



International Standards Development
for
Marine and Hydrokinetic Renewable Energy

Global Marine Renewable Energy
Conference, April 2009

Presented by Neil Rondorf



Mission

- IEC's mission is to be globally recognized as the leading provider of standards, conformity assessment schemes and related services needed to facilitate international trade and enhance user value in the fields of electricity, electronics and associated technologies
- Technical Committee (TC) 114 established: Marine Energy- Wave and Tidal Energy Converters
- Country Participants: Canada, China, Denmark, France, Germany, Italy, Japan, Korea, New Zealand, Russia, Spain, Sweden, UK, US
- Country Observers: Brazil, Netherlands, Poland, Ukraine
- The primary focus is on conversion of wave, tidal and other water current energy into electrical energy; although other conversion methods, systems and products are included



Working Group (WG) Organization

TC-114 Working Groups:

- Terminology (UK and Canada): Philip Beauchamp (GE)
- Wave Resource Assessment (UK): Grant Jennings (Teledyne)
- Tidal Resource Assessment (NZ): Grant Jennings (Teledyne)
- Wave Device Performance (UK): Dave Tietje (SAIC)
- Tidal/Current Device Performance (UK): Jonathan Colby (Verdant Power)
- Design Safety Requirements (US): Walt Musial (NREL), Charles Smith (MMS)



Terminology WG

Current Status

- 2008-11-07: New Work Item proposal, 114/13/NP
- 2009-02-27: Working Group approved, 114/21/RVN
- 11 of 14 Participating Member Countries approved
- 5 Participating Member Countries nominated or confirmed experts
- 2009-03-27: Request for additional experts, 114/24/INF
- 2009-05-06: First WG Meeting, 114/24/INF
- The participating US expert is Sean O'Neill (OREC)



Resource Assessment WGs

Wave and Tidal/Current Resource Assessment update

- Two standards proposed:
 - Assessment of wave energy resource
 - Assessment of tidal energy resource
- Proposed standards were submitted by the UK
 - US recommended a *no* vote
 - New Zealand was assigned to provide new standards and will be issuing proposed standards at the Seoul meeting
- The participating US expert is Grant Jennings (Teledyne)



Wave Device Performance WG

Performance Assessment of Wave Energy Conversion (WEC) Systems

- First draft of the proposed standard was issued 25 November 2008
- First meeting of the Committee: Scotland, 2 December 2008
 - Standard to validate the power output of a single WEC
 - Establish uniform method for measurement of the wave pattern at a test location
 - Standard method to present power output
- Draft being reviewed by the US Technical Committee (TC) for comments
 - Clear delineation of the test area
 - Wave modeling is too detailed and restrictive
 - Presentation of the power output
- Next WG meeting 5 – 6 May 2009 , in South Korea
- The participating US expert is David Tietje (SAIC)



Tidal Device Performance WG

Performance Assessment of Tidal Energy Converters update

- Proposed standard was submitted by the UK
- The proposed standard is being reviewed by the US TAG, recommending approval
- The US expert on the committee is Dean Corren (Verdant Power)
- A DOE Advanced Water Power Projects grant is funding the Maine Maritime Academy to assess different propeller designs
- The participating US expert is Jonathan Colby (Verdant Power)



Design Safety WG

US Design Requirements Proposal:

- Outline submitted to IEC TC-114 by US National Committee on April 7, 2009
- Proposal for technical specification to be led by US
- Focus of proposal is to provide guidelines for structural reliability of marine energy structures
- Includes both wave and current (tidal, ocean, river) devices; shore-based and floating
- Intended to focus and harmonize existing national standards (e.g. EMEC, GL, DNV, ABS, IEC and ISO)
- The participating US expert is Walt Musial (NREL)



TC-114 Seoul, Korea, 5-8 May 2009

Seoul Meeting TC-114 Delegates

- Neil Rondorf (SAIC), Head of Delegation
- Walt Musial (NREL), TAG Administrator
- Dave Tietje (SAIC), Wave Devices Performance
- Sean O'Neill (OREC), Terminology
- Jonathan Colby (Verdant Power), Tidal Devices Performance
- Charles Smith (MMS), Design Safety Requirements