TrinaTracker

Ultra-high Performance Solar Tracker

Tongchuan (China)

Nominal Power
250 MWdc (30 MWdc with TrinaPro)

Owners
Government Project

EPC
Trina CSES

TrinaPro
Module: Trina 335W N-Type
Tracker: Trina Vanguard 2P

COD
2020

TrinaPro LCOE
$ 0.0984 USD/kWh

TrinaPro IRR
8.95%

Background

Located 150 km north to the ancient Xi'An City, Tongchuan Village lies in the valleys among towering mountains. Despite not being an ideal circumstance, it is still necessary to promote solar in this particular area. Tongchuan Project not only matches renewable power generation agenda issued by Chinese Goverment, but also facilitates crops recultivation on the barren land and brings significant economic return to this underpriviliged village. Therefore, it is definitely an inspiring investment trifecta for the local government.

Trina CSES, a Trina Solar subsidiary company which operates separately from Trina SPVCG, participated as the EPC and adopted TrinaPro in this projects. TrinaPro, developed and supplied by Trina SPVCG, is an optimized integration of module and tracker, and the design combination is varied based on project specifics. In this particular project, Trina 335W N-Type module with 20.67% conversion integrated with Trina Vanguard 2P tracker are carefully selected for maximum yield gain performance.

Challenge

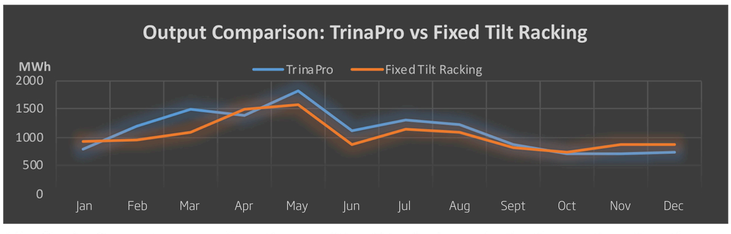
Surrounding mountains decreased site accessibility to both construction crews and materials. The undulated terrain discouraged crews to work efficiently, and it also significiantly affected pile installation and component alignment. Moreover, tracker compounded with agricultural features inevitably had to elevate the torque tube clearance to over 3 meters, imposing extra difficulty and inconvenience on construction. Finally, treacherous roads on the adjacent mountains are the only viable option for logistics, but they tremendously limit the deliver capacity of construction material. Therefore, meeting the COD deadline seemed to be increasingly difficult for Trina CSES.

Solution

The biggest feature of TrinaPro is the unique communication and delivery channel for both module and tracker. Depending on the advantageous supply chain layout, Trina CSES managed to make orderly logistical arrangement to intelligently avoid delivery congestion on the mountains. Furthermore, despite globally procuring tracker components and module, Trina supply chain was able to coordinate third party suppliers and internal cross-functional teams to ensure timely manufacturing and delivery. Last but not least, Trina Vanguard 2P tracker employed adjustable bearing supporting structure along with flexible spherical bearing and reduced number of piles per MW to alleviate construction complexity in this project, so it motivated crews to expedite the installation process.

Operation Result and LCOE/IRR Analysis

This 250MW Tongchuan Project is divided into two parts: 30MW with TrinaPro and 220MW with fixed tilt racking system. Such a split project arrangement offers unit generation output comparison from each individual design. Additionally, it provides us a benchmark to study TrinPro's LCOE and ROE.



Affecting by the randomness of weather condition, TrinaPro's production is sometimes less than Fixed Tilt Racking's in Spring. Additionally, fixed racking system's production usually prevails during winter. However, TrinaPro's overall production still surpasses Fixed Tilt Racking's by 7.75% in the entire year.

Despite higher BOS, TrinaPro's annual LCOE is only 0.0984 USD/kWh, 3.5% lower than Fixed Tilt Racking; Besides, TrinaPro's annual IRR is 8.95%, 0.6% higher than Fixed Tilt Racking.

Conclusion

TrinaPro in Tongchuan Project, with 3.5% better LCOE, brings 7.75% more generation output and 0.6% better IRR than Fixed Tilt Racking. This thrilling result not only raises the developer confidence but also strengthens Trina's product design and order fulfillment capability. Eventually, it will lead to more TrinaPro applications around the world.