1500 m², HORIZONTAL SINGLE AXIS TRACKER

A COST EFFECTIVE INVESTMENT

Same land cover ratio as fixed PV installations.

10% increase in the initial project cost.

up to 25% more energy intake annually.
**BOOST YOUR EARNINGS**

The total investment cost of the S250 is ~10% higher than that of an equal capacity fixed PV installation. The energy production is increased between 15% and 25%, making the IRR and the NPV of the investments using the S250 to be among the highest in the PV industry.

**PREPARE FOR THE FUTURE**

A tracker’s energy production curve is almost constant throughout the day, in contrast to a fixed PV installation that produces the main portion of the energy during noon. This production hours extension is very significant for producers that negotiate their selling prices in the free energy market. The same applies after the end of the feed-in tariff period. It is expected that in the next decade there will be an excess of energy during noon, as sun energy technologies occupy the energy market in combination with the increased energy demand during the morning and the afternoon hours. Producers who will be selling energy during these hours, will have an advantage during price negotiations. The S250 also reduces the CAPEX and the LCOE in installations that implement energy storage, since the increase in production hours equals a proportional reduction to the energy storage needs.

**ENGINEERED TO LAST**

The S250’s design is based on our accumulated design knowledge and extensive field experience. Every detail has been thoroughly engineered to have the minimum impact to the levelized cost of energy (LCOE).

"SIMPLICITY IS THE ULTIMATE SOPHISTICATION"

Leonardo da Vinci

The S250 foundation and assembling costs are kept similar to, or in many cases even lower than that of a fixed PV system installation. The G-CLAMP saves labor time, as each module needs less than a minute to be clamped on the tracker. Visit the following link to learn more about the G-CLAMP: www.mechatronenergy.com/327q.

The innovative 6-AXIS HINGE can absorb up to 10 cm of pole misplacement in any direction, it also makes possible the installation on areas with extreme slopes. Slopes up to 17 degrees can easily compensated in the North-South axis, and unlimited slope in the East-West. Visit the following link to learn more about the 6-AXIS HINGE: www.mechatronenergy.com/775x. Since the 6-AXIS HINGE does not interfere with the PV modules during operation, there are no gaps between the PV modules, making the S250 the solution with the best ground coverage ratio in the market.

**INNOVATIVE CONTROL**

The S250 is equipped with an advanced control system. The Master Control Unit (MCU) incorporates an anemometer and a GPS receiver. It connects to the internet through WiFi or Ethernet and it controls all the trackers in a plant using a simple Modbus protocol. The S250 is practically plug & play, as it can start operation without any setup procedure, from the first day of installation.

**Astronomical algorithm**

The S250 uses an open loop astronomical algorithm. By using direct GPS information, the MCU solves the astronomical algorithm to find the sun’s position and drives the PV module surface to the most appropriate position against the sun.

**Backtracking**

During the first or the last hours of the day, where the sun is close to the horizon, the MCU continuously adjusts the slope of the modules as to prevent the Tables from casting shadows to each other.

**Web administration & Operation**

The MCU incorporates a web server, which allows the plant to be accessed through the internet. The MCU monitors and communicates with each tracker while showing the status of the plant in a well designed web interface. Plant operators can log-in from any web browser to see the status of the plant. They are also able to interact with the trackers and make movements or perform any task they wish. In case that an error occurs, the MCU can inform the operators by sending a message which contains a description and the probable cause of the fault. Messages can be sent via SMS or E-mail.

**HYDRAULIC DRIVE**

The S250 uses hydraulic drive mechanism, which despite its higher cost compared to other technologies, is the only safe choice for harsh environments (proven for decades in earthmoving machinery). The hydraulic circuit is closed and the oil is isolated from the environment. It also passes through the incorporated microfilter, which keeps it clean, even operating in the thin dust of a desert, securing reliable and low maintenance operation for many years.

**EASY INSTALLATION**

We have optimized every step of the procedure. There is no need for field work (drilling, cutting, welding, etc.) and no need for decisions during assembling, thus eliminating installation errors and the need for expert staff. The joints are shipped preassembled, thus further reducing fieldwork.

**STAINLESS STEEL BALL BEARINGS ENABLE SEAMLESS OPERATION & EASY INSTALLATION EVEN IN THE MOST EXTREME SLOPES.**
DESIGNED FOR EASY TRANSPORTATION

2MW WORTH OF TRACKERS CAN BE LOADED IN JUST 6 SHIPPING CONTAINERS.

DESIGNED FOR SIMPLE INSTALLATION

ONLY 15 DIFFERENT COMPONENTS IN TOTAL COMPRISSE THE WHOLE TRACKER ASSEMBLY.

GEARLESS DRIVE

The S250 uses a hydraulic Drive Mechanism. Despite its slightly higher initial cost compared to other technologies, hydraulics is the only safe choice for harsh environments (as proven for decades in earthmoving machinery).

FAST PV MODULE MOUNTING

The G-CLAMP saves labor time, as each PV module needs less than a minute to be fixed on the tracker. Visit the following link to learn more about the G-CLAMP: www.mechatronenergy.eu/3z7q
SUITABLE FOR ANY TERRAIN

EASILY ABSORBS TERRAIN ABNORMALITIES IN THE EAST-WEST DIRECTION

CAN BE INSTALLED ON ANY SLOPE IN THE EAST-WEST DIRECTION

EASILY ABSORBS TERRAIN ABNORMALITIES IN THE NORTH-SOUTH DIRECTION

CAN BE INSTALLED ON ANY SLOPE IN THE NORTH-SOUTH DIRECTION
MODULAR DESIGN
The length of a Table can change in order to overcome difficulties due to field inconsistencies e.g., existing buildings. Extra Tables can be added to compensate for the missing length of the shorter Tables.

DRIVE MECHANISM
All the Tables are actuated using a single Drive Mechanism.

TABLES
Each Table can bear any type of PV module of a total area up to 127 m².

LINKS
All the Tables are connected to each other and to the Drive Mechanism with the use of Links.

MODULE HOLDERS
Any kind of PV module can be supported directly on the Module Holders without the use of special underframe profiles or tools.

MAIN CARRIER
A simple tubular beam holds all the Module Holders. The Module Holder location on the Main Carrier can be decided during the installation process.

TORQUELINK + SIX-AXIS HINGE
An evolutionary torque arm design with an adjustable sliding link and a hinge with six degrees of freedom makes possible the installation on fields with extreme terrain abnormalities.
SPECIFICATIONS

MAIN CHARACTERISTICS
- Type: Modular, horizontal single axis solar tracker (rotation axis orientation south to north parallel to the ground)
- Range of motion: -45° to +45°
- Maximum surface area: 124 m² per Table 1488 m² total (12 Tables)

INSTALLATION CHARACTERISTICS
- Possible Foundations:
  - rammed pole
  - concrete pile
  - concrete ballast
- Distance between Tables: up to 8 m (7m recommended)
- Distance between foundations along a Table: 5~6 m
- Min. distance from ground during operation: 0,5 m
- Max. height during operation: 2,6 m
- Ground coverage ratio: 35% - 50%
- Field slope up to 17° by design (or more if a custom solution is required)

ELECTRICAL CHARACTERISTICS
- 230/400V 3-phase AC ±10%, 50-60 Hz
- 240/480V 3-phase AC ±10%, 60 Hz
- Daily energy consumption: 0,25 kW·h typical / 0,35 kW·h maximum

DRIVE MECHANISM
- Type: Hydraulic
- Maintenance:
  - annual inspection and greasing of the motion’s cylinder joints
  - hydraulic oil and filter change every 5 years

CONTROL
- Tracking method: Astronomical algorithm (open loop)
- Tracking accuracy: 1°
- Measuring system: Inclinometer
- Backtracking: Yes
- Monitoring and remote handling: Full, in real time through the internet
- Plug & Play: uses GPS for time and location

SAFETY
- Designed to meet all the requirements of Eurocode 3
- Automatic frame levelling in extreme weather conditions
- Operating conditions: up 50 km/h at any tracking angle and wind orientation

STRUCTURE
- Drive: Hydraulic parts sealed from the environment. Able to operate in desert and in any combination of dust and moisture
- Structural steel elements: Hot-dip galvanized
- Joints: Dry slide stainless spherical bearings (no maintenance required)

ENVIRONMENTAL CONDITIONS
- Temperature operational range: -20 °C to +60 °C
- Snow rating: 160 kg/m²

Download the latest version of this brochure from here:
[www.mechatronenergy.com/r6n4](http://www.mechatronenergy.com/r6n4)