

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELGAUM**



**A Project Report
On
DESIGN, ANALYSIS, FABRICATION & TESTING
OF A VERTICAL AXIS TIDAL TURBINE
(PROTOTYPE)**

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Engineering in

MECHANICAL ENGINEERING

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2013-2014

ABSTRACT

Growing concern over the threat of global climate change has led to an increased interest in research and development of renewable energy technologies. The ocean provides a vast source of potential energy resources, and as renewable energy technology develops, investment in ocean energy is likely to grow. Research in wave energy and tidal energy has led to promising technologies and in some cases, commercial deployment. These sources have the potential to help alleviate the global climate change threat, but the ocean environment should be protected while these technologies are developed. Renewable energy sources from the ocean may be exploited without harming the marine environment if projects are sited and scaled appropriately and environmental guidelines are followed.

As we charge our mobile phone in any socket, there are people that has to illuminate their homes with kerosene lamps, students that cannot study when the daylight extinct, medicines that cannot be stored in a freezer. There are other people that are connected to the grid but still have energy cuts. Furthermore, there are places which will not have electricity access, these places coincide with the poorest and isolated rural areas of developing countries, and these people cannot afford the cost of a tidal turbine, nor small nor bigger.

India is facing a huge energy crisis and the current electricity production is not sufficient to meet the demands of increased population, increased industrial production and agriculture use. It has over 7500km of gifted natural coastline where tidal energy can be harnessed and can be either connected to the national grid or to provide electricity on a localized basis.

The model which we are proposing for design and later subjected to analysis is of floating type with vertical axis of rotation. It consists of a floating platform below which an assembly of turbine blades is mounted. The dynamic working of shaft depends on tides of high frequency causes rotation of blades. Vertical axis turbines extract energy from the tides in a similar manner to that of wind turbine; however the turbine is mounted on a vertical axis. The tidal stream causes the rotors to rotate around the vertical axis and generate power.