



Fly-it-yourself PV plant inspections: the future of solar plant maintenance

Using drones for solar plant inspections has started to become the norm amongst plant owners and O&M companies because it is quicker, more accurate, more economical and safer. However, plants aren't being inspected nearly enough to ensure their functionality. PES caught up with Mauro Migliazzi, the CEO of Wesii, to find out how their new product launch this coming February is going to change the way we do solar plant inspections.



PES: A warm welcome to PES Solar/PV Mauro, it's good to talk with you. Would you like to begin by introducing us to WESII S.r.l and telling us how you got started?

Mauro Migliazzi: Absolutely, thank you for having me, I'm happy to be here. I first started Wesii in 2016 after 10 years of working in hyper spectral and multispectral remote sensing elsewhere. I had always worked with airplanes but starting my own company you could say that an airplane was out of budget for me, so I decided to spend all my money on a drone instead.

My initial idea for Wesii was to help the everyday person learn how to use drones and infrared wavelengths to take better care of their businesses and assets. However, after one year I found myself with a small team and focusing on the solar industry, which is personally very important to me, providing B2B services, with aerial thermography being our top seller.

I feel quite fortunate to be able to pursue my passion for renewable energy in my career and to have built a team who shares the same passion.

PES: That's great to hear. Can you tell us

about your inspections, what they involve, the how, the why and what the benefits are to the end users?

MM: Gladly! Like anything in life, if you don't take care of solar plants they will begin to deteriorate and won't work the way you intended them to. Fortunately, solar plant owners, or those in charge of looking after them, have realized that, creating the rise in the demand of efficient predictive maintenance. That's where we come in.

Our three main services are Elios Analytics, Elios Serial Number and Elios Visual Inspection, which all aid PV plant owners, managers or O&M companies in making sure their solar plants are operating properly. Using these services optimizes an owner's return on investment and minimizes time-to-warranty claims. You could say they are essential to the PV plant's health and by not utilizing a multitemporal/predictive maintenance tool its efficiency and longevity will decrease significantly.

Elios Analytics is a survey of the PV plant conducted with drones or small airplanes with multispectral sensors to capture the necessary data, so we can first digitize the plant and use our analytics software to categorize the faulty panels by the anomaly type. These can occur for many reasons such as cell failure or partial shading. This is important because we are able to show the client which panels, they need to keep an eye on and which ones should be attended to immediately.

This service is conducted once a year so we can provide our clients with a multitemporal view of their plant, giving them a potential predictive maintenance tool.

Elios Serial Number is an efficient and safe way to capture and catalogue each individual serial number of each panel utilizing a 0.1mm pixel resolution which allows you to clearly read the serial number from an aerial view, eliminating the unsafe procedure of manually



Mauro Migliazzi

collecting the data from rooftops, car parks, etc. Imagine the difference between manually walking around a PV plant to log each serial number vs. quickly flying overhead in a matter of minutes to get the same information. Huge difference in time and money spent.

Elios Visual Inspection is a survey of the PV plant also conducted with drones or small airplanes to capture aerial RGB photographs to view visual anomalies such as delamination or discoloration of the panels and cracked cells.

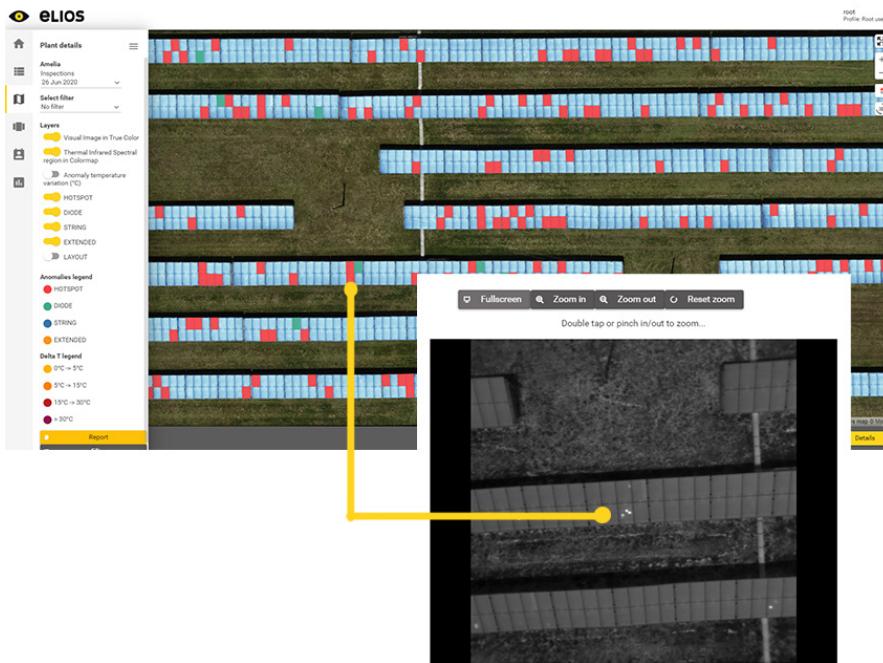
This service is also conducted once a year along with the Elios Analytics inspection, so we can provide our clients with a multitemporal view of their plant also with visual images.

Elios Portal is our web-portal where we house all the captured data, analyses and serial numbers in one place, giving our clients easy access to everything they need to keep track of their plant's status and perform the



Elios Portal - Portfolio overview

ASK THE EXPERTS: INSPECTIONS



Erios Portal: thermographic inspection (TIR) with all the identified anomalies. With a simple click on the panel, it's possible to view all the information of that specific panel, including the original images. Pictured: original thermogram

necessary maintenance to improve its health and their electricity credits. In the portal they can view all surveys ever conducted, which allows them to compare them and predict their future needs. Other features include custom reports, anomaly filters and multiple logins so they can share results and work with third parties.

PES: Would you say research and development is an integral part of your business and why?

MM: Yes of course, before I even started Wesii I worked many years in the research department of my former company, not only honing my skills in this field but learning what an essential part it plays in the development

of a business and especially a young start-up.

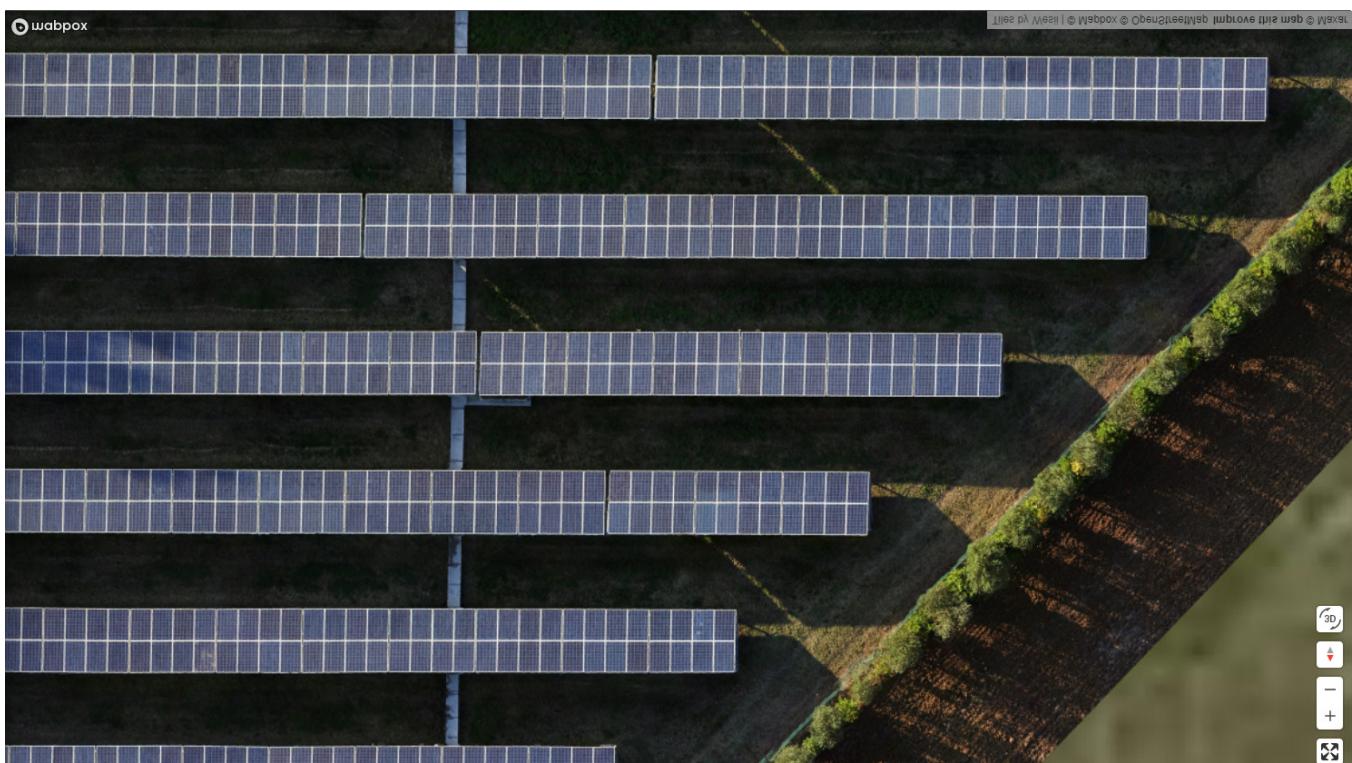
You see, drones are a fairly new tool, but it's only a tool. We need the right solutions and innovations to accompany it to make a difference and to help businesses make the smartest decisions based on the tools and information we provide them.

The world is rapidly changing and the field operations are constantly evolving. Right now, there are so many new things, new technologies that are needed that don't even exist yet, which is another reason that makes this an amazing sector to work in. There are so many companies, us included, that are able to research which new technologies are needed and actually create these new solutions. Now thanks to drones, we are able to collect an incredible amount of data compared to the previous years. Already it's a huge leap for the solar industry and we're excited to take part in the next generation of developments in this sector.

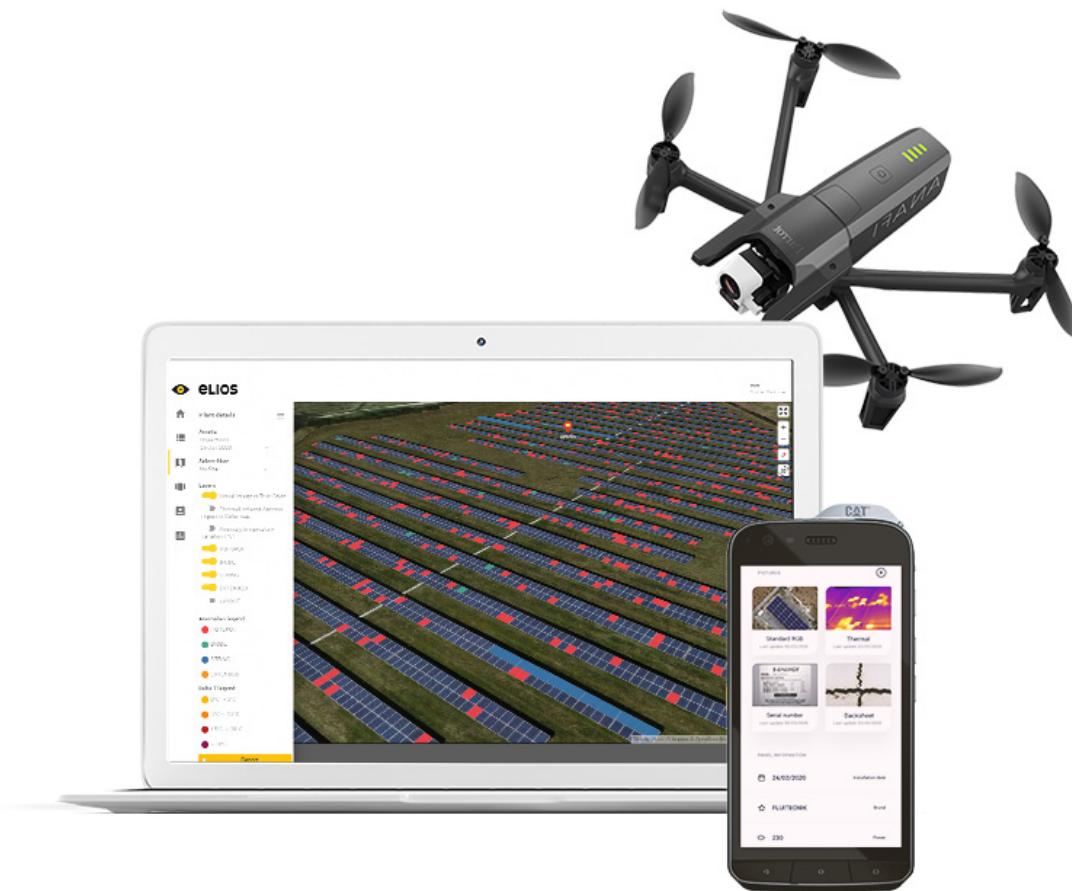
PES: How important is the role of AI in your inspections and what added value does this bring?

MM: We have a fairly small team of 20 people and a lot of what we do would be impossible without AI. We use machine learning to train our software and to extract the information we need. Yes, our people created it, but AI will make it grow and take us places that we would only be able to go if we had the help of 100 people.

PES: What would you say is the most unique aspect of your approach to solar inspections?



Erios Portal: Visual RGB view (1 cm/px our standard resolution)



EliosField Dronino: Our new product, the CAT thermal phone + Wesii APP, Anafi Thermal Parrot Drone and Wesii Elios Portal, puts the control in your hands to perform fly-it-yourself inspections as often as you like.

MM: Our unique approach is that we focus on the long game. For us it's a marathon and not a sprint. Many companies in our niche focus on getting a lot of clients and first-time surveys. We are the opposite. We know that the functionality of a plant takes constant monitoring, which is why one of our coveted features is the multitemporal view, an essential step to having a predictive maintenance tool. As I mentioned earlier, this tool allows you to compare all of the surveys of the plant right in the Elios Portal, giving you all the knowledge you need to make the smartest decisions for your plant.

The thing is, we've been thinking how to improve this aspect and work towards a predictive maintenance tool. For this to happen, we firstly need to fly the plants more frequently.

PES: So, it sounds like you have some interesting projects in the pipeline. Are you able to share them with us?

MM: Yes, of course. I am beyond excited to tell you all about our newest product that is coming to the European market this February. I'm so excited that I think it deserves a little drum roll...

It's called EliosField and I believe it's truly going to transform the way we perform PV plant inspections. As I mentioned earlier, a major problem that plant owners face now is

that they aren't able to inspect their plant enough times in order to have a proper predictive tool. Our multitemporal service is the closest there is, but of course we are always looking for ways to improve. With EliosField, plant owners, managers and O&M companies can easily fly their plants whenever they want, upload and view the data immediately and keep track of the maintenance done on the plant every time they want to see the progress.

As I described earlier, we first digitize and analyse the plant using our Elios Analytics service, which is conducted annually. EliosField is an added feature that takes the CAT S62 Pro, Parrot thermal drone and Wesii software to bring an economical and efficient way to perform frequent PV plant inspections, so you can perform as many as you want between our annual inspections. This way owners can always know what's going on in their plants and can make the most intelligent decisions to increase the functionality of their solar plants.

Another benefit of EliosField, is with the CAT S62 Pro and our EliosField App, you can work on the detected anomalies in field directly from the app. Using the built-in GPS and thermal camera you can easily go to the desired panel, check the anomaly in person, create a ticket for the problem and upload all changes to the portal.

Furthermore, EliosField is a monthly subscription, making it extremely easy and affordable. To find out more in depth about the packages we offer, you can easily head over to our website and/or chat with a customer service representative.

PES: We were wondering about your geographical reach and if you have plans to expand into other regions?

MM: At the moment we work mostly in Europe, but we have started working in South Africa and Southeast Asia in the past year. We plan to go global with the introduction of EliosField.

PES: So, to conclude, where do you see Wesii in 5 years' time?

MM: Since I founded the company we have grown so much and we have big plans to continue to do so. In 5 years, we will have completed our transition from a service-based company to products based and operating in other renewable industries, in particular in the Wind Industry.

PES: Thank you for your time today, it was a pleasure speaking with you.

MM: Thanks to you as well. The pleasure was all mine.