



MECHANICAL TRADE INDUSTRIAL EQUIPMENT START-UP PROCEDURES

PROJECT OVERVIEW

At a high-tech industrial aeronautics factory, a new exhaust abatement system was in the process of being installed.

INDUSTRIAL EQUIPMENT START-UP PROCEDURES ISSUES

At a high-tech industrial aeronautics factory, a new exhaust abatement system was being installed by a contractor.

- The system was designed with state-of-the-art HEPA filtration to clean the air prior to discharge.
- The system was equipped with stainless steel ductwork upstream of the exhaust equipment serving the factory.
- Due to the high-pressure drop of the HEPA filters in the exhaust equipment, the system was designed with high-static pressure fans.

The work was completed by the contractor and awaited final inspection by the manufacturer’s representatives.

- The inspection of the equipment was designed to perform a “final loading” to install the HEPA filters.

A mechanical engineer who was not aware of the current status of the equipment was anxious to see the equipment in operation.

- Before the inspection, the mechanical engineer started the equipment. Since the equipment did not contain the HEPA filters, the system was subject to high-static pressures and collapsed the entire ductwork.

The ductwork had to be re-fabricated and re-installed.

- Although the contractor believed they were clearly not at fault, the owners determined the contractor left the equipment in an unsafe, hazardous energy condition.
- A dispute arose, and a claim was filed, which had to be adjudicated in a court of law.

HOW TO AVOID A HAZARDOUS ENERGY ACCIDENTAL START-UP

Use Lockout/Tagout (LOTO) devices to prevent unwanted accidental hazardous energy start-up of any system, in this case, an incomplete system.

Note: LOTO procedures protect people and systems.

Do not assume everyone on the job site will always act responsibly.

- LOTO all hazardous energy energized systems.
- Use a pre-start checklist that must be completed by qualified individuals and submitted to the owner of the building and systems.
- Make sure there are clear commissioning procedures that involve the contractors and owners.
- Make sure all individuals at the site understand the start-up and commissioning procedures.

Plan to prevent the worst and hope for the best.

DISCUSSION QUESTIONS

1. Have LOTO procedures been used to prevent accidental start-up of equipment?
2. Is everyone aware of the commissioning process?
3. Do we have a pre-start checklist?

ENTIRE DUCTWORK PRESSURE COLLAPSE





MECHANICAL TRADE LOCKOUT/TAGOUT SAFETY TOOLBOX TALK

OVERVIEW

Lockout and tagout (lockout/tagout) (LO/TO) refer to safeguard methods employers and employees use to protect workers from hazardous machinery energy releases. LO/TO are safety practices or procedures to disable machinery or equipment from being energized or activated to prevent unaware employees and the public from harming themselves or others.

LEARN AND APPLY THE FOLLOWING

Any trade must deal with equipment or machinery that is potentially dangerous, especially shut-down equipment. Many accidents happen when a worker turns on a machine that others are repairing.

- LO/TO procedures are one way to ensure these types of accidents do not happen by ensuring power cannot reach the machinery while workers are near it or repairing it.
- LO/TO methods are only effective if workers are intentional and consistent with LO/TO methods. Simply turning off a machine is not an acceptable practice.

Lockout: LO means a lock or other device is placed that prevents the release of energy.

- LO examples are electric circuit breakers, line valves, disconnect switches, or blocks.

Tagout: TO means attaching a tag on the shutoff device or switch that warns other employees and the public not to touch or start up the equipment.

- TO must be used in addition to LO to maximize effectiveness unless LO of the equipment is not possible.

Training: The effectiveness of lockout or tagout is entirely up to the employee.

- Ask to see and become familiar with your company’s LO/TO procedures for the equipment you will work near or with.
- Make sure you are adequately trained in LO/TO procedures.

Mechanical Trade: Lockout/Tagout Procedures

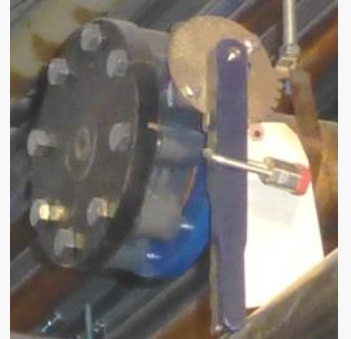
Regarding mechanical work such as vehicle and assembly line machinery maintenance, LO/TO procedures can absolutely protect workers against accidents caused by releasing hazardous energy.

- For mechanical workers, hazardous energy may refer to mechanical motion, potential energy due to pressure, gravity, springs, battery-generated energy, thermal and chemical energy, etc.
- Any machinery or equipment being worked on must be isolated from any energy sources that will allow it to activate and cause injury.
- During pipe installation or repair, use the Double Block and Bleed procedure. This is the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking a drain or vent valve in the line between the two closed valves.
- During maintenance, vehicle maintenance workers complete LO/TO truck lock procedures to keep others from operating the vehicles.
 - A way you can do this for machinery with battery sources is to cut all connection of energy from the battery.
 - Another common method is to run a cable around the steering wheel and the brake pedal, secured with a padlock.

Figure 1 Valve LOTO



Figure 2 Comm Valve LOTO



Meeting Date:
Supervisor:
Employee Name:

DISCUSSION QUESTIONS

1. What are lockout and tagout safety devices?
2. How do lockout and tagout safety practices or procedures improve safety on site?
3. Are there General Contractor or Building Owner specific rules that apply to Mechanical Work that are above OSHA Lockout/Tagout standards?