A new dawn in solar O&M: remote, repowered and repaired

Our team sat down with Sam Wookey, Head of Operations and Maintenance at Ethical Power. An experienced solar engineer, Sam brings practical, on the ground experience to his management style, ensuring the team remains customer focused while delivering data driven and functional solutions.

PES: You recently announced a contract in New Zealand; as a UK based company, how did you end up signing an O&M deal on the other side of the globe?

Sam Wookey: This is a really exciting project for Ethical Power, and not just because of the location. Our Performance Monitoring team has been chosen to take on the SCADA monitoring on two new solar farms, Kaitaia and Edgecumbe. Both of these 33 MW farms are owned by New Zealand renewables company Lodestone Energy, with whom we have a growing pipeline.

While New Zealand is very far away, in terms of how we work it may as well be down the road. Lodestone selected Ethical Power thanks to our extensive industry experience and our ability to deploy it 24 hours a day, seven days a week. Our team monitors Lodestone's solar farms around the clock, alerting them not only of any active status alarms, but also of any irregularities that could lead to problems down the line. Reducing downtime with quick detection and repairs is great, but avoiding it with proactive maintenance is even better.

PES: Are you saying there is no difference in monitoring projects in different countries?

SW: Of course, we factor in relevant regional considerations during the initial set up, but once that's done it makes little difference for our team and clients. At Ethical Power, we already work all over Europe, so we are used to adjusting our processes for different territories, whether it's development, EPC, or monitoring.

One notable change is that the New Zealand grid is set up completely differently from the UK or Spain, for example. In the UK, sites can be managed through cloud solutions such as InAccess, but in New Zealand, there are many bespoke solutions for each locality. Taking on this new contract meant we needed to expand our tooling and roll out the subsequent training to go with it.

Grid systems in New Zealand also have a different flow to those in the UK. Here in the UK, we've got systems that monitor the output of sites, implement setpoints, manage power, etc. This is all done automatically and in line with pre agreed schemes, limits, and so forth, so you can use off the shelf solutions to manage it all.

However, in New Zealand, we can see and respond to direct requests from the grid, which means that the setpoints and request system are much more active. It relies much more heavily on the ability of a solar site to be fluid and adaptable, rather than the UK requirement of maintaining maximum output up to a predetermined limit.

This is certainly a new challenge, but also a great application of our expertise. It means we can offer clients so much more than just security alerts. Ethical Power has designed, built, and operated utility scale renewables assets for over a decade.

Based on our experience, we can help make recommendations or predictions to help clients achieve maximum output or flexibility. Whatever they need, we can do.

PES: This sounds a lot more expansive than typical O&M, why increase the scope of your offering?

SW: To be honest, traditional O&M always felt very limited to us. Time and time again we saw clients struggling with the same issues, issues that lay outside the scope of a standard O&M contract.

Years of renewable specific experience allow us to proactively maintain the energy efficiency and security of a site. If we see areas for improvement or potential pitfalls down the road, we want to be able to step in and help.

We can proactively monitor the performance of the assets, as well as the security. Our state-of-the-art control room is staffed around the clock, meaning we can put human eyes on any CCTV or data stream anywhere in the world in real time. With up to a million data points coming into our control room every hour, we can see the output of each string and each inverter, and even monitor and adjust the positioning of tracking panels. This way, we can help maintain optimal output at the same time as keeping the site secure and operating safely.

We don't just fix problems as they arise, we offer expert advice on asset optimisation, proactive maintenance, and effective security. Ultimately, everything that we do works towards optimising performance or maximising our customers' ROI.

PES: Can you give us an example of asset optimisation that you've completed as an O&M team?

SW: Sure. Solar power is established enough now, and some sites are already beginning to offer diminishing returns due to ageing assets or outdated technology. However, the pace at which our industry is changing means that older solar sites stand to benefit a lot from processes like repowering. At Ethical Power, we can perform an in depth analysis of the site's performance and offer an optimal repowering package. With this service, we can breathe fresh life into your assets by installing more efficient tech that will boost output and reliability.

Sam Wookey

Repowering is just one example, though. Optimal performance is made up of many different aspects, and a great O&M provider can do a lot more with today's technology and an experienced team. It's not enough to just send an email saying 'one of your strings went down six hours ago', with no follow up or plan of action. We can, and we do go several steps

Top tier performance monitoring requires top tier tech.

further; identifying which string went down, investigating why, and beginning to resolve the matter in just 30 minutes, if not quicker. An inbox full of resolutions is preferable to an inbox full of problems!

PES: You mention technology a lot, has O&M changed that much?

SW: Top tier performance monitoring requires top tier tech. Our control room feels like the set of Star Trek, but we also use a lot of tech onsite as well. On top of all the data we monitor and analyse, we can now aid our engineers in the field by remotely switching off inverters, when needed. For the battery systems we monitor, we can also offer other remote interventions to save on engineer attendance altogether, reducing carbon footprint and time spent on a case resolution. In the field, we now use drone thermography to scan each table of panels looking for hot spots or shading, which could indicate damage or other factors affecting performance.

Our capabilities must match our ambition. We currently average out at 99% availability across all the sites we cover, and our continued investment in tech means we can maintain this quality of service while also improving other areas.

PES: What's next for Ethical Power in the O&M space?

SW: Well, the short answer is 'a lot!' We are so proud of what we have achieved with our facilities, but the growth doesn't stop here! We have more international remote monitoring contracts in the pipeline. And because these contracts involve a lot more than adding to an endless list of CCTV feeds, we've had to make some pretty major upgrades to our control room. We will continue to develop our tech and our team so that we can continue to provide the full suite of services tailored to our clients' needs.

O&M doesn't exist in a vacuum though, and Ethical Power as a whole is continuing to grow, too. We can offer full wrap services for solar projects and having an in house O&M service helps our clients. As our knowledge transfer and project handover is as simple as speaking with a colleague, clients don't need to worry about their assets moving onto a new O&M team. Having all the expertise and experience, from landowner engagement to design, construction, and connection, also benefits our O&M team massively. Chances are, no matter what is happening to your solar asset, someone at Ethical Power has seen it before!

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Solar repowering: a case study

Earlier this year, Ethical Power completed the repowering of Southdown Marina Solar Park, which had been in operation for almost a decade. After completing an initial assessment of the site's output, we provided the client with a list of options on how best to move forward in line with their needs and constraints. The client opted for a repowering of the solar park.

A repower requires careful consideration of the existing infrastructure onsite, the electrical connections in place, and more. We researched and sourced the optimal equipment for Southdown Marina, and replaced the 60 Danfoss FLX and 6 STP inverters that were originally installed in 2015 with just 11 Huawei 100KTLs.

In addition to that, our O&M team installed main AC feeds to the inverters and replaced the combiner boxes with uprated switch disconnectors and AC fault protection. The DC cable was also extended into the new inverter positions and housed in newly installed galvanised cable baskets.

As a result of these repowering works, after just three months of operation, Southdown Marina has already experienced a 42% improvement in the Performance Ratio.