



Getting the measure of renewable power generation

PES spoke with Mark Bakker, Field Application Engineer at Fluke, about the importance of trusted, safe and accurate measurement equipment for solar plants and how new troubleshooting and analysis technology makes it easier to capture the right data at the right time.

PES: Hi Mark, it's great to welcome you to PES and always good to introduce our readers to new names and ideas in the sector. Perhaps we can begin with a brief introduction to Fluke and what it is that you do?

Mark Bakker: Fluke is a manufacturer of handheld measurement equipment, for the most part, able to measure all kinds of variables inclusive of temperature, current, voltage and vibrations. The multimeter was

the start, then Fluke expanded into other applications and now we have a very wide portfolio of test and measurement equipment often used by maintenance teams and research and development laboratories. Some 99% of our test and measurement product portfolio is portable and battery powered.

Our products are known for their rugged design, always with the safety of the user in mind. Fluke is based in Seattle in the USA and

has some 2500 employees globally. I am based in our EMEA head office in Eindhoven in the Netherlands, and have been with Fluke now for 10 years working across vibration measurement tools and then in power quality. I work with a team of applications engineers creating and developing training material for internal stakeholders, distributors and for the end users of our equipment.

We are in a unique position. Because we set out all this training, our team is in constant

contact with customers, distributors and salespeople and we gather information about the product from all these sources. Combined with our technical backgrounds this makes us product experts. For that reason, we are often invited by salespeople to visit the customer to help them with their challenges, offer solutions, demonstrate the product, explain the benefits, and receive the feedback from the end user.

PES: How do your products and services relate to the world of solar and renewable energy?

MB: We deliver power quality tools for industrial plants, manufacturing facilities and for energy providers. The way in which electrical power is produced is transitioning at a rapid rate. Solar and other renewable energy resources are providing new ways of generating electrical power. To develop, commission and troubleshoot these types of renewable power generation systems you need trusted, safe and accurate measurement equipment.

PES: As solar energy becomes even more in demand, being able to analyse the power output efficiently becomes increasingly important too, how are you responding to this at Fluke?

MB: In commissioning it is important for owners and investors to determine if the installed equipment can deliver the output that the solar plant was designed to deliver. Fluke power quality products can measure the output of the solar plant or of the wind farm. The output must comply with certain quality standards and again this can be verified using Fluke equipment.

A well-designed user interface can greatly



improve test efficiency for the operator and for that reason it is a high priority in the development of our products.

PES: Routine maintenance and troubleshooting of solar panels can be time-consuming and tricky, given their often remote locations; what can be done to help in this regard from your perspective?

MB: A crucial consideration when selecting a tool for troubleshooting is having just one instrument capable of measuring DC so that you can do a function check on a solar panel and have the ability to measure AC as well. Of

equal importance is a tool that will display results in real time.

In these instances where testing and troubleshooting is in remote locations, it can be worth considering adding the 4G module, which is available as an accessory. Remote connection is not standard, but the solution is available to allow data to be communicated back to a central office or server.

Ethernet connection is helpful as well – so if the product is installed in a basement for example, with no 4G signal, a wired communication or Ethernet connection can give the operator the confidence that all communications options are covered. This is also very helpful if Wi-Fi connections are not allowed, which is the case in many production facilities.

PES: How does the Fluke 1770 series help when it comes to carrying out routine maintenance and troubleshooting of equipment in the solar industry?

MB: The best troubleshooting equipment for routine maintenance should always come with a solid software package that will assist with analysis of events on the electricity network. This software should also review the electrical signals in the log file, completing the analysis for you.

The Fluke 1770 can achieve this and will also offer real time analysis should any issues arise. For example, if a conductor gets hot in the solar panel network, then you can hook up the tester equipment to the conductor and test the current and voltages going through the conductor in real time. This allows the operator to relate the results directly to the processes that happen around them.





autocorrect feature of the Fluke 1770 series? It allows you to automatically correct connection errors digitally, without having to alter physical connections, is that right? That sounds very beneficial in terms of time saving etc.

MB: This is a very exciting development, particularly for the safety of operators in the field. The autocorrect feature allows the operator to apply the probe within the cabinet. Once connected it is possible to adjust and make corrections to the connection remotely via a smartphone, without having to open the safety cabinet, minimising exposure to high voltage terminals.

If the probe is connected over two days, or a week or a month, the operator can be assured that it is working well, make adjustments to the connections and ensure it is taking the required data by checking in remotely.

PES: It sounds like the Fluke 1770 series could be a big help for the solar industry. Do you think you've taken this technology as far as it will go now, or is there more to come?

MB: We always work closely with our customers, are eager for their feedback and to further develop our products.

We have just launched Fluke 393 1500 V TrueRms clamp meter and its specification makes it a great tool to use in Solar Farms. The 1770 platform is already a good solution for solar measurement, but we will continue to develop tools to further improve the accuracy, efficiency and safety of those delivering electrical power from renewable sources like solar.

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PES: How does it ensure accuracy, which is obviously really important?

MB: The guided setup for the 1770 series is fool proof, quick and easy. It starts logging data automatically so even if the operator forgets to set up a parameter, the data can be drawn from the log file later.

The accuracy of the product is assured by the fact that the measuring circuits are designed according to requirements from IEC 61000-4-30 – class A standard. To prove that the product fully complies with this standard, it is handed over to an independent laboratory for testing and certification.

PES: Safety is another important factor of course, how does this new technology help in this regard?

MB: The large touch screen and physical navigation buttons can be operated in the field using gloves. One of the great advantages, apart from the IEC standard, is that the operator can check and if necessary, change connections digitally and remotely via their smartphone with the safety cabinet closed.

PES: Given the remote location of many solar fields, powering up testing equipment can often prove tricky, which risks data being lost and time wasted; how is this overcome with your latest solutions?

MB: The latest solutions are actually able to power directly from the circuit being measured, which is a huge benefit in remote locations like solar fields.

PES: What about the sharing of data once it is gathered? Is this simplified?

MB: Yes, it's very simple. Data can either be transferred for analysis via USB, Wi-Fi or a direct via USB to PC connection, all without interrupting a logging session, for power quality or an energy survey. If required, there are even 4G solutions available.

PES: Can you tell us a little bit about the

