

ISO 50001 Energy Management System Mallplaza Case Study

Chile

Plaza S.A

15 facilities ISO 50001:2011 certified



Image 1: Plaza S.A.

Organization Profile & Business Case

At Mallplaza, we aim at contributing to people's life quality providing places for gathering and getting memorable experiences, real public squares where thousands of dreams and wishes of people are integrated. Such pursuit challenges and commits us daily to life of people as well as to cities and places in which we insert ourselves.

Procuring at any moment to keep an ethical, responsible, transparent and reliable behavior. We guide our conduct and decisions on the basis of the strict compliance with the rules applicable to every single country where Mallplaza operates, our code of integrity and internal rules of the company.

Since our very first days, sustainability has been a cornerstone for the company. In accordance with the aforementioned, Mallplaza has joined to: i) ISO 26000 Standard of social responsibility; ii) the UN Guiding Principles on Business and Human Rights; ii) Tripartite

Case Study Snapshot

Industry	Real State
Product/Service	Retail
Location	Av. Américo Vespucio 1737, Huechuraba Región Metropolitana Chile
Energy management system	ISO 50001
Energy performance improvement period	1
Energy performance improvement period over improvement period	6,7%
Total energy cost savings over improvement period	1,982,278 \$USD
Cost to implement EnMS	260,316 \$USD
Total energy savings over improvement period	66,369 (GJ)
Total CO₂-e emission reduction over improvement period	14,951 (Metric tons)

Declaration of Principles concerning Multinational Enterprises and the International Labour Standards on Social Policy; and iv) the OECD Guidelines for Multinational Enterprises. Likewise, Mallplaza has joined the UN 2030 Agenda for Sustainable Development, therefore we are committed to work on the achievement of the Sustainable Development Goals related with reducing inequality; Sustainable Cities and Communities; and Climate Action.

Our commitment to these Sustainable Development Goals materializes in our sustainability strategy which has for purpose to promote a responsible management of social, environmental and economic field providing sustainable value on all our groups of interest.

This Sustainability Policy demands and inspires us to keep moving forward, growing and daily contributing to a better life quality for people, as our commitment, focal point and action is towards them. In this way, Mallplaza commits to the implementation of an Energy Management System (EMS) in our all shopping centers since 2011, starting with a recurrent process of steady improvement that seeks to add people value and at the same time make our process as efficient as possible.

“We, the companies, have more responsibility, mobilizing not only resources but making our own business a contribution for the planet”

—Sergio Cardone Solari, Chairman of the Board at Mallplaza.

Business Benefits

Mall Plaza was among the three first Chilean enterprises on being certified to ISO 50001:2011 international standard, because of its branch, Mall Plaza Sur. This gave us the honor to be the first shopping center in Latin America on being certified by this standard.

After this success, Mall Plaza decided to extend its EMS (Energy Management System) to the rest of its shopping centers. So far, 15 operational shopping centers have been certified of a total of 17 malls in Chile, two of those, are recently opened. This two, are now been studied to EMS certificated. This has meant savings for over 66 TJ just in 2018 and a reduction in the emission of almost 15 MTCO₂ (The 15 operational shopping centers). The implementation has also helped saving 1.9M USD\$.

None of these results could be possible without the structure of work carried out by Mallplaza, which has a particular area for Energy Management. This area is in charge of proposing and setting the guidelines that sustain our management system to all different Malls, to their facility management and operation center. This latter may boast to be one of the most modern in Latin America, from there all different operations are monitored, all Malls from Arica to Los Ángeles covering more than 2546, 7 km. The advantages of this multiple implementation are found in the establishment of a more robust EMS by producing a synergy of the

different shopping mall experiences to invoke a greater impact in terms of energy savings and information provided to the system. Additionally, economies of scale can be accessed, reducing implementation costs such as energy consultation and facilitating the implementation of permanent staff to manage a large number of establishments within the scope of the EMS. In the case of Mallplaza, incurring a cost of implementation and operation of approximately 216,316 USD / year that includes concepts of human capital, internal and external training, replacement of measuring equipment, measurement and verification studies among others of the Energy Management System.



Image 2: Mallplaza Operation Center

“The Operation Center is a modern multi-platform designed to improve the efficiency on security, energy and operation in our urban centers. We can join effort among the different programs from one geographic spot, this allows us to accede, for instance, to entrance doors, internal and external lightning, escalator, elevator and air conditioning, among others. Currently, all our Malls in Chile are connected to the Operation Center which results in real-time interaction among all parts.”

—Antonio Braghetto, Operations Manager.

Plan

The company energy planning covers an internal and legal update of the requirements to which we stick to. It is possible to reduce gaps, formulate and integrate action plans in order to correct them through an annual legal advice.

Another important factor in the planning is the energy review, which is carried out on a monthly basis (1st business day of each month) where the energy

performance indicators of the 15 shopping centers are reviewed and the uses of energy are analyzed to understand the deviations and generate action plans that correct or replicate models that help us meet our goals and energy targets of annual reduction of 5% over the baseline of 2017 (current) and increase the consumption of NCRE (Non- Conventional Renewable Energy) from our parent company to 2020. This last objective was achieved in its entirety (100% of NCRE) at the end of 2018 thanks to negotiations of electric contracts, which are included in the procedure of "Acquisition of energy services, products and equipment" that directly intervenes in tenders and shopping processes of Mallplaza.

Mallplaza has a strong commitment to the environment which is reflected in its sustainability policy, as described before. This policy allowed us to understand the need to implement an EMS, to guarantee the correct and efficient use of the energy and water resources of our shopping centers, so the implementation task was complemented and integrated to this policy that already had the existence of ISO 14001, which facilitated the integration by making a direct leap to the technical approach that this standard has.

In this way Mallplaza manages to build a robust energy management system that is integrated in 2018 to ISO 14001 and that identifies the significant uses of energy through the extraction of information from over 4000 electric meters of all the Malls of Chile, which encompass the particular measurement of common areas, systems, specific equipment (energy consumers) and internal premises (customers). This is how the company manages to understand the significant uses of energy that finally permit to generate action plans that encourage an efficient use of the resources within the scope of the management system, focused on the operation processes of the Malls.

The outputs of the continuous process of energy review allow to identify and constantly update the main significant uses of energy, which, in spite of differing among establishments, can be summarized in the following graph:

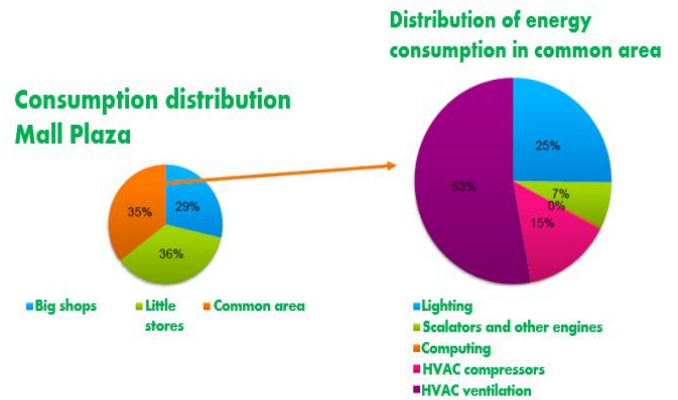


Chart 1: Distribution of energy Consumption

The energy management system of Mallplaza aims at improving energy performance that directly depends on the operation of shopping centers, which in summary is identified as mall common area (vertical elements, lighting) plus all air conditioning systems of common area as well as premises. The power block within the scope of the Management System corresponds to 35% of the total consumption of each establishment (average).

Of the previous power block, climate systems represent 68% of the total consumption of common areas followed by lighting with 25% and vertical transport equipment with 7%, these are measured and verified through performance indicators, which are constructed and registered through the dependent variable kWh and as an independent variable within a linear regression model to the GD (Degree days) together with the GLA (Gross Leasable Area) where their correlation is validated through statistical indices ($R^2 > 0.92$ and statistical $T > 2$).

“The ISO 50001 implementation in 2018 has allowed us to generate savings of 66 TJ which results in 1.9 million dollars”.

—Óscar Munizaga, Corporate Manager of Development and Malls

Do, Check, Act

The implementation process involves different interdisciplinary areas of the company such as

maintenance, sustainability, landscaping and assistant managers of all the Malls in Chile, all this effort is promoted by Mall Plaza's senior management through contracts that include energy efficiency as a determining factor both in the purchase of equipment and in the provision of services, where the competence and training of people are a key factor for the final acquisition. In this way and with the help of the centralization of information in the servers of the Operations Center (OC) it was possible to encompass with the EMS the different shopping centers distributed throughout Chile, which are also fed with information from all the collaborators through the "Portal de Ideas" (ideas portal) of Mallplaza (mobile application).

To ensure that the planning is carried out, Mallplaza monitors the operation of its shopping centers 24 hours a day, 365 days a year, which allows to manage the systems of significant uses of energy and adopt action plans that are required immediately, either determining the SetPoint and appropriate schedules for the systems of: HVAC, lighting, vertical transport, solar photovoltaic power plants and the recurring monitoring of these systems when they present alarms or faults that can both divert the energy base line and affect the operation of the mall.

With the constant monitoring of the systems and the operation of these, it is necessary to verify that the objectives established in the energy planning are met, through the KPI of Mallplaza and its baselines updated to 2017 and corresponding to the energy used in the common areas of Mall associated with the GLA and Cooling Degrees days. These results are reviewed periodically by the operations management of the company and that once a year generates the inspection by the management, an instance in which all the assistant managers and leadership of the Operations Management of Mallplaza participate, that seeks to produce an interdisciplinary synergy, taking into account the different points of view to establish new goals and challenges in terms of energy performance improvements, through operational controls, implementation of new technologies and cultural change in our shopping centers. A key factor that allows

the continuity of the EMS is the constant training and awareness of both our suppliers and the company's employees themselves that have finally contributed to modifications in internal processes such as the integration of energy efficiency in the purchase of goods and services.

Transparency

Annually, Mallplaza reports its results to the Ministry of Energy of Chile in order to integrate them into the National Energy Balance of the country, in full compliance with government regulations and the same norm, in a parallel and voluntary way our results are reported to Down Jones through the Falabella group, Sustainability Report of Mallplaza¹ and in its Annual Report², both public and that can be found by accessing the following websites:



Image 3: Mallplaza Annual Report 2017

In addition, a report is generated monthly to each of the establishments that have the EMS, so that they can monitor their energy performance and contribute with action plans.

¹ Available on http://www.mallplaza.com/index.php?option=com_content&view=article&id=123&Itemid=96

² Available on http://www.mallplaza.com/index.php?option=com_content&view=article&id=50&Itemid=41

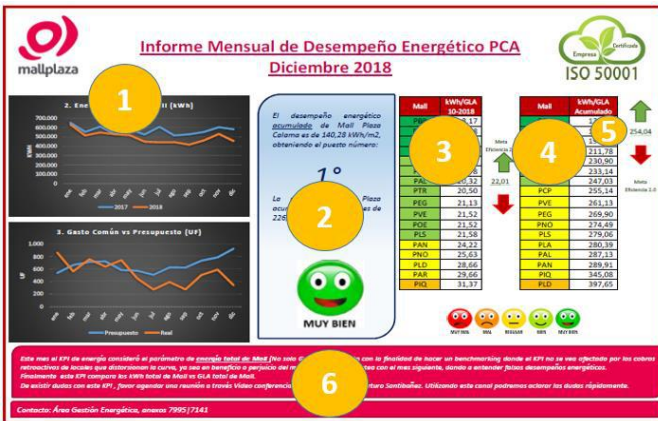


Image 3: Example of monthly report of energy performance review - Mall Plaza Calama.

1. Energy baselines (kWh and \$)
2. Internal Ranking of shoppings
3. Monthly Ranking
4. Accumulate ranking
5. Consumption goals
6. Recommendations and action plans

Lessons Learned

Some of the lessons learned in Plaza S.A. through the implementation of its 15 sites are:

- To include in the revisions of Mall construction projects the criteria of energy efficiency as a determining factor for decision making
- For the purchase of energy services and equipment conceived from its design, consider the necessary equipment for its measurement, control and monitoring of energy consumption, in order to ensure the performance committed by the acquisition.

- To start from the very first day with a training and awareness plan that addresses the cultural change that implies energy efficiency, in order to strengthen the system from all levels of the organization, both internal and external.
- To involve all senior executives of the company starting at the design stage of the Energy Management System.
- To have acknowledged and experienced advisors in energy audits such as the implementation and certification of energy management systems based on ISO 50001.
- To give greater emphasis to the internal communication of both the implementation of the management systems and the results obtained through it.
- To ensure from the beginning the necessary resources for the implementation and operation of the Energy Management System.
- To take into account and base on other standards such as ISO 50002 and ISO50004 for the correct implementation of the Energy Management System.
- To guarantee that all information associated with the system is backed up and traceable over time.
- To assure the correct calibration of all the measurement equipment on which the Management System is based.
- To ensure the transparency and accuracy of internal audits.

Through the Energy Management Working Group (EMWG), government officials worldwide share best practices and leverage their collective knowledge and experience to create high-impact national programs that accelerate the use of energy management systems in industry and commercial buildings. The EMWG was launched in 2010 by the Clean Energy Ministerial (CEM) and International Partnership for Energy Efficiency Cooperation (IPEEC).

For more information, please visit www.cleanenergyministerial.org/energymanagement.

