



ABOUT THE COMPANY

Telefónica, S.A. is an integrated and diversified telecommunications group operating in Europe and Latin America. The Company's services and products include mobile business, fixed-line telephony business and digital services. Its segments include Telefónica Spain, Telefónica Brazil, Telefónica Germany, Telefónica United Kingdom and Telefónica Hispanoamerica (formed by the Company's operators in Argentina, Chile, Peru, Colombia, Mexico, Venezuela and Central America, Ecuador and Uruguay). These segments are engaged in activities relating to wireline, wireless, cable, data, Internet and television (TV) businesses and other digital services in accordance with each location. It offers a range of mobile and related services and products to personal and business customers. It offers traditional fixed telecommunication services, Internet and broadband multimedia services and data and business-solutions services. It offers a range of digital services, such as Internet of Things (IoT).

www.telefonica.com

Case Summary

Location: Chile

Critical Needs:

- Upgrade off-grid sites composed of standard solar panels, batteries and diesel generators to reduce energy consumption and to keep up with evolving broadband cellular technology.

Vertiv™ Solutions:

- High Efficiency Solar Panels (265 Wp)
- NetSure™ 5100 Hybrid Controller
- Diesel generator with 1000 hours maintenance windows
- *Trellis*™ Critical Insight monitoring and control
- VRLA Fast Charge Batteries with different capacities based on the specific site and load requirements
- 800 VA Inverters
- Redesign of sites, installation and commissioning

Results:

- Reduced the OPEX of hybrid sites
- Fuel consumption decreased from 215 k EUR per year
- Diesel generator maintenance reduced from 13 services per year to 1 every 8 months
- Provided return on investment in less than 3 years
- Enhanced energy efficiency to align with wider business goals

Background

Today the demand for data is booming, and technology is advancing faster and faster to support this demand. We can see it everywhere. As IoT becomes embedded in our daily lives, an increasing amount of data and number of services is reaching us through apps and mobile networks.

According to GSMA Intelligence, the number of IoT connections will **increase more than threefold worldwide between 2017 and 2025**, reaching 25 billion. When looking specifically at Europe, a recent study conducted with support from the European Commission estimated the total number of IoT connections across the EU could **reach 6 billion by 2020**. The technology powering these advancements has had a huge impact on the telecommunications industry, as demand from 2G to 4G, and now 5G has skyrocketed in Europe.

The Situation

Telefónica, has a huge number of sites in Latin America, among which many are located in Chile. To keep up with global consumer demand, **Telefónica wanted to keep its infrastructure up to date with 3G and 4G technologies, and be also prepared for future evolution towards 5G.** It strived to reduce energy consumption from its off-grid hybrid sites which were already deployed.

Before Vertiv's solutions were implemented, diesel generators were operating most of the day. Telefónica's existing architecture was based on 2G technology requirements, and was no longer efficient with 3G and 4G. In fact, the evolution of

technology towards 3G and 4G increased power consumption, and the design of the batteries and solar panels was not enough to cover demand.

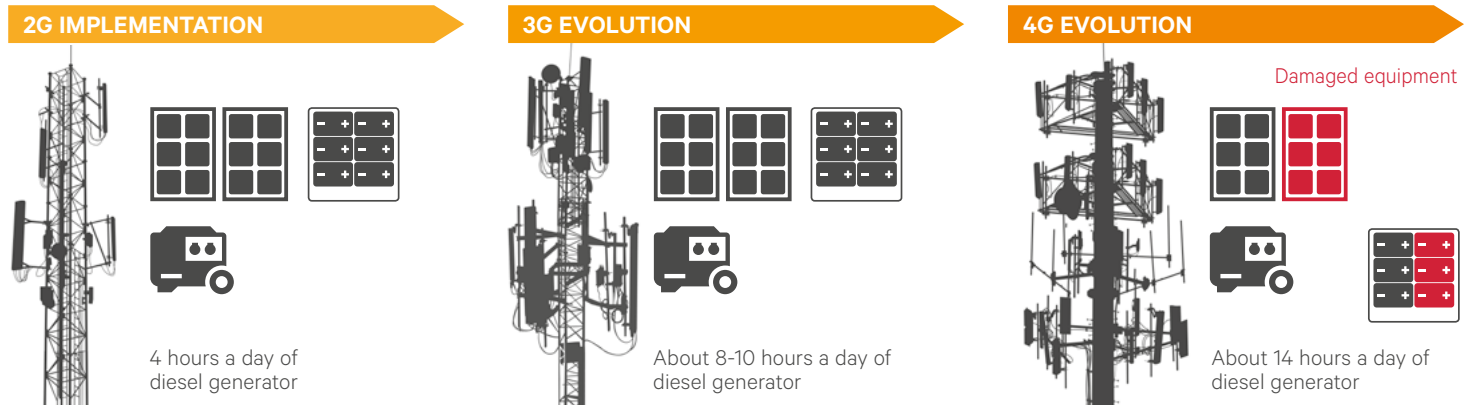


Fig. 1 Telefónica off-grid sites prior to Vertiv intervention.

The Solution

When Vertiv learned about Telefónica's challenge, **we proposed an innovative solution with a hybrid configuration.** The newly designed solution was able to reduce energy consumption and operate the diesel generator for no more than four hours per day, and 1,460 hours annually. With this new energy efficient solution, Telefónica was able to see a return on investment (ROI) in less than three years. Although the diesel generator is only used for four hours a day, the battery banks are always fully charged. The limited use of the generator also means that it lasts up to four times longer than it usually would if being used for extended periods of time. In addition, the solution was also able to meet all customer targets:

- Reduced OPEX of hybrid sites
- Decreased fuel consumption by 215 k EUR per year
- Reduced generator maintenance from 13 services per year to 1 every 8 months
- Provided ROI in less than 3 years.

The Vertiv hybrid solution is based on the design showed in figure 2 which includes solar panels, NetSure™ 5100 hybrid controllers, battery banks, diesel generators, inverters and *Trellis™ Critical Insight* (TCI) monitoring and control. In terms of services, Vertiv provided the new designs as well as the installation and commissioning of all equipment.

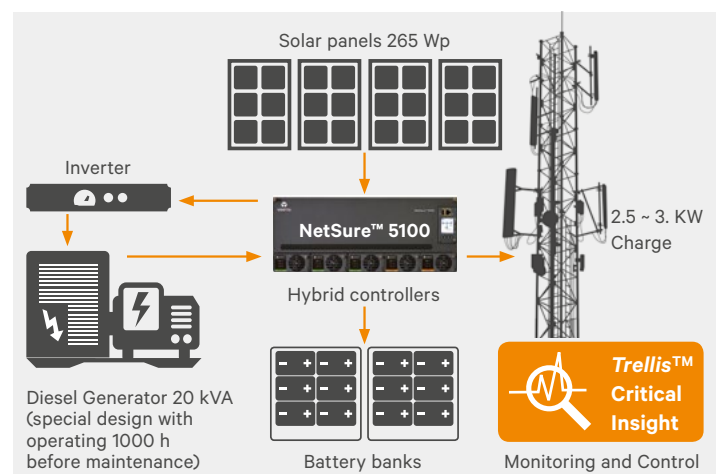


Fig. 2 Vertiv Solution.

This pilot project demonstrated how Vertiv could effectively improve energy efficiency at Telefónica's off-grid sites. After the first installation, Telefónica identified 20 off-grid sites in Chile alone that could benefit from this new hybrid solution. To date, **12 sites have been already completed, showing great results beyond initial expectations.**

Following the success of the pilot project, the scope of the initial frame agreement has expanded from Chile to cover all core and access sites in Europe and the Americas. Under the global **Energy Savings as a Service (ESaaS) agreement**, Vertiv is helping Telefónica slash their power consumption and carbon footprint.