

# Power to your business

Episode 3: Solar from start to finish

MARCH 2024

**aldermans**  
Engineered Metalwork Solutions



## For the third webinar in our Power to Your Business series, Solarsense brought together a panel of industry leaders and sustainability experts to reveal what goes on behind the scenes of a solar installation, looking at the full process from start to finish.

In seven easy steps, the panel took us from the start of the sustainability journey, through the audit and feasibility stages, considering the finance options and then onto installation and monitoring. We also asked: what's next on the road to sustainability and where is solar technology headed in future? The webinar ended with a range of interesting questions from our audience.

This paper captures key messages that came out of the event. To watch the full webinar visit <https://www.solarsense-uk.com/news/webinar-power-to-your-business-episode-three/> or for specific questions please contact Solarsense at [info@solarsense-uk.com](mailto:info@solarsense-uk.com) or on **0333 772 1800**.

### With thanks to our panel



**Tim Cook** is an Independent Energy Consultant at TDC Renewables with more than a decade of experience in the clean energy sector. He works with a wide range of businesses to deliver strategic direction for their on-going energy needs.



**Jonathan Spencer Pickup** is Director of Finance at King's School, Macclesfield, one of the UK's oldest and most distinguished independent schools. Solarsense has recently installed new solar panels on the sports centre at King's, as part of a range of initiatives aimed at making the school a net zero energy user.



**Ollie Fowler** is Head of Technical and Project Delivery at Solarsense. He provides leadership and direction in the planning and delivery of all commercial and large-scale projects.



**Ashley Webber** is the owner and director of Balanced Energy, an energy consultancy focused on helping businesses to reduce carbon usage and adopt more sustainable practices. He has previously worked for a major energy supplier and has many years' experience within the consultancy sector.



**Karen Friendship** is Managing Director at Alderman Tooling, one of the South West's leading sheet metal fabricators, and chair of the Plymouth Manufacturers' Group. Solarsense has recently installed a 263kWp solar PV system to power the Alderman Tooling metal engineering facilities with clean energy.



## 1. Getting started on your sustainability journey

Many businesses are attracted to solar for the environmental and financial benefits. But are there easier ways to reduce your carbon footprint and bring down energy costs? We heard from sustainability expert Ashley Webber who explained there are two key strands to reducing your carbon emissions: data and organisational culture. Once you've addresses these aspects, solar is the next port of call.

### First steps

#### 1. Data

Work out how and where to find the data about your current energy usage, and then use it to identify how you can reduce your consumption, both in your business and across your whole supply chain.

#### 2. Culture and behaviour

What needs to change within your operations to reduce your energy use? This might be about shifting your working hours to match the availability of renewable energy, or turning machines off when not in use.



**“Solar is key. Commercially it's a no brainer - with current energy prices as they are, investing in generating your own clean, renewable energy makes commercial sense.”**

**“In terms of a sustainability narrative, investing in your own generation and producing your own clean energy has a really strong message.”**

**“The other thing is future proofing your business. I think the way we use electricity has to change in order to decarbonize the whole energy network. To be able to be more flexible in your energy usage you need to have your own assets on site.” – Ashley Webber**



## 2. Conducting an energy audit

Once you have a handle on your energy data, you may be able to carry out your own audit in house. At King's School, involving internal stakeholders in the audit process helped them to take ownership of the project.



For Finance Director Jonathan Spencer Pickup, the audit helped reveal where the school used the most CO<sub>2</sub> and it quickly became evident that heating the school was the main source of energy use. In contrast, fuel used for vans and minibuses was relatively low. This helped make a case to the governors for investing in solar panels rather than electric vehicles.

**“The energy audit enabled us to agree and set priorities. And that’s important in schools because we’ve always got demands on money and investment. And once we’d completed that work, it was clear that solar was the right way to go for reducing our CO<sub>2</sub> substantially over the next 3 to 5 years.” – Jonathan Spencer Pickup**

At Alderman Tooling, Managing Director Karen Friendship started collecting data from their energy bills and it quickly became evident that once their fixed rate tariff ended, rising prices were going to have a substantial impact on the business. Installing solar was a way to take control of costs and ensure future energy security.

**“The payback that we were quoted was around three and a half to four years and after that, everything that we generate would be free. That seemed pretty good to us.”**

**– Karen Friendship**



## 3. Feasibility

Armed with half-hourly energy data for the current and previous years, along with details of any constraints about where the solar panels can/cannot be located, the next step is to speak to a potential supplier.

A good installer will guide you through the process and work out the optimum size of the system, taking into account your available budget, existing energy use and any additional future demands such as electric vehicles.

Ollie Fowler explains that at Solarsense, the in-house design team use this information to design a bespoke system to meet the customer’s needs. Once the system is designed the likely return on investment can be calculated – if this looks favourable, the project would proceed to the feasibility stage.

### Get ready for solar

#### What does a feasibility study cover?

- **The roof structure** - is it adequate for taking on the additional weight of the panels, plus any potential snow load?
- **Application to the local network operator (DNO)** to ask if a future installation can be connected to the grid. This is usually approved but in some cases there may be a limit on how much electricity can be exported to the grid (on rare occasions a connection could be declined so this is an important stage of the process).
- **Planning permission.** In Wales this is not required but in England any system over 50kW (which many commercial systems are) requires planning permissions. Systems on a listed building or in a conservation area may also need planning approval.
- **An electrical survey** - is the existing electrical infrastructure adequate for the additional connections needed for the solar PV panels?
- **Drone footage** of the roof to check for obstructions or any other features that could affect the design of the system.

There is usually a 2-3 month wait for the DNO application and planning permission.

By the end of the feasibility stage you’ll have a really clear idea of what the system will look like, how much energy it is likely to produce, and an even more accurate prediction for your ROI.

**“We will hold the client’s hand through that whole process and they can be as involved or as distant from it as they choose”.**

**“But the more information that we’ve got to start off with, the better the results are going to be at the end. So if you know what your future growth in energy demand may be, that’s all very helpful.” – Tim Cook**



## 4. Finance options

The conversation about finance usually starts in the early stages of planning. Energy consultant Tim Cook has seen an increasing number of businesses not wanting to use their own capital and says there are two main alternatives: asset finance, which is the most popular, or a Power Purchase Agreement.

- **Asset finance** Solarsense works with a number of asset finance providers including renewable energy finance specialist **Smart Ease**. They can often make an offer within 72 hours and can provide 100% asset finance, usually structured over a 5-7 year period which means the system is cash flow positive from day one.
- **Power Purchase Agreements (PPAs)** are an alternative option for companies that want to avoid borrowing but don't have their own funds to invest. They are only possible with larger systems (typically a minimum value of £200,000 / 250kW). With a PPA, third party investors pay for the whole installation and own the system, while the business on-site simply pays per unit for the energy that is generated – often at around half the cost of buying it from the grid. There are some more legal complexities involved in this option but it guarantees lower energy bills with zero risk.

## 5. The installation process

As Head of Technical and Project Delivery at Solarsense, Ollie Fowler has overseen hundreds of solar installations in the past decade. He explained that once the designs have been finalised and deposits paid, the project would move to the pre-construction period.

### What happens in the pre-construction period?

- A dedicated project manager is assigned to the customer
- Materials are ordered and delivery is arranged
- The project manager will hold a site meeting with the customer to run through all the final details, from the location of scaffolding to delivery timings and health & safety
- An installation date is agreed

Depending on the size of the system, the installation itself usually takes around 2-3 weeks.



At King's School, the work was scheduled for the summer holidays to minimise disruption, but there were still pupils and kids clubs on site.

**“An early meeting with Ollie in terms of setting our expectations and agreeing how contractors get on site, how they sign themselves in, and safeguarding requirements, was very important.”**

**“We’re a big site so we were able to give them some dedicated space because these things arrive in some very big lorries. The challenge then is to store the panels before they’re put up. But there was no issues with or interaction with pupils, parents, etc. and it moved forward smoothly.”**  
**– Jonathan Spencer- Pickup**

Once installation is completed the project manager will give a detailed handover of the system, explaining how the new equipment works and providing installation and commissioning certificates.

**Top tip! Make sure you contact your insurer before installation starts to make sure your building and new equipment is all fully covered.**

## 6. Enjoying the results



As part of the handover process, Solarsense customers get access to an online monitoring system which enables them to see how much energy their new panels are generating and where it is going.

Nowadays, the best return on investment is achieved by using as much energy as possible on-site (rather than exporting it), explains Ollie Fowler. After monitoring the output of their panels, some businesses have chosen to change shift patterns to better match solar energy production, for example introducing Saturday work hours during the summer months.

At Alderman Tooling, weekend shifts are now under consideration.

**“I have to admit, I’ve turned into a bit of a nerd watching this because it’s quite exciting knowing that you’re being self-sufficient and doing good to the environment... And actually, it’s making us a more positive, attractive supplier for winning new contracts.”** – **Karen Friendship**

Karen told us that Alderman Tooling are now sharing their sustainability journey with their customers, knowing that at some point in future they might be needing to quote products in carbon as well as in GBP.



## 7. Next steps towards a sustainable future

Installing solar is a really important step along the road to becoming more sustainable, but it doesn't stop there. We heard from Ashley Webber that the next stage is to look at your value chain – how you buy things the operation needs, and how you influence your staff and stakeholders to reduce their emissions.

**“I think that this is where the hard work really starts, but it's also where real traction can be made with benefits throughout. By engaging with sustainability, bringing that into the core of your business, your staff will be more engaged because people absolutely care about this stuff.”**

– Ashley Webber

Tim Cook tells us there are exciting developments on the horizon in the solar energy sector.

- **Solar technology is improving year on year.** PV panels can now generate almost double the output they could ten years ago, with much better performance in the lower light conditions of the UK.
- **Smart controls** will increasingly be used by businesses to better match their time of energy use with generation, for example turning on blast freezers, air conditioning units, heating, or hot water during times of surplus capacity.
- **Flexible energy tariffs** are likely to become more common to encourage people to use energy at times when it can be provided by a renewable source.
- **Battery technology is improving** but batteries are still expensive and usually don't improve the return on investment. When considering battery storage, it's important to install the solar system first and monitor usage for a year to make sure you get the right sized battery.
- **Solar carports** are growing in popularity and offer a great way to expand an existing PV system, as well as provide a very visible signal of a business's commitment to sustainability.



## Questions from the audience

### Q: Do you have to clean solar panels and if so, how often?

Ollie Fowler told us it depends on location and environmental factors. In the UK, the panels are often self-cleaning thanks to frequent rain. However, if you are by the sea or in an area of high dust, cleaning will certainly improve the performance of the panels. There are some cleaning companies that provide this service but many businesses do it themselves. It could be as simple as hiring a cherry picker for the day and using a long reach brush. It's really not a lot of upkeep, says Ollie.

### Q: Are there any other maintenance requirements?

Some insurance companies may require details of your maintenance schedule for fire safety reasons, says Karen Friendship. Karen has scheduled Alderman's in-house maintenance team to check the system after one year to make sure all the cables are intact and not damaged by birds.

Tim Cook adds that birds are a common concern and in areas where there are a lot of birds, prevention measures can be put in place to stop them getting underneath the panels and building nests. Tim recommends an annual health check of the system is carried out by an electrical engineer.

### Q: What is the lifespan of a typical system?

Most product warranties for the solar panels are a minimum of 10-15 years, says Tim Cook. While the panels are expected to gradually degrade over time, they only lose around 4% efficiency per year and their normal power output warranty is 25-30+ years so they are a long term investment.

The inverters tend to come with a typical 5 or 10 year warranty and usually last around 15 years. So in the whole 25 to 30 year lifespan of a system, you would expect to have to change the inverters once.

### Q: Why is half hourly data so useful in the planning stages?

Half hourly electricity data (rather than monthly or annual data) is required to understand your consumption in relation to when the system will be generating power, explains Tim Cook. This is important when working out the optimum size of system for your business. To make savings, you need to be using power at the same time it's being generated – otherwise it will be exported to the grid and will only earn around 5p per unit.

If you have further questions please visit the Solarsense website [www.solarsense-uk.com](http://www.solarsense-uk.com) or call 0333 772 1800 to speak to a member of the team. You can watch the full webinar on the link below.

[www.solarsense-uk.com/news/webinar-power-to-your-business-episode-three/](http://www.solarsense-uk.com/news/webinar-power-to-your-business-episode-three/)

