

Technical and Process Safety Sharing

Lock-Out, Tag-Out (LOTO)

Isolation of Energy: Understanding the requirements and procedures of LOTO

What is Lock-Out, Tag-Out (LOTO)?

Lock-Out, Tag-Out (LOTO) is a procedure that protects workers by ensuring that the equipment is shut down and verified to be isolated safely.

Importance of Lock-Out, Tag-Out (LOTO): Energy Isolation (Source: [Green Job Hazards - Solar Energy](#))

- If LOTO is not implemented properly, about 3 million workers will face greater risks of injury.
- Adherence to the LOTO standards averts over 120 fatalities and 50,000 injuries annually.
- Workers injured due to hazardous energy exposure are expected to lose 24 workdays for recuperation.



Unexpected energy release during machine and equipment maintenance and repair can pose a significant risk and even cause death to workers due to various energy sources such as electrical, mechanical, hydraulic, pneumatic, chemical, and thermal.

Code of practice for energy lockout and tagout (SS571:2011) - Lockout requirement:



Develop and implement a policy and procedure including proper training for the workers



Relevant competent persons to understand and follow established LOTO procedure



Periodic inspections and audit with documentation

What can be done to control hazardous energy – LOTO procedure



Announce the shutdown

Inform the affected personnel that the service shall be performed, and the affected equipment shall be switched off and lockout.



Shutdown the machine

Proceed to shut down the equipment by the normal shutdown procedure.



Disconnect all energy sources

Disconnect all energy sources to the equipment through energy-isolating devices.



Apply LOTO devices

Implement lockout devices over the energy-isolating devices to prevent unexpected energy restoration when work is being carried out. Locked out equipment should be identified with specific tags.



Verify the isolation

Release any residual energy. Test to see if the equipment is properly locked out by trying to start it before performing the maintenance required.



Usual challenges faced in the industry: (Source: MHD – Understanding Energy Isolation Failures: Lessons for Prevention Slides)

1. Work scope not defined clearly
2. Non-adherence to company's LOTO Standard Operating Procedure (SOP)
3. Lack of proper training and refresher courses resulting in improper isolation procedures
4. Lack of communication between personnel
5. Lack of systems in place to verify de-energisation

References:

1. <https://www.osha.gov/control-hazardous-energy>
2. <https://www.lockout-tagout-shop.com/en/blogs/nieuws/7-steps-of-lockout-tagout-tryout/>
3. <https://www.osha.gov/green-jobs/solar/lockout-tagout>

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