



## SOTRACK

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**Faculty** : Faculty of Electrical Engineering  
**Program** : Electronic Engineering  
**Program Code** : EE241  
**Course** : Technology Entrepreneurship  
**Course Code** : ENT600  
**Semester** : 8  
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Submission Date: 17 December 2019

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## 1.0 EXECUTIVE SUMMARY

### 1.1 Business Product and Concept Description

SoTrack is our product that innovated from current fixed ground-mount solar panels. Our company decide to make changes and improve towards this current product to increase its efficient on power generation, harness power from the sun ray to the max and reduces the amount of real estate needed for the system. The problem with the current fixed ground - mount solar panels is they do not rotate and do not aim directly to the sun as the sun moves over time. This means the orientation of the solar panels is kept unchanged during the entire year. As a result, the lesser the sunlight been harvested. But with small adjustment would be advantageous. Solar power, with its promise of emissions-free renewable energy, boasts a growing number of fans. Some of them, it turns out, are thieves, and a lot of cases of solar panels being stolen have been reported. And lastly, it requires large amounts of solar panel and requires large amounts of land either. It would take around three to four sheets of the solar panel to be able to produce the same amount of electricity as that of a single solar tracker.

The unique part about our product is it has two rotation axis degrees, which are called the “primary axis” and the “secondary axis.” The rotational axis can move downwards or upwards to adjust with the angles of the sun throughout the day. SoTrack allows for the most accurate orientation of the solar device, and it provides 40% more output through energy absorption and can maximize energy production.

### 1.2 Target Market and Projections

Our company is targeting the industries and buildings in Malaysia. Malaysia has been experiencing strong economic growth through the last decade. Energy has been a key input in the development and growth of the country. The industrial sector and the building is the largest consumers of energy in Malaysia. They uses electricity for operating industrial motors and machinery, lights, computers and office equipment, and equipment for facility heating, cooling and ventilation. Most of the energy is generated from the natural gas and coal. Some industries produce electricity with a renewable energy such as solar photovoltaic systems located in their property. However, the development of renewable energy in Malaysia is rather slow and is still in the infant stage. This is basically due to the high capital investment

## 2.0 PRODUCT DESCRIPTION

Access to energy is a crucial pillar for human wellbeing, economic development, and poverty alleviation. Ensuring everyone has sufficient access is an ongoing and pressing challenge for global expansion. However, our energy systems also have substantial environmental impacts. Global energy systems are dominated by fossil fuels. The use of fossil fuel has caused environmental pollution with high carbon dioxide emission into the air, which in turn is not good for our health and causes the greenhouse effect.

With the concern of clean and green energy technology, our company has come up with the idea in order to enhance the current fixed ground-mount solar panel by making a rotating mechanism that follow the movement of the sun. By taking the advantages toward this situation, the SoTrack has been invented with special features.

SoTrack features are consist of two motor that used as a rotating mechanism for both azimuth and elevation angle, sensors to detect the light intensity of the sunlight, controlled by a microcontroller and monitored by using an Internet of Thing (IoT) system, and also some security features.

The system work in closed-loop form to trace the movement of the sun throughout the day and the microcontroller has to sense the light through the sensor. The sensor consists of a disc of semiconductor material with two electrodes on its surface. In the dark or dim light, the material of the disc has a relatively small number of free electrons in it. There are few electrons to carry an electric charge, and that means it is a poor conductor of electrical current, and its resistance is high. In the bright or sunny day, more electron escapes from the atoms of the semiconductor. There are more electrons to carry an electric charge. Therefore, it becomes a good conductor. Then, the sensor sends it information to the microcontroller. The motor circuit then constructed and follows the sun to the angle where it is perpendicular to the sun.

As result, the rotating mechanism that follows the sun will extract the solar energy to the maximum rate along the day to ensure more energy output and electricity can be harvested. Thus, SoTrack has created high efficiency rating in power generation.

### **3.0 TECHNOLOGY DESCRIPTION**

Nowadays, power generation by using solar is not as strong as coal and fossil fuel. Undeniable, this source of power generating is potent, but coal smoke is linked with everything from asthma and congenital disabilities to cancer and premature death. Natural gas fracking is tied to contaminated groundwater and earthquakes. And oil is the single largest source of air pollution and smog in the world. Fossil fuels are also the primary source of global warming emissions, one of the most pressing existential issues facing humanity today. Understanding the scope of their impacts is critical for informing our choices around energy production.

SoTrack will be equipped with both technical and business skills. SoTrack business will focus more to Research and Development (RnD) and product selling that will come out with new marketing. The concept of SoTrack services is by using Website Application. The concepts that SoTrack term want to bring out is to solve the problem that affect SoTrack lack marketing of SoTrack company. SoTrack development of website will create and keep update with new information about SoTrack company, services and product to customers. Moreover, with this application of website application is in line with this era that using the technologies in communication ways.

SoTrack was innovated to made solar harnesses step up at the same level as those other methods. Due to our uniqueness and feasibility product compared to other solar panels, it will have a positive effect on our target market due to the high demand for our customers, especially in industries and buildings. Furthermore, to make it a reality, many researchers and studies have been made to design the product and meet the high market demand.