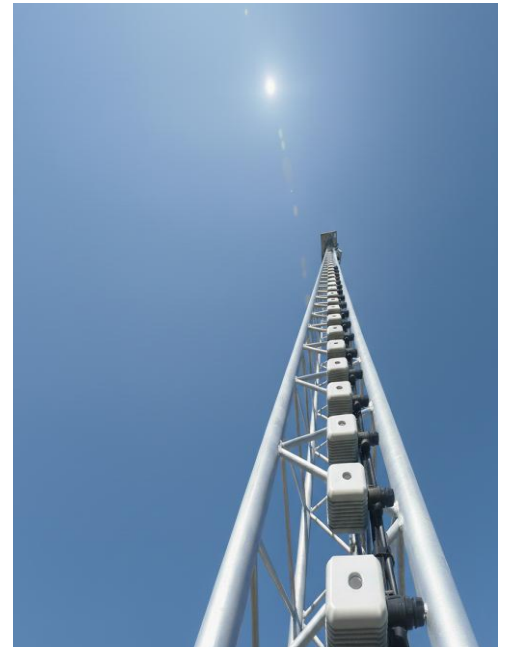


Helioschar+

Advanced heliostat optical characterization for commercial solar tower plants

Patented detector-and-camera technology to measure real heliostat beam quality and surface/slope deviations at scale.

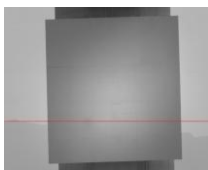
Technology transfer / licensing opportunity for China



Large tower fields need reliable knowledge of each heliostat, not only theoretical optical models.

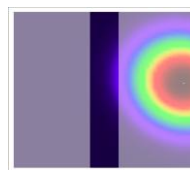
Conventional target-camera techniques become noisy, slow and inaccurate for far, small or low-flux heliostats. Helioschar+ directly scans the reflected beam with light detectors and cameras while the heliostat remains static.

From target uncertainty to direct beam measurement



Current method

Target-camera images suffer from target non-uniformity, camera limitations, low contrast and partial reconstruction.



Helioschar+

Optoelectronic detectors measure the beam directly with high sensitivity and low noise, supported by camera-based surface analysis.

Key value for Chinese tower CSP

- Characterize heliostat optical quality independently of size or position in the field.
- Enable QA during manufacturing, assembly, commissioning and operation.
- Reduce uncertainty in receiver flux and support safer, less conservative aiming strategies.
- Transferable patented technology for local industrialization by a Chinese partner.

<0.1 mrad

reported precision KPI achieved

5 min

typical fast procedure target

parallel

multi-system characterization potential

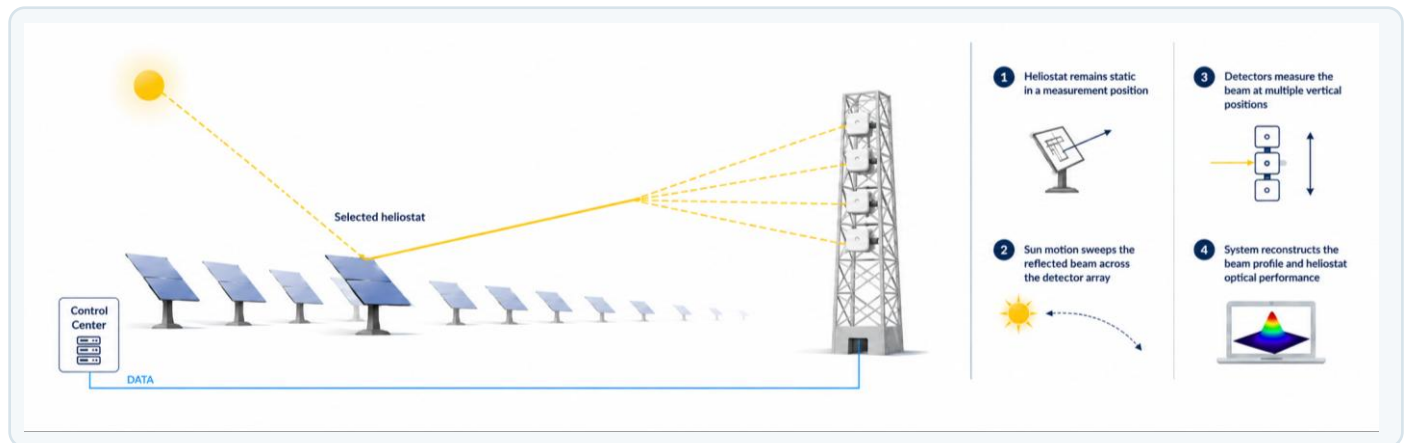
WO/2020/021147
CN112442253A/B
patent references

Helioschar+ technology

CENER does not propose a China service model

Validated know-how ready for transfer to an industrial partner

How it works



Technology package

- Optoelectronic detector array
- Vertically distributed cameras
- Automatic variable gain electronics
- Signal normalization and post-processing
- Know-how for beam/slope characterization

Use cases

- Heliostat manufacturing QA
- Field assembly and commissioning
- Optical quality acceptance testing
- Receiver protection and aiming strategy
- Solar-field digital diagnostic tools

Development and transfer status

Field-validated patented technology, ready for transfer to an industrial partner for final product adaptation, industrialization and local deployment.

Intellectual property

International: WO/2020/021147
China: CN112442253A / CN112442253B
CN title: 根据反射的光束表征反射元件的方法
Publication in China: 2 March 2021
Applicant/assignee: Fundación CENER
Patent/know-how licensing available for China.

Ideal China partner

- Heliostat manufacturer or solar-field supplier
- Tower CSP developer / EPC / owner
- Optical instrumentation or control company
- Local manufacturer able to complete industrialization

Partner with CENER to industrialize Helioschar+ for large-scale Chinese tower CSP deployment.