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TrinaTracker

11 April 2023

4:00 pm – 5:00 pm | CEST, Berlin, Paris

6:00 pm – 7:00 pm | GST, Dubai

11:00 am – 12:00 pm | BRT, São Paulo

10:00 am – 11:00 am | EDT, New York City

pv magazine
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New tracker design: Multiple motors to tackle multiple challenges



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Welcome!

Do you have any questions? ? 

Send them in via the Q&A tab.  We aim to answer as many as we can today!

You can also let us know of any tech problems there.

We are recording this webinar today. 

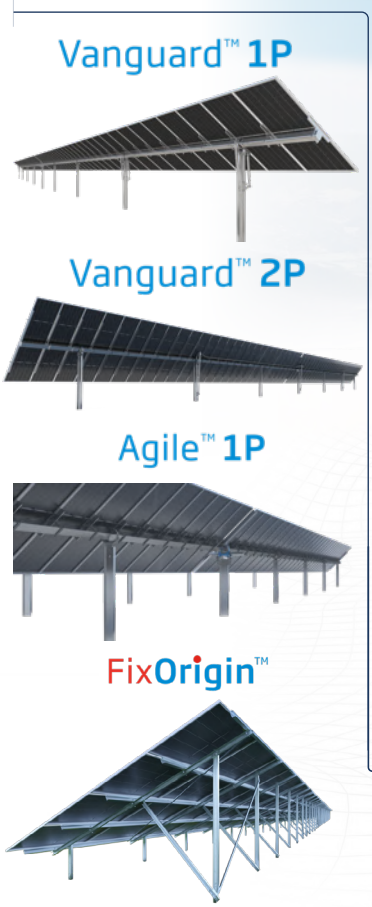
We'll let you know by email where to find it and the slide deck, so you can re-watch it at your convenience.  



TrinaTracker
Boosting Power Beyond the Horizon

New tracker design:
Multiple Motors to Tackle
Multiple Challenges

Vanguard™ 2P
Second Generation



SuperTrack
Smart Tracking Algorithm



Smart Monitoring and Control

Complete range of services

3 GW capacity around the world within 2 years



Vanguard™ 2P Multi-Motor Advanced Control

TrinaTracker
Boosting Power Beyond the Horizon



Vanguard™ 2P
Second Generation

1

Instalation
cost

2

Inestabilities
produced by
high wind speed

3

Tested
efficiency

4

Angle accuracy
for maximun
power generation

5

Complete
monitoring

6

O&M
cost

7

Wind related
risks

8

Noise
pollution

9

Recognised
international
validation

1

CONCERN / CHALLENGE

Installation cost

Solved

SOLUTION

- Only 7 piles per tracker (106 piles/mw)
- Lower ramming failure rate
- Self-adjust bearing



90%

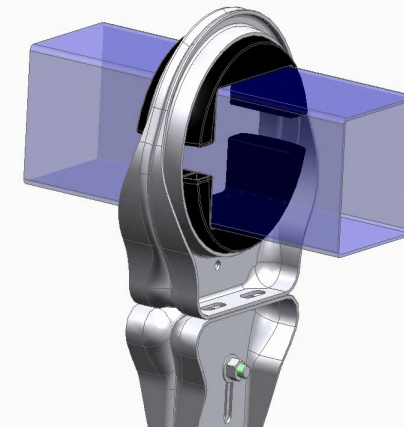
reduction
in pile damage

10%

reduction in
ramming failure



23% reduction
in installation



Self-adjust
during the
installation
process.

2

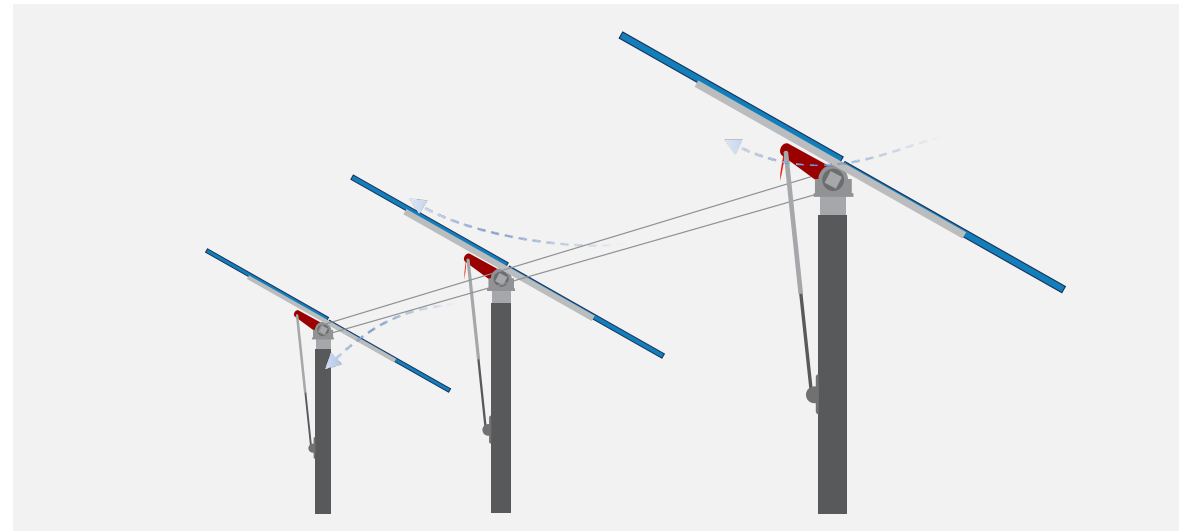
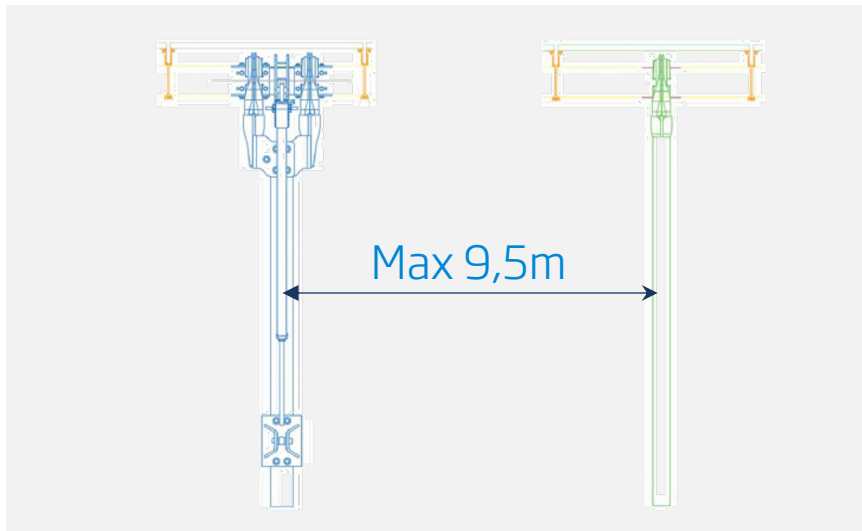
CONCERN / CHALLENGE

Tracker instabilities produced by high wind speed

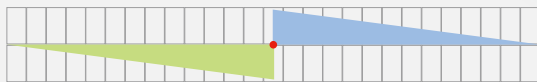
Solved

SOLUTION

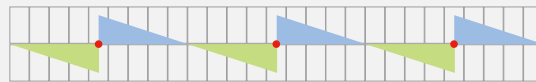
- Muti-Drive system
- Linear actuator
- Torque 170mm with 4 - 3.5 mm thickness



Single Drive:
Higher Torsional Fluttering



Multi Drive:
Lower Torsional Fluttering

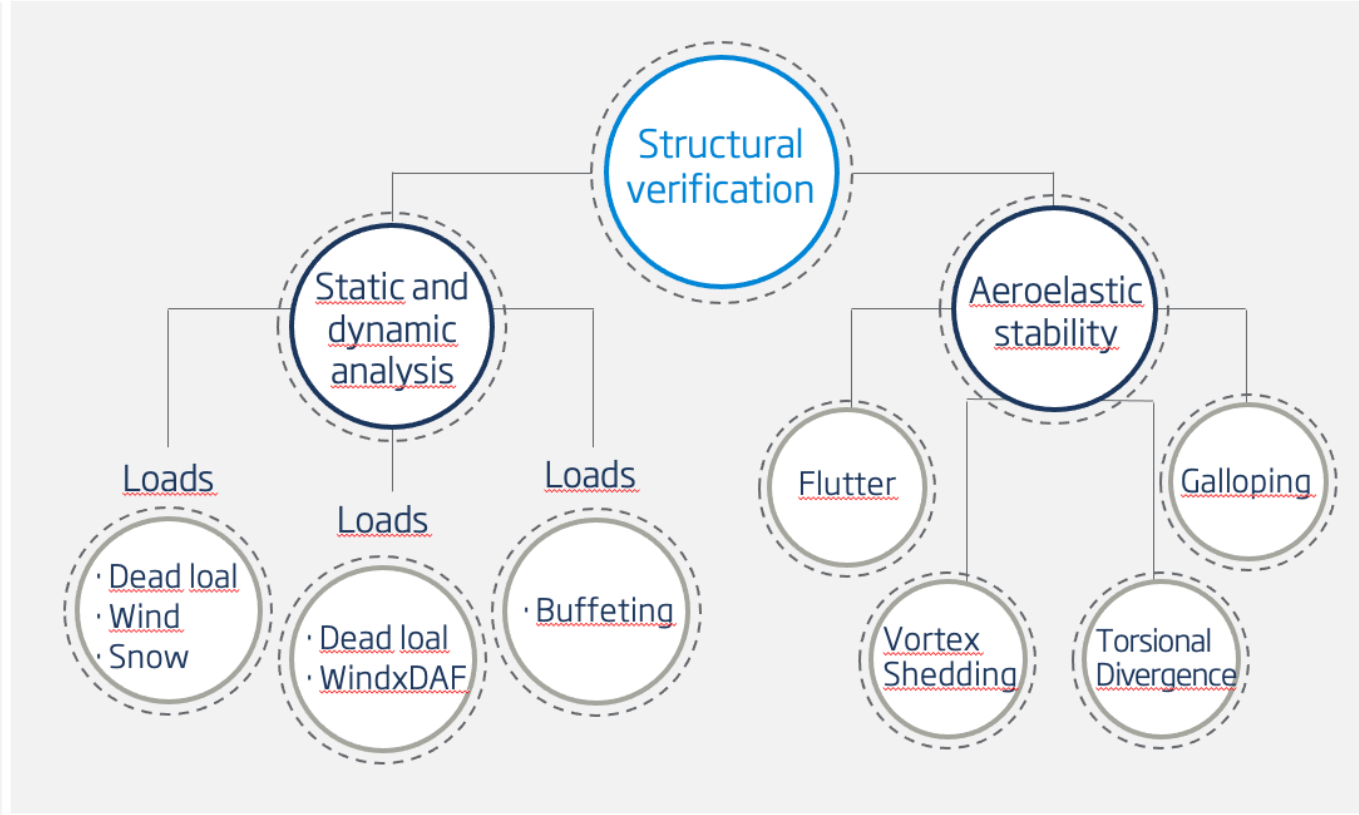
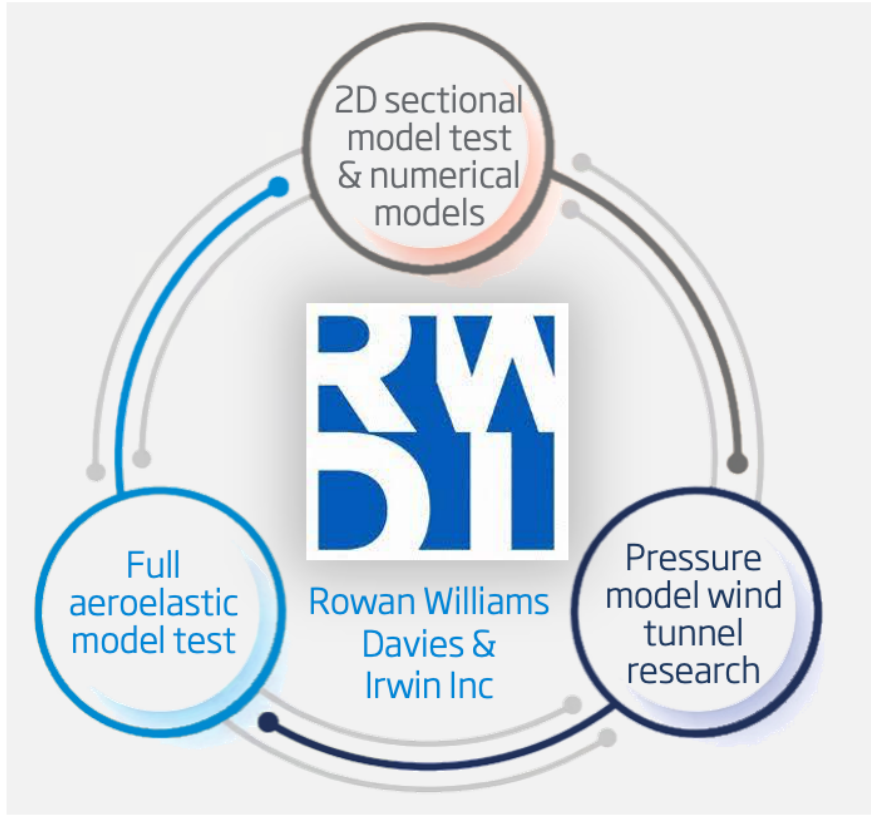


Multi-point drive has self-locking function for



Maximum wind stability

2



3

CONCERN / CHALLENGE

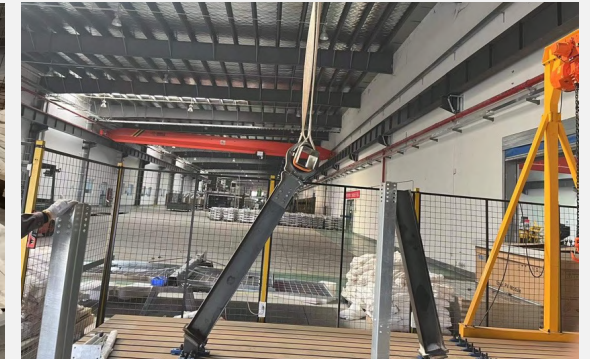
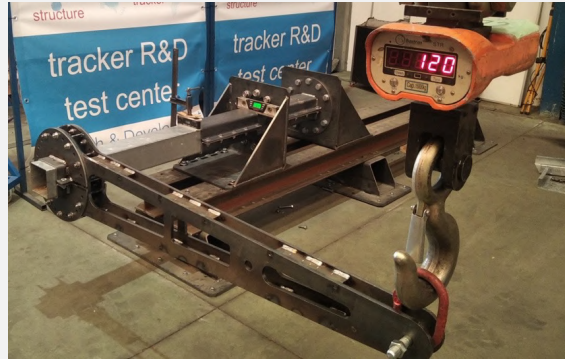
Tested efficiency

Solved

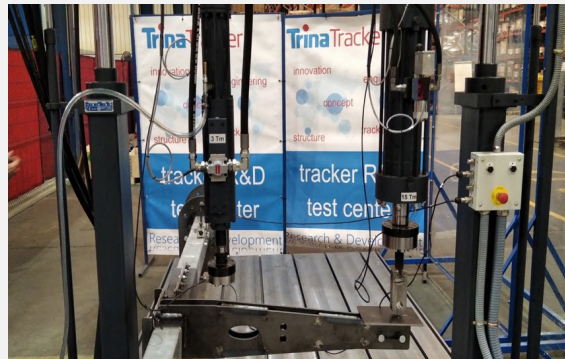
SOLUTION

➤ Indoors testing at **TrinaTracker's** facilities

High Load Test



Fatigue and Dynamic Test



3

CONCERN / CHALLENGE

Tested efficiency

Solved

SOLUTION

➤ Outdoor testing at **TrinaTracker's** facilities

Complete Transmission Test



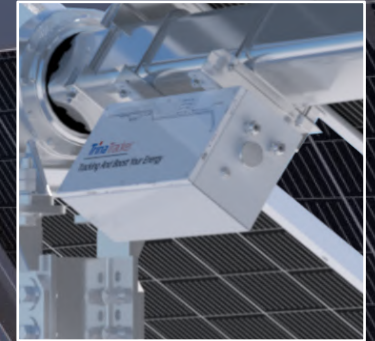
IEC Accelerated Test



Comparative Production Test



Master TCU



Slave TCU



- ✓ Removed cardan & transmission bar
- ✓ All actuators are motorized
- ✓ Optimised shading on bifacial modules backside

4

CONCERN / CHALLENGE

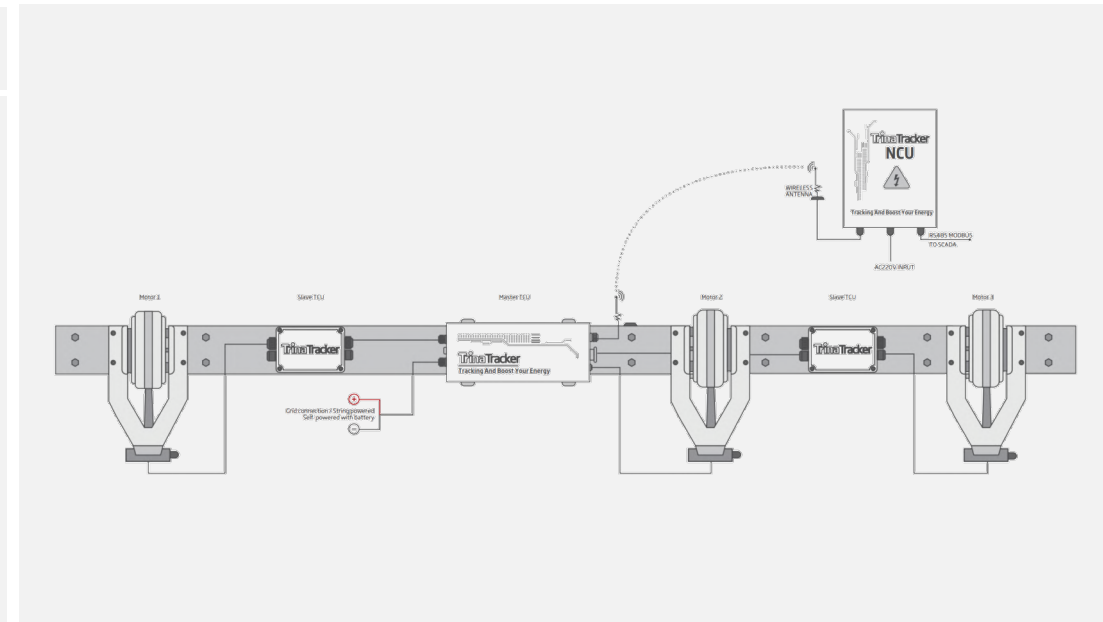
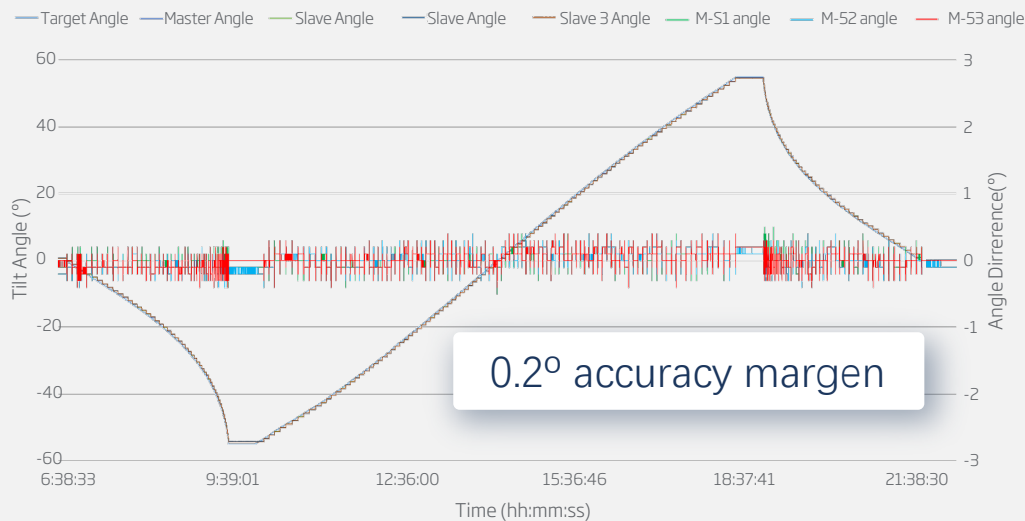
Angle accuracy for maximum power generation

Solved

SOLUTION

- 4 controllers ensure perfect angle positioning across the whole tracker's length
- 4 motorized actuators

Complete Tracking Day Multimotor Controllers Angle Difference



5

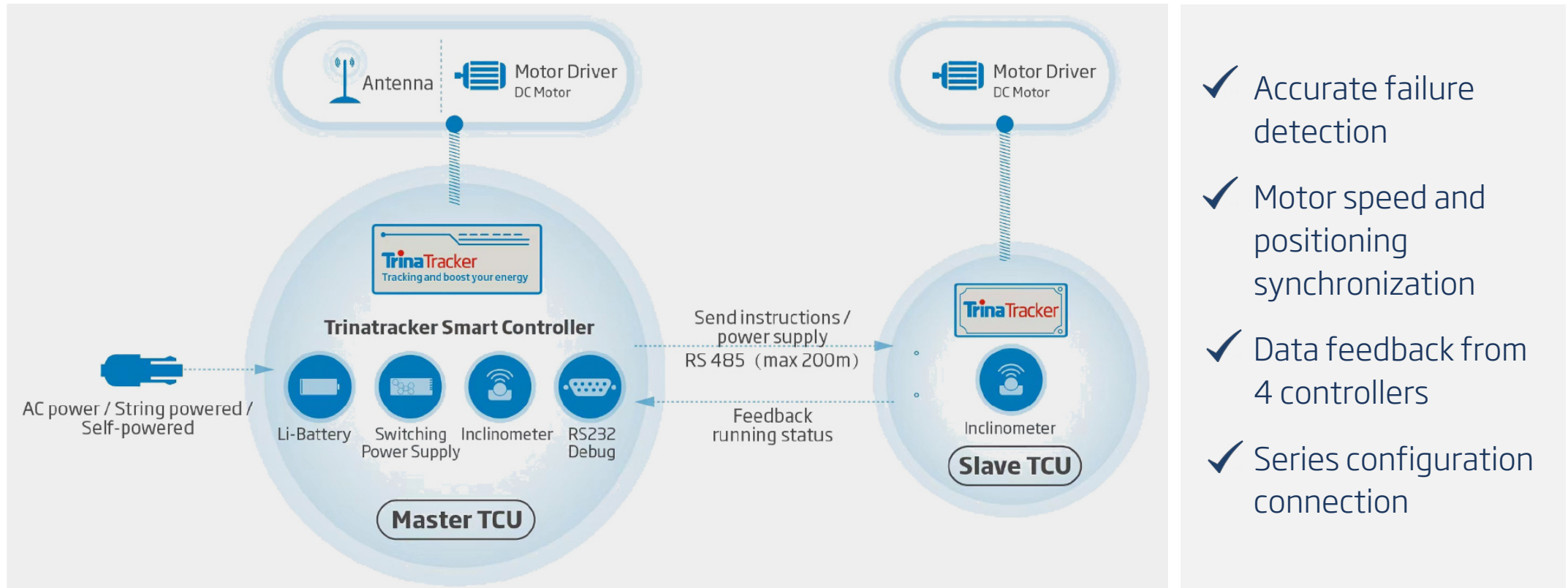
CONCERN / CHALLENGE

Complete monitoring

Solved

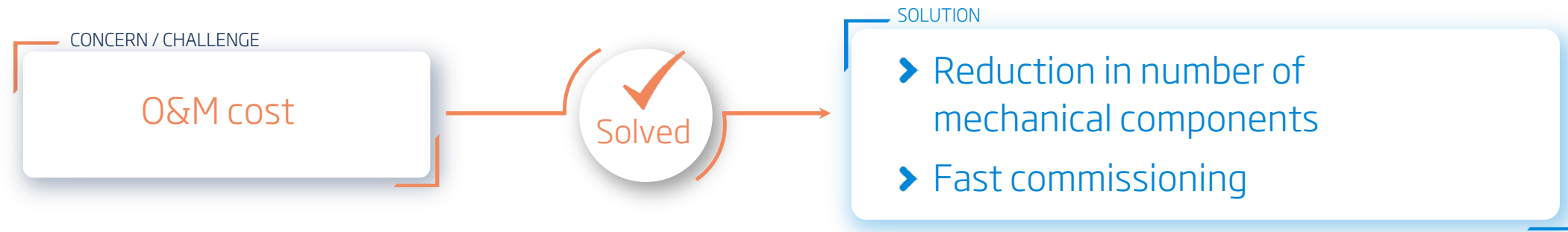
SOLUTION

➤ 1 master TCU and 3 slaves TCUs in each tracker



- ✓ Accurate failure detection
- ✓ Motor speed and positioning synchronization
- ✓ Data feedback from 4 controllers
- ✓ Series configuration connection

6

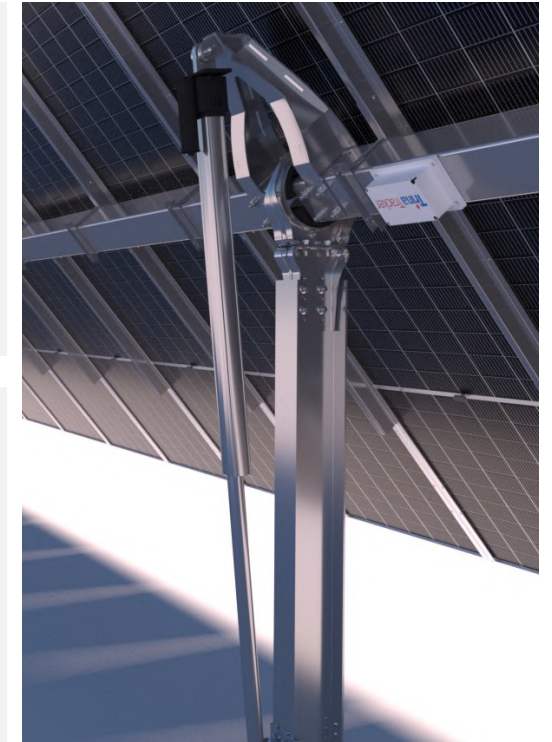


15% Components reduction compared to 1st generation

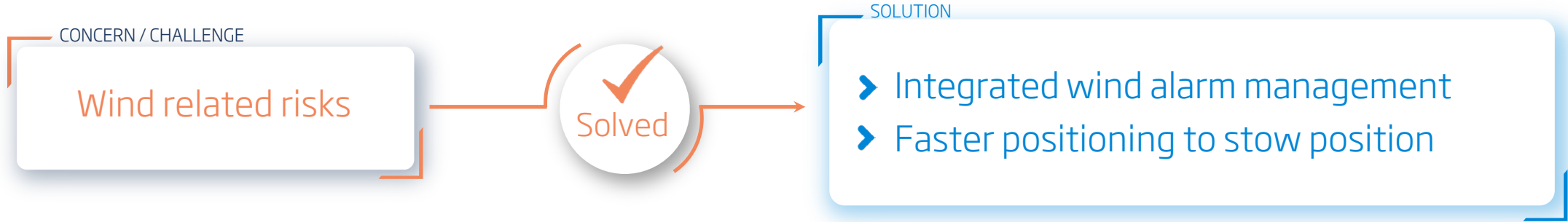
Tracker series	Structural components (avg)	Fasteners (avg)
Vanguard 2P	20	44
Vanguard 2P 2G	0	12

40% Time saving on O&M compared to 1st generation

Tracker series	Replacement time (h/MW)
Vanguard 2P	40.40
Vanguard 2P 2G	13.50



7



20% Faster positioning to stow position compared to 1st generation

Max. tracking Angle	Activation	Deactivation
Stow 0°	Wind last more than 3 sec, Wind speed > 60 km/h	Wind last more than 600 sec, Wind speed < 60 km/h
±15°	Wind last more than 3 sec, Wind speed > 50 km/h	Wind last more than 600 sec, Wind speed < 50 km/h
±30°	Wind last more than 3 sec, Wind speed > 40 km/h	Wind last more than 600 sec, Wind speed < 40 km/h

- Reduction of rotation time from 55° to 0°
- Time to stow position with the wind alert strategy: **Maximum 3 minutes**



Mutupin | Chile | 11 MW

8

CONCERN / CHALLENGE

Noise pollution

Solved

SOLUTION

- Elimination of components' friction
- Lower power motors (60w)
- More efficient distributed drive system

15% Noise level reduction
compared to 1st generation





Project location **Yungay, Chile**
Project capacity **42MW**
System type **VANGUARD 2P Multi-motor drive system**
2Px56 550w

CHALLENGES

- The hard ground required highly demanding requirements for pile foundations.
- The historical maximum wind speed is 45m/s threatening the tracker's stability

TrinaTracker

- Successful first installation of Multi-Motor Vanguard 2P
- Commissioning time optimized.

9



Certificate no.
21133-CER

PRODUCT CERTIFICATE NUMBER	21133-CER
TRACKER MODEL	Vanguard™ 2P
STANDARD	IEC 62817: 2014 + A1:2017 Photovoltaic system-Design qualification of solar trackers
TRACKER CONTROL UNIT	Master/slave multi controller
ACTUATION TYPE	Distributed linear actuators

cere



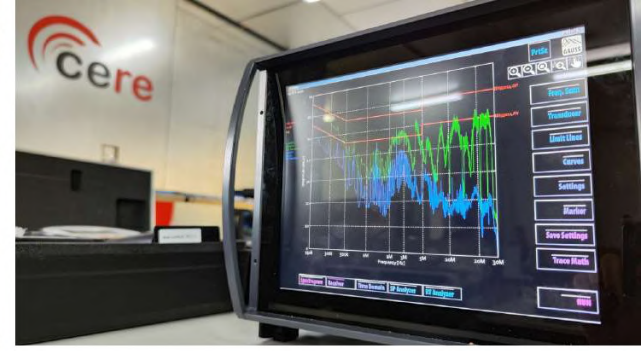
**Renewable
Energies**



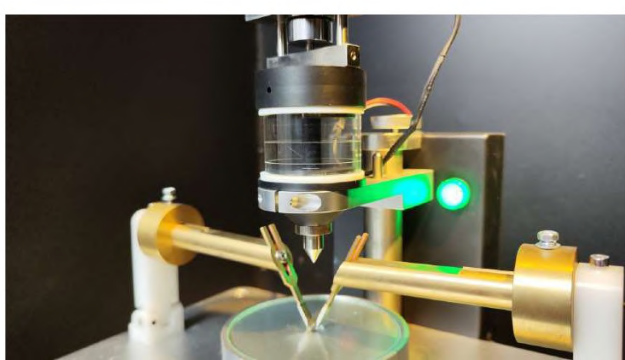
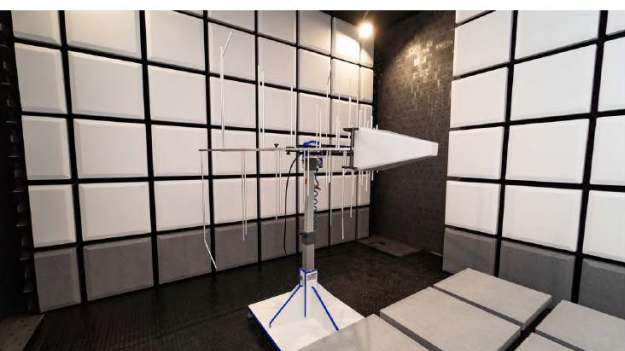
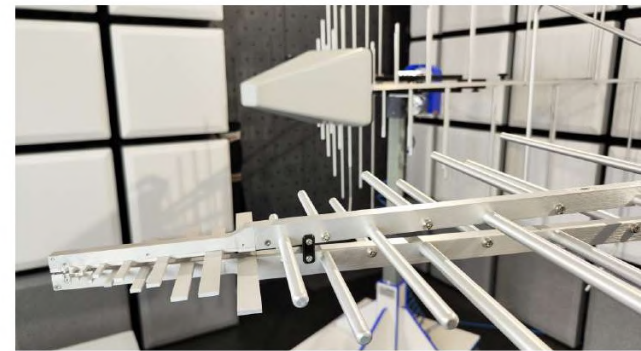
Industrial



Medical



TESTING SIMULATION CERTIFICATION









TrinaTracker
Boosting Power Beyond the Horizon

A large solar farm at dusk, with a blue overlay and decorative circles. The solar panels are arranged in long rows, and the sky is dark with some light spots. The text "THANK YOU!" is centered in the middle of the image.

THANK YOU !

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Q&A



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Alberto Muñoz
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by Beatriz Santos



Coming up next...

Tuesday, 25 April 2023

10:00 am – 11:00 am CEST, Berlin, Paris, Madrid
4:00 pm – 5:00 pm CST, Beijing

Tuesday, 2 May 2023

5:00 pm – 6:00 pm CEST, Berlin, Paris, Madrid
11:00 am – 12:00 pm EDT, New York City

Many more to come!

TOPCon for homes

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Marian Willuhn
Editor
pv magazine

**Thank you for
joining today!**