Taking solar to where it has never been before

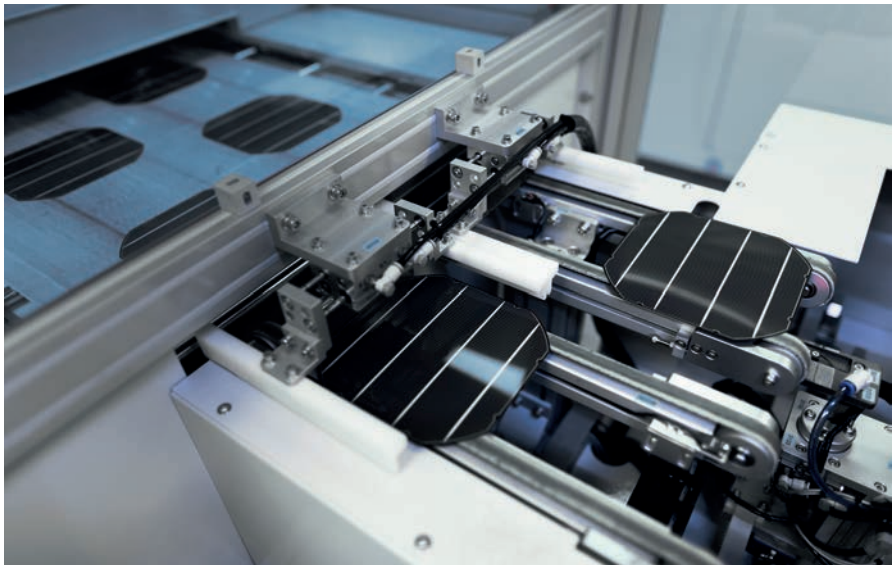
Brett Jarman

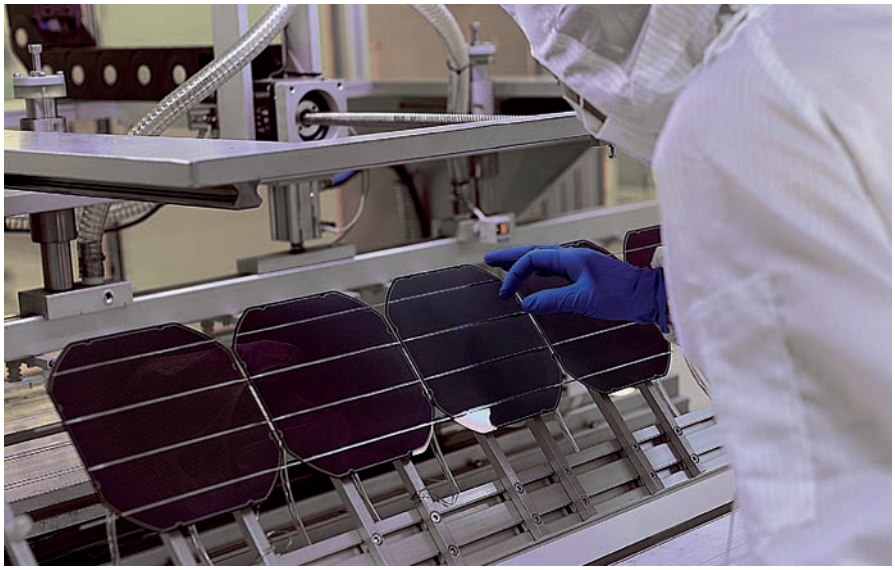
Brett Jarman, VP Commercial Business Development at Sunflare spared time to share the company's vison with PES. Their panels are unique and they are now spending equal time developing commercial and residential solutions. They are super light, can be customized, low on emissions and can be installed in places which were previously thought impossible.

PES: Hi Brett, thanks for coming in to talk with us. Could you begin by explaining a little about the background of Sunflare and the importance of the solar/PV industry to you?

Brett Jarman: My pleasure. Sunflare has been in development for almost a decade, perfecting the next generation of CIGS technology. Our mission is to reduce CO_2 worldwide. For that, solar needs to be installed universally. This is why Sunflare modules are light, thin, flexible and rugged, so they can go everywhere traditional solar is already installed, and many places they can only dream of for the moment.

Our SUN^2 cells are made of Copper, Indium, Gallium and Selenide on a .127 mm stainless steel substrate. Unlike traditional solar panels, which are covered in glass, our modules are more durable because the SUN^2 cells are encapsulated between strong polymer sheets.





PES: We have been hearing about your CIGS panels and would like to know more: what makes them different from other CIGS modules?

BJ: With our proprietary CIGS manufacturing technology, we have eliminated the issues that plagued the CIGS industry in the past. Unlike the old CIGS roll-by-roll processing, our precise cell-by-cell manufacturing is tightly controlled at every juncture. Thus, increasing yields and eliminating waste.

Part of that precision comes from a high degree of monitoring built into each step of the system. Each cell has a QR code that records the exact conditions at each stage to ensure uniform quality. It's a classic case of getting the right hardware and software together.

Sunflare provided a finely-honed design and worked tirelessly with their innovative equipment partner to create the proprietary manufacturing process. The resulting system is a compact, fully automatic deposition system for CIGS solar cell manufacturing. It's designed for high throughput, operational stability, optimized layer uniformity and superior material utilization.

The science was mostly there for CIGS. What was required was innovative equipment matched with a precise formulation of the cells. This allows us to do what no manufacturer of CIGS thin film has done before—mass produce high quality, efficient, flexible solar panels.

PES: What are the benefits to the customer and end user?

BJ: Sunflare performs best on commercial roofs where weight and multiple penetrations are a major issue. Sunflare is 86% lighter than traditional commercial roofing installations and there is no need for racking or heavy ballasts.

There is no need to penetrate roofs to install Sunflare. Compare that to the traditional solar installation, which, can add 1000s of new penetrations, opening up a serious threat from new leaks.

To reduce shading issues, we've integrated bypass diodes on every cell. Therefore, shading doesn't affect our modules like it does traditional solar. Sunflare can be added to existing parking structures, turning them from a mere canopy into a revenue-generating asset. Due to the fact that they are lightweight and frameless, existing parking structures can be used. There's no demolition or removal needed, meaning minimal disruption or displacement of tenants, customers, or employees.

They are rugged enough to withstand the elements and impacts from objects during

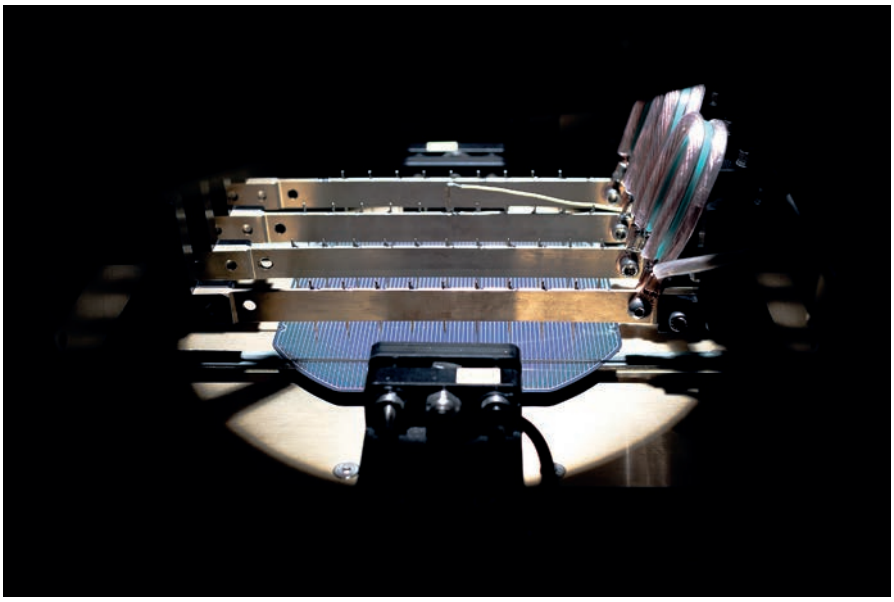
inclement weather. In addition, microcracking, common in more brittle silicon cells, is eliminated because CIGS cell chemistry is inherently flexible.

PES: Would you say that Sunflare's main focus is commercial or residential products or are they both equally as important to you?

BJ: Currently we are devoting an equal amount of time and effort to the residential market as well. Our proprietary cell by cell manufacturing process means we can create small, flat residential solar roofing shingles. The unique properties of our technology allow us to be very creative in our connection methodology. With the recent changes in residential construction laws in places like California, we see a massive opportunity in the market for new home construction and building-integrated photovoltaic construction materials.

The collective Sunflare team is motivated by the vision of making renewable, solar energy available and affordable to all: from a village in Africa that has never had access to electricity to the buildings in the largest urban cities.

Ultimately, there should not be a roof, a car, or a truck built without solar. Our vision is that everything built under the sun is powered by the sun.



PES: Are there any key projects or developments that you are currently working on that you can share with our readers?

BJ: Sunflare will be announcing and presenting a prototype of new easy to install, aesthetically pleasing residential shingles, at Solar Power International on September 25th, 26th, and 27th at the Sunflare booth, #2482.

We asked ourselves why hasn't roof-integrated solar been successful to-date? It's not rocket-science. In a way, it's the opposite. Sunflare looked at getting at the core problem of the market. How do we simplify the wiring? How do we lighten the load on the roof? How do we make the roof look beautiful? How do you make it easy to install?

Sunflare created new patent-pending residential roof tiles with snap-together electrical connectors, and easy standard-roofing installation methods, with 100% water-proofing, and neighborhood appeal.

Like our bigger modules, the roof tiles are light weight, and durable, CIGS solar encapsulated in polymer sheets. Each tile has a bypass diode, which means only the cell that is shaded becomes inactive.

Brad Nally, from Diversified Roofing, the largest roofer in Arizona had this to say, 'These could definitely be a game changer if they can perform in the heat. I like the cosmetics of this design as well. After a quick glance at these, they look to be fairly easy to install.'

It will have the best warranty: 25-year linear production, 25-year workmanship.

As far as the heat goes, the Sunflare panel has a temperature coefficient of - 0.31% per 1 degree Celsius. Silicon runs - 0.45% per 1 degree Celsius.

Beyond that we are receiving significant interest both in the US and Internationally for applications of our product in industries like cold storage and solid waste landfill transitions. We continue to market to the commercial sector and will be introducing new products for commercial roofs, residential roofs and parking structures at SPI.

PES: Customization seems to be a trend in our industry, how do you as a company respond to his?

BJ: Because our manufacturing process produces each cell individually, we have flexibility in module size. We have the traditional size for the commercial roofing market (1675mm x 990mm). And, since we also have a robust and growing market with manufacturers of diverse products, we develop sizes to fit our partners' needs.

PES: Where do you operate and where are your key markets and are there are any areas, geographically speaking, that you would like to work in?

BJ: Sunflare handles business worldwide. Our manufacturing is carried out in Sweden and China. Our headquarters is in the US. Our scalable manufacturing units give us flexibility for our future large-scale volume locations.

PES: With so much competition in the market what makes Sunflare stand out from the competition, why should customers choose you?

BJ: We are the only mass producer of light, thin, flexible and rugged panels with unique installation methods that allow these modules to go where others can't.

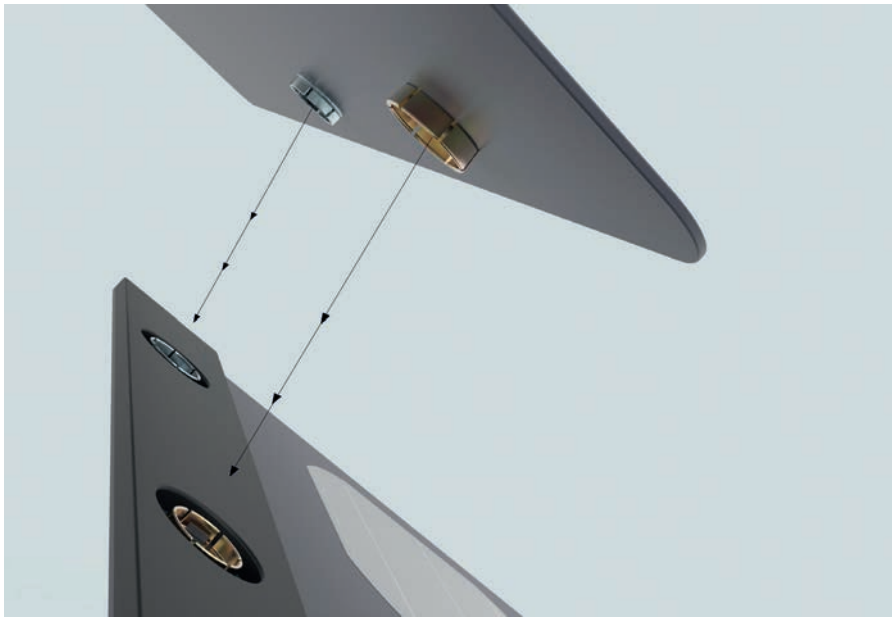
PES: What is the single biggest challenge facing the market today?

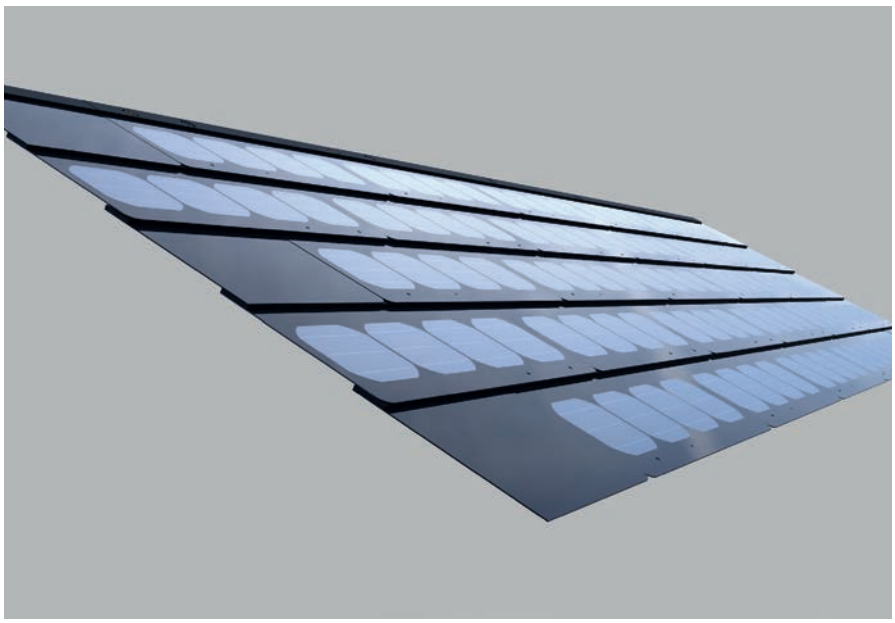
BJ: Energy storage holds the biggest opportunity. The biggest challenge is the ever-changing trade/political environment.

PES: What is different about Sunflare's vision of the market?

BJ: At Sunflare, innovation is at the core of our vision. We see a time where our module is adapted for every segment of the commercial solar market. We have a team of creative and talented product development specialists whose job is to solve the problem of going where solar has never gone before.

CIGS has historically been relegated to a niche corner of the membrane roof market, because of the need for adhesives. Because of the light, thin, flexible and rugged properties of our module, we are developing unique mechanical attachment methods. That way we can install solar quickly and efficiently on all roof types. Through this same mechanical attachment research, it became apparent that we could also develop a solution for ground-mounts with our module.





In addition, we push ourselves every day to meet the needs of the OEM marketplace by integrating our technology into the manufacturing processes of a growing number of companies. The Sunflare creative team integrates solar into many types of product design. We create prototypes, and revise them until, together with our partner, we reach perfection. We synchronize with our customers to customers production schedule, working closely with their project managers.

Our marketing helps discover new end-user insights, which differentiates and distinguishes manufacturers from their competitors. We aim to optimize their end-customers experience and perfect the product interface. As with commercial solar, our goal, with the original equipment manufacturers, is to take solar to new places.

PES: Looking ahead into 2019 and beyond, what trends and/or changes are you anticipating in the solar market and why?

BJ: Over time, we expect increases in performance, especially in areas where CIGS has always had an advantage, such as low light capture and better temperature coefficients. Long term, the future is bright for CIGS because it performs well, it uses scant resources and the materials are recyclable.

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