



Repowering the planet by reducing solar power production costs

Words: Arturo Herrero, Chief BD Officer by GameChange Solar

GameChange Solar is an American solar tracker and fixed tilt manufacturer based in New York, with the main mission of 'repowering the planet by reducing solar power production costs'. It has grown exponentially from the beginning and in only 6 years, it has managed to reach almost 10GW sales, placing the company among Top 3 in the USA and Top 6 globally.

We started in the solar business with big investments from our CEO's IPP, and it clearly showed that the cost and efficiency of the installations had big improvement potential. So, there you have the origin of the company, designing its own fixed structures and trackers, focusing on maximizing energy production and reducing cost of installation goals for developers and EPC companies respectively.

Nowadays, both cost of equipment and installation are crucial to reduce CAPEX and OPEX and minimize LCOE. Developers and investors are sure to be competitive and reach a good IRR, after all, every cent counts.

That's why GameChange Solar focus on optimizing the design of the fixed structures and trackers to reduce the cost in production without compromising quality and warranties. We offer up to 40 years design life.

In addition, we are improving installation design and components to reduce timing and installation manpower during EPC works.

Our most important contribution aligned with investors and developers' interest is to get higher IRR of their investment in the project,

The company's exponential growth is mainly thanks to the following 7 main differentiators:

1. Very robust tracker design using high strength steel, supporting winds up to 175 miles/hour (250 Km/hour), and avoiding the galloping effect by stowing position at 35-45 degrees.

The galloping effect is produced by continuous vibration of modules fixed to the structure when stowing at 0 degrees, entering into resonance and increasing oscillations finally blowing the panels out of the tracker, as seen in several damaged projects few months ago. Stowing at 35-45 degrees requires strongly reinforcing the posts.

The prestigious company CPP has provided continuous feedback on results on the aeroelastic and aerodynamic calculations from wind tunnel test studies conducted by GameChange Solar Genius Tracker, for both 1 Portrate (1P) and 2 Portrate (2P), very popular now with Bifacial modules.

2. Focused on single-line trackers, covering maximum lay-out surface, optimizing coverage ratio and production output. One of the most important goals for developers, promoters and investors, is to maximize solar production in terms of KWh/Year to be turned into \$/Year and the highest possible IRR.

One of the main advantages for the tracker is to optimize the land coverage, getting the most of lay-out limitations on the site of the photovoltaic project and assuring every single square meter has

installed modules to produce energy.

3. The use of artificial intelligence (AI) to maximize generation with a company's own algorithms used in GameChange property features: TopoSmart, SmartStow and WeatherSmart.

TopoSmart is an in-house developed software that analyzes the topography and comes out with a 3D lay-out design. It gives exactly the different needed lengths of piles depending on the landscape, to overcome high slopes, high peaks and low valleys, substantially reducing the need of move of ground and civil works. It reduces positively the total cost of the EPC.

SmartStow calculated via sophisticated algorithms, determines the absolute moment to drive the tracker to stow position, depending on the measurement of winds, differentiating between a dangerous constant strong wind versus just a sudden gust of wind. Assuring therefore the maximum time the modules are facing the sun in their right position throughout the day.

The WeatherSmart concept is similar to StowSmart, but takes into account cloudy moments during the day. On an entirely cloudy day, the tracker will be sent to 0 degrees position to absorb maximum indirect radiation, however if there are only sporadic moments of clouds, the tracker will 'intelligently' decide to stay following the sun rather than moving to the flat position.

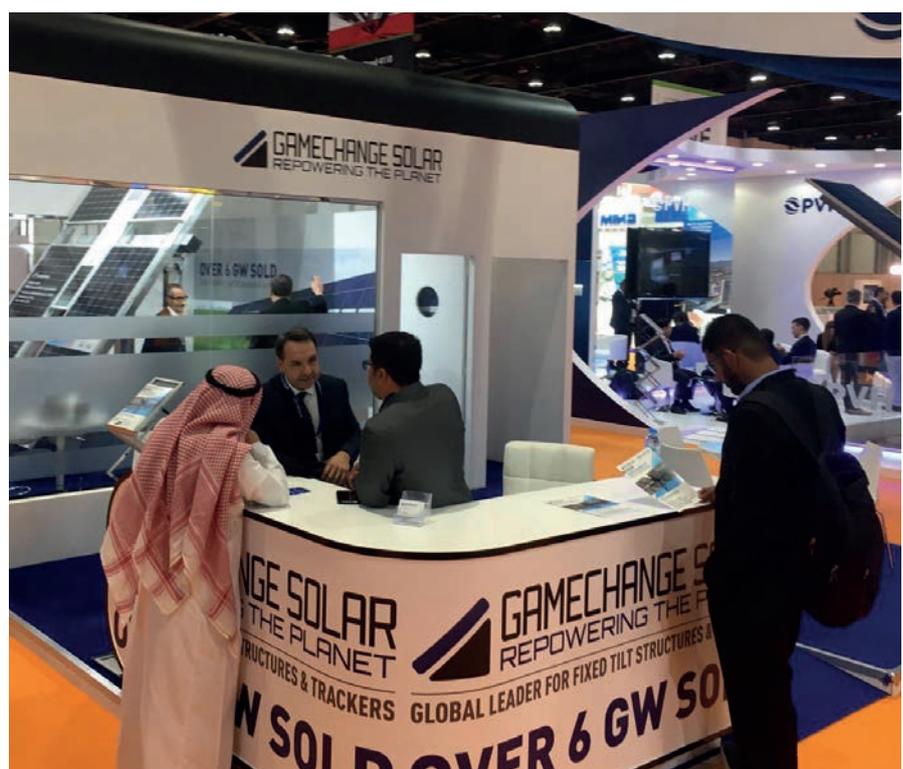
We also have snow and flood stow positions available for sites that require them. A sensor calculates the distance to the ground, which decreases when there is an important level of snow, or a flood water, so the tracker can avoid the full tilt angle, preventing damage to the modules.

4. Very easy and fast to install, reducing substantially EPC installation cost.

most parts come pre-assembled from factory and there's no need for special tools during installation. GameChange Solar's SpeedClamp, for 1P configurations, is the fastest mounting solution in the industry.

After the increase of energy production, our second important goal is to reduce LCOE as much as possible, improving design to make on site assembly and installation faster, combined with providing as many preassembly parts as possible.

5. Cost efficient and the fastest to install fixed tilt solutions. For projects and sites that are better suited for fixed tilt, GameChange Solar has created the most cost effective solutions: MaxSpan-X Post driven systems, for regular soil sites, and Pour-In-Place Ballasted Ground System, to allow installation at sites where the complicated soil makes pile driving costs impossible to assume. Both products designs follow the same philosophy of our Genius Tracker System: robust design, adaptability, cost efficiency and fast installation with Twistclamp, preassembly and integrated hardware.





In the USA, GameChange Solar, with main headquarters in Connecticut, is currently Top #3.

Besides the USA, Spain, Australia, Brazil, Chile, Colombia and UAE are expected to be the most attractive markets for solar trackers in the next coming 5 years.

The global PV tracker market increased by over 42% in revenues up to \$2.8 billion in 2019, according to IHS latest report.

The global PV tracker market reached over \$3 billion in 2020, equivalent to an estimated 40GW of shipped solar trackers.

The company, with its great expectations of growing internationally, has opened offices and hired representatives in Switzerland, Ireland, Spain, Argentina, India, China, Middle East and Australia besides the USA.

GameChange Solar's goal internationally is to reach the top global positions in the coming years.

Despite the Covid-19 impact, with the slowdown in the financial markets and in the economy in general, we are optimistic about our renewable energy sector and we see the commitment from private and institutional investors and even more support from governments, in most of the countries that are seeing a way to boost back the economy and employment in this Industry.

🌐 www.gamechangesolar.com

As module prices reduce more in the coming years, highly packed fixed tilt for over 90% GCR as alternative to a higher total MWH production, on constrained terrain and extremely undulating sites, will begin to make lot of sense.

6. Besides production in USA, in November 2019 GameChange Solar, inaugurated its factory in Wuxi, China, as part of its investment, becoming one of the most competitive manufacturers in the world.

Installed Capacity in China is over 12GW annually with state-of-the-art brand new equipment. Together with this new factory, GameChange can reach a capacity of over 20GW annually. Production is provided globally from Wuxi's factory in China, in every needed geographical area outside of the USA.

We have clients such as NextEra, Moss, Cupertino... and outside the USA, we have signed contracts with Total, Sterling&Wilson, Acciona, Tata, PowerChina, IBOX Energy, Canadian Solar, Solaria, Enel, Iberdrola... and have been qualified recently by Fotowatio, Risen, Repsol, SolarCentury, BP Lightsource, OPDE, EDF, EDPR, Engie, ACWA and MASDAR, amongst others.

7. Another important advantage from GameChange is the close relationship with steel suppliers. The company obtained really competitive prices for raw material thanks to the large economies of scale, together with long term relationships, as GameChange Solar founder and CEO, Andrew Worden, was trading and dealing with steel companies with the Barron Capital family office before starting investing in his own IPPs and later in GameChange Racking.

8. The high standard of know-how and highly experienced employees, with over twenty years of dedication to PV solar technology, led by successful and proven department leaders in engineering, business development, sales and customer service give definitely the needed trust to GameChange's high demanding clients.

Geographical focus

The United States has been the #1 market for solar trackers during the forecast accounting for one third of installations.

8.5GW of solar trackers are estimated to have been shipped from H2 2019 to mid-April 2020, only in the United States.

Bio

Arturo Herrero joined GameChange Solar, one of the PV SolarTrackers industry leaders as Chief Business Development Officer in October 2019.

Arturo has been Managing Director at Alterpower AG, doing for last five years, a consultancy for leading companies across Europe, LATAM, Asia and Africa.

Previously, Arturo played an integral role as Chief Strategy Officer and Chief Marketing Officer at Jinko Solar and Trina Solar and led both companies to reach top global positions in 2010 and 2016, respectively.

Also, thanks to Arturo's contribution, each company launched successful IPO's in 2006 and 2010, respectively and kept Top#1 and Top#2 global positions as solar PV module producers.

Arturo Herrero is originally from Barcelona, living abroad since 2006, and currently resident in Switzerland.

He was hired as Chief BD Officer by GameChange Solar to help the company to expand internationally, with the goal to become among the Top#3 tracker manufacturers.