

**1. Purpose:**

The purpose of this program is to establish procedures for the safe control of energy through the locking and tagging of equipment and machinery at Innovative Machining, LLC (IM). This procedure is designed to prevent injuries caused by the unexpected start up or release of any type of energy from machinery or equipment.

**2. Scope:**

This program applies to all IM team members who are authorized to perform servicing or maintenance activities on equipment or processes and any team members who are affected by these activities.

**3. Definitions:**

- 3.1 Affected Team member: A team member whose job requires him or her to operate or use a machine or equipment on which service or maintenance is being performed under lockout/tagout or whose job requires him or her to work in an area in which such service or maintenance is being performed.
- 3.2 Authorized Team member: A person who locks and tags machines or equipment in order to perform service or maintenance on it.
- 3.3 Energized: Connected to an energy source or containing residual or stored energy.
- 3.4 Energy-Isolating Device: A mechanical device that physically prevents the transmission or release of energy, including a manually operated electrical circuit breaker, a disconnect switch, a line valve, a block and any similar device used to block or isolate energy.
- 3.5 Lockout: The process used to identify, cut off and secure all energy sources before beginning repair, adjustment or maintenance.
- 3.6 Lockout Device: Used to secure equipment or machinery in the "off" position, ensuring that it cannot be operated.
- 3.7 Servicing and/or Maintenance: Workplace activities that require lockout/tagout on the equipment before beginning the activity because team members may be exposed to the unexpected energization or startup of the equipment or the release of hazardous energy. Servicing and/or maintenance includes constructing, installing, setting up, adjusting, inspecting, modifying, lubricating, cleaning or unjamming and making tool changes.
- 3.8 Tagout: The process used to apply a tag to the power source that has been shut off,
- 3.9 Zero-Energy State: All energy has been controlled in the machinery or equipment.

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## 4. Responsibilities:

### 4.1 The President and Management Team

4.1.1 Providing the resources necessary to implement this program, including delegating responsibility and authority to managers and supervisors.

### 4.2 Program Administrator (Shop Superintendent)

4.2.1 Issuing and administering this program and making sure that it satisfies the requirements OSHA's LOTO requirements.

4.2.2 Providing or coordinating training of Authorized team members.

4.2.3 Reviewing the program annually to ensure that it is accurate and effective.

4.2.4 Ensuring that all team members who are authorized to service equipment within the facility have received training on appropriate Energy Control Procedures (ECPs).

### 4.3 Human Resources

4.3.1 Maintaining the training records of all team members.

### 4.4 Leads Whose Departments Contain Energized Equipment

4.4.1 Completing an ECP for each specific piece of equipment or process within the department that requires it.

4.4.2 Ensuring that all team members who are authorized to service equipment within the department have received training on appropriate ECPs.

4.4.3 Ensuring that only authorized team members service the equipment and machinery in their department.

4.4.4 Verifying through periodic inspection that ECPs are accurate and effective.

4.4.5 Assuring that appropriate energy-isolating devices are available for all equipment and processes within the facility.

### 4.5 Authorized Team Members

4.5.1 Complying with the company's lockout/tagout program and follow all ECPS.

4.5.2 Attend training as required.

4.5.3 Ensuring the security of the LOTO lock keys when locks are applied.

### 4.6 Affected Team Members

4.6.1 Advising the maintenance department when equipment needs servicing.

4.6.2 Attend training as required.

4.6.3 Following the direction of authorized team members as it affects the operation of

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their equipment.

**5. Equipment:**

- 5.1 Personal LOTO lock: Red (Red body, red apron) paddle lock.
- 5.2 Supervisor locks: Blue (Blue body, blue apron) paddle lock.

**6. Procedure:**

**6.1 LOTO 6 Steps**

6.1.1 Team members shall be trained on the importance of following the 6 Steps to lockout tagout (LOTO). The 6 steps shall form the foundation for ECPs.

6.1.1.1 Step #1, Prepare for Shutdown: Gather all necessary tools and repair or maintenance materials required for the planned service task prior to beginning the notification and shut down procedure, notify all affected team members in the area that the equipment is going to be locked out and the reason for the lockout/tag out and if applicable obtain the ECP.

6.1.1.2 Step #2, Machine or Equipment Shutdown: If the machine or equipment is operating, it should be shut down by utilizing normal shut-down procedures.

6.1.1.3 Step #3, Machine or Equipment Isolation: Place all energy source controls in the correct position so that the machine or equipment is isolated from the energy source(s).

6.1.1.4 Step#4, Apply Locks and Tag: Apply locks and tags to the energy isolating devices with individual lock(s) and/ or tag(s).

6.1.1.5 Step #5, Release Stored Energy: Stored or residual energy (springs, elevated machine members, rotating flywheels, hydraulic systems, air, gas or water pressure, capacitors) must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc. Take necessary steps to prevent the re-accumulation of stored or residual energy.

6.1.1.6 Step #6, Verify Isolation: Verify that no personnel, product, or repair materials or tools are exposed to machine or equipment parts and try to operate all normal control switches to make certain the equipment will not operate under the energy controls in place. NOTE: Return all operation control switches to the off or safe position after verification of lockout is complete.

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- 6.1.2 Upon completion of the previous six steps the equipment or machine is locked out and ready for service and/or maintenance work.
- 6.2 Restoring to Normal Operations
  - 6.2.1 Each team member who applied a lock must remove their own lock following the below procedures:
    - 6.2.1.1 Remove tools and non-essential items from the machine or equipment and replace all machine guards that may have been removed.
    - 6.2.1.2 Verify that all control switches are in the neutral or off position.
    - 6.2.1.3 Notify all affected Team members in the area that service/ maintenance work is complete, the machine/ equipment is ready for operation, and energy is about to be restored.
    - 6.2.1.4 Remove locks and/or tags from their installed positions applied on all energy control devices.
    - 6.2.1.5 When preparations to restore energy have been accomplished, the energy control point(s) can be activated to restore energy to the machine or equipment.
- 6.3 LOTO Locks
  - 6.3.1 Used for LOTO during servicing and maintenance activities.
  - 6.3.2 Each work area will maintain an inventory of general use locks to be shared by team members. The locks will be keyed uniquely. A spare key will be maintained in the Shop Supervisor's office in a locked box.
  - 6.3.3 Each team member who performs service or maintenance must attach a red LOTO lock.
  - 6.3.4 Team members may not remove another team member's LOTO tag or lock.
- 6.4 Supervisor Locks
  - 6.4.1 A supervisor lock will be applied to each piece of equipment that is being serviced and maintained. The supervisor lock shall be left on for the duration of the project, including over shift change, waiting for parts, etc.
  - 6.4.2 Supervisor locks can be used for out of service, shift change, etc.
  - 6.4.3 Supervisor locks can be keyed individually or similarly.
  - 6.4.4 Supervisor locks cannot be used for lockout tagout.

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- 6.5 Tags applied with Locks
  - 6.5.1 A tag shall be applied to each red LOTO lock to singularly identify who applied it.
  - 6.5.2 The tag shall have the the date that it was applied and who applied it written on it.
- 6.6 Tags Used in Lieu of Locks
  - 6.6.1 Tags do not provide the same protection as locks. Tags may only be applied to energy control points when no feasible means of affixing a lock is provided.
  - 6.6.2 Tags used in lieu of locks must be durable and able to withstand the environment of the workplace (Resistant to steam, chemicals, physical contact, etc.).
  - 6.6.3 Tags applied to energy source control points are not to be removed, bypassed, ignored, or defeated. Only the person whose signature is on the tag shall remove the tag.
  - 6.6.4 In addition to a tag, additional measures must be taken to prevent startup, for example removing disconnect handles.
- 6.7 Shift or Personnel Changes
  - 6.7.1 In the case of shift or personnel changes, a changeover period will be established so that the authorized team members may remove and apply their locks and tags. The authorized personnel assuming control of the lockout equipment shall be fully briefed in the scope and stage of the work by those team members who are being relieved.
  - 6.7.2 In the event that the incoming shift authorized team member(s) are not available at shift changeover, the team member who is leaving shall remove their lock (The supervisor lock is still applied controlling the energy sources).
    - 6.7.2.1 The in-coming authorized team member(s) will verify that the machine or equipment is properly locked out by following the 6 LOTO steps (Including locking it out).
- 6.8 Removal of a LOTO Device by Management
  - 6.8.1 At the completion of the task, end of the shift, or when relieved from the lockout by the team member’s supervisor, the authorized team member shall remove their LOTO lock and tag. In the event a LOTO lock has been accidentally left in place, the lockout device can only be removed by the Shop Superintendent, Supervisor, or Leads. The following procedure must be adhered to:
    - 6.8.1.1 Identify the team member who left the lock in place. Page and call them to

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ensure that they have not left the building. If they are available, ask them to return to remove the lock.

- 6.8.1.2 If the team member cannot be located or is not available, the Shop Superintendent, Supervisor, or Leads may proceed with removing the lock after completing the lock removal form, see attachment SAF.147.F1, Emergency Lock Removal Form.
- 6.8.1.3 The supervisor shall ensure that the authorized team member has knowledge that their LOTO lock was removed from the equipment before they resume work by having them sign the lock removal form immediately upon their return to IM.

## 6.9 Energy Control Procedures (ECP)

- 6.9.1 When applicable, specific ECPs will be developed, documented and utilized for the control of potentially hazardous energy. The ECP must follow the 6 steps to LOTO, see attachment SAF.147.F2, Energy Control Procedure Template.
- 6.9.2 These procedures will be made available to any individual that may perform maintenance and/or service on the piece of equipment.
- 6.9.3 Upon receipt of new machines and/or equipment being installed by an outside contractor, the contractor will be required to provide a detailed summary of all energy sources and potential for stored energy.
- 6.9.4 IM will then be responsible for preparing a new machine specific ECP for the machines and/or equipment prior to operating it.
- 6.9.5 Written ECPs are not required to be provided for equipment when **all** of the following criteria apply:
  - 6.9.5.1 The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shutdown which could endanger team members;
  - 6.9.5.2 The machine or equipment has a single energy source which can be readily identified and isolated;
  - 6.9.5.3 The isolation and locking out of that single energy source will completely de-energize and deactivate the machine or equipment;
  - 6.9.5.4 The machine or equipment is isolated from that energy source and locked out during servicing or maintenance;

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- 6.9.5.5 A single lockout device will achieve a locked-out condition;
- 6.9.5.6 The lockout device is under the exclusive control of the authorized team member performing the servicing or maintenance;
- 6.9.5.7 The servicing or maintenance does not create hazards for other team members; and
- 6.9.5.8 There is no history of accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance.
- 6.9.6 ECPs shall be inspected each year.
  - 6.9.6.1 The inspection shall be completed by another Authorized team member who will observe the authorized team member use the ECP to lockout the piece of equipment. The inspection shall be documented using Attachment SAF.147.F3, ECP Annual Inspection Form.
  - 6.9.6.2 The inspection will address any deviations or inadequacies observed in the application of the ECP. Corrections or performance improvement suggestions will be immediately shared with the team member being evaluated. Retraining will be recommended if indicated by deficient performance.
- 6.10 Testing and Positioning of Machines
  - 6.10.1 In situations which lockout/tagout must be temporarily removed from the energy isolation device and the machine or equipment energized to test or position the machine, the following steps shall be followed:
    - 6.10.1.1 Clear the machine or equipment of tools and materials.
    - 6.10.1.2 Remove team members from the machine or equipment area.
    - 6.10.1.3 Remove the lockout/tagout devices.
    - 6.10.1.4 Energize or proceed with testing or positioning.
    - 6.10.1.5 If additional testing or positioning is required, de-energize all systems and re-apply lockout/tagout devices as specified in the ECP.
    - 6.10.1.6 Repeat process until all testing or positioning work is completed.
- 6.11 Minor Servicing
  - 6.11.1 Minor tool changes and adjustments, and other minor servicing activities that take place during normal production operations do not require LOTO if they are routine (Simple in nature), repetitive (Occur on average more than once per day), and

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integral (Loading inventory) to the use of the equipment for production. The work must be performed using alternative measures which provide effective protection.

6.11.2 Alternative measures include specially designed tools, remote devices, interlocked barrier guards, local disconnects, or control switches which are under the exclusive control of the team member performing the minor servicing. These alternative measures must enable the team member to safely perform the servicing task without being exposed to the unexpected energization or activation of the equipment, or the release of stored energy. In the forging industry, minor servicing activity includes tasks such as minor cleaning, lubricating and adjusting operations.

## 6.12 Contractors and Vendors

6.12.1 Outside contractors and vendors must utilize their own program and comply with 29 CFR 1910.147. It is the responsibility of either the Shop Superintendent or Purchasing Manager overseeing the contractor to assure that they have the ECP for the equipment and/or are made aware of the energy sources for the piece of equipment.

6.12.2 The contractor and IM shall inform each other of their respective lockout/tagout procedures.

6.12.3 Each contractor performing work at IM will be responsible for obtaining his/her own locks. Each lock must be accompanied by a tag/sticker indicating the Company name and the name of the team member.

6.12.4 Contractors must be sure to remove all locks as the completion of a job or end of shift whichever comes first. If a lock has been accidentally left in place, the contractor shall follow their procedure for removal.

## 6.13 Cord and Plug

6.13.1 Equipment that is operated by electrical plug-in or air pressure can be de-energized by unplugging/uncoupling the electrical or other power sources. The lockout/tagout standard does NOT apply to cord and plug connected equipment under the following circumstances:

6.13.1.1 The work or minor service activity is performed by one person only.

6.13.1.2 The power source is unplugged or uncoupled.

6.13.1.3 There is no potential for stored energy.

6.13.1.4 The plug or coupling device is under the exclusive control of the associate performing the work or minor service activity at all times.

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6.13.2 If the plug/coupling is left unattended at any time for any reason, then the plug or coupling must be placed in a plug lockout device, locked and tagged by the person(s) working on the equipment.

6.14 Accidents Concerning Lockout/Tagout Restart

6.14.1 All accidents involving lockout/tagout must be fully investigated by both department management and Human Resources.

6.14.2 If the accident involved the control of hazardous energy with a single lockout source, a specific procedure will be written before work continues.

6.14.3 If the accident involved an ECP for a piece of equipment, the ECP will be evaluated and modified (if necessary) prior to authorizing work to continue.

**7. TRAINING:**

7.1 Authorized Team members

7.1.1 Prior to conducting LOTO, all authorized team members shall receive documented training to recognize all hazardous energy sources, the type and magnitude of the energy in the workplace and the methods and means necessary for energy isolation and control.

7.1.2 Authorized team members will also receive training on ECPs for equipment that they service or maintain.

7.2 Affected Team members

7.2.1 Prior to working on or near equipment that will be locked out, affected team members shall receive lockout/tagout overview training, which will review the purpose and use of the lockout/tagout program.

7.3 Retraining:

7.3.1 Required when there is a change in job assignment, change in machines, equipment or processes that presents a new hazard.

7.3.2 Required when there is a change to an ECP and/or whenever periodic evaluation reveals or whenever there is a reason to believe that there are deviations from or inadequacies in the team member's knowledge or use of the lockout/tagout procedures

7.3.3 Team members shall be retrained in ECPs relevant to them annually.

7.3.4 Retraining shall occur as required to ensure competency in the program requirements.

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## 8. RECORDKEEPING:

<u>Topic</u>	<u>Duration</u>	<u>Location</u>
Energy Control Procedure (ECP)	Maintain Current and Previous Version	HR Department
ECP Annual Inspection	Maintain Current and Prior Year's Completed Inspections	HR Department
Training Records	Length of Employment	HR Department
Abandoned Lock Removal Form	Maintain Current and Prior Year's Abandoned Lock Removal Forms	HR Department

END OF WRITTEN PROCEDURE.

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SAF.147.F1, Forcible Lock Removal Form

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SAF.147.F2, Energy Control Procedure Template

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SAF.147.F3, ECP Annual Inspection Form

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