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A clever idea for climate neutrality – sheet metal specialist creates a parasol for fish

Can solar panels really be used as sun protection for fish? In Taiwan, this clever idea is helping to make optimal use of scarce land and bring the island nation closer to its goal of climate neutrality by 2050. Sheet metal specialist INTER-TECH helped to develop the mounting systems for the gigantic sunshades and manufactures them with the highest precision using TRUMPF machines.

Some ideas are astonishingly ingenious in their simplicity. A project on Taiwan's west coast that combines fish farming and solar power generation is one such example. Covering an area of around 3.5 million square metres, solar panels from Taiwanese sheet metal processing specialist INTER-TECH with a total output of 350 megawatts shield a fish farm's breeding tanks from sunlight. INTER-TECH Managing Director Edward Liu explains: "The solar panels provide shade for the pools and prevent photosynthesis, which in turn inhibits algae growth and ensures better water quality. In addition, they prevent changes in water quality caused by heavy rainfall."

Inter-Tech's solar panel mounting system utilises more space, increases corrosion protection and reduces the company's carbon footprint.

20% electricity from renewable energies

For years, Taiwan has been promoting solar energy through government schemes that also contribute to the development of technological innovations. The island nation aims to become climate neutral by 2050, with around 20% of its electricity

coming from renewable sources by 2025. "The original target of 20% by 2025 has been postponed by one year to 2026, " says Liu, explaining: "The reasons behind this are changes in government regulations, land scarcity, a climate with typhoons and earthquakes, the shortage of skilled workers and issues with supply chains." These are challenges that INTER-TECH hopes to overcome, at least in part, with ideas such as the project combining fish farming and solar power generation.

By participating in the development of a unique solar C mount, INTER-TECH has made a name for itself and established itself as a specialist in this field.

INTER-TECH is currently the only Taiwanese manufacturer that can supply C mounts of the required high quality. The large production volume of 1,8,00 tonnes per month also requires fast and precise machines. To satisfy demand, Edward Liu has continued to invest in TRUMPF machines.

INTER-TECH uses the TruBend 8320 to process sheets up to six metres long and between 32 and 40 millimetres thick.

Edward Liu is the second generation to run the family business INTER-TECH, founded in 2003 and based in Taichung City, Taiwan.

Ideas that defy the weather

Almost 10 years ago, INTER-TECH was commissioned by the Metal Industries Research & Development Centre to transform a theoretical model of solar panel mounting systems into a practical product. In collaboration with Taiwanese steel distributor HKS Steel, INTER-TECH developed a material suitable for the mounting system. "The beams must be corrosion-resistant and withstand strong winds, typhoons and earthquakes up to magnitude eight on the Richter scale," explains Liu. An alloy of magnesium, aluminium, zinc and nickel developed by HKS specifically for this application meets these requirements. The material has a smooth surface, high strength properties and is corrosion resistant.

The perfect bending part in 37 seconds

INTER-TECH supports the development of a unique Solar C mount based on the theoretical model. "The frame and support structure consists of around 100 single parts, which we have to manufacture with precision," says Liu. This involves investing in a TruLaser 3060 fibre 6 kW laser cutting system, a TruLaser 3030 fibre with 24 kW and a TruBend 8320 bending machine with automatic tool changer from TRUMPF. "We can process sheets up to six meters long and between 32 and 40 millimetres thick on the machines," says Liu. The material for the C mounts comes on coils - rolled-up steel sheets – and is first cut to size with a laser at INTER-TECH and provided with holes for brackets. The company then bends the parts on the TruBend 8320, packs them and loads them onto lorries. "Including supply and removal, bending a six-metre-long workpiece takes exactly 37 seconds," Liu says proudly. And that is important, because one of the major challenges in the production of the C mounts is the comparatively large production volume of 1,800 tonnes that INTER-TECH processes every month. "Thanks to the high productivity of our TRUMPF machines, we can ensure this production capacity with very stable

manufacturing quality," says Liu with satisfaction.

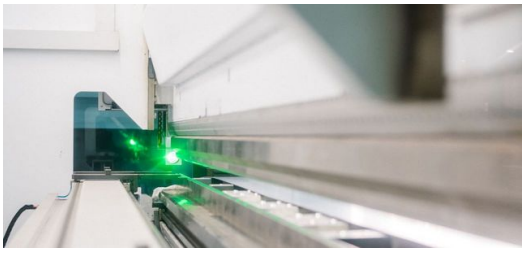
> **With the TruBend 8320 and the new TruLaser 3060 fiber , we were able to increase our annual turnover by 75%.**
>
> Edward Liu, CEO, INTER-TECH

Smart solution brightens future prospects

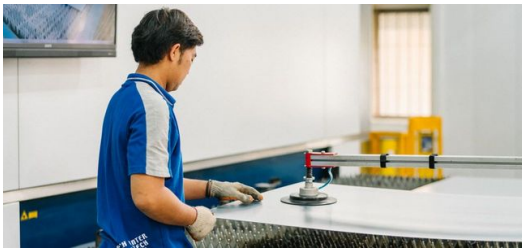
The assembly of the single parts of the C mount takes place on site. "During the design phase, we ruled out welding processes for joining the parts with a view to corrosion resistance," explains Liu. Instead, INTER-TECH relies on screw mounting with bolts. "This method, which is unique to Taiwan, requires calculation and analysis using special software for screw mechanics," Liu continues. "This naturally gives us a competitive advantage. At present, we are the only Taiwanese manufacturer that can supply mounts of this quality," says Liu.

INTER-TECH is achieving multiple objectives with this project. "We are utilising the land area twice – once for the solar park and once for the fish farm. The electricity generated supplies the entire plant and helps to further increase the proportion of solar energy." So it's no wonder that Edward Liu is already looking forward to follow-up orders: "The next project is an agricultural farm in the interior of the country with solar panels with a total installed capacity of 300 megawatts. Here, we will also equip the mount systems with electronics that allow the panels to be aligned according to the position of the sun."

Each individual part of a C -mount must be prepared precisely. INTER-TECH uses a large number of TRUMPF bending machines for bending.



The ACD angle measuring system ensures the repeatability of precise angles.



The mount for the solar panels consists of around 100 single parts. They are produced on a TruLaser 3060 fiber 6 kW laser cutting system and a TruLaser 3030 fiber with 24 kW from TRUMPF for precise cutting and drilling.

For him, the cooperation with TRUMPF is a key building block for the success of his company. Apart from the productivity and manufacturing quality of the TRUMPF machines, he was impressed by the TRUMPF team's commitment. "When we were considering purchasing a six-metre bending machine, none of the domestic or foreign machine manufacturers were able to supply us with a system that did not require foundations," he reports. "Our TRUMPF sales representative then introduced us to the TruBend 8320 , which fully met these and all our other requirements." Liu signed the purchase agreement for this machine just one week after opting for the TruLaser 3060 fiber, and he has not regretted it: "With these two machines, we were able to increase our annual turnover by 75% in 2021."

About INTER-TECH

Edward Liu is the second generation to run the family business INTER-TECH, founded in 2003 and based in Taichung City, Taiwan. His father, Vincent Liu, invested in TRUMPF machines in order to position himself on the market as a high-quality and responsive sheet metal manufacturer. Edward Liu joined the management team in 2009 and has continued to expand the machine park in recent years. Today, INTER-TECH supplies the mechanical engineering, semi-conductor and food industries as well as the medical and architectural sectors with parts and complete assemblies. Since early 2024, INTER-TECH has been using the TecZone Bend programming system for more efficient bending processes and the TRUMPF Oseon production control system for monitoring production processes. With its expertise in the manufacture of C mounts for solar panels, INTER-TECH has established itself as a specialist in this field and intends to consistently expand this market segment.

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