



## Marine Energy Standards TC114 Canadian Subcommittee

### IEC TC114 Project

#### Teams

- [Terminology](#)
- [Design Requirements](#)
- [Mooring Systems](#)
- [Power Quality](#)
- [Acoustic](#)
- [Characterization of](#)
- [Marine Energy](#)
- [Converters](#)
- [Wave Energy](#)
- [Converters](#)
- [Performance](#)
- [Wave Energy](#)
- [Resources](#)
- [Wave Energy](#)
- [Converters](#)
- [Performance - 2nd](#)
- [Site](#)
- [Guidelines – Wave](#)
- [Energy Converters](#)
- [Tidal Energy](#)

### Message from the Chair

Welcome to the Summer 2015 edition of the newsletter. I hope everyone is enjoying some well deserved rest and relaxation with family and friends.

The summer is a good time to reflect on the accomplishments of the Canadian committee and TC114. Since its inception in 2008, there have been 6 technical specification published of which 3 of them have been published in 2015! The documents cover the following subject areas:

- IEC TS 62600-1:2011: Terminology
- IEC TS 62600-10:2015: Assessment of mooring system for marine energy converters (MECs)
- IEC TS 62600-100:2012: Electricity producing wave energy converters - Power performance assessment
- IEC TS 62600-101:2015: Wave energy resource assessment and characterization
- IEC TS 62600-200:2013: Electricity producing tidal energy converters - Power performance assessment
- IEC TS 62600-201:2015: Tidal energy resource assessment and characterization

There are now 9 active work programmes which will all produce new standards within the next 2-3 years. The Canadian committee has been an extremely active member of each and every one of these project teams. Canadian experts have chaired 4 of the project teams and have committed 2 and in some instances 3 members to each of the teams. The Canadian experts have also built shadow committees which have provided the necessary support and assistance in document review, but more importantly, have ensured that a large number of Canadian stakeholders are engaged in the process.

The Canadian committee has been very strategic (and fortunate!) in obtaining 4 years of guaranteed funding through NRCan's ecoEII program. This funding has allowed Canada to take an extremely active role in standards development as well as fund critical enabling standards

[Converters](#)

[Performance](#)

- [Tidal Energy](#)

[Resources](#)

- [Ocean Thermal](#)

[Energy Conversion](#)

[\(OTEC\) Systems](#)

- [Power Performance](#)

[Assessment for River](#)

[Energy Converters](#)

- [River Energy](#)

[Resource](#)

[Assessment and](#)

[Characterization](#)

related research. This type of focussed research is a Canadian first. Many countries are impressed with Canada's leadership in this area and are now looking for mechanisms to replicate the approach to fund standards research.

The Canadian committee has also been successful in producing it first document independent of IEC. The committee, in collaboration with CSA, has recently released a Guideline for the Geological and Geophysical site characterization for marine energy converters. This type of document has not been produced by any other jurisdiction so it is anticipated that it will become an essential guideline for work performed at FORCE, the Digby COMFit sites and at sites in the UK and France.

I feel very fortunate to chair such a group of dedicated and enthusiastic volunteers. It definitely makes my job as chair a very enjoyable one.

Please visit our website (<http://tc114.oreq.ca/>) as it is continuously being updated with the latest information and feel free to contact me or Marine Renewables Canada directly for more information on how to get involved with this committee.

Cheers,  
Russell Stothers  
Chair, Canadian Mirror Committee to IEC TC114

---

## Research Project Update 2015-16

Early in 2015 a request for proposal was launched by SMC/IEC TC114 to solicit applications for funding of research activities related to the development of technical specifications and standards for marine energy conversion systems. The funding was made available through a contribution from Natural Resources Canada and administered by Marine Renewables Canada. Highlights of the research projects funded last year can be found in the "Research Projects" section of the SMC/IEC TC114 web site (<http://tc114.oreq.ca/>).

### **Research Project Update: Simulation of Long-term Wave Energy Converter Power Performance**

Clayton Hiles - Cascadia Coast Research Ltd.  
Scott Beatty - University of Victoria, West Coast Wave Initiative

The Canadian Subcommittee to the IEC TC114 are contributing substantially to two technical specifications on performance assessment of wave energy converters (WECs). They are (1) IEC62600-100; on the power

---

### Quick Links

- [IEC TC114 Standards Website](#)
- [International Electrotechnical](#)

[Commission \(IEC\)](#)

- [Marine Renewable Energy Technology Roadmap](#)

performance assessment of a deployed WEC, and (2) IEC62600-102; on the power performance assessment of a WEC at a prospective second deployment site given data collected from a previous deployment at a first site.

It is critical that the technical specifications apply to all power producing WEC designs that see considerable industrial development. This leads to a challenge: because of the diversity of operating principles of WECs currently under development worldwide, testing of the performance characterization methodologies on a selection of various WECs is important. However, there is a lack of publicly available WEC performance data to test the methodologies. Although the PT102 has made progress on this aspect by gaining access to WEC performance data from a particularly open WEC developer (WaveStar), further testing is still required.

With funding from Marine Renewables Canada, Cascadia Coast Research has forged a collaboration with the University of Victoria and the University of Edinburgh to address this problem. The project goal is to generate a data to enable testing of the WEC performance assessment methodologies within IEC62600-100 and IEC62600-102. This will be achieved by using validated, time-domain simulations of 10 year deployments of two different WEC types at four strategic locations around the world.

WEC model types:

- Self reacting point absorber
- Bottom mounted pitching flap

Simulated deployment locations:

- Ucluelet, BC (Canadian Pacific)
- Lord's Cove, NL (Canadian Atlantic)
- North Uist, Scotland (UK Atlantic)
- Aberdeen, Scotland (UK North Sea)

In its first quarter, the research project has focused on securing appropriate wave data and development of the computational WEC model. Wave data has been obtained from: The West Coast Wave Initiative (Canadian Pacific), Environment Canada (Canadian Atlantic), and the European Centre for Medium-Range Weather Forecasts (UK). The data, obtained as directional spectra has been processed into appropriate input format for each model, and derive the spectral parameters of interest. While little work was needed to utilize the self-reacting point absorber model (UVic), the pitching flap model (UoE) requires further development to include the effects of wave directionality.

A face-to-face collaborative work session is planned for late July. UoE researcher will join Cascadia and UVic personnel in Victoria for a week of intensive work. In this session the project team will test and validate the WEC models as well as prepare and begin execution of the 10 year simulated deployments. Simulations will be performed on UVic

---

**Project Partners:**

**Canadian Sub-Committee  
(SMC/IEC TC114)**

- Acadia University
- Akoostix Inc.
- AMEC Black & McDonald
- BC Hydro
- Bhuyan Consulting
- Cascadia Coast Research
- CSA Group
- Dalhousie University
- Dynamic Systems

- Analysis
- Emera
- Glas Ocean
- Engineering
- Consulting
- Grantec Engineering
- Hatch
- JASCO Applied
- Sciences
- Mavi Innovations
- National Research
- Council Canada
- Rockland Scientific
- University of Victoria

supercomputing facilities and are expected to take several weeks to complete. A final work session for analysis and reporting is planned for September 2015.

The outputs from this work will be public data-sets comprising ten year time series of WEC performance metrics and wave parameters for each simulated deployment. These data-sets will enable the TC114 project teams, and the broader research community, to investigate issues relating to deployment time, operating principle, and differing wave climates, and other factors that affect the robustness of WEC performance assessments.

---

## Updates & Initiatives

### Face to Face Meeting - June 2015 in Victoria, BC

The semi-annual face to face meeting was held in Victoria, B.C. on June 11th, 2015. A total of 18 delegates attended the meeting either in person or via conference call. The meeting was hosted by Natural Resources Canada at the Pacific Geoscience Centre which provided the conference room facilities.

[Photo: Institute of Ocean Sciences] The meeting provided the opportunity for the Canadian committee to discuss the progress of each of the project teams as well as review the details on the recently held TC114 plenary meeting in Dublin, Ireland. It also provided the venue for an update on research projects and future plans for the committee. The details of some of the more important topics are provided below.

---

### Members:

#### IEC-TC114

- Chair: Neil Rondorf  
(USA)
- Secretary: Danny  
Peacock (UK)
- Technical  
Officer: Charles



- Increased shadow committee membership is required for PT62600-102, -103 and -40 to ensure that Canadian experts are fully supported as well as feedback is received from all key industry stakeholders.
- During the plenary meeting, it was highlighted that Canadian experts are required for PT62600-202 which is the "Scale testing of tidal energy converters". A discussion of possible sources of volunteers will result in inquiries being sent to University of Victoria, University of Manitoba and

Jacquemart

---

**Sponsors:**



Dalhousie University.

- IEC TC114 has asked Canada to provide a volunteer for a new subcommittee recently formed by the IEC. Subcommittee SC8A will focus on the Grid integration of large capacity renewable energy.
- Gouri Bhuyan is the chair of the new formed Canadian group focusing on conformity assessment of renewable energy systems (Wind, Solar, Marine). He provided a presentation on the conformity assessment system, IECRE, and he emphasized that additional Canadian experts are required.
- The Express Document on Geological and geophysical site characterization for marine renewable energy development and environmental assessment is published. This document is a first for the industry and will provide invaluable guidance for upcoming projects at FORCE and in the UK. The document is available for free download on Shop CSA:  
<http://shop.csa.ca/fr/restofworld/technologie-de-la-generation-repartie/exp03-2015/invt/express032015>
- The Canadian committee has submitted a proposal in response to NRCan's request for "Add-on Projects" A total proposal of approximately \$350,000 was submitted. A decision on this funding is expected late June/early July.
- A new information package is now available for committee members (new and existing) to give them a better understanding of the workings of the Canadian committee as well as their interactions with CSA, SCC (Standards Council of Canada) and IEC. Initially targeted at new members, it was quickly realized that this will also be a valuable resource for existing members.
- The funding provided by NRCan to support the operation of this committee will end as of March 31, 2016. As a result, a discussion was held on possible funding sources as well as an agreed plan on how best to approach potential sponsors.

After lunch, the committee members went on a tour of the Institute of Ocean Science. The Institute of Ocean Sciences (IOS) is one of Canada's largest marine institutes. The first part of the tour focussed on the DFO portion of the facility. At this location, DFO performs research on the coastal waters of BC, the Northeastern Pacific Ocean, the western Canadian Arctic and navigable fresh waters east to the Alberta border. Research at the institute is focused on two DFO science divisions: Canadian Hydrographic Service and Ocean Science.

The second part of the tour moved over to the Pacific Geoscience Centre, which is the main centre in western Canada for monitoring earthquakes. Experts from both of these groups provided excellent details on the interesting work performed at this facility and how it related to marine renewable energy.

Conveniently, the tour continued across the street from IOS, at the Canadian Scientific Submersible Facility (CSSF). The CSSF is a nationally registered not-for-profit corporation established in 1995 to manage and operate the ROPOS system (ROPOS - Remotely Operated Platform for Ocean Sciences). The CSSF allows ocean scientists to conduct research on the ecology of hydrothermal vents, sponge reefs and cold-water corals, and the geochemistry of mineral and gas deposits, and to perform pioneering work on cabled deep-sea observatories.



The discussion on ROPOS tied in very well to the final stop on the tour which was Ocean Networks Canada (ONC), located at the University of Victoria. At ONC, the committee was provided with a presentation and overview of the data management expertise that has grown out of the Venus and Neptue projects. This expertise is planned to be leveraged at FORCE as well as other marine renewable energy sites around the world.



The day was capped off with a "cruise" on one of the pickle boats over to a restaurant for a final group dinner.



A special thanks go out to Ryan Nicoll and Phil Hill for all of the work they did organizing this meeting.

---

**Published: Geological and geophysical site characterization for marine renewable energy development and environmental assessment**

On 1 June 2015, EXP03-2015 - Geological and geophysical site characterization for marine renewable energy development and environmental assessment was published by CSA Group. Working off of a seed document provided by Geological Survey Canada, the 131 page Express Document was published in approximately 8 months and is available for free download on Shop CSA. The publication was funded with generous support from Marine Renewables Canada and aims to assist the industry moving forward when carrying out site characterization. Many thanks to the dedicated volunteer reviewers:

- P. Hill Natural Resources Canada, Sidney, British Columbia
- A. Carlisle OpenHydro Technology Ltd, Dartmouth, Nova Scotia
- G. Decker Nova Scotia Department of Energy, Halifax, Nova Scotia
- G. Fader AMGC, Halifax, Nova Scotia
- S. Molloy Glas Ocean Engineering and Dalhousie University, Halifax, Nova Scotia
- G. Trowse Fundy Tidal Inc., Shad Bay, Nova Scotia
- T. Wright Fundy Ocean Research Center for Energy,

Halifax, Nova Scotia

Victoria Alleyne  
Project Manager, Renewable Energy  
CSA Group

---

## Upcoming Meetings

The SMC to TC114 meets on a monthly basis via teleconference to provide updates on all current activities. The subcommittee also plans for two face-to-face meetings, one typically in the spring and one in the fall to make more progress on significant issues. The meeting in the spring is focused on ensuring all committee members are in agreement with the Canadian position on all issues to be discussed at the annual TC114 plenary meeting. The meeting in the fall is focused on assessing the current and projected needs for the upcoming year.

For 2014-2015, the meeting schedule is as follows:

December 17, 2014 AM PST	Conference Call 10:00
January 21, 2015 AM PST	Conference Call 10:00
February 18, 2015 AM PST	Conference Call 10:00
March 25, 2015 AM PDT	Conference Call 10:00
April 15, 2015 AM PDT	Conference Call 10:00
April 27- May 01, 2015 Dublin, Ireland	TC114 Plenary –
May 20, 2015 AM PDT	Conference Call 10:00
June 11, 2015 (In person)	Meeting in Victoria, BC
August 26, 2015 AM PDT	Conference Call 10:00
September 16, 2015 AM PDT	Conference Call 10:00
October 14, 2015 AM PDT	Conference Call 10:00
November 6, 2015 (In person) QC (2015 MRC Annual Conference)	Meeting in Montreal,
December 16, 2015 AM PST	Conference Call 10:00

*Copyright © 2015 Marine Renewables Canada, All rights reserved.*

You are receiving this email because you opted in through our website, events or membership.

**Our mailing address is:**

Marine Renewables Canada

121 Bird Sanctuary Drive

Nanaimo, British Columbia V9R 6H1

Canada

[Add us to your address book](#)

[unsubscribe from this list](#) [update subscription preferences](#)

