

ZIM Track - Single-Axis Tracker System

A high-quality, large-scale PV Tracker System

Wednesday 7 June 2023

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History of the ZIMMERMANN Group



1950

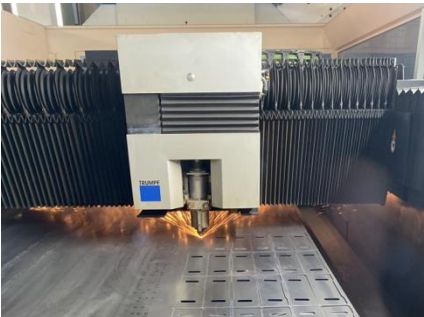
Founding of a foundry, today ZIMMERMANN Metallbearbeitung

1965

Foundation of ZIMMERMANN Stalltechnik in Oberessendorf

2009

Planning, construction and delivery of the first PV substructure



...almost 75 years of experience in steel construction!

Headquarters in Oberessendorf, South Germany

The ZIMMERMANN PV-Steel Group has been developing, planning and supplying solar substructures for worldwide projects since 2009.

Around 50 of our 65 employees work at our headquarters in Oberessendorf. Next to our office building is our PV model park as well as our logistics centre with an area of approx. 5000 sqm of storage space.



ZIMMERMANN PV-Steel Group

Fixed Tilt Systems



8,091 MWP
MOUNTING
STRUCTURES

Tracker PV Systems ZIM Track



1,504 MWP
MOUNTING
STRUCTURES

Floating PV Systems ZIM Float



258 MWP
MOUNTING
STRUCTURES

Agri PV Systems ZIM Agri



60 MWP
MOUNTING
STRUCTURES

Experience of

YEARS
14

PROJECTS
> 1,700

GW
> 10

Our innovative system at a glance



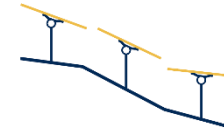
**Wind certified
45m/s**



**Proprietary
control System**



**Adaptable to undulating
site conditions**



**Independent
row control**



**Low
maintenance costs**



String powered



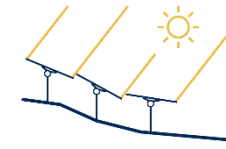
**Flexibility in
modul size**



**Bifacial
optimized**

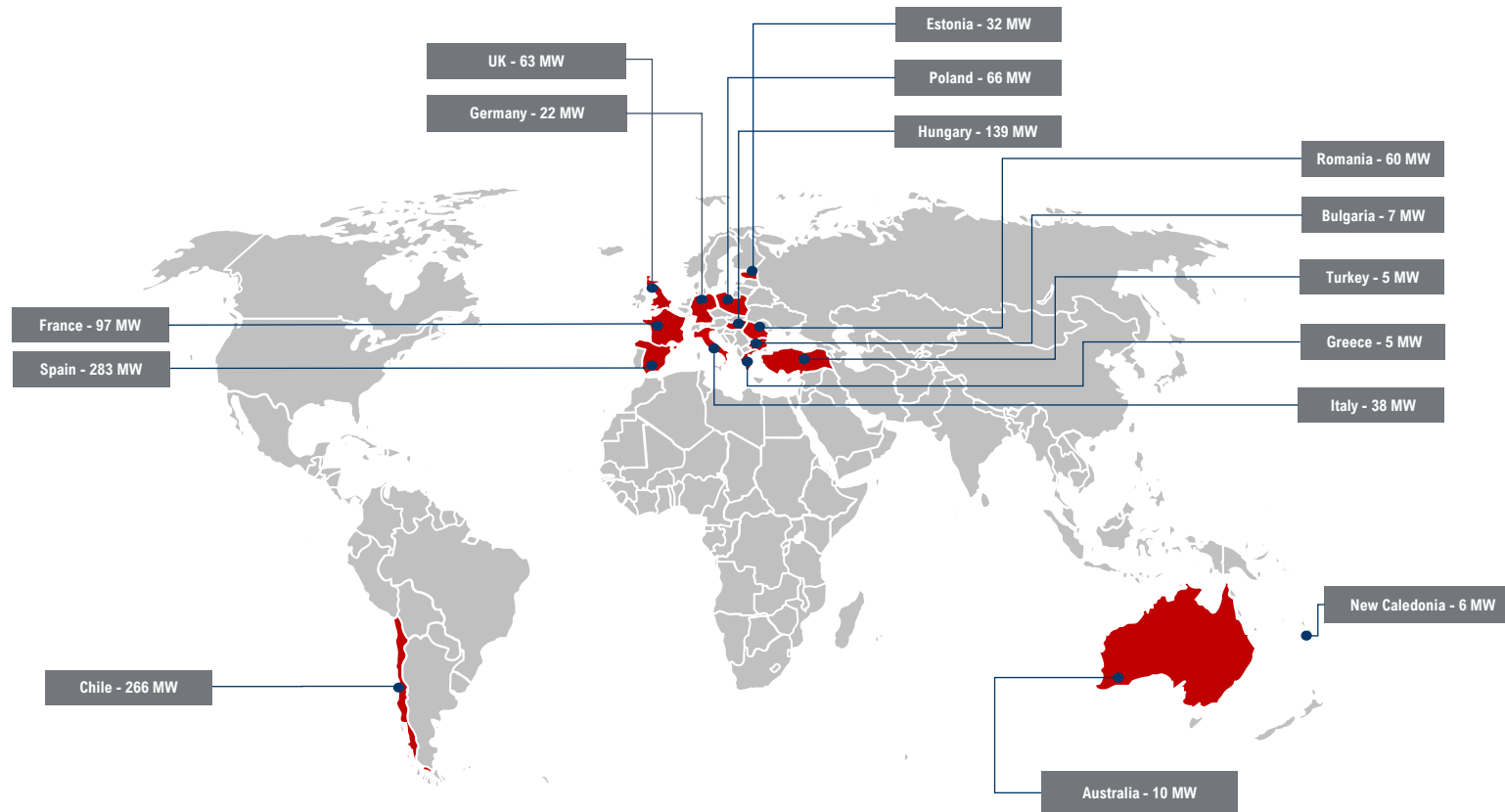


**Lowest
installation time**



**ZIMply Terrain
Track**

Total Track Record of Projects



1,504
MWP OF MOUNTING
STRUCTURES
INSTALLED

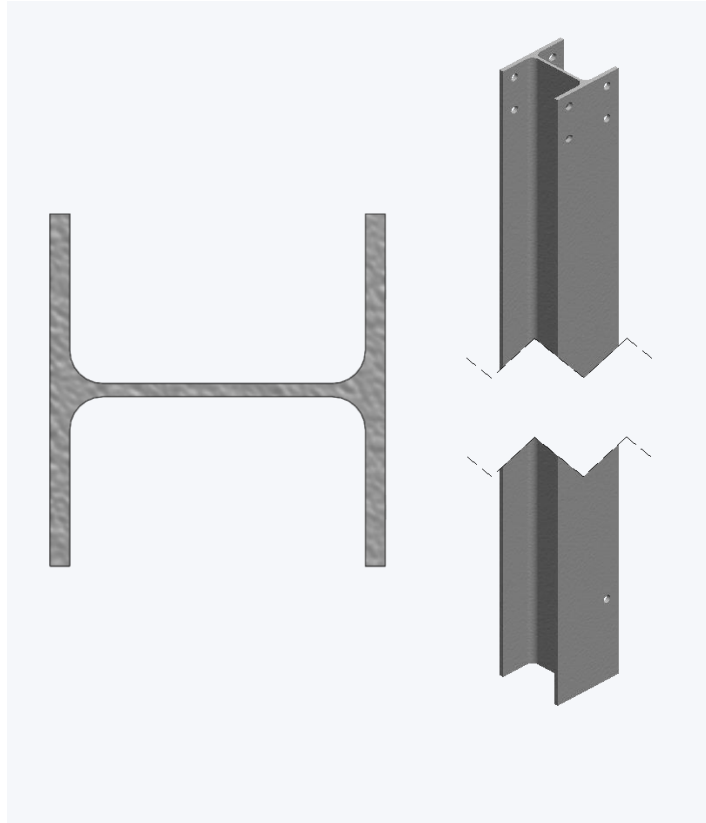
115
PROJECTS
EXECUTED

5,849
TRACKER ON LARGEST
PROJECT

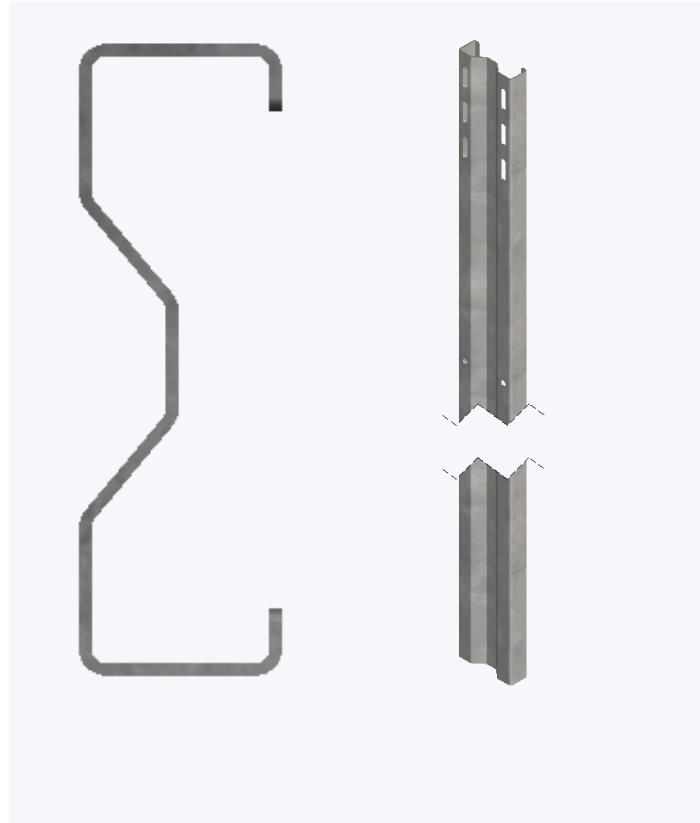
45,000
TOTAL TRACKER
INSTALLED

1,015,050
TONS CO2 EMISSIONS
SAVING

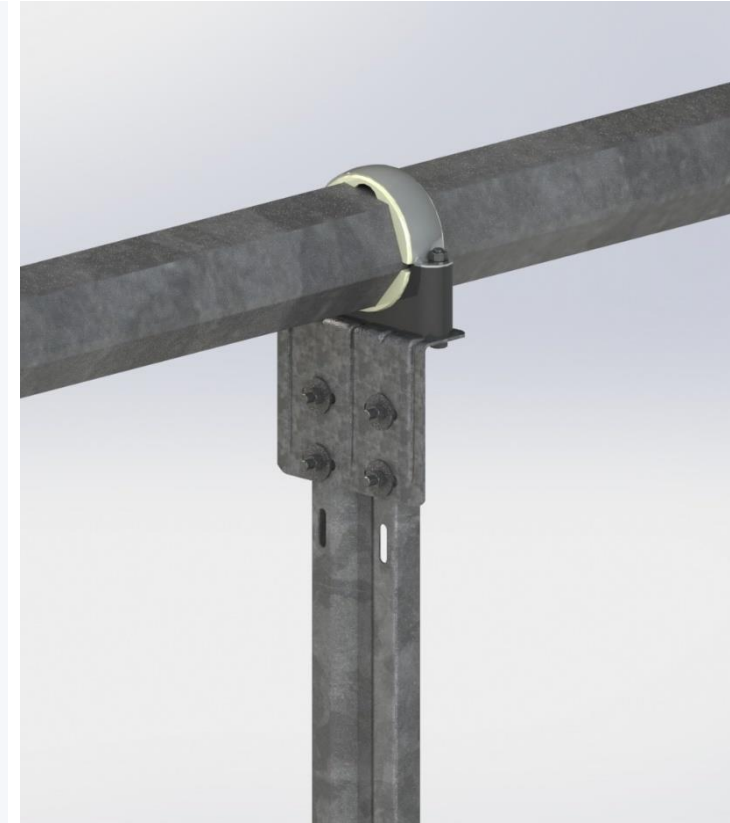
Structural design – main structural components



HEA160 profile for central pile (drive unit)



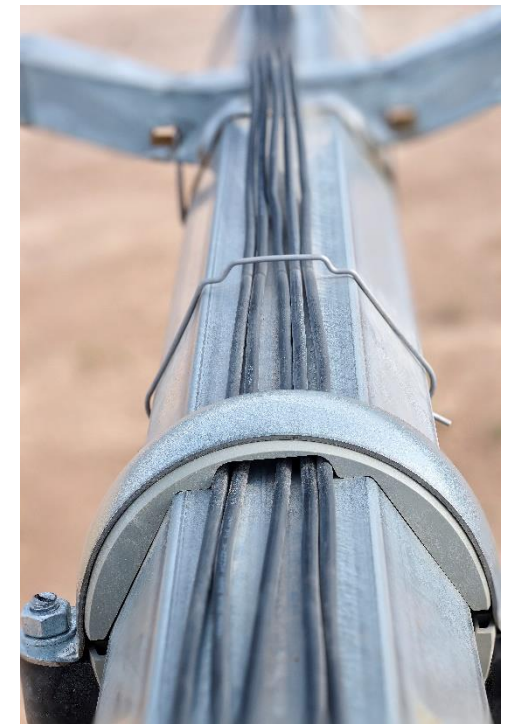
Sigma profile for bearing piles (under modules)



Bearings on sigma piles

- For challenging terrain e. g. steep slopes, altitude differences a special sigma pile has been developed

Structural design – main structural components



- From foundation to module clamps – all ZIM Track components are robust, durable and form an integral part of the innovative and functional design

Strategic design – three components against galloping



1 HEXAGONAL TUBE

Innovative technical solution
maximizes the mechanical resistance to both torsion and bending



2 MODULE HOLDER

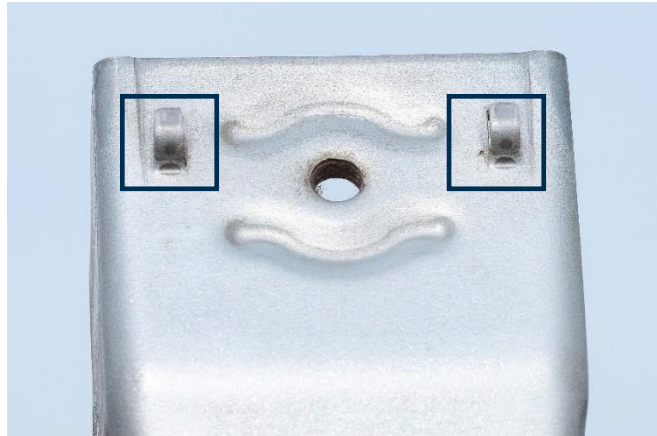
Patented solution. Form-fits on the hexagonal tube, so the forces are transmitted by the shape, not by joints (rivets, bolts, screws). Designed to increase the distance between the tube and the module = **maximum bifacial gain**



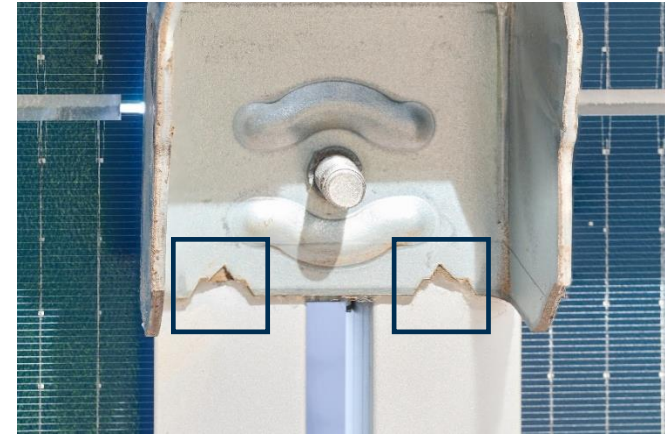
3 SHOCK ABSORBER

State of the art Shock Absorbers, specifically designed to **eliminate the galloping effect**

Details matter, best installation time in the market



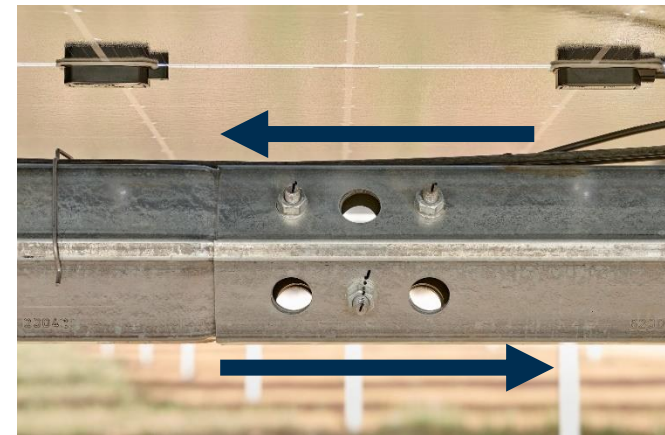
Patented module holder with self aligning module hooks
No tools for alignment check needed. Easy & safe installation, minimum time.



Integrated grounding pins
Every module automatically grounded without additional steps during the assembly.



Mounting in vertical position thanks to our hook system
Comfort and safety for the mounting team, reduction of assembly time.



Tapered hexagonal tube connection
Reduction of assembly time, maintenance work and increases system safety.

Safe and efficient cable management



- **All cables are shaded** and protected from long-term wear and tear and run through the upper bearing callots.
- Our **cable wire clamps** eliminate the use of plastic cable ties, providing a **maintenance free cable management**.
- The cables are arranged and secured by 2 clamps per module width plus a canal passage through the bearing.

Integrated grounding design



VDE RENEWABLES

The continuity of the grounding is guaranteed:

- Integrated **cable tray** between the two tracker wings, protecting the cables from wear and tear and UV radiation
- **Grounding strap** to connect the torque tube with the piles

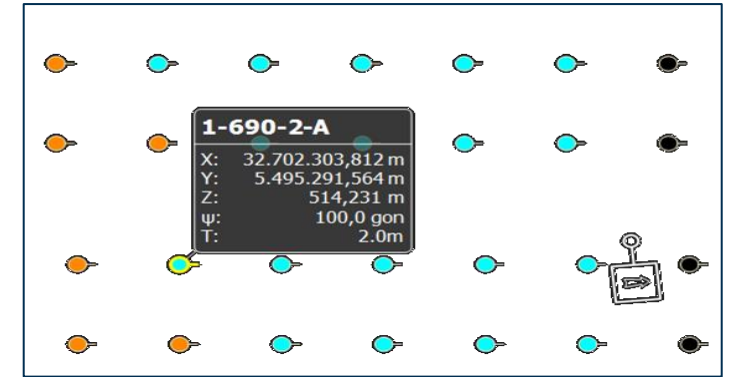
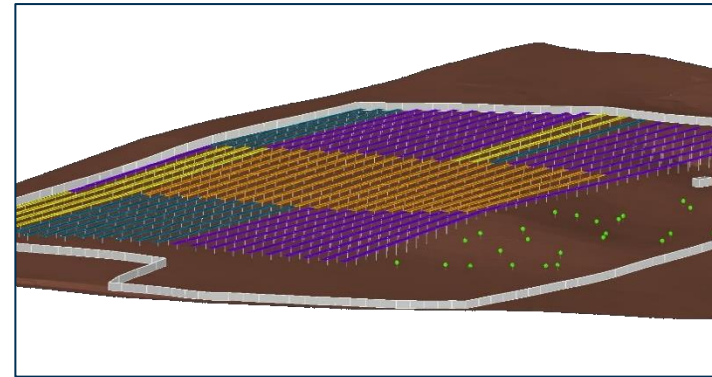
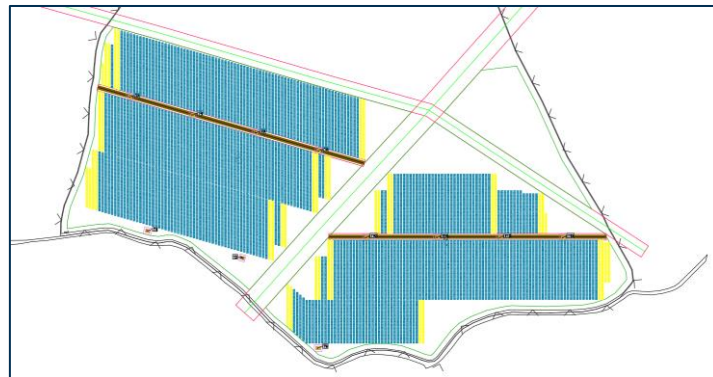
Operation and Maintenance



- ZIM Track guarantees low maintenance – reducing operational costs significantly



- V-Cleaning position enables cleaning of two rows at once without interruption



Customer Project Layout

- Tracker positioning
- Topographical survey

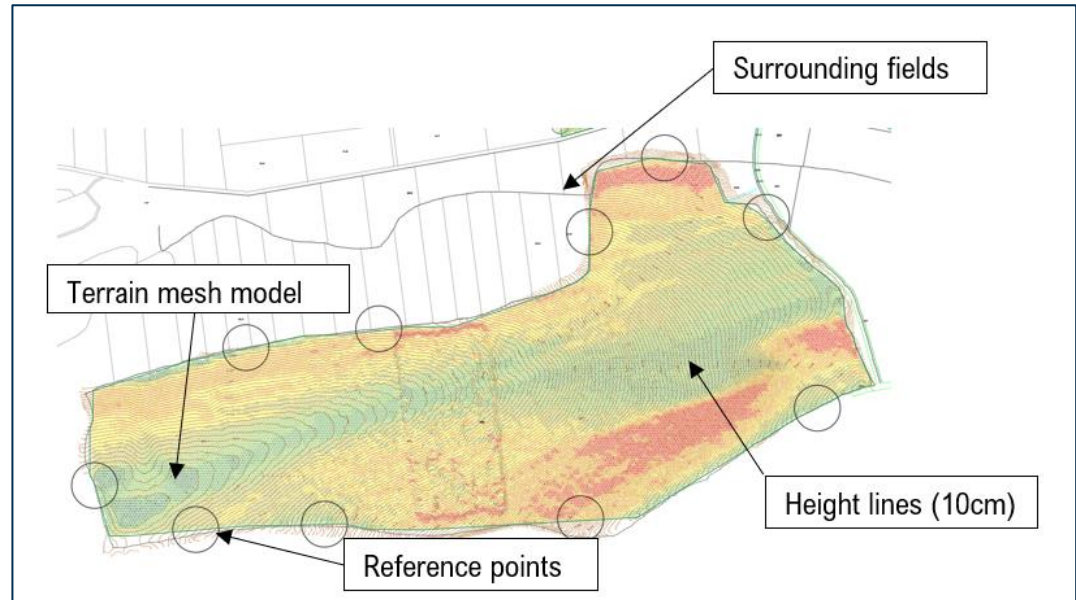
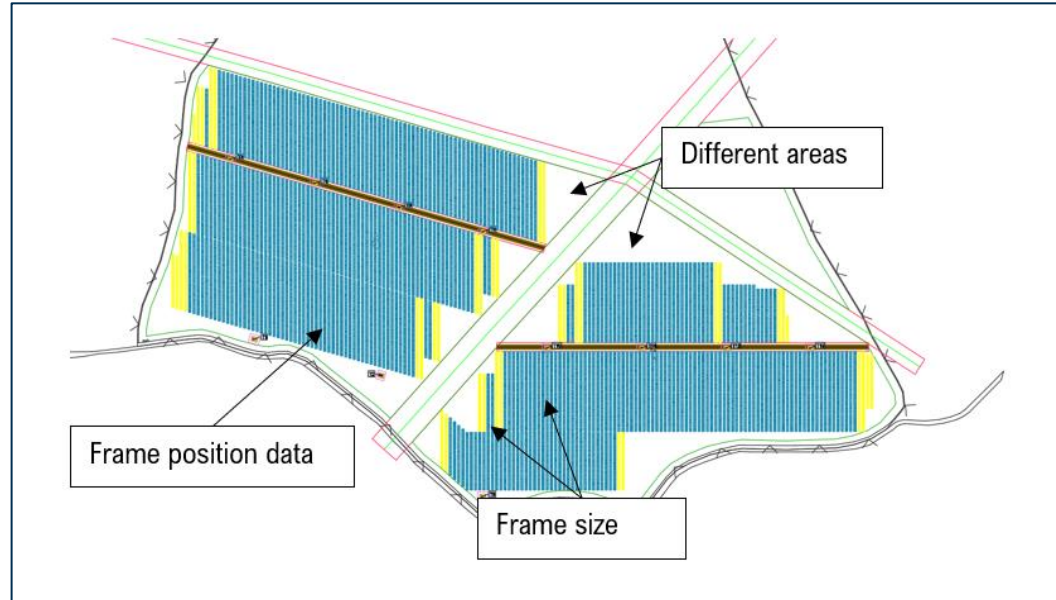
ZIM Track 3D-Engineering Check

- Tracker type definition
- Earth work indication
- Piling length calculation

Output data

- Ramming file for 3D-piling rig
- ZIMply Terrain Track integrated
- Piling plan length distribution

ZIM Track 3D-Engineering – Step 1



- Mark outer boundaries of the relevant areas (DWG or KMZ)
- Use a local coordinate system and reference AutoCAD file
- Use whole strings for frame size (max. 96m)

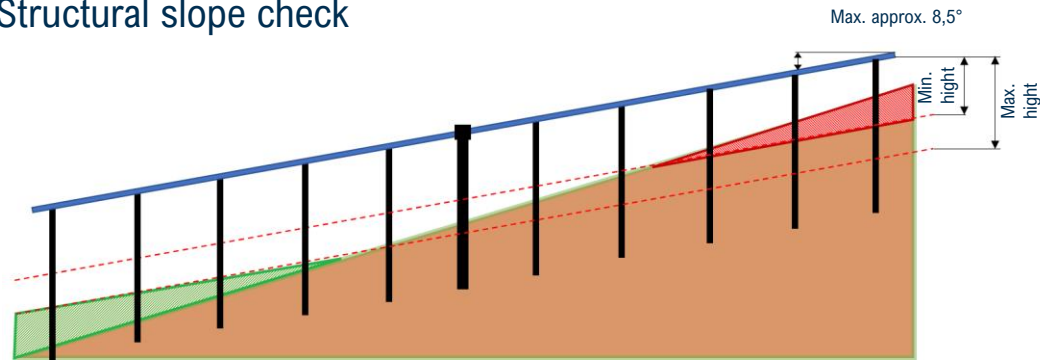
- Drone or quad topography survey
- Deliver data package in AutoCAD Civil 3D file
- Define a reference point which is still being available during construction

ZIM Track 3D-Engineering – Step 2

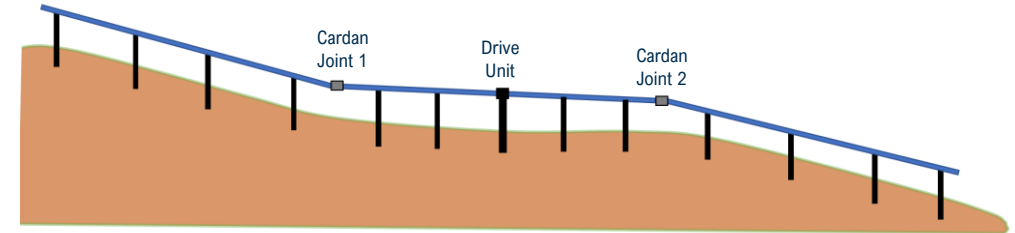
ISSUE

SOLUTIONS

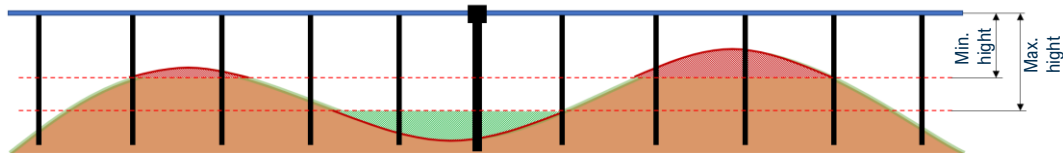
Structural slope check



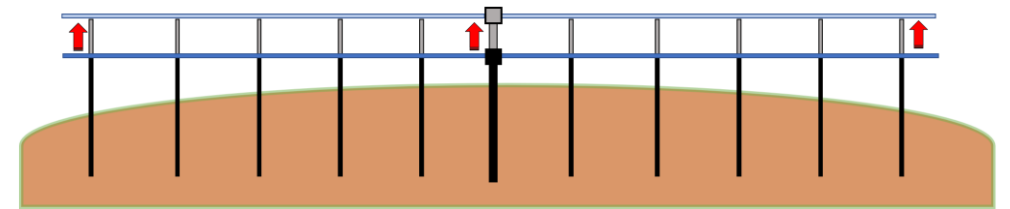
Better adaptation to the topography due to cardan joint



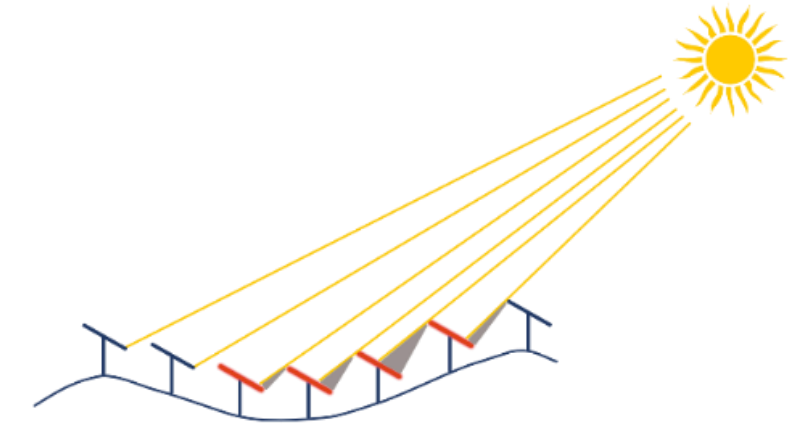
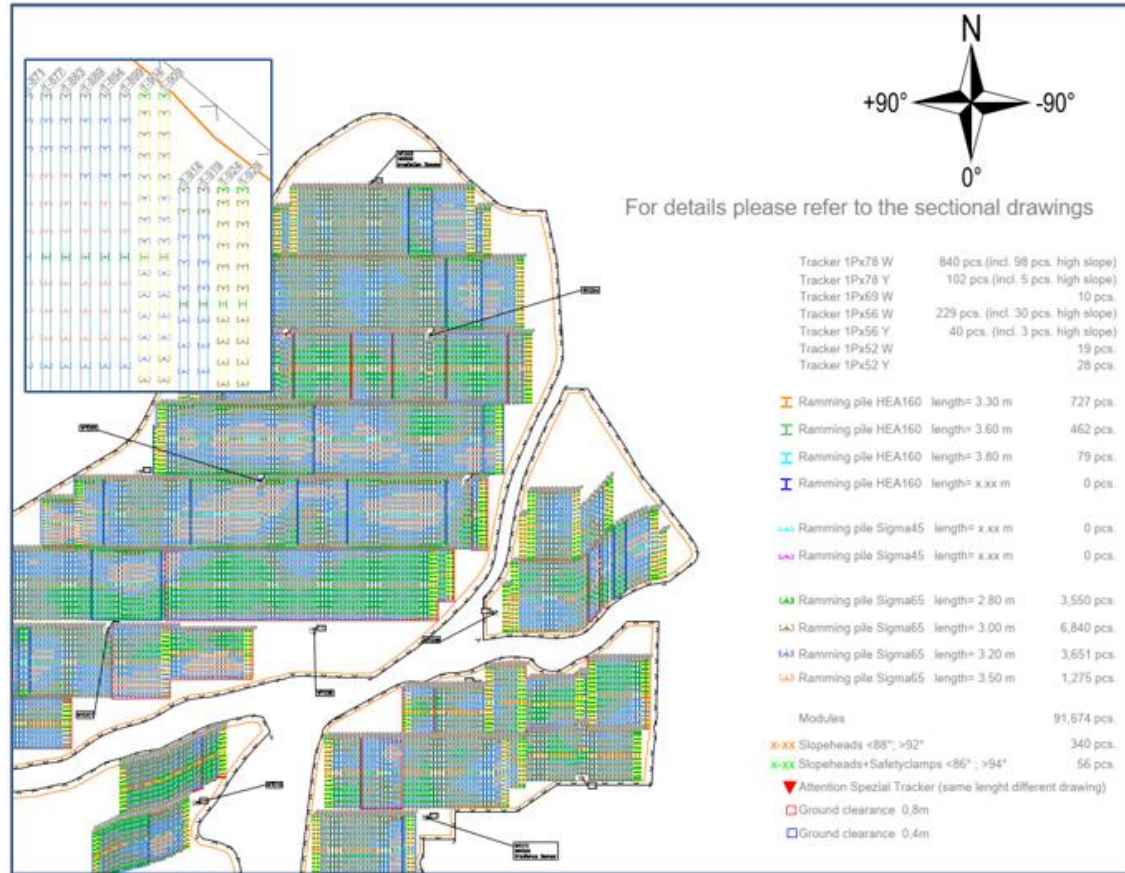
Structural collision check



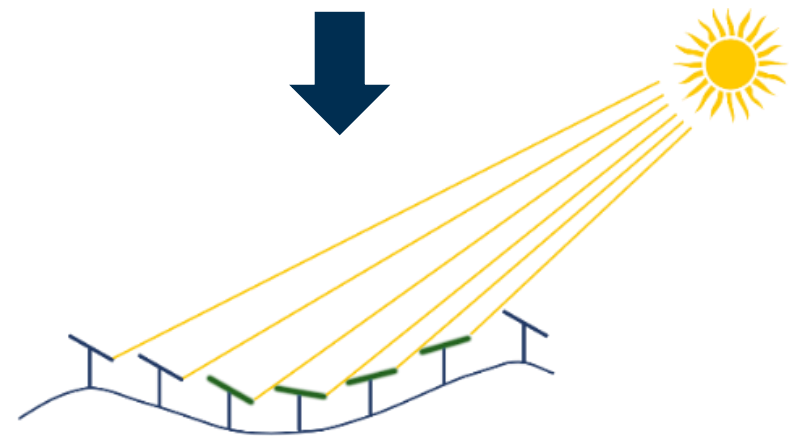
Moving tracker groups up/down or repositioning



ZIM Track System Output – Step 3



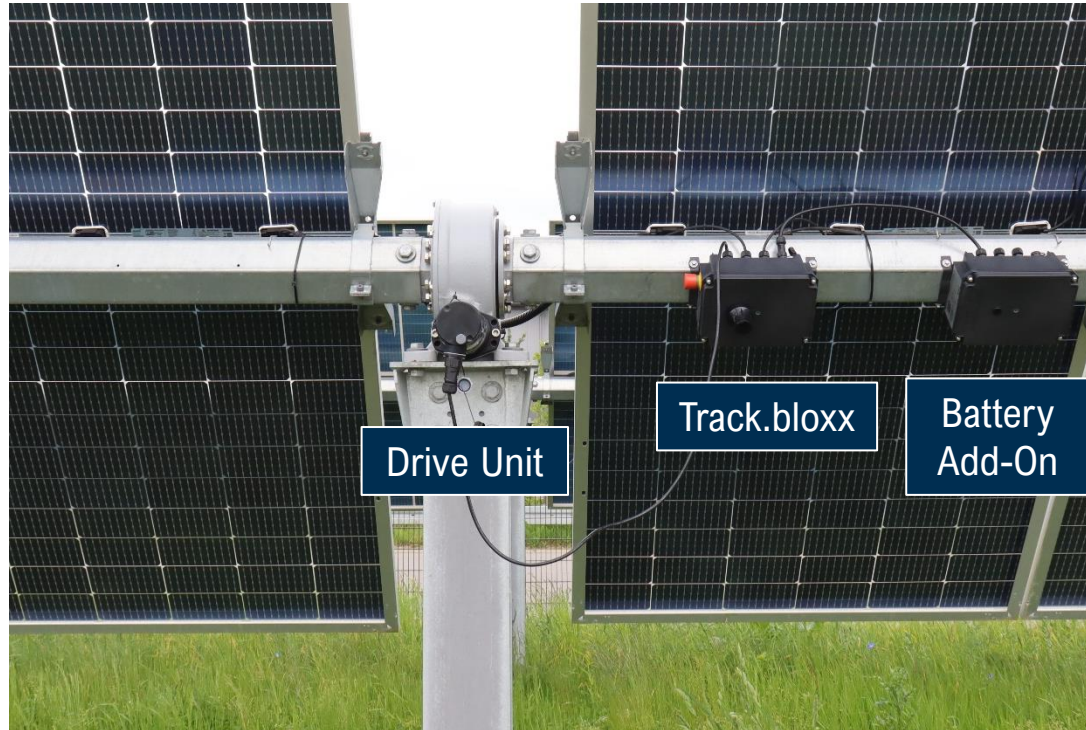
Standard Backtracking



ZIMply Terrain Track

- Piling plan length distribution
- Data package for GPS piling rig

ZIM Track Control System



3 Options:

- ZIM Track.bloxx 101- Tracker Control AC powered
- ZIM Track.bloxx 102- Tracker Control 1500V DC powered
- ZIM Track.bloxx 103- Battery AddOn

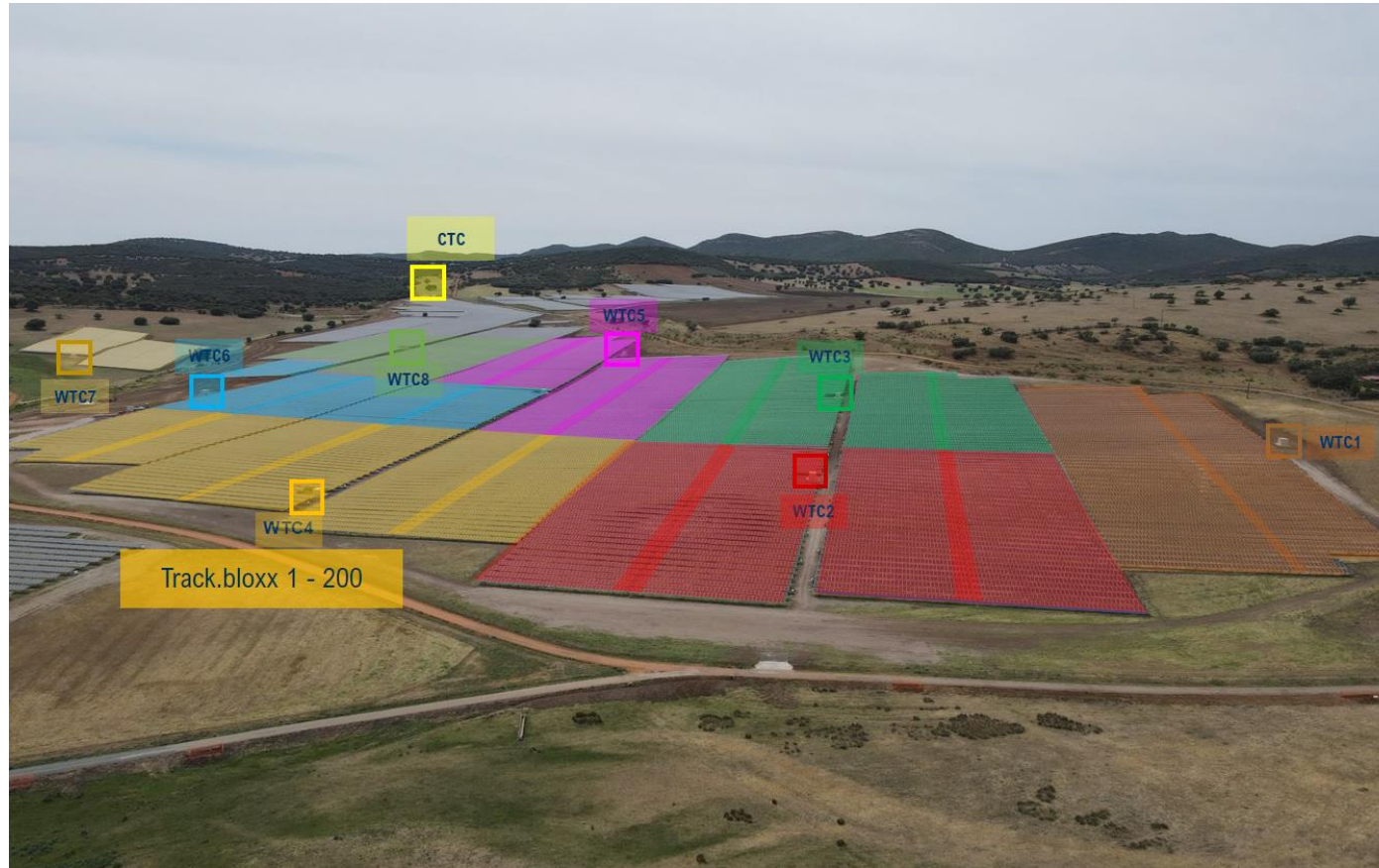
ZIM Track Control System



- ZIM Track's high quality and innovative control systems are designed and manufactured in Germany

Precipitation: WS100
Wind: WS200/Anemometer
Irradiation: Si-Reference cell
Others: Flood Sensor

ZIM Track Control System



- Proprietary innovative control system

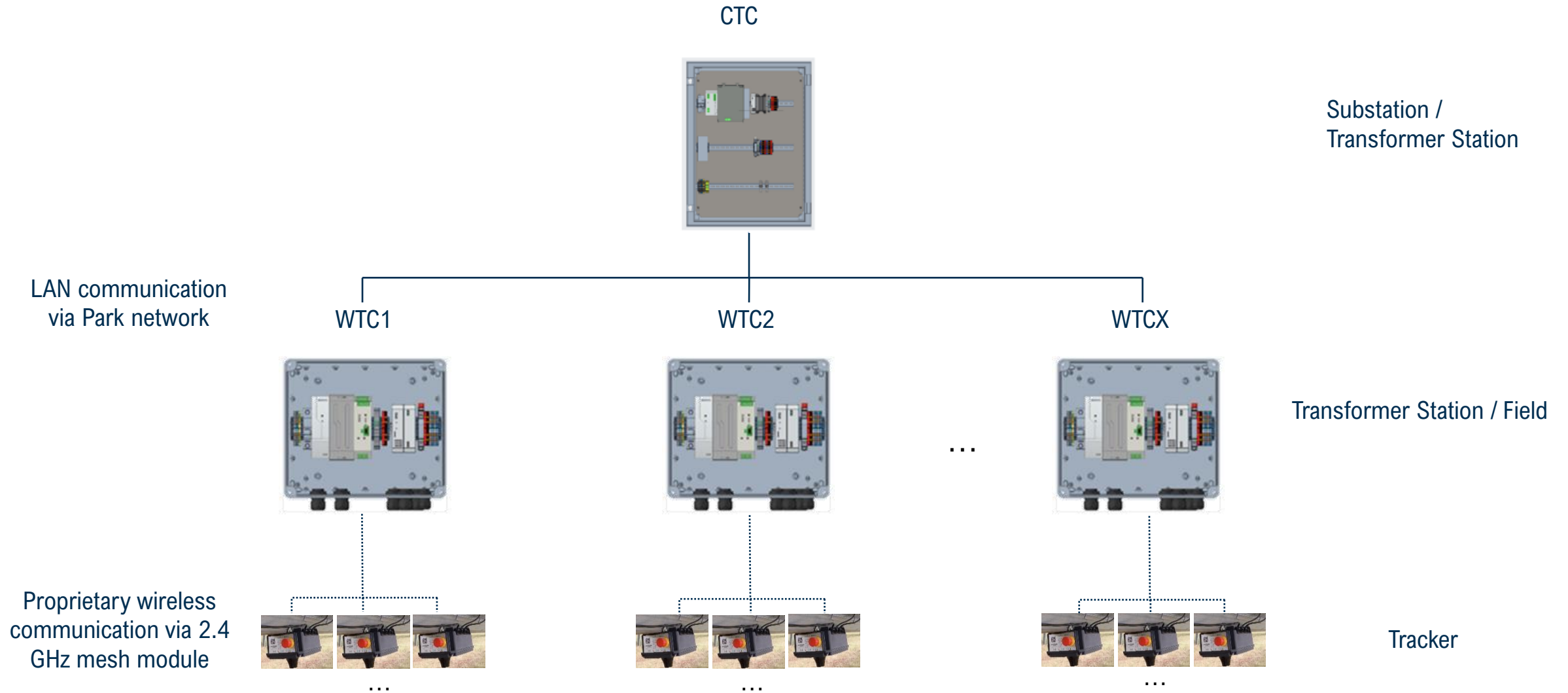
- Reliable wireless communication system with maximum uptime performance

- Up to 150 Track.bloxx per Wireless Tracker Control (WTC)

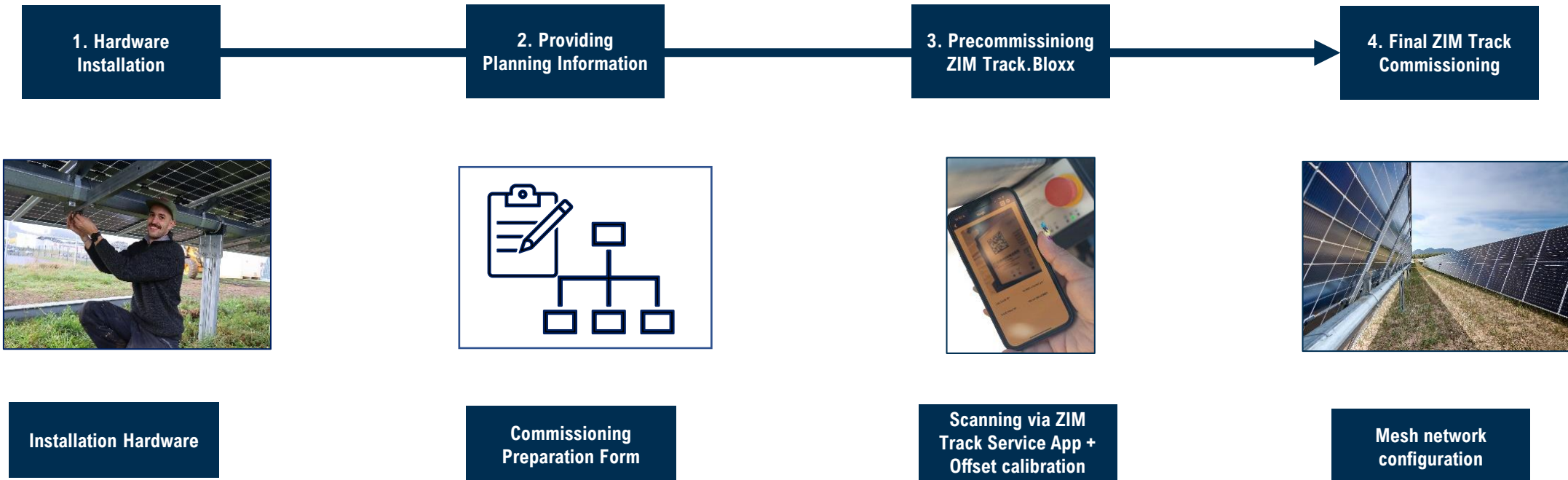
- 200m wireless communication radius around WTC

- Central Tracker Control (CTC) steers up to 6500 Track.bloxx

ZIM Track Control System – Communication Setup



Commissioning of ZIM Track System



- Tracker commissioning managed through a dedicated mobile app
- Data matrix codes on components enable fast and easy commissioning

ZIM Track Add-Ons



ZIM Track design offers additional Add-Ons, as inverter holders



ZIMply Monitoring system 1 year included

Quality testing



VDE RENEWABLES



External design & management reviews

IEC 62817:2014 + A1:2017- Photovoltaic systems. Design qualification of solar trackers

UL3703

CE certification – EC machinery directive 2006/42/EC

Grounding design review

ISO 9001:2015 & ISO 14001:2015

DNV Bankability Report

Impressions – Germany



Impressions – France



Impressions - Spain



Impressions - Chile



Impressions - Chile



Impressions - Greece



Thank you for your attention!

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