RENEWABLE ENERGY INFORMATION FROM THE PIER AQUARIUM LABYRINTH

Geothermal

"GEOTHERMAL" comes from the Greek word "geo" meaning Earth and "therme" meaning heat.

1. Harnessing geothermal energy is easier on the land than many other forms of power production.
2. Geothermal energy is completely reliable since subterranean heat is constant.
3. Geothermal energy is obtained from the internal heat from the planet.
4. We can access these areas through geothermal hotspots.
5. Hotspots are areas of reduced thickness in the Earth's mantle that transmit the internal heat.
6. The hotspots are located in areas such as Hawaii, Yellowstone National Park and Iceland.
7. Geothermal energy can be used to run a steam turbine.
8. If we drill down only three miles, it would reach temperatures up to 100 degrees C.
9. This would be enough to boil water to run a steam-powered electric power plant.
10. Geothermal heat pumps have been used since the late 1940s.
11. Although there are seasonal highs and lows, the temperature below the Earth's surface is constant.
12. Depending on latitude, ground temperatures range from 45 degrees F (7 degrees C) to 75 degrees F (21 degrees C).
13. This ground temperature is warmer than the air above it during the winter and cooler in the summer.

14. Geothermal heat pumps take advantage of this by using ground heat exchangers.
15. This process is more beneficial than using the exchange medium as the outside temperature.
16. It allows the system to reach high efficiencies (300-600%) on the coldest of winter nights.
17. The system pumps hot water into the hotspots found underground to generate electricity.
18. Then the steam is condensed and sent back to its sedimentary stream.
19. Geothermal and water-source heat pumps are able to heat, cool and provide hot water.
20. These heat pumps are quieter, last longer and need little maintenance.
21. A dual-source heat pump combines an air-source + a geothermal heat pump.
22. These appliances combine the best of both systems.
23. The main advantage of these systems: they cost less to install than a single geothermal unit.
24. Each year in the United States, approximately 50,000 geothermal heat pumps are installed.
25. Geothermal electricity can also be processed through volcanic magma.
26. The magma can be used to boil water.
27. In California, geothermal power plants produced almost 5% of the state's total electricity (2,626 megawatts) in 2000.
28. It's estimated that California has a potential of 4,000 megawatts of additional power from geothermal resources.