CAN/CSA-C227.4-06 – Three-phase, pad-mounted distribution transformers with separable insulated high-voltage connectors

This document provides an overview of the requirements of *Welding Requirements CSA-C227.4 – Three-phase, pad-mounted distribution transformers with separable insulated high-voltage connectors* with respect to welding. It is designed to specify the requirements for three-phase, pad-mounted distribution transformers, consisting of a transformer and a cable entrance compartment with provision for separable insulated high-voltage connectors, intended primarily for operation by electric utilities on three-phase underground distribution systems having primary voltages.

This document is only for general guidance purposes; reference to the full text of CSA C227.4 should be made. For further information, please contact the CWB at 1-800-844-6790 or info@cwbgroup.org.

Introduction

Welding is a key joining method used in the fabrication of distribution transformers. To ensure welds of the highest quality and the safety of both the users of distribution transformers and the general public, CSA Standard C227.4 provides specific requirements around the design and fabrication of distribution transformers, with awareness that the distribution transformers are used by people.

Welded Fabrication

CSA C227.4 provides the following requirements:

8.3 Welding
All welding shall conform to CSA W59. The fabricator shall be fully qualified and approved by the Canadian Welding Bureau in accordance with CSA W47.1.

CSA Standard W47.1 provides requirements for the qualification of welders and welding operators, welding procedures and welding supervisory and engineering personnel.

CSA Standard W59 requires that contractors performing work under this standard be certified under the requirements of CSA Standard W47.1 unless the Engineer of record approves the contractor for the work to be undertaken. CSA Standard W59 provides guidance on weld design, fabrication techniques, inspection and other key considerations around welding for steel.

An organization meeting the requirements of CSA Standard W47.1 will have qualified welders, accepted welding procedures and accepted supervisory / engineering personnel. All elements of the welding operation will be independently verified by the Canadian Welding Bureau on an on-going basis.

Please note that there are no domestic or international equivalents to CSA Standard W47.1. Other national systems, such as that of the American Welding Society (AWS) do not include key concepts such as independent and on-going verification and welding supervisors/engineers. The CWB strongly cautions the reader around accepting substitutions; doing so may place public safety at risk.

For a listing of all organizations that currently meet the requirements of CSA Standard W47.1 please see *www.cwbgroup.org*.

Welding Inspection

CSA Standard W59 requires that all welds be visually inspected. In addition, when required by contract weld inspection must be completed by certified welding inspectors or a welding inspection organization following the requirements of CSA Standard W178.2 or CSA Standard W178.1 respectively. It also requires that CSA Standard W186 and CSA Standard W59 be followed for the acceptance criteria for all welds. It should be noted that CSA Standard W178.2 has individual "product categories" that inspectors may qualify to, including one for CSA Standard W59.

For a listing of all organizations and individuals who currently meet the requirements of CSA Standard W178.1 and CSA Standard W178.2, please see *www.cwbgroup.org* .