

# Building in quality

**EPCs** | Solar engineering, procurement and construction contractors have a central role in ensuring the long-term performance and profitability of PV power plants. Ben Willis speaks to Adele Ara and Ralph Gottschalg of SolarPower Europe's O&M and Asset Management Task Force, which is drawing up the industry's first best practice guidelines for EPC companies



The work of EPC contractors has a key bearing on the operational performance of PV power plants

Credit: Lightsource BP

European trade body SolarPower Europe has just kicked off the process of drawing up what it is billing as a first for the industry – a set of best practice guidelines for solar engineering, procurement and construction (EPC) contractors.

As SPE is at pains to emphasise, the exercise is not about naming and shaming “black sheep” within the EPC community – rather an attempt to draw out and codify what works best in a part of the solar business that has such a vital role to play in ensuring PV power plants are built to last.

The guidelines, likely to be finalised sometime later this year, will follow a similar mould to SPE's best practice guidelines covering operations and maintenance (O&M), now in their fourth version, and more recently asset management, published at the end of 2019 and covered in more detail on p.50 of this publication. They will be the product of a detailed consultation with the European solar industry and seek to address how the long-term quality and O&M-friendliness of solar power plants are considered throughout the design and construction phases.

Here, Adele Ara, director of asset management at Lightsource

BP, and Ralph Gottschalg, director of the Fraunhofer Centre for Silicon Photovoltaics, respectively the chair and deputy chair of the SPE task force leading this work, discuss why the guidelines are needed and how they are taking shape.

**PV Tech Power:** What is the thinking behind producing these guidelines at this point in time?

**Ralph Gottschalg:** There is a lot of willingness among EPCs and a keenness to improve. I often get feedback [from EPCs]: if we had known that at the beginning, we would have done things differently. I think there is lacking a coherent set of information and sharing of best practices between EPCs to improve the overall lifetime of the asset.

**Adele Ara:** If you look at the UK, we [the solar industry] now have sites that are nine, 10, 11 years old, and we have enough operational data to look back and learn from what we did in the past. We are at a stage in the maturity journey of the industry to start looking back and asking ourselves what we can do better and what we have learned in the last nine or 10 years.



**Your stated aim with this exercise is to safeguard the long-term quality of the PV power plant fleet. How important are EPCs in ensuring quality, or does this go beyond their specific role?**

**AA:** Ultimately, I feel a bit bad giving all the responsibility for bad quality to EPC contractors, because there is a shared level of responsibility also sitting on the owner and investor. There is very little point in pretending to have a Ferrari if we only scope and pay for a Cinquecento; let's not forget that an EPC contractor is building what you're asking them to build. Components are critical too: owners, particularly if they have the ambition of being long-term owners or IPPs, really need to scale their games and increase the level of sophistication when it comes to component selection. So, if you look at us, we have a centralised component procurement team and we send out specialists to inspect manufacturing facilities in Asia, or wherever they are. Is this something everyone can do? Probably not, but the quality of components and how suitable they are for the environment where they're being installed is critical. And of course, if you're a prudent investor you're going to have a say on that and you're going to have to understand what you're asking your EPC contractor to do.

**RG:** The project developer determines what the EPC does. It's easy to say if something went wrong it's the EPC's fault. Yes, sometimes there are some black sheep, like in all industries, that's true. But the EPC just carries out the work according to the scope it was given by the developer.

**There's been plenty of anecdotal discussion about quality problems in PV power plants and things going wrong in the field, but few examples actually coming to light because failures are very often hushed up under non-disclosure agreements (NDAs). What are some of the issues the industry faces in terms of poor-quality design and execution?**

**RG:** That's entirely true [the use of NDAs], and maybe that's one of the shortcomings we have because people don't talk about it and people don't believe it happens. A couple of issues come to mind. In the UK [for example] you seem to have a relatively high occurrence of PID [potential-induced degradation] in the field because of the rain; unfortunately, PID is accelerated by precipitation and humidity. So, there are these problems which are lurking, they are hushed up, and I think knowledge sharing is one of the key things which we want to achieve in the guidelines here so that these things are ameliorated much faster than they are at the moment.

**AA:** Looking at this from a very different perspective, it's not just about the quality of the components, but also about what we are designing. For example, originally we were designing sites with an aim to maximise the capacity installed, but didn't realise that operationally it's much easier to do ground maintenance with tractors than a man with a strimmer, so we didn't put enough space between the panels [for tractors]. These are things that might not impact the production of the site and the performance, but for sure they do impact the bottom line and the overall profit-

ability. So, it's always an effort between striking the right balance between what we are building and how we are optimising what we are building and making sure that it's designed in a way that is very cost efficient to manage operationally and maintenance wise. It's not wrong or right, it's just we need to get to fine tuning more and more how we are doing that.

**RG:** One of the points we are missing is the interfaces between different stakeholders in the process. What Adele is saying here is that the O&M provider needs to have an input into the system design, and I agree that this is absolutely critical. One key thing we want to do in this exercise is work on the interfaces between different stakeholders to get the most out of the entire build process and the system in the long term.

**How will you gather the necessary information to inform the EPC guidelines?**

**AA:** We are following the same type of approach the task force has used for the O&M and asset management guidelines. We have invited all the members of the task force and members of SolarPower Europe to contribute, either by providing information or expertise, specific or anecdotal experiences, or by offering to help draft some of the chapters of the publication. We are not pushing anyone to cooperate, we are very much looking for people willing to share the experiences. And we don't want only EPCs to contribute to this; we need EPC contractors to contribute, we need owners to contribute, we need O&M operators to contribute so that we can look at the problem from a 360-degree perspective, otherwise it becomes a very self-referential document.

**What are some of the key areas the guidelines will look at?**

**RG:** It will go through the entire process of a project – what is expected in a good design? What kind of component verification is useful? When starting system integration on site, what kind of verification is needed that the system has been built correctly? And then, looking at documentation, how do you pass information to O&M providers in a form that they can utilise without any information loss or additional costs from having to re-digitise things.

**You talk about the need for better interfaces between all stakeholders in a project. How do you propose addressing that with these guidelines?**

**RG:** It is a difficult and complicated area. I would say in version one we would look at certain handover sheets between different groups and stakeholders. Maybe a simple spreadsheet is sufficient, but maybe we will need something more. It would be ideal to bring the O&M provider into the system design; I just don't see that that's very practical, but these are the kind of things we need to discuss.

“One key thing we want to do in this exercise is work on the interfaces between different stakeholders to get the most out of the entire build process and the system in the long term”

**AA:** For me, the ideal scenario would be a forum where we can very openly put on the table the list of challenges that are arising from scoping, specs and design that an O&M contractor faces. We might have a very long list of situations that are not optimal from an operational perspective, and it's very important that the EPC and owner understand those, but it's equally important that the O&M contractor gets a feel of why certain decisions were taken [during design and construction]. So maybe they were taken because at the time it was the best thing to do or the best components available, or perhaps they have been taken because they didn't have any other choice. If you look at the UK, for example, let's not forget that we all had to build in winter because we all had a very hard deadline to make sure we could get our subsidies. Therefore, the main driver of the design and construction was how do we compress the timeline as much as possible. So, for me this is a fantastic opportunity to show that the O&M contractor can contribute on how we can do things better and the EPC can say what their challenges are. And the owners need to listen, because they need to make sure they understand the costs of their expectations, because sometimes they have the wrong expectations for the price they're prepared to pay, and it's important for the long-term stability of the site that they appreciate that.

**How open do you hope contributors to these guidelines will be, bearing in mind the commercial sensitivities around openly discussing quality-related topics?**

**AA:** We have a number of limitations from the perspective of competition law. So the idea of this is not about naming and shaming; this is not supposed to be a process whereby we list bad practice and say what we shouldn't be doing; this is really meant to be a moment for people to share experiences. I am not expecting these guidelines to come out with: these are the good EPCs, these are not the good EPCs. And we have to be careful not to disclose the name of component manufacturers, because that would be unfair competition; therefore I'm expecting people to share their experience on a no-name basis. We will make sure it's anonymised, data is collected in a way that is as anonymous as possible

**RG:** It may also be a matter of generalising things; I don't foresee the need to identify black sheep. It is more about identifying what caused a particular issue and how it could have been avoided.

**What form will the final guidelines take and who will they be aimed at?**

**RG:** It will be relevant for everyone under the sun: owners, investors, project developers, EPCs, O&M, asset manager – all those have a stake here. And, also if you deliver something on site, this will set out what is a reasonable amount of verification to be expected from a developer's point of view. It would enable EPCs to obtain certain documentation from suppliers if they could state that according to European best practice guidelines

this is what's expected and it gives them the support needed to argue their point. The guidelines will be critical in managing expectations throughout the entire value chain.

**SolarPower Europe has in place various best practice marks for companies to use as a label demonstrating quality in disciplines such as O&M. Could you foresee something similar for EPC companies?**

**AA:** Yes, I think the idea is to follow the same process we worked through for the O&M guidelines. So, if you look at the journey of the O&M best practice workstream, it started with the publication of the guidelines, we're now on version four, it's in a few languages, having great success. After publication of the guidelines we started working on the best practice mark. And I think the idea is to replicate the same thing for the asset management guidelines, which we published last year, so we will probably come up with the best practice mark later this year. And similarly, we would like to follow the same journey for the EPC guidelines. So, I would say we will be publishing the EPC guidelines in around Q4 of this year and then follow through with the best practice mark.

**Bearing in mind what we have discussed about EPC companies having a key role in determining how well or otherwise a PV plant performs during operation, could you foresee a closer alignment between the two disciplines, with more companies offering both EPC and O&M services?**

**AA:** I am not that sure how much we will see that happening. Certainly, we have EPC contractors that also provide O&M services, but that's very much linked to the warranty period immediately after the completion of the construction, because they have an interest to make sure the plant is performing as promised on paper. But I think the logic behind the EPC and O&M business models are rather different; they work on the basis of different business drivers, so it's difficult to see the type of integration you're talking about. And this is why these guidelines are very important – because we don't necessarily have forums where people working on design and installation and people working on operation have the opportunity of sharing their stories. And the reason why it's important for owners and investors to be there is that they need to be educated, they need to understand. So, the main readers of these guidelines, for me, need to be investors and owners because they really need to get a sense of how realistic their expectations are.

**How significant do you hope these guidelines will be in helping the solar industry in its ongoing development?**

**RG:** All the work of SolarPower Europe, be it the O&M or asset management guidelines, is a good sign of the maturing of the industry. We're not a fully mature industry yet, so all in all this is a pretty good step towards supporting the maturing of the industry as a whole and also to make sure that assets we are building today will work in the future and not only until the EPC has finished its contractual duties. ■