**What is the Energy Crisis?**

The energy crisis is the concern that the world’s demands on the limited natural resources that are used to power industrial society are diminishing as the demand rises. These natural resources are in limited supply. While they do occur naturally, it can take hundreds of thousands of years to replenish the stores.

The **energy crisis is a broad and complex topic**. *Most people don’t feel connected to its reality unless the price of gas at the pump goes up or there are lines at the gas station.* The energy crisis is something that is **ongoing and getting worse**, despite many efforts. The reason for this is that there is not a broad understanding of the complex causes and solutions for the energy crisis that will allow for an effort to happen that will resolve it. *Solar energy holds the key for eradicating energy crisis which is imminent in the near future.*

WHY WE NEED SOLAR ENERGY?

* **Solar power - unlimited source of energy**

Solar power is the **key to a clean energy future**. Every day, the sun gives off far more energy than we need to power everything on earth.

* **Solar energy - a clean source**

**No greenhouse gas emissions** are released into the atmosphere when you use solar panels to create electricity. And because the sun provides more energy than we’ll ever need, electricity from solar power is a very important energy source in the move to clean energy production.

* **No fuel to burn**

After solar panels have been installed, operational costs are quite low compared to other forms of power generation. **Fuel isn’t required**, and this means that solar power can create large amounts of electricity without the uncertainty and expense of securing a fuel supply.

* **Solar power is also scalable.**

**This means** that it can be deployed on an industrial scale or it can be used to power a single household. When it’s used on a small scale, extra electricity can be stored in a battery or fed back into the electricity grid. Overall, the sun gives off far more energy than we’ll ever need. The only limitation is our ability to convert it to electricity in a cost-effective way.

**WHY SOLAR TRACKING?**

Solar panel tracking solutions are ***a more advanced technology for mounting photovoltaic panels.*** Stationary mounts, which hold panels in a fixed position, can have their productivity compromised when the sun passes to a less-than-optimal angle. Compensating for this, solar trackers automatically move to “track” the progress of the sun across the sky, thereby maximizing output. It’s a fantastic system for energy output.

* Trackers generate more electricity than their stationary counterparts due to increased direct exposure to solar rays. This increase can be as much as 10 to 25% depending on the geographic location of the [tracking system](http://solarflexrack.com/wp-content/uploads/2014/06/SFR-TDP-Tracker-Flier-Rev-1.pdf).
* There are many different kinds of solar trackers, such as [single-axis](http://solarflexrack.com/products/tracker/) and [dual-axis](https://www.solarpowerworldonline.com/2017/09/dual-axis-solar-tracker/) trackers, all of which can be the perfect fit for a unique jobsite. Installation size, local weather, degree of latitude and electrical requirements are all important considerations that can influence the type of solar tracker best suited for a specific solar installation.
* Solar trackers generate more electricity in roughly the same amount of space needed for fixed-tilt systems, making them ideal for optimizing land usage.
* Advancements in technology and reliability in electronics and mechanics have drastically reduced long-term maintenance concerns for tracking systems.

WHY DUAL AXIS TRACKING?

The two-axis tracker ensures that the solar panel absorbs maximum sunlight to generate maximum electricity. The two separate axis control system that would benefit the solar panel and increase its rate of generating energy. The goal of the control system is to automatically position and tilt the solar panel towards the strongest line of light. The first axis is in charge of tilting the solar panel left and right towards the strongest side of light. The second axis enables rotation of the entire system so that the first axis can tilt in the direction of the light with highest intensity.

**OBJECTIVES:**

The main objective of project is:

* To rotate solar panel through LDR by using servo motor. We have proposed solar panel to control the panel that it should face the sun till it is present in the day.
* To minimize the cost of installation and operation providing high reliability.

**APPLICATIONS:**

* Used by the solar monitoring stations.
* Used by the people working in mines for monitoring cracks.
* Used by the Process control industry.
* Used by the Wild life researchers.
* Used in the Distributed control systems and R&D industries.

**ADVANTAGES:**

* It reduces human errors.
* Human power requirements are less.
* It saves more power.
* It requires less time.
* Cost effective and time efficient.
* Installation is easy.
* Consumes less energy and is more efficient.
* Increases the overall efficiency of the system.
* Facilities can operate with little maintenance or intervention after initial setup.
* Ability of tracking sunlight at any weather. Average power gain of solar panel with dual axis tracking system over normal stationary arrangement is 40-50%.