CANADIAN ELECTRICAL CODE 2012 ADDRESSES RENEWABLE ENERGY APPLICATIONS

By Tim Pope and Adi Rabadi, P.Eng.

WITH THE increased interest in energy generated from such renewable sources as wind and solar, it is important to have established safe practices for installation and maintenance personnel and to help ensure optimum performance of installed equipment. The expanding markets for renewable energy systems have also led to a need for electrical safety requirements to ensure public safety and provide a level regulatory playing field for installers and manufacturers. The new 2012 Canadian Electrical Code (CEC), Part I, responds to this market need through the addition of section 64 on renewable energy systems and adoption of revisions to section 50 on solar photovoltaic systems. Developed by committees of experts representing a broad spectrum of industry stakeholders from across Canada, Part I is being published on a three-year cycle and has been adopted as regulation in all provinces and territories. The 22nd edition of the CEC was published this year and features over 180 major changes, in addition to the new section 64.

NEW REQUIREMENTS

The Canadian electrical safety system rests on a foundation of the installation requirements in Part I, product safety requirements in the Part II series of standards, and enforcement of Part I through adoption as regulation.

The newly developed section 64 in Part I was formulated through extensive research of existing international documents. It reflects the principles of global standards and industry practice and addresses the unique installation requirements for a variety of renewable energy systems in Canada, including wind, hydrokinetic, micro-hydro and fuel cells systems. Through its major updates to section 50 and the addition of section 64, Part I now covers electrical installation requirements for renewable energy systems, including off-grid and utility-connected systems.

These new requirements, comprising 15 pages in Part I, apply to all types of occupancies, including residential, commercial and industrial establishments. Among the many new requirements in section 64 are requirements for grounding of renewable energy systems, disconnection means, and the installation and connection of storage batteries.

While section 64 covers many new technologies, requirements for solar photovoltaic systems in section 50 have been substantially updated to reflect new cabling and connection products, marking requirements, details about permissible voltage drop, safety devices, installation practices, and voltage/current temperature correction calculations.

To support the new installation rules in Part I, there is now a great deal of activity in the Part II series of standards for electrical product safety. New standards are either under development or have already been published to address a wide variety of new technologies in the PV industry, including purpose-built PV cables, arc fault protection, connectors, combiner boxes and other related electrical products.

OTHER STANDARDS

In addition to the modifications to parts I and II, Canadian Standards Association (CSA) Group, an independent, not-for-profit membership association, has published standards for the wind energy industry that provide requirements for design, power performance, acoustic noise measurement and lightning protection for wind turbines, along with design requirements for offshore wind turbines. CSA Group is also working with many expert technical committees to adopt existing International Electrotechnical Commission (IEC) wind energy standards as national standards of Canada and to develop new standards that meet Canadian requirements for the wind industry. In addition, CSA Group is developing PV rooftop installation best practice guidelines for rooftop projects. For more information, visit www.csagroup.org. Σ

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