



Reinforcement Lock Off Key

Member company	Columbus Stainless
Category	workplace improvement; introduction or enhancement of behavioural safety approaches

The Challenge

The operational interlock between the strip entry gate proxy & lock ON/OFF box during manual re-enforcement of the weld make use of similar interlock alarm as follows:

1. During re-enforcing of strip, operator need to turn log OFF key before commencing to enter on top of the strip to interlock the entry drives from moving.
2. The proxy on the entrance gate also acts as a second protection when gate is left open to interlock the entry drives from moving.

The entrance gate on open position & lock ON/OFF switch send similar interlock alarms to stop the entry from moving whilst re-enforcing of weld is performed i.e. for the same actions we used similar but different interlocks to the PLC to stop the entry. This situation caused confusion and created a condition where the protection was not rendered safe because people would use the one or the other.

Why?

The operators sometimes forget or “do-not-use” the log ON/OFF key to disengage the line during re-enforcing process. They would only rely on the gate proxy to protect them while sitting on the strip busy with welding. If the gate now closes, the “lock off” for the operator would effectively fail. The Operators still relied on the previous interlock practice prior to lock ON/OFF key being implemented i.e.

leave the gate open to interlock the line

It has happen that the operator forget to turn off Lock ON/OFF key, at the same time forget to leave the entrance gate on full open position to prevent the line from crawling.

This challenge had to be taken to ensure people are safe when they perform reinforcement work on the steel strip.

Needed Action

The following engineering changes were implemented:

- Revise current alarm interlock to be linked to the castle key box i.e. remove the alarm on the gate working together with the entrance gate
- Change the castle key mechanism to enable use of “one” key between lock ON/OFF box and the strip entrance gate.
- When operator need to perform re-enforcing of the weld, the following will be followed:
 - Turn off castle key OFF and remove it from the lock ON/OFF box(only removable on lock OFF position)
 - Use the same key to open the entrance gate to access the strip (lock off key must not be removable when lock open)
 - The second key from the lock mechanism can then be removed by the operator and kept on his persons.

Action Review

Specific; Specifically intended to improve the lock out practice in a very high risk area.

Measurable; The improved action / new form of lock out eliminates the previous risk, hence reduce the amount of possible injuries on duty for the area.



Achievable; The action is fully implemented and by all means an achievable requirement for the area and its people performing reinforcement welding work.

Realistic; Yes – people feel safer with the new lock off. It also eliminated any confusion that was hanging in the air regarding the previous lock out practice – no more grey areas.

Time-bound; Effective improvement that will remain in place.

Target Beneficiaries from the Action

Columbus employees; AP2 Production personnel who works on a full time capacity as Process Controller and Section controller who undergo training. Maintenance personnel busy troubleshooting as part of their work also benefits from this improvement.

Horizontal Expansion Capability

Definitely, it can implemented anywhere especially in high risk areas.

Outcome

One of the biggest benefits of this action is the fact that employees are forced to use the protection provided. There is no way around it... this in itself eliminates the human factor where a person tires to take an impossible chance. In general the Production employees in the area feels safe using the new lock off. It is for them peace of mind to focus on their job trusting this means of lock off will protect them/ keep the safe. This action improves people's approach to safety because it's a repetitive action that people perform to "plan for safety" before work is commenced.



MEMORANDUM

Annexure 1 of AP2 Reinforcement Lock Off Key

Images 1 and 2 display the implemented new lock off used at the Welder of AP2 when employees need to reinforce the joint of two steel strips. Images 3 and 4 illustrate the lock off that used to be in place before the implementation of the new arrangement / system.

Image 1: Locking device installed on the access gate – requires two keys to unlock



Image 2: Control panel is situated away from the access gate. Operator firstly need to lock off the panel before he can open the gate.



Locking device requiring 2 keys mounted on gate. Second key in control panel. Panel and gate interlinked.

Image 3: The Previous lock off device – the key could be used on other positions also and was therefore not always readily available.



Image 6: Only a proxy attached to the gate.m The proxy and lock off key did not interact with each other. Was two systems working on their own.



Proxy on gate and lock off key on side of panel