solytic

Driving the energy transition with smart monitoring: How start-up Solytic is making solar energy more efficient with Azure

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Customer
Solytic GmbH

Products and Services
Azure
FastTrack for Azure
Power BI

Industry
Energy

Organization Size
Small (1 - 49 employees)

Country
Germany

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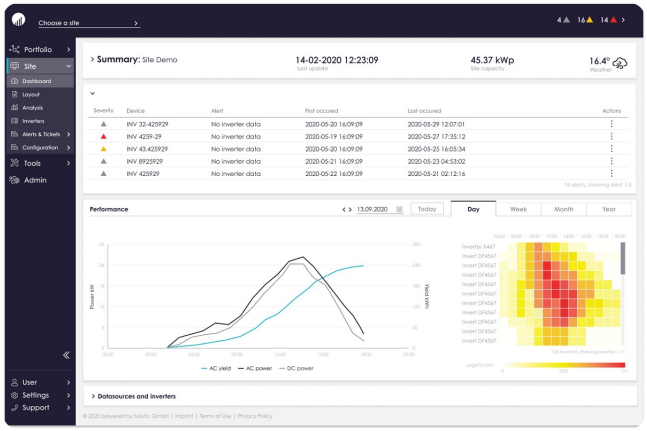
Lower costs, improved performance, greater photovoltaic efficiency: solar plant operators have a lot to gain from Solytic's monitoring and analytics software—and they can help counter climate change along the way. The Azure cloud platform provides plenty of room for growth here—both for new customers and for increasing volumes of data. With its start-up program "Microsoft for Startups", Microsoft has supported Solytic since its first kilowatt hour.

The challenge: Data quantities that far exceed local storage and processing capacity

Climate change is one of the greatest challenges of our time, with the targets set by the Paris Agreement aimed at curbing its progression. Sustainable energy sources—used to their full potential—are instrumental in meeting these goals. Photovoltaics (PV) are a key technology in the energy transition; it is therefore essential that solar installations be configured to work as efficiently as possible. But this is not always the case: if a panel is chipped by a stone, for example, the damage might not even be visible to the operator. How will they know there is an issue? What about the impact of dirt on a plant's efficiency? Is a neighbor's tree perhaps casting a shadow over an installation, reducing how much solar radiation it receives and therefore yield? Are there other services that might make the PV system more profitable? Think battery, finance, insurance. Many questions, one answer: smart monitoring.

This is where start-up Solytic (https://www.solytic.com/about-us/) comes in: its software monitors installations, collects their data, and derives insights that then serve as the basis for decision-making. "Modules don't have to be visibly damaged to underperform. We identify the reason behind drops in performance," says Konrad Perényi, managing director and one of the four founders of Solytic. If an

installation is not working as efficiently as it could be, the solution examines data not only from the installation in question but also from its surroundings—weather data, for example, or data from a comparable PV plant in the vicinity. This is then evaluated by means of smart monitoring and analyses. In the case of smaller PV systems, the data is consolidated for the installation as a whole; for larger systems, the analysis can focus on individual modules.



Today, just three-and-a-half years since it was founded, Solytic monitors over 130,000 photovoltaic plants across 60 countries—and counting. By comparison, there are around two million PV systems in Germany at present. The volumes of data generated by round-the-clock monitoring are gigantic: Solytic receives roughly 3,000 readings from its customers every single second. An earlier beta phase involving the company's first customers had already shown that a locally hosted solution was not an option. "Managing all of this on-premises would have become impossible by now. Technologies that require manual maintenance and monitoring reached their limits a long time ago," says Steffen Mangold, founder and CTO at Solytic, describing the situation that led to deciding on a cloud solution. More specifically: before moving to the cloud, the start-up was having to turn down customers as it was simply unable to handle such large volumes of data.

The solution: Smart, unlimited, and flexible monitoring with Azure

"The Azure (https://azure.microsoft.com/en-us/) cloud platform provides us with the fastest way to create scalability while letting the developers focus on development. Thanks to the integrated functionalities, we can ensure the provision, maintenance, and availability of the platform as well as data security—all with a minimum of personnel," says Mangold. Everything Solytic offers today runs over Azure. The developers can therefore concentrate entirely on software development and innovation.

What makes Solytic stand out is its hardware-agnostic strategy. The software works with any hardware, regardless of manufacturer. This means Solytic customers don't have to invest in new hardware—an economic advantage and of course a huge ecological benefit as well. "For us, the software really is the heart and soul of Solytic," says Perényi. "That's why our top priority is to see that it works smoothly and to continuously optimize it. Azure plays a vital role here." Migration into the cloud also has its advantages for the approximately 20 percent of customers based abroad: the precise location of PV installations is irrelevant to Solytic—as long as there is an internet connection, the company can monitor and analyze the systems from Germany.

"The products themselves are a big plus, but more than anything else, the support we've had from Microsoft has really helped us grow," Perényi says. As a participant in the Microsoft for Startups (https://startups.microsoft.com/en-us/) program, Solytic was able to trial all kinds of technologies in the Azure environment at the start of its journey. Microsoft provided licenses for Office, developer tools, and analytics tools such as Power BI (https://powerbi.microsoft.com/en-us/) . "This freedom meant we could jump in really quickly with a large team while remaining cost neutral," Mangold recalls. "Microsoft supported us from the initial idea right through to market entry—in other words, until the technology was sufficiently developed for us to look after our first customers and prove ourselves as a start-up."

Microsoft still advises the start-up today when it comes to fixing problems, exploiting the potential for scalability, and building a technological infrastructure. "The start-up program helped us mature beyond our initial phase, and now the FastTrack programs (https://www.microsoft.com/en-us/fasttrack) are helping us flourish," Mangold explains. This acted as the springboard for Solytic's now fully-fledged, three-stage process model comprising monitoring, analytics, and marketplace: The PV installation first sends data to the cloud, where it is visualized by Solytic. This is the monitoring element. In stage two, the subsequent analysis pinpoints the installation's problems and potential. Stage three, the marketplace, combines problems and potential with concrete solution proposals for the customer. The entire process is driven and optimized by data. "This means our customers can get the most out of their systems while keeping costs down. Their installations will deliver maximum performance throughout their entire operational life, which typically lasts 25 years," Perényi says.

Solytic wants to integrate AI and machine learning even more in the future, eventually taking an automated approach to their monitoring, analysis, and marketplace services based on algorithms. "We want to recognize causes and prevent deviations from the optimum with even greater accuracy. Our goal is to proactively warn users before any faults become critical and returns are lost," Mangold says. As a

future milestone, the founders have set out to equip one million installations with the Solytic software over the next three years. This will increase the efficiency and profitability of PV systems on the one hand, while helping to generate more green energy and thus accelerate the energy transition on the other.

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