

## Portugal energy storage investment

Portugal has a goal to produce at least 80% of its electricity from renewable energy resources by 2050. Several companies are investing in the country's power infrastructure, including Powin, an Oregon-headquartered energy storage platform provider that has partnered with Galp, a leading Portuguese integrated energy group, to install battery energy storage systems (BESSs). The latest project, announced in February, is for a 5-MW/20-MWh BESS (Figure 1) in Alcoutim, Portugal. The installation would be Powin's first in Europe, and coincides with the opening of the company's new office in Madrid, Spain.

Other companies investing in energy storage in Europe include Ardian, a France-based investment house that manages or advises \$164 billion of assets in a global portfolio. Ardian in February announced, in partnership with its operating platform eNordic, a final investment decision to build the Mertaniemi battery energy storage project, a 38.5-MW BESS in Finland that will support that country's power grid. The investment comes from the Ardian Clean Energy Evergreen Fund (ACEEF), and is the fund's first for a BESS project.

The projects in Finland and Portugal will help Europe's installed energy storage capacity grow from about 11 GWh today to 75 GWh by 2030, according to data from BloombergNEF. Ardian said its project is aligned with ACEEF's strategy in Finland, which aims to acquire and aggregate wind and solar power assets to benefit from economies of scale and to better utilize the grid interconnection points by developing battery storage assets.

Portuguese officials have said the Galp/Powin project is part of the country's emphasis on developing cleaner energy resources, including from solar, wind, hydro, and energy storage. REN, the country's grid operator, said renewable power generation supplied 61% of the country's electricity in 2023, up from 49% in 2022. REN officials said wind energy accounted for about 25% of the country's power generation in 2023, followed by hydropower at 23%. Solar power accounted for 7% of generation, while biomass accounted for about 6%.

"Powin's work with Galp is directly supporting Portugal's clean energy goals of generating 85% of its electricity from renewables by 2030," said Anthony Carroll, president of Powin. "The only way that we can support a renewable [energy] economy is by prioritizing storage technologies that will enable us to get the most from our renewable energy sources by storing that power for use when the grid is most strained."

Carroll told POWER, "Galp's solar power plant near Alcoutim is located in a very sunny village and is a perfect example of a solar plant that is generating excess renewable energy that we can save via Powin's batteries and deploy when it's needed most. This maximizes the energy's

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value and fortifies the local grid from potential disruptions.”

Alcoutim is a small village in Portugal’s southern region of the Algarve, where Galp operates several energy projects with a combined capacity of 144 MW across Portugal’s southernmost region. This BESS is Galp’s first move in the hybridization of its solar power portfolio, which includes about 1.5 GW of operating generation capacity. The BESS, as Carroll noted, will allow Galp to store solar energy for deployment during periods of high demand for electricity.

“This particular project with Galp is bigger than its MW impact; it is the beginning of a new partnership and is Powin’s first project in Europe following the opening of our Madrid [Spain] office,” said Jeff Waters, Powin’s CEO. “Europe is expected to deploy over 90 GWh of utility-scale battery energy storage projects by 2030, and we are well-positioned to support this demand along with the wider EMEA [Europe, Middle East, and Africa] region’s rapid energy storage growth.” Carroll said Powin will use the Madrid office “to support many more projects in Europe and the larger EMEA region. Being on the ground and in the same time zone as our customers will enable us to provide them with superior customer service.”

“As Galp keeps growing its renewable energy capacity aiming to transform its industrial base to produce green fuels and sell renewable energy to its clients, [energy] storage solutions are key to ensure a steady supply of electrons to our businesses,” said Georgios Papadimitriou, Galp’s executive director in charge of Renewables, New Business, and Innovation. “Batteries also add to the competitiveness of our renewable energy portfolio by making solar and wind power available when they are most needed.”

Carroll said, “In addition to ramping up our work in Europe, Powin has been supporting decarbonization across the globe. In Australia, we are supporting the Waratah Super Battery, which will reside at the site of the old Munmorah Power Station, a 1,400-MW coal-fired power plant serving Sydney, Australia, and beyond, ultimately providing reliable power for more than 8 million people. The project will ensure that nearby Australian cities will have access to more energy from existing generators while reducing the risk of power disruptions and replacing the retiring coal-fired plant with cleaner energy.”

Carroll said Powin last year “signed a memorandum of understanding with Suntech and Rept Battero for an 86-MWh clean energy project in Indonesia with Vena Energy.” Powin also is providing energy storage services for the Sunstreams Complex, which Carroll said “is a large PV-plus-storage project located near Palo Verde Nuclear Plant” in Arizona. Carroll said, “Powin is supplying 728 MW/3,010 MWh of energy, which consists of three projects—Sunstreams 3: 215 MW/955 MWh AC; Sunstreams 4: 300 MW/1,200 MWh AC; and Serrano: 213 MW/855 MWh AC.”

Ardian’s announcement of its BESS project in Finland comes on the heels of the group’s purchase of two Finnish wind farms last year with more than 27 MW of combined generation capacity. The BESS installation is a joint venture between Ardian’s ACEEF and Lappeenranta Energia, a Finnish



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municipal energy company. The Mertaniemi project is expected to come online in the spring of 2025 and is located near the Mertaniemi power plant in Lappeenranta.

Contact us for free full report

Web: <https://kary.com.pl/contact-us/>

Email: [energystorage2000@gmail.com](mailto:energystorage2000@gmail.com)

WhatsApp: 8613816583346

