



Marine Energy Standards TC114 Canadian Subcommittee

Message from the Chair

IEC TC114 Project

Teams

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Welcome to the Spring 2015 edition of the newsletter!

The Canadian committee continues to grow in order to support new work proposals in TC114. A new committee has been established on acoustic characterization of marine energy devices. The intended scope of this technical specification will be to provide uniform methodologies to consistently characterize the sound produced by marine energy converters in operation. This specification will not include the characterization of sound associated with installation, maintenance, or decommissioning of these converters, nor does it establish thresholds for determining environmental impacts. We would like to welcome Melanie Austin (JASCO) and Joe Hood (GeoSpectrum Technologies Inc.) as the experts who will be representing Canada on this project team.

The Canadian committee has also been actively recruiting new experts to support the project team developing a technical specification on river resource assessment. Julien Cousineau (NRC) has been chosen as one of the experts and the committee is now finalizing the selection of the second expert. We are fortunate to have had several good candidates to choose from who have extensive background on river systems and we believe will be excellent choices to represent Canada internationally on this project team.

The semi-annual face to face meetings for 2015 have been finalized. The spring meeting will be held around June 12th, 2015 in Victoria BC. Phil Hill, at the Geological Survey of Canada, has offered to host the meeting. The fall meeting will be held in Montreal, QC, immediately following the annual Marine Renewables Canada conference (November 4-5, 2015). Plans are being made for a meeting the morning of November 6th, 2015. A full list of all of the committee meetings can be found on our website.

The Canadian committee is now busy preparing for the annual TC114 Plenary meeting which will be held in Dublin, Ireland from April 27-May 01, 2015. In addition, to the overall plenary meetings at the end of the week, there will also be project team meetings discussing river

[Assessment for River](#)

[Energy Converters](#)

performance assessment, design requirements and power quality.

At the 2014 plenary meeting in Vancouver, TC 114 established an ad hoc group to review its Strategic Business Plan (SBP); the group has now completed this task and the proposed SBP has been distributed to all National committees for review. During this process, it was also proposed that the scope of TC 114 be changed to more accurately reflect the current activities. The scope of TC 114 was first established at the plenary in 2008 and had not been modified since. In addition, the emerging certification system (more details later in this newsletter) requires work that must be considered. Finally, there is a need to stay focused on measurement methodologies as opposed to environment mitigation or evaluation which is outside of the experience and knowledge of the industry and must be addressed on national level.

Quick Links

- [IEC TC114 Standards Website](#)
- [International Electrotechnical Commission \(IEC\)](#)
- [Marine Renewable Energy Technology Roadmap](#)

The resulting proposed new scope of IEC TC114 is as follows:

"To prepare international standards for marine energy conversion systems. The primary focus will be on conversion of wave, tidal and other water current energy into electrical energy, although other conversion methods, systems and products are included. Tidal barrage and dam installations, as covered by TC 4, are excluded. The standards produced by TC 114 will address:

- system definitions
- management plan for technology and project development
- performance measurements of wave, tidal and water current energy converters
- resource assessment requirements
- design, including reliability and survivability, among others
- deployment, operation, maintenance and retrieval
- commissioning and decommissioning
- electrical interface
- laboratory, manufacturing and factory testing
- measurement methodologies of physical device parameters"

Project Partners:

Canadian Sub-Committee (SMC/IEC TC114)

- Acadia University
- Akoostix Inc.
- AMEC Black & McDonald
- BC Hydro
- Bhuyan Consulting

The full SBP, including the revised scope, will be a topic of considerable discussion at the upcoming plenary meeting.

Our website (<http://tc114.oreg.ca/>) is continuously being updated with the latest information. Please 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 2014-15

Early in 2014 a request for proposal was launched by SMC/IEC TC114 to solicit applications for funding of

- CanmetENERGY-NRCan
- Cascadia Coast Research
- Clean Current Power Systems
- CSA Group
- Dalhousie University
- Dynamic Systems Analysis
- Emera
- Glas Ocean Engineering Consulting
- Grantec Engineering
- JASCO Applied Sciences
- Mavi Innovations
- National Research Council Canada
- Rockland Scientific
- University of Victoria

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.oreg.ca/>).

Research Project Update: Evaluation of Performance Assessment Procedures for a Floating Hydrokinetic Turbine

Mavi Innovations was awarded a SMC/IEC TC 114 research project to pursue two primary objectives:

- Evaluate the design and procedural challenges when following IEC recommendations for deploying a current profiler upstream of a floating turbine;
- Investigate the effect of recommended current profiler location on performance evaluation of a turbine with non-circular frontal area.

When measuring turbine performance, the IEC recommends that current velocity be measured between 2 and 5 equivalent diameters (based on turbine frontal area) upstream of the turbine. For the Mavi Mi1 turbine, this equates to an ADCP location between 7m and 15m upstream of the turbine.

Mavi investigated a variety of concepts to deploy the ADCP over the targeted range. The preferred solution was to deploy the ADCP from a separate floating platform moored upstream of the turbine. This solution was put into practice in December 2014 at the Canadian Hydrokinetic Turbine Test Centre (CHTTC) in Manitoba. Figure 1 shows the instrumentation platform and ADCP deployed upstream of the Mavi turbine.

Current measurements were taken at multiple locations between 5m and 24m upstream of the turbine to commission the system and test measurement procedures. During the deployment, it quickly became clear that the instrumentation platform needed to be linked with the turbine platform using a tightly tensioned rope in order to maintain alignment.

In June 2015, Mavi will return to the CHTTC to obtain additional field data to investigate the effect of current measurement location on calculated turbine performance efficiency. These results will be compared to computer simulations. Mavi will also test the use of a boom mounted to the turbine floating platform to deploy the ADCP at the minimum distance (2 equivalent diameters) upstream of the turbine.

Results from the project will inform the development of IEC Technical Specification (TS) 62600-300: Electricity Producing River Energy Converters – Power Performance Assessment, as well as future releases of TS 62600-200: Electricity Producing Tidal Energy Converters – Power Performance Assessment. For further information, please contact Bill Rawlings at bill@mavi-innovations.ca.

Members:

IEC-TC114

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

Figure 1: ADCP deployment upstream of Mavi turbine.



Sponsors:



Updates & Initiatives

Express Document for Geological and Geophysical Site Characterization for Marine Renewable Energy Development and Environmental Assessment

A small Committee has recently wrapped up its work in developing the content for an Express Document for Geological and Geophysical Site Characterization for Marine Renewable Energy Development and Environmental Assessment. Express Documents are CSA documents which are significantly faster to publish than traditional standards. While following a similar process, such as a committee with diverse stakeholders to review the document and a public review period, the timelines are extremely compressed and the document does not go through a formal Standards Council of Canada accreditation process.

The extensive seed document and its initial research were carried out by Geological Survey of Canada with Phil Hill's team. Marine Renewables Canada funded the Express Document process. A small group of participants, Phil Hill (NRCan); Gordon Fader (AMGC); Tony Wright (FORCE); Gregory Decker (Government of Nova Scotia); Andrew Carlisle (OpenHydro); Sue Malloy (Glas Ocean Engineering); and Greg Trowse (Fundy Tidal Inc) met to review the document and provide any suggestions to improve.

The document will be published by summer 2015 and is now at the public review phase for 30 days at the following link: <http://publicreview.csa.ca/Home/Details/1505>. Once published, all are encouraged to share the document locally and internationally, as the Committee is confident that a high quality document has been created which will provide assistance to many in the industry.

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### **IECRE and IEC Conformity Assessment Systems in Canada for the Marine Energy Sector**

In June 2014, IEC established a new conformity assessment system called IECRE (IEC System for Certification to Standards Relating to Equipment for Use in Renewable Energy Applications). The IECRE System includes the following sectors:

- Solar PV Energy Sector
- Wind Energy

- Marine Energy Sector

The objective of the IECRE System is to facilitate international trade in equipment and services for use in Renewable Energy Sectors while maintaining the required level of safety:

The overall responsibility for the operation of the IECRE System is vested in the Renewable Energy Management Committee (REMC), which is a committee of the IEC and operates under the authority of the Conformity Assessment Board (CAB). The CAB has delegated the management and overall operational responsibility related to the IECRE System to the REMC.

Each of the three sectors has an Operational Management Committee (OMC), such as, ME-OMC for the Marine Energy Sector. The OMCs report to the REMC. The ME-OMC has established Working Groups for the following three areas: Rules of Procedures, Financial, and Certification Scope. The next meeting of the ME-OMC will be held in Edinburgh during April 23-24, 2015.

Currently, 18 countries, including Canada, are member of IECRE. Canada, France, Japan, Netherlands, Spain, UK and USA are the member countries for the IECRE Marine Energy Sector. Canada's Member Body (MB) for the IECRE is the National Committee of the IEC, i.e., CANS/IEC.

#### Stakeholders

Stakeholders representing the renewable energy sector in the areas of marine, solar and wind are represented by the following stakeholder categories:

- Equipment & turbine supplier/manufacturers for harnessing wind, solar, river current, tidal current, and wave energy
- Insurers and financiers
- End-users and operators, such as, utilities, independent power producers
- Certification bodies
- Laboratories, and field facilities practicing tests according to IEC standards relevant to wind, solar and marine energy sectors
- Consulting industry practicing consulting relevant to the RE sectors
- Government and regulatory authorities
- Standard development organizations

#### IECRE System Services

The IECRE System will offer a broad mix of certification services for the wind, solar and marine energy sectors, including for the equipment and product supplier, project developers, end users, and service providers. The services will include:

- Prototype certification
  - Component certification
  - Product and type certification
  - Project certification
  - Consulting personnel competence accreditation
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- Test laboratory & field facility accreditation

CANC/IEC will be responsible for the receiving, consideration and endorsement of applications from organizations seeking acceptance as a Renewable Energy Certification Body (RECB) or Renewable Energy Testing Laboratory (RETL) of Renewable Energy Field Testing Facility when submitting such to the IECRE Secretariat, in accordance with the Rules of Procedure.

CANC/IEC has established a National Committee for the IECRE, called CNC/IECRE. The Standards Council of Canada (SCC) has appointed Gouri Bhuyan as the Chair of this National Committee. Recruitment for memberships for the CNC/IECRE will start soon.

*For further details on the scope of IECRE and how the system fits within the IEC Conformity Assessment System; how it relates to other IEC certification schemes and the IEC Technical Standard committees; and how to join the National IECRE committee, please visit:*

<https://www.scc.ca/en/stakeholder-participation/standards-development/participate-canadas-mirror-committee-iecs-conformity-assessment-system-for-renewable-energy-iecre>

You may also contact Lynne Gibbens of the Standards Council of Canada at [lgibbens@scc.ca](mailto:lgibbens@scc.ca) for membership in CNC/IECRE.

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## 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<br>AM PST               | Conference Call 10:00 |
| January 21, 2015<br>AM PST                | Conference Call 10:00 |
| February 18, 2015<br>AM PST               | Conference Call 10:00 |
| March 25, 2015<br>AM PDT                  | Conference Call 10:00 |
| April 15, 2015<br>AM PDT                  | Conference Call 10:00 |
| April 27- May 01, 2015<br>Dublin, Ireland | TC114 Plenary –       |

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|-----------------------------------------------------------------|-------------------------|
| May 20, 2015<br>AM PDT                                          | Conference Call 10:00   |
| June 12, 2015 (In person)<br>(TBC)                              | Meeting in Victoria, BC |
| August 26, 2015<br>AM PDT                                       | Conference Call 10:00   |
| September 16, 2015<br>AM PDT                                    | Conference Call 10:00   |
| October 14, 2015<br>AM PDT                                      | Conference Call 10:00   |
| November 6, 2015 (In person)<br>QC (2015 MRC Annual Conference) | Meeting in Montreal,    |
| December 16, 2015<br>AM PST                                     | Conference Call 10:00   |

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