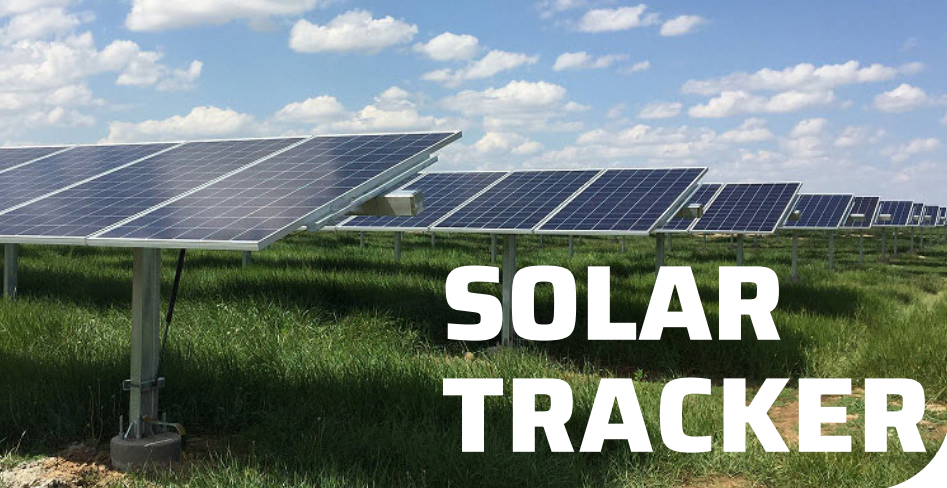


GROUND MOUNTING SYSTEM





SOLAR TRACKER SYSTEM

The solar tracker ensures that sunlight hits each panel at the most efficient angle by adjusting the panel's orientation.

To achieve this, parameters such as the site's GPS coordinates, local time, and geometric configuration are fed into a predefined mathematical model, where calculations are performed to maximize power output.

Intelligent Sun Tracking

Thanks to the dynamic tracking algorithm, it continuously monitors the sun in an active and controlled manner with a single solution that adapts to all installation sites.

Suitable for Various Applications

- Ground-mounted photovoltaic systems
- Agrivoltaic applications
- Large-scale solar parks (from 10 MWp up to over 100 MWp)

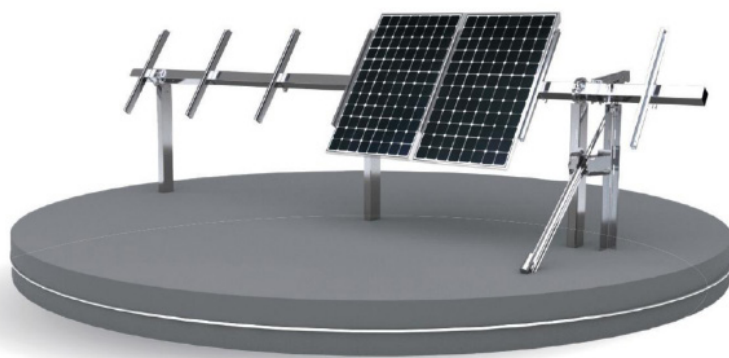
Quick and easy installation

Thanks to its innovative and flexible design, it simplifies installation and saves time. The reduced number of components significantly speeds up the installation process while minimizing the margin for error.

Superior design

Thanks to the spherical joint, it adapts to the natural terrain of the field with high tolerances. The automatic position-adjustment feature protects the panels from potential damage by moving them to the preset position during adverse weather conditions.

The eyelet is the component that facilitates installation in the field; it features 3 degrees of freedom to accommodate positional changes during operation. Designed to support any type of profile simply by changing the hub component



Custom-designed spherical joint for solar power fields

The spherical joint used for terrain adaptation offers three degrees of freedom, allowing for precise alignment even in difficult terrain conditions.

- Aesthetic and durable
- Secure mounting on the torsion tube to prevent slipping on sloped terrain.
- The housing, supported by steel rings, is resistant to external forces.
- The large friction surface prevents the torsion tube from vibrating due to wind.

Technical specifications

GENERAL SPECIFICATIONS

Solar Tracker Type	Single-row, single-axis
Tracking Range	±55° (110°)
Driver	Multiple linear actuators
Configuration	Single module in vertical orientation, up to 52 modules total
Supported Solar Modules	Framed modules
Foundation Options	Direct mounting / Pre-drilled + mounting / Micropiles / PHC piles

MODULE MOUNTING

Terrain Adaptability	15% N-S
Wind and Snow Load Tolerance	Customized to site requirements
Rear Shading Factor	0.8%
Critical Wind Speed	47 m/s

STRUCTURE

Coating	HDG, galvanized, and ZM / S355 / S350 / Magnelis / Corten
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CONTROLLER

Control	Electronic board with microprocessor
Water resistance	IP65
Tracking method	Astronomical algorithm
Advanced wind control	Customizable
Anemometer	Cup-type / ultrasonic
Night Stowage	Configurable
Communication with Tracker	Wired option: RS485 Wireless option: LoRa
Operating Conditions	Altitude <4000m Temperature +30°C to 60°C
Sensors	Digital inclinometer
Power (motor drive)	DC motor: 0.2 kW
Power supply	Grid connection / String power supply / Self-powered with battery

WARRANTY

Structures	10 YEARS
Drivers and control components	5 YEARS

Solar Tracking System Software Technology

The Sollower solar tracking system software features an intelligently designed interface that can easily send installation and positioning information to each row of trackers in various types of fields.





AGRO TRACKER

An agrivoltaic system is installed at a height that allows for the passage of animals and farm machinery, as well as crop cultivation.

- Protection of crops from weather events provided by the panels
- Dual land use, simultaneously enabling energy and agricultural production

The system integrates active solar tracking with automatic retraction in adverse weather conditions; this ensures both performance and protection. Its robust construction and minimal number of components make it ideal for large-scale projects.



Durable Materials

EN 10346 Galvanized Steel
Corten Steel
Magnelis



Compatibility

It is custom-made to fit all sizes of solar panels



Protection

Wind and snow resistant



Increased Production

Up to **21% more** energy production compared to fixed systems



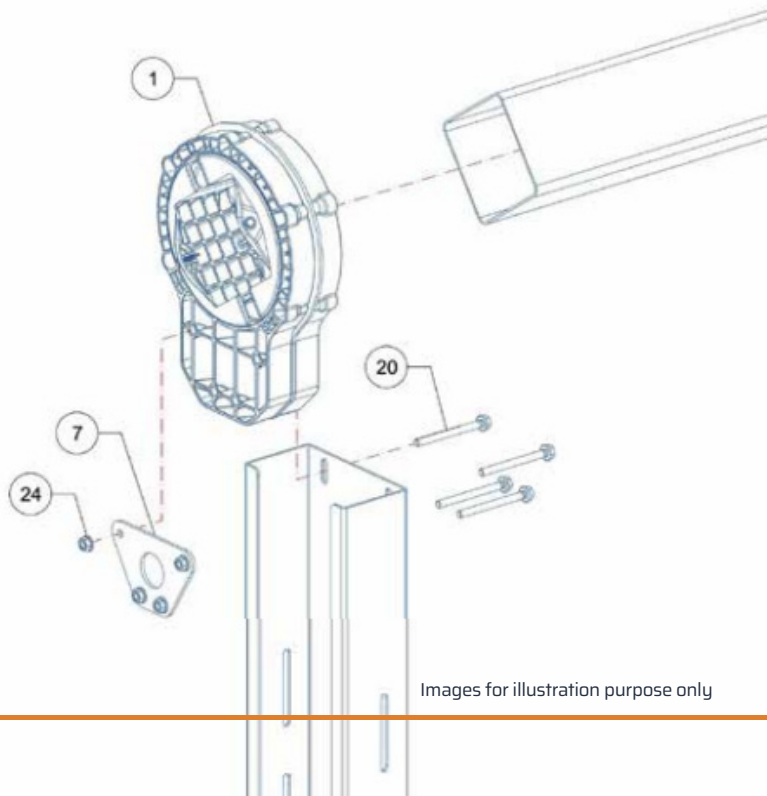
Traceability

3% increase in production using the tracking algorithm



Various foundation options

- Driven piles
- Screw piles
- Ballast solutions
- Special foundations for unstable soils



Images for illustration purpose only

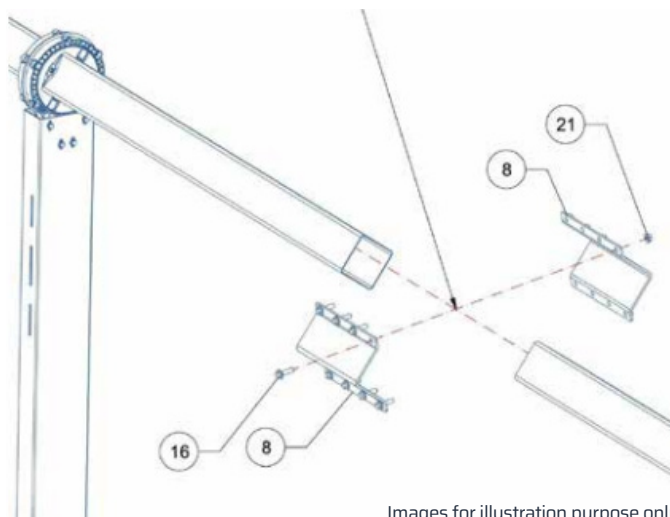


Row Layout

File-based tracking system. Each row supports a standard 1×10 module layout and can be adapted to meet project requirements. The system compensates for height deviations of ± 100 mm and accommodates slopes of up to 10%. Thermal separation is recommended for rows longer than 120 meters

Wide tracking range

Il Tracker solare ad alte prestazioni è progettato con funzionalità avanzate di tracciamento e montaggio. Offre un raggio di tracciamento di $\pm 31^\circ$ (totale 62°) e configurazioni opzionali a inclinazione fissa tra 10° e 40° .



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Wide Compatibility

The design, which offers various foundation options, accommodates different types of terrain, including flat ground, sloped surfaces, and uneven ground conditions. The choice of foundation is based on geological surveys and static load assumptions.

Automatic retraction in adverse weather conditions

The weather protection system automatically retracts the panels to a safe position during storms or heavy snowfall.

Structural Durability

The structure is reinforced with steel profiles coated with Magnelis or galvanized, ensuring long-lasting corrosion resistance.



6MW Agrivoltaic Installation (Città di Castello)

Main Components

COMPONENTS	SPECIFICATIONS
Axle	Octagonal profile 140x2.1mm
Axle Coupler	Mechanical connector
Slew Drive (with hole)	Octagonal profile 140x3mm
Pole	170×90×25×3mm,Length: 3.000mm
Slew Drive Mounting Pole	170*90*25×3mm,Lenght: 3.000mm
P20 Slew Drive Holder	Mechanical Bracket
Panel Connection Clamp	Pice
Joint Connector	Mechanical Element
Purlink Omega	34*39*24*1,5mm, Lenght: 1.500mm
Damper Arm	Mechanical Pice
Sensor	Weather-responsive control
Web Control	Remote Control Interface
Control Box	Electrical Control Unit
Joint	Mechanical Connector
Slew Drive	Rotational Actuator
Damper	Protective Mechanism
Module Fastening Bolts	Steel grade 8.8, zinc-coated
Clamps	Aluminum clamps 6063-T6

SOFTWARE TECHNOLOGIES

- Provides complete solutions for monitoring, controlling, and maintaining the SPP site.
- Simple and intuitive graphical interface;
- Allows users to remotely monitor and control the solar tracking system, review necessary analyses, and easily manage the maintenance process.
- Includes algorithms that maximize energy production for all types of axis setups based on the terrain structure
- Monitoring of instant and historical data
- Authorization as administrator, maintainer, and user. User-based data logging function
- Control via WEB browser. Graphically supported ergonomic indicators
- Remote parameter update
- Remote firmware update. Remote fault monitoring function
- Resume from where you left off without data loss in case of power interruptions

Tracking Method	Single axis tracking in east-west direction
Control	Microcontroller based numeric control system SDC; Solar Direction Calculator algorithm PHK; Panel Holder Kinematics algorithm PD; Proportional Derivative algorithm TRGN; Trajectory Generator algorithm AFK; Axle Forward Kinematics algorithm AIK; Axle Inverse Kinematics algorithm BT; Backtracking algorithm PF; Power Failure algorithm
Tracking Range	Asymmetrically adjustable tracking up to 120 degrees
Adverse Weather Resistance	Snow and wind sensors move the panels to a predefined safe position during adverse weather. Up to 70km/h according to local regulations for stow position
Operating Temperature Range	-35 [C] - +65 [C]
Power per Tracker	17-22 Kwh
Ground Coverage Ratio (GCR)	Varies based on demand, typical 30 - 50%
Monitoring	Web-based remote monitoring software
Guarantee	Additionally, 30 years of guarantee extension option.

Engine Specifications

MECHANICAL PARAMETERS

Parameter	Value
Gear Ratio	59:01:00
Self-locking	Ever
Backlash Clearance	< 0,20°
Max. Rotation Angle	124° (+0°/+6°)
Nominal Torque	7.500 Nm
Holding Torque	42.000 Nm
Maximum Torque	13.500 Nm
Tilting Moment (Static)	9,4 kNm
Tilting Moment (Dynamic)	1,9 kNm
Radial Load (Static)	115,4 kN
Radial Load (Dynamic)	46,2 kN
Axial Load (Static)	34,2 kN
Axial Load (Dynamic)	6,8 kN
Max Output Speed	1 rpm

GEOMETRY AND DIMENSIONS

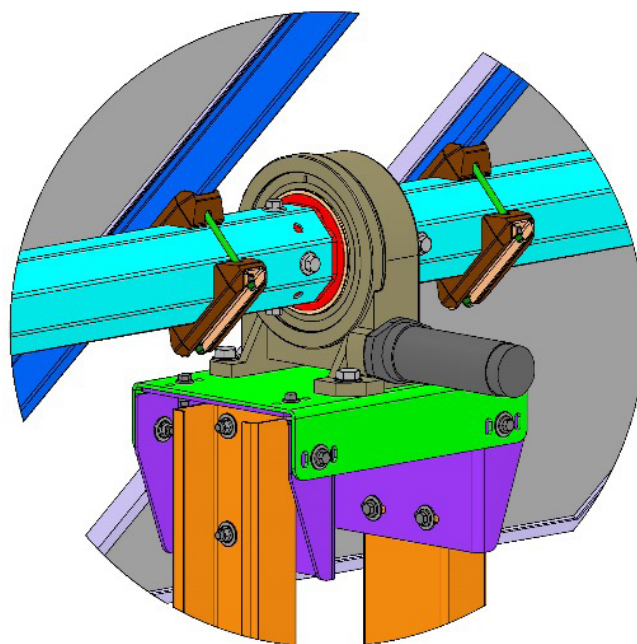
Total Weight	51,94 kg
Post-Painting Tolerances	DIN ISO 2768-C
Mounting	M16 (x4)

ELECTRICAL PARAMETERS

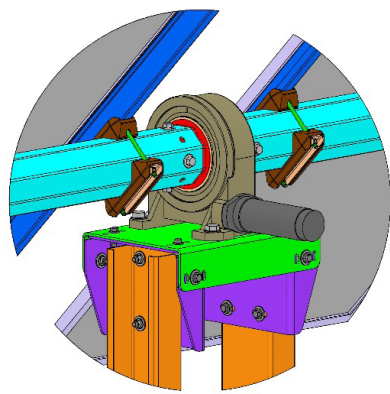
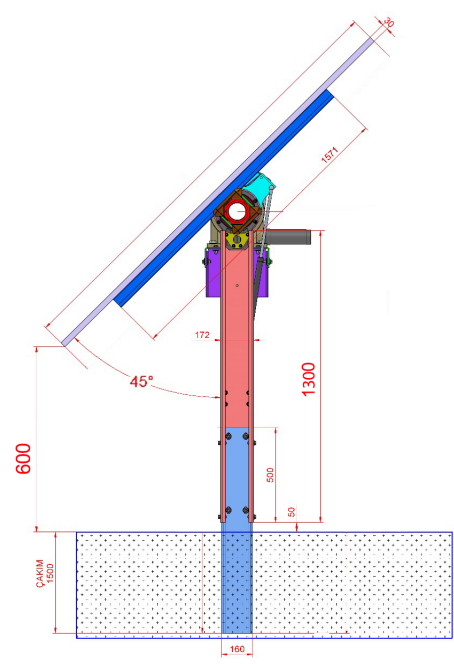
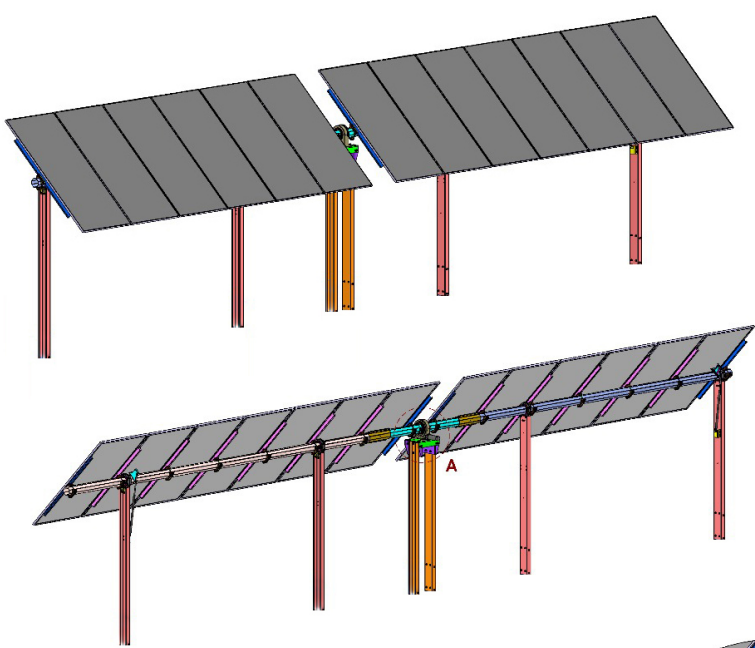
Rated Output Torque	7.400 Nm
Rated Output Speed	0,03 rpm (±10%)
Rated Current	< 6,3 A
Current at Max. Torque	< 10 A
Operating Mode	Short Time Duty (DC motor)
Connector	SP2110/S3 (Female Connector)
Wiring Definition	Pin 1: Motor -/Pin 2: Motor +/Pin 3: Ground



The system features a DC gear motor structure with a self-locking mechanism and meets CE requirements (2006/42/EC). Electrically rated as Class III, it offers IP65 protection against environmental factors. With an operating temperature range from -40 °C to +70 °C, it withstands a wide range of weather conditions and is coated with RAL 7040 gray paint suitable for corrosion category C3-M.

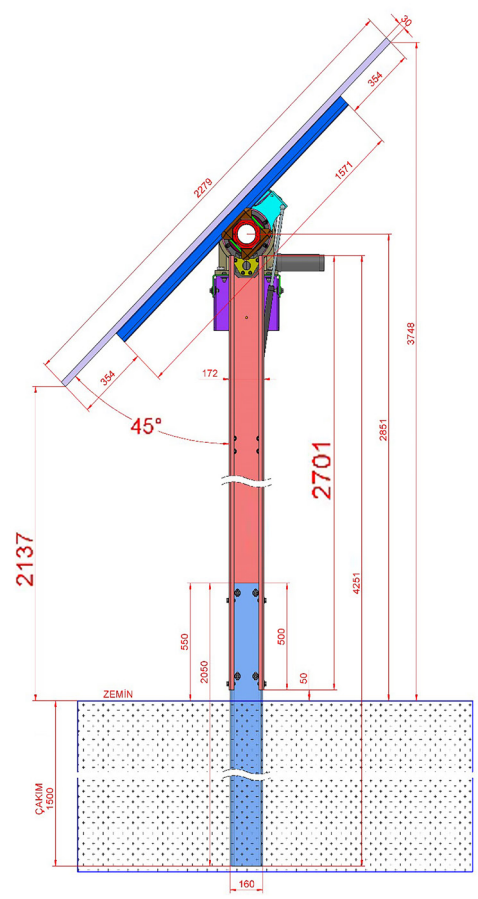
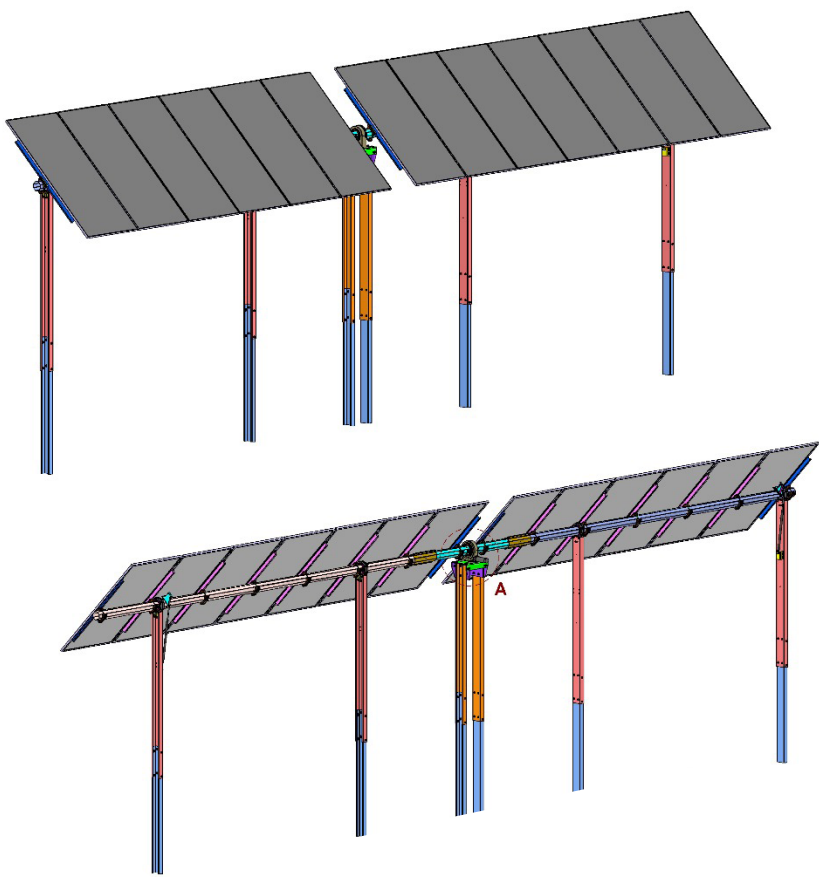


SOLAR TRACKER



DETAY: A (1:10)

AGRIVOLTAIC TRACKER



Images for illustration purpose only

FIXED-TILT SOLAR MOUNTING SYSTEM



The fixed-tilt system is made using the latest technologies. It consists of a complete structure for ground-mounted systems, including slotted poles to be driven into the ground in galvanized steel, EN AW 6060 T6 aluminum profiles with or without anodized coating, assembly screws, terminals, and omega-shaped components for mounting PV modules. Standard module arrangement (single or double row) / 30° tilt.

A fixed-tilt structure has panels tilted towards the equator, so the angle depends on the site's latitude. The panels are tilted south in the northern hemisphere and north in the southern hemisphere.

ADVANTAGES



Environmental sustainability

As no cementitious resins are used, the foundation system ensures a low environmental impact.



Technical support

Depending on the geological and geotechnical characteristics of the soil, our technical team evaluates each case to determine the foundation poles to use, as well as providing all the necessary support during installation.



Easy installation

All components of the structure are easily transportable, assembled and removable, leaving the soil undisturbed.



Corrosion resistance

Hot-dip galvanising in accordance with UNI EN ISO 1461 ensures excellent corrosion resistance.



High structural strength

Excellent strength and mechanical performance: the foundation piles are capable of withstanding high tensile and compressive stresses, as well as ensuring secure anchoring even in rocky or calcarenite soils; each profile is dimensioned to withstand the wind and snow loads specific to the installation site.



Modular design

The structure can be customized according to the client's needs, allowing the installation of any type of photovoltaic module at any required angle.

PULL OUT TEST

On-site direct pull-out tests are essential for determining the most accurate holding value of a fixing depending on the type of support. These tests are carried out to check the behavior of profiles under conditions similar to actual use; monitoring the deformation and loads of the profiles is very effective for studying structural elements.

The tests carried out are as follows:

Lateral load test

The test is performed through cycles of increasing load, resulting in the total detachment of the pole due to horizontal load at the level of the lowest hole from the insertion plane. Other heights for applying the horizontal load are allowed.

Axial tension test

The tension test or vertical load test involves the total extraction of the pole due to an upward vertical load.

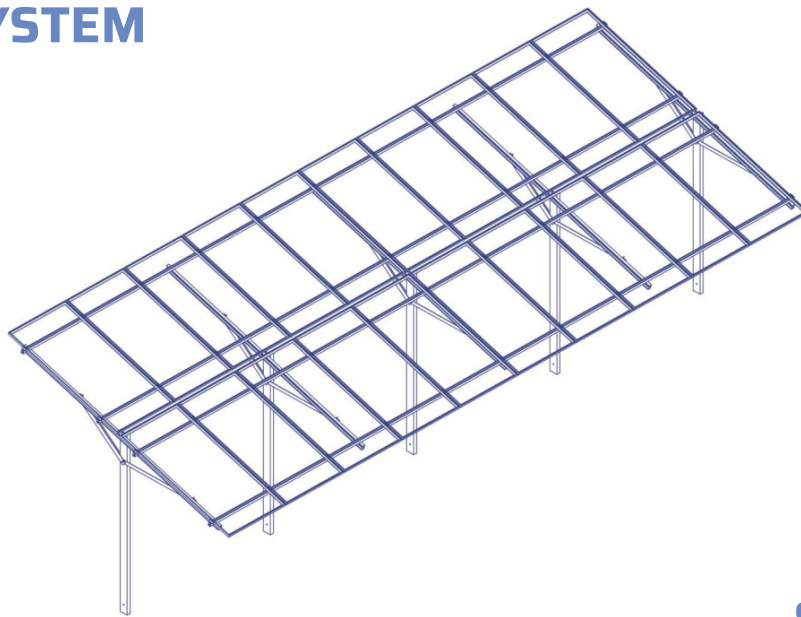
The tests may also lead to damage to the pole and will necessarily have to continue until the complete failure of the pole-soil system.

The pole to be tested must be driven to the design depth.

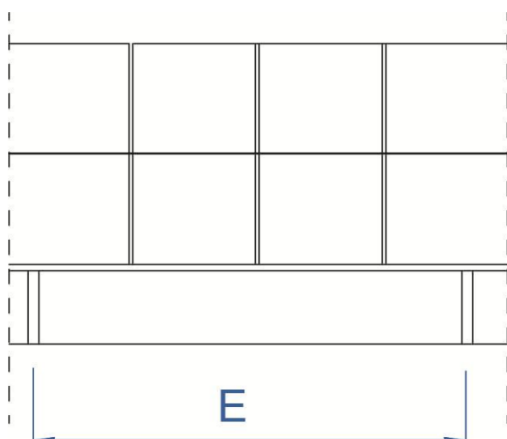
The pole's cross-section should be as per the design.

The pole must be driven without sustaining any damage

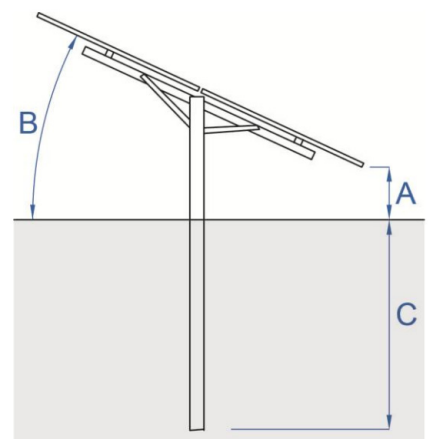
MONO-POST SYSTEM



FRONT VIEW



SIDE VIEW



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REGULATORY REFERENCES

D.M. 17-01-18 | Technical Standards for Construction
Circolare 7 21-01-19 C.S.LL.PP | Instructions for the application of the Update of the N.T.C. referred to in the ministerial decree of January 17, 2018

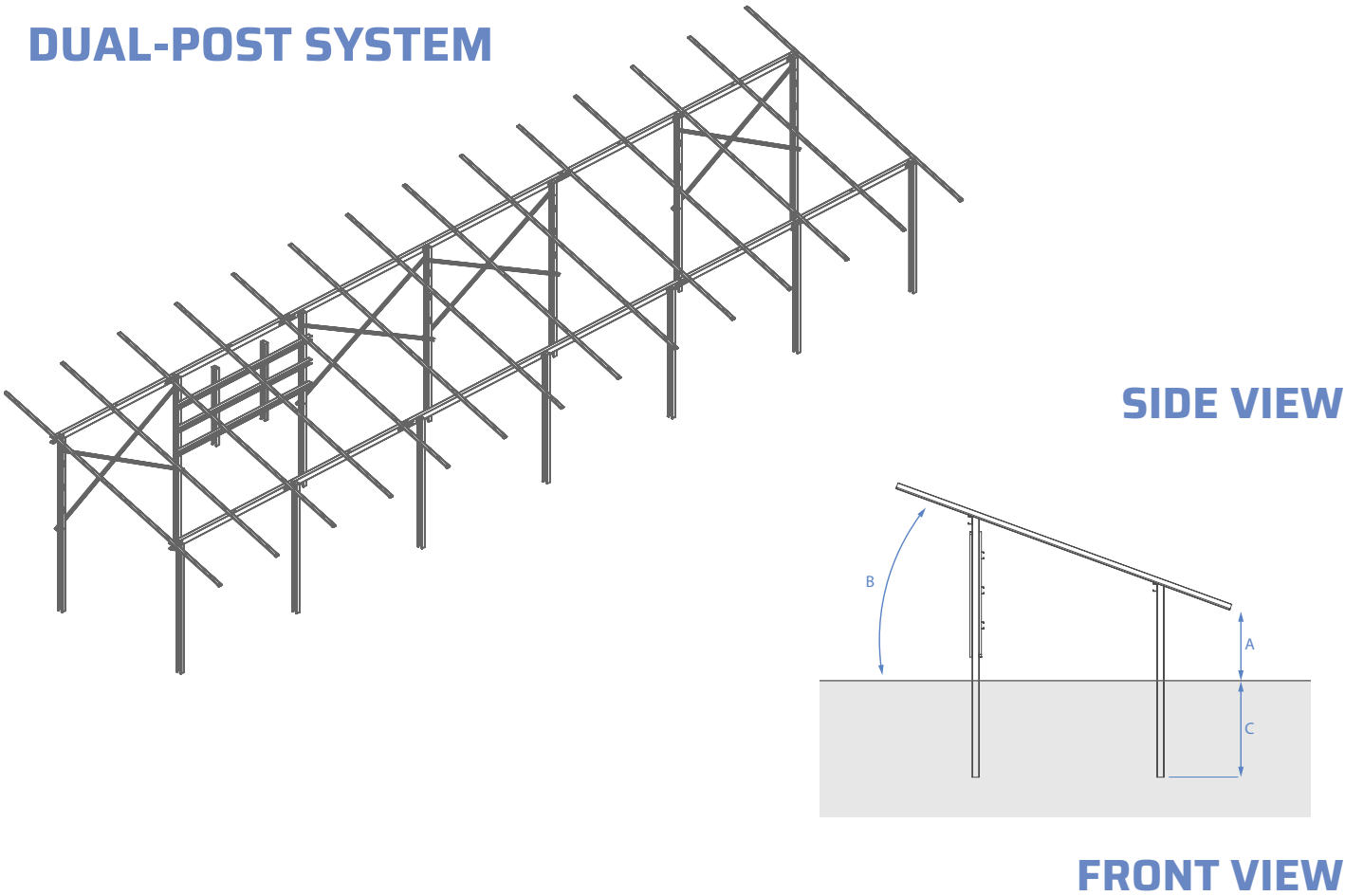
Eurocodes
EN 1995-1-1:2004 +AC:2006 + A1:2008 + A2:2014
EN 1090-1:2009+A1:2011
EN 1090-2
EN 1999-1-1:2023

MATERIAL CERTIFICATIONS
The materials of the individual components comply with current regulations, particularly for steel parts, for which the following are issued:

- Specific material test certificate 3.1 according to EN 10204 (CE)
- Declaration of conformity for hot-dip galvanizing according to UNI EN ISO 1461
- Factory production control compliance certificate (upon request)

USAGE CLASS
The structures covered by this estimate are designed and built in accordance with Usage Class II, as defined by current regulations.

DUAL-POST SYSTEM





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