



Photo credit: Sollega

# Sollega & BASF:

## A solar success story

After a process of innovation and collaboration, BASF Engineering Composites helped Sollega improve product performance while reducing cost.

### A new solar challenge

When solar panel racking system provider Sollega and BASF Engineering Composites first met 11 years ago, the solar industry looked very different.

Regulations were still developing and solar was finding its footing. UL 2703 — the standard for mounting systems, mounting devices, clamping/retention devices, and ground lugs for flat-plate photovoltaic (PV) modules and panels — was still being authored.

At the time, BASF was interested in understanding how its materials could best contribute to the solar market. Sollega had designed a solution to simplify the process of mounting solar panels on commercial roofs with high-density polyethylene (HDPE).

As HDPE became an unviable material, a challenge surfaced, marking the start of a long-lasting collaboration. How could BASF take Sollega's innovation and improve the material's properties so it

could meet the shifting demands of the solar industry while being cost-effective?

### Collaborative problem-solving

Matt Parkinson, Head of North American Technical Development, Engineering Plastics at BASF, was a key part in the move to injection molding the FastRack.

He describes looking at a PA6 material of BASF's Ultramid®, selecting a solution with 33% short glass fiber reinforcement to make the material a composite. He and the team then started working with a computer aided engineer (CAE).

“We used our proprietary polymer composite software Ultrasim®,” Parkinson says. “We started with Sollega's polymer, to show a baseline and why it wasn't working, testing it against heat and loads. Then we took our nylon, ran the same tests, and it performed very well with no changes to their current design.”

BASF's thermal and mechanical performance were double that of the material it was replacing. However, with better performance came a heavier and more expensive material. To solve that, BASF explored how it could reduce material volume while retaining performance.

"We used the same geometry Sollega had, but removed material based on where the simulation said areas are not seeing much load," Parkinson continues. "We removed close to 50% of the overall volume and were still meeting requirements."

The result was the patented FastRack (FR510-6°)<sup>™</sup>, a solution that was lighter, higher performing, cost effective, and quick to get to market. After seeing the results, Sollega was able to sell the part to customers within six months of initial discussions.

As Elie Rothschild, CEO of Sollega, says, "This is a highly engineered material that's fully tested and analyzed, and we know exactly what it's going to do. It's the right material for the application because of its longevity and ability to flex and not crack or break.

Rothschild adds that as those parts went to Sollega clients, education was important, particularly around preconceptions and connotations surrounding the durability and properties of polymer. BASF was there to provide test results and any knowledge gaps when required.

Aside from a few modifications to decrease manifold pressure and other minor changes, Sollega's current offering remains the same.

## Delivering results for a decade

The first projects using the improved material were installed in 2014 at airports in Hawaii. In 2024, after a decade in action, Rothschild says performance has been excellent.

"Several projects in the Caribbean, Puerto Rico, and the Florida coast have gone through hurricane events," he says. "We check in with clients after these, and they say the system's on and operating with no issues."

One specific incident was in 2017, when hurricanes Irma and Maria made landfall on Puerto Rico. The array that used Sollega parts on the VA Hospital remained operational and functional despite winds exceeding 180mph.

"One of the reasons our systems do well in these situations is the material itself and the inherent design," Rothschild notes. "It can flex without breaking compared to galvanized metal systems, which are rigid and don't have any give. Plus, they are able to flex and mold to the roof so there are fewer breaks in the array."



FastRack FR510-6° (above);  
San Francisco International Airport,  
Harvey Milk (Terminal 1) 1.3MW roof  
racking installation (left).

Photo credit: Sollega



Photo credit: Sollega

He goes on to say that, because of the product's performance, a lot of business is repeat business. "It's easy to work with, train, and install. Installation time can make or break a job. If they can be on and off the roof quicker, and there's less labor, it's more profit for them."

## Facing the future

In the US, solar power is on the rise. According to an estimate from the Department of Energy, solar is forecast to make up 58% of new generation of electricity installed in the US this year and, according to a 2024 report from Solar Energy Industries Association (SEIA) and Wood Mackenzie, American solar panel manufacturing capacity increased 71% in Q1 2024.

Currently, BASF's PA6, 33% glass fiber reinforced high speed compound has 50% less product carbon footprint (PCF) than non-recycled aluminum. As the market has put a larger emphasis on sustainability for composites, we began working to improve our offerings.

As Sollega continues serving the growing market, it's working to double down on environmentally conscious practices and is collaborating with BASF to incorporate recycled material into the product.

"We're a lean company. [...] We really look at the conception of a material and its carbon footprint compared to smelting aluminum, and it's lower and easily recyclable at the end of its useful life," Rothschild says.

"We're confident our racking will outlast the useful life of an array, and clients can install new solar panels 20 or 30 years from now. However, if they need to recycle it, they can remove the stainless bolts, nuts, and washers, and the bucket can be put into the recycling stream, reground, and made into something else."

Sollega is also looking at the creation of a new online design tool that will streamline the process for its clients so they can get the information they need to submit permits quickly.

"The solar industry, especially in the US, is speeding up," Rothschild says. "If we need to grow, it's about having a company like BASF who can handle whatever we need."

**If you would like to be part of the metal to composite transition, see how BASF can join you in the innovation process at [solar-plastics.basf.us](https://solar-plastics.basf.us)**



We create chemistry

# Learn more about BASF's innovative engineering composites



[solar-plastics.basf.us](https://solar-plastics.basf.us)

## **BASF Corporation**

Margo Rolon

Mobile: +1 248-331-7095

[margo.rolon@basf.com](mailto:margo.rolon@basf.com)

THE DESCRIPTIONS, DESIGNS, DATA AND INFORMATION CONTAINED HEREIN ARE PRESENTED IN GOOD FAITH, AND ARE BASED ON BASF'S CURRENT KNOWLEDGE AND EXPERIENCE. THEY ARE PROVIDED FOR GUIDANCE ONLY, AND DO NOT CONSTITUTE THE AGREED CONTRACTUAL QUALITY OF THE PRODUCT OR A PART OF BASF'S TERMS AND CONDITIONS OF SALE. BECAUSE MANY FACTORS MAY AFFECT PROCESSING OR APPLICATION USE OF THE PRODUCT, BASF RECOMMENDS THAT THE READER CARRY OUT ITS OWN INVESTIGATIONS AND TESTS TO DETERMINE THE SUITABILITY OF A PRODUCT FOR ITS PARTICULAR PURPOSE PRIOR TO USE. IT IS THE RESPONSIBILITY OF THE RECIPIENT OF PRODUCT TO ENSURE THAT ANY PROPRIETARY RIGHTS AND EXISTING LAWS AND LEGISLATION ARE OBSERVED. NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH HEREIN, OR THAT THE PRODUCTS, DESCRIPTIONS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS. ANY DESCRIPTIONS, DESIGNS, DATA AND INFORMATION GIVEN IN THIS PUBLICATION MAY CHANGE WITHOUT PRIOR INFORMATION. THE DESCRIPTIONS, DESIGNS, DATA, AND INFORMATION FURNISHED BY BASF HEREUNDER ARE GIVEN GRATIS AND BASF ASSUMES NO OBLIGATION OR LIABILITY FOR THE DESCRIPTIONS, DESIGNS, DATA OR INFORMATION GIVEN OR RESULTS OBTAINED, ALL SUCH BEING GIVEN AND ACCEPTED AT THE READER'S RISK.

® = registered trademark of BASF.

© 2024 BASF Corp, Florham Park, NJ 07932. All rights reserved.