

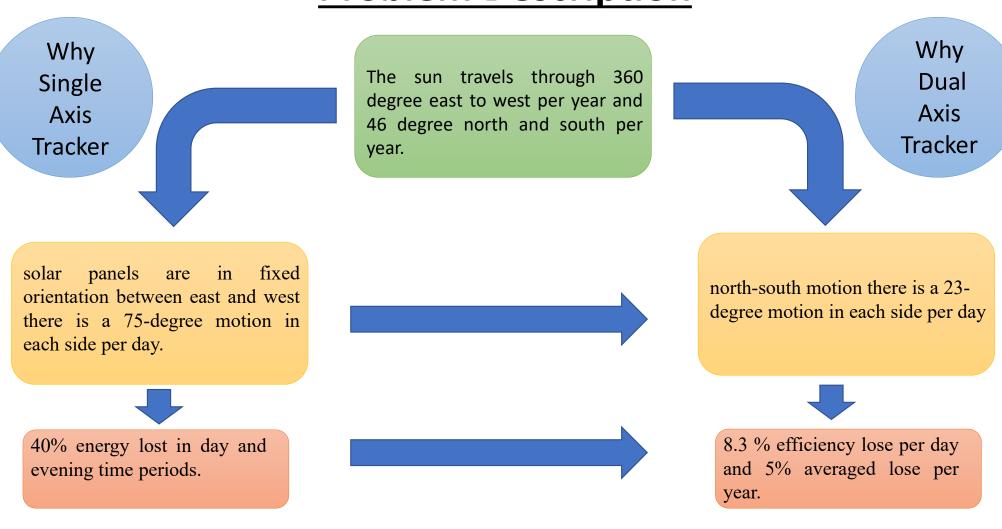
EN1070 – Electronic Product Design and Manufacture

Design Project – Progress Review Team Tesla

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Problem Description



Problem Description

We cannot predict cloud covering per day

Variation of the distance travel by Sun Decrease efficiency up to 15%-22%.

Most of the energy will be lost in a conventional fixed solar panel.

Motivation

37% of global Other 63% comes nearly 2/3 of global from the fossil electricity production electricity production is done comes from low carbon fuels such as coal, by high carbon emission gas, and oil. sources. sources. Global serious negative Need a impact on the warming Solution climate changes.

Why Solar Tracking System Need

?

average the earth surface receives about 604 W/m2 of solar energy

Lack of the efficiency and the cost of the fixed solar panels



3% of global electricity production due to solar panels



Free Energy Source



Convert into Tracking system



Will increase the performance of solar panel up to 30% - 40%





Simplicity Of Operation

Only Need to Supply power to the system

5V input Voltage need

Fully Automated System



User Friendly product

Can Connect to Domestic Electricity supply by using an Adapter

9V batter needed for simple usage

Technical feasibility

Weight of the design is minimum.



Be easy to assemble.



Store the energy that we can use power for a long time period.



Low Power consumption.

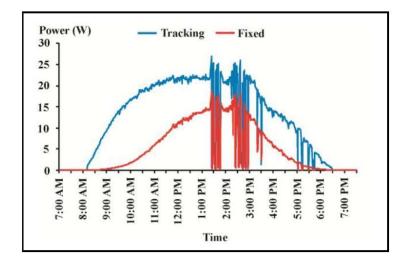


Supply at least 10% more energy efficiency than a conventional fixed solar panel.



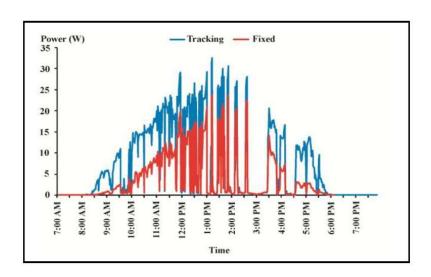
Power feasibility

Increase of Power generation



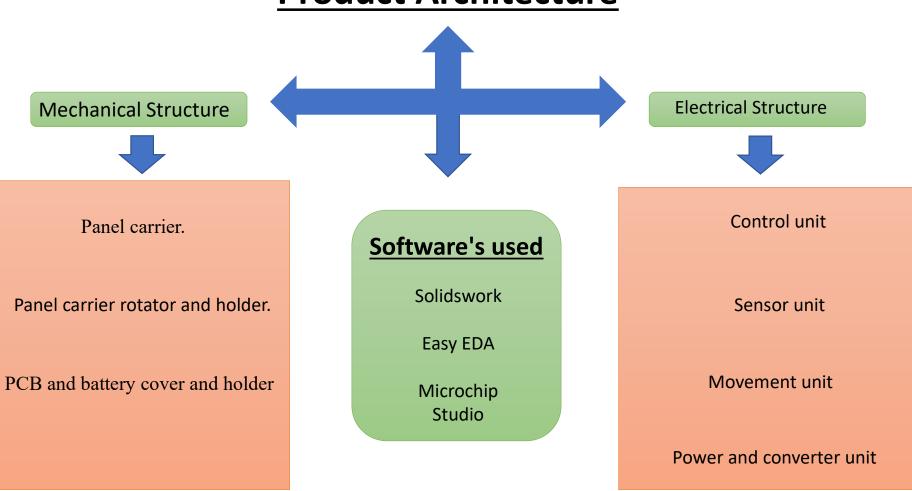
Clear Day

Low power consumption



Rainy Day (Estimated)

Product Architecture



Technical Specifications

increase the performance of solar panel up to 30% - 40%



Warranty terms

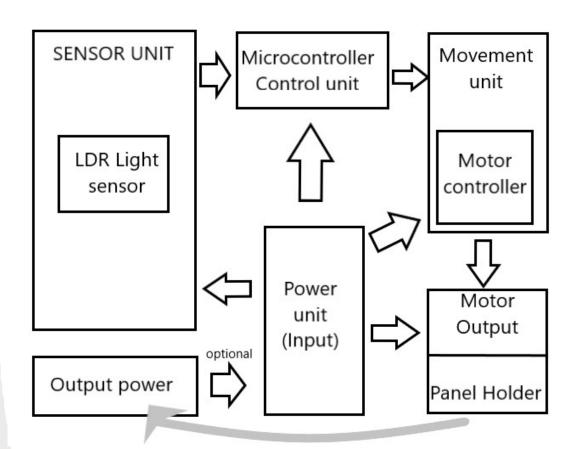
- ✓ 2 Years for full product warranty for manufacture defects.
- ✓ 3 Years for service warranty.
- ✓ 15 Years warranty for solar panel.(T/C apply)

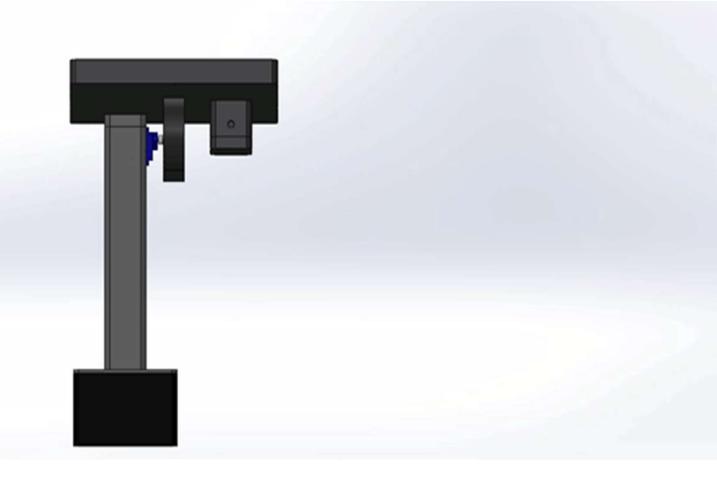
Recommend for;

- ✓ Street lighting
- ✓ Garden lighting
- ✓ Portable solar charger
- ✓ Domestic power supply (Need to increase the number of Panels, inverter system for domestic electric usage – As per the customer order)

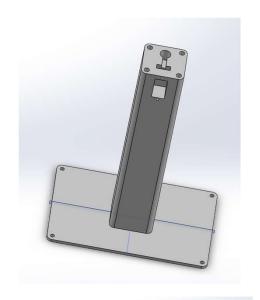
Product Architecture

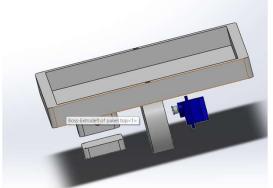
Block Diagram

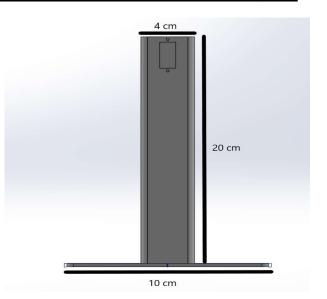


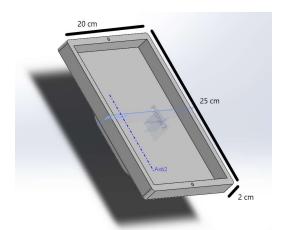


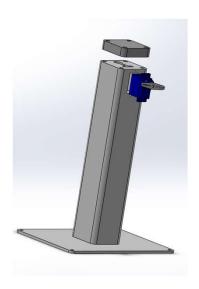


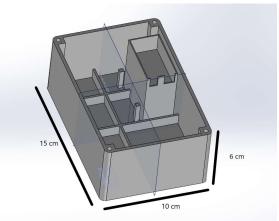












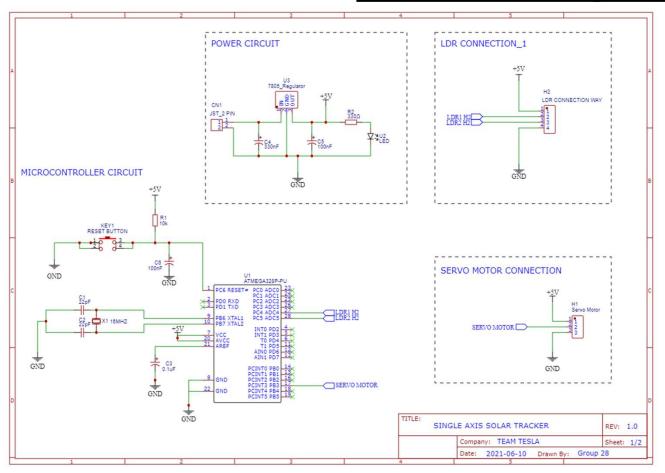


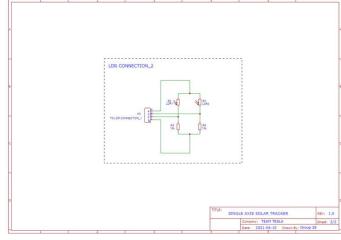




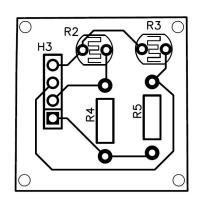
^{*}Estimated weight 250 g - 400 g. (Without solar panel and the inverter). (this is the weight for portable solar tracking system. This may be varying by the order request.)

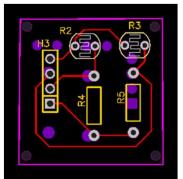
Enclosure Design Schematic Diagram

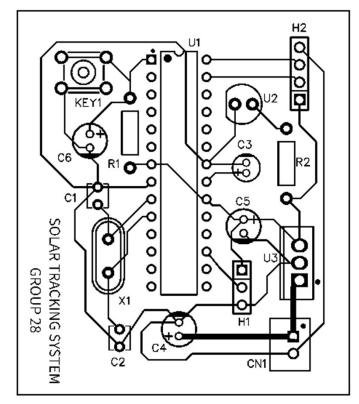


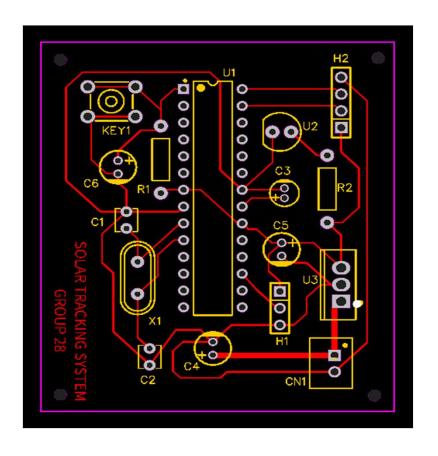


Enclosure Design PCB Design

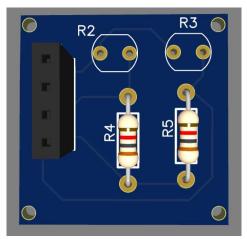


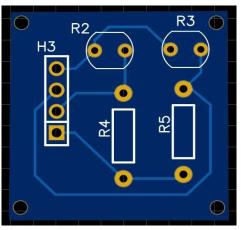


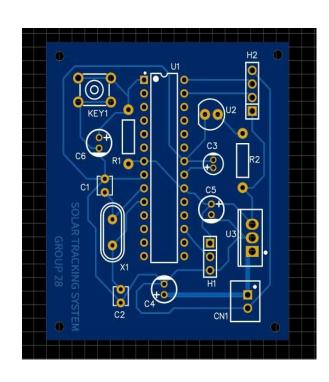




Enclosure Design PCB Design









Marketing and Sales and Beyond

Product packaging

- Use recyclable papers. Cardboards for packaging.
- Air Pillows Made of Recycled Materials as an alternative to Styrofoam or bubble wrap.

Maintenance

- Battery change (if used batteries for power up the system).
- Recommended to clean solar panel by 6 months.
- If any circuit faults we recommend customers to call our hotline for the maintains.

Reuse/Recycle

- Since, We are using ABS material for enclosure, it can recyclable.
- Solar panels are not needed to change for 15 years.(Warranty)
- We encourage customers to reuse the system with the minor repairs done by our company without disposal them.

Disposal

We are planning to buy our disposable product (After 15 years use) from the customers to dispose them in sustainable way or to recycle them.

Marketing and Sales and Beyond

Marketing and Sales

- > Posting flyers in social media.
- ➤ Encourage people to use solar power for garden lighting, domestic power supply as a renewable energy source.
- ➤ Highlighting advantages about the using solar tracking system rather than using a fixed panels in their houses.
- > Discounts are given for loyal customers and who are return products for disposal.
- > Free 1 year service warranty.
- Customer only needed to pay the cost for the components that use for repair after the 1 year.
- > Delivered maintain services by the well skilled electricians and mechanics.





Project Budget

▼ Name	▼ Designator	▼ Footprint	Quantity	Manufacturer Part	▼ Manufacturer	▼ Supplier	Supplier Part	JLCPCB Part Class	EasyEDA	▼ Price	
1 22pF	C1,C2	CAP-TH_L3.5-W3.0-P2.54-D0.8		2 22pf/50V 10%	ReliaPro	LCSC	C9316			LKR	2.9
2 0.1uF	C3	CAP-TH_BD4.0-P1.50-D0.8-FD		1 electrolytic capacitor10UI	50' ValuePro	LCSC	C32856	Extended Part		LKR	1.90
3 330nF	C4	CAP-TH_BD5.0-P2.00-D0.8-FD		1 0.33uF 50V 5*11	ValuePro	LCSC	C45097	Extended Part		LKR	1.92
4 100nF	C5,C6	CAP-TH_BD5.0-P2.00-D0.8-FD		2 0.1UF 50V	ValuePro	LCSC	C28061	Extended Part		LKR	3.00
5 JST_2 PIN	CN1	CONN-TH_XHB-2A		1 XHB-2A Connector	BOOMELE	LCSC	C57981	Extended Part		LKR	1.86
6 Servo Motor	H1	HDR-TH_3P-P2.54-V-F		1 FFH25405-S03S1001K6K	TXGA(特思嘉)	LCSC	C2833886			LKR	22.48
7 LDR CONNECTION WA	Y H2	HDR-TH_4P-P2.54-V-F		1 FFH25405-S04S1004K6K	TXGA(特思嘉)	LCSC	C2833751			LKR	23.70
8 RESET BUTTON	KEY1	KEY-TH_4P-L6.0-W6.0-P4.50		1 button6*6*8.5	ReliaPro	LCSC	C59980			LKR	4.00
9 10k	R1	AXIAL-0.4		1 MFR0W4F2200A50	UniOhm	EasyEDA	E57439		E57439	LKR	4.00
10 330Ω	R2	AXIAL-0.4		1 MFR0W4F2200A50	UniOhm	EasyEDA	E57439		E57439	LKR	1.00
11 ATMEGA328P-PU	U1	DIP-28_L34.6-W7.3-P2.54-LS10.2-	BL	1 ATMEGA328P-PU	MICROCHIP	LCSC	C33901	Extended Part		LKR	800.00
12 LED	U2	5MM LED		1 5mm LED						LKR	3.00
13 7805_Regulator	U3	TO-220-3_L10.0-W4.5-P2.54-L		1 7805	Foshan Blue Roc	ket LCSC	C305416	Extended Part		LKR	47.80
14 16MHZ	X1	HC-49US_L11.0-W4.6-P4.88		1 49SAC16000202060	JGHC	LCSC	C390745	Extended Part		LKR	30.00
15 LDR	LR1,LR2			2	ValuePro	LCSC				LKR	100.00
16 Solar panel				Class A polysilicon solar p	anel					LKR	400.00
17 servo motor				ES08MAII						LKR	800.00
18 PCB print						LCSC				LKR	160.00
19 Enclosure print										LKR	300.00
110	111		Tot	al cost			110	111	""	LKR	2,707.58
			Ma	rkup precentage							109
			IVId	The state of the s						To see a	24/4/2004/04/2004
				Total Selling Price						LKR	2,980.00

^{*} This is the cost for more than 20 units bulk cost and price.

