

Equipment Specific Energy Control Procedure (multiple energy sources)

Equipment description: _____

Property Control #: _____ Equipment location: _____

Locking out equipment

(Step 1) Notify all Affected Employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.

Name(s)/Job Title(s) of affected employees and how to notify (include control center if building system involved).

Name	Title	How Affected	How to Notify

(Step 2) The Authorized Employee shall complete the hazardous energy assessment form to identify the type and magnitude of the energy that the machine or equipment utilizes and identify the methods to control the energy.
(note: attach a completed hazardous energy assessment form)

(Step 3) Identify any other potential hazards (task related or hazardous conditions) and method(s) of control.

(Step 4) If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open switch, close valve, etc.). Locate and de-activate the energy isolating device(s) (switches, breakers; valves) so that the machine or equipment is isolated from the energy source(s).

Identify the steps in order to safety shut down equipment (include type(s) and location(s) of machine or equipment operating controls).

Step#	Type	Location	Deactivated (Y/N)

(Step 5) Lock out (isolate) and tag out the energy isolating device(s) with assigned individual lock(s) and tag(s).
(note: attach a completed hazardous energy assessment form which contains the isolation points and methods of control)

(Step 6) Disconnect, bleed off, restrain, or otherwise render safe all potential hazardous stored energy or potential residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.).

Type(s) of stored energy--methods to dissipate or restrain. (note: must address each energy type)

Energy type	Method to dissipate/restrain	Confirmed (Y/N)

(Step 7) Ensure that the equipment is disconnected from the energy sources, check that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate. Caution: Return operating control(s) to neutral or "off" position after verifying the isolation of the equipment.

Method of verifying the isolation of the equipment.

Energy type	Method to verify isolation	Activated (Y/N)	Returned to safe or off (Y/N)

(Step 8) The machine or equipment is now locked out and service or maintenance may be performed safely.

Restoring Equipment to Service

When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken.

(Step 1) Check the machine or equipment and the immediate area to ensure that all tools and nonessential items have been removed, that the machine or equipment components are operationally intact and all machine guards and safety devices have been reinstalled.

(Step 2) Check the work area to ensure that all Affected Employees have been safely positioned or removed from the danger zone.

(Step 3) Notify Affected Employees that the servicing or maintenance is complete and that the machine or equipment will be returned to service.

(Step 4) Verify that the controls are in the safe or off position.

(Step 5) Remove the lockout devices and reenergize the machine or equipment. Note: The removal of some forms of blocking may require reenergization of the machine before safe removal.

(Step 6) Notify Affected Employees that the servicing or maintenance is completed and the machine or equipment is ready for use.

Completed by: _____ Date: _____
 (Authorized employee)

Approved by: _____ Date: _____
 (Manager/supervisor)

Hazardous Energy Assessment Form

Equipment Description:

Completed by:

Date:

Evaluate the equipment for all existing and potential hazardous energy sources and indicated present by checking the left hand column. For each, describe the energy type and magnitude, danger zone (the part(s) of the equipment where the energy is found), and the isolation point(s)/method of control.

Check If Present	Types of Energy	Type / Magnitude	Danger Zone	Isolation Point(s) and Control Method
	Electrical - low voltage (<50 V) - list amperage			
	Electrical - low voltage (50-600 V) - list amperage			
	Electrical - high voltage (>600 V) - list amperage			
	Chemical - flammable, pressure, extreme heat, fire, corrosive, reactive, oxidizer, toxic, etc. Required: Consult an ES&H subject matter expert.			
	Pressure - hydraulic, pneumatic > 150 psi in rigid pipe > 50 psi in flexible, unsecured lines			
	Vacuum			
	Mechanical - capable of crushing, pinching, cutting, snagging, striking			
	Thermal - high temperature-surface temperature, hot liquids, steam Liquids or gases > 125°F (52°C) Surfaces ≥ 140° F (60°C)			
	Thermal, cryogenic - super cold surface or cryogenic liquid < 27°F (-3°C)			
	Radiation, ionizing			
	Radiation, non-ionizing – ultra-violet, infra-red, RF/Microwave, laser, magnetic			
	Stored energy - flywheel, springs, differences in elevation, capacitors, batteries, etc.			
	Emergency power - does the equipment maintain an emergency power /uninterruptible power supply?			
	Other - describe			

Hazardous Energy Thresholds

Energy Form	Evaluate Hazard and Consider Lockout/Tagout	Lockout/Tagout Required (see note 1)
Electrical (AC or DC)	< 50V and < 5mA, and ≤ 10J	≥ 50V, or > 5 mA or > 10J
Thermal (hot)	Liquids or gases ≤ 125°F (52°C) Surfaces ≤ 140° F (60°C)	Liquids or gases > 125°F Surfaces ≥ 140° F
Thermal (cold)	Liquids and surfaces ≥ 27°F (-3°C)	Liquids and surfaces < 27°F
Mechanical - kinetic	No threshold; each situation must be evaluated	
Mechanical - potential	No threshold; each situation must be evaluated	
Pneumatic	≤ 150 psi in rigid pipe ≤ 50 psi in flexible, unsecured lines	> 150 psi in rigid pipe (see note 2) > 50 psi in flexible, unsecured lines
Hydraulic	≤ 150 psi in rigid pipe ≤ 50 psi in flexible, unsecured lines	> 150 psi in rigid pipe (see note 2) > 50 psi in flexible, unsecured lines
Chemical	No threshold; each situation must be evaluated based on the chemical's hazardous properties	
1 Unless de-energizing the source by lockout/tagout introduces additional or increased hazards or is infeasible due to equipment design or operational limitations.		
2 Double valve isolation is required when the operating temperature exceeds 200°F or the operating pressure exceeds 500 psig.		