

Asset management: maximising the potential of solar power plants

Asset management | The services and skills offered by asset managers have a central role to play in boosting the value of solar PV investments. Adele Ara, Máté Heisz, Magda Martins, Diego Molina and Paul Norrish outline the key recommendations in the solar industry's first set of best practice guidelines for asset managers



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Asset managers as key value contributors during the plant lifecycle

There is a myth about solar photovoltaic (PV) plants, that once the plant is built and the panels installed, as long as the sun is shining, the plant will require minimal management and operational effort. As more and more large-scale solar plants are being developed and built, it is important to recognise that this is, indeed, a myth.

Stakeholders in the industry, whether strategic or financial investors, have been crucial for the continuous growth of solar PV and have sustained high expectations as to the ultimate performance – both operational and financial – of solar plants. This has resulted in stakeholders indirectly imposing ambitious targets for service providers in the solar sector.

This article examines the wide variety of services an asset manager should provide to a solar PV owner, as a means of achieving the desired return. To achieve the expectations set by many owners and investors in the industry,

it is not enough for the sun to shine – asset managers must deploy resources, skills and strategies well beyond what the industry expected in the early days of solar. These skills involve operating advanced digital asset management platforms, which enable the effective management of diverse solar portfolios. To help key stakeholders, asset managers, and asset owners in particular, deal with these new challenges, SolarPower Europe's O&M and Asset Management Task Force developed the industry-first Asset Management Best Practice Guidelines, based on the experience of leading asset management experts, covering the essential topics to facilitate high-quality service provisions.

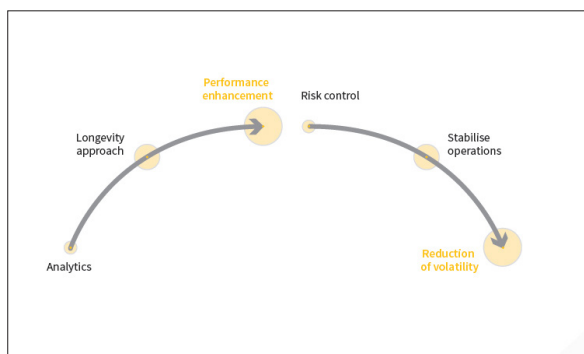
When considering a solar PV plant as a business unit in its own right, it becomes apparent that, while fewer risks are involved compared to a traditional power plant, it is not risk free from a financial, operational and technical perspective. For the asset manager, this risk profile underpins the need for a multipronged approach to the risk

The role of asset managers in solar PV is assuming growing importance

mitigation and management of solar plants, and the importance of working efficiently to address the significant volume of work in an increasingly competitive environment.

This challenge has also presented an opportunity to forward-looking asset managers. It is apparent that successful asset management organisations, whether independent service providers or business units within independent power producers, are not simply driven by the objective of fulfilling the services related to their scope of work, but are ultimately focused on realising the maximum return potential of the solar plant.

If the mandate of an asset manager involves working to ensure that each solar plant meets its expected value generation for the owner, then the entire suite of asset management services is designed to reduce volatility, through the stabilisation of operations, and to enhance performance, through the optimisation of the sites with the goal of increasing their longevity.



Technical asset management and critical monitoring services

Technical asset management (TAM) is focused on providing value to the asset owner through assistance relating to the regular operations of the plant. TAM involves a holistic approach, anticipating the asset owner's requirements in terms of the management support of its operations; not only from an asset perspective, but also keeping in mind other stakeholders, such as lenders, suppliers, or advisors.

The general guidelines when carrying out a TAM contract include the following activities:

- Communication with the asset owner and all relevant stakeholders, focusing

Figure 1. Steps to agree strategic approach to increased profitability

on reporting the owner's needs and presenting suitable alternatives that can add value to the plant;

- Optimisation of value for the asset owner by maintaining a regular interest in opportunities applicable to the project – such as maximising energy production, minimising downtime, reducing costs;
- Mitigation of operational, financial and technical risks, and avoidance of general distress of the asset owner towards the plant – including compliance with national and local regulations and contracts, and repowering investments;
- Selection and implementation of asset management software and portfolio monitoring system for operational projects – such as, monitoring performance of operations assets, issue resolution and coordination of information flow;
- Insurance of risk management systems and processes, and contributing to policies, processes, and procedures.

The asset manager is expected to play an integral role in the design process from pre-construction to operation,

and must ensure that the best output is presented to the asset owner. Such an important task may only be accomplished by working closely with local teams and partners.

The coordination of the design process is something that the asset manager must do when dealing with sub-contractors and on-site issues; the ability to manage the process and ensure it is cost- and time-effective are key drivers of success. In this regard, the asset manager must be a central point of contact for local team members working on operating assets, and the main person responsible for monitoring a pipeline of operational assets. The role includes not only the oversight of day-to-day administration, but also reporting on information flow, policies and corporate governance, along with monitoring project performance. To perform these tasks, the asset manager must be supported by critical monitoring systems and a dedicated team of experts.

The basis for the asset manager's data and monitoring requirements should be a specialised asset management platform, which will cover the storage and management of operational and

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The issue today is how to operate them at best: this is what Solar Power Europe's Asset Management and O&M Best Practice Guidelines address. And it is the challenge TCO SOLAR has set itself.



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non-operational data related to the asset or portfolio, as well as static and dynamic data. Such a platform makes it possible for the industry to transition to an asset-centric information management approach, which addresses five key challenges: (1) minimising production losses; (2) significantly improving efficiency; (3) reducing lack of data transparency; (4) improving the levelised cost of energy (LCOE); (5) positively impacting the return on investment for solar asset owners and operators.

The asset management platform will include plant performance data management, which covers key performance indicators with a daily follow-up, incident remote detection, direct dispatching, and standard reporting elaboration. Further, the platform will include O&M site activity supervision, covering the full traceability of all maintenance completed for the plant or to particular equipment. Finally, the platform includes contract management and administrative optimisation.

The detailed data storage and treatment promotes the reduction of detection time and downtime, which will result in mitigating energy losses in the advent of an abnormal situation. Strategies for reducing and controlling operation & maintenance (O&M) costs, based on comprehensive plant data, can also be devised. The automation of monitoring, which is becoming increasingly popular, in combination with advanced data analysis, can lead to significant returns. This technology allows operation teams to make decisions based on the up-to-date data they receive from monitoring providers, SCADA systems, data loggers, inverters, satellite irradiation data, weather forecasting services and other sources.

Beyond the business sector trends, there is a growing tendency of opting for solutions that integrate the functionalities of monitoring systems, computerised maintenance management systems (CMMS) and enterprise resource planning systems (ERP) into one central platform. These integrated solutions should be regarded as a valuable contribution to asset management, highlighting that centralised data of a high quality is critical for reliable asset operations and effective decision-making. In fact, a recent study conducted by MIT showed that companies using data-driven decision-making are 5% more productive and profitable than

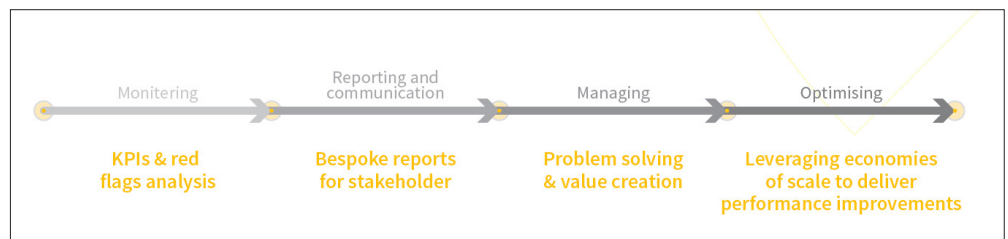


Figure 2. Drivers of operational asset management services

their competitors. Indeed, asset managers are increasingly relying on advanced analytical tools to help asset owners reduce the LCOE and to facilitate the development of solar projects around the world.

Commercial and financial asset management

Commercial and financial asset management involves monitoring the business aspect of the solar PV plant, providing recommendations for improving the overall status and performance. This includes specialised management based on reporting individual and consolidated figures of the asset owner's portfolio and breaking down the contribution of each plant to compare it with financial model assumptions and historical years. Such analysis will comprise detailed financial interpretation and understanding of the results, and a periodic report can be fine-tuned in accordance with the asset owner's needs.

Strategy management refers to the need for the company to develop and implement a strategic framework for all of its asset management activities, implementing it with the required change management process and monitoring through regular audits and management reviews. Following from this, accounting is an essential area of expertise, responsible for meeting local and international legal, regulatory and tax requirements, as well as the reporting of financial transactions, including bookkeeping, administration and accounting procedures.

The most significant challenge of the asset manager is the control of revenues and expenses through rigorous invoicing monitoring. The asset manager is thus responsible for confirming the reading of the meters based on information collected on site by the O&M team, and for validating and comparing it with the billing issued by the electricity purchaser. Further, working capital reconciliation activities will see the asset manager overseeing accounts payable and

accounts receivable through rigorous client and supplier contract negotiation, ensuring that the accumulated revenue generated is enough to meet the supplier's payment.

The asset manager is responsible for conducting financial analysis in order to achieve the company's financial goals. This refers to the set of processes, policies and procedures that enable the analysis of a company's actual activities from different perspectives at different times. Further, the asset manager is a key player in supplier relationship management – including O&M suppliers, landowners, insurance, technical consultancy, legal consultancy and electricity providers. With a comprehensive perspective of the operational business, financial performance and the supplier's contracts in place, the asset manager can add value by understanding the project's needs and pursuing individual contracts in order to ensure maximum business optimisation. It is not uncommon for EPC and O&M contracts to include penalty clauses linked to specific KPIs to protect the asset owner's interests. O&M contracts may also include bonus or penalty mechanisms linked to KPIs such as plant availability and reaction times, among others. In case of bonus payments, the asset manager must make suitable provisions in terms of financial planning; in case of penalties, they must calculate and invoice the correct amount to the O&M provider.

The asset manager must maintain a comprehensive understanding of the financing contract and the periodic reporting of financial statements, coverage ratio monitoring, escrow accounts monitoring and business plan updates, among other requirements. Additionally, the asset manager is responsible for monitoring the non-financing contracts that are indexed to and locked by the project finance – such as land lease, O&M and security – in order to avoid penalties raised by contract non-compliance.

Finally, the asset manager must have

a comprehensive understanding of the equity agreement and the bank loan requirements in order to work towards the solar plant's maximum optimisation and profitability, with an eye on shareholder remuneration and complying with debt services. This includes knowledge of local tax authorities' requests, which could result in distinctive tax legislation interpretations with the potential for tax exemption.

It becomes clear that the role of the asset manager includes the capability of contributing to the development of new indicators and of innovative reporting solutions. Therefore, the asset manager may contribute significantly to the improvement of the performance of the solar plant by managing all of the above activities. Overseeing the coordination of a set of corporate financial services that are essential to assessing the economic and financial performance of the plant is a crucial part of the asset manager's job.

Procurement strategy

Asset managers should leverage their experience and network of contacts to both identify the right trade-off between

quality of service, price and key contractual terms, and constantly adapt all of them to market conditions. In line with the procurement best practices, it is suggested to use a Kraljic Matrix (see Figure 3). The supplier's class is based on two key criteria: (1) strategic relevance, in terms of value-added, impact on profitability and overall costs in the supply; (2) the complexity of the supplier market, in terms of the number of suppliers, features of the supply (scarcity).

Taking these criteria into account, the main suppliers involved in a solar power plant operation can be allocated in the following matrix:

Once a classification of the supplier class is analysed, then the supplier must be selected. The recommended methodology to select a supplier is the analytical hierarchy process (AHP), which is a recognised and standardised supplier selection methodology. The AHP methodology evaluates a set of potential suppliers, with each receiving a rating based on a set of evaluation criteria, assessed on the basis of specific indicators. It is important to note that since some of the criteria could conflict, the best option is not always

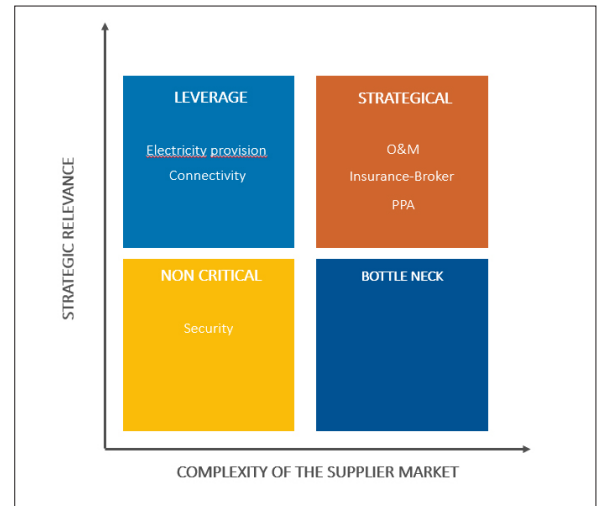


Figure 3. Kraljic Matrix of the main suppliers of solar power plant operation

the supplier that optimises every single criterion, but rather the one that achieves the most suitable trade-off among the different criteria. AHP allows for not only quantitative but also qualitative elements to be considered; it also enables a different weight to be attributed to the different indicators and selection criteria, and can thus attribute rational importance to the various aspects of the decision-making

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process that could vary in a different environment.

The asset manager can add value in the procurement process, not only by leveraging its proprietary knowledge, based in particular on direct observations and historical evidence of the activity of various suppliers, and network of contacts, but also by allowing its clients to benefit from a scale effect to run a tender process. If the solar portfolio has sufficient scale, it is advisable to avoid single sourcing (i.e. allocating 100% of the activity to the same contractor). Instead, either a second sourcing (by identifying the main contractor which would manage the majority of the plants and a second contractor with more limited exposure) or parallel sourcing (with two or three contractors that manage similar percentages of the portfolios) is recommended.

In the case of portfolios with bank financing in place, the process of selecting the strategic contractors – mainly O&M, insurance companies and PPA counterparties – should take the prescriptions of the loan agreement into account. The selected supplier and the methodology of selection should be approved by the financing institution following a qualification process. To monitor the supply account, the asset manager should identify certain indicators, periodically monitor them, and take appropriate and timely action in case of situations that are not aligned with expectations. Moreover, the asset manager should keep strict control not only on the supply side, but also on the demand side, by ensuring smooth interaction and regular communication with the suppliers.

Future challenges in a growing industry

As the solar industry is maturing, and owners are becoming increasingly industrialised, the role of asset managers will need to evolve beyond mere service provision. The industry is entering a new chapter of unsubsidised generation, a trend that is inevitably shifting the risk paradigm for owners and investors in solar plants. Not being able to rely on subsidies and government support introduces an incremental level of risk; solar plants are no longer relatively simple recipients of government-backed supporting schemes, rather they are becoming fully fledged electricity suppli-

ers. This necessitates more sophisticated requirements for forecasting and remote operation of the sites.

This new risk allocation leads toward an expansion of the responsibilities and services of asset managers, as well as a further diversification of capabilities required to successfully manage solar plants. Further, this presents an opportunity for asset managers prepared to anticipate the new challenges that owners face, ultimately reshaping their services toward two different clients: the asset owners, as well as the energy consumers or electricity off-takers.

Asset managers must expand their scope and embrace investments in analytical tools as a necessary enabler to face the new challenges posed by the unsubsidised era. This will help to increase the understanding of solar plant behaviour and improve the ability to control and operate the plants more effectively.

This push toward new services to support the requirements of the unsub-

sidised market further emphasises the need for asset managers to contribute to optimisation throughout the life-cycle of solar PV plants. The longevity, longer-term sustainability and ability of the plant to deliver on owners' and off-takers' expectations is also dependent on new developments and projects having the opportunity to incorporate in their design, construction, contracting and financial strategy, the lessons learned during operation. Asset managers are uniquely placed to facilitate this feedback loop, thus creating additional value for asset owners.

In 2020, SolarPower Europe's O&M and Asset Management Task Force will address these future challenges in its upcoming Version 2.0 of the Asset Management Best Practice Guidelines. Experts and businesses that would like to be part of this initiative are invited to contribute. ■

Version 1 of the "Asset Management Best Practice Guidelines" is available via www.solarpowereurope.org

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