EL-313 LINEAR CONTROL SYSTEMS

COURSE PROJECT – PROPOSAL TEMPLATE

PROJECT GROUP MEMBERS (2)

1. Zain Ali (19B-020-EE) (Group Leader)
2. Ammar Bin Amir (19B-004-EE)
3. Osama Bin Khalid Raza (17B-051-EE)

PROJECT TITLE:

Solar Tracker

PROJECT ABSTRACT:

Solar tracker, a system that positions an object at an angle relative to the Sun. The most common applications for solar trackers are positioning photovoltaic (PV) panels (solar panels) so that they remain perpendicular to the Sun's rays and positioning space telescopes so that they can determine the Sun's direction. PV solar trackers adjust the direction that a solar panel is facing according to the position of the Sun in the sky.

MOTIVATION:

Studies have shown that the angle of light affects a solar panel's power output. A solar panel that is exactly perpendicular to the Sun produces more power than a solar panel that is not perpendicular. Small angles from perpendicular have a smaller effect on power output than larger angles. In addition, Sun angle changes north to south seasonally and east to west daily. As a result, although tracking east to west is important, north to south tracking has a less-significant impact.

Solar trackers provide significant advantages for renewable energy. With solar tracking, power output can be increased by about 30 to 40 percent. The increase in power output promises to open new markets for solar power.

REFERENCE:

https://www.britannica.com/technology/solar-tracker

COMPONENTS/HARDWARE REQUIRED:

1. Two LDRs
2. Servo Motor
3. Microcontroller
4. Li-Ion Battery
5. Li-Ion Battery Holder
6. Mini Solar Panel
7. PCB

COST ESTIMATION:

Serial #	Components	Unit Price (PKR)	Quantity	Total Price (PKR)
1	LDR	50.00	2	100.00
2	Servo Motor SG90	280.00	1	280.00
3	Arduino NANO	1100.00	1	1100.00
4	ICR18650 Li-Ion Battery	120.00	1	120.00
5	ICR18650 Li-Ion Battery Holder	50.00	1	50.00
6	Mini Solar Panel	300.00	1	300.00
7	PCB	300.00	1	300.00
8	Miscellaneous	250.00	1	250.00

The total approximate cost is about 2,500 PKR.