

LLE's Energized Work Policy

Safety training topic: E_003



**University of Rochester
Laboratory for Laser Energetics
Energized Work Permit**

Part I: To be completed by the requestor or supervisor of the job	
Requestor's Name and title:	Request Date:
Description of Equipment:	Job # and Location:
Description of Work to Be Done:	
Justification of why the equipment cannot be de-energized or the work delayed until the next scheduled outage:	
Part II: To be completed by the qualified person(s) completing the work. Attach responses on separate page(s) if necessary. Check when Complete	
Hazards present while system remains energized:	<input type="checkbox"/>
Detailed description of procedure to be used in performing the above work:	<input type="checkbox"/>
Description of safe work practices to be employed:	<input type="checkbox"/>
Voltage exposure (shock hazard analysis):	<input type="checkbox"/>
Determination of shock protection boundaries:	<input type="checkbox"/>
Results of flash hazard analysis:	<input type="checkbox"/>
Determination of flash protection boundaries:	<input type="checkbox"/>
PPE required to safely perform the task:	<input type="checkbox"/>
Method used to restrict access to the work area:	<input type="checkbox"/>
Do you agree the above work can be done safely? YES ___ (proceed to Part III) NO ___ (return to requestor)	
Qualified Person:	
Name	Title
Signature	Date
_____	_____
_____	_____
_____	_____
Part III: To be completed by LLE Safety Officers	
Approvals:	
Name	Title
Signature	Date
_____	_____
_____	_____
_____	_____
<small>Note: Route Permit to LLE Safety Officers. A minimum of two safety officers must approve energized work. When job is finished, forward to Chief Safety Officer for review and retention.</small>	

**Douglas Jacobs-Perkins
LLE Chief Safety Officer**

LLE's Energized Work Policy

Safety training topic: E_003



This training

- is to inform supervisors and workers about LLE's Energized Work policy
- does **NOT** permit individuals to authorize Energized Work

LLE's Energized Work Policy is to be applied to **ALL** forms of energized work, including

- Energized high voltage electrical equipment
- Pressurized systems (gas, steam, hydraulic, ...)
- Rotating & reciprocating machinery (motors, fans, pumps, ...)

“High voltage” is defined as ≥ 50 Volts

LLE's Energized Work Policy requires systems to be de-energized before servicing, with limited exceptions



- Energized Work Permits, or written and approved procedures, are required when this can't be achieved
- “Nuisance” and “Inconvenience” are not sufficient justification to work on energized equipment
- Must demonstrate critical need
- Requires developing a safe work plan before execution
 - Hazard analysis
 - Mitigation strategy
 - Review & Approval
 - Training

⚠ DANGER

De-energizing equipment is not sufficient to ensure personnel and equipment safety.

Make sure it can't be re-energized!

Lockout / Tag out!

Everyone has the right and RESPONSIBILITY to “**Stop work**” if they perceive an Imminent Danger



- An **imminent danger** is a hazard that presents an **unacceptable risk** of injury, environmental impairment or property damage.
- Such hazards may result from
 - defective equipment,
 - failure to follow procedures,
 - equipment or techniques unsuitable for a specific task, or
 - unforeseen circumstances.
- Resolve the problem; **get the right people involved**:
 - co-workers, supervisors, Shot Director, Safety Officers, and/or the Laser Facility Manager.
- **Provide feedback** to the Chief Safety Officer to
 - reduce future risks and
 - improve planning.

These excerpts from OSHA regulations are the basis for LLE's policy



1910.333(a)

- Safety-related work practices shall be employed to prevent ... injuries ... when work is performed near or on equipment ... which are or may be energized. **The specific safety-related work practices shall be consistent with the nature and extent of the associated ... hazards.**
- ... parts to which an employee may be exposed shall be de-energized before the employee works on or near them, **unless the employer can demonstrate that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations...**
- If the exposed ... parts are not de-energized ..., **other safety-related work practices shall be used to protect ...**

⚠ DANGER

De-energizing equipment is not sufficient to ensure personnel safety

UR
LLE 

Make sure it can't be re-energized!
Lockout / Tag out!

- Be certain that **ALL** energy sources are disabled before starting work
- Locking-out and/or Tagging-out (LOTO) **ALL** energy sources is critical to keeping personnel safe until conclusion of a task
- LOTO is required whenever there is a **possibility** that someone or something could restore energy to the system, for example by:
 - Operation of a switch, valve, circuit breaker, etc.
 - Remote control (software, automated controls, ...)
- LOTO is not required if the worker has **exclusive** control of **ALL** energy sources, e.g.:
 - Line cord to chassis
 - Local compressed gas source (bottle)

LLE's policy is more restrictive than OSHA and UR



- LLE's Energized Work Policy is to be applied to ALL forms of energized work, not just energized electrical work, including
 - Energized electrical equipment
 - Pressurized systems (gas, steam, hydraulic, ...)
 - Rotating & reciprocating machinery (motors, fans, pumps, ...)
- LLE does not use UR's "Limited Long Term Energized Work Permits"
- Written, approved procedures are required when a recurring need exists to work on energized equipment. Requirements:
 - There is a demonstrated need that can only be satisfied with equipment energized (e.g. testing, trouble-shooting)
 - Safety risks and mitigation steps are defined in the procedure
 - Personnel are trained and follow the procedure

When energized work is required at LLE ...



- **An Energized Work Permit must be properly completed in advance of performing the job**
- **Work must be conducted using the LLE Buddy System, where the Buddy is:**
 - **physically present during activity**
 - **knowledgeable of trades being practiced (electrician, mechanic, etc)**
 - **aware of safety risks associated with task**
 - **ensuring that risk mitigation steps are being followed**
 - **able to respond appropriately in the event of an emergency (i.e. safely disable energy source)**
- **At least one qualified first-aid responder must be on site, available, and aware that energized work is being conducted.**

Responsibilities

- **Safety Officers will help to assess specific situations**
- **Supervisors must first consider alternatives to performing energized work (i.e. schedule work when down-time is acceptable)**
- **If there is no viable alternative to performing energized work,**
 - **Supervisor(s) and Safety Officer(s) perform safety risk assessment.**
 - **Supervisor and Chief Safety Officer must authorize Energized Work Permit before work may begin**
 - **Potentially recurrent situations should have procedures that become part of operations protocol**
- **Procedures are to be reviewed and approved in PDM (Project Data Management) system. Include relevant Safety Officers in procedure approval**

An Energized Work Permit...



- Applies to a specific task or event
- Requires explicit authorization from Supervisor and Safety Officer(s) prior to execution
- Names specific individual(s) and time(s) to execute the task
- Is **NOT** to be re-used (convert to procedure if re-use becomes necessary)

Whereas Operating Procedures are:

- Formal
- Written so that any member of a group may execute a task after receiving instruction
- Approved in PDM system
- Used each time the task is performed, and
 - Do not require explicit approval from Safety Officers each time task is performed

Process for initiating an Energized Work Permit at LLE



- If situation involves a faulty piece of equipment,
 - Notify work area supervisor
 - Contact Chief Safety Officer and Safety Officer(s) from relevant discipline(s)
 - Develop plan to make the work area and equipment safe before proceeding
- Obtain a blank Energized Work Permit form from the LLE Safety Zone
 - http://safety.lle.rochester.edu/520_training/presentations.php
- The Chief Safety Officer will assist with preparation and review of all Energized work permits
- If building maintenance personnel are required (e.g. electrician, mechanic, plumber), contact the Building Facility Manager

Results at LLE to-date



- **Since implementing this policy at LLE in 2008, few (<10) energized work permits have been required.**
- **When challenged, most area supervisors found that work could be postponed and executed while equipment was de-energized, with little impact on productivity.**
- **Permits have generally been handled in a few hours**
- **Some tasks take less time to execute when systems are de-energized.**

Sources of related information



UNIVERSITY of
ROCHESTER

- OSHA Regulations 29 CFR Section 1910.333

- http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9910

- University of Rochester Policy No. IH001
“Electrical Safety Program”

- <http://www.safety.rochester.edu/policies.html>

Plan ahead!

Schedule work to take advantage of down time.

LLE's Energized Work Policy requires systems to be de-energized before servicing, with limited exceptions



- Energized Work Permits, or written and approved procedures, are required when this can't be achieved
- “Nuisance” and “Inconvenience” are not sufficient justification to work on energized equipment
- Must demonstrate critical need
- Requires developing a safe work plan before execution
 - Hazard analysis
 - Mitigation strategy
 - Review & Approval
 - Training

⚠ DANGER

De-energizing equipment is not sufficient to ensure personnel and equipment safety.

Make sure it can't be re-energized!

Lockout / Tag out!