

The Future of Ocean Power

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Abstract- Renewable energy can be used to decrease global dependence on natural resources, and tidal power can be the primary form of renewable power utilized. Built upon steam turbine knowledge, tidal turbines draw on innovative technology and design to operate on both the inflow and outflow of water through them. The tidal power plants are capable of producing reliable and efficient power. Problems, such as initial cost and power transportation hinder future implementation of tidal power plants. This paper emphasizes the possibilities of utilizing the power of the oceans by pollution free, tidal Power generation. since india is surrounded by sea on three sides, it's potential to harness tidal energy has been reconised by Govt. of India.

Keywords- Tidal power, Blue energy, Ocean energy.

I. INTRODUCTION

The sources for 90% of the electric energy generated today are non-renewable. Natural resource emissions are over 120 times greater than that of renewable emissions. The depletion of the finite resources, environmental pollution, global warming became more apparent near the end of the 20th century. World energy consumption is expected to rise 60 per cent by 2020. In order to meet that demand, while limiting production of green house gases, renewable energy sources considered as an alternative to traditional forms of energy production.

Renewable sources of energy are necessary because the Earth will eventually run out of the resources to create non-renewable energy. There are three types of renewable energy sources: solar, wind, and waterpower. Both solar and wind power are drastically affected by weather variations, while tidal power varies little when the weather changes power. Over the last fifty years, engineers have begun to look at tidal and wave power on a larger, industrial scale. However, until the last few years, wave power and tidal power were both seen as uneconomic. Although some pilot projects showed that energy could be generated, they also showed that, even if cost of the energy generated was not considered, there was a real problem making equipment which could withstand the extremely harsh marine environment.

Tidal energy is an essentially renewable resource which has none of the typical environmental impacts of other traditional sources of electricity such as fossil fuels or nuclear power. Changing the tidal flow in a coastal region could, however, result in a wide variety of impacts on aquatic life, most of which are poorly understood. Tidal are generated through a combination of forces exerted by the gravitational pull of the sun & the moon and the rotation of the earth. This is very convenient because scientist's can predict the electricity production on a daily basis. .

A. Using the Energy of the Ocean:

There are three basic ways to tap the ocean for its energy.

- We can use the ocean's waves,
- we can use the ocean's high and low tides, or
- We can use temperature differences in the water.

Let's take a look at each,

1) Wave Energy

Kinetic energy (movement) exists in the moving waves of the ocean. That energy can be used to power a turbine. In this simple example, to the right, the wave rises into a chamber. The rising water forces the air out of the chamber. The moving air spins a turbine which can turn a generator. When the wave goes down, air flows through the turbine and back into the chamber through doors that are normally closed. This is only one type of wave-energy system. Others actually use the up and down motion of the wave to power a piston that moves up and down inside a cylinder. That piston can also turn a generator. Most wave-energy systems are very small. But, they can be used to power a warning buoy or a small light house.

2) Tidal Energy

Another form of ocean energy is called tidal energy. When a tide comes into the shore, they can be trapped in reservoirs behind dams. Then when the tide drops, the water behind the dam can be let out just like in a regular hydroelectric power plant.