Effective SAFETY Solutions

WHERE

Company: **Hydro Aluminium Gießerei Rackwitz GmbH**

Location: **Germany, Saxony, Rackwitz**

Business: **Extrusion ingot producer**

THE ISSUE

The operators needed to carry a heavy steel ring manually, if they wanted to attach this ring to the crane hook.

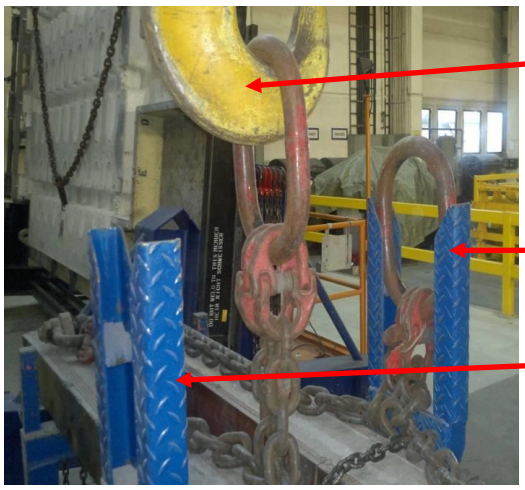
THE SOLUTION (additional level of protection put in place)

Type: (Technical ☒ - Procedures ☐ - Others ☐)

Description of key feature or change versus current conditions:

In close cooperation between production and maintenance department we developed a steel support structure which enables the ring in an upright position, so that it is very easy to pick up the ring with the hook of the crane without any manual tasks.

PICTURES (if applicable) or ADDITIONAL INFO



SAFETY BENEFITS – pros/cons

- No possibility that ring can fall down and hit an operators leg, foot or damage to floor
- No possibility that operator can clamp his hand between ring and crane hook
- No manually lifting of the heavy ring anymore

IMPLEMENTATION COST (k€) AS APPLICABLE

- Almost no cost (some steel parts and some minutes for welding, painting)

Effective SAFETY Solutions

WHERE

Company: SAPA

Location: Sapa Profiles Perfialsa, S.L

Business: Aluminum extrusion

THE ISSUE

Due to the risk an operator could fall down, we have tried to find a viable solution to protect them during truck loading.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ■ - Procedures □- Others □)

Description of key feature or change versus current conditions:

Improve safety condition of shipping area, especially during truck loading.

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

Pros: Eliminate the risk of injury in the event of a fall from the top of the truck, during loading operations, through catch net on both sides

IMPLEMENTATION COST (k€) AS APPLICABLE

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Tønder (DKT)

Location: Tønder, Denmark

Business: Extrusion Europe

THE ISSUE

Previously, there was a lot of manual handling in connection with assembly of die into die ring with consequent risk of injuring fingers and hands. Furthermore, this operation was not the optimum solution with regard to ergonomics.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ▬ - Procedures ☐ - Others ☐)

Description of key feature or change versus current conditions:

We have designed a simple solution fixing the die ring to a metal frame. This metal frame gives us to possibility to move the die ring from vertical to horizontal position. When in horizontal position it is possible to use a magnet for placing the die into the die ring. This gives us ergonomic benefits due to less lifting and furthermore keeps hands and fingers away from getting squeezed.

PICTURES (if applicable) or ADDITIONAL INFO

Before:

After:

SAFETY BENEFITS – pros/cons

- Only positive benefits. We have eliminated heavy lifting/handling, and we have eliminated risk of getting fingers/hands squeezed between die and ring.

IMPLEMENTATION COST (k€) AS APPLICABLE

400 €

Effective SAFETY Solutions

WHERE

Company: Sapa Profiles Navarra

Location: Irurtzun (Navarra – Spain)

Business: Cast and extruded aluminum

THE ISSUE

The crane of dies store does not have cruise control on their movements.
This leads to safety problems in handling suspended loads and in the handling of dies in the nitriding furnace.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ▬ - Procedures ▭ - Others ▭)

Description of key feature or change versus current conditions:

Installation of frecuency converters in translational movements of the crane and of the carriage of crane.

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

- Avoid sudden movements of suspended loads.
- Facilitates the positioning of the bridge to take and manipulate the load.
- Not to reverse the direction of movement until the load is stopped.
- Allows you to modify different speeds.
- Reduce greatly mechanical problems of the brakes.
- Energy saving (minimum)

IMPLEMENTATION COST (k€) AS APPLICABLE

3000 € (Materials and workmanship)

Effective SAFETY Solutions

WHERE

Company: Sapa Building System France

Location: Puget sur Argens

Business: Building System

THE ISSUE

Reduce the requests of upper limbs during the accessories order preparation.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ☐ - Procedures ☐ - Others ☐)

Description of key feature or change versus current conditions:

TASK	IMPROVEMENT
a) Manual cardboard handlings at the level of the blue plastic tray storage in, exit of automatic storage & Writing on the orders in progress of preparation (documents fixed at the top of the storage rack)	Reduction of the height of storage racks blue tray
b) Manual stapling of little bags of screwing pieces	Implementation of automatic staplers with a linear cable connection of 6 meters
c) Manual "Sellotaping" of cardboards who requires the rise of the shoulder	Modification of the preparation table

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

a. Limit the arm prehensions in rise and improve the reading and writing on the sheets of preparation.
b. Limit the difficulties relative to the effort exercised at the hand level.
c. Optimize the distances of functional achievements (plan at height adapted) and facilitate the deplacement of cardboards (rollers of guide) for the operators.
d. Operators participation.

IMPLEMENTATION COST (7600 €) AS APPLICABLE

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Nenzing Komponenten GmbH

Location: Nenzing, Austria

Business: Fabricating

THE ISSUE

Shipping of order to customers is mostly carried out by external companies. Truck drivers from all over Europe visit come to the plant to pick up loads. As a consequence they are not always familiar with language and signs. Driving in false directions, wrong parking constitute an unsafe act.

THE SOLUTION (additional level of protection put in place)

Type: (Technical x **- Procedures** ☐ **- Others** ☐**)**

Description of key feature or change versus current conditions:

By using illustrative symbols on the ground distinguishing between trucks and cars as well as giving clear directions, allowing truck drivers to orientate easily.

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

- Traffic safety on the company estate is increased
- Clear messages for truck drivers, own forklift traffic and employees to support a safe behavior
- Traffic order on factory premises established

IMPLEMENTATION COST (k€) AS APPLICABLE

3000,-

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Nenzing GmbH

Location: Nenzing, Austria

Business: Extrusion

THE ISSUE

The employee had to bend down to fill up a basket with dies that were further processed in the nitriding machine. This specific work situation was ergonomically poor designed and contained additional occupational safety risks, as the bent posture fostered the slipping and falling of dies.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ■ - Procedures □- Others □)

Description of key feature or change versus current conditions:

A flexible ring at the bottom of the basket allows the worker to move the basket into an optimal position. Through the installation of a lifting table, the basket can adjusted to the right height. The workers can load the basket in an upright position and do not have to bend down anymore while holding heavy dies.

PICTURES (if applicable) or ADDITIONAL INFO

Before

Rotating ring

After

SAFETY BENEFITS – pros/cons

- Improvement of occupational safety while working with heavy pieces.
- Improvement of ergonomics of work station.
- Increase of comfort of work procedure for the worker.
- Efficient, smooth and safe working procedure.

IMPLEMENTATION COST (k€) AS APPLICABLE

Flexible ring € 400

Lifting table € 3.900

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Nenzing GmbH

Location: Nenzing, Austria

Business: Extrusion

THE ISSUE

When transporting profiles in containers in the packing department, the crane driver fixed slings of the crane belts on four hooks on the container, before lifting up the load. This transportation procedure is prone to near miss and technical damage incidents, because the crane belts were not properly hooked. This happened especially on the opposite side of the crane driver, where the view is blocked and therefore it is difficult to conduct appropriate safety checks.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ■ - Procedures □- Others □)

Description of key feature or change versus current conditions:

Together with the belt supplier, we developed a belt with extendable bungee-style rubber lanyards with a protective sleeve against abrasion. These are sewn directly to the transportation belts. Slings are now automatically under tension when attached to the hook, minimizing the risk of unhooking through loose slings.

PICTURES (if applicable) or ADDITIONAL INFO

Before

After

SAFETY BENEFITS – pros/cons

- Tremendous decrease of the incident risk of losing load due to unhooking of slings during crane handling. Subsequent decrease of injury risk, because the crane driver operates very close to the moving load.
- Robust, reliable and cost-efficient solution: performance since 6 month 24 four hours a day without any issues.

IMPLEMENTATION COST (k€) AS APPLICABLE

Four crane belts needed for traverse cost about ~ € 200,-

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Bellenberg GmbH

Location: Bellenberg, Germany

Business: Extrusion

THE ISSUE

We use a crane with a traverse and crane belts to transport skips loaded with profiles that are delivered to the customer by truck. The crane belts go along with the load to the customer in order to support the unloading of the skips. The employees in the shipping department had to climb up on the load to unhook the belts from of the traverse. This operation contained a risk of falling down from the truck/load.

THE SOLUTION (additional level of protection put in place)

Type: (Technical X **- Procedures** ☐ **- Others** ☐ **)**

Description of key feature or change versus current conditions:

Together with an external company we constructed a traverse through which the belts are unhooked automatically as illustrated on the pictures below.

PICTURES (if applicable) or ADDITIONAL INFO

Traverse for carrying the loads

Crane belts fixed in the traverse

Automatic unhooking of belts from the traverse

SAFETY BENEFITS – pros/cons

- Loading procedure for trucks is safer, because the new equipment makes climbing on the load and trucks obsolete.

IMPLEMENTATION COST (k€) AS APPLICABLE

~ € 25.000,-

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Bellenberg GmbH

Location: Bellenberg, Germany

Business: Extrusion

THE ISSUE

During winter time, the roofs of trucks are frequently covered with snow and ice. When parked inside the dispatching hall for loading and unloading, the melt waters of snow and ice can form a slippery water film on the floor. This is a risk for both fork lift trucks and employees.
In addition to that it is forbidden to drive on roads with snow and ice on the roof. Especially in tunnels icefall can hit cars driving behind or on the opposite side of the road.

THE SOLUTION (additional level of protection put in place)

Type: (Technical X - Procedure ☐ - Others ☐)

Description of key feature or change versus current conditions:

We constructed a safe gantry to clean up the truck roof before they enter the dispatch hall or access main traffic routs.

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

- Increase of safety in the production site due to avoidance of slippery floors because of snowmelt
- Increase in overall traffic safety

IMPLEMENTATION COST (k€) AS APPLICABLE

~ € 25.000,-

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Bellenberg GmbH

Location: Bellenberg, Germany

Business: Extrusion

THE ISSUE

We have a large number of dies in our die stock. Some of these are stored on a steel platform. A front and back steel edge secures the dies against falling on the floor. However, when handled manually, these dies can easily tumble in lateral direction. Squeezed fingers already happened in the past.

THE SOLUTION (additional level of protection put in place)

Type: (Technical X - Procedures ☐ - Others ☐)

Description of key feature or change versus current conditions:

Holes were drilled in our stock platform through which a steel pin can be put. Dependent of the diameter of the die, the pins can be adjusted to the right size to store the in dies in a safe position. The consequent lock in through the steel pins avoids the lateral tumbling of the dies.

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

- Increase in operational safety when manually handling dies
- Smart, cost-efficient and easy solution
- High flexibility: system can be adjusted to different die sizes by simply changing the steel pins into the fitting drill holes.

IMPLEMENTATION COST (k€) AS APPLICABLE

The solution was self-made with minimal costs.

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Nenzing Komponenten GmbH

Location: Nenzing, Austria

Business: Fabricating

THE ISSUE

For every machine in our component factory, a written safe instruction exists. Our near miss system and one recordable injury showed us that the highest risk does not represent the normal working on the machine, but the set up in between different orders.

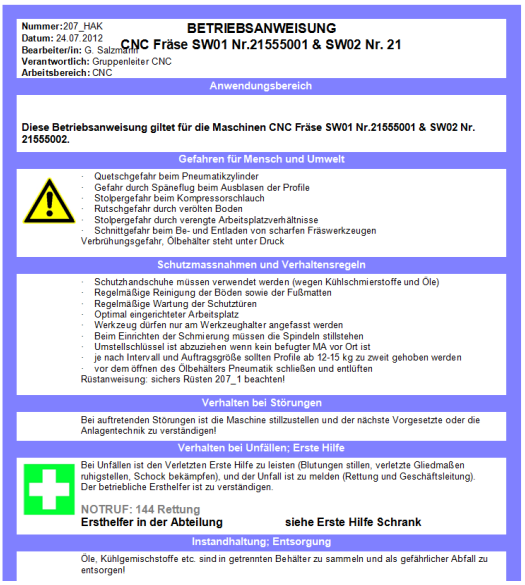
THE SOLUTION (additional level of protection put in place)

Type: (Technical ☐ - Procedures x - Others ☐

Description of key feature or change versus current conditions:

A group consisting of the safety manager, group leader, and machine worker created detailed set up work instructions, describing all relevant tasks, the risks involved and best practice. Photos are used to illustrate different tasks.

PICTURES (if applicable) or ADDITIONAL INFO



Nummer: 207_HAK
Datum: 24.07.2012
Bearbeiter/in: G. Salzmann
Verantwortlich: Gruppenleiter CNC
Arbeitsbereich: CNC

BETRIEBSANWEISUNG
CNC Fräse SW01 Nr.21555001 & SW02 Nr. 21

Anwendungsbereich

Diese Betriebsanweisung giltet für die Maschinen CNC Fräse SW01 Nr.21555001 & SW02 Nr. 21555002.

Gefahren für Mensch und Umwelt

- Quetschgefahr beim Pneumatikzylinder
- Gefahr durch Späneflug beim Ausblasen der Profile
- Stolpergefahr beim Kompressorschlauch
- Rutschgefahr durch verölten Boden
- Stolpergefahr durch verengte Arbeitsplatzverhältnisse
- Schnittgefahr beim Be- und Entladen von scharfen Fräswerkzeugen

Verbrühungsgefahr, Ölbehälter steht unter Druck

Schutzmassnahmen und Verhaltensregeln

- Schutzhandschuhe müssen verwendet werden (wegen Kühlschmierstoffe und Öle)
- Regelmäßige Reinigung der Böden sowie der Fußmatten
- Regelmäßige Wartung der Schutztüren
- Optimal eingerichteter Arbeitsplatz
- Werkzeug dürfen nur am Werkzeughalter angefasst werden
- Beim Einrichten der Schmierung müssen die Spindeln stillstehen
- Umstellschlüssel ist abzuziehen wenn kein befugter MA vor Ort ist
- je nach Intervall und Auftragsgröße sollten Profile ab 12-15 kg zu zweit gehoben werden
- vor dem öffnen des Ölbehälters Pneumatik schließen und entlüften

Rüstanweisung: sichers Rüsten 207_1 beachten!

Verhalten bei Störungen

Bei auftretenden Störungen ist die Maschine stillzustellen und der nächste Vorgesetzte oder die Anlagentechnik zu verständigen!

Verhalten bei Unfällen; Erste Hilfe

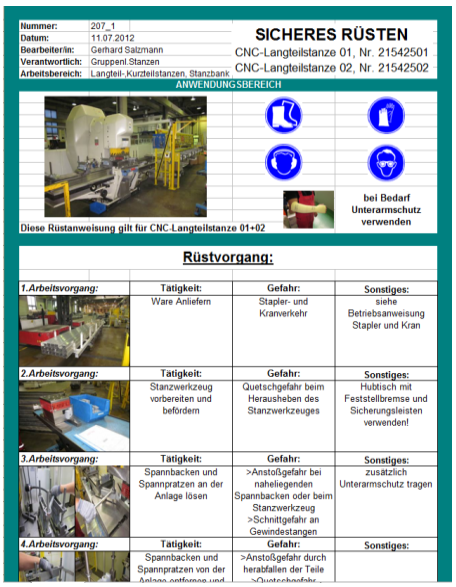
Bei Unfällen ist den Verletzten Erste Hilfe zu leisten (Blutungen stillen, verletzte Gliedmaßen ruhigstellen, Schock bekämpfen), und der Unfall ist zu melden (Rettung und Geschäftsleitung). Der betriebliche Ersthelfer ist zu verständigen.

NOTRUF: 144 Rettung
Ersthelfer in der Abteilung **siehe Erste Hilfe Schrank**

Instandhaltung; Entsorgung

Öle, Kühlgemischstoffe etc. sind in getrennten Behälter zu sammeln und als gefährlicher Abfall zu entsorgen!

Safe work instruction



Nummer: 207_1
Datum: 11.07.2012
Bearbeiter/in: Gerhard Salzmann
Verantwortlich: Gruppenl.Stanzen
Arbeitsbereich: Langteil-Kurzteilstanzen, Stanzbank

SICHERES RÜSTEN
CNC-Langteilstanze 01, Nr. 21542501
CNC-Langteilstanze 02, Nr. 21542502

ANWENDUNGSBEREICH

bei Bedarf Unterarmschutz verwenden

Diese Rüstanweisung gilt für CNC-Langteilstanze 01+02

Rüstvorgang:

	Tätigkeit:	Gefahr:	Sonstiges:
1.Arbeitsvorgang:	Ware Anliefern	Stapler- und Kranverkehr	siehe Betriebsanweisung Stapler und Kran
2.Arbeitsvorgang:	Stanzwerkzeug vorbereiten und befördern	Quetschgefahr beim Herausheben des Stanzwerkzeuges	Hubtisch mit Feststellbremse und Sicherungsleisten verwenden!
3.Arbeitsvorgang:	Spannbacken und Spannpratzen an der Anlage lösen	>Anstoßgefahr bei naheliegenden Spannbacken oder beim Stanzwerkzeug >Schnittgefahr an Gewindestangen	zusätzlich Unterarmschutz tragen
4.Arbeitsvorgang:	Spannbacken und Spannpratzen von der	>Anstoßgefahr durch herabfallen der Teile	

Set up work instruction

SAFETY BENEFITS – pros/cons

- Safe work procedure for standardized operations
- Clear and simple information exchange
- Can be used as guidelines for safety talks within the organization (WOC,BBS)

IMPLEMENTATION COST (k€) AS APPLICABLE

No costs

Effective SAFETY Solutions

WHERE

Company: ALCOA – Global Primary Products Europe.

Location: San Ciprián (Spain).

Business: Refinery.

THE ISSUE

Certain operations with self-loading truck operators require access to the box truck itself to perform various tasks (loading, unloading ...). The presence of workers on the truck is a risk of falling at different levels due to the lack of adequate protection.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ▭ - Procedures ▭ - Others ▬)

Description of key feature or change versus current conditions:

Modify existing masts (upload up to a height of approx. 1.2 meters) and install on their anchors to assemble temporary wiring to act as a perimeter railing whenever you access the truck bed. For access to the installation of a stair box self-made self-installing

PICTURES (if applicable) or ADDITIONAL INFO

f

Effective SAFETY Solutions

SAFETY BENEFITS – pros/cons

- eliminate risk of falling at different levels
- facilitate safe access to platform truck
- ergonomic improvement by placing a ladder easy assembly

IMPLEMENTATION COST (1k€) AS APPLICABLE

Effective SAFETY Solutions

WHERE

Company: ALCOA – Global Primary Products Europe.

Location: San Ciprián (Spain).

Business: Smelter.

THE ISSUE

Serious Arc flash Hazard has been identified during Pot Grounding Operation.

Pot Grounding is a Mandatory & Very Frecuent Procedure in Smelters, intended to create a Safe Work Zone when works are to be performed in DC energized parts of the Potlines.

During this operation, the DC busbar is Grounded by using a Portable Earth Ground Circuit Breaker but the high available current in the potline makes imposible to ensure 100% the capability of this device to withstand a shortcircuit.

Should a failure occur, the worst scenario reveals an Electrical Arc Flash Hazard with an Incident Energy >40cal/cm2 and consecuently, this would become in serious injuries as the switching operation is locally performed.

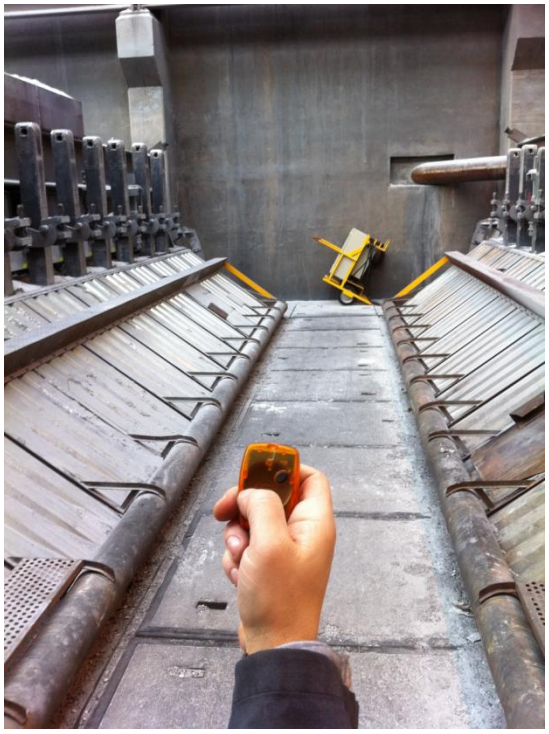
THE SOLUTION (additional level of protection put in place)

Type: (Technical ■ - Procedures □- Others □)

Description of key feature or change versus current conditions:

Engineering Solution has been developed on site in order to implement a Remote Control System in the Portable Earth Ground CB. This now provides the capability to perform the same operation but with enough distance to the equipment (>10m) and therefore, the arc flash exposure is eliminated.

PICTURES (if applicable) or ADDITIONAL INFO



SAFETY BENEFITS – pros/cons

- Remote Control System implemented on the Portable Earth Ground CB
- Operators not exposed to Arc Flash Hazard during Switching.
- Arc Flash Risk Eliminated
- No special PPE is required to perform the operation.

IMPLEMENTATION COST (10k€) AS APPLICABLE

Effective SAFETY Solutions

WHERE

Company: ALCOA – Global Primary Products Europe.

Location: San Ciprián (Spain).

Business: Smelter.

THE ISSUE

Fall Risk into the pit when it is without a cast table or there isn't any slab in the cast table when it has just finished the cast.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ■ - Procedures □- Others □)

Description of key feature or change versus current conditions: A mobile railing is installed in the pit to close the hole. Change from personal protection to collective protection.

PICTURES (if applicable) or ADDITIONAL INFO

BEFORE

AFTER

SAFETY BENEFITS – pros/cons

- Fall risk is eliminated.

IMPLEMENTATION COST (14,4k€) AS APPLICABLE

Effective SAFETY Solutions

WHERE

Company: ALCOA – Global Primary Products Europe.

Location: San Ciprián (Spain).

Business: Smelter.

THE ISSUE

Fall Risk into the furnaces pit, when the furnace is tilting.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ■ - Procedures □- Others □)

Description of key feature or change versus current conditions: A railing is installed around the furnace basement. The protection closes the hole while the furnace tilt and when the furnace is down the protection is hidden in the furnace basement.

PICTURES (if applicable) or ADDITIONAL INFO

BEFORE

AFTER

PROTECTION IS RAISED AS THE FURNACE TILT¡¡¡¡

SAFETY BENEFITS – pros/cons

- Fall risk is eliminated.

IMPLEMENTATION COST (45,6 k€) AS APPLICABLE

Effective SAFETY Solutions

WHERE

Company: Alcoa Inespal, S.A.

Location: La Coruña

Business: GPP Europe

THE ISSUE

Different level fall hazard exists when the pot has the shell but the anode has been removed to do the lining. The distance to the bottom of the shell is 1,45 meters. There is no physique protection to reduce or to eliminate the hazard. There is only warning sings.
Also, if the pot is moved from its place, a hole appears and the fall risk appears too (>1,8m). In this case a net is placed covering the hole.

THE SOLUTION (additional level of protection put in place)

Type: (Technical X - Procedures ☐ - Others ☐)

Description of key feature or change versus current conditions:

Fall control improvement in cathode relining on site. Mobile equipment interaction and installation issues were overcome to physically control this hazard.

PICTURES (if applicable) or ADDITIONAL INFO

BEFORE:



SAFETY BENEFITS – pros/cons

- PROS:
  - Removed vehicle fall risk
  - Removed workers fall risk
- CONS:
  - No safety inconvenience

IMPLEMENTATION COST (k€) AS APPLICABLE: *3k€*

Effective SAFETY Solutions

WHERE

Company: Alcoa Inespal, S.A.

Location: La Coruña

Business: GPP Europe

THE ISSUE

There are several maintenance tasks that should be performed at the anode or about this, change and repair of keys pressed, change of engines of anode, etc. Within the anode to distinguish two levels of work:

a. above 1.8 m. Above the beam of cruise or we need to cross it to access the central part of the anode.

THE SOLUTION (additional level of protection put in place)

Type: (Technical X - Procedures ☐ - Others ☐)

Description of key feature or change versus current conditions:

Job below 1.8 m:

- Use a special ladder to access.

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

- PROS:
  - Effective control of Fall hazard
- CONS:
  - Although, now it is a slow process (some operation every day), no safety inconvenience

IMPLEMENTATION COST (k€) AS APPLICABLE: *3k€*

Effective SAFETY Solutions

WHERE

Company: ALCOA INESPAL

Location: AVILES

Business: PRIMARY ALUMINUM

THE ISSUE

To carry out maintenance of the poots, not necessarily have to be inactive. This is the case of the wearing plate change operation, operators replace the plates with the poot working. The operator is placed on sheet metal to make the change of the plates. This plate is supported on the deckplatte, running the risk that the crust breaks and the operator come in contact with the liquid bath.

In addition, the worker is at risk of suffering an entrapment or stroke with a mobile equipment as a semigantry or overhead crane.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ■- Procedures □- Others □)

Description of key feature or change versus current conditions:

To avoid this risk, we designed a platform with a railing which is anchored on forklift forks. The operator is placed on the platform from which the plates are replaced safely without breaking the crust and avoiding the risk that he comes in contact with the liquid bath.

While performing this operation the forklift is completely stopped. Forklift is stopped using lock out, tag out procedure.

This design has been reviewed by the Asturian Institute of Occupational Risk Prevention (Local Government Agency).

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

- **With the use of this vehicle is no risk of falling at different levels of contact with the bath liquid and shock or entrapment with mobile equipment.**

IMPLEMENTATION COST (k€) AS APPLICABLE

Economic cost: 2000 euros

Effective SAFETY Solutions

WHERE

Company: ALCOA INESPAL

Location: AVILES

Business: PRIMARY ALUMINIUM

THE ISSUE

To carry out work at the top of the anode (replacement and repair of pieces), workers are exposed to a height of 2.5 meters, without any fastening and carrying tools.

There is high risk that the worker suffers any fall or stumble, suffers a fall, stumble or fall on the deckplatte, breaking the crust and make contact with the poot liquid bath.

In addition, the worker is at risk of suffering an entrapment or stroke with a mobile equipment as a semigantry or overhead crane.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ■ - Procedures □ - Others □)

Description of key feature or change versus current conditions:

For the operator to work safely, we have designed a vehicle in which the operator gets on a platform. The platform is raised to the height of the anode and when the worker leaves the platform to placed over the anode, the vehicle extends a Fall Protection Device to which the worker is anchored by the safety harness.

In this way the operator works on the anode and attached to a Fall Protection Device that carries the vehicle itself.

PICTURES (if applicable) or ADDITIONAL INFO





SAFETY BENEFITS – pros/cons

With the use of this vehicle is no risk of falling at different levels of contact with the bath liquid and shock or entrapment with mobile equipment

IMPLEMENTATION COST (k€) AS APPLICABLE

Economic cost: 180 K€

Effective SAFETY Solutions

WHERE

Company: ALCOA INESPAL

Location: AVILES

Business: PRIMARY ALUMINUM

THE ISSUE

During usual tasks in ingot machine, operators need open machine guarding to check ingot movements. In this case the worker has no way to stop the machine, either by an indisposition of the operator or machine failure. The operator runs the risk of being trapped.

THE SOLUTION (additional level of protection put in place)

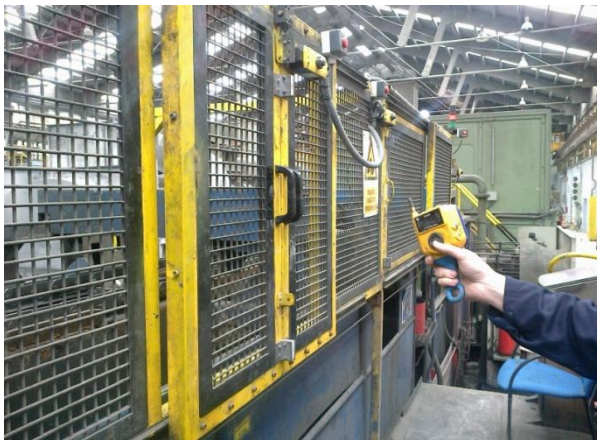
Type: (Technical ■- Procedures □- Others □)

Description of key feature or change versus current conditions:

In the ingot machine will install a monitoring system, which in the case of operating in the interior of the machine and with it in operation, supply a protective layer. If the operator is not valid for a period of time or if the unit detects a problem for installation. The system acts on the drive machinery eliminating sources of direct or residual energy (pneumatic, hydraulic, electric, etc ...) of power and control circuits, for your stop.

- **Direct action by the abrupt removal of the Emergency Push Button by the operator.**
- **Operator Inactivity: Lack of confirmation of activity (SIMVA has a monitoring device type "Dead Man").**
- **Detecting operator drop: by activating a tilt sensor included in the device.**

PICTURES (if applicable) or ADDITIONAL INFO



SAFETY BENEFITS – pros/cons

- **This system avoids the entrapment within the ingot machine.**

IMPLEMENTATION COST (k€) AS APPLICABLE

Economic cost: 456 K€

Effective SAFETY Solutions

WHERE

Company: ALCOA

Location: AVILES

Business: PRIMARY ALUMINUM

THE ISSUE

The van and lorry which transport of liquid metal bags had no system to control the speed and position. The lorry is fundamental not to exceed the speed to avoid spilling carrying metal at high temperatures, both as certain environmental safety reasons.

For safety reasons, it is also necessary to know the position of the van, especially on the night shift.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ■ - Procedures □- Others □)

Description of key feature or change versus current conditions:

Mobile equipment Device integrates a GPS that indicates the position of mobile equipment (which you can view real-time in a web page) and, some mobile equipment, a pushbutton emergency system.

Another advantage of this system is that if the person who carries leads a vehicle reflects speed (even in real time, with a minute delay) in the web, application as well as a report of displacement, speed and points that happened.

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

With GPS can control the speed of vehicles and their position at each moment.

IMPLEMENTATION COST (k€) AS APPLICABLE

Economic cost: 300 €/ unit

Effective SAFETY Solutions

WHERE

Company: ALCOA INESPAL

Location: AVILES

Business: PRIMARY ALUMINIUM

THE ISSUE

Periodically, it is necessary to stop the poots for the cleaning and repair of the same for your performance and productivity are optimal.

When the drawer is taken out of poot to perform the task of lining-raming, is an empty space of approximate dimensions 9 x 5 x 2.5 meters, producing a high risk of falling at different height.

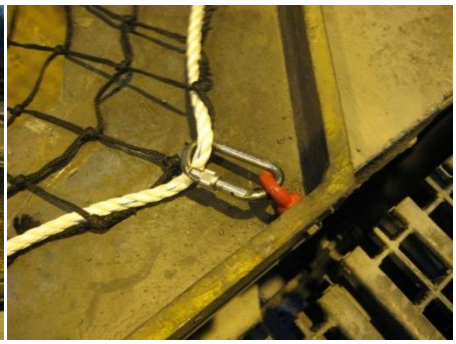
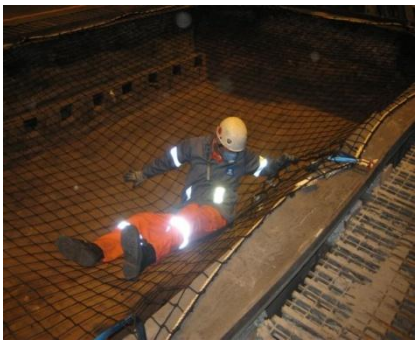
THE SOLUTION (additional level of protection put in place)

Type: (Technical ■ Procedures □- Others □)

Description of key feature or change versus current conditions:

To avoid the risk of falling at a height of approximately 2.5 meters, are cast fall arresters nets which are approved and bear the weight of a person. Consequently, it was prepared a special anchoring system to the deckplatte.

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

- **Eliminate the risk of falling at different levels when remove the drawer of cathode.**

IMPLEMENTATION COST (k€) AS APPLICABLE

Economic Cost : 1600 €.

Effective SAFETY Solutions

WHERE

Company: Alcoa Inespal

Location: Avilés

Business: PRIMARY ALUMINUM

THE ISSUE

Smelting furnaces have doors which have to be opened to load the furnace with liquid aluminum, add alloying agents, or perform tasks skimming.

The melting furnace doors are raised and lowered by metal wires attached to both sides of the door. The doors run between two guides.

Previously, the metal wires were attached and run between the door and guides. This position wasn´t good because the metal wires were always affected by the high furnace temperature between door and furnace, and caused thermal stress. So an elevator system failure or a cable breakage could cause an entrapment because the door could fall to the ground.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ■ Procedures □- Others □)

Description of key feature or change versus current conditions:

To eliminate the risk that the cable will deteriorate by continuous exposure to heat, we have designed a new system that the metal wires are placed outside the heat source using the guides as a shielding.

This one also prevents that the door can swing forward and backward as it rises or descends.

The system avoids the falling door hazard in case of cable breakage or elevator failure system, and the doors will fall in the support points.

PICTURES (if applicable) or ADDITIONAL INFO

BEFORE

CURRENTLY

SAFETY BENEFITS – pros/cons

- **With the improvements made have eliminated the risk that the door could fall without warning .**

IMPLEMENTATION COST (k€) AS APPLICABLE

Economic cost: 6000 / Door

Effective SAFETY Solutions

WHERE

Company: Intals S.p.A.

Location: Parona Lomellina - Italy

Business: Refinery and aluminum smelter

THE ISSUE

Apply directly to each employee the responsibility for the safety of themselves and of all the co-workers to keep down the number of accidents.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ☐ - Procedures X - Others ☐)

Description of key feature or change versus current conditions:

From the beginning of 2013 is applied to a control methodology of workers by the use of a license with points.

Every worker has a total of 120 starting points and for every wrong action committed to the same worker will be removed a number of points varies depending on the action incorrect order.

for example, do not use seat belts on mechanical means leads to a decrease of 5 points, not to use personal protective equipment are adjusted to exclude other 5 points etc..

The first 20 points lost involve a number of specific safety training, from 100 points to zero points lost, there will be a decrease in economic performance bonus.

Workers who have maintained their 120 points will have an increase in economic performance bonus.

Effective SAFETY Solutions

PICTURES (if applicable) or ADDITIONAL INFO

Every worker, to improve their efficiency on occupational safety and efficiency company, has the ability to report on a special form any technical problems and management issues related to safety at work and environmental safety.

The HSE committee with company executives, every week, during the meeting environmental and safety, discusses each report to help improve problem solving any problems.

SAFETY BENEFITS – pros/cons

- Reducing accidents, the comparison in the same period between the year 2012 and the year 2013 showed a strong reduction of accidents

IMPLEMENTATION COST (k€) AS APPLICABLE

Effective SAFETY Solutions

WHERE

Company: Constellium
Location: Singen SSH
Business: Casting and Rolling

THE ISSUE

Often damages at forklift trucks, buildings and equipment due to inadequate FLT movements are not reported. Each time such is not reported is a lost opportunity to address the root causes and improve safety.

THE SOLUTION

Type: Technical [X] - Procedures [x] - Others [ ]

The backside of each forklift is painted with a specific and unique colour (not available directly available on the market) to allow damage identification. The drivers are expected to report incidents to their supervisor and each operator, during the pre-shift inspection, is asked to check painting condition: in case he finds an unreported damage, he has to call the Supervisors. Regular audits are performed to verify that each damage is properly reported.

PICTURES

SAFETY BENEFITS – pros/cons

More root causes analyzed and addressed, e.g. forklift too big for the area, wrong fences position, lack of driving ability, etc.

IMPLEMENTATION COST (k€) AS APPLICABLE

Cost insignificant compared with the cost reduction due to less frequent damages.

Effective SAFETY Solutions

WHERE

Company: Constellium
Location: Neuf-Brisach
Business: Sheet and Packaging

THE ISSUE

Maintenance employees need push rods and chisels. Usually they do not have hand protection and cause hand injuries

THE SOLUTION

Type: Technical [x] - Procedures [ ] - Others [ ]

We developed a tool with hand protection and exchangeable heads.

PICTURES

Before

After

SAFETY BENEFITS – pros/cons

Hands are better protected. The tool can be used for multiple different purposes and applications.

IMPLEMENTATION COST (k€) AS APPLICABLE

The tool will be offered by SAM Outillage. We do not know the exact cost yet.

Effective SAFETY Solutions

WHERE

Company: Constellium
Location: Issoire
Business: Plate and Sheet

THE ISSUE

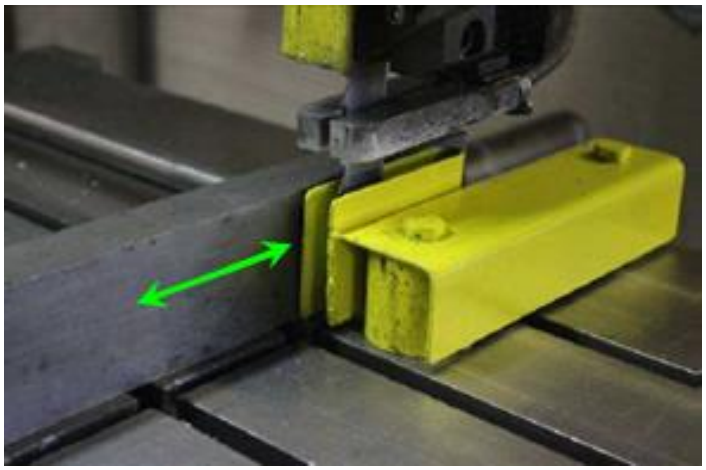
Employees can touch the running saw blade at band saws during sample cutting.

THE SOLUTION

Type: Technical [x] - Procedures [ ] - Others [ ]

We have set up a protective cover around the blade on saws equipped with a moving table.

PICTURES



SAFETY BENEFITS – pros/cons

When the table is retracted, the blade is in the protective cover. And when the operator moves the table forward for sawing a sample, the blade exits from the protective cover, but is covered by the work piece.

IMPLEMENTATION COST (k€) AS APPLICABLE

The cost is insignificant.

Effective SAFETY Solutions

WHERE

Company: Constellium
Location: Singen SSH
Business: Casting and Rolling

THE ISSUE

It was intended to improve the illumination to provide a safer workplace. A second target was to reduce the energy consumption as an ISO 50001 objective and to save cost.

THE SOLUTION

Type: Technical [x] - Procedures [ ] - Others [ ]

The old lighting gears were replaced by LED lamps.

PICTURES

Before

After

Before

After

SAFETY BENEFITS – pros/cons

Illumination has been increased from less than 100 lux to more than 200 lux.

IMPLEMENTATION COST (k€) AS APPLICABLE

The reduction of energy consumption is 70-80%.
Approximate payback time is 2.5 years. If the illumination had not been increased the payback time would had been 1.5 years only.

Effective SAFETY Solutions

WHERE

Company: Constellium
Location: Singen EAS
Business: Casting and Rolling

THE ISSUE

The die has to be turned to remove the lock screws. To turn the die it had to be placed vertically. In this position it could tip over.

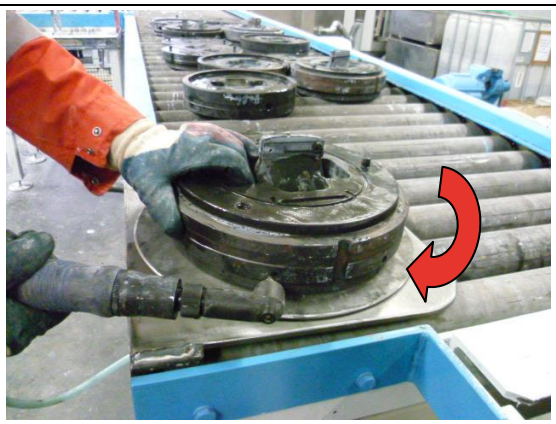
THE SOLUTION

Type: Technical [x] - Procedures [ ] - Others [ ]

We mounted a turntable on the roll gear.

PICTURES

Before



After

SAFETY BENEFITS – pros/cons

Now the lock screws can be removed without placing the die vertically. The tiling risk has been eliminated.

IMPLEMENTATION COST (k€) AS APPLICABLE

Approximate cost 0.3 k€

Effective SAFETY Solutions

WHERE

Company: Constellium
Location: Ravenswood and Neuf-Brisach
Business: Sheet and Plate

THE ISSUE

There is a significant risk that truck drivers fall from the truck or trailer platform. And it is difficult to manage the behaviours of external truck drivers.

THE SOLUTION

Type: Technical [X] - Procedures [ ] - Others [ ]

A simple platform has been implemented that can be pushed up against a truck to eliminate a fall to floor level. The platform is constructed from lightweight aluminum and is on casters. The platform can be manually moved with less than 20 lbs of horizontal pressure.

PICTURES

At Ravenswood at flatbed trucks

At Neuf-Brisach at trucks for side loading

SAFETY BENEFITS – pros/cons

Installation of this platform allows truckers to access their beds and tarp their loads without the potential fall hazard that was previously a concern. With this system we do not have to rely on a trucker to ensure their own safety. The loader (Constellium employee is required to ensure the platform is properly positioned prior to loading.)

IMPLEMENTATION COST (k€) AS APPLICABLE

Cost per platforms approximately 7.5k€.

Effective SAFETY Solutions

WHERE

Company: Constellium
Location: Landau
Business: Extrusion

THE ISSUE

For work at light domes there are often no approved anchor points on the roof or they are not located where they are needed.

THE SOLUTION

Type: Technical [x] - Procedures [ ] - Others [ ]

Mobile anchor points from www.jet-gruppe.de.

PICTURES

SAFETY BENEFITS – pros/cons

Sufficient for 1-2 persons
Certified according EN 795
Optional with descender for rescue operations
Low weight, easy to install

IMPLEMENTATION COST (k€) AS APPLICABLE

Approximate cost per anchor point = 4k€
Plus cost of annual safety inspection by competent person

Effective SAFETY Solutions

WHERE

Company: Constellium
Location: Issoire
Business: Plate and Sheet

THE ISSUE

There is a high risk of explosion if a tool touches molten metal which is not prepared for contact with molten metal. This can happen if tools for different purposes get mixed.

THE SOLUTION

Type: Technical [x] - Procedures [ ] - Others [ ]

The two kinds of tools are painted in different colors: tools for molten metal in red, others tools in blue.

PICTURES

Red support for molten metal tools

Blue support for other tools

SAFETY BENEFITS – pros/cons

The visualization makes a human error very unlikely.

IMPLEMENTATION COST (k€) AS APPLICABLE

The cost is insignificant.

Effective SAFETY Solutions

WHERE

Company: Constellium
Location: Chippis/Valais
Business: Casting

THE ISSUE

The operator of the trolley was not protected against projected pieces of metal in case of cracking or bursting ingots.

THE SOLUTION

Type: Technical [x] - Procedures [ ] - Others [ ]

The protection is made of a frame and a stainless steel grid mesh.

PICTURES

SAFETY BENEFITS – pros/cons

The operator can watch through the grid and is sufficiently protected.

IMPLEMENTATION COST (k€) AS APPLICABLE

Approximate cost is 6 k€.

Effective SAFETY Solutions

WHERE

Company: Constellium
Location: Ussel
Business: Casting

THE ISSUE

Most safety glasses do not sufficiently protect the eyes. Of course this depends also on the shape of the face. Particles could be thrown up under the glasses and reach the eyes.

THE SOLUTION

Type: Technical [X] - Procedures [ ] - Others [ ]

We found a model of glasses that covers better the face (Uvex , Phéos model) with a foam rubber frame that can be clipped inside the glasses.

PICTURES

Before

After

Foam rubber frame clipped inside

SAFETY BENEFITS – pros/cons

The eyes are better protected.

IMPLEMENTATION COST (k€) AS APPLICABLE

No significant different compared with other safety glasses.

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Extrusion Spain

Location: La Roca

Business: Extrusion

THE ISSUE

Some manual wheeled transfers to transport skips from one area to other ones with high risk of hands, feet trapping.

THE SOLUTION (additional level of protection put in place)

Type: (Technical ▬ - Procedures ▭ - Others ▭)

Description of key feature or change versus current conditions:

Manual equipment to pull /push wheeled transfers but with a handle bar to positionate hands and eliminate possibility of trapping hands.

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

- Ergonomical benefit
- Avoiding trapping hands

IMPLEMENTATION COST (k€) AS APPLICABLE

750€/unit

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Extrusion Spain

Location: Santa Oliva

Business:

THE ISSUE

Positive reinforcement

THE SOLUTION (additional level of protection put in place)

Make positive safety massages so employees be aware that good behavior is acknowledge.

Type: (Technical ☐ - Procedures ■ - Others ☐)

Description of key feature or change versus current conditions:

Give a positive feedback (monthly) that encourages employees to continue to act in a safe way and to use all the safety tools available.

PICTURES (if applicable) or ADDITIONAL INFO

SAFETY BENEFITS – pros/cons

- Use the "LIKE HAND" of facebook each time employees act according to safety guidelines.

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Extrusion Spain

Location: Santa Oliva

Business:

THE ISSUE

Traffic Segregation in all warehouses – operators working under hanging loads

THE SOLUTION (additional level of protection put in place)

Toll flag announcing to the crane operator that there´s people working in a specific area of the warehouse.

Type: (Technical ■ - Procedures ■ - Others □)

Description of key feature or change versus current conditions:

The crane operators have to find an alternative route to carry the load when he sees the flag on the warehouse. Before this there was no way of knowing if there was someone among the stock material

PICTURES (if applicable) or ADDITIONAL INFO

It can be seen from anywhere in the warehouse.

SAFETY BENEFITS – pros/cons

- The crane operator has the knowledge that there are people working in an specific area and do not goes near that area with hanging loads.

IMPLEMENTATION COST (200€) AS APPLICABLE

Effective SAFETY Solutions

WHERE

Company: Hydro Aluminium Extrusion Spain

Location: Santa Oliva

Business:

THE ISSUE

Traffic Segregation in all warehouses

THE SOLUTION (additional level of protection put in place)

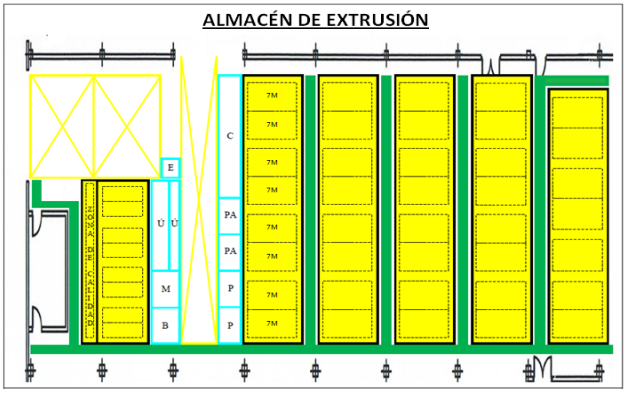
Design work areas in all warehouses, marking floors and developing SOPs for each section.

Type: (Technical ■ - Procedures ■ - Others □)

Description of key feature or change versus current conditions:

There was no working space available and no organization of what goes where.

PICTURES (if applicable) or ADDITIONAL INFO



SAFETY BENEFITS – pros/cons

- Marking the floors gives a guideline to crane operators on where to unload packages, skips and bundle of material

IMPLEMENTATION COST (k€) AS APPLICABLE