

Top quality corrosion resistant chains ensure it is always sunny

30 November 2021

A manufacturer of rotating solar panels that track the sun as it travels across the sky has switched from an underperforming drive chain to a long life, corrosion resistant chain made by Tsubaki. This has reduced the need for expensive in-field maintenance and frequent replacement, thus shortening the payback time of every installation.

Spain has re-emerged as a leader in both the development and deployment of photovoltaic technologies as a renewable source of power. A pioneer in the field in the years following the Millennium, it lost some momentum when the global financial turndown of 2008 led to it introducing a steep solar tax on existing and new installations.

Since then, the renewable energy contribution to Spain's national energy mix has strongly increased, reaching 38% in 2019 according to the International Energy Agency¹ and at latest count achieved nearly 44% of its total from renewables in 2020². As a result of much of Spain's year-round sunlight exposure, a significant proportion of the country's renewable energy mix comes from solar energy.

One of the country's leading manufacturers of solar panels produces large-sized photovoltaic panels for commercial solar farms. Arrays of

these panels are installed in fields and on hillsides that are unsuitable for development or cultivation (although sheep and cattle may graze between the panels). To maximise their generating capacity, each panel is mounted on a pedestal and has a drive system that slowly turns throughout the day so that the panel is always facing directly into the sun.

The drive motor works through a chain mechanism, but it was found that the originally-specified chain quickly corroded due to the effects of rain, dew and atmospheric moisture. This led to costly servicing and a short service life, meaning that chain frequently had to be replaced due to corrosion. Not only was this expensive, but it also tied up the valuable time of mechanics and engineers, preventing them from completing other duties.

Tsubaki provided a solution to this dilemma by suggesting that the existing chains were replaced with ones from its Neptune™ range. These chains are designed for harsh environments and demanding duties, so have a high tensile strength plus a special coating that is corrosion resistant.

The coating is a two-layer surface treatment that seals the chain components from corrosive environments. The outer or top coat resin protects the chain from physical impact and forms the first line of defence against corrosive substances. Below this a second layer prevents oxidation from reaching the chain. The coatings are applied prior to chain assembly (to ensure that each component is completely coated) in an ambient temperature process so that the metal is not weakened by

heat. As a result Tsubaki Neptune chains are ideal for outdoor use, wet environments and even on washdown equipment.

An initial trial proved successful, with the Tsubaki Neptune chains lasting far longer than the OE solution due to their corrosion resistance – reducing the frequency with which they had to be replaced. Furthermore, as the Tsubaki chains were stronger they were less prone to stretching with use, so there was also a reduction in the need to send engineers out to do adjustments in the field. The net result of these two gains was a significant reduction in the Total Cost of Ownership of the solar panels.

With Spain committed to being a leading developer and user of clean solar power, steady improvements in the underlying technology are essential. Tsubaki is always working to increase the performance of its chains and so expects to be able to help with the long-term effort to maximise the uptake of green energy solutions.

¹ <https://www.iea.org/reports/spain-2021>

² <https://renewablesnow.com/news/spain-generates-436-of-power-from-renewables-in-2020-725418/>

Image captions:



Image 1: One of the country's leading manufacturers of solar panels produces large-sized photovoltaic panels for commercial solar farms.



Image 2: Tsubaki's Neptune™ chains are designed for harsh environments and demanding duties, so have a high tensile strength plus a special coating that is corrosion resistant.

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About Tsubaki

Established in 1917, Tsubakimoto Chain Company is the world's premier manufacturer of power transmission products with strong market positions in premium quality industrial drive & conveyor chains and associated power transmission components such as cam clutches, reducers & linear actuators. With a turnover exceeding \$1,5 Billion US Dollars & 6,500 employees, the Tsubaki group includes 41 manufacturing locations and 81 group companies worldwide. Our production and sales networks are now more developed than ever.

Tsubakimoto Europe B.V. serves Power Transmission customers in the Pan-European market, Africa and the Middle East from European headquarters located in Dordrecht, the Netherlands, along with a local subsidiary based in Nottingham, serving the UK market & Ireland and from the office in Ismaning, Germany customers in Germany, Austria and Switzerland are served. Customers in Spain and Portugal are served by our office in Madrid, Spain.

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