Extracting Renewable Energy from the Oceans What will it take for the sector to live up to its potential?

Joint Electrical Institutions Sydney - Engineers Australia, IEEE, IET

DATE & TIME

Thursday, July 9, 2015
5:30 pm for 6:00 pm start

VENUE

Engineers Australia Harricks Auditorium
Ground Floor, 8 Thomas Street,
Chatswood NSW 2067

COST

EA, IET, IEEE Members – Free
Students – Free
Non-members - $30

CPD

Eligible for 1.5 Continuing Professional Development hours.

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IET The Knowledge Network

Presentations by Mr Doug Hunt (EET) and Dr Timothy Finnigan (BioPower)

Our oceans cover over 71% of the Earths surface and will become an important source of future energy needs. CSIRO's current projections show that wave energy could become a large part of Australia's energy mix. Extracting renewable energy from moving water has the advantage of predictability and will have its place in the world's energy mix once holistic engineering solutions can be found to reduce the Levelised Cost of Electricity (LCOE) to competitive levels.
Australia has several innovative start-up's in this renewable energy space. Two leading companies in the development of new approaches to harnessing energy from the oceans, Elemental Energy Technologies (EET) and BioPower, will give their views on the current state of play and present an overview of their technologies.

EET's next generation hydrokinetic turbine, branded "*the Mako*" represents breakthrough technology utilising a sophisticated design and employing advanced materials & manufacturing techniques to produce low-cost electricity by harnessing the energy contained in moving bodies of water. As the water flows horizontally, the turbine blades spin and drive a generator which produces electricity.
To achieve this, EET has recruited a team of design and mechanical engineers from the automotive industry, marine engineering, aeronautics and precision equipment manufacturing. As well as borrowing knowledge and experience from other industries, the MAKO project is also utilising rapidly emerging engineering technology such as cloud computing for simulations, 3D printing for components and robotics for fabrication.

BioPower's innovative bioWAVE™ generator is being developed for utility-scale power production from ocean waves. The bioWAVE™ is designed to operate in ocean swell waves, absorbing energy both at the surface and below. As a result, the pivoting structure sways back-and-forth in tune with the waves, and the energy contained in this motion is converted to electricity by an onboard self-contained power conversion module, called O-Drive™. The O-Drive™ contains a hydraulic system that converts the mechanical energy from this motion into fluid pressure, which is used to spin a generator resulting in efficient clean energy from the ocean.

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SPEAKER BIOGRAPHY

Mr Doug Hunt, Managing Director of **Elemental Energy Technologies**

Doug has an investment banking, finance, and legal background, but has become increasingly involved in the marine renewable sector over the past 7 years. Doug is a passionate believer in the potential of the marine renewable sector and for the last 3 years has been Managing Director of Elemental Energy Technologies Ltd, a start-up technology company working to commercialise its proprietary hydrokinetic (tidal) energy turbine designs. EET's initial *SeaUrchin* design project won an Engineers Australia national Excellence Award in 2012. The successor design, the *MAKO* turbine, is currently in development for release early in 2016.

Dr Timothy Finnigan, Chief Executive Officer of **BioPower Systems**

Tim has been involved in engineering and ocean energy for 23 years. From 2001-2005 he was the Technical Director of Energetech Australia. Prior to this, he was involved in research and technology commercialisation in the US, Canada and Australia. Tim holds a BASc in Engineering Physics, an MASc in Civil Engineering, and a PhD in Environmental Engineering. He is an Adjunct Associate Professor in the Faculty of Engineering & IT at the University of Sydney, where he also teaches in the Business School.

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