

School of Engineering – Standard Operational Procedures



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Revision: 1.1	Subject: SOP - Electrical Equipment Certification	

1. Introduction

The Standard Operating Procedure (SOP) for Electrical Equipment Certification was developed by the School of Engineering in accordance with the University's Policy Statement on Occupational Health and Safety. Its purpose is to ensure all equipment & appliances are in full compliance with the BC Occupational Health & Safety Regulation (OHSR) under WorkSafeBC, as well as other applicable electrical codes and standards.

This SOP is to outline the criteria for the purchase, installation, and inspection of electrical equipment and appliances used by all University personnel.

2. Applicable Legislation

- Occupational Health and Safety Act,
- Canadian Electrical Safety Code (adopted as BC Electrical Code),
- B.C. Reg. 105/2004, M63/2004, Safety Standards Act, Electrical Safety Regulation, Division 2 – Regulated Product Standards & Certification, (including amendments up to BC Reg. 50/2017, May 29, 2017)
- Technical Safety BC (previously called BC Safety Authority)
- CSA International (Canadian Standards Association),

3. Scope

This SOP applies to any electrical equipment located at all indoor or outdoor facilities within the UBC Okanagan campus, including any off-site activities performed by University personnel. The SOP requires that all electrical equipment and appliances currently used by the University, or purchased by, loaned to, demonstrated to, fabricated or modified by, or otherwise obtained by the University shall be suitable for its use and certified by a recognized certification agency.

4. Responsibilities

4.1 Risk Management Services

Responsibilities of the UBCO Risk Management Services will include the following:

- Ensure that each UBC department is aware of this SOP;
- Review this SOP periodically and amend it as necessary;
- Serve as a resource to departments which require assistance obtaining approvals.

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4.2 Directors, Department Heads, Managers, Supervisors & Principal Investigators

Each has the following responsibilities under this SOP:

- Ensure that pertinent supervisors and employees are notified of their responsibilities outlined in this SOP;
- Ensure that all equipment in the department/unit meets the certification requirements;
- Ensure immediate modifications, maintenance, repair or replacement of any malfunctioning electrical equipment is undertaken;
- Ensure that all personnel who purchase equipment are aware of the requirements outlined in this SOP;
- Ensure that regular internal electrical equipment certification inspections are conducted in the department;
- Ensure that any uncertified electrical equipment found during electrical equipment certification inspections is inspected and certified by a recognized certification agency;
- Ensure that any electrical equipment not able to meet minimum certification requirements be properly disposed of.

4.3 Departmental Safety Officer

Departmental Safety Officers shall:

- Assist their department in raising awareness about the requirements of this SOP and the responsibilities that supervisors as Principal Investigators have under this SOP.
- Assist in the establishment of department-specific policies as necessary.

5. Definitions

CSA: Canadian Standards Association.

Technical Safety BC: Managing Agency of electrical safety in BC.

FE: Field Evaluation.

GFCI: Ground Fault Circuit Interrupters

PI: Principle Investigator

Qualified Electrician: a person who, because of knowledge, training and experience, is licensed and qualified to perform safely and properly a specified electrically related task.



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6. Purchase and Installation Requirements

All electrical products sold, displayed, or connected to a source of power must be approved by a recognized certification agency in British Columbia.

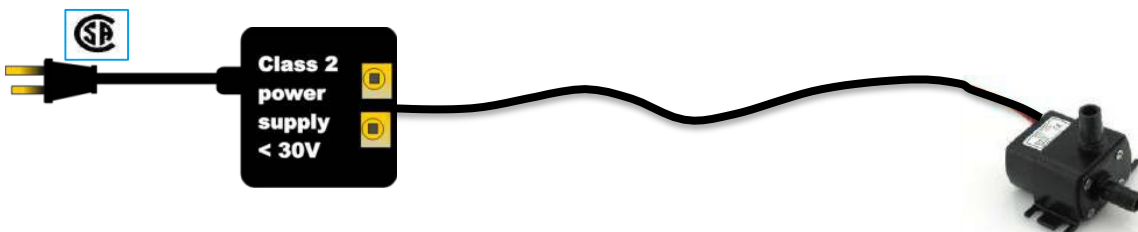
When purchasing new equipment, ensure the equipment supplier is aware of the requirement for approvals acceptable to Technical Safety BC and UBC purchasing and legal policies pertaining to compliance of required certifications.

Electrical products which have been imported from abroad are likely to require approval. Do not use any equipment until it receives the approval of one of the testing services acceptable to Technical Safety BC.

Devices powered by an approved Class 2 transformer in many cases need only be acceptable. A Class 2 transformer has a maximum voltage output of 30 V and delivers 100 VA or less.

Subrule (1)
Transformer
must be
approved

Subrule (2)
Wiring and most
devices need
only be acceptable



7. Internal Electrical Equipment Certification Inspection

Electrical equipment certification inspections shall be conducted annually to ensure that all equipment in the department is in compliance with current B.C. legislation, and has been certified by a recognized certification agency. Equipment which has been approved will have one of the following labels from an accredited certification organization.

The labels shown below are found on approved equipment, usually near the power cord. The labels indicate that the equipment has been inspected, conforms to electrical safety standards and presents no undue hazard to persons or property.

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Recognized Certification Markings:



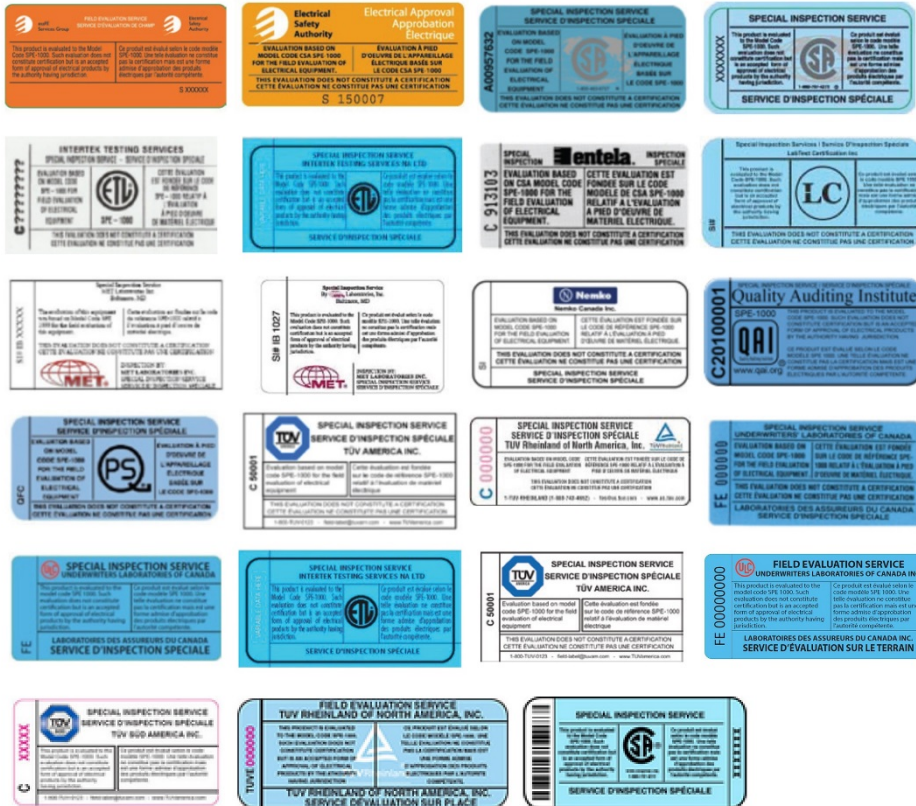
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Recognized Field Evaluation Agency Markings:



Recognized Panel-Only* Field Evaluation Markings for SPE-1000



*Note: “PANEL ONLY” label identifies that the panel has been evaluated to the SPE-1000. It does not cover equipment that is added to the panel.

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Recognized Panel-Only* Field Evaluation Markings for SPE-3000



Component Certification Markings that are not Recognized on Complete End-use Products



Note*: Electrical components bearing these marks may have restrictions on their performance or may be incomplete in construction, and are intended to be used as part of a larger approved product or system. The Component Recognition marking is found on a wide range of products, including some switches, power supplies, printed wiring boards, some kinds of industrial control equipment and thousands of other products.

Electrical products that do not bear the label of a recognized certification organization may be unsafe, and could pose serious electrical shock and/or fire hazards. If any electrical equipment is found during the Internal Electrical Safety Inspection which does not have one of the above marking of an accredited certification agency, it is not in compliance with current B.C. legislation, and must be removed from service until approved by an accredited agency.

8. Direction for Obtaining Approval

Electrical equipment can only be inspected by approved agencies that have been accredited by the Standards Council of Canada to approve electrical equipment. To submit an application for inspection, please contact one of the following accredited agencies:

Canadian Standards Association (CSA)
1-866-797-4272
<http://www.csagroup.org>

Technical Safety BC
1-866-566-7233
<https://www.technicalsafetybc.ca/>

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Intertek Testing Services
<http://www.intertek.com>
1-978-929-2100

Met Laboratories Inc. (MET)
<http://www.metlabs.com>
1-410-949-1833

Nemko
<http://nemko.com/>

QPS
<http://www.qps.ca/>
1-877-746-4777

TUV America
<http://www.tuvam.com/>
1-800-888-0123

TUV Rheinland
<http://www.tuv.com>
1-888-743-4652

Underwriters Laboratories of Canada (ULC)
<http://canada.ul.com/>
-866-937-3852

A complete list of recognized certification agencies can be found on the [Electrical Safety Authority](#) or [Standards Council of Canada](#) website.

The process of obtaining approval for electrical equipment is as follows:

1. Once an application for inspection has been received, an inspector will arrange a time and date for inspection. At the time of the inspection, if the equipment meets the requirements of the standard, the inspector will immediately label the equipment and provide a certification certificate.

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2. Alternatively, if the equipment does not meet the requirements of the standard, the inspector will issue a “Notice of Alteration” outlining repairs which are required to meet the standard. After the equipment has been repaired, the inspector will re-inspect, and if the equipment meets the requirements of the standard, the inspector will label the equipment and provide a certification certificate.

9. Student Projects

Projects which are designed by students at UBCO for the explicit purpose of obtaining a mark, and dismantled immediately afterward, shall be exempt from obtaining approval from the Electrical Safety Authority. However, the following criteria must be met and properly documented:

1. A schematic of the wiring of the equipment must be provided;
2. The device and the schematic are examined by a Supervisor to ensure wiring safety;
3. Prior to plugging in the device, access to the area must be controlled by some means;
4. Ground Fault Circuit Interrupters (GFCI) are installed on electrical source which will be used to energize the device;
5. Accessibility to personnel that has a current First Aid/CPR certification.

Any equipment which requires hard-wiring must be installed by a certified electrician.

10. Research Equipment & Prototypes

For all newly purchased equipment that do not have recognized certification or field evaluation agency markings, users must follow the procedures laid out in section 8 of this document; i.e. Direction for Obtaining Approval. For research equipment which is fabricated for, or modified for research purposes must be inspected and certified by a recognized certification agency before it is connected to a power source.

According to the Safety Standards Act, B.C. Reg. 105/2004 M63/2004 Part 4 (22), Notification & Testing of Prototypes:

1. A person who develops or possesses a prototype must not use the product except for the product demonstration or product testing;
2. A person must not use a prototype in a manner that may cause harm to any person or damage to property;
3. On application by a person who develops or possesses a prototype, a provincial safety manager may provide an approval under section 10 (2) of the Act;
4. A person must not use a regulated product approved under subsection (3) unless the person obtains any required permit for the use of the regulated product.

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Prior to initial use, the following criteria must be met and documented:

1. A schematic of the wiring of the equipment must be provided,
2. The device and the schematic are examined by a Supervisor to ensure wiring safety,
3. Prior to plugging in the device, access to the area must be controlled by some means;
4. Ground Fault Circuit Interrupters (GFCI) are installed on electrical source which will be used to energize the device;
5. Accessibility to personnel that has a current First Aid/CPR certification.

Any equipment which requires hard-wiring must be installed by a certified electrician.

Approved by:

Mina Hoorfar

Director, School of Engineering

April 3, 2018

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March 2018 – v1.0 Document created

April 2018 – V1.1 class 2 transformer clause added