



Repsol develops smart energy management system that improves customer efficiency

- Repsol's smart energy management system could reduce energy consumption in climate control systems by up to 20% and up to 40% in cold chain logistics.
- This technology, developed at the Repsol Technology Lab, will be tested in real-world commercial and industrial scenarios through agreements with various industry-leading companies.
- This technological product marks an advance in Repsol's customer-centered strategy and offers a unique and differential value proposal that is tailored to customer needs and contributes more efficient energy use.
- Energy efficiency is one of the pillars on which the company has based its strategy to achieve zero net emissions by 2050.

Repsol has developed an energy management system (EMS) that uses artificial intelligence algorithms and advanced optimization to manage energy efficiently. The device will act on the energy use in the climate control and cold chain logistics processes of commercial and industrial customers, lowering energy consumption while also reducing CO₂ emissions. This initiative is one of many launched by the multi-energy company in its effort to achieve zero net emissions by 2050.

In preliminary stages of development carried out at the Repsol Technology Lab's microgrid laboratory, the EMS has shown savings of up to 20% of power consumed by climate control systems, rising to 40% in cold chain logistics applications.

A solution adapted to each industrial sector

The smart management system will now be tested in real-world scenarios through agreements with various industry-leading partners in different sectors. Each partner presents their own specific characteristics which, together, will help complete development in a diverse variety of environments.

The first large sports facility to test out the EMS will be the San Mamés Stadium, where Athletic Club de Bilbao football team plays their home games. Saving energy has always been a priority for the club and it was one of the premises during the construction of the stadium, which first opened in 2013 and in 2016 became the first European football stadium to receive the prestigious LEED Gold Certification for Sustainable Buildings. Now, with Repsol's EMS, it can continue improving the efficiency of its climate control systems.





Additionally, the García Carrión Group, a family business with 130 years of history and present in over 150 countries, will test the EMS at its plant in Almería, in southern Spain. The 15,000-square-meter facility will implement the energy management system in all the cold chain processes involved in the production and packaging of juices, creams, and 100% natural soups.

Thanks to the agreement signed with CBRE, a top-ranked international consulting and real estate services firm, installation of the EMS at the De la Vega Business Park will optimize the climate control systems at the 23,000-square-meter office complex, comprised of four buildings located in the suburb of Alcobendas just outside Madrid. Built in 2000, the business park has also received the LEED Gold Certification following recent renovations.

Lastly, the Nueva Pescanova Group will use the EMS to manage the temperature of the water at its aquaculture plant for raising young turbot in the coastal town of Mougás in northwestern Spain. With its own commitment to sustainability, the Nueva Pescanova Group is working to incorporate technology and processes to reach optimal efficiency in its use of natural resources, materials, and energy.

Artificial intelligence at the service of energy efficiency

The EMS uses technology developed by Repsol and is based on artificial intelligence algorithms, physical asset models, and advanced optimization. It involves a number of parameters – such as required power, usage patterns, electricity price at any given time, and weather forecasts – and analyzes the behavior of different pieces of equipment in real time to predict user energy demand. The system then uses this data to determine the optimal conditions for each device and acts automatically to deliver energy savings. In coming phases, energy storage systems, distributed photovoltaic power generation, and electric vehicle charging may be integrated into the smart energy management system.

Repsol is also developing a device that aggregates EMS systems so they can operate as a single unit on the electricity market. This way, the system known as virtual asset management (VAM) will respond to the market by supplying energy or reducing customer demand, all while respecting each consumer's energy needs. This system will provide the grid with stability and flexibility, balancing the intermittent nature of renewable power generation and leading to greater savings on customers' energy bills. All of these technological developments will also be eventually made available to residential customers.

Repsol has an ambitious digitalization program that began two years ago and is currently transforming the company. At present, this program includes over 250 initiatives, of which approximately 100 have a direct impact on sustainability.

