A holistic strategy: the unknown value of solar trackers

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Nowadays, tracker companies do not limit their activities to the development of state-of-the-art designs, manufacturing and delivering the trackers to the plant. As TrinaTracker's main aim is to achieve the lowest possible energy price for every PV project, innovation and development are 'essential' areas. As a result, Trina works continuously to define intelligent solutions and services that increase energy production and support clients through the entire implementation and operation of the PV plant.

Marisa González Berrocal

Behind every commercial offer there is solid pre-sales and engineering work, that consists of analysing multiple factors, many of which are unknown by the clients.

Among many other elements, pre-sales engineers evaluate the site characteristics as regards its layout, terrain and weather features, local legislation, logistics, technology adaptation etc, to deliver the most beneficial and optimised proposal for every project. Therefore, every offer is unique and tailor-made to the client's demands.

Moreover, the services do not end with delivery of the trackers to the plant. On the contrary, we work together with our clients throughout the entire installation and operation process: providing installers with training; supervising and/ or planning the installation; working on contingencies and offering technical consultancy services to ensure that every component works efficiently during the 30+ years of the operational phase.

If any kind of failure occurs after the interconnection, our after-sales services department works 24/7 to provide clients with a fast response and immediate action. In addition, TrinaTracker continuously

optimises its online communication channels to facilitate reporting tasks, ask questions, and then, deliver the quickest possible solution.

Fortunately, the solar market includes excellent players, such as highly mature and professional Engineering, Procurement and Construction (EPC) companies, who excel in building large solar installations. Their business model, nature and the pressure they face on Capital Expenditure (CAPEX) leads them to buy those products that, apart from quality, bring competitive price advantages for their clients, and for themselves. Hence, developers, asset owners and Independent Power Producers (IPPs) delegate to and trust in their procurement and construction expertise, and do not consider the technological innovations that are emerging in the PV market.

Recently, I have been surprised to learn that a few developers, investors and asset owners are unaware of the latest developments that integrate artificial intelligence into the

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tracker ecosystem. These groups sometimes complain about the need to digitalise PV installations further when they have not even heard of intelligent tracker algorithms or smart monitoring and control solutions.

In my opinion, this arises for two reasons. On one hand, some developers, asset owners and IPPs rely 100% on EPC companies, whose purchasing criteria are based on CAPEX. But on the other hand, tracker companies do not make sufficient effort to inform and target their communications about their innovations to the entire market.

Consequently, having a customer-focus mindset, TrinaTracker educates the market on its entire portfolio of intelligent solutions from a 'holistic' standpoint. When integrated, Trina's tracker solutions achieve greater production at a lower cost in the long-term.

The company's capabilities not only consist of intelligent manufacturing procedures and state-of-the-art tracker designs. TrinaTracker has developed artificial intelligent solutions, such as the SuperTrack and Trina Smart Cloud. The former includes a Smart Tracking algorithm that increases energy production by 3% to 8% compared with conventional algorithms. Furthermore,

it combines Smart Tracking (STA) and Smart Backtracking (SBA) algorithms to enhance energy yield, particularly during overcast weather, highly diffuse irradiance and on uneven terrains.

STA optimises power production for bifacial modules in highly diffuse irradiance conditions, considering the 12 different parameters included in the Trina Bifacial Irradiation Model. That means a much larger quantity of information than the data obtained by the four parameters used by conventional algorithms. Moreover, STA reduces tracker rotation times, extending the durability of the motors.

SBA minimises energy generation losses resulting from row- to-row shading in PV plants installed on terrains with multiple slopes. First, UAV sensing technology and power generation data create a 3D simulation of landscapes and shadings. Then, the optimal backtracking angle is accurately defined by a machine learning algorithm and the Mini-Shading patented model.

Trina Smart Cloud is the intelligent data monitoring and control solution patented by TrinaTracker. This smart solution provides remote real time operating data, minimises

power loss, improves system performance, in addition to reducing O&M activities, time and costs.

Trina Smart Cloud analyses the data online, enabling reliable and accurate PV operations across a wide range of weather conditions, maximising energy production and limiting O&M activity and costs as much as possible through preventive maintenance suggestions.

In addition, Trina Smart Cloud includes pyranometers and snow sensors, which data is shared between NCUs. Therefore, if a sensor fails, tracker operation is unaffected and energy production remains high. The application also integrates protection strategies that actively respond in extreme weather conditions.

These TrinaTracker proprietary smart tracking solutions, together with the company's manufacturing capabilities and the wide range of services that support the implementation of the PV installations from their initial configuration to the end of their operating life, ensure the maximum return throughout its 30+ years of energy production.

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