

# On track for increased energy generation



Tracking systems are something of a booming market in the world of solar technology. We were keen to get the viewpoint of Juan Manuel Gómez García, CEO of TrinaTracker BU EMEA, to find out why this is the case. What are the advantages of this technology and where might it lead us next?

**PES:** Welcome to PES Juan, and congratulations on your recent appointment as CEO of TrinaTracker BU EMEA. From your perspective, combining your many years of expertise in photovoltaics with your strong knowledge of mechanical designing and information technology, how do you see the future of the solar tracker industry?

**Juan Manuel Gómez García:** It's great to speak with you. My 15 years of experience in the tracker market, backed up by a bachelor's degree in Industrial Engineering and a soon-to-be-completed Computer Engineering degree, has given me enough expertise to evaluate the industry's potential, with an objective perspective and critical judgement. And now, I can say with full confidence that the future looks bright and promising.

Solar growth has consistently exceeded expectations, and policies continuously evolve to enable higher targets. According to the International Renewable Agency, by 2024, almost 33 per cent of the world's electricity is forecast to come from renewables, with solar photovoltaic (PV) accounting for nearly 60 per cent. This has a clear impact on the utility installation's growth and, consequently, on the increase of tracker technology development.

HIS Markit report shows that global tracker shipments grew 12% year-on-year, reaching 51 GW in 2022, 10 of which were deployed in Europe, the Middle East and Africa, representing a 39% year-on-year growth in the region.

The global solar tracker market is expected to reach an accumulated capacity of 660 GW



Juan Manuel Gómez García



globally, and a \$12 billion opportunity in EMEA specifically.

Investors look for the latest technology to minimize the cost of the energy they produce, reducing BOS cost and maximizing energy production throughout the whole 25-35 years that the operation phase of the plant lasts.

Module price is stabilizing, but still constitutes a large proportion of the expense; this makes investment on trackers more durable. Capital costs for fixed-tilt systems are generally lower than solar trackers, but their overall performance is around 25% lower in most cases.

Moreover, there is very limited technically innovative room for traditional fixed-structure solutions to have additional power gain and facilitate lower-cost and smart O&M for lower OPEX during the lifecycle time of a solar plant. On the contrary, tracking systems combined with artificial intelligence have already proven to significantly increase power gain.

As a result, when combining the fixed and variable costs into a single measurement, the LCoE for a tracking system will be lower than the fixed-tilt system. Additionally, trackers can be perfectly integrated with storage systems and therefore ensure grid stability and energy usage optimization.

**PES: There are no limitations to complex sites, under extreme weather conditions, or low direct radiation, correct?**

**JGG:** There are no more perfect flat sites, located in places with high direct radiation available. Therefore, to increase the market demand, tracker technology has evolved to utilize sites with uneven and difficult grounds in areas with strong wind or highly diffuse irradiation.

**PES: Where and how is TrinaTracker positioned in this booming context?**

**JGG:** TrinaTracker is a leading global tracker solutions provider. We manufacture, develop, and implement high-tech, intelligent, integrated and tailor-made solar tracking solutions that maximise energy production and reduce costs.

We expect to maintain our 20-30% growth in 2023 globally, becoming one of the main global tracker players in the solar market across all the regions. We operate in EMEA, North America, Asia Pacific, and China and have implemented more than 400 projects worldwide with a total capacity of around 9 GW. On our path to leadership, we have recently signed projects that will become significant milestones in their geographical markets, like the Samsung PV plant with 875 MW of capacity in Qatar and Santa Lucia with 520 MW in Brazil.

We, as well as our parent company Trina Solar, are positioned in the market as an 'innovation pioneer, which makes us a point of reference in the solar technology field.

from 2023 to 2030, with 170 GW of solar trackers expected to be installed in EMEA.

This data, apart from being good news, has become the biggest challenge of my career. As head of R&D, I have to match the trackers' design to the market requirements, and now my role is to ride the company's growth in parallel to the market's expansion.

**PES: What are the main drivers of tracker demand?**

**JGG:** There are quite a few strong drivers that quickly increase the tracker's demand. First of all, reaching a common ground on energy policies that demand high solar energy objectives and investments. The advantageous legal European framework, combined with market dynamics unquestionably foster utility-scale PV projects.

In 2015, signatories to the United Nations Convention on Climate Change in Paris agreed to pursue efforts to limit the rise in global temperatures to well below 2°C and try to limit this temperature increase to 1.5°C above pre-industrial levels by 2050.

Here in Europe, the European Commission, aligned with the UN, approved the European Green Deal in 2020, which focuses on making

the European Union (EU) climate neutral in 2050. The Green Deal mobilises at least €1 trillion in sustainable investments until 2030.

Then, in March 2022, the Commission presented RePowerEU to achieve Energy independence and the solar capacity targets of 400 GW by 2025, and 740 GW by 2030. To reach this goal the EC estimates that €210 billion are needed between now and 2027. The Recovery and Resilience Facility (RRF) is at the heart of the RePowerEU Plan implementation, providing additional EU funding. Member States can use the remaining RRF loans, currently at €225 billion, and new RRF grants funded by the auctioning of Emission Trading System allowances, currently held in the Market Stability Reserve, worth €20 billion.

**PES: It's an attractive ROI area isn't it?**

**JGG:** Utility-scale photovoltaic energy has become an attractive investment area since installation and interconnection times are short, it involves low risk, and energy production can be predicted.

The 660 GW of solar tracker installations forecasted between 2022 and 2030 by IHS Markit represents a \$60 billion opportunity

In addition, we have gained our clients' trust by proving our supply chain efficiency by reaching every corner of the world. Apart from our local suppliers, we support in-house production. We have two manufacturing centres in Viana, Navarra and Changzhou, China, which boast total annual production capacity of 8 GW.

TrinaTracker has around 300 employees working in offices in Madrid, Viana and Zurich. Moreover, one of our R&D hubs is also located in Spain, next door to our tracker factories.

**PES: Can you describe TrinaTracker's strategy behind its positioning and growth?**

**JGG:** The key to TrinaTracker's strategy is our customer-focus mindset. We provide peace of mind for our clients by ensuring that our offer includes the best possible solution to achieve the lowest LCoE. We focus on gaining our clients' trust by proving the reliability of our solutions and the efficiency of our services.

TrinaTracker's offer includes the integration of different smart solutions to achieve the lowest energy price throughout the whole operating phase of the PV plant. Our offer also includes state-of-the-art-trackers, Vanguard 1P, Vanguard 2P and Agile 1P, a smart tracker algorithm called SuperTrack, a SCADA system known as Trina Smart Cloud and a wide ranging tracker services.

Our business model has nothing to do with selling individual tracker products. Each solution is thoroughly studied, defined, and specific to each project. The company's tracker portfolio covers the clients' needs for each PV site according to its ground, elevation slopes, size, and the remaining physical characteristics.

For example, Vanguard 1P has a really simple design that reduces installation and O&M costs. Its damper system and rounded-edge torque tube make the tracker stable under extreme wind and snow storm conditions. Vanguard 2P multi-motor, multi-control with only seven posts per tracker is the most optimal solution in the market for sites that require expensive foundations. The tracker achieves total angle alignment across the whole length of the structure and accurate control. Furthermore, dual-row Agile 1P stands out for its perfect adaptation to even the most complex sites.

TrinaTracker has an holistic business approach. Our offer also integrates innovative owned developed artificial intelligent applications. The SuperTrack Smart Tracking Algorithm combines Smart Tracking and Smart Backtracking algorithms. It increases power production by up to 8% in sites with uneven terrains that are located in areas with highly diffused irradiation.

TrinaTracker's proprietary SCADA system, coined 'Trina Smart Cloud', monitors and controls the plant's operation remotely, lowering O&M costs. Moreover, our tracking

services make sure that our clients always receive the most optimised offer, and the solutions are implemented appropriately, meeting all the agreed deadlines. They include pre-sales, pull-out-tests, engineering, training, consultancy, operations lead and supervision among other services.

**PES: What about quality control?**

**JGG:** All our solutions go through very demanding internal tests. Our trackers are bankable certified by DNV, and have passed IEC 62817 / UL3703 standards. Furthermore, they have all submitted to the wind test implemented by the world-wide wind energy consultancy leaders in the industry: RWDI and CPP.

We have just received the third-party validation to ratify the extra energy generated by SuperTrack Smart Tracking Algorithm, and Trina Smart Cloud allows continuous energy production. We are proud to have highly qualified, multicultural employees with strong expertise in the solar industry. They are the core of our success.

**PES: How important is innovation to your success?**

**JGG:** TrinaTracker's pioneering spirit is firmly rooted in the company's DNA. Our parent company, Trina Solar, has always been at the forefront of the solar industry, which makes it a world-wide solar module manufacturing leader.

The company has two R&D hubs: in Changzhou, China and Viana, Spain where we also have our indoor testing laboratory and outdoor fields. We have registered nine patents of invention and 14 technology tracker-related utility models in Madrid, and 5 more patents overseas. They include the 'Spherical Bearing,' the only three-dimensional tracker bearing in the industry that allows 30% of tracker adaptation, and 'Trina Clamp', smart purling that reduces installation time by 50%.

**PES: You are headquartered in China, so how localised is your strategy?**

**JGG:** Although TrinaTracker is a global leader, we act as a local company in all the markets in which we operate. We carefully study legal frameworks to comply with all the industry regulations in each country. TrinaTracker understands that their strategy and operation procedures must match with the clients' requests and culture in each market.

The company benefits from having consolidated international expertise, hiring solar experts from all over the world and building local teams. With the aim of increasing its international presence, TrinaTracker has developed a diversified supply chain, capable of delivering not only main structural components. It also covers services such as ramming or assembly processes, covering the entire cycle of the projects.

**PES: How do you contribute to the growth of solar in Europe?**

**JGG:** First of all, Europe is a prioritised region in our business plan. So, the company has allocated a substantial amount of resources to this market. We are members of Solar Power Europe and most solar associations in the continent. We are aligned with the United Nations Convention on Climate Change, the Green Deal, and the RePower Euro plan.

TrinaTracker has around 300 employees working in offices in Madrid, Viana and Zurich. One of our two R&D hubs is also located in Navarra, Spain, where we have also built the company's indoor laboratory and outdoor testing fields.

In addition, at the company's manufacturing centre in Spain, we are working on a strategic plan to increase the factory's production capacity to cover most of the supply required for deployment of our European projects.

**PES: As an expert in tracker R&D and an active participant in the history of tracker evolution, please tell us your view of the direction that tracking technology is heading.**

**JGG:** Tracker innovation is a non-stop process, with the unique objective of lowering energy prices. Right now, this process is accelerated by the common goal of reaching net zero CO<sub>2</sub> emissions by 2050.

Besides maximizing production, tracker technology aims to have no barriers to installation. Optimizing systems is key to having PV plants in sites that were never thought possible. Lakes, oceans, mountains, deserts, heavy snow, strong wind gusts, hail, mountains, hard ground, soft soil, slopes, low or diffuse irradiation, sheep, birds, noise, agriculture, nature integration are all no longer obstacles to installing trackers.

There is an artificial intelligence race to achieve total angle accuracy for maximizing energy production on overcast days, in cloudy areas, and during dusk and dawn. Moreover, the tracker industry focuses on smart monitoring that predicts potential failure and remotely controls the installation to lower O&M cost.

I guess the word 'integration' identifies the tracker roadmap. We must work not only towards a total integration among the tracking solutions, but also to reach perfect compatibility with the latest module, inverter and storage technology. Trackers should also be integrated into any available space and with parallel activities. AI, floating systems, and agrivoltaic are crucial to reach sustainability.

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