



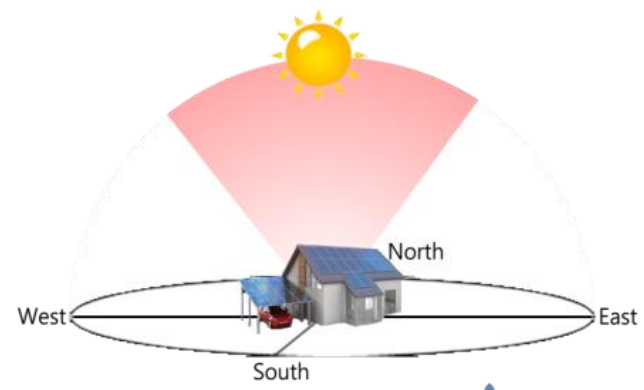
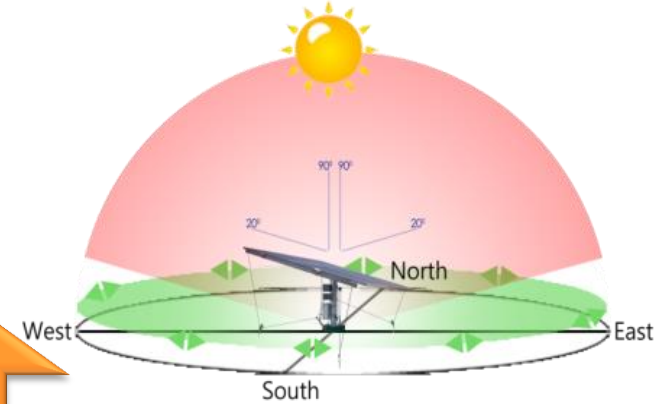
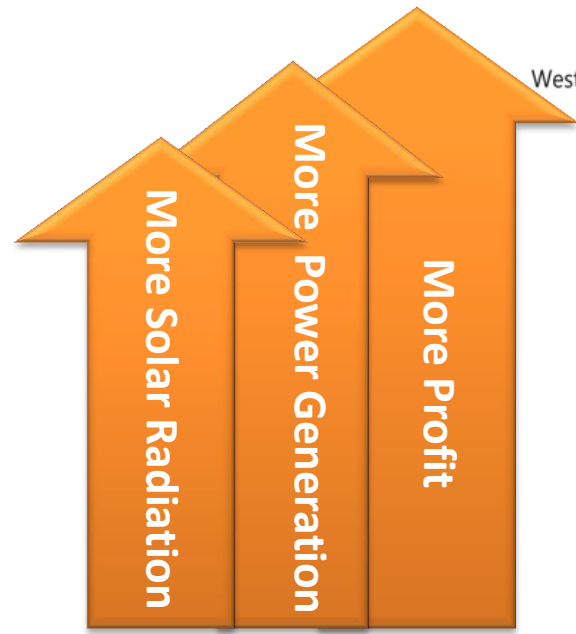
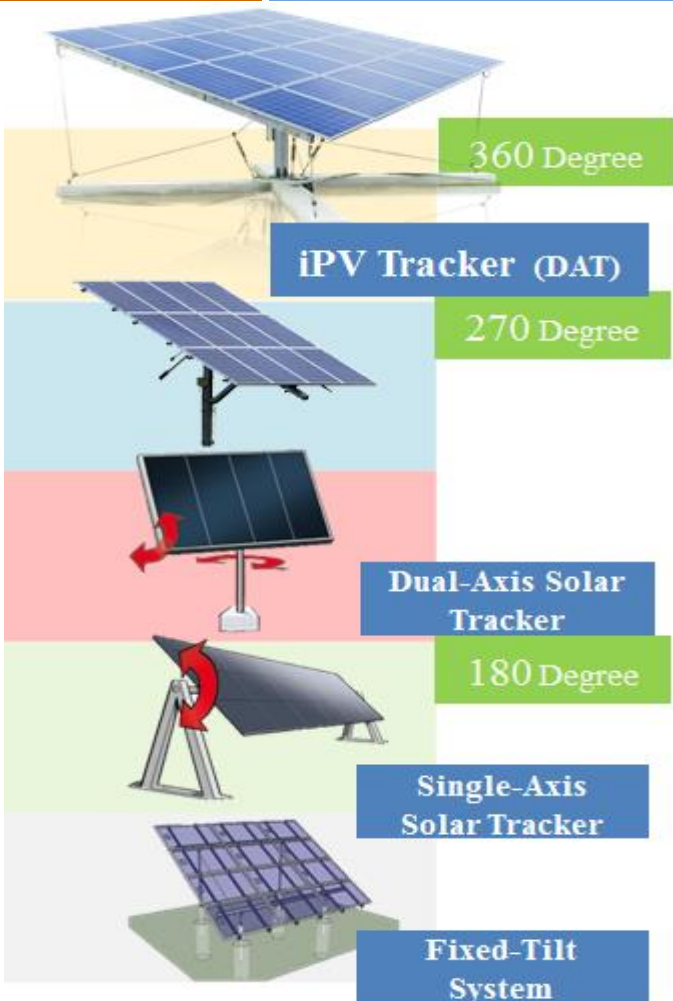
# **The Benefit of iPV Tracker (DAT)** **(Dual-Axis Tracking System )**

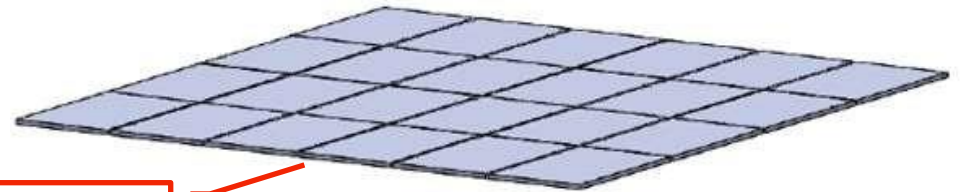
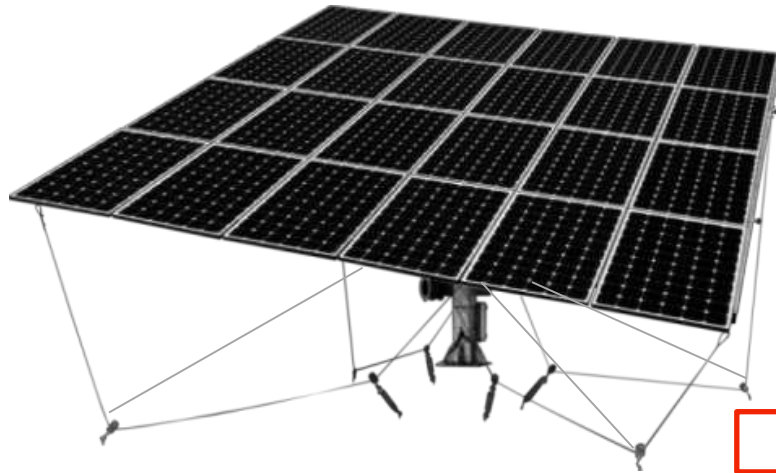
**Big Sun Energy Technology Inc.**



# ➤ Type of Solar Tracking System

**Wider angle tracked yield higher power and better profit**





模組

平台

感測器

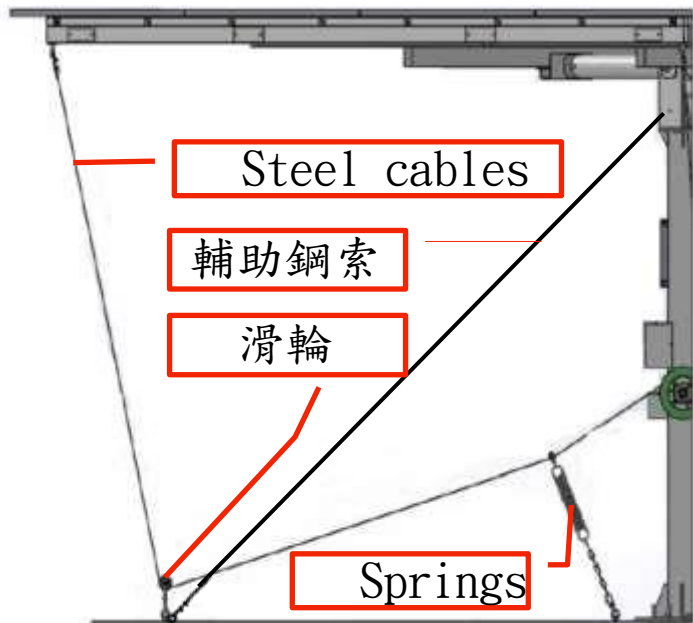
Universal Joint

立柱

Control Box

線盤

Motor Set

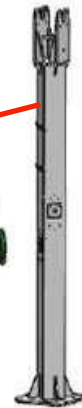


Steel cables

輔助鋼索

滑輪

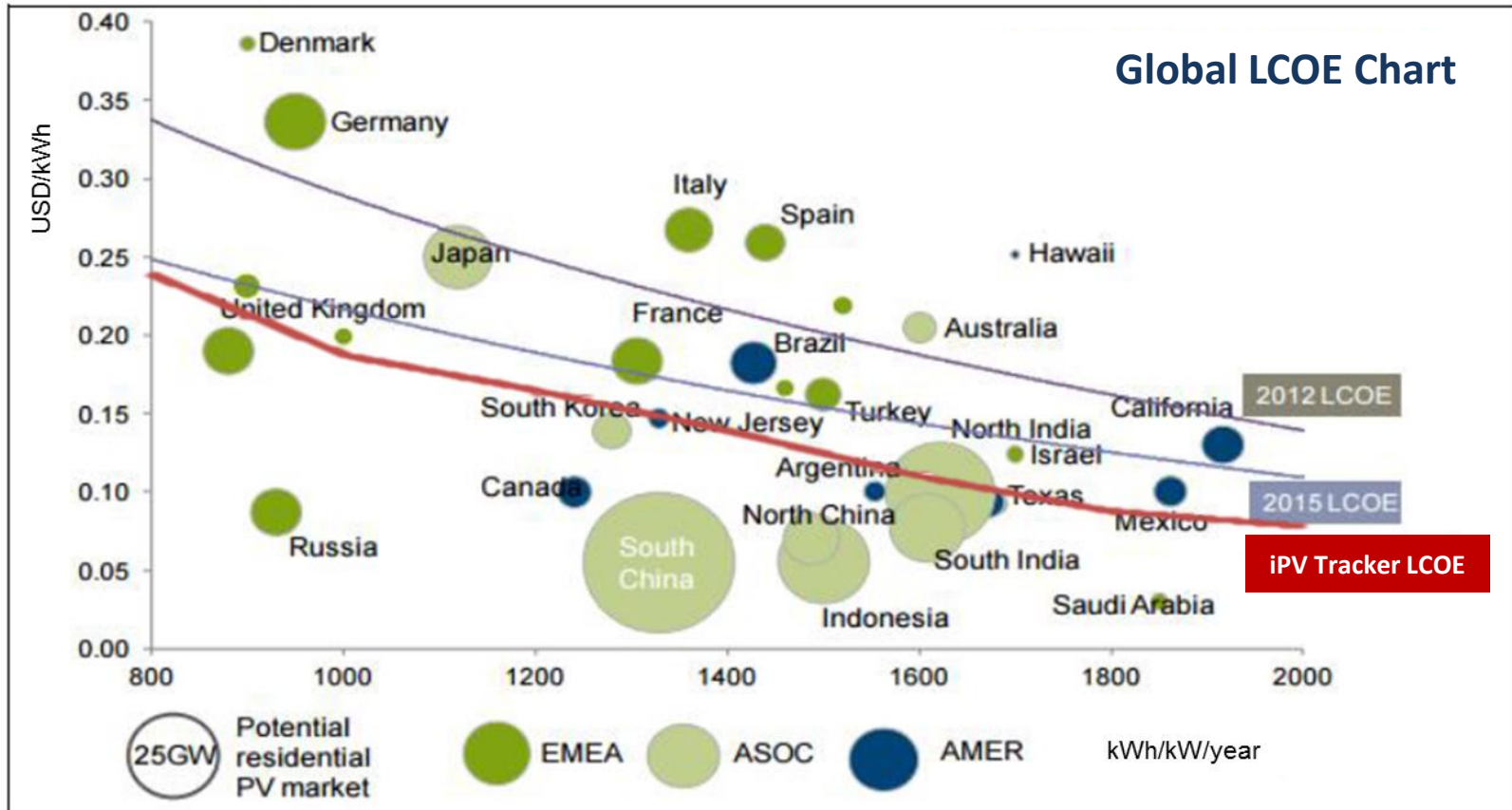
Springs



# ➤ iPV Tracker can bring forth Grid Parity earlier

## Reduce LCOE Effectively

### Grid Parity vs. LCOE



Source: Frankfurt School · Bloomberg New Energy Finance · Nov. 2015 | V.S. BIG SUN  
iPV Tracker

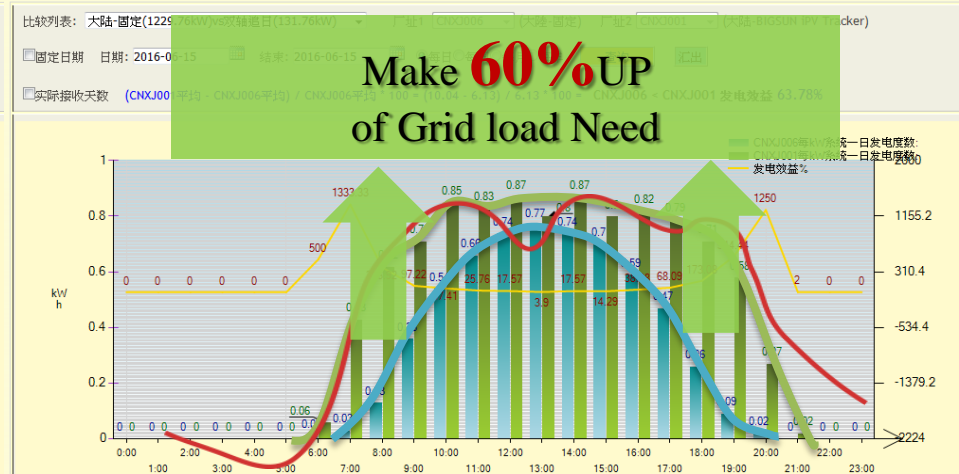


# ➤ iPV Tracker elevate the grid utilization efficiency

## Gain 30 to 100%\* Grid utilization against the Fixed-Tilt system

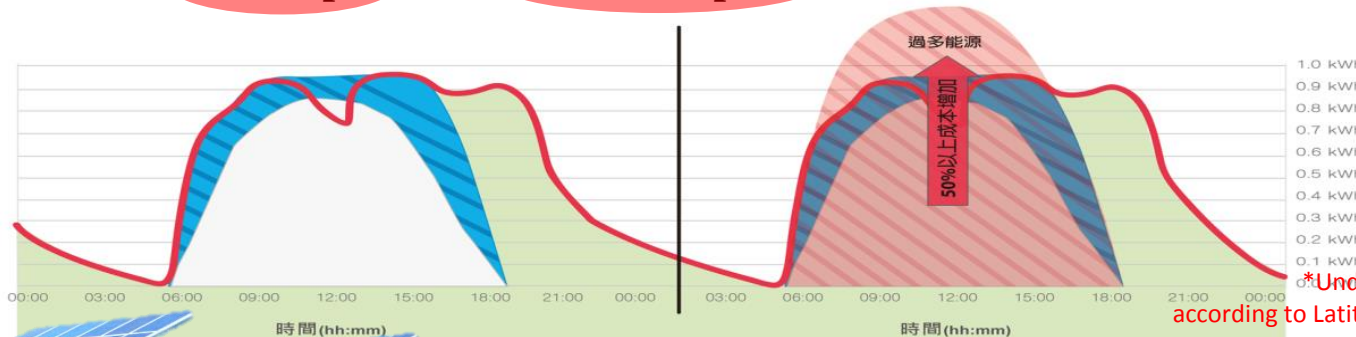
- Supplement the peak period ( tip load ) gap

- Match better with the Grid load curve and keep the Grid stable



- All Fixed tilt option shall induce **cost hiking**, **load impulse** and **abandoned power crisis**

Real benchmark data in China Experimental PV site in Xinjiang, TBEA



\*Under full irradiance, varies according to Latitude and climatic region

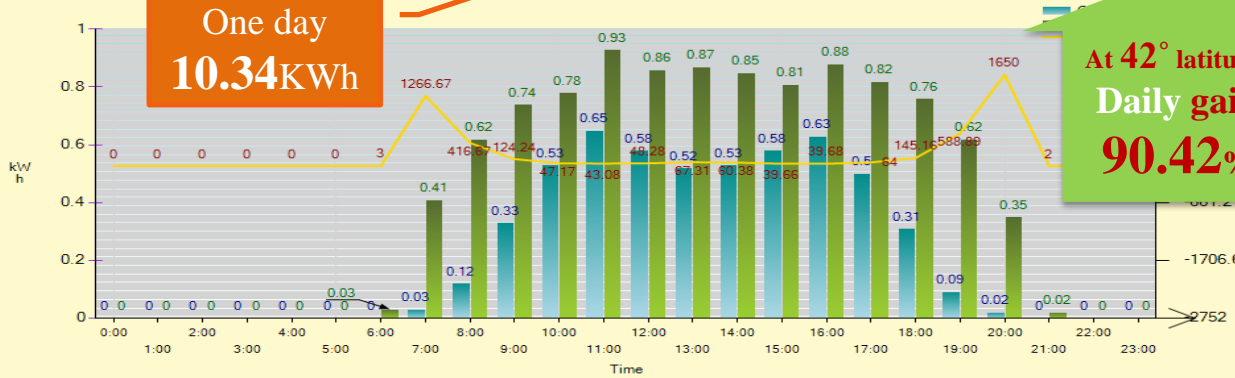


# ➤ iPV Tracker elevate the power generation efficiency

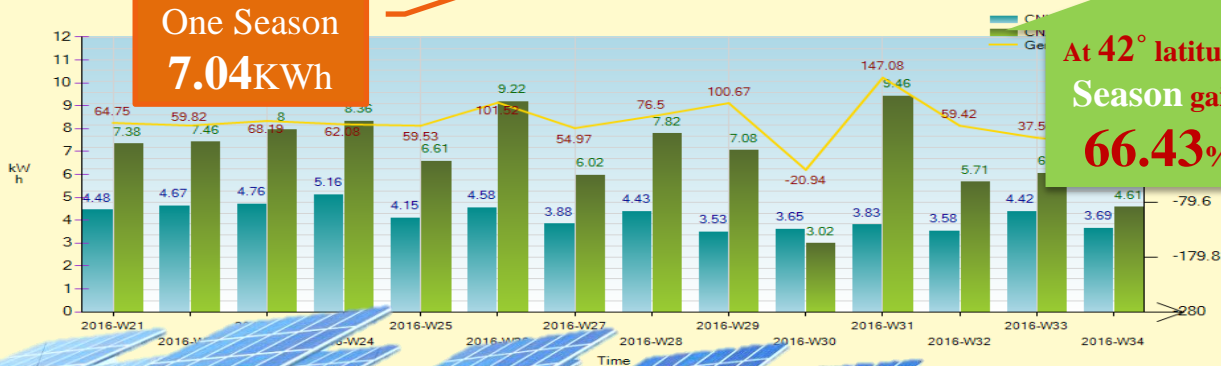
## Gain 30 to 100%\* more power generation against the Fixed-Tilt system

### Plant Compare

Compare List: China-Fixed(252.54kW)vsDualTracker(131.76kW) Site1: CNXJ006 Site2: CNXJ001 (CHINA-BIGSUN iPV Tracker)  
 Date: 2016-07-14 To: 2016-07-14 daily weekly monthly yearly Query Export  
 Actual data days:  $(CNXJ001\text{AVG} - CNXJ006\text{AVG}) / CNXJ006\text{AVG} * 100 = 10.34$  5.43 / 5.43 \* 100 = CNXJ006 < CNXJ001 Generation Benefits 90.42%



Compare List: China-Fixed(252.54kW)vsDualTracker(131.76kW) Site1: CNXJ006 Site2: CNXJ001 (CHINA-BIGSUN iPV Tracker)  
 Date: 2016-05-22 To: 2016-08-22 daily weekly monthly yearly Query Export  
 Actual data days:  $(CNXJ001\text{AVG} - CNXJ006\text{AVG}) / CNXJ006\text{AVG} * 100 = 7.04$  4.23 / 4.23 \* 100 = CNXJ006 < CNXJ001 Generation Benefits 66.43%



Real benchmark data in China Experimental PV site in Xinjiang, TBEA

# +30~100%\*

➤ Better profit

➤ Higher power

➤ More irradiance

\*Under full irradiance, varies according to Latitude and climatic region



# ➤ iPV Tracker revitalize the land usage benefit effectively

**Gain 15 to 50%\* more land usage Against the Fixed-Tilt system**

## **iPV Tracker (Dual-Axis Tracker System)**

Real benchmark data in China Experimental PV site in Xinjiang, TBEA  
At 42° latitude / Module 280kW

**20GW Capacity = 42billion KWh Annual Yield = 25,000 hectare land usage**

➤ **Yield higher power over the same 20GW capacity:**

系統	裝設量	年均日發電	年發電量	年增發電量
雙軸追日系統	20GW	5.75度	420億度	<b>提高 50.92%↑</b>
固定型系統	20GW	3.81度	278億度	

➤ **With lower land usage and cost:**

系統	裝設量	裝設投入	年發電量	使用土地	土地利用效率
雙軸追日系統	20GW	<b>減少50%</b>	420億度	2.5萬公頃	<b>提高30%↑</b>
固定型系統	30GW		420億度	3.2萬公頃	

**\*With patented Backtracking function, more efficient land usage can be expected**

\*Under full irradiance, varies according to Latitude and climatic region



# ➤ iPV Tracker provide best availability/lowest energy consumption



## Promise reliable 99.9% availability rate and up

- Universal(cross) joint + stable & robust steel cable and pulley driving mechanism = Low O&M costs、 high availability



- Under due O&M practice, iPV Tracker availability over 20 years is projected below:

架設首年	第五年標準	第十年標準	二十年標準
<b>99.9%</b>	<b>99.8%</b>	<b>99.5%</b>	<b>99%</b>

- Due Diligence Verification

**1<sup>st</sup>**  
1<sup>st</sup> DAT in the world receiving due Diligence (Bankability) report

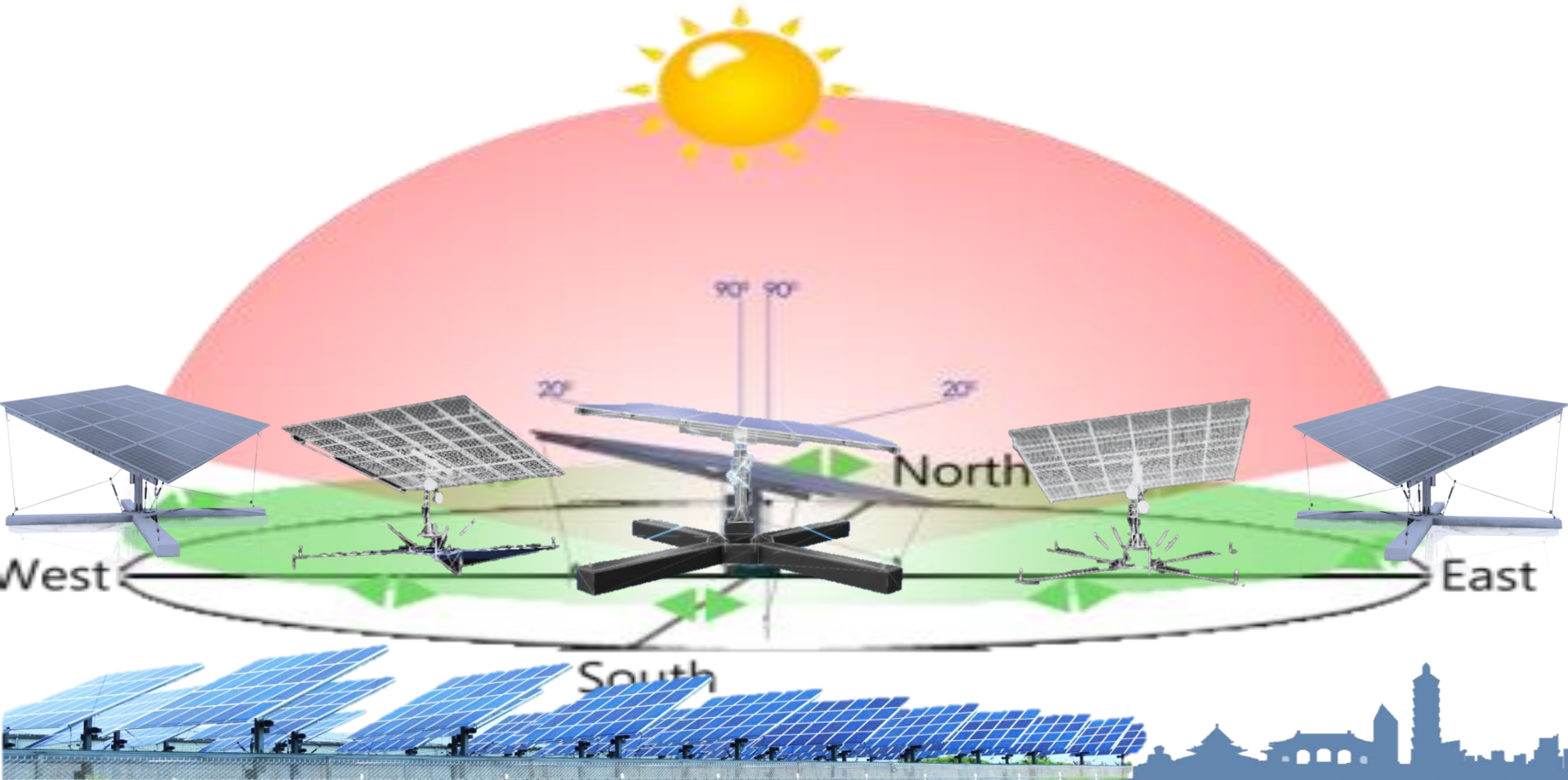
Issued by B&V, a global engineering consultant leader in Energy, water and telecommunication.



# ➤ iPV Tracker's precise synchronization with the Sun

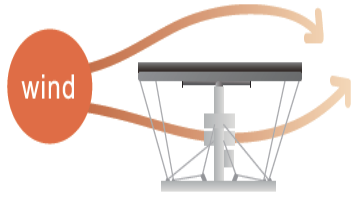
## Tracking Accuracy within $\pm 0.5^\circ$

- High torque and miniature driven speed by steel cable and pulley promise tracking precision and better generation efficacy
- Assured under routine annual maintenance

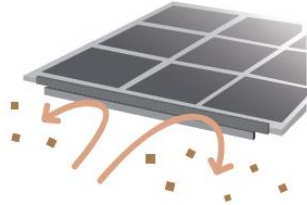


# ➤ iPV Tracker mitigate best against climate change

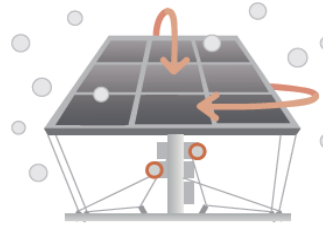
## Autonomous Secured Power Plant , Lower Investment Risks



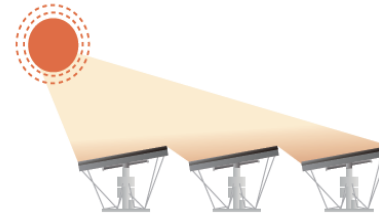
Wind Resistant



Dust Removal



Snow Removal



Backtracking



Flood Avoidance



Avoid Costly Climatic Risk

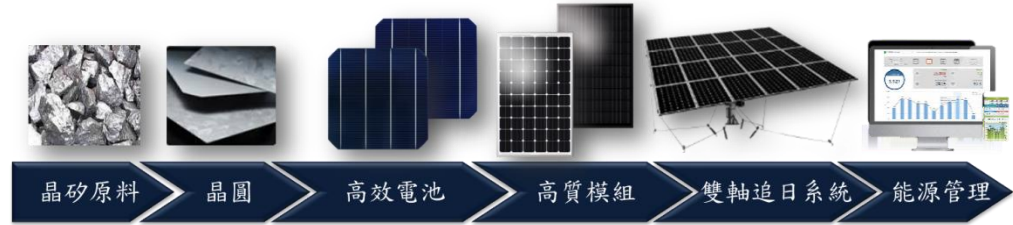


# ➤ iPV Tracker can spur the growth in associated industries

## Vertically integration and horizontally alliance towards Industrial 4.0

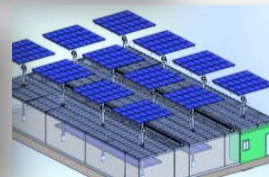
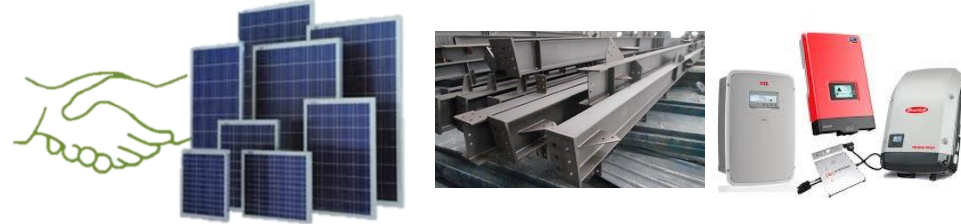
### Vertically Integration

- ✓ PV industrial chain
- ✓ peripheral industries (electrical, steel, civil engineering and others)

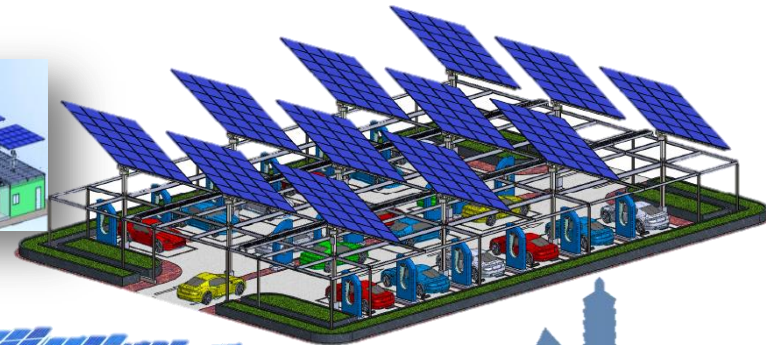


### Horizontally Alliance

- ✓ Agrosolar, Aquasolar, solar and animal husbandry
- ✓ Energy sources & IoT
- ✓ Transportation & vehicle Ind.
- ✓ Tourism & landscape



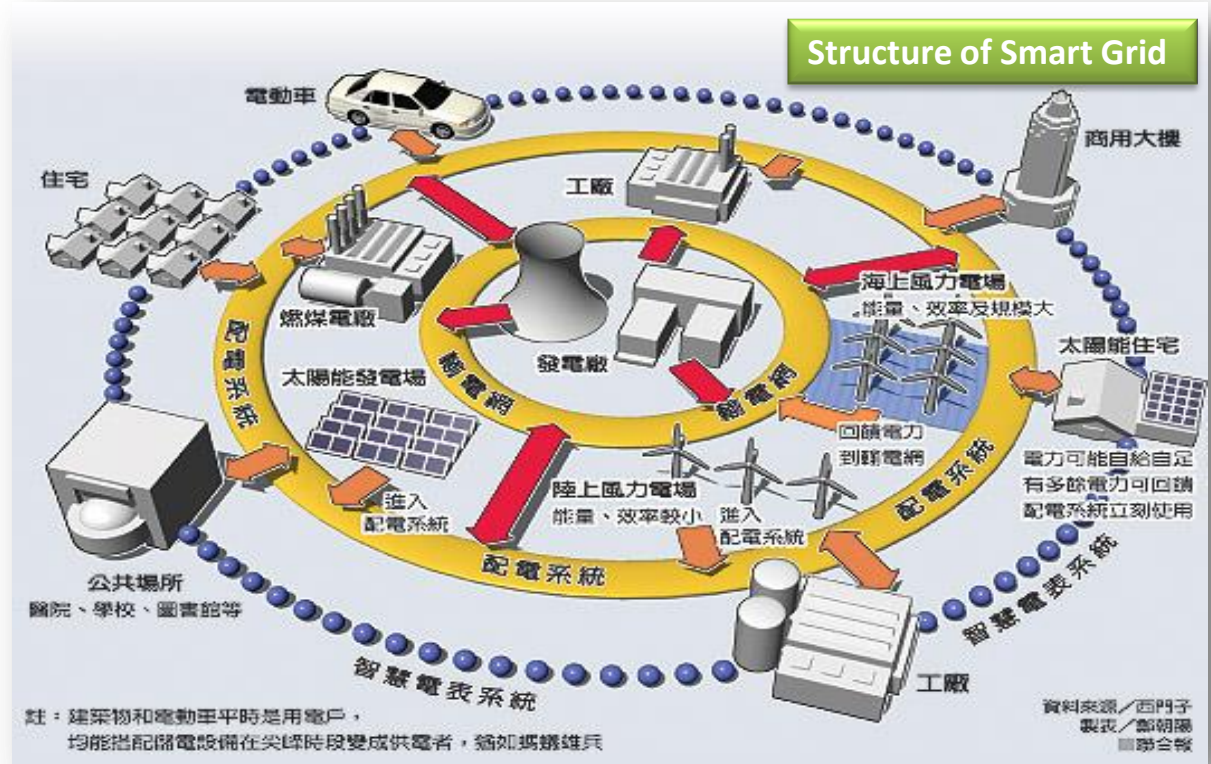
Carport & EV charger



# ➤ Synergy of iPV Tracker and iPvita monitoring platform

## Real Time Monitoring of power plant performance

Smart integration of iPV tracker hardware and iPvita monitoring software provide real time monitoring, diagnosis and super efficacy in Grid O&M



➤ Summary of iPV Tracker **NINE BENEFITS**

- ✓ Reduce **LCOE**
- ✓ Raise Grid Utilization by **30~100%\***
- ✓ Increase Power Generation by **30~100%\***
- ✓ Elevate Land Usage rate by **15~50%\***
- ✓ Solid **99.9%\*** Availability Rate
- ✓ Accurate Tracking within  **$\pm 0.5^\circ$**  Deviation
- ✓ Mitigate **Climate Change** Impact
- ✓ Migrate to **Industrial 4.0**
- ✓ Synergy with **Energy Monitoring System**

\*Under full irradiance, varies according to Latitude and climatic region



## Ground Type

### *Global Project*

日本滋賀  
ShiGa, JAPAN  
750 kW  
地面型



iPV Tracker Application over 20MW installed globally

## Roof Top

### *Global Project*

台灣屏東  
PingTung, Taiwan  
840kW  
屋頂型

**World's Largest Rooftop Dual-Axis Solar Power Station**  
全球最大屋頂行雙軸追日電廠



# AgroSolar

## *Global Project*

台灣 雲林  
YunLin, TAIWAN  
300kW  
農棚型





**Thanks for your attention**

