STANDARDS/PROCEDURES MANUAL

Approved: /s/ Jeff Rosenfelt

TAG OUT - LOCK OUT

I. PURPOSE/SCOPE

This procedure establishes the requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machinery or equipment. It shall be used to ensure the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected starting or movement of machinery or equipment and or the release of stored energy could cause sevier injury or death. This procedure will be inspected, reviewed and documented annually to ensure procedures and requirements are being followed.

II. APPLICATION

This procedure applies to all Key Technology personnel which are engaged in near or directly related to factory equipment. Specific duties identified in this procedure apply more directly to Maintenance Department personnel.

This procedure applies to all locations and facilities of Key Technology, including Key Technology Inc. (United States) and Key Technology EMEIA (The Netherlands and Belgium).

III. ASSOCIATED MATERIALS

Individual lock-out device and tag.

IV. DEFINITIONS

A. Zero Energy State - The condition in which all electrical or motivating force has been removed from a piece of equipment or system.

B. Residual Energy - Energy remaining in a piece of equipment or system such as a charged capacitor or a compressed spring. Residual energy is energy that might be released unexpectedly, causing harm to persons or equipment.

C. Multiple Energy Sources - The situation which exists when a piece of equipment or system has more than one method of being activated. An example is a system which has pneumatic, hydraulic, hydrostatic, and electrical energy applied to it.

D. Single Energy Source - The situation which exists when a piece of equipment or system has one method of being activated. An example would be a system which requires electrical energy only to activate it. Multiple Lockout and Tag - A device which may be passed through a lockout port on a control mechanism that has several places for padlocks to be attached. The concept being that more than one individual may be working on the same system, but in differing areas. Each individual would be able to have the degree of comfort knowing that the system cannot be energized until his or her lock is removed.

V. PROCEDURES

A. Essentials of the procedure: To prevent injury or death to an employee and/or damage to equipment. It is a prerequisite that before any maintenance occur the equipment be brought to a zero energy state.

1. Maintenance includes but is not limited to repair, inspection, cleaning, adjusting or other forms of servicing which would cause entrance into or close proximity to the equipment under consideration.

2. Before starting any maintenance or servicing function, and BEFORE turning off the power of a machine or piece of equipment, the qualified maintenance technician must:

a) Check to be sure that no one is operating the machinery. The machine operator shall be informed before the power is turned off. Sudden loss of power could cause an accident.

b) Have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the methods or means to control the energy.

3. Bringing the equipment to a zero energy state includes but is not limited to blocking off the main power disconnect with a padlock,

disrupting flow with a blank flange or similar device such as a lockable shut off valve. A zero energy state is not achieved until all residual energy has been released. This release includes pneumatic, hydraulic, compressed springs, and stored electrical energy.

4. Before starting any maintenance or servicing function on a piece of equipment where unexpected movement or application of power could result in injury or material property damage, it is important for the employee to personally determine that the correct power source is locked out. If there is to be a concession made it shall always be made in the direction which provides the greater safety for persons and equipment.

5. Verification of Isolation. Before starting any maintenance or servicing function on a piece of equipment that has been locked and tagged out, the qualified maintenance technician must verify and continue to monitor that isolation and de-energization of the equipment has been accomplished.

B. Procedures for Multiple Energy Sources:

1. All multiple energy sources must be identified on each machine or piece of equipment. Each must be neutralized before any work can be done. Close liaison with equipment operators is the best and most proper way to accomplish this task.

2. All electrical sources: A qualified Maintenance Technician or Electrician shall assist in the lockout of all electrical power sources at the main switchboard.

3. All pressurized fluids (compressed air, oils, steam, cylinders, and others). A qualified Maintenance Technician who is familiar with the systems in question shall assist in locking out all energy sources of this type.

a) Use appropriate shut off valves. Block the pressure from the power source and reduce pressure on the machine side by venting to the atmosphere or draining as appropriate.

b) All shut off valves shall be locked out by means of padlocks, cable disconnection, chain, rope, removing the handles, blank flanges, or other means to assure a zero energy state.

4. Kinetic Energy of Machine Members: A qualified maintenance technician, electrician or technician as appropriate shall lockout this source of energy.

a) Energy stored in springs, electrical capacitors, cycling of machinery, or others holding stored energy shall be locked out by means of padlocks, chains, disconnection blocking blank flanges, pinned and/or drained, or by other means to assure a zero energy state.

5. Other sources of energy: Make sure loose or freely moveable machine members are secured against accidental movement.

C. Use of multiple lockout and tag. All personnel who lock out equipment or systems will attach a safety tag at each lockout point to identify the owner of the lock.

1. Multiple lockout procedures shall be used when work is being done by more than one person. A qualified maintenance technician has primary responsibility for the group of employees. The multiple lockout adapter shall be attached at the point or points which will achieve zero energy. Each person working on the machine shall put their lock and tag on the adapter. As they complete their part of the job, they will remove their lock and tag from the adapter.

a) Key Technology tags will be a picture I.D. with the employee's name. Exception to the picture requirement is given for the generic tags available at the lockout stations.

b) If it is required, other information will be included such as the date and the reason for lockout.

2. Job completion: Upon completion of the task the Maintenance Technician shall remove the lock and tag.

   a) If the Maintenance Technician is the last person to remove the lock and tag, he or she will notify the department supervisor in charge of the equipment.

   b) A visual inspection will be made to make sure that all guards and other safety devices have been put back in place and that there is no danger to equipment or personnel.

3. Abandoned locks: If a lock has been left on by an employee who has gone and it is impeding Key Technology business:

   a) The plant supervisor in charge of the equipment will be notified and will satisfy him or her self that operation of the equipment will not endanger an employee, materials or cause property loss, and then remove the lock.

D. Training Requirements:

1. Lockout/Tag out must precede the exposure to locked out equipment, or the use of the lockout system. Retraining shall be conducted whenever necessary to reestablish employee proficiency, or to introduce new or revised procedures.

2. The manager/supervisor shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

E. Equipment Service Manuals:

1. It is incumbent upon the service personnel to use the information in this procedure in conjunction with that of the service manuals pertaining to individual pieces of equipment. Lockout/Tag out instructions found in service manuals <u>must</u> <u>also</u> be adhered to. Equipment service manuals will be kept in the Maintenance Department.

VI. REVISION HISTORY

A. June 22, 2004 - Consolidated AIS procedure #9-0001 and PS procedure #6-0001 into one COR 17-01 and moved to a newly created Section 17 Facilities and Maintenance.

B. February 10, 2005 - Class "A" Procedure Annual Review.

C. September 8, 2010 – Changed for 17 Facilities and Maintance and updated for Class A procedure.

D. December 6, 2012 – Section V:C:1:a – exception added to picture requirement. V:D:1 and 2 – paragraphs rewritten.

E. September 10, 2014 – Section I. added, "This procedure will be inspected, reviewed and documented annually to ensure procedures and requirements are being followed". Section II. added, This procedure applies to all locations and facilities of Key Technology, including Key Technology Inc. (United States) and Key Technology EMEIA (The Netherlands and Belgium). Added V.A.2. paragraph. Added V.A.5. paragraph. Added sentence in V.C.1. "A qualified maintenance technician has primary responsibility for the group of employees.

F. January 18, 2017 – Changed Approver from Roxann Forkan and Stan Croghan. Section I. Purpose/Scope rewritten.