

Press release

BayWa r.e., Ampt and Fraunhofer ICT complete European first-of-its kind PV, Wind and Battery Storage system combination

Munich, Germany, and Fort Collins, Colorado, 27 February 2024: Global renewable energy company BayWa r.e. and Ampt, the #1 DC optimizer company for large-scale photovoltaic (PV) systems, announce the successful deployment of a unique combination of wind and solar generation together with battery storage within the microgrid at the Fraunhofer Institute for Chemical Technology ICT campus in Pfinztal, Germany.

BayWa r.e. installed three new rooftop arrays and one new ground-mounted system to expand renewable energy utilization onsite. These PV systems with a total capacity of 690 kWp are now connected to the power grid without their own inverters, but via an existing 2 MW wind turbine. A 10 MWh flow battery energy storage system completes the triad.

Technically highly sophisticated, it represents a progressive plant combination of wind and solar energy including battery storage, which is unique in Europe in this form.

Leveraging Ampt String Optimizers, each of the different technologies was integrated through a shared DC bus - commonly referred to as a “DC-coupled” architecture. In this way, the generation variability across the PV systems can be managed and the different systems united at a high and fixed voltage to increase system efficiency.

“We are delighted to bring this milestone project to life. Ampt’s technology simplified a technically very complex project,” said Andrea Grotzke, Global Director of Energy Solutions at BayWa r.e. *“The way we have added solar to the existing wind energy and battery storage system is unique, and in successfully completing this project we were able to further improve our own expertise and capabilities. We are pleased with the result of this innovative power solution symbiosis and our ability to meet our customer’s individual requirements.”*

The main campus of the Fraunhofer Institute ICT has over 100 laboratories, as well as several pilot plants and three test centres on a 20-hectare site. This project will make a valuable contribution to their increasingly climate-neutral operation.

Ampt String Optimizers are DC/DC converters that perform maximum power point tracking (MPPT) and recover energy losses due to voltage and technology differences. Through individual string MPPT, Ampt optimizers mitigate the energy losses caused by shade from surrounding buildings on the Fraunhofer ICT campus. The optimizers are programmable and provide string-level data, which enhances visibility of the system functions as well as operation and maintenance capabilities.

“Combining both rooftop and ground-mounted solar in seven different orientations and two module sizes in one common microgrid with wind power and batteries is a significant challenge. This project is a testament to the capabilities of our industry-leading power conversion technology to simplify control of the diverse systems spread across a site,” said Levent Gun, CEO, Ampt. *“We look forward to expanding our relationship with BayWa r.e. and continuing to deploy our technology to solve the challenges of our customers in solar and energy storage applications.”*

Dr. Frank Henning, Institute Director of Fraunhofer ICT, added: *“It was important for us to add solar to the microgrid that powers our campus, to bring additional flexibility and ensure*

higher utilization of our system. Sustainability plays a crucial role for Fraunhofer ICT, and by combining the advantages of wind, solar and storage, we are ensured to meet our sustainability goals and operate in a responsible manner.”

A video about this flagship project can be found [here](#).

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BayWa r.e. AG (BayWa r.e.):

At BayWa r.e. we r.e.think energy: how it is produced, stored and can be best used to enable the global renewable energy transition that is essential to the future of our planet.

We are a leading global developer, service supplier, distributor and solutions provider and have brought over 6 GW of energy online and manage over 10 GW of assets. We are also an Independent Power Producer with an expanding energy trading business.

BayWa r.e. works with businesses worldwide to provide tailored renewable solutions. Through our climate contribution approach, we are strategically investing in internal and external initiatives that adhere to climate action best practices, align with the Paris Agreement, and are enabling us to make significant progress in our own sustainability journey. Every day, we are working hard to actively shape the future of energy in a diverse, equitable and inclusive workplace.

Our shareholders are BayWa AG, a €27,1 billion global business, and Energy Infrastructure Partners, a leader in energy infrastructure investment.

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About Ampt:

Ampt delivers innovative power conversion and communication technology that are used to lower the cost and improve performance of new PV systems, repower existing systems, and enable lower-cost DC-coupled storage. With installations and experience serving markets around the world, Ampt is the number one DC optimizer company for large-scale systems. The company is headquartered in Fort Collins, Colorado, and has sales and support locations in North America, Europe, and Japan as well as representation in Asia, Australia, and the Middle East. For more information, visit www.ampt.com and follow Ampt on [LinkedIn](#).

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Fraunhofer Institute for Chemical Technology ICT:

The use of wind energy, in combination with photovoltaics and our 10 MWh Redox-Flow-Battery allows us to operate our campus with over 100 laboratories, pilot plants and test centres on 20 hectares of land in Pfinztal near Karlsruhe in an increasingly climate-neutral manner. Our research focus enables us to combine research and development work in this sector with large-scale demonstrators on our campus.

In our research focus, we attach great importance to the scalability of processes and the transfer of research results from laboratory scale to pilot plant scale through to pre-production applications.

We currently employ around 540 people. Our customers and project partners are companies in the chemical industry and chemical process engineering, automotive manufacturers and their suppliers, the plastics processing industry, material manufacturers, recycling companies, companies in the energy and environmental sectors, customers with safety-related issues, the construction industry and the aviation industry. We are also the only explosives research institute in Germany that covers the entire development process from laboratory scale to system level.

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