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Why standardisation in O&M is key to PV's future

Operations and maintenance | The maturing of the solar operations and maintenance business has shone a spotlight on the need for some universally accepted standards and practices across the industry. Vassilis Papaeconomou explains why such a step forward will be vital to ensuring the full value of solar assets is realised



PV technology is a rather old technology and has been around for some decades. The solar PV market started in Europe and its large-scale deployment followed a few years later primarily in Germany in the early 2000s and a series of other European countries including Italy, Spain and Greece. The early days of the market were based on feed-in tariffs (FITs) as many countries adopted that strategy based on its successful implementation in Germany.

During the first growth phase of the market stakeholders were focused on development and construction, while long-term experience on the operation of solar PV assets was nil. Consequently, there was no clear perception of the value and importance of operations and maintenance (O&M), not only from the investors and lenders, but also on the part of the EPCs themselves.

O&M was considered as a "checkbox" to achieve financing and was initially perceived as a burden by the EPC contractors, a pure cost centre for the owners and a formal necessity from the lenders. The pipelines were rather small in megawatt (MW) size as well as plant count, geographical concentration and O&M by definition being tied to the EPC contractor.

It is obvious under these circumstances that there was no space for a pure O&M market, not only due to the above reasons, but also because O&M's value was not properly weighted to its contribution to high-performing solar assets. Much has changed since the early days of the solar PV market. Solar PV is now a booming source of renewable energy across the globe and a key solution in the nations' vision to fulfill the Paris COP21 climate change agreement.

O&M today

Now the market sees the long-term operational necessity and bankability factor in solar O&M, or better said, in some cases, the absence of it.

Solar PV plants constructed in the beginning are getting older and the lack of maintenance and/or quality design and construction are becoming evident. Such adverse effects are heavily impacting the generated revenues of solar assets and creating a lot of headaches for investors and lenders. Even in well performing PV plants, owners are struggling to decrease overall costs as the market is shifting from the FIT scheme to tender-based markets, with cutthroat pricing competition.

In the past few years we have experienced the birth of a new market segment – the independent, third-party O&M market – where O&M contractors are striving to increase the quality of services, while decreasing costs. The management of a large number of assets is becoming a challenge due to the complexity associated with that task. Most people still underestimate the challenge. The reason is the operational part of O&M activities is rarely fully understood and most discussions are based on the maintenance tasks alone, neglecting the effort needed to manage such activities (and a lot of additional ones) to a large extent.

This new market is experiencing steady growth, with more clarity related to the definitions, activities and performance-enhancing expectations related to O&M investments. Another factor is the (very often overestimated) potential of the O&M market as a business. New companies are entering the market, while others are leaving either by going out of business or by being acquired by larger groups. O&M is in a transitional phase, where finally the importance of quality O&M services is

better understood, mainly due to experiences with bad cases. But the market still lacks a significant track record, even in the older markets in Europe, let alone in emerging solar markets such as Africa, India and even Japan.

At the same time, the solar market is evolving with greater geographical dispersion of the assets and larger plants not only through new constructions, but in parallel also with new acquisitions of operational assets. Not long ago a 10MW plant in Europe was considered to be one of the larger ones, while today in India this is considered to be a small plant. The fierce competition forces stakeholders such as EPCs to focus on their core business, leaving space for independent third-party O&M providers.

A problem lies in the fact that most of these new companies have a very limited track record and bad investor experiences have created mistrust about their capabilities. Even large companies are still not providing confidence as failures such as the recent SunEdison bankruptcy show. On top of that, due to the very short history of the independent O&M market, there are huge discrepancies in the understanding of what really is part of the scope of O&M, not only between different regions (for example the USA and Europe) but also in the same country. Investors themselves have very different views and requirements of what an O&M contractor should deliver.

It is becoming very clear that a common language and evaluation criteria for O&M contractors is needed. Investors are becoming increasingly global and expanding into regions where very limited knowhow and experience of solar PV exists, while their requirements and expectations remain the same.

Future requirements of the solar PV

Global market

Solar O&M is a true global market (investment in emerging markets higher than developed markets)

Independent contractors

Established third party O&M market with track record. Track record instead of balance sheet is key

Standardisation

Best practices to increase quality of services. Clarity and consensus from all stakeholders leading to increased and healthy competition

Plant management evolution

Evolution from plant monitoring to portfolio management – high complexity more difficult to manage

O&M market

The characteristics of the future O&M market can be summarised in the below four main points, which are expanded on in Figure 1:

- Global market
- Independent contractors
- Standardisation
- Plant management evolution – more emphasis on operations

Global market

The solar PV market is increasingly globalised. As costs keep dropping, new regions are showing more interest in diversifying from the classic power generation options (such as coal) and a global trend shifting into renewables is becoming very evident. Nowadays we are experiencing development of PV in areas where it was unthinkable just a few years ago. In fact, there is hardly any region in the world where some sort of development in solar PV is not seen; some regions are more advanced while some others are just starting, but the trend is really global.

Independent contractors

Together with the expansion of solar PV on a global scale, the challenges are increasing as well, while basic requirements are remaining the same. The old model of the EPC taking over the O&M is getting less relevant due to the fact that the EPC business is a project-based business while O&M is operational; two very different points of view with largely different requirements and competencies.

Standardisation

Standardisation is becoming a hot topic, while just a year ago it was not even on the agenda. There have been several initiatives mainly in the USA and Europe, but most

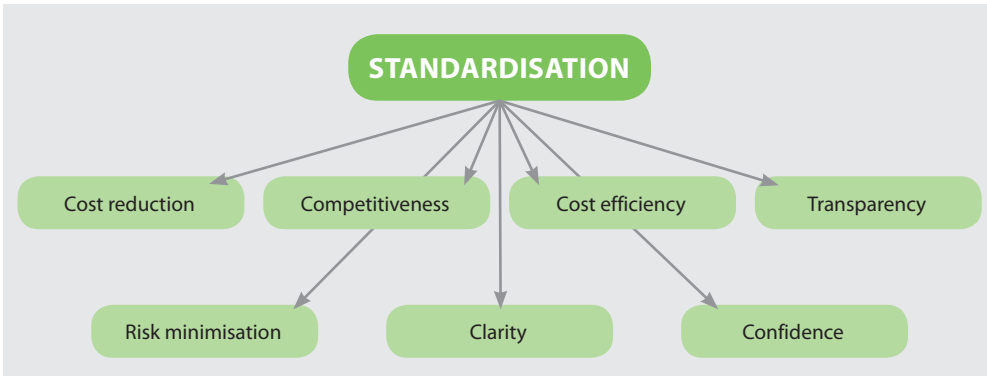
- The latest news, analysis and opinion on energy storage innovation and technologies
- Explore residential, commercial, utility scale and off grid storage applications and opportunities
- Keep up to date with the latest industry developments
- Read in depth analysis and expert commentary from key stakeholders



Figure 1: Essential characteristics of the future global O&M market

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have focused primarily on a subset of the full O&M scope, for example, monitoring or maintenance, whereas the operational part has been neglected. Only recently we saw the first initiative from SolarPower Europe touching the subject of operations in conjunction with monitoring and maintenance and other important aspects, which provides a more complete description of what O&M is really about.

In the USA the PV O&M Working Group run by the National Renewable Energy Laboratory is in the process of drafting the PV Best Practices document and Cost Model to help bring a level of standardisation and help include realistic plant operations and plant maintenance costs into the financial models. Meanwhile, the “Orange Button” initiative funded by the US Department of Energy targets a reduction in soft costs by streamlining the collection, security, management, exchange and monetising of solar datasets across the value chain of solar.

The fact that the basic terms like ‘O&M’ and ‘asset management’, which are so often used, are not clearly defined gives enough evidence of the value of standardising the industry.

The evolution of plant management

Emphasis on the operations side of managing assets cannot be overvalued. With growing pipelines in dispersed geographies the efficient and consistent management of solar PV assets is increasingly becoming a challenge. Critical to the efficient management of dispersed assets is the evolution of software tools including the shift from simply monitoring the plants to proactively managing them. We already experienced this trend decades ago when corporate software evolved from simple accounting systems to complete Enterprise Resource Planning (ERP) solutions. We will no doubt experience the same in solar PV, where software tools will not only be dealing with one isolated aspect of a plant

(monitoring, service management, asset management etc.), but also comprehensive solutions, such as the first solar ERP from Alectris called ACTIS.

Standardisation – the key to sustainable growth

As explained above, the growing pipelines of global investors, the consolidation thereof and the geographic diversity as new solar markets emerge are creating substantial complexity in operational and technical asset management. The lenders’ requirements are becoming more stringent given the past experiences from more mature markets. The market is getting overpopulated by new companies, whereas we are experiencing bankruptcies from large and established players. All that is happening in an environment where cost reduction is not just an optimisation requirement, but a condition to proceed, while at the same time the industry has not yet clearly defined the terms so often used in the industry.

All of this adds up to a situation that does not seem to be sustainable for a long time. Numerous actions need to be taken, but there is a very important first step, which we consider absolutely essential, that can serve as a foundation for sustainable growth: standardisation.

Standardisation is not a new concept. We have seen this happening in many other much older and more mature markets, such as air travel or financial services. History has shown that once standardisation has been achieved, markets developed exponentially with standardisation serving as a multiplication factor in their growth. We expect standardisation to have a similar effect in the solar PV business as well, but there is a long way to go to get to this point.

Given the current circumstances, the benefits of standardisation in solar PV are very evident (see Figure 2). Most of these items are currently missing from the

Figure 2: The benefits of greater standardisation in solar O&M practices

current solar O&M business environment. Several initiatives that could eventually lead to standardisation in the market have already been observed in various regions, mainly in the USA by NREL and SunSpec Alliance, and in Europe by trade association, SolarPower Europe.

In the case of the USA, such initiatives focused mainly on the maintenance part of the O&M business whereas in Europe it has also included the operational aspect, which is very often neglected. In June at Intersolar in Munich, SolarPower Europe, through its O&M Task Force, published a document setting out guidelines for best O&M practices in the industry. This document is valuable in that it sets out clear definitions of commonly used terms, and schedules of critical operational and maintenance activities.

It covers a very wide range of activities, apart from maintenance, such as claim management, training, KPI definitions, environment and health and safety aspects, and many others that belong in the scope of a bankable O&M contract.

Collectively, the task force’s guidelines are far from amounting to an official standards document, but is a very good first step towards standardisation. Ultimately they may evolve into a single standard for the O&M sector, but before that happens there will need to be a period of time for providers to adopt the new guidelines and engage in the debate over how their industry should be shaped. Nevertheless, through this and similar initiatives in other regions, what is emerging as a distinct business segment of the PV industry is laying the foundations for a clear set of minimum requirements that will serve as a quality benchmark for the whole industry to follow, leading to greater efficiencies and lower costs. ■

Author

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Turn to next page for further insights into the O&M Task Force’s guidelines, including an interview with its leader, First Solar’s Stefan Degener

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