

Ocean Alternative Energy

Thursday, Oct 22, 8.30a-10.30a

Moderators:

David Gray, PE, The Glostén Associates, Inc., Seattle, Washington

Dr. Bruce Adee, Department of Mechanical Engineering, University of Washington, Seattle, Washington

The age of energy extraction from the ocean is changing form. Up until these last few years ocean energy was often equated with offshore energy, meaning the extraction of oil and gas offshore. But the new identity is the extraction of usable energy from the energies of the ocean itself, including tides, currents, waves, thermal layers and the winds blowing over the ocean surface. How is this to be accomplished is the question this special panel session will start to develop. It is a large subject and cannot be covered in one two-hour session. But there are questions of interest to Naval Architects and Marine Engineers and we will get the discussion started. The special panel session format is designed for lots of time for attendee questions, observations and discussion. In addition, plans call for a follow-on Symposium where the interface between Ocean Energy and Offshore Energy will be explored. This panel session will feature three speakers that will look at Ocean Energy developments from three different perspectives; an overview of energy extraction options, the economics of wave energy conversion and the state of the art of offshore wind energy projects.

Christopher Barry, PE and Paul Kamen, PE, will set the stage with their paper titled, "An Overview of Ocean Renewable Energy." The paper discusses and summarizes energy demand, the true cost of energy extraction, climate change, the "ecology" of renewable energy, and extraction concepts including hydrokinetic energy from waves and currents, offshore wind projects, ocean thermal energy concepts and marine biofuels.

Dr. Michael Raftery and Dr. Raju Datla, both from Stevens Institute of Technology, will combine engineering and economic issues with their paper titled, "Key Engineering Issues for Economically Viable Ocean Wave Energy Conversion." Their paper brings to the discussion an issue that is often overlooked by ocean energy extraction concepts and that is survivability. As they state in the very beginning "Survivability is paramount." The issue of survivability is presented in terms of assessing the environment, design issues, system and component survival, global loads and fatigue analysis, deployment, maintenance and decommissioning and paying for it all with an efficient system.

Kevin Pearce and Stephen Geiger, from Bluewater Wind and Charles Nordstrom, from The Glostén Associates, will focus the discussion on the developments in offshore wind energy extraction. Their paper is titled, "State of the Art in Offshore Wind Energy Projects." There are significant developments in this area in Europe and those projects inform the development of projects in North America. The paper presents the technical issues confronted by an offshore wind farm developer, the installation components and installation challenges, and thoughts on the future of the US offshore wind industry.