

Vestas and EDPR install wind turbine-coupled hybrid demonstrator

A wind and solar photovoltaic hybrid demonstrator has recently been installed at an EDPR wind farm in Cádiz, Spain. The initiative is part of EDPR's R&D strategy and Vestas' increasing efforts to offer sustainable energy solutions that meet customers' increasing need to balance energy supply with grid demand.

Madrid, 27nd March 2018. EDP Renewables (EDPR), a global leader in the renewable energy sector and one of the world's largest wind energy producers, and Vestas, the global leader in wind energy, have built a turbine-coupled hybrid demonstrator with solar at the Janda III wind farm in Cádiz. The hybrid demonstrator is a combination of an existing Vestas V112-3.0 MW turbine and 372 kW of a new solar photovoltaic (PV). The PV power is fed to the turbine as direct current, which is then converted and transformed by the turbine's ad-hoc modified power conversion system in order to export the power to the grid. By combining wind and PV, the demonstrator offers increased capacity factor and annual energy production.

The demonstrator explores a way to combine sustainable energy sources to meet the energy industry's increased need for sustainable energy production and better integration with energy grids. The demonstrator is the result of a close collaboration between Vestas and EDPR with EDPR owning both turbine and PV array. For the project, Vestas has upgraded the technical specifications of the turbine's controllers, converters and design as well as installed new hardware. By connecting wind and solar through the turbine's power electronics and utilising its full-scale converter, the number of converters is reduced, contributing to lower equipment costs and thus cost of energy.

Bo Svoldgaard, Vestas' Senior Vice President, Innovation and Concepts adds: *"This project demonstrates the mutual benefits of collaboration between Vestas and EDPR and how wind and solar through their complementarity bring cost of energy further down and can deliver stable energy production. The learnings will accelerate the execution on our strategy of integrating and combining renewable power as the market looks to absorb more renewable energy in the future."*

"The development and running of this demonstrator is an interesting opportunity to test some of our hypotheses on the hybrid power plants of the future. Furthermore, it gives us an opportunity to explore wind and solar technology synergies in close collaboration with Vestas", says Bautista Rodriguez, Technical Director at EDPR.

"This project, promoted by EDPR, fits in perfectly with our R&D strategy. Research under the framework of sustainable energy has always been part of the company's DNA", adds Bautista Rodriguez.



About EDP Renewables (EDPR)

EDP Renewables (Euronext: EDPR) is a global leader in the renewable energy sector and the world's fourth-largest wind energy producer. With a sound development pipeline, first class assets and market-leading operating capacity, EDPR has undergone exceptional development in recent years and is currently present in 12 markets (Belgium, Brazil, Canada, France, Italy, Mexico, Poland, Portugal, Romania, Spain, the UK and the US). Energias de Portugal, S.A. ("EDP"), the principal shareholder of EDPR, is a global energy company and a leader in value creation, innovation and sustainability. EDP has featured on the Dow Jones Sustainability Index for ten consecutive years.

For further information, please visit www.edpr.com.

About Vestas

Vestas is the energy industry's global partner on sustainable energy solutions. We design, manufacture, install, and service wind turbines across the globe, and with 90 GW of wind turbines in 77 countries, we have installed more wind power than anyone else. Through our industry-leading smart data capabilities and unparalleled 76 GW of wind turbines under service, we use data to interpret, forecast, and exploit wind resources and deliver best-in-class wind power solutions. Together with our customers, Vestas' more than 23,300 employees are bringing the world sustainable energy solutions to power a bright future.

You can learn more about Vestas by visiting www.vestas.com.

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