

VANGUARD 2P

PRESENTATION

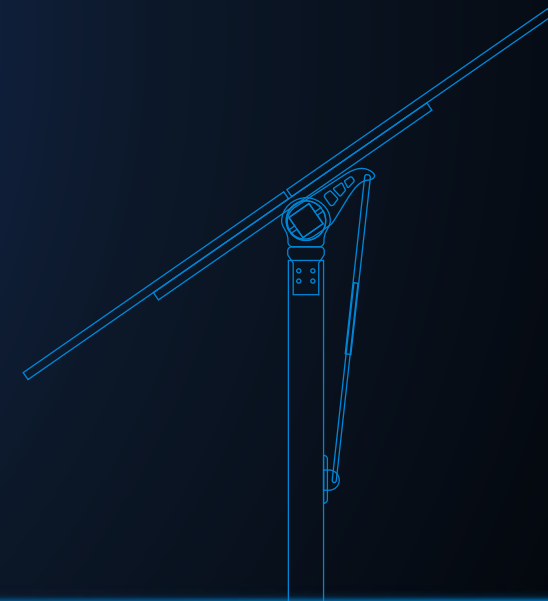
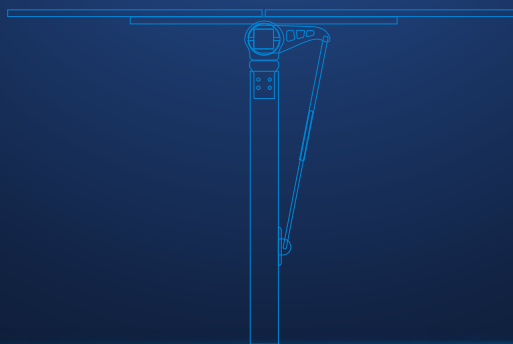
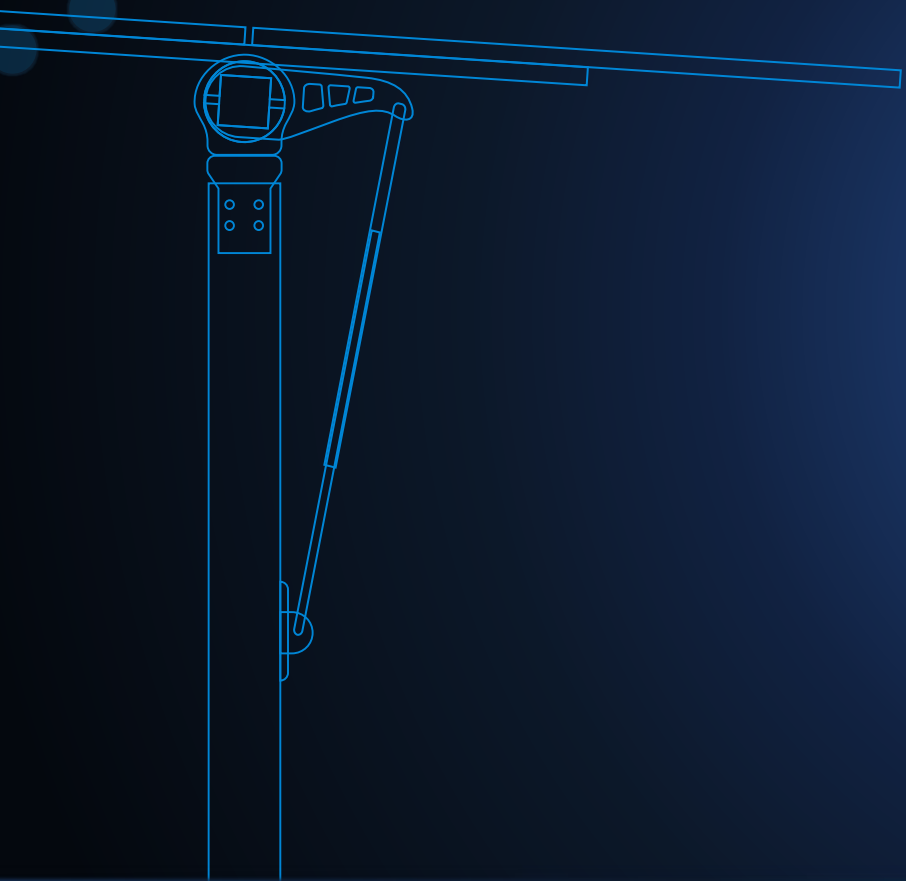
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- TRINATRACKER PRODUCT OVERVIEW
- VANGUARD INTRODUCTION
- VANGUARD FEATURE
- TRINA INTEGRATION

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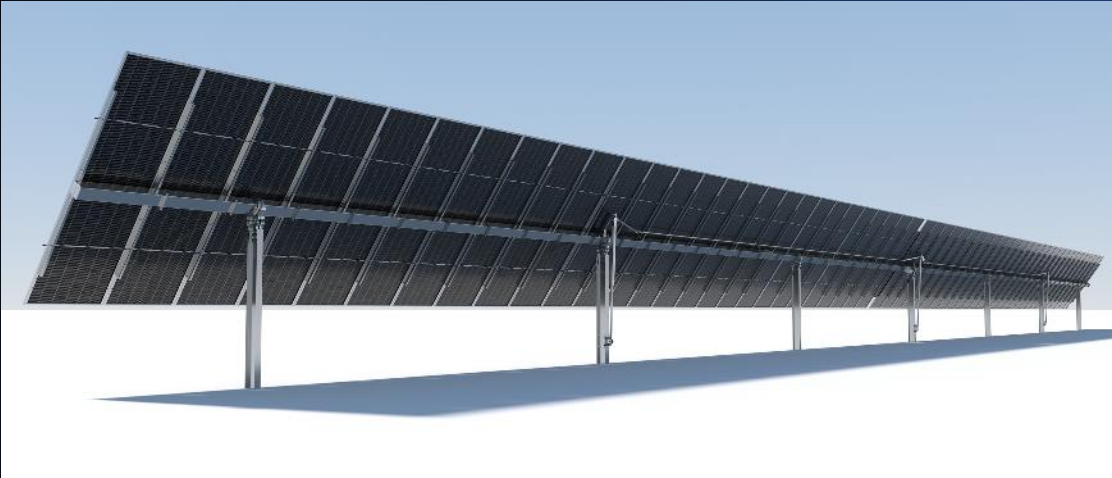
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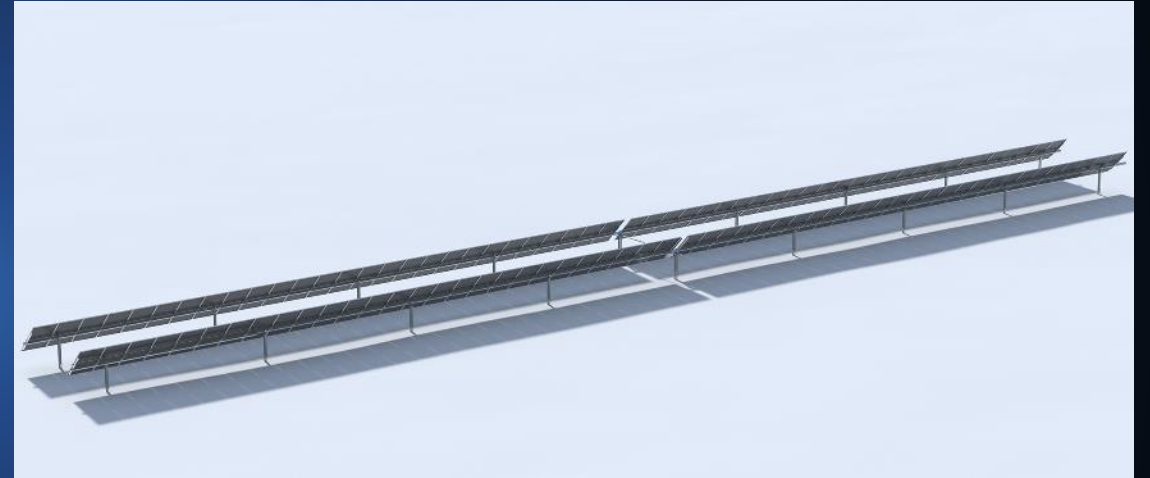
TRINATRACKER FAMILY

Vanguard™ 2P



Independent Row Tracker

Agile™ 1P



Dual Row Tracker

VANGUARD: BORN FOR CHALLENGING CONDITIONS

Irregular
Site Layout



Uneven
Terrain



Strong Wind
Region



Difficult
Soil

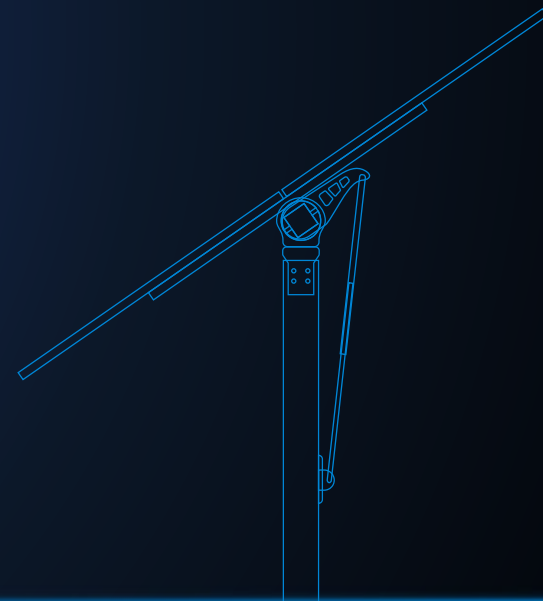
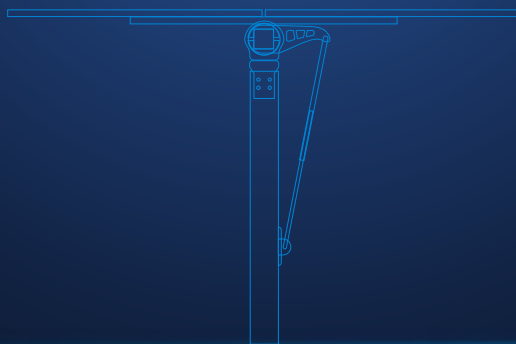
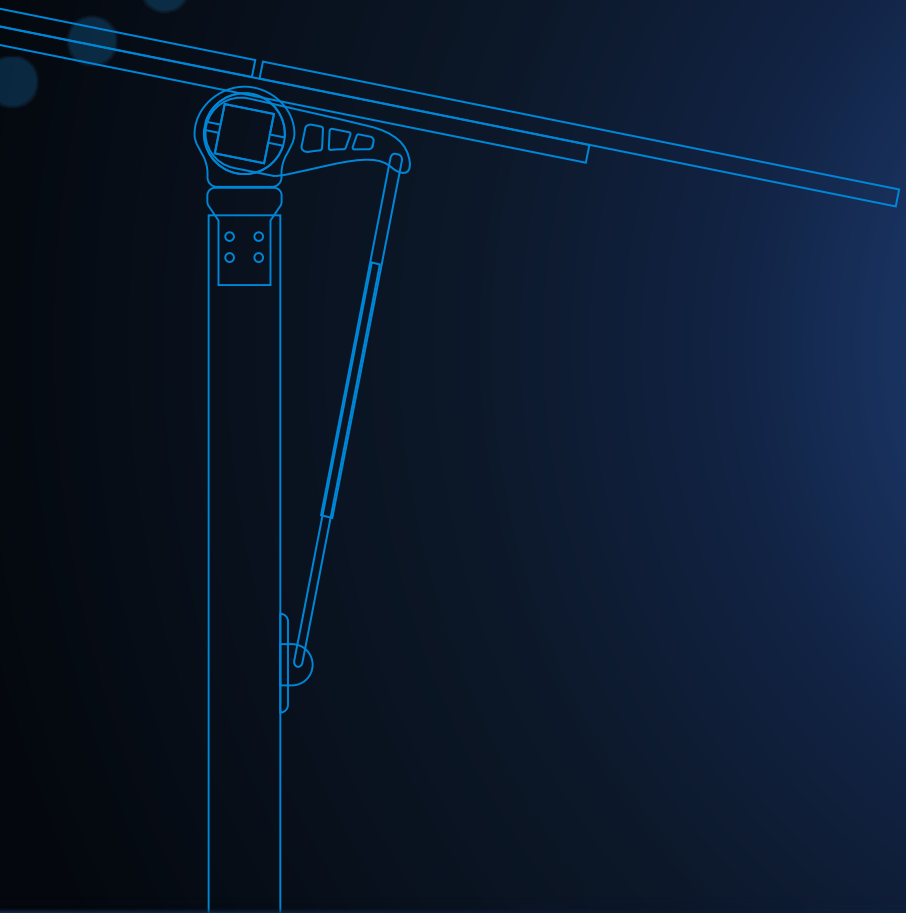


High
Corrosive
Area



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OVERALL PERFORMANCE

TrinaTracker

VanguardTM

More Compatible Modules

400W to 670W⁺

Upgraded 2-in-Portrait Design

Up to 4 String / 120 Modules Per Tracker

Higher Power Density

Up to 68KW Per Tracker

Extract Extra Tracking Capability

±55° (110°) Tracking Range

Flexible Terrain Adaptability

Up to 15% N-S

KEY COMPONENTS

TrinaTracker

Increased Yield Gain From
SuperTrack

Boost Extra **3-8%** Yield
Gain

Reliable Communication

Zigbee or **LoRa** Available

Optimized Pile Design

From **7** Piles Per
Tracker

Enhanced Torque Tube
Design

170mm Robust Tube for
2P Operation

Revolutionized Multi-
Drive System

Critical Wind Speed
Increase Significantly

Patented Spherical
Bearing Design

Angle Adjustability Up To
30%

SYSTEM DESIGN OVERVIEW

For a **1MW** System,

Vanguard only needs:

Land

14,000m²

Modules

1,536

Tracker

16

Total Torque
Tube Length

1,088m

Pile &
Foundation

107

Motor

16

Note: the data is evaluated in terms of 600W+ module

LOWER SYSTEM BOS AND LCOE



Vanguard™



Maximum 120 pieces of modules

Maximum 90 pieces of modules

Traditional 2P Tracker



66 kW

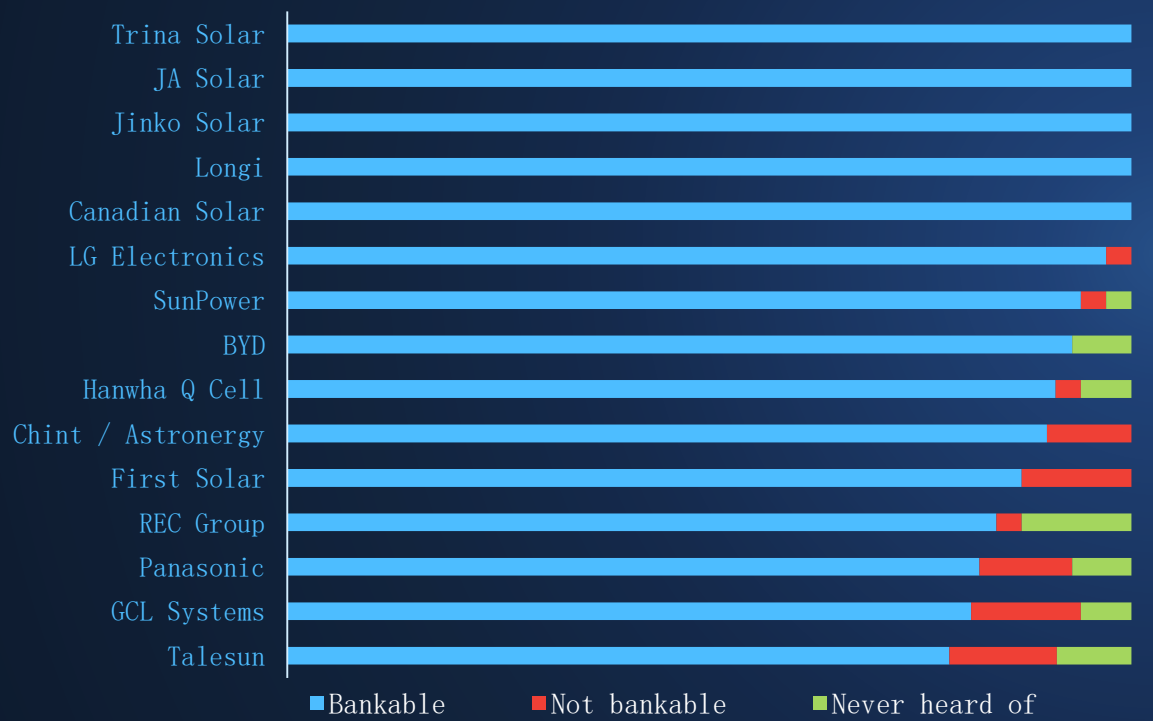
49, 5 kW

Comparing to Traditional 2P Tracker

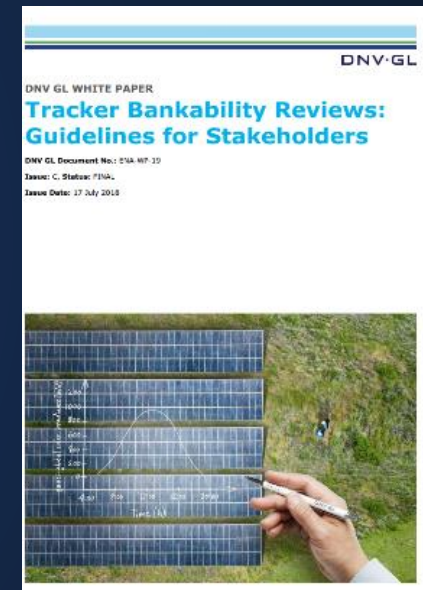
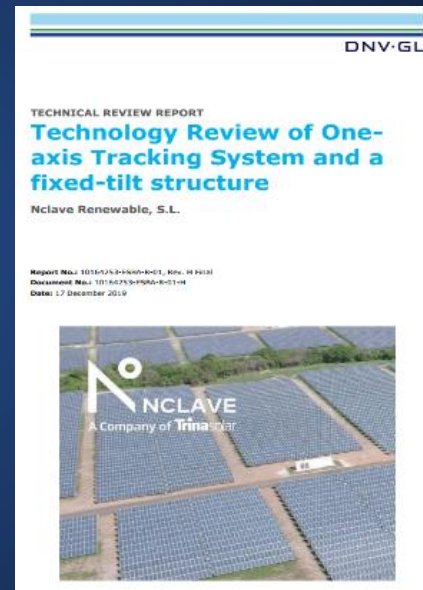
−36%	−31%	−25%	−25%	−8. 7%	−2. 5%
Module Assembly	Foundation	Installation	DC Cables	BOS	LCOE

SUPERB BANKABILITY*

Trina recently maintained its 100% bankability record with Bloomberg New Energy Finance for the 5th consecutive year



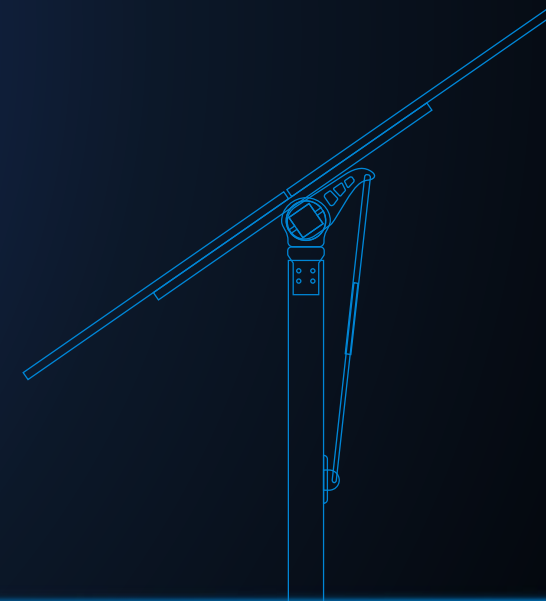
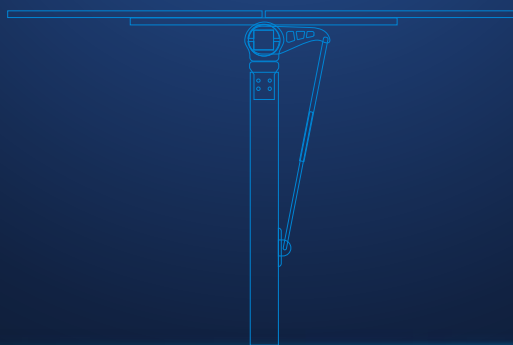
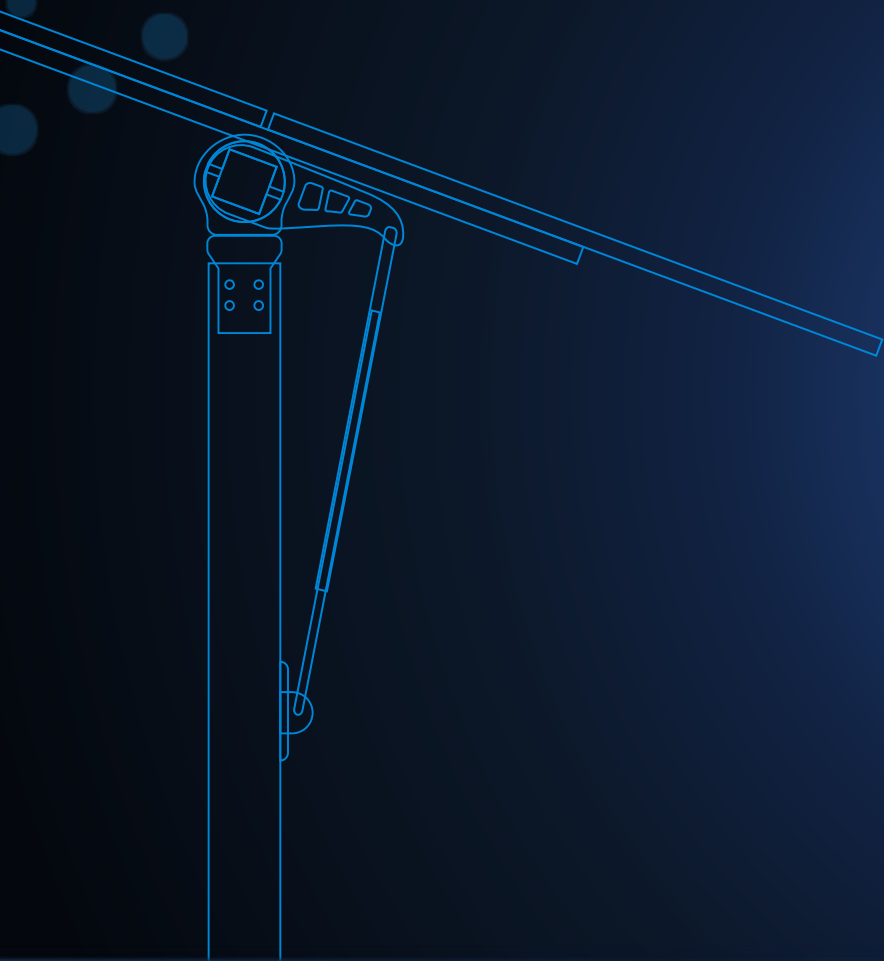
Source: Bloomberg Module Manufacturer Bankability Ratings 2020



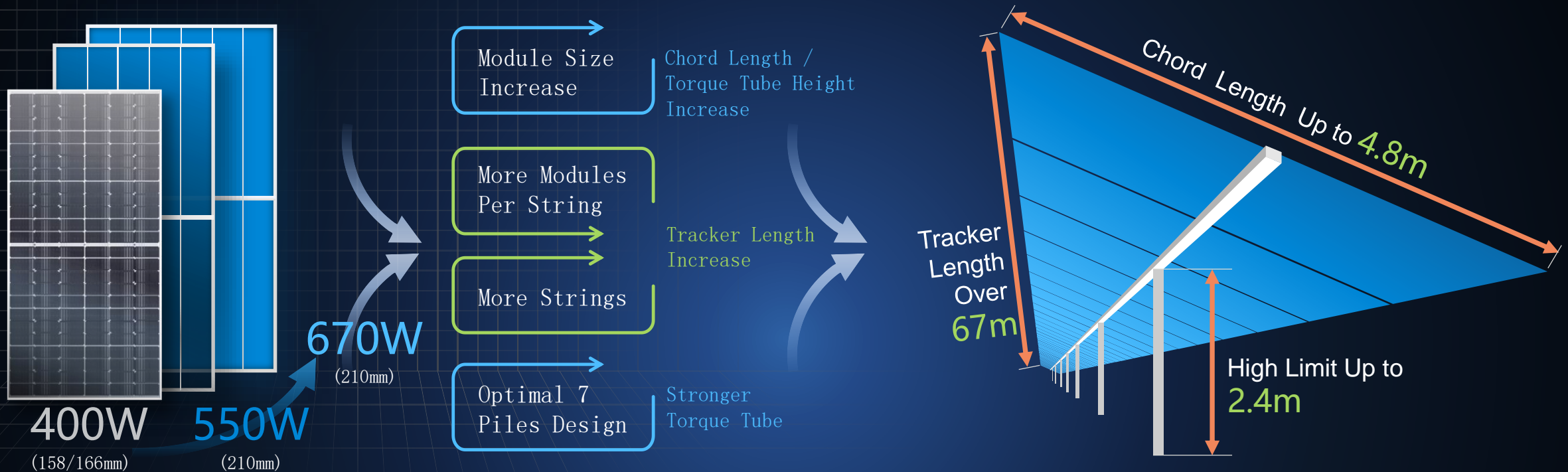
DNV-GL has continually provided valuable endorsement to TrinaTracker

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DESIGN FOR LARGE FORMAT MODULE



Module	Module Size (mm)	2P Chord Length	Normal Tracker Length	Torque Tube Height @500mm Ground Clearance	Torque Tube
400W ⁺	2111*1046	✓ (4.32m)	✓ (66.47m, 4 strings)	✓ (1.75m)	✓ (170mm)
550W	2384*1096	✓ (4.77m)	✓ (63.81m, 3 strings)	✓ (1.91m)	✓ (170mm)
670W	2384*1303	✓ (4.77m)	✓ (62.43m, 3 strings)	✓ (1.91m)	✓ (170mm)

Note: Vanguard is also compatible with 540W (182mm) and 580W (182mm) modules

COMPREHENSIVE WIND TUNNEL TESTING BY RWDI

- Static Wind Load Coefficients
- Dynamic Wind Load Factors (DAF)



Pressure
Model
Wind
Tunnel
Research

2D
Sectional
Model Tests

- Aerodynamic Derivatives
- Static Force and Moment Coefficients



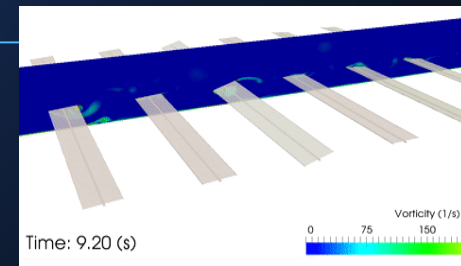
- Mean and Background Fluctuating Loads
- Peak Responses of the









3D
Buffeting
Response
Analysis

3D Flutter
Stability
Analysis

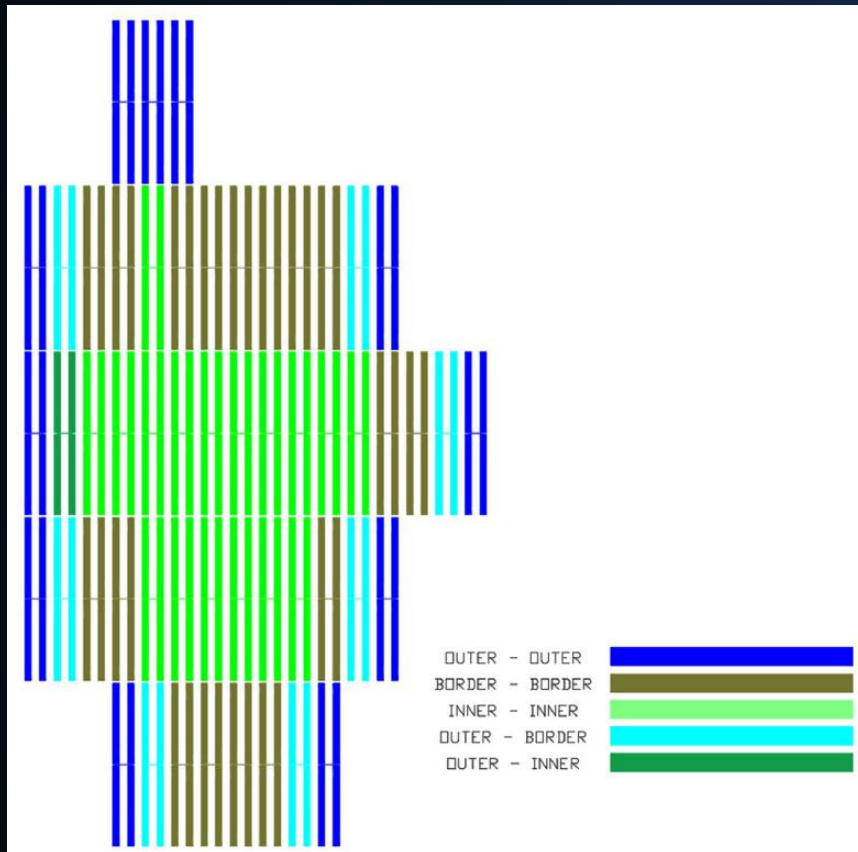
- Variation of Total Damping and Damped Frequency
- Critical Wind Speed



STOW CONTROL PRIORITIZATION*

	 LOW BATTERY	 COMMS ALARM	 MANUAL STOW ALARM	 HAIL STOW	 WIND ALARM	 SNOW ALARM
Description	Stow position is command if the battery energy is not enough to stay tracking	Stow position is command if no communications with NCU are available	Stow position is command by the plant operator in case of any extreme risk	Hail Stow position is command in case of hails storms	Wind Stow position is command in case of wind alarms	Snow Stow position is command in case of wind alarms
Activation / deactivation	Automatically by the TCU SOC* estimation	Automatically by the TCU	Manually by the operator	Manually by the operator	Automatically by the weather station	Automatically by the weather station
Priority	1	2	3	4	5	6

FLAT POSITION WIND STOW

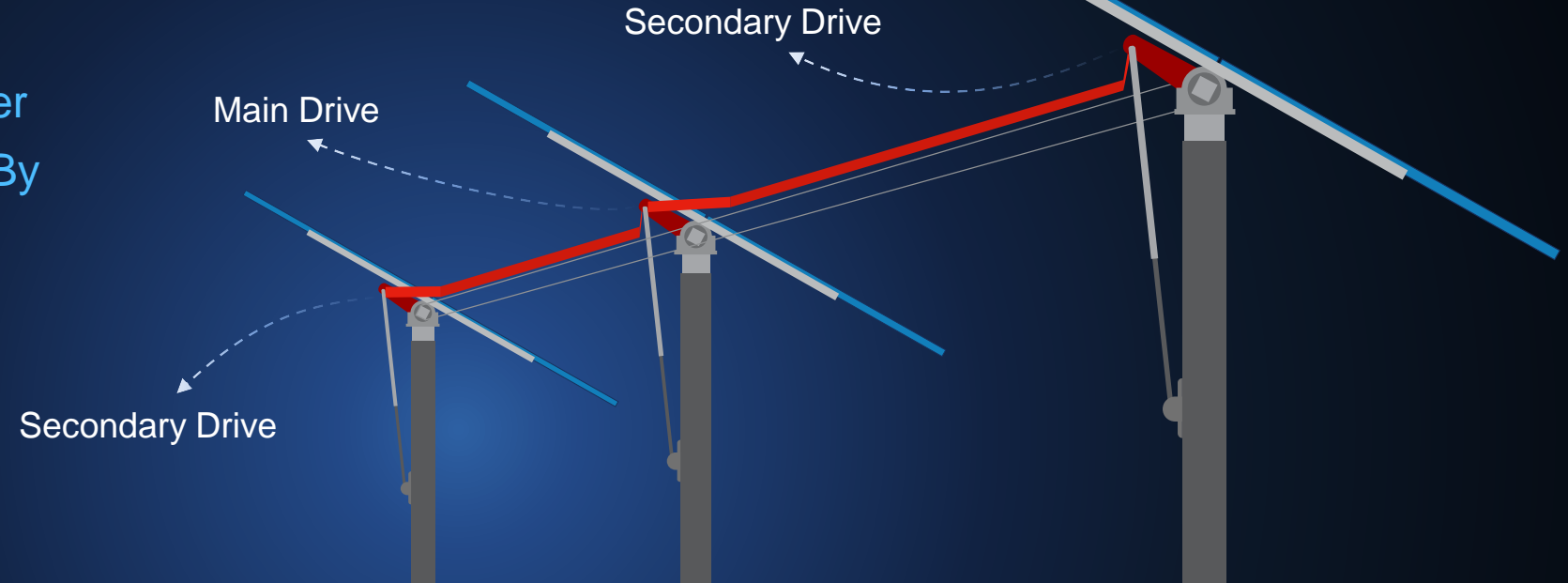


Vanguard's intelligent wind stow strategy guarantees operation time and system stability of solar farms.

Multidrive + Flat Position = Stable

ROBUST MULTI-DRIVE SYSTEM

- 3 Linear Actuators Per Tracker
- All Drives Are Synchronized By Single Transmission Bar



Single Drive:
Higher Torsional Fluttering



Multi Drive:
Lower Torsional Fluttering

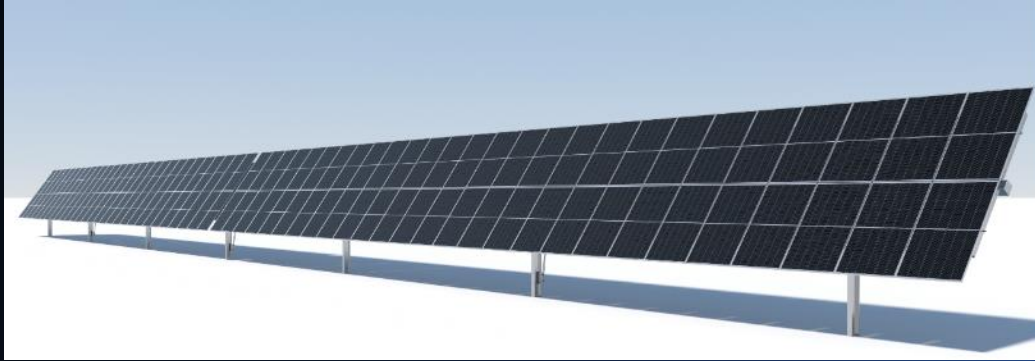
- Higher Critical Wind Speed
- Higher Power Density
- Lower Failure Rate



Multi-point drive has self-locking function
for
MAXIMUM WIND STABILITY



OPTIMIZED PILE ARRANGEMENT



Vanguard™ 7 Piles Only



2P Tracker 9 Piles

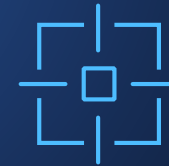
Cost Saving
Per MW



Grading
-1.67%



Installation
-23%



Pile Alignment
-25%

Total Saving
-19.6%

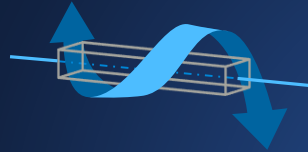
FLEXIBLE SPHERICAL BEARING

Patented Spherical Bearing

Lower Tracker Failure Rate



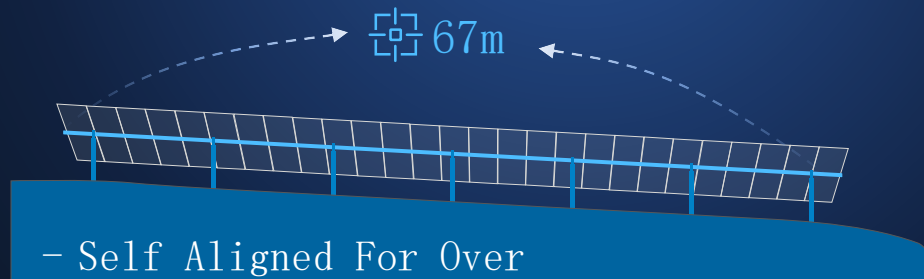
- Up to 30% Angle Adjustability



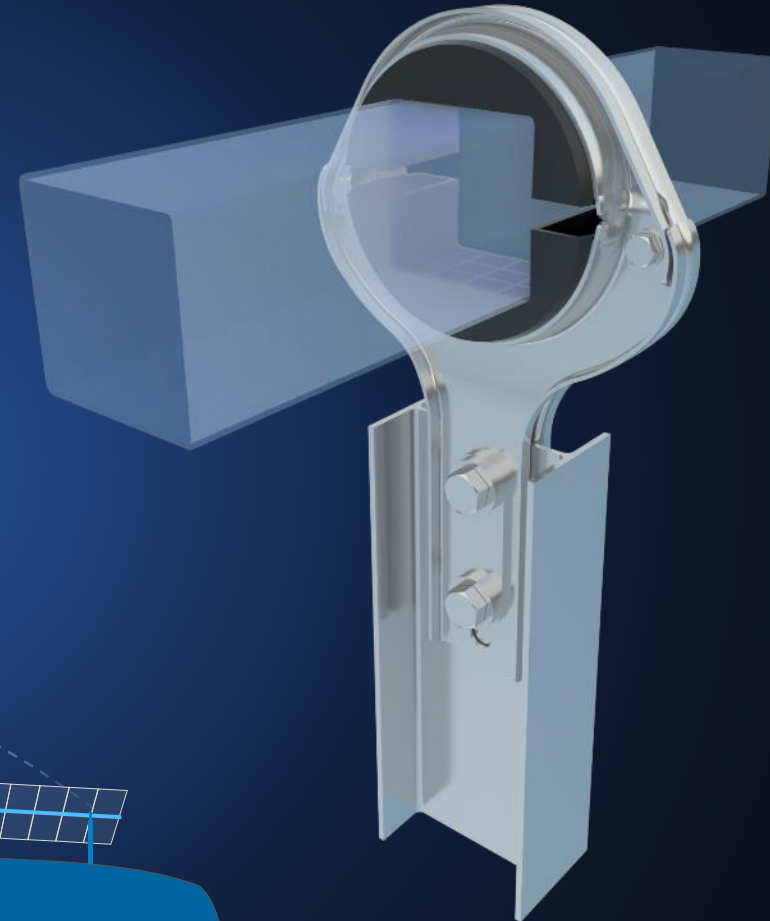
- Extra Stress Release During Tracker Deformation



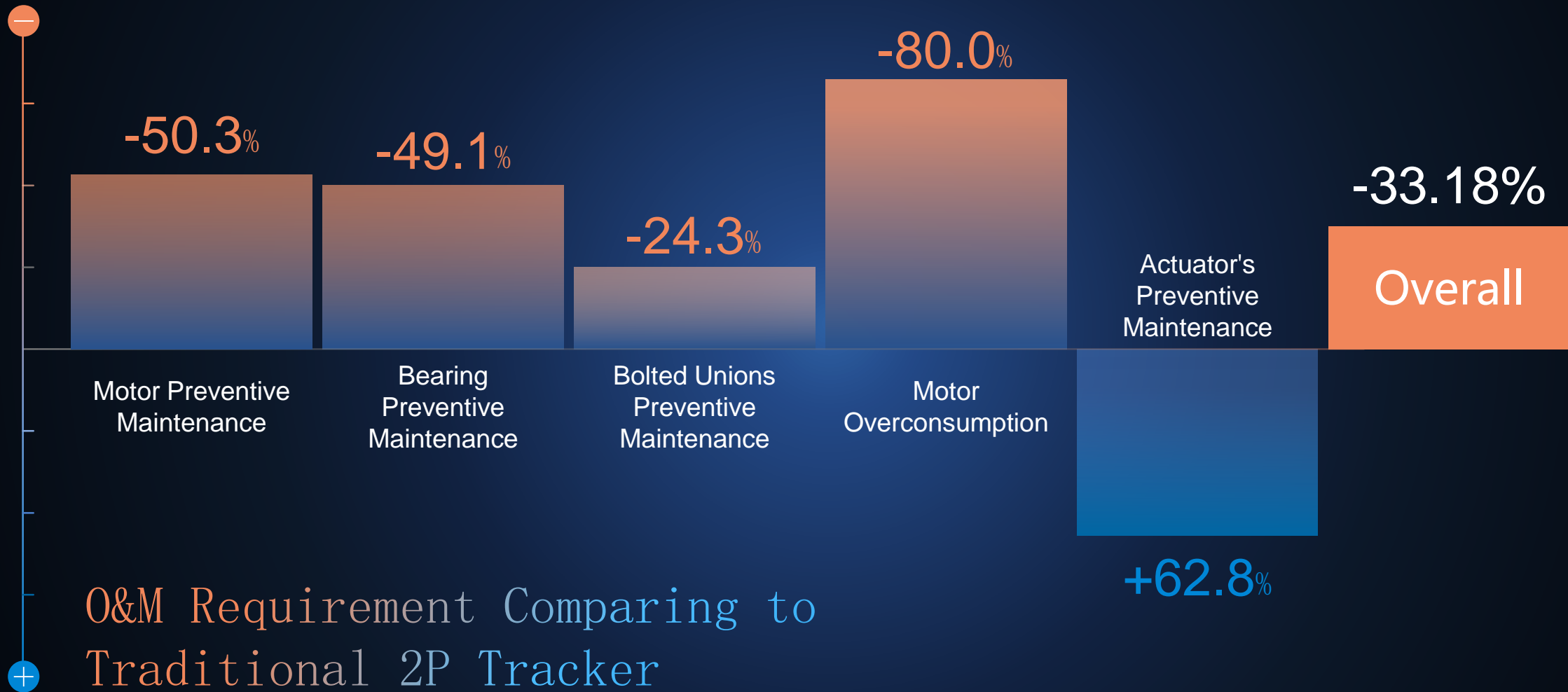
- Foundation Settlement Damage Alleviation



- Self Aligned For Over 67m

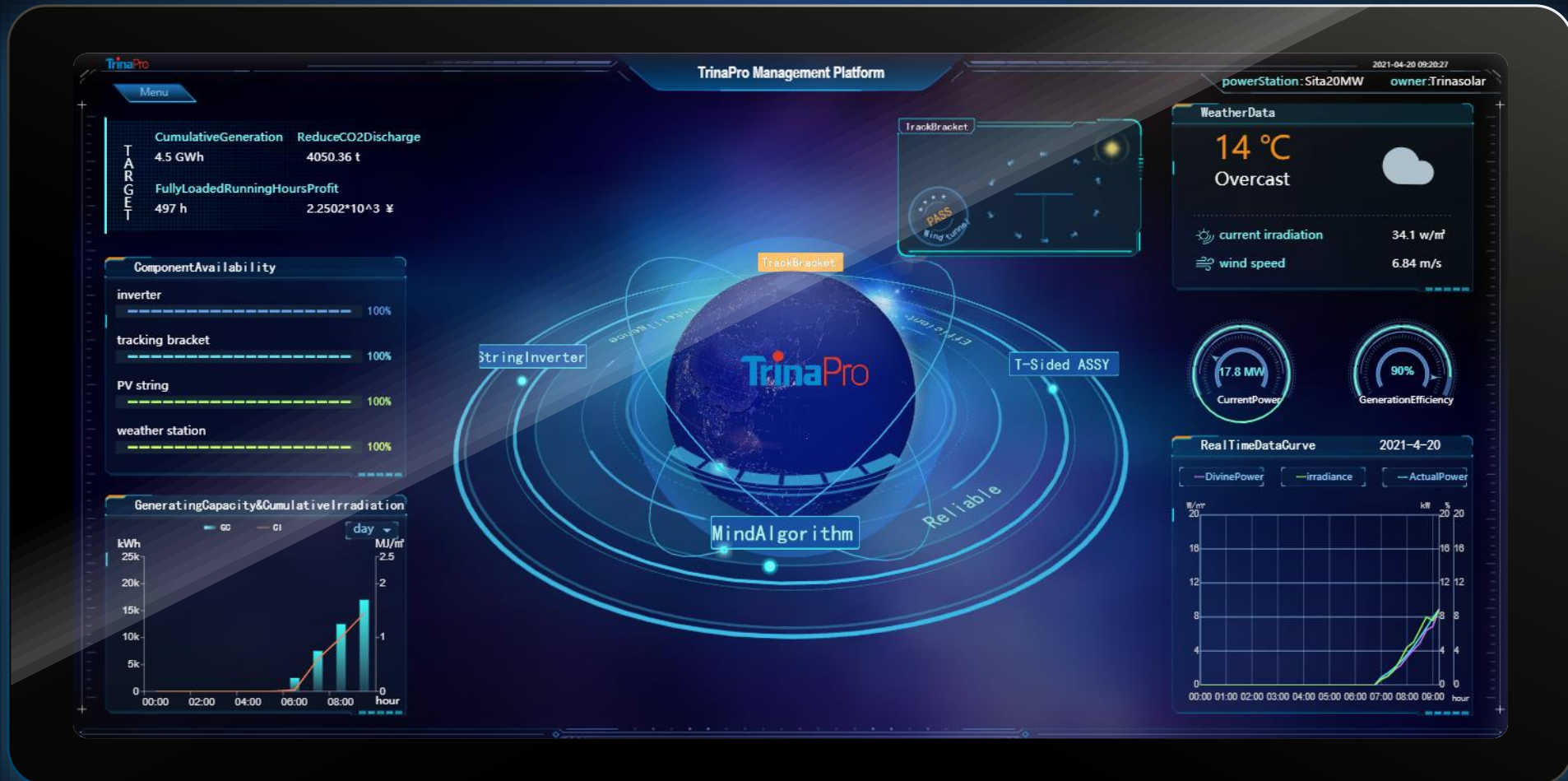


REDUCING O&M COST



SMART O&M: SCADA SYSTEM*

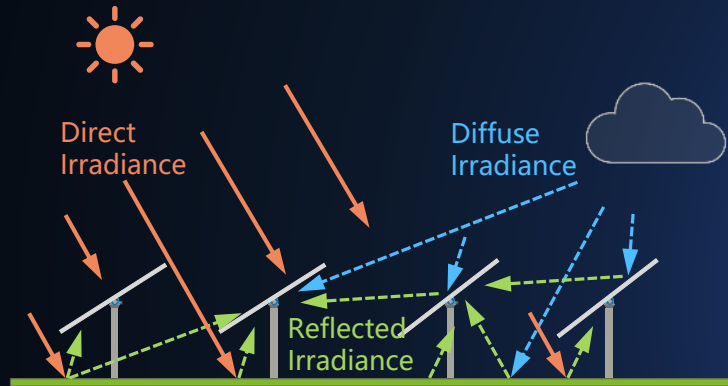
TrinaSCADA = Tracker Monitoring & Alarm + System Diagnosis + Intelligent Control



SUPERTRACK

BIFACIAL ENHANCEMENT + INTELLIGENT BACKTRACKING*

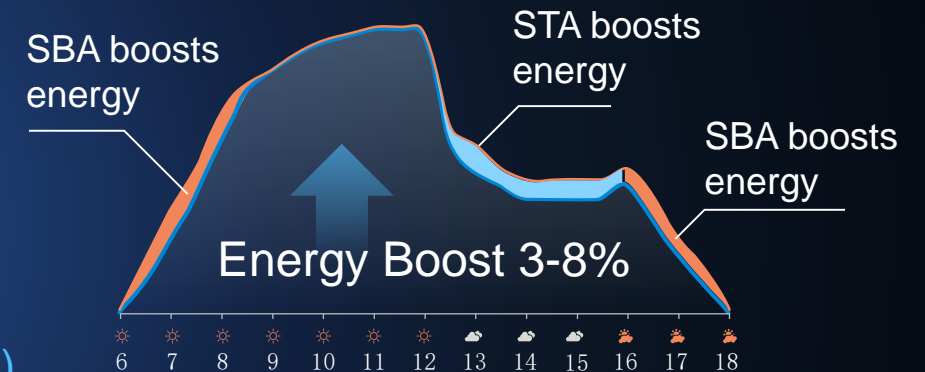
SuperTrack = Smart Tracking Algorithm + Smart Backtracking Algorithm



Smart Tracking Algorithm (STA)



Smart Backtracking Algorithm (SBA)

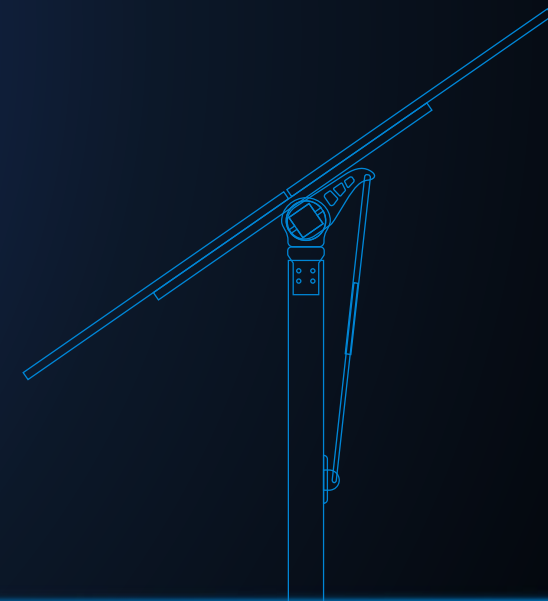
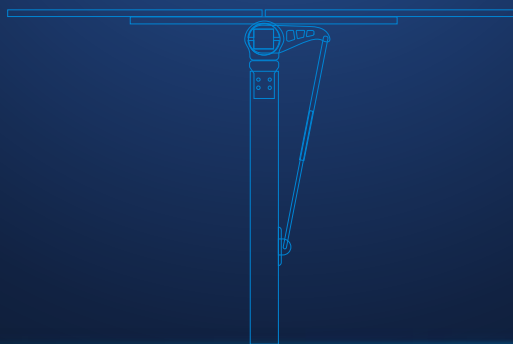
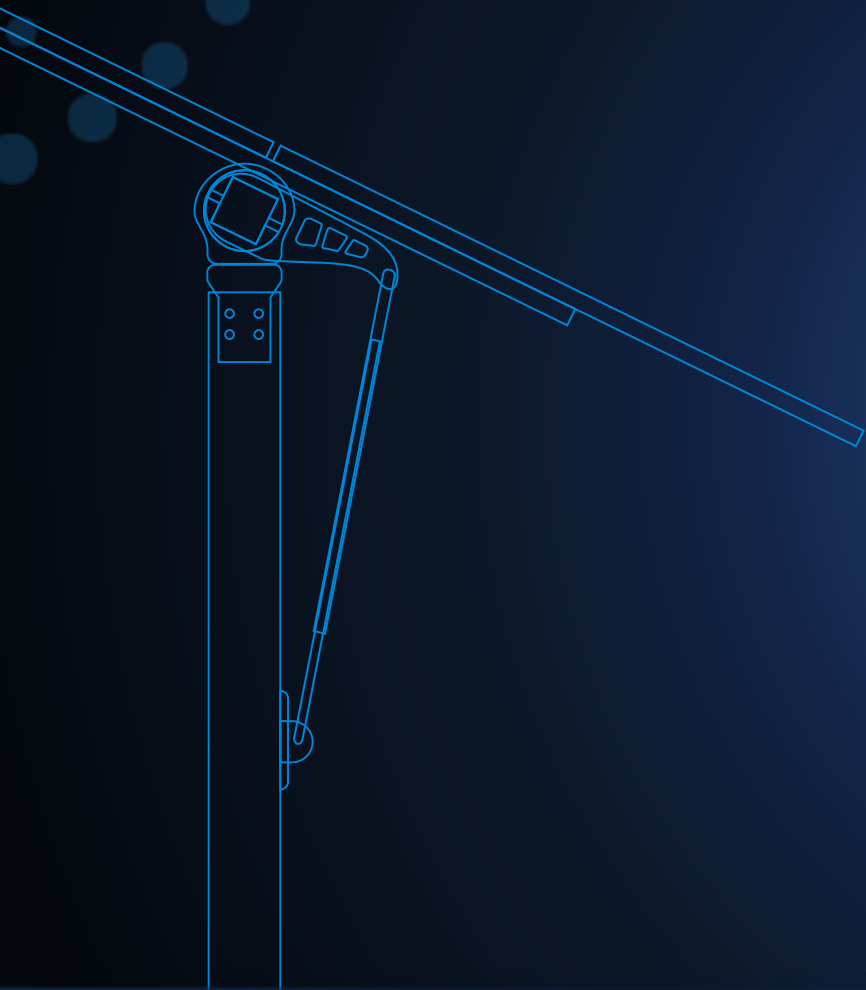


SuperTrack is developed to increased yield gain in:



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PRESALES AND SALES SERVICE*

FULL MECHANICAL ASSEMBLY

(As an optional service)

- Structure assembly
- Modules assembly
- Motors and electrical boxes
- Delivery control
- Quality control



PULL OUT TESTING

Design and supervision of pull out test campaign

- Final design of foundation
- Trina Tracker take the risk of the foundation design and guarantee it

GEOTECHNICAL REPORT

- International geotechnical consultant partners
- Evaluation of feasibility of the installation

COMMISSIONING

- Tracker commissioning
- Communication commissioning

ON SITE SUPERVISION

- Supervision of assembly
- Delivery supervision
- Quality control
- Certification of installation

DEDICATED GLOBAL SUPPLY CHAIN AND LOCAL SUPPORT

5GW⁺

DEPLOYED WORLDWIDE

12⁺ Years
Of Experience

5GW⁺ Installed
Capacity Worldwide

25⁺ Countries
In The 5 Continents

4GW⁺ Production
Capacity Worldwide

● Offices & Branches

Spain / France / UAE / USA / Mexico / Brazil / Chile / Australia / China

●^(HQ) Production centers

Spain / Brazil / Argentina / China*

(*China factory to be in service in Q3 2021)

PRODUCT RECAP

- Wind Tunnel Testing
- Extreme Weather Mitigation
- Multidrive System
- Patented Spherical Bearing

More
Reliable
Tracker

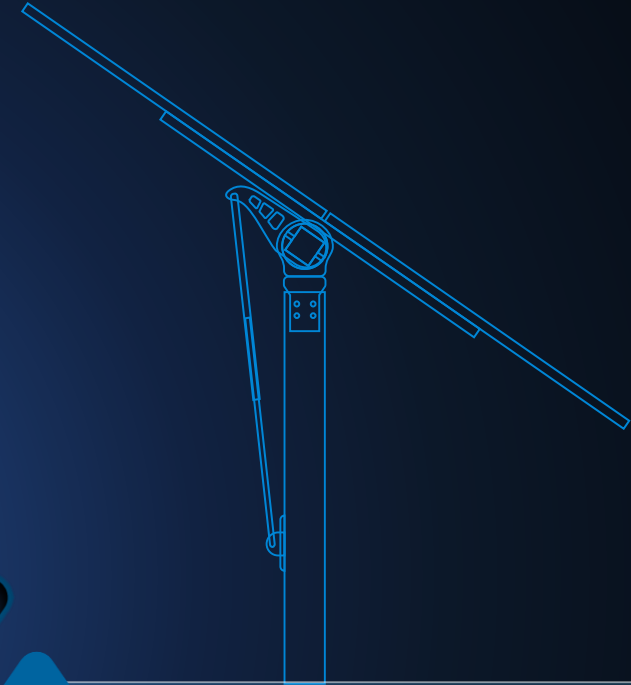
- Optimal SuperTrack Algorithm
- SCADA Smart Monitoring and O&M advice

More
Energy Yield

VanguardTM

Lower
Capex

- Lower BOS Cost Than Traditional 2P Tracker
- Lower Installation and O&M Cost



THANK YOU !

