Telefónica offices at Celta Trade Park, Funza (Colombia)

A Vertiv™ Case Study

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 Hispanoamérica (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: Funza, Cundinamarca, Colombia

Critical Needs:

- The commitment of Telefónica Group to reduce power consumption and improve impact on climate change arises
- Design and implement efficient cooling solutions for the data center at the Celta Trade Park, by procuring a reduction of energetic consumption and a return of investment in less than 3 years.
- Diminish the steady increase of expenses due to preventative and corrective maintenance during the las three (3) years.

Vertiv™ Solutions:

- Super Saver System which is a solution designed and patented by Vertiv that integrates the Chiller, handling units, hall confinement as well as a special software focused on savings and the reduction of energy consumption.
- 12 Handling Units
- Ring Topology Chiller of the Liebert® FB4075 family.
- Installation, commissioning and adjustment

Results:

- Savings estimated in 40% for energy consumption of the handling units.
- Harnessing of operational benefits of the chiller under the “Free Cooling” mode that allows the use of low temperatures of the savanna to accomplish the proposed savings.
- Reduction from 68 kW/h to 41 kW/h
- It yielded a return on investment in less than 3 years.
- Enhanced energy efficiency to align with wider business and technology goals
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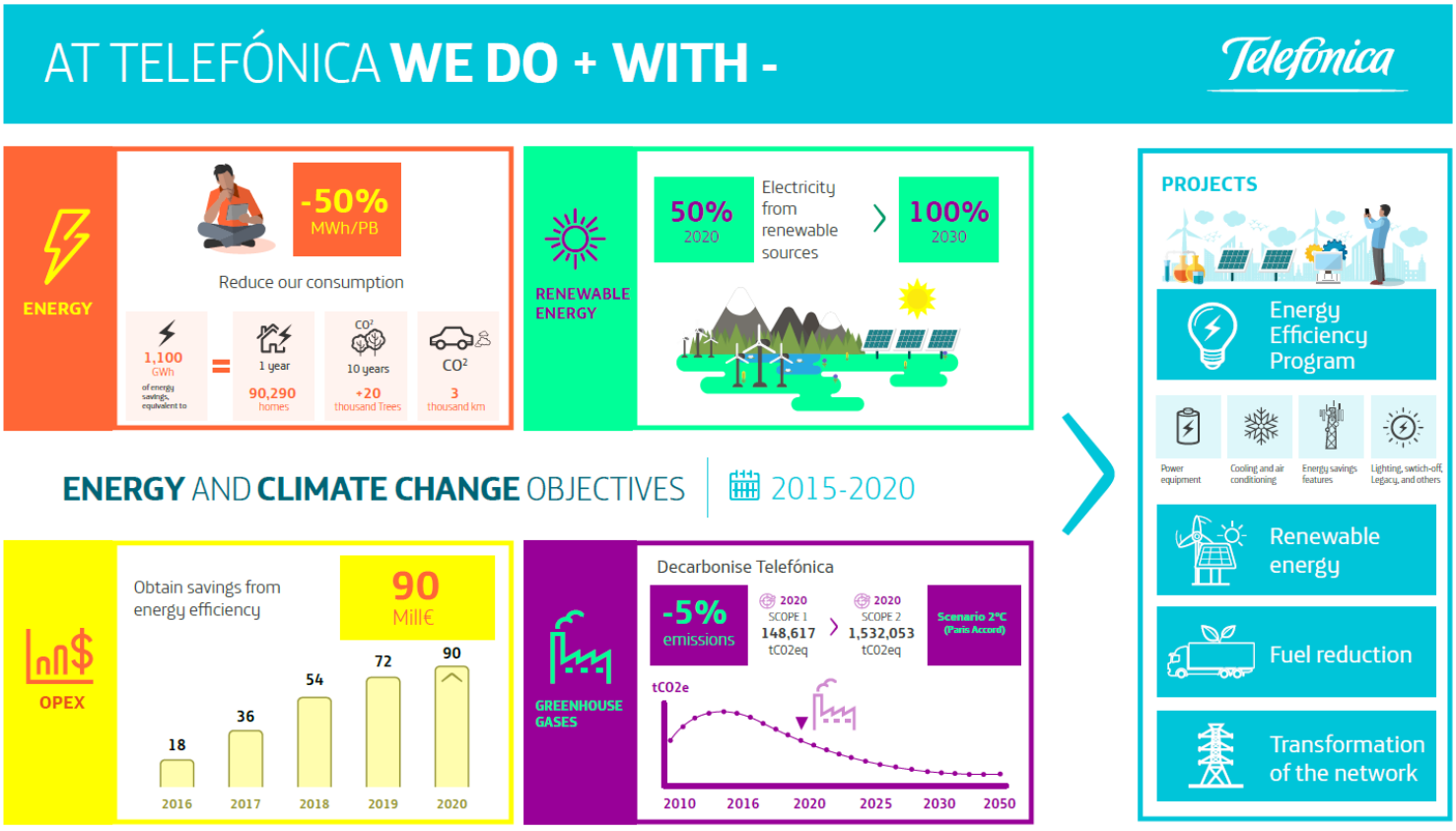
Background

Since December 2016, Telefónica announced its global targets for energy and Climate Change for 2020, in which they highlighted their stake on renewable energies as a sustainable source for the business and at the time, made a commitment that 50% of electricity used in their operations, would come from clean sources by 2020 and 100% by 2030.

During that time, Telefónica would start implementing energy efficiency projects as well as the use of renewable resources in order to report savings of up to 90 million euros by the end of the term.

At the time, José María Álvarez-Pallete, President of Telefónica, declared that “these goals perfectly match the strategy for growth and deployment of the Telefónica network: do more with less and have the most efficient and clean network in the industry in terms of energy and carbon. And we want it because this is good for our outturn account, for our clients, their families and the future generations”.



Source: *From www.telefonica.com/web/responsible-business/article/-/blogs/telefonica-commits-to-contribute-to-the-paris-agreement-with-new-energy-and-emissions-reduction-targets*

The Situation

During the months of April and September 2016, Telefónica carried out readings of energy consumption of electrical power in the refrigeration system for the main IT room of Telefónica's communications switch at Celta, by identifying increases of up to 17% KW during that period, in both CA and CC IT loads.

The cooling system was composed of two (2) coolers with an effective capacity of 244TR installed in order to work as a redundant 1+ 1 system, and within this room there are twelve (12) CRAH units of upward flow (without a raised floor). The hydraulic line was developed based on the "constant primary" topology where water flow is powered by a set of two redundant pumps. Both for the cool water that flows inwards, as for the warm water that flows backwards, there is only one set of piping with the risk of not having the chance to isolate the system through valves. No part of the system had communicated control systems, nor for saving energy. On the other hand, the racks system was posing many "thermal short circuits" in which cool air comes back to the CRAH without having to go through the hot shelves, causing the air not to flow properly.

Vertiv™ Solutions

At Vertiv, we want to provide solutions for the needs of Telefónica which is why we have created comprehensive solutions for cooling in accordance with the best practices for telecommunication environments, increasing the system's availability and taking it to a Tier III level as defined by the UpTime Institute, while improving efficiency with the change of equipment. That is why we implemented the Super Saver System, a solution designed and patented by Vertiv that combines the Chiller, handling units, hall confinement and a software focused on saving and reducing energy consumption.

Communication

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Chiller Free-Cooling with "Super Saver" system

Update of "CRAH" units with rack temperature remote control

Cold aisle confinement with SmartAisle™

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This Super Saver system by Vertiv integrates 12 handling units, a chiller with ring topology which is concurrently tenable, and with the option of indirect “free cooling” which makes the external temperature of the node to refrigerate water and so, turn off the compressors, by reducing energy consumption in up to 40%.

For redundancy, they kept one of two existing coolers working and a valve system was installed in each CRAH in order to select the desired cooled water source and allow for the reduction of attention risk.

The “Super saver” function adjusts a number of different parameters at the same time, such as the speed of the ventilator and the flow of water at CRAH level, as well as water temperature and its compressor cooling capacity at cooler level. These features are embedded within the I-COM™ product which also allows for communication links from the Chiller to each one of the racks.

The containment of the cold hall will allow for the perfect separation between cold air sent through CRAH Units and the hot air that comes back from the servers. In order to achieve said maximum efficiency in containment, several blind panels must be installed in order to block air flow through the racks, as well as to level all roofing or top surfaces. The SmartAisle™ product together with the I-COM™ product, controls and handles temperature conditions for the enclosure.

Results

Vertiv introduced the proposal to execute the plan of activities in a sequential manner, and started by installing containment for the cold aisle and by recalibrating CRAH units; and finally, the Chiller, in order to reach a more efficient point of operation.

Based on initial calculations, air consumption savings of 10% were suggested for the Chiller and 35% for the cooling system. With these values a return of investment (ROI) projection was made, that included savings in maintenance that would be reached in three years’ time.

The results were satisfactory, the measurements after the implementation mean that it reached energy savings of 40%; hence, adherence to ROI within the stipulated time.

Vertiv.com | **Vertiv Latin America,** 550 W. Cypress Creek Rd. Suíte 200, Fort Lauderdale, FL 33309, USA

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