

Title: Energy Control and Lockout Compliance Work Instruction

1.0 Scope, Application and Purpose

1.1 Scope

OSHA Standard 1910.147 covers the servicing and maintenance of machines and equipment in which the **unexpected** energization or start up of the machines or equipment, or release of stored energy could cause injury to the employee. This standard establishes minimum performance requirements for the control of such hazardous energy.

All employees of Waupaca Foundry, Inc. are included in the scope of this work instruction, whether deemed to be affected personnel, or authorized personnel (See Definitions 2.0). This procedure shall be followed to provide proper lockout for all machines and equipment in the Waupaca Foundry, Inc. plants. Machines/equipment having a **single energy** source that can be readily identified and isolated can be locked out by a single device. If there are no sources of stored or residual energy remaining after the machine is locked out, it shall be locked out in accordance with this procedure. Those machines/equipment that have multiple energy sources shall in addition to this procedure have a machine/equipment specific lockout postings identifying the energy sources, energy source location, methods to isolate such energy and necessary checks to verify that such energy has been isolated. During the implementation of this program, where a machine specific posting is required on a machine/equipment but has yet to have the posting placed on the equipment, the supervisor or designate with supervisor authority (such as a foreman or an assistant foreman) of those assigned to conduct servicing/maintenance on such equipment shall hold a pre-job meeting with his/her employees. The meeting will be for the review of which energy source shall be isolated, blocked, and locked out, and the location of each such energy source. Included in the discussion shall be the necessary lockout practices that are required by this procedure.

1.2 Application

This procedure applies to the control of energy during servicing and /or maintenance of machines and equipment.

1.2.1 Normal production operations are not covered by this standard (See Definitions 2.9). Servicing and /or maintenance which take place during normal production operations are covered by this standard only if:

- An employee is required to remove or bypass a guard or other safety device
- An employee is required to place any part of his or her body into an area on a machine or piece of equipment where work is actually performed upon the material being processed (point of operation) or where an associated danger zone exists during a machine operating cycle.

Title: Energy Control and Lockout Compliance Work Instruction

1.3 Purpose

This procedure establishes requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines and equipment. It shall be used to assure that the machine or equipment is isolated and safely powered down from all potentially hazardous energy sources. Equipment will be locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause injury to employees. Potential energy sources covered by this procedure include but not limited to electrical, hydraulic, pneumatic, thermal, steam, water pressure, compressed gas, and gravity (i.e. unsupported machine parts).

1.3.1 All Waupaca Foundry, Inc. employees are required to comply with the restrictions and limitations imposed upon them during the use of Lockout. The authorized employees are required to perform the lockout in accordance with this procedure. All employees, upon observing a machine or piece of equipment that is locked out to perform servicing or maintenance shall not attempt to start, energize or use that machine or equipment.

2.0 Definitions Applicable to this Compliance Work Instruction

2.1 Affected Employee

Affected employee is the machine operator or any other employee who works in the area of a machine being serviced, but who is not servicing or providing maintenance to the equipment. (Examples: Janitors, Vehicle operators in the machine vicinity, contract workers in area).

2.2 Authorized Employee

Authorized employee is any person or persons performing service or maintenance to the equipment and who, therefore, have the responsibility to work under the own lock and lockout the equipment according to the requirements of this procedure. This person has a personal lock in their possession. (Examples: Machine operator, maintenance personnel for the machine, foremen)

2.3 Capable of Being Locked Out

An energy-isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy control capability.

UNCONTROLLED

Title: Energy Control and Lockout Compliance Work Instruction

- 2.4 Energized
Connected to an energy source or containing residual or stored energy.
- 2.5 Energy Isolating Device
A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.
- 2.6 Energy Source
Included but not limited to any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
- 2.7 Lockout
The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.
- 2.7.1 Group Lockout
A unique series of locks that may be keyed alike or different that are used to secure a piece of equipment with multiple lockout points that make it impracticable to use personal lockout devices.
- 2.8 Lockout Device
A device that utilizes a positive means such as a lock with key to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.
- 2.8.1 Group Lockout Box / Device
A device that allows the placement of group lockout key(s) inside of the device and be secured from opening by placement of an authorized employee's locks. The device should be of the design that doesn't allow it to be pried open for unauthorized key removal.
- 2.9 Normal Production Operations
The utilization of a machine or equipment to perform its intended production function.
- 2.10 Servicing and/or Maintenance.
Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include but are not limited to lubrication, cleaning or unjamming

Title: Energy Control and Lockout Compliance Work Instruction

of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the **unexpected** energization or startup of the equipment or release of hazardous energy.

- 2.11 Troubleshooting
Systematic approach to locating the cause of a fault in an electronic circuit or system
- 2.12 Posting – a sign/placard that includes a photo or pictogram that describes the work instruction and explains how to de-energize the machine.

3.0 Responsibilities

3.1 Safety Department

- 3.1.1. Assure that the necessary equipment (locks, tags, hasp, etc.) are available for use by employees.
- 3.1.2. Schedule and arrange periodic inspections of lockout postings.
- 3.1.3. Audit machine specific postings prior to them being posted.
- 3.1.4. Maintain a list of authorized employees, and the serial numbers of their locks, as well as records of their annual training and audit.

3.2 Supervisor or designate with supervisor authority (such as a foreman or an assistant foreman)

- 3.2.1. Train and authorize employees to perform lockout according to the guidelines established by the safety department. Periodically re-instruct all authorized employee's regarding the provisions and requirements of the lockout procedure.
- 3.2.2. Train all affected employees about their responsibilities under this program.
- 3.2.3. Enforce compliance to this lockout procedure, including the disciplinary actions process as required to ensure the compliance work instruction is followed.
- 3.2.4. Annually audit the authorized employee's ability to follow the lockout procedure.

3.3 Employee - Authorized and Affected

- 3.3.1. Employee shall understand and comply with all elements of the Lockout Procedure.
- 3.3.2. Employee, as necessary shall consult with their supervisor or other appropriate or knowledgeable individual whenever there are any questions on how to lockout a piece of machinery. For example, if lockout cannot be accomplished due to disconnect damage or other reasons. Consultation will include how to isolate the energy and make the equipment safe for servicing or maintenance.

UNCONTROLLED

Title: Energy Control and Lockout Compliance Work Instruction

3.3.3. Each authorized employee shall understand the type and magnitude of the energy of the machine they will be working on prior to starting work on the equipment.

3.3.4. Employees will obtain and keep in their possession, their own personalized lock(s) required to carry out the elements of the lockout program.

3.3.5. Employees shall only use the locks issued under this program for lockout purposes. (Gold “Abus” brand, “American lock” brand or “Masterlock” brand with yellow collar and name label on lock) The lock should be labeled with a “Danger – Do Not Remove this Lock” warning, as well as employee identification such as name, clock number, department.

3.3.6. Authorized and Affected employees, upon observing a machine or piece of equipment that is locked and tagged out shall not attempt to start, energize, or otherwise use the machine or equipment.

3.3.7. Employees that have been issued a lock, and are considered authorized, will be audited initially and annually for their ability to follow machine specific procedures in order to lock out all machines they are working on. The audit will include responsibilities of the supervisor or designate with supervisor authority (such as a foreman or an assistant foreman), and the employee, it will list lock serial numbers issued to the employee, and the machine that the lock out was demonstrated on.

4.0 Disciplinary Action

4.1 Any Employee that violates any of the Lockout rules and requirements will be disciplined up to, and including termination of employment. Termination may occur on the first offense.

4.1.1 Disciplinary actions are a day off without pay, and a formal written reprimand in the employee’s personnel file, or termination of employment. These disciplinary actions may fall into any order depending on the seriousness of the incident.

4.2 Any person that modifies a safety device and/or any control such as a switch, handle, button, in a manner that alters its effectiveness without such changes being approved by the Director of Safety and Health, will be disciplined up to, and including termination of employment.. *Examples of this may include jamming the switch with items such as match sticks, wired limit switches, or jumped out light curtains.*

Title: Energy Control and Lockout Compliance Work Instruction

5.0 Preparations for Lockout Procedures

A survey has been conducted to locate and identify all isolating devices to be certain which switches, valves or other energy isolating devices apply to the equipment to be locked out. The lockout procedure involves, but is not limited to, electric motors, compressed air, hydraulic systems, steam systems, digesters, sewers, etc. Additional procedures are written as new machines are installed.

6.0 Lockout Application

6.1 This procedure, along with information contained on machine specific lockout postings (as required), shall be followed to assure safe lockout of equipment.

6.1.1 The authorized employee shall notify all affected employees of that machine/equipment, that servicing or maintenance is required on the equipment and that the equipment will be shut down and locked out to perform the necessary work. Such notification is only required for those affected employees working on the same shift as the authorized employee.

6.1.2 The authorized employee shall evaluate the potential hazards, determine the energy sources which must be isolated (noted on the lockout posting for multiple energy), locate such energy sources on the equipment and determine the method to isolate and lockout such energy.

6.1.2.1 Plug and cord connected electrical equipment shall have the equipment unplugged and the plug end protected by use of a lockable cover device. A cover device is not required if the plug is under the exclusive control of the employee (in the employee's possession or in arm's reach and in the line of sight of the employee).

6.1.3 If the machine is in operation, shut it down by the normal stopping method (depress stop button, open toggle switch, etc.)

6.1.4 Employees will apply their own locks and tags which have been provided for this program.

6.1.4.1 Tags shall only be used to supplement locks; they will not be used in place of locks.

6.1.4.2 In the event that a machine requires more than one employee to be involved in lockout, each authorized employee shall place his own personal lock on the machine lockout device. A hasp or multiple hasps may be used for this purpose.

6.1.4.3 Under no circumstances can an employee work under someone else's lock, besides their own.

6.1.5 Once the locks have been applied and keys removed and in the possession of the owner(s), stored, or residual energy (such as capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, control transformer, water pressure, etc.) shall be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc. If

UNCONTROLLED

Title: Energy Control and Lockout Compliance Work Instruction

energy could re-accumulate, verification of continued isolation shall be checked frequently until the job is complete.

6.1.6 With no personnel in a hazard area, all energy sources will be tested (i.e. push motor starts buttons, depress run buttons, visual check of valves, etc.) to verify that the power is off and neutralized.

6.1.6.1 With the guidance of HSCWI 3-0031, where service or maintenance is performed on electrical systems, a qualified electrician shall use test equipment rated for voltages being tested to test the circuit elements and electrical parts to verify they are de-energized. If the circuit to be tested is over 600 volts nominal, the test equipment shall be checked for proper operation immediately before and immediately after this test.

6.1.7 All controls shall be returned to the neutral or off position after each verification test.

6.1.8 When two or more employees work on the same equipment, each is responsible to attach his/her own locks and tags on the energy disconnect points. An employee shall not work under someone else's lock.

6.19 An employee who is assigned to a job where a lock is already applied shall notify the employee working on the equipment of their arrival and that they will also conduct a verification check to ensure the energy sources) have been isolated. The employee making the check shall assure that no other employee is in a danger zone during such checks, as outlined in section 6.1.6.

7.0 Removal of Locks and Restoring Power

7.1 During servicing or maintenance, power may be turned on only when it is required to perform tests or adjustments and no employee is exposed to a hazard. All the rules pertaining to lock removal and restoring power shall be followed. Following the test adjustments, the equipment shall again be locked out per the lockout procedure if it is necessary to continue work on the equipment. The guards and/or other protective devices shall be reinstalled.

7.2 If the employee must leave the job before it is completed due to shift change or job reassignment, the employee shall contact his/her supervisor or designate with supervisor authority (such as a foreman or an assistant foreman) and the supervisor shall place their personal lock on the equipment prior to the removal of the last employee lock. The supervisors lock may only be removed by the supervisor. An employee will only work under his/her own lock, no employee, except the supervisor may work under that supervisors lock.

7.3 When servicing or maintenance is completed and the equipment is ready to return to operating conditions, employees shall remove their own locks and tags.

7.4 The following steps shall be taken by the last employee who removes his/her lock(s) from the equipment.

UNCONTROLLED

Title: Energy Control and Lockout Compliance Work Instruction

- 7.4.1 Check the machine and the immediate area around the machine to ensure that nonessential items (parts, tools, etc.) have been removed and that the machine components are operationally intact.
- 7.4.2 Inspect the work area to ensure that all employees have been safely positioned or are out of the area.
- 7.4.3 Check to see that all guards have been replaced.
- 7.4.4 Verify that the controls are in neutral (off) position.
- 7.4.5 Inform affected employees that locks are going to be removed, Remove the lockout devices and tags, and re-energize the equipment.
 - 7.4.5.1 NOTE: Some forms of blocking may require re-energization of the equipment before safe removal.
- 7.4.6 Test the equipment to assure it is operational.
- 7.4.7 Notify affected employees that the job is completed and the equipment is ready for use.

8.0 Exception to Primary Power Lockout

8.1 Troubleshooting Activity of Authorized Maintenance Employees:

8.1.1 When conducting **troubleshooting activity** where energy sources must remain on to perform the task, extreme care shall be exercised to avoid placing the body into a hazardous zone.

8.1.2 Authorized Maintenance Employees involved in trouble shooting must maintain a safe distance. They must not approach closer than necessary, and in no case, closer than 6 inches to the point of operation. The minimum safe distance of 6 inches shall be measured from the exterior point of contact of the machine hazard closest to an employee. Once it has been determined the machine needs repair, the authorized employee will need to continue lockout and cannot remain under “troubleshooting” instructions.

8.1.3 Blocking, pinning, and physical disconnect may be needed to secure the machine components in order to complete trouble shooting safely. Related energy sources that are not needed for troubleshooting shall be locked out and the energy dissipated per the procedure.

8.1.4 Authorized Maintenance Employees must understand the need for a working relationship between the machine operator and themselves. They must understand the function and purpose of the operating controls. They must understand the hazards of placing any part of their body within the point of operation. They must also understand the dangers of unsafe work practices, inattention, horseplay, and misuse of the equipment.

8.2 Related energy sources that are not needed for troubleshooting shall be locked out and the energy dissipated per the procedure.

8.2.1 Clear the machine or equipment of tools and materials.

8.2.2 Remove employees from the machine or equipment area.

Title: Energy Control and Lockout Compliance Work Instruction

8.2.3 Remove the lockout device.

8.2.4 Energize and proceed with testing or positioning:

8.2.5 De-energize all systems and reapply the energy control measures, and continue with the servicing and/or maintenance.

9.0 Group Lockout

9.1 When servicing and/or maintenance is performed by a crew, department or other group such as a contractor, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout device.

9.1.1 The procedure may be an existing lockout posting as described in Section 2.12 or an existing, specific written DWI for the piece of equipment.

9.1.2 If a procedure does not exist for the specific piece of equipment, a procedure shall be developed in a pre-job meeting as described in Section 1.1 prior to the start of work.

9.2 Primary responsibility is vested to a Waupaca Foundry, Inc. authorized employee such as a foreman or department head for a set number of employees working under the protection of the group lockout.

9.3 The foreman / department head shall be able to ascertain the exposure status of the individual group members with regard to the lockout of the machine or equipment.

9.4 When there is more than one crew, department or company involved in the group lockout, the foreman / department head shall coordinate the affected work forces and ensure continuity of protection to the employees and equipment.

9.5 Group lockout devices shall be used and applied in accordance with the procedure in Section 9.1.1 or 9.1.2 by the foreman / department head or an authorized employee who is working under the direction of the foreman / department head.

9.5.1 The foreman / department head always maintains primary responsibility for the group lockout procedure.

9.5.2 The group lockout key(s) shall be placed in the group lockout device and secured within the group lockout device by the foreman / department head's own personal lockout device.

9.6 Each authorized employee shall affix a personal lockout to the group lockout device prior to the beginning of work and shall remove those devices when they stop working on the machine or equipment being serviced or maintained.

9.6.1 Under no circumstance can an employee or contractor work under someone else's lock besides their own.

9.6.2 Shift change shall be conducted as noted in Section 7.2.

9.7 The foreman / department head shall be the last to remove their personal lock from the group lockout device and remove the key(s). The foreman / department head

UNCONTROLLED

Title: Energy Control and Lockout Compliance Work Instruction

shall remove or supervise the removal of the group lockout devices from the equipment or system.

Title: Energy Control and Lockout Compliance Work Instruction

**10.0 Exception to Lockout Removal by the Original Authorized Person
(Abandoned lock removal)**

10.1 The only exception to removing another person's lockout will be if a lockout has been left on or is not identified and the person who locked it out was unable to be contacted.

10.1.1 Before this takes place a supervisor at the plant at the time of the incident must be contacted and must approve the removal of the lockout.

10.1.2 This, in turn, will only be done after every condition relevant to the power source locked out has been checked to assure that there is no person whose safety would be jeopardized by the starting of the machine or by any surge of electrical power. Additional employees may be needed to confirm this verification.

10.1.3 A reasonable effort shall be made by the job supervisor or designate with supervisor authority (such as a foreman or an assistant foreman) to contact the employee at home and inform them of the removal.

At the Tell City (Plant 5) location, an employee that is contacted at home will be required to come in and remove their lock.

10.1.4 If employee contact is unsuccessful the employee's immediate supervisor or designate with supervisor authority (such as a foreman or an assistant foreman) shall use the time clock badge system to notify the employee the next time they attempt to badge in. The information is entered into the AS400 computer system in the time card approval menu. The supervisor is the person that will need to clear the message at the time clock before the employee can clock in.

10.1.5 For all abandoned lock removals, the supervisor or designate with supervisor authority (such as a foreman or an assistant foreman) authorized to remove the lock will complete a report (HSF 4-0015) of the removal and forward copies of the report to the Safety Department for review.

10.2 Removal of a Lockout lock, other than by the owner, or by an authorized supervisor will result in the termination of the employee removing that lock.

10.2.1 An employee who leaves their lock on a machine, which results in an abandoned lock situation, may be given a disciplinary action such as a verbal warning.

11.0 Machine Specific Lockout Program

11.1 In the situation that a machine cannot be Locked Out by a single energy source lockout, the "multi energy sources" program shall be followed. An example of this might be a machine that operates on electrical as well as

UNCONTROLLED

Title: Energy Control and Lockout Compliance Work Instruction

pneumatic power. These machines will be locked out according to the directions on the specific machine posting.

11.2 These postings are generated and kept electronically or as a paper copy. An electronic database is currently under construction for the management of these files to ensure document control, and review.

11.3 Machine specific Lockout/Tagout procedures will also be posted on or near the machine.

11.4 All new employees shall be instructed in Lockout procedure, prior to beginning work on a machine.

11.5 The Supervisor or designate with supervisor authority (such as a foreman or an assistant foreman) shall instruct employees in their department on the specific machine lockout procedures and location of all energy sources that could affect these employees.

11.6 Machine specific lockout procedures will be audited by the Safety Department prior to being posted on sturdy signs. The audit will include a visual check to assure that the components of the sign actually are located as posted, and will disable the machine as intended.

11.7 All equipment presently at Waupaca Foundry, Inc. will be equipped with Energy Isolation Devices during any major maintenance or modifications. This is the responsibility of the Engineering and Maintenance departments. Equipment purchased by Waupaca Foundry, Inc. whether used or new will be equipped prior to use with Lockable Energy Isolation Devices. This is addressed during the New Equipment Design & Buy Off Checklist.

12.0 Contractors

12.1 Whenever outside contractors are to be engaged in activities covered by the scope and application of the Waupaca Foundry, Inc. Lockout Work Instruction, Waupaca Foundry, Inc. Personnel and the outside employer shall inform each other of their respective lockout procedures.

12.2 If the contractors program does not meet the requirements of the Waupaca Foundry, Inc. Safety Department, then the outside contractor will be required to follow this work instruction. They will have a full and complete understanding of the program before they can start work at Waupaca Foundry, Inc. This will also include machine specific lockout posting if they will be working in one of those areas.

12.3 It is the responsibility of the Plant's Engineering, Maintenance, and Purchasing Departments to make sure the Outside Contractor forms are filled out

UNCONTROLLED

Title: Energy Control and Lockout Compliance Work Instruction

and returned to the Safety Department in a timely fashion, so they can be reviewed before the outside contractor starts any work.

12.4 Contractors shall provide lockout equipment (locks, hasps etc.) to their employees. During a machine lockout, the contractor shall contact a knowledgeable Waupaca Foundry, Inc. employee to first lock the machine out. The contractor shall mirror this lockout with their own equipment, thus allowing for start up of the machine only after both the Waupaca Foundry, Inc. personnel and the Contractors personnel are aware. If the contractor has more than one employee working on the machine, a lock shall be in place for each worker involved.

12.5 Contract workers shall follow all requirements of OSHA regulation 1910.147; and HSP 4-4.4.2-2 "Use of Contractors and Subcontractors".

13.0 Lockout Equipment Available at Waupaca Foundry, Inc.

13.1 Gold "Abus" brand, "American lock" brand or "Masterlock" brand with yellow collar and name label on lock.

Temporary Lock - Yellow band, green temporary label, stick on employee information. Label - may be obtained from the stockroom or Safety Dept. to use on a temporary basis.

13.2 Other lockout equipment may include but is not limited to a Lock Hasp - to allow greater than one user/lock; a Plug End Lockout box, a Single Pull Breaker, and a Universal Pull Breaker.

UNCONTROLLED

Title: Energy Control and Lockout Compliance Work Instruction

14.0 Procedure for Obtaining Lockout Locks

14.1 Gold "Abus" brand, "American lock" brand or "Masterlock" brand with yellow collar and name label on lock are used exclusively for the purpose of Lockout only.

14.2 Each lock has a single key, which is kept in the possession of the owner of the lock.

14.3 Each locks serial number, lock owner name, date of issue and department Identification are recorded at the time the lock is issued.

14.4 Personalized locks may be obtained by contacting the Safety Department. The lock will be issued with a label containing the Employee Name, Clock number, department and also the Warning "Danger, Do Not Remove this Lock". Each label will be painted with a protective coating.

14.5 When the lock is issued, it is sent to the department supervisor or designate with supervisor authority (such as a foreman or an assistant foreman) along with the HSF 4-0016.WMTE "Authorized Employee Lockout Audit" which is then completed with the employee and returned to the Safety Department.

14.6 In the absence of the Safety Department, where there is an immediate need for a new or replacement lock, temporary locks will be issued at the stockroom (available 24 hours). The stockroom will then send a notice to the Safety Department that a temporary lock has been issued.

15.0 Forms

HSF 4-0015.WMTE Abandoned Lock Removal

HSF 4-0016.WMTE Annual Employee Lockout Audit