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Daikin Selected for Automated Demand Response Project in Portugal

Helping to Stabilize Supply and Demand of Large-Scale Renewable Energy

Daikin Industries, Ltd., was recently selected to be a consignee of a verification project for Automated Demand Response (ADR)*¹ technology that the New Energy and Industrial Technology Development Organization (NEDO) is implementing in Lisbon, Portugal. The verification project will be performed for a three-year period from November 2016 to December 2019.

From the viewpoint of mitigating the effects of global warming, the European Commission established the target of having renewable energy account for approximately 20% of the energy consumption for the entire EU by the year 2020. Most notably, Portugal has been actively promoting the introduction of renewable energy, including wind energy and hydroelectric power generation, and aims to increase its share of renewable energy to 31% of total energy consumption.

However, because renewable energy is subject to changes in the natural environment, such as weather, the supply of electricity is unstable, and this has become a problem for expanding future use of renewables. To resolve this issue, this verification project aims to stabilize the use of renewable energy by building a system to meet the peak use of air conditioning, which occupies approximately 40 percent of electrical power consumption, and adjust the balance in the supply and demand of electricity, even in the summer season when demand for electricity increases.

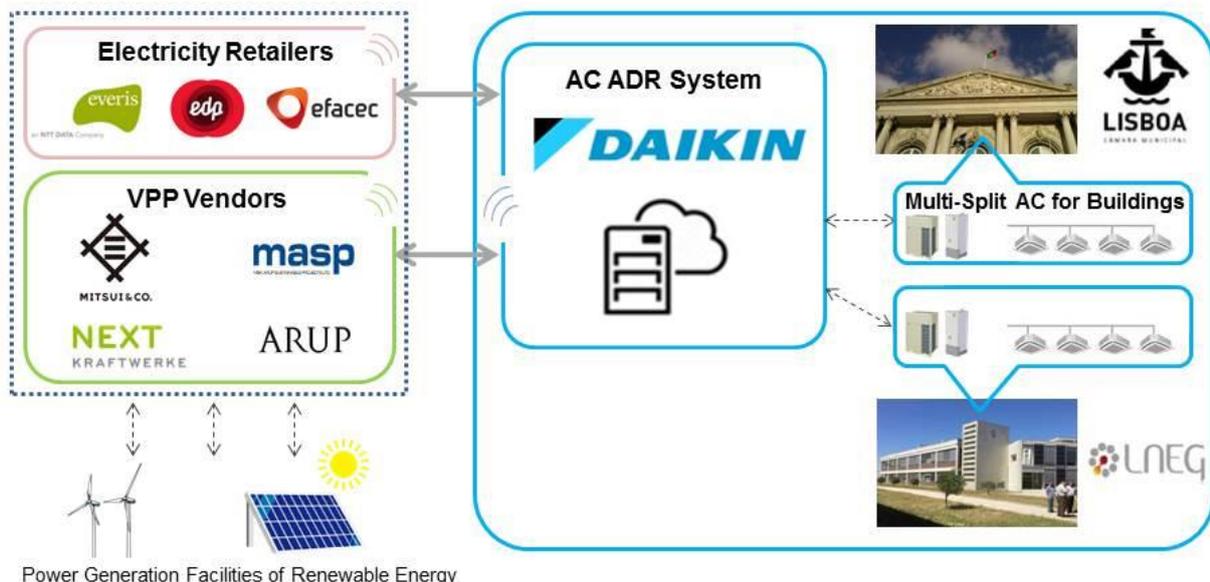
Based on actual verification in Portugal, Daikin will further enhance its capabilities as an air conditioning manufacturer to offer solutions proposals that precisely match the actual conditions of each country as it continues to promote renewable energy in the region of Europe.

[Project Outline]

In this verification project, VRV multi-split air conditioners featuring a demand response that automatically controls the upper limit of electric power consumption according to the amount of supplied electricity will first be installed in several buildings, including city hall and research institutes in Lisbon. These air conditioners will be connected to a control system that predicts electricity demand by utilizing such information as the preceding day’s weather and the daily use conditions of air conditioners. This information will be used to automatically adjust the amount of consumption, and an air conditioning automated demand response (ADR) system will be constructed.

Subsequently, local electrical power retailers together with virtual power plant (VPP)*² vendors managing groups of multiple small-to-medium power generation facilities of renewable energy will adjust the supply of electricity. Verification of stable operation of air conditioning equipment by renewable energy will be performed through the cooperation of these vendors.

Conceptual Drawing of Project



[Background of Project]

Portugal is actively promoting the introduction of renewable energy such as wind energy and hydroelectric power generation, and it has become quite prominent, even in Europe, as a country introducing renewables on a large scale. In May of this year, renewables provided all of the electrical power in the country for 107 consecutive hours. However, even with a further increase in the ratio of renewable energy in the future, there are still concerns that renewables cannot sufficiently supply electricity during peak demand for electrical power.

Based on this, NEDO decided to implement the verification project for the Automated Demand Response technology that contributes to the stabilization of electrical power supply in Lisbon, Portugal, accompanying Portugal's large-scale introduction of renewable energy.

In being selected as a consignee for this verification project, Daikin was recognized for its extensive sales results and after sales service system for air conditioning equipment in Europe. The company has received high acclaim for its experience verifying its ADR function in Japan after the Great East Japan Earthquake in March 2011 and the Daikin Air Conditioning Network Service System, a system that monitors and controls its VRV multi-split air conditioners for buildings.

Conventional manual demand response had the supplier send users a notification when there was insufficient electricity and controlled energy use, but there was no means to definitively adjust supply and demand of electricity, and the response was left to the user. In the ADR project that is undergoing verification, the upper level of electrical power consumption is controlled automatically, and the balance between supply and demand is adjusted. In this way, stabilization of supply and demand of electrical power can be expected even for renewable energy.

Notes:

- *1. Automated Demand Response (ADR) : adjusts the consumption of electrical power consumption by automatic operation management of the demand that household equipment have for electricity. (Example: air conditioning equipment)
- *2. Virtual power plant (VPP) : is a virtual power plant that functions like an actual power generation plant by monitoring and performing integrity control of small-to-medium power generation facilities for renewable energy.