

INTERNET-BASED SYSTEM MONITORING VIA WLAN

Demands on monitoring solutions for photovoltaic systems will continue to grow in the coming years. This is equally true for smaller systems, with operators looking to optimise self-consumption and see the relevant data presented in an engaging format. Internet-based solutions are becoming an ever more attractive option, particularly if the inverter can be connected directly to the internet via WLAN.

Changing times - from external dataloggers to online solutions

Two fundamental steps are involved in monitoring a system: storing and then evaluating data. In the past it was usually the case that the data would be recorded by an external datalogger and subsequently evaluated on a computer using analysis software. The most important data could be read from an external display or directly from the inverter. This often meant a large outlay in time and effort to install external components, while at the same time having to tolerate limited visualisation options. Furthermore, the data was only available locally. System monitoring will look completely different in the future. Inverters are becoming progressively more communicative, with local data storage and evaluation being increasingly replaced by internet-based solutions that bring a range of advantages in their wake.

What are the benefits of an internet-based system monitoring package?

By storing and analysing system data through an online portal, the customer can access the data from any device with an internet connection - not just a local PC. Whether on your PC at work, on your smartphone while out on the road or on your tablet while relaxing at home, PV system performance can be viewed from anywhere. The data can be accessed in one of two ways: via the online portal through an internet browser or through special apps, such as those developed for smartphones and tablets with the Android or iOS operating system. These tools allow users to check their system quickly and easily from anywhere in the world.

Presenting the system data in such an easy and engaging manner meets another customer need: that of not wanting to be overwhelmed by figures, but to obtain a clear overview of how the system is operating quickly and without any fuss. Online solutions also dispense with the burden of additional hardware costs (e.g. for an external display). Data visualisation for a public audience, such as in a company's reception area, is realised in a much more professional and timely manner by using web-based tools. Innovative providers already offer special web applications to visualise systems on flatscreens and display the system data in an extremely attractive format.

Data evaluation on the server also allows system yield to be compared against weather data from a database or against other systems in the region. If yield fails to meet expectations, a message can be sent to the system operator immediately to prevent yield losses. A connection to the inverter manufacturer's online portal facilitates technical support from the manufacturer by granting access to a faulty system at the click of a mouse, allowing troubleshooting and repair measures to be performed without delay. Data backup is yet another benefit of an online portal. This is carried out by the portal operator, thus saving customers time and money while securely managing their data.

WLAN – the easiest route to the internet

Using these internet-based solutions requires the inverter to have an internet connection. As a result, a growing number of inverters are being fitted with interfaces. Several manufacturers already equip their inverters with an Ethernet interface to provide a direct connection to the internet. This approach dispenses with the need for additional components to log the data and transfer it to the internet, again saving time and money. Especially attractive in this respect is a direct wireless connection between the inverter and the internet, as this cuts the time and effort required for installation even further. Less cabling lends the inverter a particularly professional appearance. The ideal solution here is a WLAN interface in the inverter that provides a straightforward internet connection - after all, there is a reason why WLAN is also the current standard for wireless internet connections.



SHIFTING THE LIMITS

The advantages of WLAN are obvious. It offers a good range, quick data transfer rates and a high level of security. Furthermore it has been designed for multipoint connections (unlike Bluetooth) and is therefore ideal for an internet connection. Unlike WLAN, devices with a Bluetooth interface require additional hardware to connect to the internet. A further strength of WLAN is its ability to display web pages, meaning that an attractive inverter web interface can also be accessed wirelessly by integrating a web server in the inverter. Current system data and settings can be clearly displayed on such an interface.

As WLAN is intended for IP-based data transfer, it is not only perfect for wireless internet connections but for communicating using IP-based protocols as well. These will become increasingly prevalent in the photovoltaics sector in future and can be implemented by a simple software update, provided an Ethernet or WLAN connection is available. A future-proof configuration for the system operator is the result. Examples of these protocols include IEC 61850, IEC 60870-5-104 or Modbus TCP, which are set to become more heavily used, whether for communicating with grid operators or for linking to house control systems.

Summary

Innovative technical developments continue to make system monitoring easier to use and more reliable. Internet-based solutions give operators of photovoltaic systems easy access to their system - even from mobile devices. Data is processed and displayed in a clear and engaging format. Yield losses can also be actively avoided. In addition to wired solutions using Ethernet, wireless options based on WLAN are ideal for linking systems to local networks or the internet - especially when integrated directly in the inverter. This reduces the time and effort required for installation, prevents an unsightly tangle of cables around the inverter and also cuts costs.

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