

Monitor - ISSN 1472-0221

The Newsletter for Data Acquisition and Control
Issue 308 January 2024

A Happy New Year and Kung Hei Fat Choi! In this our first issue of 2025 we're looking at monitoring renewable energy sources to evaluate their performance.

You can download Monitor as a pdf file from
<https://www.windmill.co.uk/monitor/monitor308.pdf>.



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Monitoring Renewable Energy Sources

With the global demand for sustainable energy solutions rising, hybrid renewable energy sources are gaining popularity due to their reliability and cost-effectiveness. These are systems combining two or more energy sources, like solar and wind power.

Effective monitoring systems using sensors and data analytics are essential for optimising the performance of these systems. In a recently presented conference paper, researchers described how Windmill software was used to monitor two Building-Integrated Photovoltaic (BIPV) systems at the University of Nottingham: one at the Centre for Renewable Energy (CRE) and the other at the Eco-Energy House.



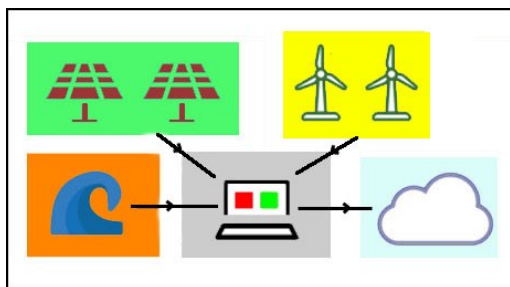
The project aimed to evaluate the performance, economic viability, and integration of these BIPV systems in different building environments. Researchers monitored the systems over 12 months to assess their energy generation, system efficiency and cost-effectiveness.

[Microlink data acquisition systems](#), connected to a PC running Windmill, measured current and voltage. Additional sensors, such as pyranometers and thermocouples, monitored environmental conditions. The system measured: Insolation (the amount of solar radiation) - horizontal and inclined planes; temperature; humidity; wind speed; wind direction; rainfall;

The [Windmill Logger software](#) collected data every 10 seconds. It was processed to one-minute averages and the [Windmill Graphics software](#) displayed a real-time graphical representation of what was happening, showing what level of electricity was being produced throughout the day and in all weathers.

Raw data was archived on two computers. Daily checks were performed to

ensure system functionality, with energy meter readings taken weekly. The project showcases different design approaches for BIPV systems, with one system (E-EH) fully integrated into the roof structure, and the other (CRE) designed as a retrofitted facade, providing valuable insights into the pros and cons of different BIPV configurations.



The researchers monitored many hybrid renewable energy systems highlighting the growing necessity of advanced monitoring systems in hybrid renewable energy systems.

More Information

For more information on using Windmill to monitor energy systems, contact sales@windmill.co.uk. Windmill works with the Microlink USB, Ethernet and Internet modules, plus most RS232, RS485 and Modbus devices.

Source: Kaneva et al. 2024. "An Overview of Monitoring Systems, Methods, and Technologies for Hybrid Renewable Energy Sources" [5th International Conference on Communications, Information, Electronic and Energy Systems \(CIEES\)](#), no. 1: 302-324.

Windmill for RS232, RS485 and Modbus devices is free to subscribers. Email monitor@windmillsoft.com for your copy.

Your DAQ questions answered: Your DAQ questions answered: Will it work with Windows 11?

Question

"How to install the usb driver under Windows 11?"

Answer

With Microsoft ceasing support for Windows 10, we're getting more queries about compatibility with Windows 11. To use the [Microlink USB data acquisition devices](#) and others, then once you've upgraded Windows you need to disable Windows 11 driver enforcement before installing your USB drivers. We explain how to do this at <https://www.windmill.co.uk/usb-device-windows11.html>.

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