

Project Case





50MW Horizontal Single-axis Tracking PV System Project of Zheneng Ningdong 150MW PV Composite Power Generation Project

- Installed Capacity: 50MW
- Project Location: Ningdong, Ningxia, China
- Tracking System Type: Cosin Solar PT Tracking System

To Provide Low-cost, High-quality and Clean Energy!

Company Profile

Cosin Solar Technology Co., Ltd. (Cosin Solar for short), established in 2010, is a reliable provider for molten salt tower CSP solutions. Being specialized in solar thermal energy and multi-energy hybrid power generation business, it has been exploring comprehensive energy applications rooted in molten salt energy storage and developing new business for intelligent PV tracking system. With all these efforts, Cosin Solar is committed to providing high-quality low-cost green energy for human beings with advanced and efficient renewable energy utilization technology.

 13 Continuous R&D	 8 National Scientific Research Projects
800 Million R&D Investment	22 Provincial & Municipal Scientific Research Projects
FICHTNER An International authoritative third-party Certified tower-type molten salt energy storage CSP station design technology and self-developed core equipment	 332 Patent applications
	205 Patents authorized
	49 Software copyrights
 2 Times Provincial First Prize in Science and Technology	 4 International Standards
1 Time Provincial Second Prize in Science and Technology	10 National Standards
2 Times Municipal First Prize in Science and Technology	

Core Competence

Mechanical Structure Design Capability

A professional mechanical structure design team has designed and developed tracking products of various specifications, and the quantity of corresponding frames, slew drives, linear actuators and controllers applied 100,000+ sets.

Control Algorithm Design Capability

A large-scale heliostat field automatic calibration system is developed. The tracking accuracy of the heliostat is above 0.1°, which is 1/20 of the accuracy requirement of the PV tracking system.

Control System Development Capability

100,000-sets scale intelligent control system and tracking system centralized control software have been developed and successfully applied.



Reliability Design Capability

Possess the design capability of highly reliable products, and the products have passed the tests under harsh environmental conditions such as high altitude (above 3000 meters), extreme temperature (below -35°C), extreme weather (strong wind above 42m/s), etc.

Solution Design Capability

Possess overall solution design capabilities such as PV + CSP multi-energy hybrid power stations and provide users with the most optimized solutions.

Project Installation and Commissioning Supervision Capability

A complete set of project execution standards and a set of scientific project execution progress management system are established.

Cosin Solar Tracking System

Horizontal Single-Axis PV Tracker

Cosin Solar PJ Tracking System

Product Introduction

Thanks to 10+ years of experience in independently designing, developing, manufacturing, and operating high-precision intelligent tracking products, Cosin Solar has actively expanded and extended the industrial chain, carried out technological innovation, and successfully developed Cosin Solar PV tracking system well suited for harsh environmental conditions. The system has the advantages of high adaptability, high reliability, accurate tracking, stable operation, and easy installation & maintenance. Combined with the self-developed intelligent tracking algorithm, it can greatly increase PV power generation. What' s more, it has been successfully applied in projects.

In addition, Cosin Solar PV tracking system has passed Cermak Peterka Peterson (CPP) wind test , at the same time, obtained the product certification issued by the global authoritative organization TÜV SÜD, fully verifying the high reliability and stability of this series of PV tracking system.



One of the world's leading third-party certification and testing agencies



One of the best wind tunnel test laboratories in the world

High Reliability

- Parallel Multiple Driving Points Design**
Parallel multiple driving points design increases spindle rigidity, the anti-vibration performance is improved by 20%+, the stress distribution is uniform, and the maximum stress is reduced by 70%.
- Electrical Synchronization**
Servo synchronous drive technology dynamically adjusts the output torque and makes it more stable with a noise level lower than 30dB.
- High Strength Structural Design**
With the main shaft as the center of rotation, it adopts a symmetrical triangular support structure with high structural strength.

High Intelligence

- Reverse-tracking Function**
It has a reverse tracking function with terrain adaptability to ensure all-day tracking without blocking, preventing the risk of "hot spots", improving operational safety, and effectively increasing power generation.
- Customized Kinematic Models**
Customize the kinematics model for each row of trackers to achieve more precise tracking control (**tracking accuracy $\leq 1^\circ$**).
- Power Generation Increase**
8%-15% ↑

Product Advantages

- Compatible with All Monofacial and Bifacial PV Modules**
The size of the installation interface can be adjusted according to features of terrain and landform, hence can easily adapt to complex terrains such as slopes and to maximize land utilization with best efficiency.
- Adapt to Various Applications**
The product can be customized and optimized according to features of terrain and landform, hence can easily adapt to complex terrains such as slopes and to maximize land utilization with best efficiency.

- Easy Maintenance at a Lower Cost**
Modular design, easy to assemble and disassemble.
- Flexible Commissioning**
Remote and on-site local control modes to support on-site hand-held device debugging.
- Efficient Troubleshooting**
Equipment self-diagnosis function to quickly identify the cause of the fault.

High Adaptability

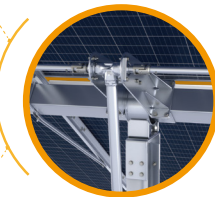
Easy Installation and Maintenance

Cosin Solar PT Tracking System

Single Row / Linear Actuator Multi-Point Drive

The multi-point parallel drive design has more drive pylons, and the stress distribution of the frame is more uniform, suitable for harsh environmental conditions such as strong winds.

Support mechanical or electrical synchronization hence a more uniform driving torque.



With a hard limit mechanism inside the linear actuator, the overall hard limit and overload protection function is more reliable.

Unique sealing design is applied on linear actuator. Grease lubrication is used hence no oil pollution and no risk of oil leakage.



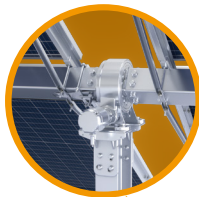
Technical Parameters

Basic Parameters	
System Type	Single row horizontal single-axis
Component Type	Compatible with all monofacial and bifacial PV modules
Tracking Angle Range	$\pm 45^\circ$ ($\pm 60^\circ$ optional)
Drive Technology	Linear actuator multi-point parallel drive, 24V DC brush/brushless motor
Pile Foundation	Hammered piles/cast-in-place piles/cement foundation
Structural Materials	Zinc-Aluminum-Magnesium coated steel/hot-dip galvanized steel/pre-galvanized steel
Power Supply	Transformer power supply/from PV string (with battery)
Electric Control Parameters	
Control System	MPU controller
Control Software	Centralized control software/open communication interface
Control Algorithm	Astronomical algorithm + position sensor closed-loop control + intelligent tracking algorithm*
Tracking Accuracy	$\leq 1^\circ$
Communication Method	Wired mode RS485/wireless mode Zigbee
Environmental Adaptability	
Wind Resistance Design	According to specific requirements
Slope Range	North-south slopes $\leq 15\%$ *
Protection Level	IP66
Working Temperature	- 40°C to 70°C
Safety Protection	
Strong Wind and Snow Protection	Available
Night Mode	Available
Motor Overload Protection	Available

*Backtracking algorithm with terrain adaptation + radiation optimization tracking strategy.
*Can be adjusted according to the terrain of the project without the east-west direction restraint.

Cosin Solar PJ Tracking System

Single Row / Slew Drive Multi-Point Drive



Higher north-south slope adaptability, up to 20%, suitable for larger slope sites.

The slew drive adopts a closed transmission with the worm gear transmitted in a fully lubricated sealed box unaffected by sand and dust, meaning better sand and dust adaptability.

The slew drive can achieve 360-degree rotation, so the slew drive solution has a wider tracking angle range.



Technical Parameters

Basic Parameters	
System Type	Single row horizontal single-axis
Component Type	Compatible with all monofacial and bifacial PV modules
Tracking Angle Range	$\pm 60^\circ$
Drive Form	Slew drive multi-point parallel drive, electrical synchronization, 24V stepping servo motor
Pile Foundation	Hammered piles/cast-in-place piles/cement foundation
Structural Materials	Zinc-Aluminum-Magnesium coated steel/hot-dip galvanized steel/pre-galvanized steel
Power Supply	Transformer power supply/from PV string (with battery)
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