of controlling multiple hazards present in the process of making and preparing printing plates for the printing presses. Plate room employees are responsible for making flexographic printing plates and trimming the excess photopolymer plate material before the plates are mounted on cylindrical printing sleeves. The trimming process required the use of a utility knife and a lot of finesse. The new automated printing plate trimming equipment is able to cut and trim plates more accurately and efficiently while eliminating laceration hazards and reducing repetitive motion/ergonomic hazards.

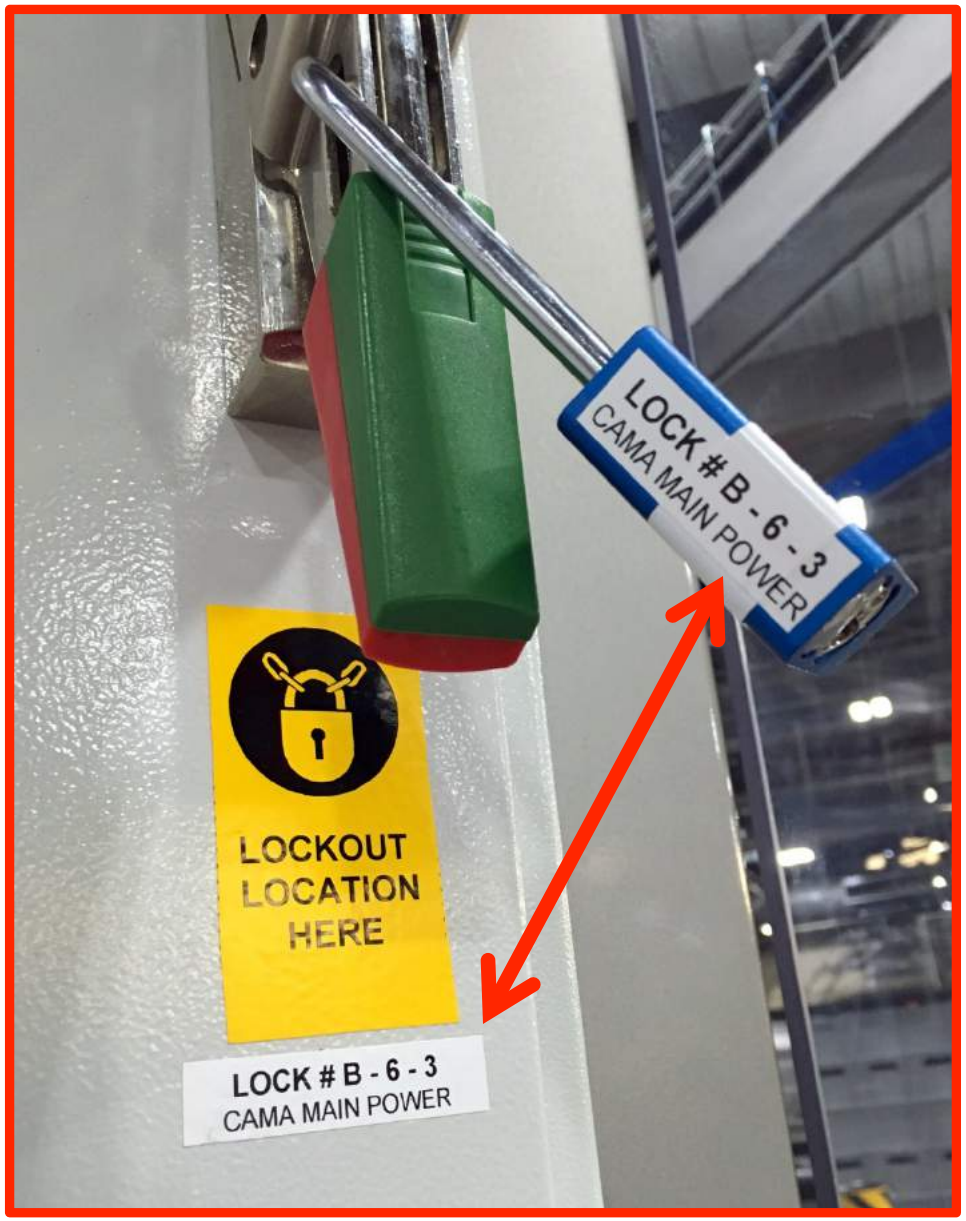
Engineering Control:
Automated Printing Plate Trimming Equipment

BEFORE:

AFTER:



LOCKOUT – TAGOUT IMPROVEMENTS



New Packaging equipment required multiple Lockout Locks to secure energy sources. Group Lockout Boxes were added to each of the new Packaging Machine that had a specific number of locks for that machine. Each lock is labeled with the specific energy source type/location. In addition, each energy source location has the identical label which insures all of the energy sources are secured during machine shutdowns.

Fall Protection Improvements

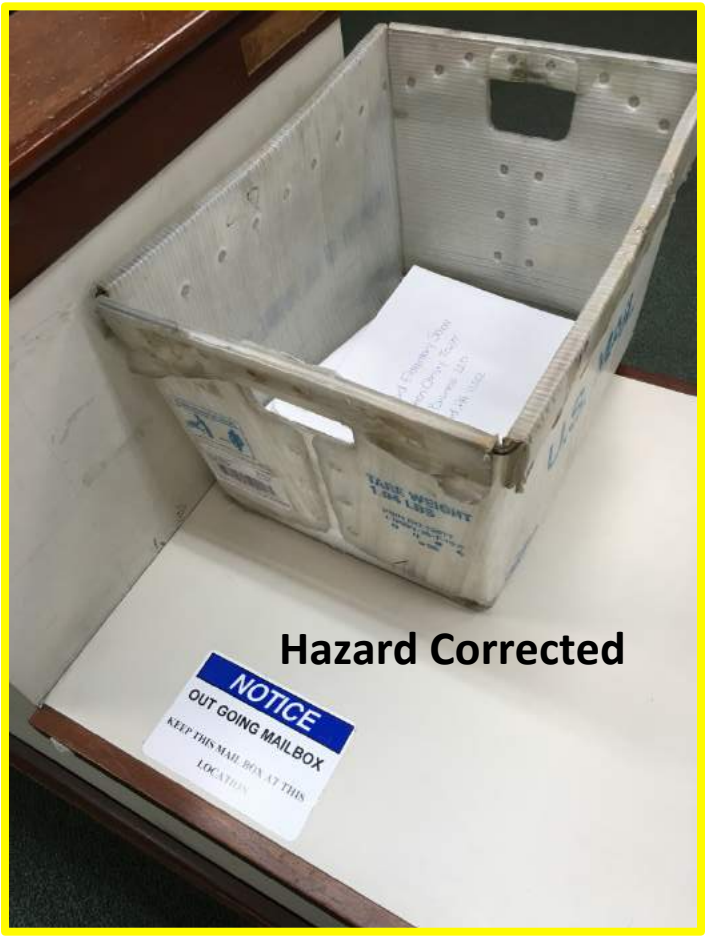
Workers could leave the safety chains off the pallet placement platform exposing a fall from height risk. Heavy Duty Solid Doors with Locks where installed to protect the workers and to insure the opening for the pallets were protected.

Condition needing improvement

Reoccurring Trip Hazard

The out-going mail bin was placed on the floor for people to drop mail into for daily U.S. Postal Pickup. The bin was a trip hazard, after relocating the bin to a safer area, the bin continued to be moved back to the original spot, a high traffic hazardous location. Finally the new bin location was labeled and the bin is now safely located on a nearby counter.

World's Finest CHOCOLATE

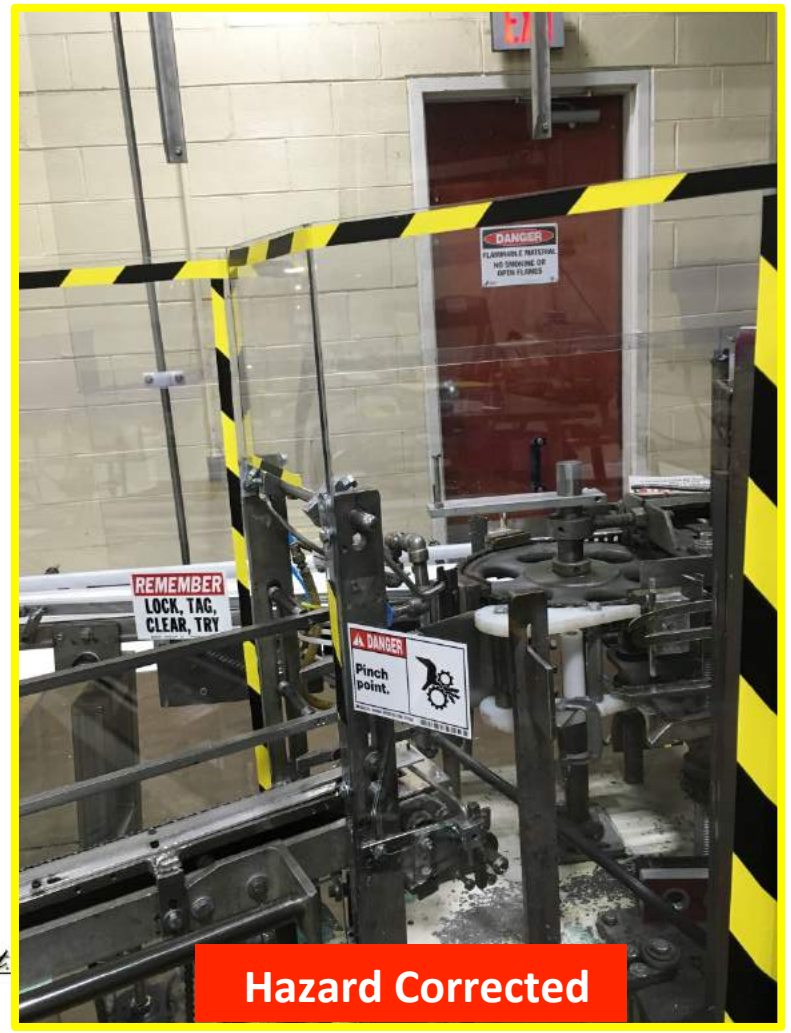


Employee Involvement

Each Year our Safety Committee hosts “Safety Week”
Employees complete quizzes and safety word puzzles and enter a drawing for dozens of home safety devices. The event is very popular and it sends a message home that safety at home counts.

MACHINE GUARDING IMPROVEMENTS

This Packaging Machine is protected with a light curtain. However, the Operators felt that they were not as secure as needed and that some moving machinery could be exposed. New guarding and waring labels were installed to make this Packaging Machine as safe as possible.



Guest Sign-In Improves Equipment Sign Out Records

Before: Switching to a new warehouse management system led to the need for some temporary help from other warehouses, office employees, stores, and temp agencies. As non-employees or non-warehouse employees they did not have a warehouse ID for signing out equipment. They needed to have our warehouse employees sign equipment out for them.

After: A guest sign-in was added which allowed users without a warehouse ID to enter their own name and record whether they were coming from our office, another warehouse, a store, or a temp agency.

New Team Enhances Site Security

Before: During a penetration test in December 2015 an "intruder" was able to easily enter both our truck yard and warehouse.

After: In March 2016 we switched from contracting security to hiring our own team of security officers. In addition to raising the qualifications of this group, their role was expanded to include multiple daily foot patrols of the grounds and facility. They have also been incorporated into our Emergency Response Team and given CPR, AED, BBP and First Aid training. Quarterly penetration tests since then have failed to enter the warehouse, and helped us make more improvements to limit unauthorized access to the truck yard.

Making Pedestrians Safer in the Warehouse and Truck Yard

Before: Foot-traffic is mixed with pallet jacks & forklifts in our warehouse, and tractor-trailers & other motor vehicles in our truck yard. Many equipment operators cited pedestrians as a safety concern.

After: Visitors and any employee who is not in either the warehouse or the truck yard on a daily basis is required to wear a safety vest while in either area, increasing visibility for the pedestrians who are least familiar with the hazards in those environments.

Security cameras improve incident investigation

Before: Important details were often missed in incident investigation records, which were very difficult or impossible to get when following up days after the fact.

After: Security cameras installed throughout the warehouse and grounds allow accurate and impartial investigation into the root causes and conditions of collisions, injuries and other incidents.

Scrap Metal Recycling

Before: Scrap metal from aerosol cans and other sources was sent to the landfill.

After: Through the purchase of equipment to puncture aerosol cans, and an enclosure to protect scrap metal from rain and potential run off issues, we are now successfully diverting our scrap metal waste away from the landfill to be recycled.

Ragan Mechanical, Inc. – Hazard Recognition Control
Before: Guard was attached - Employees were suppose to use a personal Face Shield

Ragan Mechanical, Inc. - Hazard Control Recognition
After: Attached Flexible Permanent Face Guard to Stand-Up Grinder

Ragan Mechanical has 2 of these stand-up grinders. The grinders came without permanent guards attached. Attaching these permanent guards make it more convenient and safer for employee because they don't have to put on personal face shield for protection!

CONTACT INFORMATION

Ragan Mechanical, Inc.

702 W. 76th Street

Davenport, IA. 52722

(563) 326-6224

Mike Tomsha – Safety Director

mtomsha@raganmechanical.com

Safety Communication is Key

Safety communication is key to keep employee's mind on safety at all times. We developed a traffic light communication tool to inform personnel of a safety concern before they get through the plant gate. The light communicates to the employee if there was an incident at any Roquette plant. The light conveys the severity of the incident and the communication form that is required to take place. As a follow up to this communication, an investigation and corrective action is sent by email to all employees globally.

Sharing safety information from all our plants provides awareness about potential safety issues.

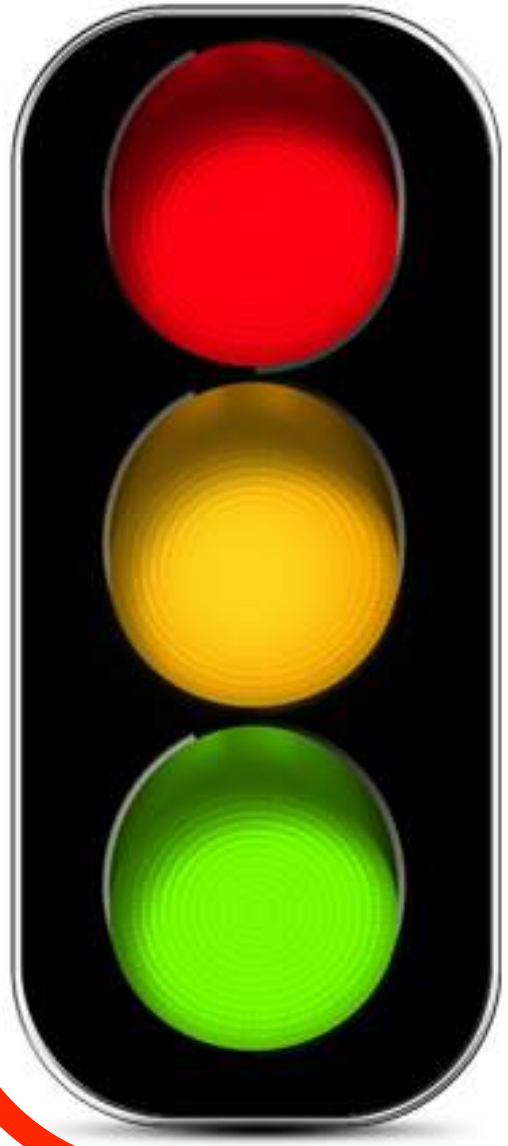
The traffic light is visible from the plant gate. Signs are also posted to explain what each color means. If the light is……..

- **Green** – everything is normal; please work safely and have a good day.
- **Amber**- A serious near miss occurred recently on an RAI facility. Please check with your supervisor for more information before the end of your shift.
- **Red** - An OSHA-recordable occurred at an RAI facility recently. Please check with your Supervisor prior to starting work to understand the impact of the issue.

Traffic Light in high visibility area

Signs posted in the plant

SAFETY TRAFFIC LIGHT



Red - An OSHA-recordable occurred at an RAI facility recently. Please check with your Supervisor prior to starting work to understand the impact of the issue.

Amber - A serious near miss occurred recently on an RAI facility. Please check with your supervisor for more information before the end of your shift.

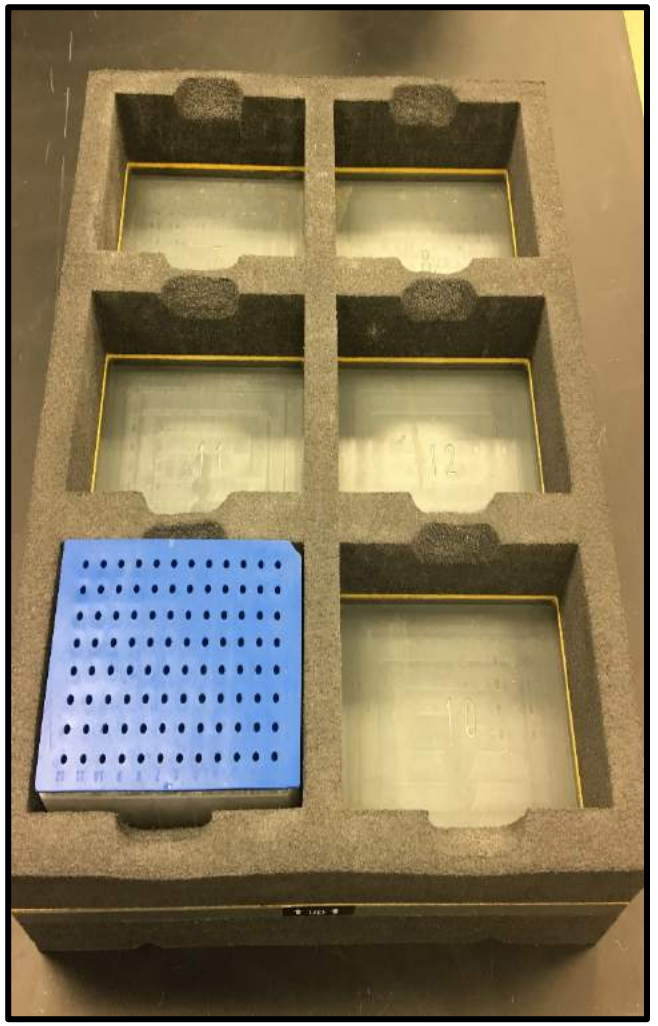
Green - Everything is normal; please work safely and have a good day.

We take personal responsibility in conducting our activities the safe way every time, and commit that …

"NO PRIORITY SHALL EVER TAKE PRECEDENCE OVER SAFETY".

ROQUETTE
America, Inc.

Hazard: Laboratory equipment used to pulverize seed for DNA testing emitted noise in excess of 91 decibels throughout the day. Laboratory employees were required to wear hearing protection, making it difficult to communicate and perform other functions of their job.



Control Solution: Noise absorbing material was install in the interior of the equipment to control noise emitted from the machine motor. A processing plate was also created out of noise absorbing material to encapsulate the DNA laboratory plates and control noise produced from BBs pulverizing seed. The engineering changes reduced the noise level to 74 decibels on a total of 9 laboratory units.

IMPROVED RESIDENT HANDLING

In an effort to improve ergonomics for staff and allow safer resident handling practices this long term care community installed a track in the ceilings of some of the resident rooms in which the residents slings can attach to. This greatly reduces the amount of weight a caregiver has to lift.

This improvement has made the task of lifting and maneuvering the weight of a human being safer for both the resident/patient and the caregiver.

Ten rooms were retrofitted to try this concept. It has been a success and is now a best practice that is being shared at other LCS communities .

Safe resident/patient handling track installed to ceiling.

IMPROVED ELECTRICAL SAFETY

Many LCS long term care communities were having trouble keeping up with repairing and replacing electrical cords to ensure that the strain relief on the plugs is okay, wires are not exposed, ground prongs aren't missing, etc.

An inspection and tension testing process for electrical cords was put into place that involved tagging and dating cords to indicate they have been tested and inspected. The picture below (right) shows an example of inspected and tagged cords.

Before

After

IMPROVED LIGHTING

The parking garage at this LCS retirement community was painted a high gloss white to reflect the light and new LED lighting was installed for an even brighter overall impact. This was done in an effort to reduce the number of slips, trips and falls by residents, visitors, vendors and staff utilizing this area. It also reduces the risk of someone accidentally getting struck by a vehicle.

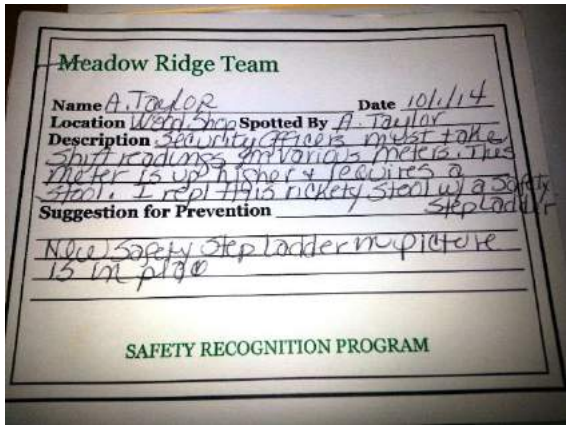
For very little cost the community has made a positive change that will improve safety and security. The LED lighting will save money for years to come and impact the environment positively as well.

Improved lighting in parking garage

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 & 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: John Doe

Multiple, tall storage racks were needed to store purchased, polyethylene foam sets that are used to ship final products to customers. Sealed Air was able to provide an on-site iMold G-flex system that allows many of these foam sets to be made on-site, on an as needed basis. This has reduced the amount of packaging materials that need to be stored on-site, and reduced the need to store packaging materials on the tall storage racks.

Before

Jodi Christensen

Iowa Alcoholic Beverages Division
1918 SE Hulsizer Rd
Ankeny, IA 50021
515.725.0108

BEFORE

Employees where bending and

twisting when shrink wrapping pallets.

NEXT

A pole that shrink wrap is mounted on is now used to

wrap the pallets allowing the employee to wrap the

pallet in an upright position and walking around the

pallet.

FINAL

Process change was implemented that included relocating the shrink wrap machine to a more convenient space to finish wrapping the pallets.

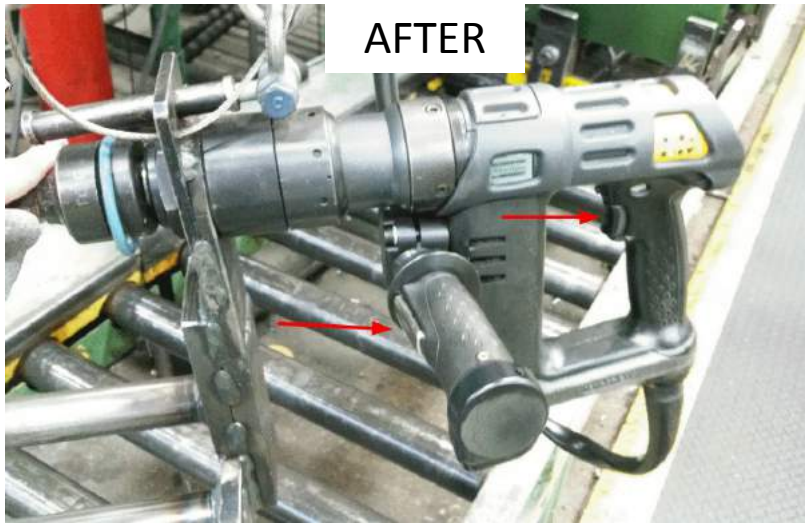
A frequent task for our Field Crews is to change out drag chain conveyors. Sections of drag chain are assembled in the plant and shipped to us in various lengths. The sections then must be assembled in the field to fit the customers needs. Connecting the sections in the field involves aligning two sections so a link pin can be pressed into the side link and barrel and then a ¼" x 1 5/8" "Keeper Pin" is put thru the link pin. The last step in the connection is to bend the "keeper Pin" over to secure the assembly. Depending on the length of chain this step might be completed several times by an employee. In May of 2016 our Field Assembler was performing this task when the wrench slipped off the "Keeper Pin" resulting in, stitches, chipped teeth and a Recordable Injury. Upon investigation we found a manufactured tool was available for purchase for this task and we no longer expose our assemblers to this struck by hazard.

For years our men bent this pin with either an adjustable wrench or a form of pliers

Now we have a manufactured Tool; successfully "Engineering Out" the risk of being struck-by the tool.

- DTO/SPO did a full factory sweep of all processes using torque guns with reaction bars led by the M.E. group and assessed by Safety/Ergo.
- This was an attempt to reduce or eliminate future injuries with potentials to have hands in the line of fire while in operation.
- Identified 40 torque guns with reaction bars
- Performed Risk Assessment on all to determine risk and what action to implement for the best solution to eliminate or reduce hazard.

SNAPSHOT OF THE TRACKING SHEET



- Pre-SERA Scores Ranged from 64-12
- The average Score was 32
- The best solution was to add 2 hand-controls to ensure hands were out of the line of fire. Others had to be redesigned.
- The implementation of this project resulted in a reduction of > 1,000 Risk Reduction points for DTO and SPO

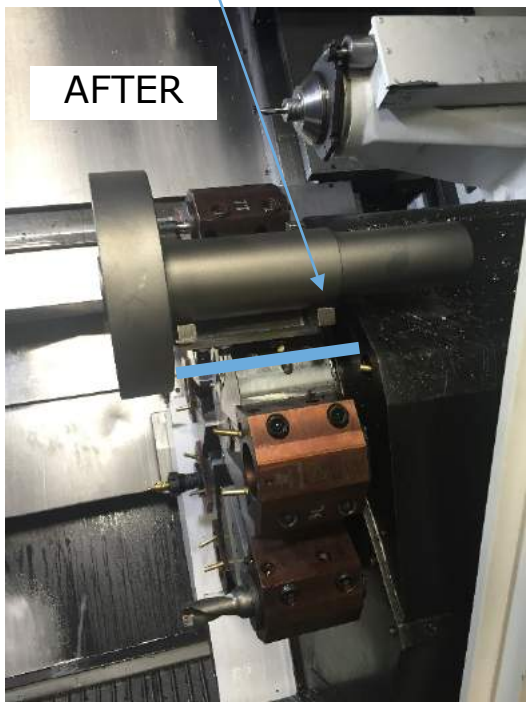
Reduction in extended repetitive reach

Operator has a reach of 33" and one handed horizontal push force of 33lbs. to get part seated on locators in machine

Reach and cross body forces

Install part cradle on lower turret and part pusher on upper turret

Installed part cradle and part pusher on machine



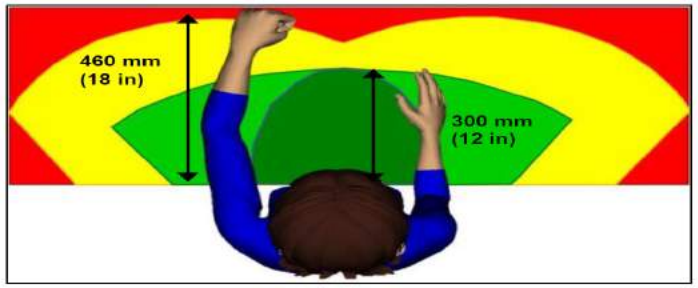


Figure 4 Operator Ideal Reach Envelope

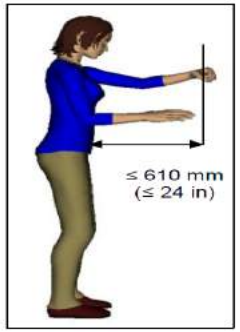


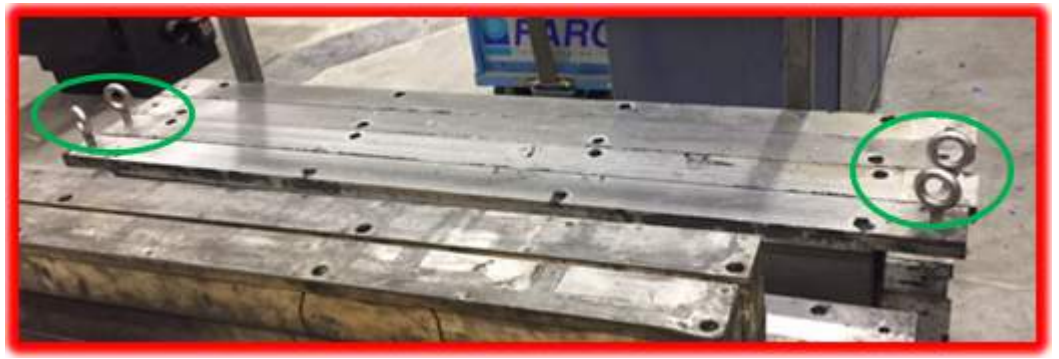
Figure 5 Operator Maximum Reach Envelope

Ergonomic Pattern Mount Improvement

Before: Employee required to perform a two person lift, lifting 75-100 lbs. parts to work station. Employees exposed to increased back/shoulder strain risk. Risk Assessment Score = 48

BEFORE

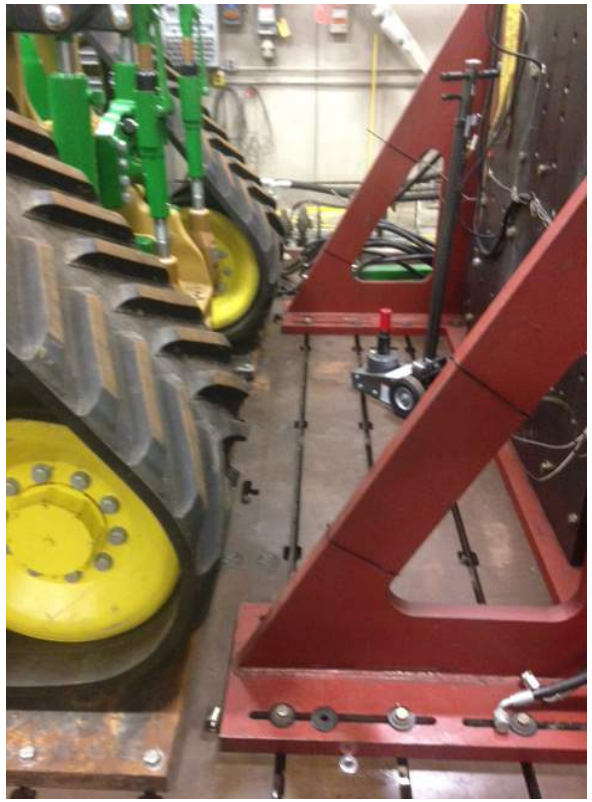
After: Holes added to the part in order to install eyelets for attachment of a hoist to lift the parts. Ergonomic risk to back and shoulder eliminated. Risk Assessment Score = 1



AFTER

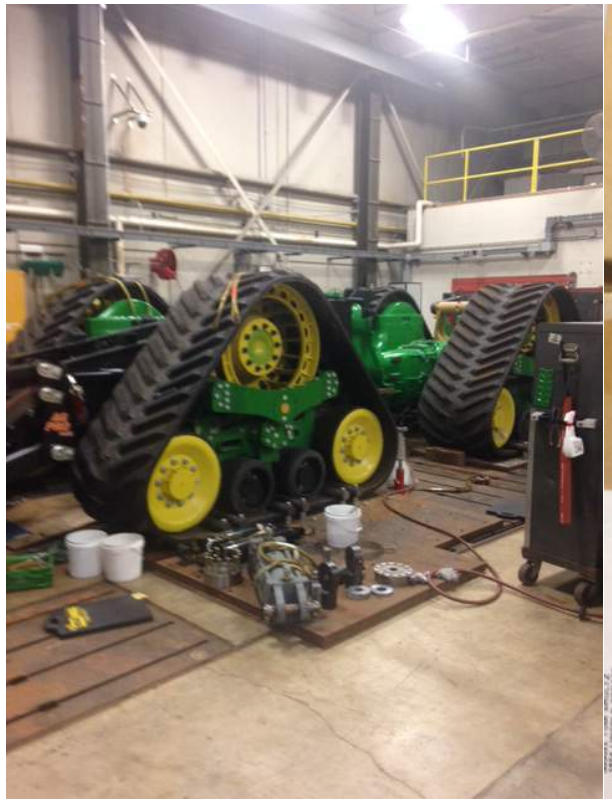
Remote hoist controls

Before: These test bays are crowded and created pinch point as well as ergonomic risks when our X60's hoisted large components.



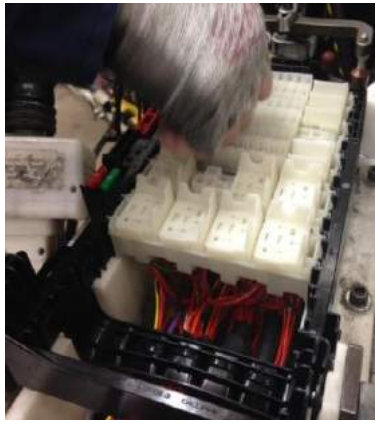
BEFORE

After: Installing remote hoist controls allows our X60's to remain out of the line of fire while moving large components into place.



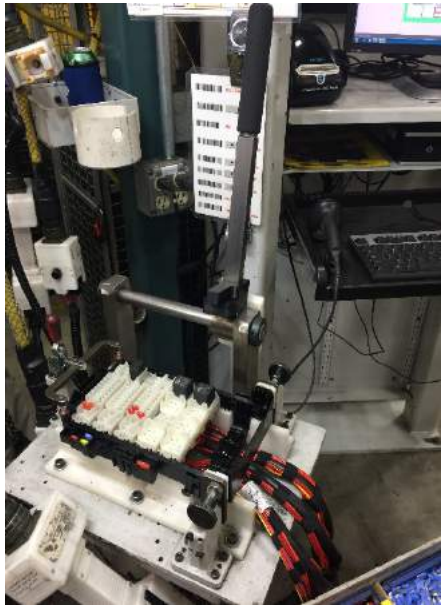
AFTER

Fuse and Relay Installation Force Reduction



* Task/Operation:	Operator inserts 40-60 fuses to each panel by hand. DPS of 11 panels a day.
* Hazard/Risk Description:	Operator uses force with their fingers, thumbs, and hands to properly seat fuses. Pinch grip and force exceeds JD standards.
Suggested Corrective Action:	Operator suggestion to create a new fixture with lever to properly seat fuses.
Actual Corrective Action	New fixture made so installation of fuses requires very little force.

Fuse/Relay	Starting Force	Ending Force	Force Reduction
10 Amp Fuse	7 lbs	3.6 lbs	49%
15 Amp Fuse	7 lbs	4 lbs	43%
30 Amp Fuse	9 lbs	0 lbs	100%
Extra Fuse	34 lbs	5 lbs	86%
2-Prong Relay	4.4 lbs	0 lbs	100%
3-Prong Relay	20 lbs	2 lbs	90%
4-Prong Relay	27 lbs	5 lbs	82%
5-Prong Relay	24 lbs	5 lbs	80%



Seedorff Masonry, Inc. – Strawberry Pt, IA

When we use heaters inside of shelters during the winter time, a fire extinguisher is also placed nearby.

Before we built these holders, it was not uncommon to have them setting on the scaffolding nearby, and often become hidden if materials were placed in front of - or around them.

Our Safety Staff discussed the problem with crew members, they came up with this low cost solution which our shop team fabricated.

Now they are hung next to the heater and always visible in the event it is needed in an emergency.

As a bonus, we put a secondary holder for a bottle of eyewash.

If anyone should get something in their eye, they no longer have to exit the shelter to go to the eye wash station.

Eye Wash is always handy in the work area to conveniently use to prevent a corneal abrasion.

Explanation of Project

Before

After

Hazard Control

Brief Explanation of Hazard

- A maintenance repair worker was inspecting the torque arm for a centrifuge at the Cedar Rapids J Avenue Water Treatment Plant. The worker was kneeling with one hand resting on a wrench when the wrench slipped out. To prevent falling, his other hand went out and under the unguarded area on the bottom side of the enclosure and his hand was struck by the free-spinning torque arm. The employee suffered serious injury to his hand that required surgery to repair.

Brief Explanation of How the Hazard Was Controlled

- Mesh guarding was added to the guarding that was already in place for the torque arm assembly. This ensured that no one anyone could accidently come in contact with the free spinning torque arm when disengaged. A new mechanical device was also installed to reset the torque valve without having to remove the machine guarding preventing the possibility of employees coming in contact with moving machinery parts before it is completely de-energized. The safety improvements were entirely conceived and implemented by in-house maintenance workers.

Skyline Center, Inc.

Clinton Iowa

We were experiencing an increase in trips on pallets recently. To help with awareness in the work area, we conducted training with staff to encourage them to use entry/exit points in the work areas. We also added footprints and signage above to help staff recognize areas to enter/exits in their work areas.

This has helped tremendously!

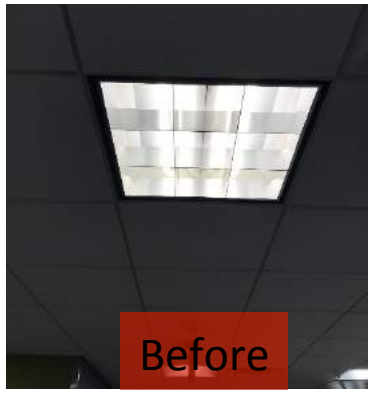
Doubly unique ergo platform

1) NOT just for Emps of disparate height BUT to allow a single operator to raise/lower a few inches to vary their position & thus reduce arm or shoulder discomfort during their shift.
2) NOT your everyday hydraulic platform for people but rather a much less expensive MOTOR CYCLE repair lift that we adapted! A "win-win'!

ERGONOMICS – reducing potential physical strain for an Emp does NOT need to be expensive. This device cost half of a typical personnel lift; why? Designed & manufactured to position **motorcycles** for repair!

Think out of the box!!!

Reduced Ladder Usage + Environmental Impact



Average florescent bulb life = 2 years

Average LED bulb life = 10 years

Reduced Ladder Use = Reduced Risk of Fall

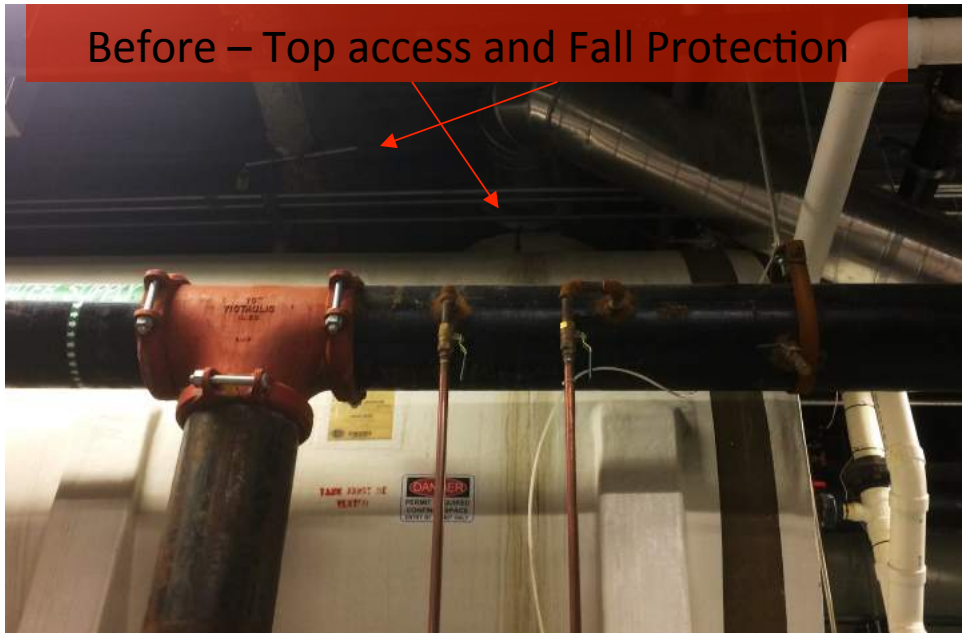
Over 5000 Bulbs and Fixtures were replaced with LEDs which will eliminate more than 20,000 times up and down a ladder by maintenance

A project to replace fluorescent and incandescent bulbs on the DuPont Pioneer Johnston campus has been underway over the past 2 years. While the initial goal was to conserve energy use, other benefits from a safety standpoint have also been recognized.

- The average life of the LED's is 10 years vs. 2 years for the florescent. This means our maintenance employees will work from a ladder 4 times less for bulb replacement work.
- The output of the LED fixtures increased illumination in some previously poorly lit areas. This increased visibility and decreased eye strain.

Access To Confined Space

Entry into a water tank for the building HVAC system required a top entry with a winch and SRL then being lowered into the tank. Extremely difficult to enter, and monitor for the attendant. The tank was modified with an access point on the side that now allows for easy entry, monitoring, and if it was ever needed rescue.



The purpose of this project is to eliminate customer traffic within our hazardous workplace area. We have had customers that walk through our shop to reach our sales department on a daily basis. We have now included a caution sign to correct this outage. It has definitely help with the safety of our customers and employees.

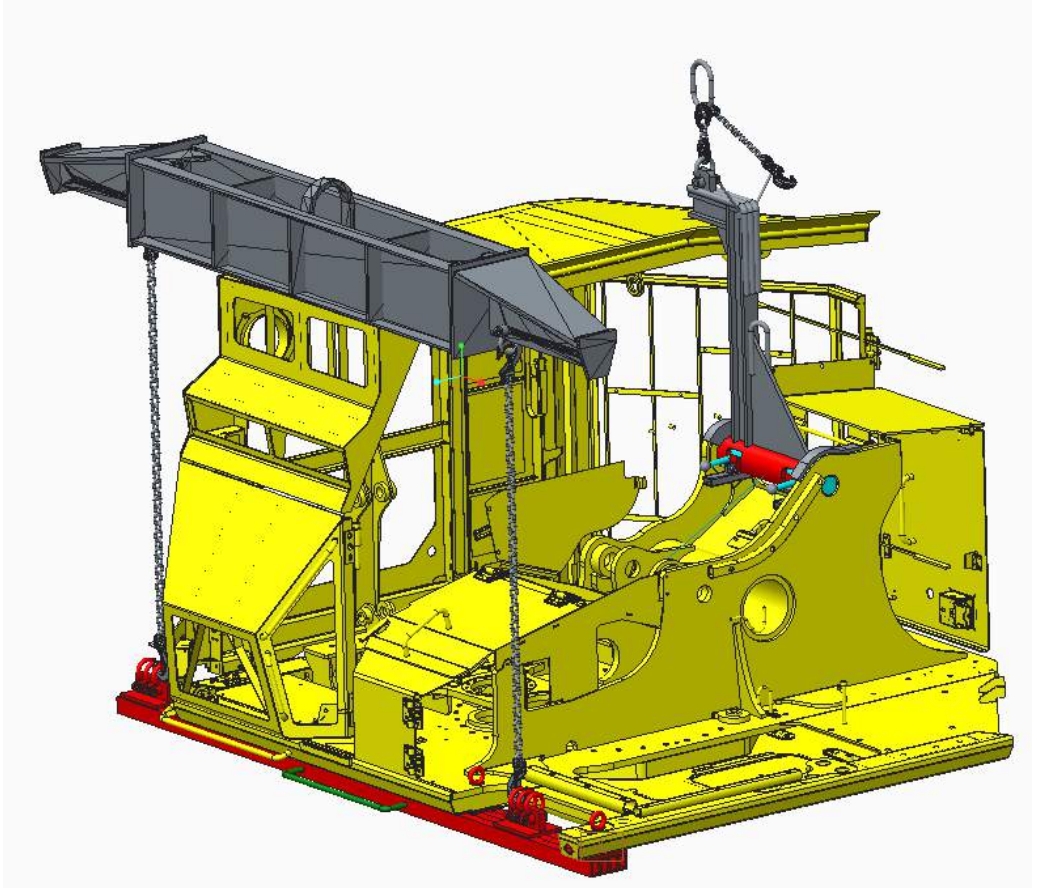
Contact Information

- Organization Name as it should appear on plaque & in program: **Hodge**
- Contact for this application**: Derrick England**
- Contact phone: **(563)583-9781**
- Contact e-mail**: dengland@hodgecompany.com**
- Mailing address: **Hodge**
  7465 Chavenelle Road
  Dubuque, Iowa 520021

Forestry

The old lifting device used to marry the forestry frame and undercarriage was not centered. This caused the unit to spin when lifted. Additionally, the doors on the unit could not be closed while the lifting device was attached which allowed them to swing. These factors contributed to a significant struck-by hazard.

Before



After

New lifting device capable of supporting variable loads while keeping them level and even was designed and implemented.

Forestry

Employees install and route hoses at heights greater than four feet on the unit.

Before

After

A guard rail system was put in place that surrounds the unit and protects employees from falls. The system also has tool and material storage to reduce the amount of time walking on the stairs.

Beam Positioning Clamps

Sukup Manufacturing Co. designed and fabricated a beam positioning clamp to secure beams to a saw horse during welding. The beam clamps prevented beams from tipping over. Clamps eliminated the crush hazard associated with falling beams. The clamps also steady the beam while welding.

The clamps can be used on various sizes, shapes, and types of beams.

Before

* Unsteady beams create a hazard for the employees.

After

* Beam clamps secure the beam to the saw horse eliminating the hazard.

Modular Grain Dryer Assembly

Before Designed Lifting Device

- Assembly employees required to use a scissor lift to reach the top of the dryer.
- Process included multiple trips to remove the bolts connecting the lifting device.

<u>**New lifting device designed and constructed to lift the platform.**</u>

After Designed Lifting Device

- New lifting device can be removed without the use of tools. (No reaching)
- New lifting device allows employees to work from ground level. (No falling)
- Because no tools or elevated platforms are required, the task is completed 75% faster.

Hazards

Before	After
• Overreaching	• No Reaching
• Strains	• No Fall Hazard
• Fall from elevation	• No Strains

Plasma Table Unload

Before

* Employee's body in poor position resulting in awkward movements.

The employee had to lift heavy and awkward parts from a conveyor belt. Parts were placed on a pallet, sometimes in various directions. A modified roller conveyor and pallet turntable were introduced to the work area. These improvements allowed parts to exit the conveyor belt and come to rest at waist height with no handling from the employee. Parts could then be placed in various directions from one location.

After

*Pallet turntable and modified roller conveyor.

Hazards Eliminated

- Strains
- Reaching
- Poor Body Position

Benefits

- Reduced Repetition
- Reduced Walking With Parts
- Reduced Reaching

Welding Arc Flash

Before * Weld bay where arc flash is present during working hours.

A weld curtain was installed to protect pedestrians and other workers from welding arc flash exposure to IR light. The frame of the weld curtain was fabricated to fit the specific working area. This installation allowed welding area to be completely enclosed. Pedestrians and coworkers are protected in all directions. The curtain was customized with slots to allow forklifts and other product to easily pass in and out of the work area.

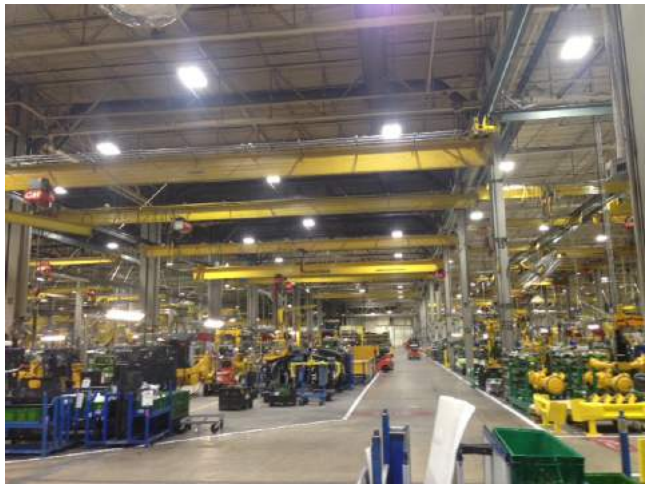
After * Weld curtain prevents exposer of arc flash.

Preventing Accidental Bridge Movement

Multiple hoist bridges are on the same hoist rail system, this enables bridges to collide. This can cause unexpected movement in the one or both loads which can result in injury or property damage.

Hoist Bridge collision system was implemented to detected proximity of adjacent hoist before an impact can occur.

1. **Laser distance sensor is installed on each hoist in the system.**
2. **When preset distances are measured between two bridges a slow down and stopping of the bridge movement is initiated.**
3. **The slow down prevents swinging on the part being moved and stopping prevents bridge collision with the second system.**



Oxyfuel Torch Project: A Cut Above The Rest

Operators stand on or between cutting tables while the machine operates on the adjacent table. The manufacturer does not provide additional emergency stop cable on both sides of the gantry system. This creates a potential struck-by hazard should the gantry index unexpectedly.

With the addition of the emergency stop cables, employee's are protected from unexpected movement of the gantry system. The addition of this safety feature prevents potentially struck-by and caught-between injuries.

By properly installing the motor with also a guard rail in place we have prevented a potentially fatal injury.

Torqued Off with Reaction Bars

- Opportunity:

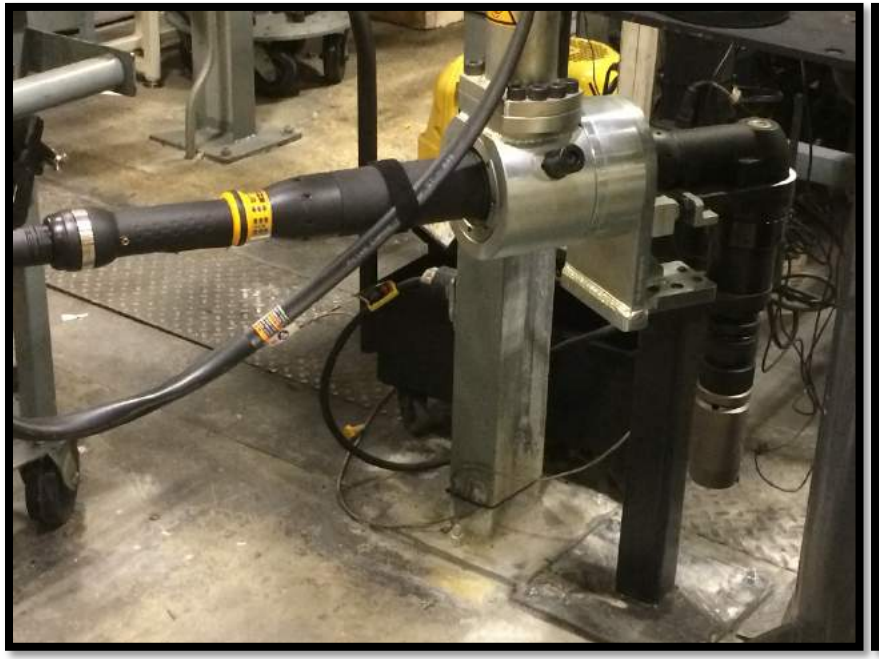
In 2016 John Deere had two separate lost time injuries resulting from employees getting their hands crushed between parts and reaction bar of a torque gun. Although these injuries did not occur at John Deere Davenport Works the JDDW Utility loaders team identified 4 of these reaction bar torque guns which created significant potential for hand injuries. Reaction bar torque guns are required in applications where torque values can exceed 300 newton meters or over 221 foot pounds of torque.

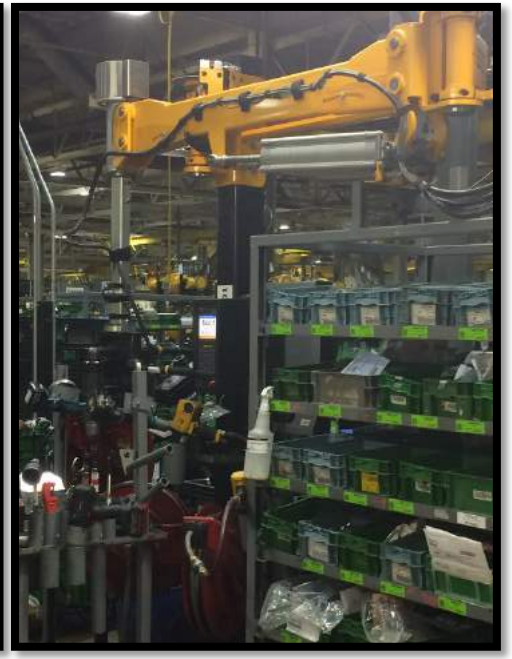
- Action

While high torque values such as these are still required on our large products tool options are available which eliminate this crushing injury risk. In 2016 John Deere Davenport Works Utility Loader team identified 4 reaction bar torque guns and eliminated them with DC torque tools. Although the project required significant capital investment the team put together a business case, justified the project outlined safety concerns and replaced these guns with DC torque tools.

- Result

DC torque tools uses large floor mounted arms to react against, t this design **eliminates** the chance for injury. This project proactively eliminated the risk for serious injuries from reaction bar torque tools in the Utility Loader line at John Deere Davenport Works.





Essentia

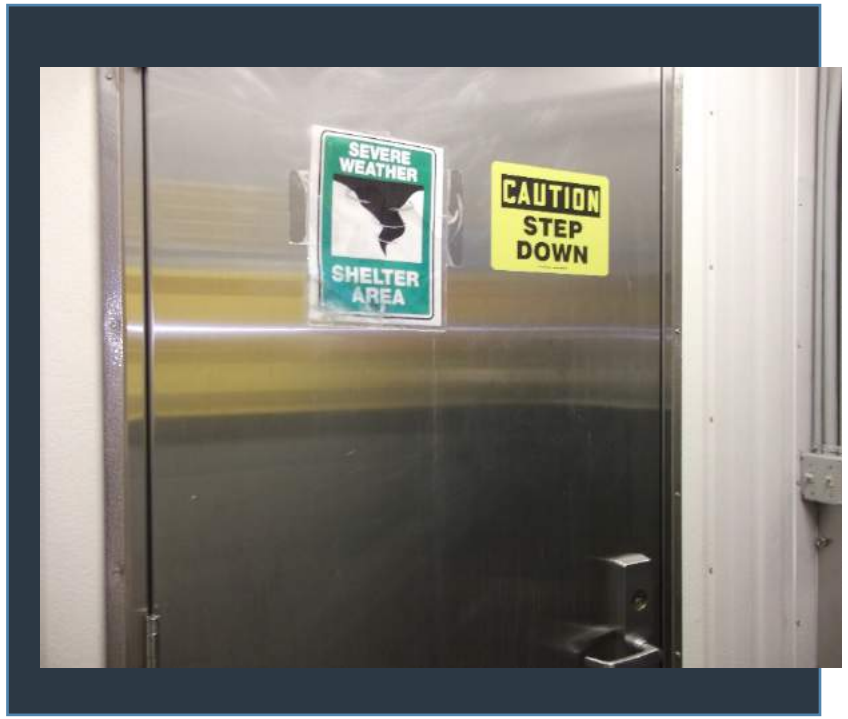
Protein Solutions

Harlan Plant

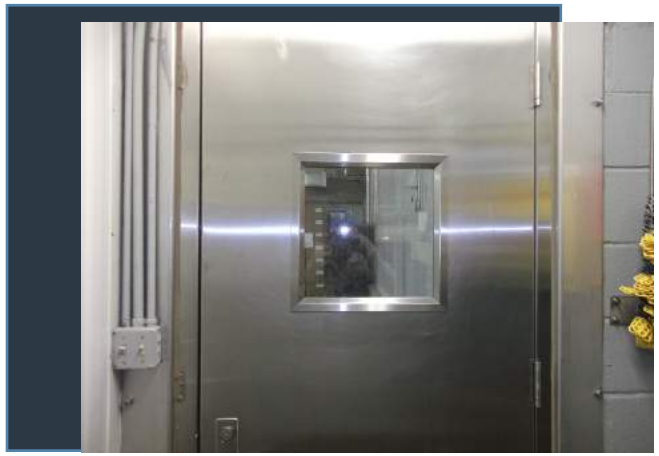
2017 Iowa-Illinois Safety Conference Presentation

Windows In Production Floor Doors

Before



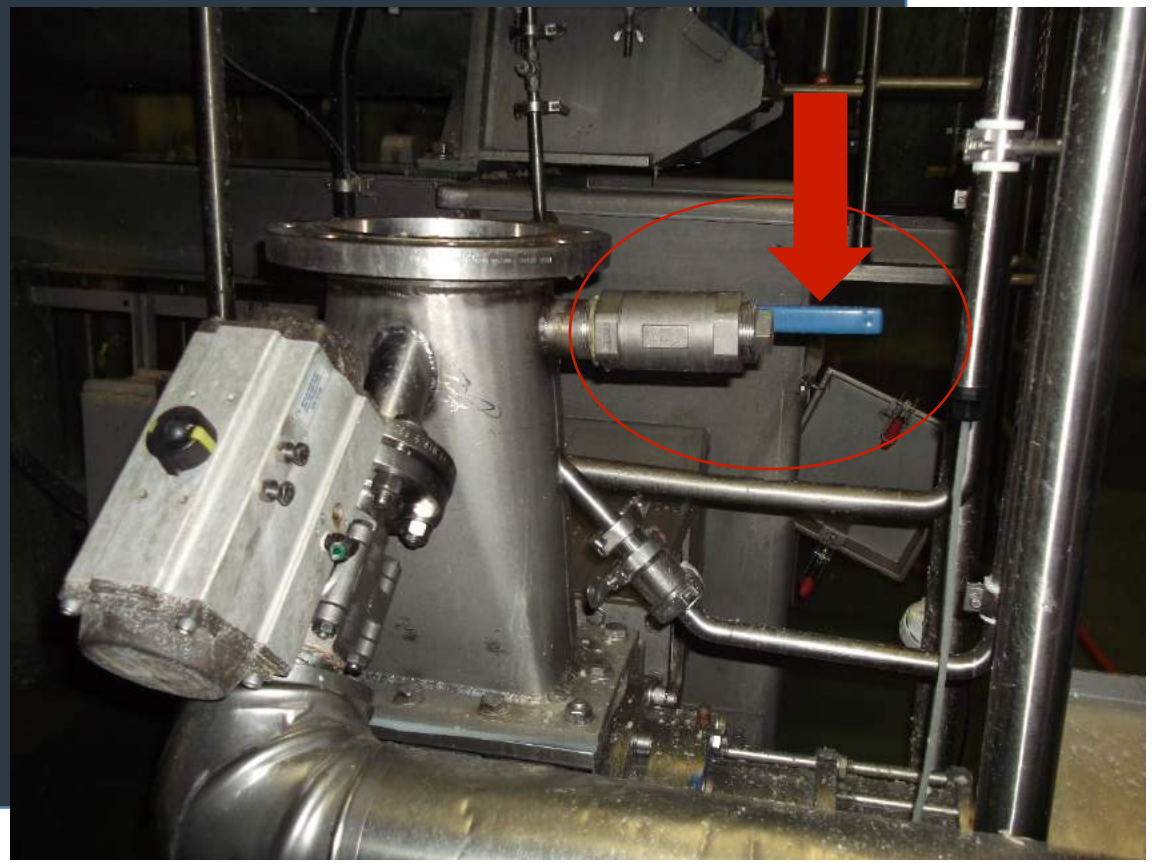
After



Windows were added to all production floor stainless steel doors. This improves visibility for the employee and serves as a safety precaution for all plant staff.

Essentia
Protein Solutions

Broth Plant Grind Rooms 1 & 2



After

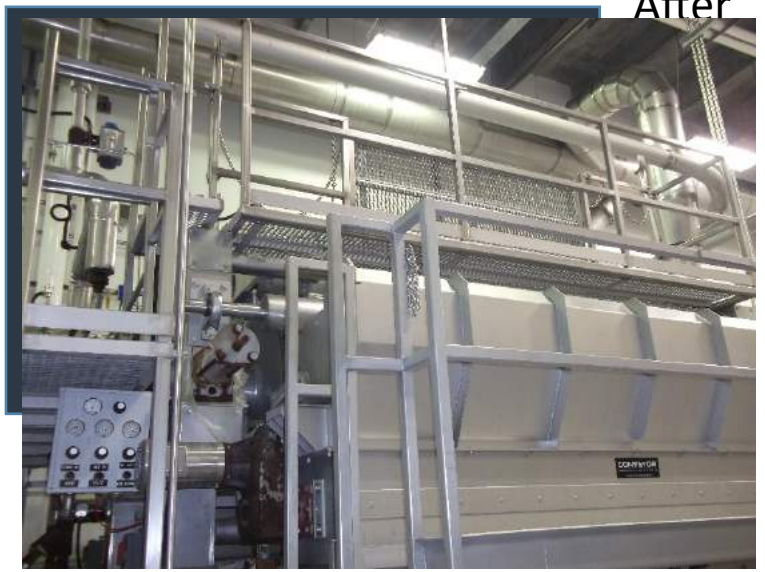
By making improvements to the valves in broth grind rooms, pressure is able to be relieved by utilizing new 2” valves that decrease the chance of an employee being injured.

Essentia
Protein Solutions

Cat Walks on Drum Dryers 1 & 2

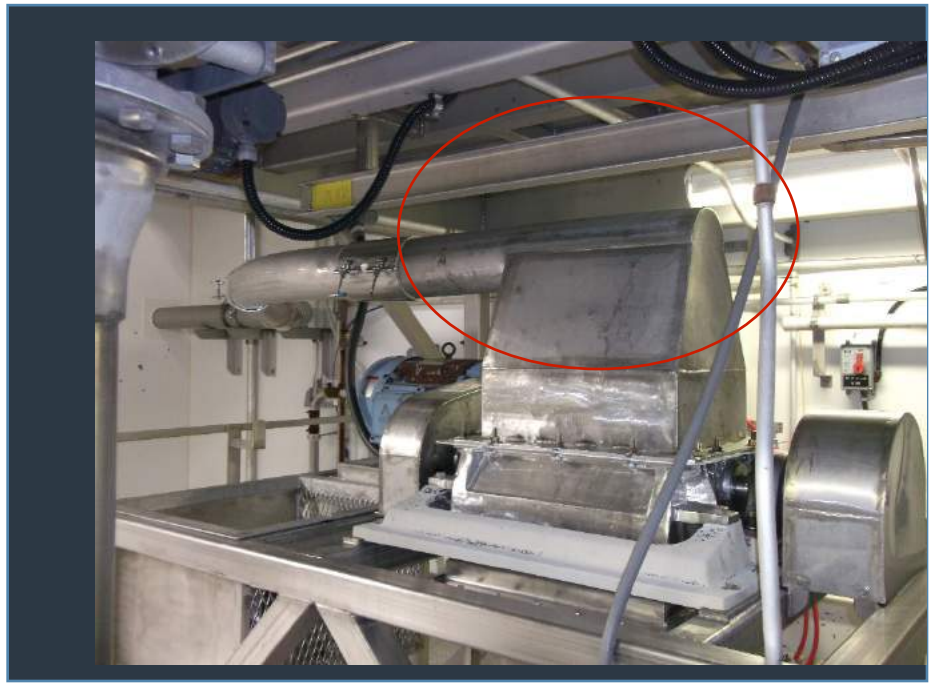
Before

After



Cat walks were added to both drum dryers in the functional plant to ensure better footing around the drum dryers for employees when the drums need to be cleaned.

Improvements to I-Beam



A hoist was added to the existing I-Beam over the Fitzmill in functional plant. This allows for safe range of motion and weight when being moved by an employee.

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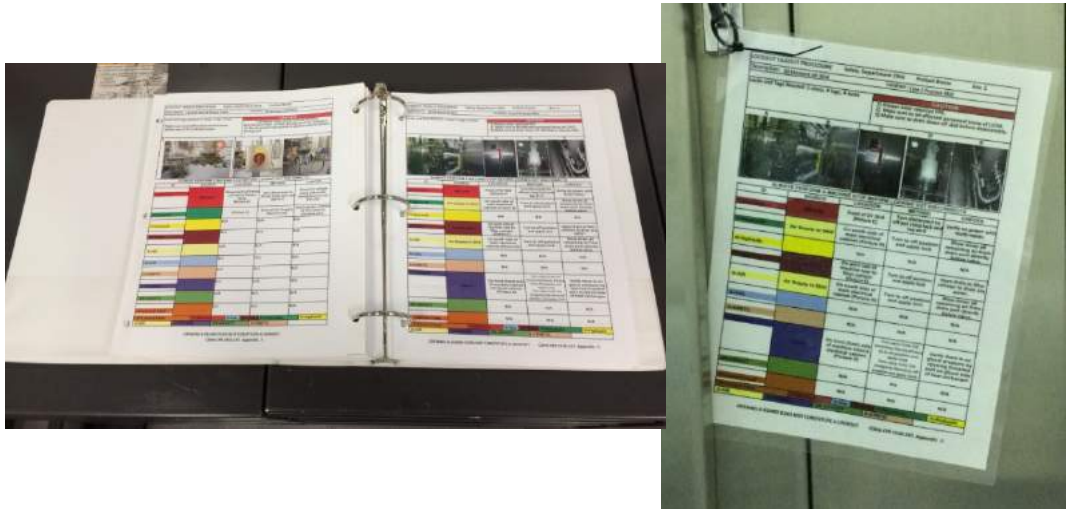
Lockout/Tagout Procedures

BEFORE

Procedures were not in place to specify isolation boundaries for equipment to ensure complete Lockout/Tagout. There was potential for different individuals to use alternate and posibly inadequate isolation.

AFTER



A Tagout/Isolation sheet was produced for each piece of equipment. The process evaluates each potential area for stored/supplied energy and provides detailed Lockout/ Tagout procedures. This ensures complete isolation and standardization for all qualified LOTO personnel. Laminated sheets with tagout boundaries are posted locally on major equipment, primarily focusing on those with multiple energy sources.

ditches, etc. ATVs are routinely used to get employees from place to place to do their work.

ATVs were upgraded to models that offered more stability, carrying capacity, and weight to enable employees to get into rough areas more safely.

#1

mirrors.

Sometimes this resulted in expensive physical damage (actual photo).

A project was initiated to have ALL work vehicles involved in field work be equipped with back-up cameras. The cameras will be available in pickups, digger derricks, bucket trucks, a semi, trailers, etc. (photo noting where the camera will be placed).

#2

sufficiently barricaded leaving a higher risk of damage, fire or explosion (photo example).

A highly visible steel barricade was designed and installed to protect the valve from serious damage if hit by vehicles or equipment. The valve is not far from a highway. (actual photo)

#3

~~paper out of a~~ rolling bin for recycling (photo example).

#4

Paper is no longer shredded and a service company picks up paper for shredding at an off-site location. (actual photo).

Machine Guarding of Old Machines

- Many old machines remained in operation due to cost or efficiency. While these older machines are very cost effective to operate, they did not meet current safety expectations.
- With our quest to provide a safe work environment, many of our old and aged machines are being retrofitted with safety guarding devices that were engineered in house by our own facility engineer.
- By making these machines safe, we were able to insure operator safety with existing equipment, thus improving safety and avoid purchasing newer equipment.
- Operators were consulted in the critical nature of the machine operation as to not impede or restrict safe operating.
- Operators were consulted in the development of retrofitting guarding to the equipment.
- Prior to operation, each machine was RED TAGGED and operators were trained with new guarding installed.
- All machines retrofitted in house by internal facility engineer.

Machine Guarding of OLD Machines

Milling Pinch Point

Before

After

Light bars added with safety interlock
Mesh screen added

Machine Guarding of OLD Machines
Protruding Material

Before

After

Machine sides will open up for long part machining.
Any operator can walk through and risk injury.
New barrier prevents traffic when running long parts.

Machine Guarding of OLD Machines

Protruding and Turning Pinch Point

Before

After

Material protrudes from old machine.

New cover eliminates turning pinch point and Potential for flying debris.

Machine Guarding of OLD Machines
Low Speed Hydraulic Press

Before

After

Operator part positioning requires manual start

Mesh Screen added as barrier wall

Safety Interlock in place for mesh positioning