SABRINA SCHILLING

Clever idea for climate neutrality: sheet metal specialist stretches sunshades for fish

Solar panels as sun protection for fish? In Taiwan, this clever idea helps to make optimal use of the scarce land areas and to get closer to the island nation's goal of climate neutrality by 2050. The sheet metal specialist INTER-TECH supported to develop the carrier systems for the gigantic "sunshades" and manufactures them with optimal precision using machines from TRUMPF.

There are ideas whose ingenious simplicity is astonishing. One such project, combining fish farming and solar power generation, is being undertaken on the west coast of Taiwan. On an area of around 3.5 million square meters, solar panels that manufactured by the Taiwanese sheet metal processing specialist INTER-TECH have a total installed capacity of 350 megawatts and shield the breeding tanks of a fishing farm from unwanted sunlight. INTER-TECH Managing Director Edward Liu explained, "The solar panels shade the pools and thus prevent photosynthesis, which in turn inhibits algae formation, ensures better water quality and reduce the drastic changes in water quality caused by heavy rainfalls."

With its solar-panel-system, Inter-Tech utilizes more space, increases corrosion protection, and produces in a more climate-neutral manner.

20 percent electricity from renewable energies

Taiwan has been promoting solar energy for years with government programs that also flow into the development of technological innovations. The goal: The island state wants to become climate-neutral by 2050 and around 20 percent of its

electricity is to come from renewable energies by 2025. "The original target of 20 percent has been deferred by one year to 2026," said Liu. "The reasons for this are amendments to government regulations, the shortage of land, our climate with typhoons and earthquakes, the shortage of skilled workers and problems with supply chains." Challenges that INTER-TECH wants to tackle, at least in part, with the help of ideas such as the combined fish farming and solar power generation project.

By participating in the development of a unique solar C-bracket, 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 capable of supplying C-beams in the required high quality. The large production volume of 1,800 tons per month also requires fast and precise machines. Edward Liu has therefore continuously invested in machines from TRUMPF.

With the TruBend 8320, INTER-TECH processes sheets up to six meters in length and between 32 and 40 millimeters thick.

Edward Liu is the second-generation head of INTER-TECH, a family business 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 translate a theoretical model of solar panel support systems into a practical product. INTER-TECH has collaborated with the Taiwanese steel distributor Hkssteel to develop a material suitable for the support system. "The beams must be corrosion-resistant and withstand strong winds such as severe typhoons and earthquakes up to magnitude eight on the Richter scale," explained Liu. An alloy developed by Hkssteel specifically for this application, made of magnesium, aluminum, zinc, and nickel, meets these requirements. The material has a smooth surface high strength, and corrosion-resistant properties.

The perfect bent part in 37 seconds

INTER-TECH supports developing a unique solar C bracket based on the theoretical model. "The frame and beam construction consists of around 100 individual parts that we have to manufacture precisely," said Liu. To this end, he is investing in a TruLaser 3060 fiber 6 kW laser cutting system and a TruLaser 3030 fiber 24 kW laser cutting system as well as a TruBend 8320 bending machine and a TruBend 5170 with automatic tool changer from TRUMPF. "On these machines, we can process sheet metal up to a length of six meters and a thickness of between 32 and 40 millimeters," said Liu. The material for the C beams comes on so-called coils – rolls of steel sheet – and is first cut to size at INTER-TECH with a laser and provided with holes for brackets. The company then bends the parts on the TruBend 8320, packs them and loads them onto trucks. "Including feeding and removal, the bending of a six-meter-long workpiece takes exactly 37 seconds," Liu said proudly. And this is important, because one of the biggest challenges in the production of the C beams is the comparatively large production volume of 1,800 tons 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," said Liu with satisfaction.

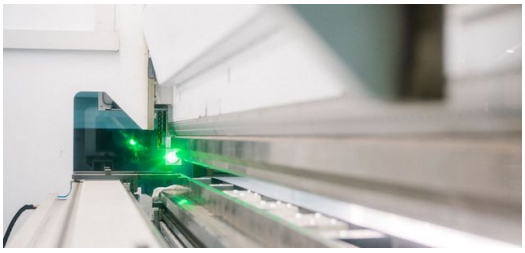
> **With the TruBend 8320 and the new TruLaser 3060 fiber, we were able to increase our annual sales by 75 percent.**
>
> Edward Liu, executive director, INTER-TECH

Clever solution brings sunny prospects for the future

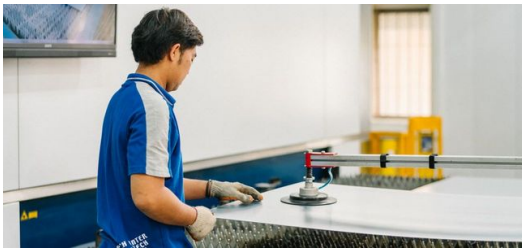
The assembly of the individual parts of the C beams takes place on site. "Even in the design phase, we ruled out welding processes for joining the parts because of corrosion resistance considerations," explained Liu. Instead, INTER-TECH is bolted together. "This method requires calculation and analysis with special software for bolting mechanisms," continued Liu. This method is unique in Taiwan. "Of course, this gives us competitive advantages. At the moment, we are the only Taiwanese manufacturer that can supply carriers of this quality," said Liu.

With this project, INTER-TECH kills several birds with one stone. "We use the land area twice – once for the solar park and once for the fish farm. The electricity generated supplies the entire system and helps to further expand the share of solar energy." So it's no wonder that Edward Liu is already looking forward to subsequent orders: "The next project is a farm in the interior of the country with a total installed capacity of 300 megawatts. Here, we will also equip the support systems with electronics that will allow the panels to be aligned according to the position of the sun."

Every single part of a C-bracket must be prepared with precision. INTER-TECH uses a wide range of bending machines from TRUMPF for bending.



The ACD angle measuring system ensures repeatable, precise angles.



The solar panel mounting bracket consists of around 100 individual parts. They are precisely cut and perforated on a TruLaser 3060 fiber 6 kW laser cutting system and a TruLaser 3030 fiber with 24 kW from TRUMPF.

For him, the cooperation with TRUMPF is an essential building block for the success of his company. Apart from the productivity and manufacturing quality of the TRUMPF machines, he was impressed by the commitment of the TRUMPF team. "When we were thinking about buying a six-meter bending machine, none of the domestic or foreign machine manufacturers was able to supply us with a system that did not require a foundation," he reports. "The TRUMPF sales representative responsible for us then presented us with the TruBend 8320, which fully met these and all our other requirements." Liu signed the purchase contract for this machine just one week after deciding on the TruLaser 3060 fiber and has not regretted it: "With these two machines, we were able to increase our annual sales by 75 percent in 2021."

About INTER-TECH

Edward Liu is the second generation to lead the family-owned company 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 processor. Edward Liu joined the management team in 2009 and has continuously expanded the machinery in recent years. Today, INTER-TECH supplies parts and complete assemblies to the mechanical engineering, semiconductor, food, medical and architectural industries. Since the beginning of 2024, INTER-TECH has been using the TecZone Bend programming system for more efficient bending processes and the TRUMPF Oseon production control system to monitor production processes. With its expertise in processing C bracket of solar panels, INTER-TECH has established itself as a specialist in this field and intends to consistently expand this market segment.

SABRINA SCHILLING

TRUMPF GROUP COMMUNICATIONS