

OCEAN THERMAL ENERGY CONVERSION (OTEC)
Renewable Energy and Economic Development for Puerto Rico
Thursday, May 3, 2007
Stefani 113, 10:30 AM

Presented by Offshore Infrastructure Associates, Inc.

Puerto Rico has particular characteristics that favor the implementation of Ocean Thermal Energy Conversion (OTEC), a technology that uses the temperature difference between the warmer, top layer of the ocean and the colder, deep ocean water to generate electricity and other useful by-products. OTEC is not dependent on fossil fuels, is not vulnerable to world energy market fluctuations and is environmentally benign. During the energy crisis of the 1970's, the U.S. Government funded OTEC research, of which a significant portion was conducted by the University of Puerto Rico at Mayaguez. Under the Federal program, a test facility (mini-OTEC) was eventually built in Hawaii in 1979. Later, in May 1993, a team directed by Dr. Luis A. Vega built and tested an larger, open-cycle OTEC plant at Keahole Point, Hawaii which broke the record for net power generation. However, work did not progress further because oil prices were low. Recent increases in fossil-fuel prices, together with increasing concern about their potential contribution to global warming have prompted a second look at OTEC. Further, new designs can effectively recover energy from the ocean at a fraction of the cost of the designs which were evaluated in the 1980's. This mini conference will summarize the current body of knowledge about OTEC and its implications for energy generation and economic development in Puerto Rico.

OTEC, A Summary of Current Knowledge

Luis A. Vega, PhD

Consultant in Renewable Energy and Resource Conservation

OTEC Power System Development

C.B. Panchal, PhD

Investigator, Argonne National Laboratory (half time)

Consultant in Heat Exchange and Energy Recovery

Environmental Implications of OTEC

José A. Martí, PE, DEE

Principal, Technical Consulting Group

OTEC and DOWA for Economic Development in Puerto Rico

Thomas J. Plocek

President, Offshore Infrastructure Associates, Inc.

Submitted to the College of Professional Engineers and Surveyors of Puerto Rico for consideration as continuing education credits for engineers and surveyors.

Seminar Presenters:

Dr. Luis A. Vega- Dr. Vega has a consulting practice in renewable energy and resource conservation and also serves as Director of the Renewable Energy Test and Evaluation Facility in Kahua, Hawaii. He previously managed design, construction and operation of an experimental open cycle OTEC Plant for the production of electricity and desalinated water, the first proven application of this technology. He holds BS degrees in aerospace engineering and applied mathematics from the U.S. Naval Academy in Annapolis, Maryland, an MS in aeronautical engineering from CALTECH, an MS in Ocean Sciences from the University of California, San Diego (USCSD), and a PhD in Engineering Sciences (with majors in Applied Mechanics, Oceanography, and Applied Physics) also from UCSD. He is the author of multiple publications on renewable energy, ocean resources and OTEC.

Dr. C.B. Panchal- Dr. Panchal is a principal investigator at Argonne National Laboratory (ANL) concentrating on heat exchanger design and energy recovery, and also has a consulting practice related to energy efficiency. During the period of 1979 to 2000, he was the principal investigator for the OTEC program at ANL, and participated in the Hawaii test facility with Dr. Vega.

José A. Martí, PE, DEE- Mr. Martí is the principal of Technical Consulting Group, a firm providing environmental engineering and planning services to industrial, government and commercial clients. He received a BSCE from UPR Mayaguez, where he also pursued graduate studies in sanitary and structural engineering. Later, he received an MSCE with major in environmental engineering from Northeastern University in Boston. He is also a Diplomat of the American Academy of Environmental Engineers. Mr. Martí is licensed to practice engineering in Puerto Rico and Massachusetts, and is also licensed as a professional planner in Puerto Rico.

Thomas J. Plocek- Mr. Plocek is founder and president of Offshore Infrastructure Associates, Inc (OIA), a company aiming at commercially developing marine energy and natural resource ventures on a global basis. Prior to founding OTEC he served in senior executive positions in the aroma and chemical industry for over 30 years. Mr. Plocek was President and CEO of ChemFleur, Inc. a company which operated chemical plants in Patillas, Puerto Rico and New Jersey for over 25 years, and which was the major world supplier of several important fragrance ingredients. He has a BS degree in chemistry from Rutgers University College in New Jersey and is a graduate of the Owner/President Management Program at Harvard University.