

	<b>Electrical Safe Work Practices</b>	<b>EHS</b>
	R&D, Manufacturing and Distribution Locations	Global Standard

**\*\*Note: Check [Our Standards Dashboard](#) before using this standard to ensure latest version \*\***

## WHAT

### 1. Objective of the Standard

Signify works toward an injury and illness free work environment through proactive injury/illness prevention and continuous employee engagement. All individuals in the company share responsibility of contribution to this goal.

The objective of the standard is to protect people working on or near exposed, energized electrical equipment.

### 2. Scope, reach & implementation level

All Signify manufacturing sites, distribution centers, and systems & services organizations are in the scope to comply with this standard, including majority owned subsidiaries. It applies to both company personnel and contractors. It establishes minimum requirements that shall be met by all organizations. In addition to complying with this standard, organizations shall ensure that they follow all applicable national, state, provincial, and local regulations.

Compliance to regulatory requirements is managed by Signify Site Managers.

The standard or its parts may be translated into local languages for ease of end-user.

Implementation compliance is driven and measured by requirements defined in QS-013535 "Process maturity Safety First" and the proof points defined in section 8 of this standard.

Excluded:

- Requirements related to local compliance.

Links with other standards:

QS-018414 Hazardous Energy Control - Lockout Tagout

### 3. Definitions


**Authorized Person** - An individual qualified to work on electrical systems, including energized and de-energized equipment, by virtue of documented training and demonstrated competency.

**De-energized** - State in which all electrical energy has been removed from equipment.

**Live Electrical Work (LEW)** - Work in which any exposed part of an energized circuit may be touched with the hands, tools or equipment and/or approached in close proximity such that accidental body, tool or equipment contact is possible. Low voltage electrical systems (less than 24VAC or 50VDC) where minimal hazards exist are excluded from this definition.

**Live Electrical Work Permit**- A written document, completed and signed by an authorized person, prior to initiating live electrical work, that verifies appropriate safety precautions have been completed.

**Zero Energy State** - A state where equipment or machinery systems have had (1) all potential energy sources isolated (i.e., turned off); (2) all potential energy sources secured from reactivation (e.g. locked out); (3) all residual energy relieved from the system; and (4) all system controls activated, with safety verified.

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## 4. General Requirements

### 4.1. Work on electrical systems and equipment – de-energized

All work on electrical systems and equipment shall be done with the equipment completely de-energized whenever possible to do so. Time saving is not justification for performing work on energized systems.

### 4.2. Work on electrical systems and equipment - energized

Under selected situations, authorized personnel may work on live electrical systems only after it has been determined that:

- de-energizing introduces additional or increased hazards, (Examples of increased or additional hazards include, deactivation of emergency alarm systems, shutdown of hazardous location ventilation equipment, or removal of illumination for an area); or,
- de-energizing is infeasible due to equipment design or operational limitations (Examples of infeasibility due to equipment design or operational limitations include testing of electric circuits that can only be performed with the circuit energized and work on circuits that form an integral part of a continuous industrial process that would otherwise need to be completely shut down in order to permit work on one circuit or piece of equipment.).
- Locations shall develop written procedures, reviewed and approved by site management, describing site-specific safety procedures for live electrical work, including the use of a live electrical permit.
- Only authorized personnel shall be allowed to perform live electrical work.
- Conductive articles and clothing shall be prohibited in or near the vicinity of all electrical work.
- Live electrical work procedures shall include specific personal protective equipment requirements (e.g. use of insulated gloves, aprons, eye and face protection, etc) for representative tasks.
- Appropriate non-conductive, insulated tools and equipment shall be used by authorized persons working on energized equipment.

### 4.3. Live electrical work permits

[Annex 1 Live Electrical Work Permit](#) shall be completed prior to initiating a live electrical work task. Permits shall be signed by the authorized person and supervisor.

Completed live electrical work permits shall be posted at the corresponding job site until the work is completed. Once work is completed, permits shall be kept for 1 year.


Provisions shall be made to ensure the continuity of electrical hazard protection during shift or personnel changes.

### 4.4. Training

Authorized persons shall be trained and demonstrate competency in live electrical work procedures and practices. Training shall be conducted annually and documented.

### 4.5. Annual Audit

An annual, documented audit of site live electrical work safety procedures shall be conducted. The audit shall include direct observation of electrical work methods and verification that procedures are appropriate, understood and implemented.

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#### 4.6. Arc Flash Assessment

All facilities where employees perform work or the site oversees the hiring of contractors that perform work on our electrical distribution system and/or industrial equipment (i.e., electrical panels of presses, CNC machines, electrical testers, etc.) must require an Arc Flash assessment to be completed for the site. This must be updated whenever there is a change in the facility that could impact the loading of circuits in the facility or every 5 years or if regulatory requirements require an update because of significant standard changes. This arc flash assessment must include:

- The applicable approach distances;
- The appropriate electrical protective equipment and safe work practices to be followed when working on the equipment and systems at the facility; and
- Whether some modification to equipment or systems is necessary or appropriate to reduce or more effectively control the risks posed to individuals working on them.

#### 4.7. Work Tools and Test Equipment

##### General Service Hand Tools

All tools will be properly maintained and routinely inspected for defects. Equipment found to be defective must be taken out of service and tagged "Do Not Use" until it has been repaired, or permanently discarded (to prevent any further use by anyone). Tools must be designed and constructed for the manner in which they are used and the environment to which they are exposed.

##### Insulated Tools

When working within the restricted approach boundary to energized or potentially energized conductors and/or exposed electrical components, Qualified Electrical Workers will use insulated tools and equipment.


Insulated tools must display the international double triangle or double square symbol (see diagram below) and must meet ASTM F1505 "Standard Specification for Insulated and Insulating Hand Tools" or equivalent.

Insulated tools must be visually inspected prior to each use.

##### Portable Power Tools

Portable power tools will be properly stored when not in use. The cord must never be used to suspend power tools.

Electrical power tools will be visually inspected for external defects before each day's use, such as deformed or missing prongs or insulation damage, and for indication of possible internal damage. Any tool found to be damaged or defective must be taken out of service and tagged "Out of Service," until it has been repaired or permanently discarded/destroyed.

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Electric portable power tools (except for battery powered or double insulated types) must be protected by a GFCI/RCD that is contained within the same power source, cable or cord as the circuit conductors.

#### Portable Ladders

Portable ladders used in electrical service will have non-conductive side rails (i.e., fiberglass) and non-slip feet.

## 5. Roles & responsibilities (RACI)

Legend (Who):	Roles & Responsibilities (What):
<b>User</b>	Execute and adhere to the principles written in standards & recommend improvements. eLearning (if available): Local Owner decides individual or group viewing of users.
<b>Local Owner</b>	Responsible for implementation, updates & adherence of the standard in the site/factory; expert knowledge & organizes training; co-editor of standard. eLearning (if available): Individual viewing.
<b>Global/Regional Owner</b>	CoE (Community of Expert) Often Author / Editor of Mfg. Standard, Expert knowledge & train the trainer, eLearning (if available): Individual viewing

Who (Function)	What (Responsibility)
Site EHS Officer	Ensures local translation of the standard; organizes training, ensures annual audit of LEW is completed.
Site employees	Ensure they follow the guidance outlined in the standard for LEW.
Global & Regional Corporate EHS Managers	Global/Regional Owner

## HOW

### 6. Requirements for Practical deployment

- Standard published in Signify Quality System
- Link established on Signify EHS Sharepoint
- Included in Manufacturing Standards: Safety domain
- Deployed via Regional Webinars
- Cascaded training via train the trainer concept

### 7. Tools for sustaining

- Sustained through [QS-013527 MDM Lean Maturity and Performance Model \(LMPM\)](#)
  - Reference to the new standards will be updated in LMPM 2x per year (End of Q2 & Q4).
- Best Practice Resources: PowerPoint Proof Point Evidence and other resources
  - See Our Standards Dashboard – Specific Community Dashboard – Best Practice
- Internal corporate maturity assessments and site self-assessments.

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## 8. Practical evidence, identification, and measurement of the standard

The LEAN Proofpoint Reviewer will review the Proofpoint Evidence List of key measurements, evidence, and behaviors with factory to help ensure the standard is embedded in the site culture.

#	Proof Points
1	Does the site ensure that all work done on electrical systems and equipment is done completely de-energized whenever possible?
2	If work must be performed on an energized system, is an energized work permit used and signed off by appropriate supervision?
3	Is training provided to those who will work on electrical systems, and those individuals can demonstrate proficiency?
4	Is an annual audit of live electrical safe work practices conducted and documented?
5	Is an arc flash study completed and available for the site at least every 5 years?

## 9. Templates, documentation & annexes

[Annex 1 Live Electrical Work Permit](#)

## 10. Managing the Standard

**Ownership:** The Signify Standard is:

- Created/modified by the Author/editor in the Quality System
- Approved by the Owner/reviewer in the Quality System

**Governance**

- Follow guidelines in [Microsoft Teams – Manufacturing Standards - Governance](#)

**Change Management**

- Revisions are made as required for safety & quality updates but at least 1x per year.
- All releases follow the [ONE Release Guidelines for New & Revised Mfg. Standards](#)
- All Signify EHS Standards are stored in the Quality System & quickly accessed by using [Corporate EHS share-point](#) or for Manufacturing Standards by [Our Standards Dashboards](#)
- Appendix or Supporting documentation: Stored in [Corporate EHS share-point](#), [Microsoft Teams– Manufacturing Standards–Community Directories](#) or the Quality System.

**Revision control**

Version	Date	Revised by:	Description of changes
1.0	12/13/2023	<a href="mailto:John.may@signify.com">John.may@signify.com</a>	First edition