

# **TEAM TESLA**

## **DESIGN PROJECT PROJECT PROPOSAL**



**University of Moratuwa**  
**EN 1070 – Electronics Product Design and Manufacture**

## **SOLAR TRACKING SYSTEM**

| <b>Name</b>         | <b>Index Number</b> |
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## **Problem**

- The sun travels through 360 degree east to west per year and 46 degree north and south per year. Therefore, when considering local horizon effects this can be reduce from 180 degree to 150 degree. when solar panels are in fixed orientation between east and west there is a 75-degree motion in each side is the day. Therefore, this led to 75% energy lost in day and evening time periods. When considering north-south motion there is a 23-degree motion in each side per day 8.3 % efficiency lose per day and 5% averaged lose per year.
- We cannot predict cloud covering per day and this affect to the total efficiency of performance in solar panels.
- Distance sun travels through atmosphere increase when sun going through the atmosphere. Therefore, if we can track the path of the sun from horizon to horizon then we can get significant amount of efficiency from solar panels.

## **Solution**

- Single axis solar tracking system – totally 30 % increase of performance
- Dual axis solar tracking system – up to 40% extra can produced.

## **Advantages of using solar tracker system.**

- Power loss is very low.
- Photovoltaic panels efficient increase up to 20% in the early morning compared with daytime.
- We can get significant power efficiency when sun is at horizon.

## **List of Materials**

- LDR
- Resistors 100K
- Arduino UNO
- Light sensors
- Servo Motor and LED panel
- Humidity sensor

## **Approximation Cost**

- Approximated cost for production - Rs.2500.00
- Estimated selling price - Rs.2750.00 (10% of markup)

## **Production Procedures**

- Designing simple model for single axis solar tracker.
- Creating PCB design.
- Enclosure designed in solids work and 3-D printed.
- Assembly parts and create final first product.
- Improve product to dual axis.
- Add weather sensors and humidity sensors for collect weather information.