

Information For Manufacturers of Electrical Equipment: Benefits of “Field Evaluation”

Background

In Canada, what do manufacturers or importers of electrical products have to do to make sure they have electrically safe products?

The Canadian Electrical Code (CEC) requires equipment to be “approved”. Generally that means a “certification” company such as CSA or UL makes sure the product meets an acceptable level of safety specified in the Canadian standards. But these standards and the certification process are geared up for larger production runs. So the industry has a “gap” to fill for small quantities of electrical products. This “gap” can be filled by Field Evaluation (FE).

For a manufacturer to get a product certified generally means they need a production run in excess of 500 units per year. If you produce a smaller production run (about 1 to 500), the “Authorities Having Jurisdiction” (Electrical Inspection Agencies) in Canada allow equipment to be “Field Evaluated” to a Canadian standard called “CSA SPE-1000”.

Field Evaluation (FE) More Fully Explained

Field Evaluation is only concerned about the electrical safety of a product. It is not a substitution for “certification” because sometimes certification will address other safety issues such as electromagnetic radiation, burns from lasers, location of emergency stop switches etc.

The FE process follows a Canadian standard called CSA SPE-1000, which has three mandatory non-destructive tests. Basically the electrical safety requirements of the standard and the CEC are followed to ensure the product is electrically safe. A serialized FE label must be put on the equipment personally by one of the Inspectors accredited by the Standards Council of Canada. Some people believe this process to be even safer than certification since every product must be inspected and labeled. The Inspectors follow a specified procedure that has been developed by experts in the electrical industry and the process is audited by the Standards Council of Canada.

For the USA, the technical requirements are very similar but not quite as well defined for the small quantities.

FE would be found useful for the following situations:

- ① The equipment is already manufactured, shipped or installed.
- ① The equipment is manufactured in small quantities.
- ① Cost of certification for the small volume does not make good business sense.
- ① There is not enough time for the manufacturer to organize and to arrange a certification process.
- ① The manufacturer is testing the market with a small quantity.
- ① The manufacturer wants to make sure the design is reasonable before proceeding with the somewhat slower and more expensive process of certification.

How Certification and Field Evaluation got Started

The following is a brief history of how “Certification” and “Field Evaluation” started in Canada.

First, ESA evolved from Ontario Hydro, which was once the Hydro Electric Power Commission (HEPC).

It is not surprising that few people realize that ESA has affected the safety of electrical equipment for the people of Ontario and Canada. This evolution of equipment approval over the past century has created an environment with so many subtle controls in place that a relatively safe environment exists for the people of Ontario and Canada.

In the 1890’s, steam-driven generators made it possible for the majority of Ontario villages with over 3,000 residents to have access to electric streetlights. It was only a year or two later that the Toronto Incandescent Electric Light Company was established and then electrical safety of equipment became an issue in Canada.

The initiative came from the Canadian Fire Underwriters Association (CFUA). The CFUA was concerned about the massive financial liabilities its members could face from structural fires caused by electrical equipment. Therefore in 1892, the CFUA appointed an inspector to ensure that all electric equipment was installed in accordance with CFUA requirements.

The new power source had caught the fancy of consumers and nowhere was this more evident than in the City of Toronto, where scores of contractors and builders came forward to meet the demand with inferior, often bogus, and clearly dangerous equipment.

To offset growing concerns, significant amendments were made to the Power Commission Act in 1912 and 1914 to ensure that electrical equipment was safe.

In 1918, the HEPC Approval Laboratory was established to test electrical equipment to determine its adherence to specific and stringent guidelines. The “Approval Laboratory” Department was operated by HEPC and resulted in the establishment of Rules and Regulations for testing and approving electrical materials, devices, and fittings. The initial labels that were applied were actually solid bronze metal.

Products that met the guidelines were declared “HEPC Approved” and later “Hydro Approved”. This process was generally accepted by the electrical industry across Canada.

The purpose of this function was to provide standards and testing of electrical equipment to avoid risk of injury or fire to persons or property. This approval process was

considered so significant that by 1924 the HEPC was empowered to prohibit the sale of electrical equipment considered to be unsafe for public use.

As a result, the Approvals Section of the HEPC Electrical Inspection Department was established.

Soon HEPC was testing products for all of Canada. When other provinces requested the use of the “HEPC Approved” designation and when other provinces started to include this approval in their legislation, it quickly became evident that there was a need for a national testing body.

So in 1940, the “Canadian Standards Association Testing Laboratory” was created by the HEPC and the CSA certification process began as a self-contained, self-supporting unit. HEPC continued to approve small quantities of equipment and specialized equipment that could not be done under certification.

Summary

Today, in North America, most electrical equipment is submitted to accredited certification organizations (e.g. CSA, UL and others) for approval, but for smaller quantities and specialized equipment, the Field Evaluation process still applies. ESA continues to provide that service as part of its safety heritage.

Just a reminder that the best time to get the Field Evaluation process started is at the conceptual design stage. A FE Inspector can meet with your designers and give tips and suggestions to make the design and the FE process work best.

I hope this gives you a better understanding of the benefits of the Certification process and the Field Evaluation process for Canada.

If you have any questions please call 1-800-559-5356.

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