



PRESS RELEASE

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ENEL OPERATES WORLD'S FIRST "PLUG AND PLAY" MICRO-GRID POWERED BY SOLAR PV AND HYDROGEN-BASED STORAGE IN CHILE

- *The micro-grid comprises a 125 kWp solar PV facility combined with two energy storage systems, one based on hydrogen and the other based on lithium, for a total storage capacity exceeding 580kWh*
- *The hybrid facility, developed by Enel with the technological support of EPS (Electro Power Systems), is meeting part of the energy needs of the camp which hosts over 600 technicians working at geothermal plant Cerro Pabellón*
- *Systems like this micro-grid can supply 24 hours of green energy a day, with no need for back-up diesel generators, to potentially any location, as they can be easily moved between places and work both on-grid and off-grid*
- *This "plug and play" solution can be particularly useful to ensure energy access in remote, poorly electrified areas*

Rome, Calama, May 31st, 2017 – Enel, through its subsidiary Enel Green Power Chile Ltda. ("EGPC") has started operations at the world's first 100% emission-free "plug-and-play" commercial-sized micro-grid powered by solar PV as well as hydrogen-based and lithium-based storage. The facility is currently meeting part of the energy needs of the camp that hosts over 600 technicians working at the company's geothermal plant Cerro Pabellón, located in Ollagüe in the Antofagasta region.

Antonio Cammisecra, Head of Enel's Global Renewable Energies Division Enel Green Power commented: *"This groundbreaking project shows that it is possible to build fully renewables-powered micro-grids capable of delivering efficient, zero-emission energy without interruptions. With this project, we have achieved a new milestone in our R&D work with the aim of creating systems that facilitate energy access to isolated areas, in line with our commitment to the UN Sustainable Development Goal number 7, ensuring universal access to affordable and clean energy."*

The micro-grid is a pioneering innovation project developed by Enel with the technical support of EPS (Electro Power Systems), technology pioneer in energy storage systems and micro-grids. The facility relies on a Hybrid Energy Storage System (HyESS) which comprises a 125 kWp solar PV installation backed by a 450kWh hydrogen storage system and a 132kWh lithium storage system. The combination of the solar PV plant with the overall storage facility, whose capacity exceeds 580 kWh, turns intermittent solar power into a steady energy source, boosting the micro-grid's flexibility and stability. On top of that, an innovative micro-grid controller optimises the electricity flows produced by the PV modules making sure that such flows are efficiently shared between the two storage systems in order to guarantee



continuous availability of the power supply. As a result, the micro-grid is capable of supplying green energy 24 hours a day with no need for support of any diesel generator as part of its normal operation, unlike most plants of this type.

The facility can work both on-grid and off-grid: it can be connected to a grid, like it is now supporting the network delivering electricity to the Cerro Pabellón camp, or operate autonomously. In addition, it offers a “plug-and-play” solution as its components can be easily removed, re-assembled and installed in a new location, which is particularly helpful in remote, poorly electrified areas.

Enel through EGPC currently operates in Chile renewable plants with a combined installed capacity of more than 1.1 GW, of which 564 MW comes from wind energy, 492 MW from solar PV, and 92 MW from hydropower, which makes Enel the biggest renewable player in the country. In addition, EGPC has just started producing energy from the 48 MW¹ Cerro Pabellón facility, which is the first geothermal plant in South America and the world’s first high enthalpy, utility-scale geothermal plant to be built at such a high altitude (4,500 metres above sea level). The Chilean International Renewable Energy Congress in 2015 awarded the prizes “Renewable Project of the Year” and “Innovation”, respectively, to Cerro Pabellón and to another groundbreaking Enel’s project, which is the Ollague off-grid hybrid facility integrating solar and wind power with battery storage.

Enel Green Power, the Renewable Energies division of Enel Group, is dedicated to the development and operation of renewables across the world, with a presence in Europe, the Americas, Asia, Africa and Oceania. Enel Green Power is a global leader in the green energy sector with a managed capacity of 38 GW across a generation mix that includes wind, solar, geothermal, biomass and hydropower, and is at the forefront of integrating innovative technologies like storage systems into renewables power plants.

¹ Gross capacity.