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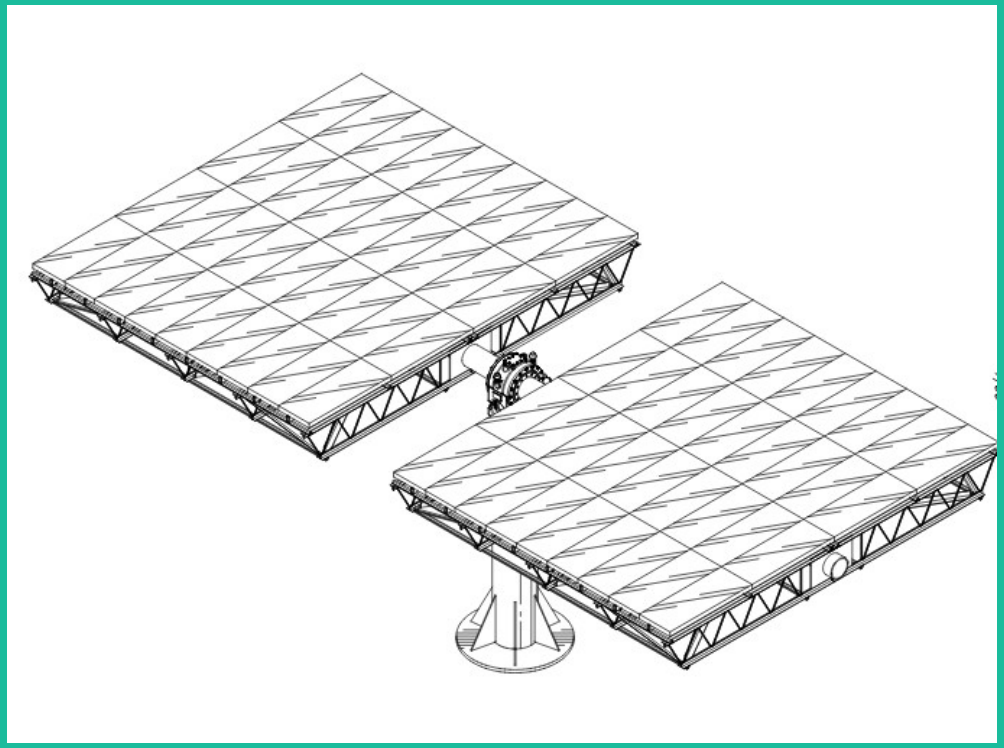

JLN Solar, Inc. Dual Axis Tracker

The Electric Butterfly™

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Why solar?

Why use Solar vs Nuclear or Wind to solve our energy needs without contributing to the increasingly changing climate?

- **Utility nuclear reactors are presently very expensive.**
- **Large utility wind generators require vast amounts of unoccupied land and produce disturbing noise for wildlife and humans.**

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Why dual axis?

What are the benefits of using dual axis trackers vs single or fixed?

- **Efficiency. Dual axis trackers are 30-35% more efficient than fixed, dual axis trackers are 17-20% more than single axis tracker.**
- **Dual axis trackers offer valuable agricultural production and livestock grazing in between the trackers. This increases the potential profits from one parcel of land.**
- **Dual axis trackers also stow to the horizontal position, to increase survival in high wind situations and other hazards.**

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Why CIGS thin film PV?

4. Why are CIGS panels better than other thin film PV?

- **CIGS (Copper, Indium, Gallium and Selenium) with ZnOS2 buffer contains non toxic elements, as compared to Cadmium Telluride panels which, if broken, will contaminate the ground below them.**

- **Superior energy harvest on cloudy days**

- **CIGS PV Modules are the most advanced and the most efficient among the thin film technologies. Today, the efficiency of a laboratory solar cell is 23.3%, the champion module efficiency is slightly in excess of 18.5%, and the shipped commercial module is between 14% and 16% efficient. JLN SOLAR,INC. projects its module efficiency resulting from the first pilot 125 MW plant to be between 15% -16%, with potential continuous improvements towards >18% efficiency. The module is 1240mm x 630mm with a rating of about 120-130 W. ***

***Source: Electricity Generation and the Electric Butterfly™**
An exploratory study for the JLN Solar Electric Butterfly™
August 2019 By Miguel Contreras, PhD

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Electric Butterfly?

Why use the Electric Butterfly™ vs other brands?

- The Electric Butterfly™ features a custom designed gearbox and is built to withstand 140 mph hurricane force winds, tidal surges, class 5 earthquakes,and sand storms in the stowed position.
- It is built with American steel, which is recyclable
- The unit is self-contained for security and is not dependent on the internet for operation.

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How about an Electromagnetic pulse?

Why is the control box on the Electric Butterfly protected by a Faraday cage and not dependent on the internet or phone lines?

- The 1859 naturally occurring electromagnetic pulse knocked out telegraph communications at the time and could also knock out our current electric grid if a similar event happened today. The controls for the Electric Butterfly are protected by a Faraday cage which should protect against the majority of electromagnetic surges that are not extremely severe.

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Built in the USA?

Why build The Electric Butterfly in the USA?

- Eliminates dependence on foreign energy providers.
- Superior American components; gears, solar modules, steel, ball bearings, roller bearings, nuts, bolts, coatings.
- Bring manufacturing jobs back to US to stimulate economy and create jobs.

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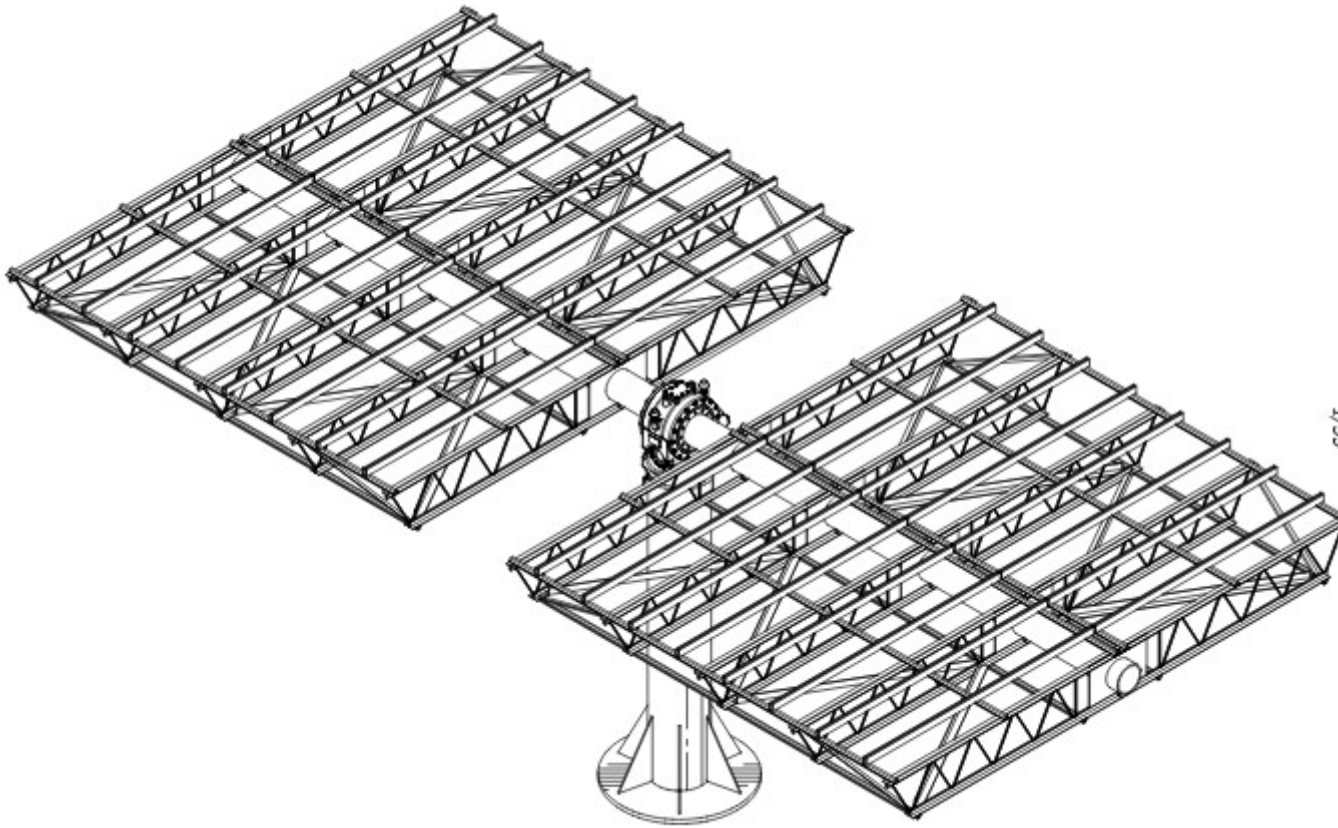
Why JLN Solar?

Why select JLN Solar, Inc to build an array?

JLN Solar Inc. has 30 Years of research and development experience in the field of thin film photovoltaics, custom transmissions and steel structures. This ensures a superior two axis solar tracker for the USA.

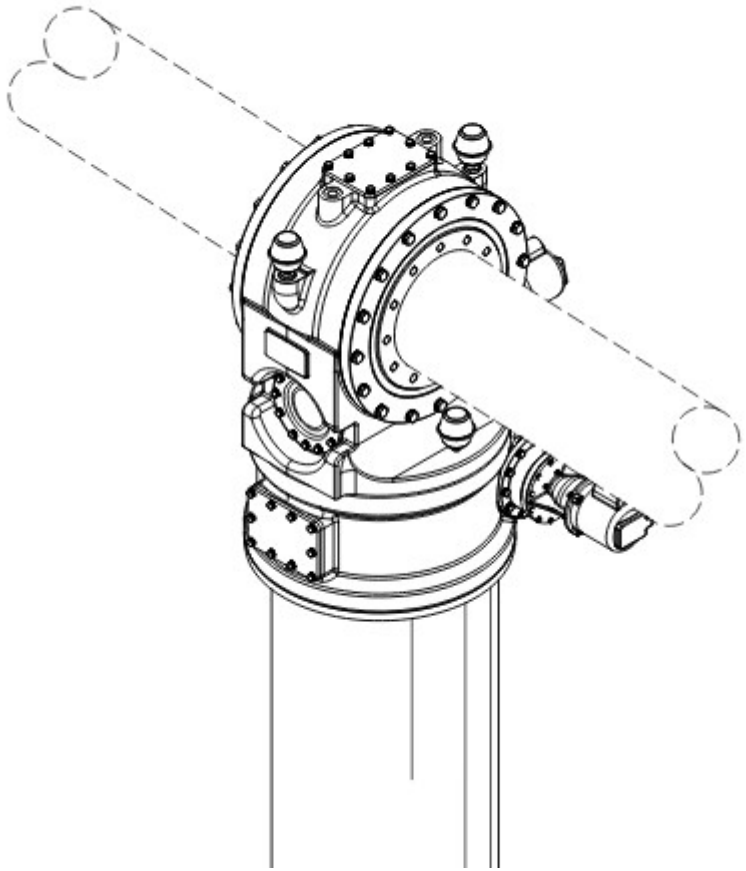
Construction

The Electric Butterfly stands 14 feet tall with a 40 foot wingspan, and is fitted with 72 solar modules.

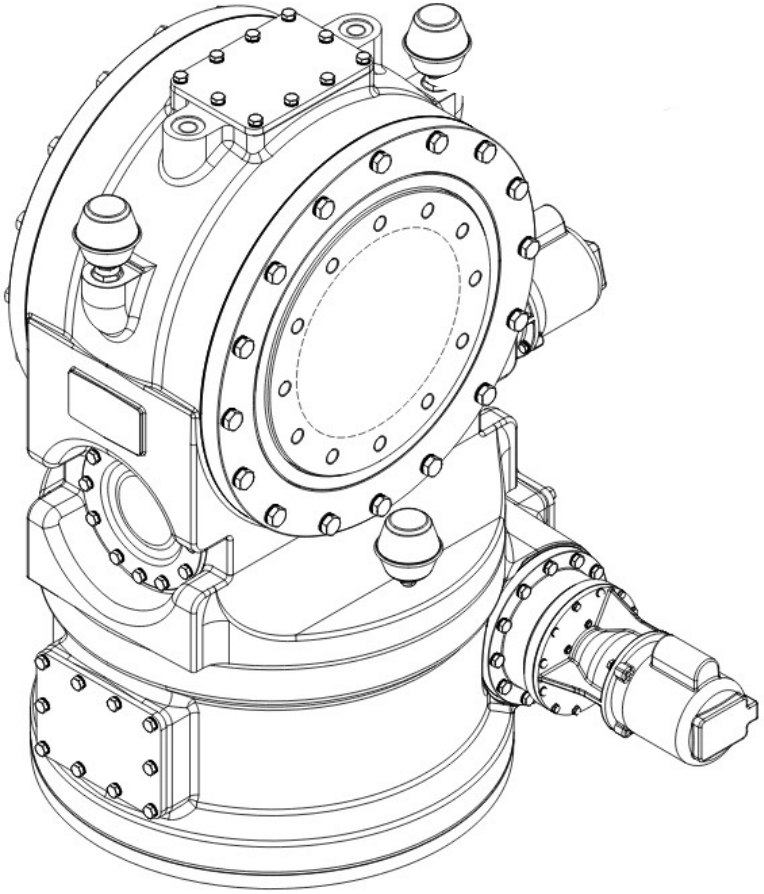


Transmission

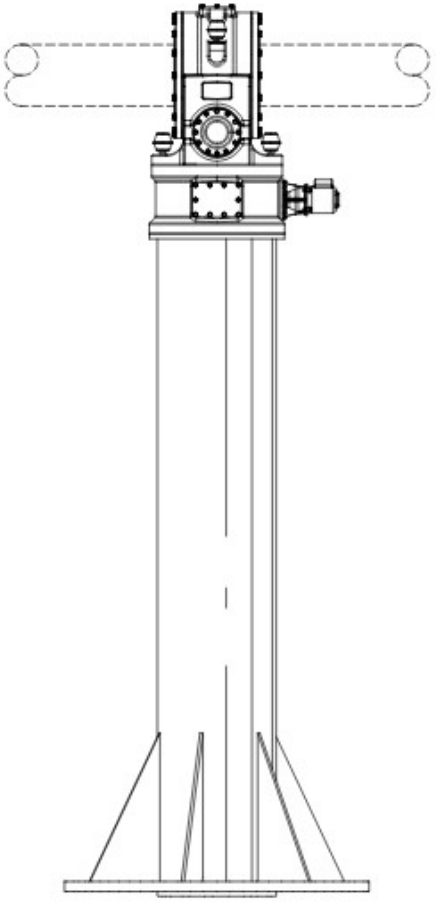
Our custom designed transmission was built by Edwin Hahlback at Powertrain Engineers, Inc., world renowned for their innovative design. JLN SOLAR, INC challenged the engineers to design a unique, dependable two axis solar transmission that is built to withstand large forces such as Class 5 earthquakes, 140 mph hurricane winds,and sandstorms.



Transmission



The transmission weighs approx. 3600 lbs to withstand extreme forces.
Transmission, mast, modules, and wings can be transported using regular commercial flatbed truck for installation ease.



Control Box

JLN SOLAR INC. custom designed a controller box for the Electric Butterfly™ to be independent from the internet. It can withstand EMP's, natural or weaponized. The gear box and controls are at a high level from the ground, making them tamper resistant against persons or livestock.

Installation

- Pre- wired electrical assemblies
- Mast mounts to the foundation in a short time
- Array is assembled on the ground
- A small 5 person team with a crane can mount entire mast, transmission, and module assembly to the foundation by nuts and bolts.

Maintenance

- Powder coated steel resists corrosion.
- Weather tight control box resists rain and dust particles.
- Lubrication fluid checked once a year
- Control box checked for insects once a year
- Electric motors changed every 10-20 years
- Damaged solar modules easily replaced as needed
- Electric Butterfly lifetime estimate: 50 years

Safety

- No fast moving parts, high temperature parts or exposed high voltage parts that children, pets, birds, wildlife,or livestock would be exposed to.
- No moving parts such as open cog gears or exposed hydraulics within reach of children, livestock or pets.
- Most steel assemblies are powder coated to avoid the toxic process of galvanizing.
- Electric Butterfly will be transported in a safe manner from factory to installation by regular flat bed truck or combination of rail and flatbeds, thus avoiding dangerous and awkward large trucks, unlike wind and nuclear installations.

Prototypes

JLN Solar Inc has built two prototypes of the Electric Butterfly on an Almond orchard in Chico, California.

EB1 has over 1100 hours of continuous operation producing electricity.
EB2 is under construction, finishing the electronic controls.

These arrays are personally owned by Jim Negley, CEO, JLN Solar, Inc.

Contact

JLN Solar, Inc.
591 Redwood Highway
Suite 2155
Mill Valley, CA
94941

JLNSolarIncorporated@gmail.com