

Tracker technology highlights

Trackers | With competition in the tracker marketplace becoming extremely fierce, rival companies are adding new features all the time aimed at minimising installation and operation costs, and enhancing durability. Here we profile some of the single-axis trackers currently available on the market and the innovative design features they offer

Company: Array Technologies

Technology: DuraTrack HZ v3

Features: The DuraTrack HZ v3 incorporates a novel wind mitigation feature that allows the tracker to respond to and alleviate high wind loads. Trackers commonly utilise an 'active stow' approach to wind mitigation, whereby sensors move the solar field into a flat position to minimise wind forces. This requires an uninterrupted power source – something that may not be guaranteed during periods of particularly bad weather – and regular testing and maintenance to ensure they are functioning properly at all times. Rather than relying on sensors and a power source to move the entire structure into the same flat position, the DuraTrack HZ v3 has a torsion limiter built into each row, which decouples when exposed to high load forces. After decoupling, the tracker row naturally assumes a position of least resistance by the wind. Usually the position of least resistance is at or near v3's 52° range of motion limit, where redundant mechanical stops are located throughout the system to prevent over-rotation. This angle allows the wind load to be distributed evenly over the 80 module row and the mechanical stops distribute the forces across the row's multiple columns instead of compounding the forces on one central column location. The net result is that no scheduled maintenance is required on the v3, meaning the system can manage itself for the 30-year design life of the product, according to Array.



Credit: Array Technologies

The DuraTrack HZ v3 features a unique system for handling heavy wind loads



Credit: NEXTracker

NEXTracker's NX Fusion bundles together tracker, modules and inverter in one package

Company: NEXTracker

Technology: NX Fusion

Features: The NX Fusion is a bundle of technologies that incorporates NEXTracker's NX Horizon single-axis tracker, a Huawei inverter and, if desired, modules; NEXTracker offers its own NX-405 modules or Flex's 325 modules as part of the bundle, although the system is compatible with any panels. The NX Horizon tracker itself offers various features, including a 120-degree tracking range and the ability to move rows into stowing position within two minutes. Individual rows can accommodate up to 90 panels, and the motors driving each tracker are self-powered by their own dedicated solar panel with battery backup, minimising wiring and maintenance. The NX Horizon is also compatible with bifacial modules, such as those offered by SolarWorld and LG. Overall, NEXTracker claims the NX Horizon offers 2% higher energy yields.

Company: STI Norland

Technology: STI-H1250 (multi-row); STI-H160 (mono-row)

Features: Spain-based STI Norland has over 700MW of its trackers in operation around the world. Its STI-H1250 tracks the sun on a horizontal axis oriented north-south. It is comprised of a series of torsion beams on which the PV modules rest. The beams and modules rotate, tracking the east-west movement of the sun. The 250W motor that drives the beams requires only 1.25kW per MW to operate – making it among the most efficient trackers on the market, according to STI Norland. The tracking control includes a 'backtracking' mode to prevent shadows from being generated between adjacent rows of modules, as well as a flag function to protect the structure and the modules in situations of extreme wind. The STI-H160 is a single-row option that offers greater flexibility for irregular layouts and steeper slopes.



The STI-H1250 is claimed to be one of the most efficient trackers on the market

Company: Grupo Clavijo

Technology: SP160 (single-row); SP1000 (multi-row)

Features: Spain's Grupo Clavijo is presenting the latest generation of its single-axis trackers at this year's Solar Power International. The SP160 single-row and SP1000 multi-row models are claimed to offer optimal reliability in a range of conditions, in temperatures between -5 and +50 degrees Celsius and at altitudes of up to 1,000 metres.

The company has also developed a new maintenance-free spherical bearing for its trackers, which it says offers a number of benefits, including quicker assembly time by virtue of the fewer number of individual pieces involved, greater stress resistance and the capacity to absorb a working angle greater than 60 degrees with structural systems that reduce the centre of mass and decrease the energy consumption required for movement. Grupo Clavijo has around 1.2GW of its trackers installed worldwide, with production centres in Spain, the USA, Brazil, Chile and South Africa.



Credit: Grupo Clavijo

A 4.8MW PV array in Fresno, California, featuring Grupo Clavijo trackers

Company: Exosun

Technology: Exotrack HZ v2

Features: The Exotrack HZ v2 has been engineered to deliver high energy output and to minimise CAPEX and OPEX for ground-mounted solar plants, thereby offering the lowest levelised cost of energy. Exosun claims the simple design of the Exotrack HZ v2 enables an installation rate of 200 man-hours per megawatt. This is possible due to the fact that no machines are needed to assemble the structure's few and lightweight parts on site, reducing installation time. The system is also configured in short rows, meaning it accepts high land irregularities, following flowing topography without the need for land grading.

Exosun says the fact the Exotrack HZ v2 requires only 51 key components needed for 10MW also minimises failure risks and reduces the need for O&M actions. Exotrack HZ v2 can be delivered with a smart module cleaning device. With reduced human intervention and its capacity to clean without water, the system offers increased cleaning performance at a low cost. More than 370MW of Exotrack HZ trackers have been installed on 35 solar plants worldwide. The Exotrack HZ v2 will be on display at Exosun's booth #3013 at SPI as well as on First Solar's booth #745 supporting the latter's S4 and S5 modules.



Credit: Exosun

The Exotrack HZ v2 has been designed to minimise the number of man hours required in installation

Company: Ideematec

Technology: safeTrack Horizon

Features: The safeTrack Horizon is claimed to use 20% less material input and 50% less foundation work than other tracking systems on the market, yet offer stability under high wind loads of up to 180 miles per hour. The tracker can be installed on gradients of up to 20 degrees in all directions; the elimination of push rods between installation on gradients of up to 20 degrees is possible without leveling work. The safeTrack Horizon's patented steel rod system minimises stress, while the absence of push rods aids maintenance by eliminating obstructions for maintenance teams.



Credit: Ideematec

Ideematec's safeTrack Horizon system in operation in Rwanda, East Africa

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