

# Tidal energy solutions swot analysis



**ASSIGN  
BUSTER**

## Running header: SWOT Analysis

## SWOT Analysis

In today's world there is a major dependence on fossil fuels for our power needs. There are other forms of energy out there like solar and wind but they do not currently offer a good supplement to easing our use of fossil fuels. That is where Tide Energy Solutions (TES) comes in. Their goal is to cut its use in half. Allowing for our limited supply to be used primarily for vehicle use and leaving our country to be run by its most prevalent resource, water. The ocean which covers 70 percent of the earth has massive potential in electrical production.

The California based company has developed a new buoy based power generating plant which will take the "motion of the ocean" and turn this into useable energy. The simple description of how it works is easy to explain. Have you ever used a bobber when you went fishing? If you have or even have seen it done then you know that if there is any disturbance in the water then the bobber will rise with the water level. In the ocean there are constantly waves. By placing a much larger "bobber" they are able to take the rising motion created by the ocean's waves and turn it into energy. The bottom of the buoy is heavily weighted so as a wave comes in, the buoyant top pulls away from the bottom driving the generator's piston creating power. This power can then be transferred to land by a cable connected directly to the buoy or transferred to an ocean power management facility which can then send it out. Using SWOT analysis we can take a closer look to see the viability of the company.

## Internal

## Strengths      Weaknesses

- |  |   |
|--|---|
| <p>1. Unique patented product that is not easily duplicated.</p> <p>2. Cost of sustaining energy production is marginal when compared to cost of sustaining fossil fuel production.</p> <p>3. Renewable energy allows continuous operation.</p> <p>4. Relatively</p> | <p>1. High initial production cost.</p> <p>2. Manufacturing process has low turnaround.</p> <p>3. Maintenance can be costly/difficult on an in-place unit.</p> <p>4. Degradation of metal parts will eventually occur in salt water and</p> |
|--|---|

new field.

5.

Environment

ally friendly.

6. Unique the unit will  
coating will need to be  
protect replaced.

product parts 5. Limited  
from salt data on  
water length of life  
erosion for of product.  
many years. 6.

7. Company Geographica  
located on lly limiting  
the coast so factors  
highway  
transport is  
not needed,  
saving cost.

External

Opportunities Threats

1. Need for 1. New  
new forms of company

could  
 power. imitate or  
 2. Ability to create more  
 produce effective  
 power product.  
 without 2. Power  
 limiting giants.  
 factors such 3. Larger  
 as sun light company  
 or wind. with  
 3. With more infrastrucur  
 advancements e could take  
 t cost to over.  
 implement 4.  
 will become Environment  
 lower. al concerns  
 4. over effect  
 Environment on sea life.  
 ally pollution 5. Cost  
 free. could out  
 weigh gains.

Strengths

There are many strengths to TES and they are as follows. First is the patented equipment developed and employed by them. No other company currently offers a product that uses our specific technology. This means that the ability for another company to attempt to catchup down the road is much less likely. Also given the limited nature of other companies in the market there aren't many competitors that offer buoy specific technology. Another great strength is that compared to the daily cost to run fossil fuel processing plant, with workers, transport of raw materials, processing, etc. the daily operating cost of their product is virtually nothing. Although there are many aspects to keeping a processing plant running on a day to day basis, however the product simply needs to be put in place and wired to a power plant. While the cost of energy production remains so low there is also the fact that the main source the product is renewable, non-polluting, and widely available. Also through a partnering with a marine aquatics company they have been able to find a new underwater coating that will prevent damage to the metal components for 30 years compared to many of today's current products which will only last half that. Then there is the fact they are located on the coast with their own water access. This allows them to ship directly anywhere in the world and because they are used in the ocean there is no need to transport them over highways. A benefit to this is the money and time saved not having to determine logistical routes, obtaining transportation permits, and additional problems with road travel.

### Weaknesses

Where there are strengths there are bound to be weaknesses. The first is the high initial cost of the power plant. There are many factors that have to be

accounted for when they are being placed. They have to be built and loaded on to a properly equipped ship to be taken to their location, cable has to be run from the buoy location to an appropriate power plant and if one doesn't exist one may have to be built or a new location selected. Another weakness is the amount of time to produce the devices. Due to the newness of the field and low demand, manufacturing techniques are not at a level for quick mass production. Maintenance will also be a concerning issue. Maintenance will have to be performed underwater or by removing the power plant so that it may be worked on out of water. Although both tasks are simple in themselves the equipment and training required would be a unique skill set among today's market. Product life is an area where there is an element of uncertainty. While confident that the product is quality made, unpredictable factors could occur as they have not had a model subjected to 30 years of real world use. There are also factors that could cause limited geographic placement of the product. Things such as the wiring that is run to the power plant, existing underwater obstructions, and current marine shipping routes. The final weakness to mention is the fact that although there is an anticipated 30 year life, saltwater will eventually cause a degradation of metal components that will lead to large scale part replacement or replacement of the entire unit.

### Opportunities

Next we will look at the opportunities that are available. Firstly anyone can tell you that there is a greater need for alternative energy sources. While this does not propose a solution to all of them, it can alleviate and substitute a growing need. The benefit to this energy source is greater than current technologies with solar and wind. Solar and wind technologies have their

limiting factors. Such as solar on being viable in sunny open areas and only useable obvious during the day. Wind turbines have a limited amount of places that they can be placed, require good wind flow, and take up land space. With this being a newer technology advancements in the field will only lead to a lower production cost and faster turn around times in the future. One of the most beneficial parts of the product are its environmentally friendliness. It has no harmful emissions, requires no external input, and takes up minimal space when compared to the vastness of the ocean.

### Threats

Lastly there are the threats that are possible to look at. While this field is limited in competitors they are not the only ones currently in production of similar or different products that harness tidal energy. There is always the possibility of new forms of tidal harvesting that could be discovered to have a much lower cost associated that would leave our product obsolete. Also there is a possibility of the larger power companies trying to gain a greater advantage by venturing into the tidal energy market, and if this was the case then we could not compete on a financial level with them. As for environmental concerns, while there is no emissions or pollution to speak of there are various oils and hydraulic fluids housed in the power plants. If they were to become damaged there is a possibility of contaminating the ocean. Also different environmental groups are concerned that the introduction of our power plant could impact indigenous sea life. Mainly if they would still be able to inhabit the area surrounding said power plant or will be driven away. If the viability of our product does not pick up it is very possible that the initial costs will scare away the long-term gains of our project.



Overall there is quite a bit to consider in with this company. While the potential for growth in the field is quite great there are many unknown variables. It is possible that the high initial costs will be too great and overshadow the chance for the product to develop to a common use stage. Based on the SWOT analysis conducted I don't feel that continuing this product at the this time is wise. With the development of new technologies and better integration into the current system there exists the chance for a re-examination at a later date.

## References

Dess, G. G., Lumpkin, G. T., & Eisner, A. B. (2010). Strategic management creating competitive advantages,

(5th Ed.). New, York, NY: McGraw-Hill/Irwin

Humphrey, A. S. (August 2004). SWOT Analysis. [http://www. businessballs. com/](http://www.businessballs.com/). Retrieved January 16, 2014, from <http://www. businessballs. com/>.

Ocean Power Technologies. (2002). Retrieved from [http://www. oceanpowertechnologies. com/](http://www.oceanpowertechnologies.com/) January 16, 2014.

Renault, V. (2013). SWOT Analysis: Strengths, Weaknesses, Opportunities, and Threats. [ctb. ku. edu](http://ctb.ku.edu). Retrieved January 17, 2014, from [ctb. ku. edu](http://ctb. ku. edu).