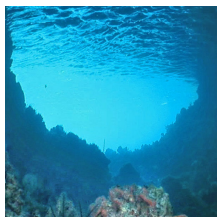


20 November 2008

By: Tudor Vieru, Science Editor



Water temperature differences in the oceans could be used to provide clean, renewable energy
Kalpoint

Temperature Differences in the Water Will Provide Clean Energy

Lockheed Martin is just one of the companies involved in this research

Exploiting the temperature differences between various layers of oceanic water may provide humankind with a never-ending source of renewable energy, one that could be exploited almost effortlessly. Ocean Thermal Energy Conversion (OTEC) is a concept that scientists pursued since the 1970s. Over the past twelve months, it has occupied the minds and time of scientists at aeronautics giant Lockheed Martin. "I think OTEC has the potential to develop sufficient power output much quicker than wave buoys or tidal power would. It would take a lot of buoys to produce 8 to 10 MW of power. We're looking at them all but have our hopes on OTEC," said US Navy Shore Energy Office director, Bill Tayler. The scientific principle behind OTEC is fairly simple. A series of long tubes, some 27 meters (approximately 90 feet) wide, are used in the process. A low-boiling point liquid, such as ammonia is inserted in one of the pipes. The liquid is heated by warm surface waters, and turns to gas, which drives an electric turbine. After the gas is exhausted, cold water is pumped outwards, and the gas is turned back into water, which sinks back, as it is colder than surface water. This means that even a limited volume of water can be used indefinitely to create clean energy. Pilot-plants already exist in Japan, but they produce about 120 kilowatts of electricity, which is insufficient for commercial use. Now, Lockheed Martin, working with Waimanalo-based Makai Ocean Engineering of Waimanalo, in Hawaii, is planning to build a 10 to 20 MW plant, to supply energy to the main grid via underwater cables. The US federal government gave some \$600,000 to the project. Future plans for this technology include the construction of mobile sea platforms, which would virtually stroll across the oceans, searching for the most significant differences in water temperature. Long cables would connect the large ships to the mainland, supplying very cheap energy, and reducing the impact that fossil fuels have on the environment. This renewable source of energy offers even greater promises than nuclear [fusion](#), as the latter is very expensive to implement and, also, it is not readily available.