Laboratorios Farmacéuticos ROVI S.A.

Thanks to the implementation of ISO 50001 Laboratorios Farmacéuticos ROVI saved more than 3,363 tCO2.

### Case Study Snapshot

<table>
<thead>
<tr>
<th>Industry</th>
<th>Pharmaceuticals</th>
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<tbody>
<tr>
<td>Product/Service</td>
<td>Active Ingredients and Research and Development of Medicines and Health Products.</td>
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<tr>
<td>Location</td>
<td>Granada / Spain</td>
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</table>
| Energy performance improvement percentage (over the improvement period) | 2020: Electricity (2.9%), Natural Gas (0.4%)  
2021: Electricity (2.1%), Natural Gas (8.5%) |
| Total energy cost savings (over the improvement period) | 38,160.13 $USD |
| Cost to implement Energy Management System (EnMS) | 21,500 $USD |
| Total energy savings (over the improvement period) | 2,138.43 GJ |
| Total CO₂-e emission reduction (over the improvement period) | 3,363 tCO2 |

### Organization Profile / Business Case

In Laboratorios Farmacéuticos ROVI S.A. Granada we work for the well-being of society and to improve the quality of life and patient care, promoting human health through the research and manufacturing, marketing and distribution of medicines and other healthcare products.

We have a firm and constant commitment to environmental protection, which forms part of our day-to-day activity. Our environmental strategy is based principally on implementing energy efficient solutions, managing natural resources rationally and recycling the waste we produce.

Laboratorios Farmacéuticos ROVI S.A. Granada is committed to a responsible use of energy in its production of active ingredients and research and development into medicine and other health products in order to reduce greenhouse gases and other negative impacts on the environment, as outlined in the “Policy against climate change” from the ROVI group. Laboratorios Farmacéuticos ROVI S.A. Granada is aligned with the general policy of the ROVI group, which works with the objective of reducing the environmental impact, and thanks to its "Avoid, Reduce and Compensate" strategy, it has achieved CO2 emission neutrality. Offsetting emissions through financing high environmental impact projects in 2021 has been key to achieving these goals. Visual example: [https://www.youtube.com/watch?v=QPzpnxEVLOA](https://www.youtube.com/watch?v=QPzpnxEVLOA)

Energy consumption, as part of the production process at Laboratorios Farmacéuticos ROVI S.A. Granada, constitutes one of links necessary to undertake its activity.

The acquisition of energy efficient products and services, designing and improving the energy performance and an energy management system based on the Plan-Do-Verify-Act (PDVA) continual improvement cycle, are parts of our regular practices in the organization.
In addition, promoting a correct usage and consumption of energy and sharing these principles across all levels and with all employees, by means of continual training and awareness-raising, is part of our company culture.

**Business Benefits**

**Energy Performance Improvement 2020:** The baseline calculation is done through statistical regression analysis including the relevant variables that affect energy consumption. Energy performance is measured by comparing actual consumption with the calculated baseline and with the savings target proposed in each case. The variables analyzed for baseline have been: Freeze drying hours, Work calendar, Heating degree days, Cooling degree days, Cooling process phases, Sanitizations, Sterilization and uses of GVL, Thermal oxidation reactor.

Energy performance indicators 2020:

1. **ELECTRICITY:** Blue line → Actual accumulated consumption / Green line → Objective

   ![Electricity Graph](image)

   2. **NATURAL GAS:** Blue line → Actual accumulated consumption / Green line → Objective

   In 2020, energy performance of natural gas is improved but the objective is not achieved due to a failure of a conductivity meter in the boilers, of the traps in the steam line and of a valve in the clean steam line.

   ![Natural Gas Graph](image)

Energy performance report 2020:
In this figure three different colors are shown: the red tabs show those periods in which there is no improvement in energy performance, the yellow tabs show those periods in which there is improvement in energy performance, but the objectives are not achieved, and the green tabs show those periods in which energy performance is improved and objectives are also achieved.

**Energy Performance Improvement 2021:**

The baseline calculation is done through statistical regression analysis. Energy performance is measured by comparing actual consumption with the calculated baseline and with the savings target proposed in each case. The variables analyzed for baseline have been: Freeze drying hours, Work calendar, Heating degree days, Cooling degree days, Cooling process phases, Sanitizations, Sterilization and uses of GVL, Thermal oxidation reactor

**Energy performance indicators 2021:**

1. **ELECTRICITY**: Blue line ➞ Actual accumulated consumption / Green line ➞ Objective
   In 2021, energy performance of electricity is improved but the objective is not achieved due to some changes in the quality of the compressed air generated at the plant. To adapt it to the production needs of Moderna's vaccine

2. **NATURAL GAS**: Blue line ➞ Actual accumulated consumption / Green line ➞ Objective

These graphs represent the objectives that are calculated through the implementation of energy efficiency measures. These measures are collected in a table that is constantly updated and where ideas for improving energy performance are described.

**Energy performance report 2021:**
In this figure two different colors are shown: the yellow tabs show those periods in which there is an improvement in energy performance, but the objectives are not achieved, and the green tabs show those periods in which energy performance is improved and the objectives are also achieved.

**NON-ENERGY BENEFITS: Through the implementation of the EnMS we obtain the following non-energy benefits:**
- Optimization of existing resources
- Efficient use of workspace
- Increased worker safety
- Improvement of the maintenance of equipment and facilities
- Reinforces teamwork
- Plant technology improvement
- Improves knowledge of the organization’s activities
- Promotes the search for new investments

Since Laboratorios Farmacéuticos ROVI has begun to build its relationships with suppliers based on ISO 50001, products and equipment are acquired that contribute to improving the organization's energy performance.

**COSTS:**
- Internal/External staff time to develop, implement, and maintain EnMS → Greater than 1 year
- Overall energy cost savings → $38,160.13 USD
- Percent of overall cost savings that was due to operational savings → less than 25%

**Plan**

Since 2015, Laboratorios Farmacéuticos ROVI has worked on the analysis of the plant’s energy consumption and on the development of trends that allow responsible energy consumption and improvement of the operation of equipment and facilities, as well as their maintenance.

When new ISO 50001 was published in 2018, work began under its recommendations, and after reporting to senior management the opportunities detected in the PESTLE and SWOT analyses carried out, the economic benefits derived from the implementation of energy efficiency measures, benefits not energy such as social prestige, improvement of the corporate image in the eyes of customers and investors, and benefits for the environment and the fight against climate change.

The commitment of senior management is achieved by signing and publishing the energy policy according to ISO 50001 of Laboratorios Farmacéuticos ROVI S.A. Granada. This signature is achieved after explaining to senior management all the economic and environmental benefits that are obtained after the implementation of the EnMS (Investments with great profitability, savings derived from lower energy consumption, improvement of the corporate social image...)

After the commitment of the senior management, the economic financing, and the reserve of resources for the EnMS is decided at each annual management review meeting, where all those factors that will have an impact on the EnMS are considered, such as: Policy Energy, energy performance indicators, objectives, goals, energy saving opportunities, audits, improvement opportunities, risks, non-conformities, legal requirements.

**DATA ANALYSIS TO IMPROVE ENERGY PERFORMANCE.**
1. Analysis of annual historical energy consumption, energy cost and manufacturing.

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<tr>
<th>ENERGÍA</th>
<th>CONSUMOS Y COSTES ABSOLUTOS ANUALIZADOS</th>
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<tbody>
<tr>
<td>Electricidad</td>
<td>4,000</td>
</tr>
<tr>
<td>Gas Natural</td>
<td>2,000</td>
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The EnMS focuses its efforts and resources on the continuous improvement of the energy performance of those energy consumers that exceed 4% of the organization's total consumption (significant energy users).

These SEUs are obtained after carrying out an energy inventory and analysing consumption.
In the tables all the energy-consuming equipment of the plant is represented, that is, an inventory and energy balance of the plant. Equipment that exceeds a consumption greater than 4% of the total energy source is identified as significant energy use.

**Do, Check, and Act**

To engage employees in energy management, we created awareness campaigns that are shared by mail and in the canteen’s TV. For example: [https://www.youtube.com/watch?v=dqBWvUdf1ag](https://www.youtube.com/watch?v=dqBWvUdf1ag), [https://www.youtube.com/watch?v=VRGrb5hp5M](https://www.youtube.com/watch?v=VRGrb5hp5M)

Next, in the following excel table, we have identified more than 100 variables (relevant and non-relevant) that help us to determine the baseline and the energy performance indicators. In this table, we define the frequency of data sampling and where they are collected:
This image represents some examples of all the variables that are used to determine the baseline and performance indicators, as well as their collection frequencies and the data collection system.

When there is a continued worsening of the energy performance of any indicator, we carry out an investigation and it is collected in the following table. Thanks to the energy performance indicators, we can detect deviations of energy consumption and react.

The objective is to detect unexpected energy consumption in time:

This image shows some examples of studies that have been carried out on consumption deviations. These deviations occur if there has been a worsening of the energy performance during the last 7 days and at the same time during the last 28 days (identified with the red color in the energy performance report table) or if there has been an improvement of the energy performance greater than 10% in the last 7 days and in the last 28 days (green color in the energy performance report table). Critical operating parameters have been established for each of the significant energy uses, all defined in the following table:

This image is a representation of the table in which all the critical operating parameters defined for the SEUs are collected. The name of the form to be completed and the frequency of data collection and verification are also...
New projects are approached from the perspective of energy efficiency. Each member of the organization that may have an impact on energy performance is included in a training plan defined in the EnMS. There is an audit plan, also defined in the EnMS where the external and internal audits are planned. The organization's purchases are also made taking into account energy efficiency factors. Suppliers are aware of the organization's commitment to the responsible use of energy that Laboratorios ROVI wants to make at all levels.

**Transparency**

As a sign of Laboratorios Farmacéuticos ROVI S.A. Granada commitment to the EnMS, the ISO 50001:2018 certificate and the energy policy of ROVI have been published on the website. Link: [https://www.rovi.org/es/accionistas-inversores/esg](https://www.rovi.org/es/accionistas-inversores/esg)

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<tr>
<td>Política de Sostenibilidad</td>
<td>Política integrada de gestión</td>
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As part of this transparency, there is communication within the boundaries of Laboratorios Farmacéuticos ROVI S.A. Granada about the EnMs, the energy policy, ideas for improvement, energy performance and awareness campaigns: [https://videoenplay.com/login/assets/uploads/ge6i6-sabiasqueeficenergetgranada.mp4](https://videoenplay.com/login/assets/uploads/ge6i6-sabiasqueeficenergetgranada.mp4)

**What We Can Do Differently**

If we were to start over with EnMS implementation, the first thing I would do would be to devote more resources to explaining the real benefits of EnMS through communication and awareness campaigns at all levels of the organization. With greater involvement of all the people who are part of the organization, the implementation would have improved even more since they would understand the importance of their actions in the performance of the EnMS.

We would also have improved the implementation of the EnMS if we had created synergies with industries in the sector where we could have shared our ideas to move towards the same point, which is the improvement of energy performance, having national and international forums/meetings related to energy efficiency, publish on social networks, such as LinkedIn, the achievements obtained after the implementation of energy efficiency measures to obtain feedback from other colleagues. Regarding the use of alternative tools to those used in the installation of the EnMS, I would use a new tool that facilitates the management of all the documentation that is generated in the EnMS.

In conclusion, the most important thing about this Energy Management system is how integrated it is in the organization's day-to-day activities. Today, if we think of ROVI Granada Pharmaceutical Laboratories, we think of energy efficiency. The EnMS is not an independent system. For Laboratorios Farmacéuticos ROVI to exist, the EnMS must exist. This is the most important value and in turn the most difficult to achieve.

“*Laboratorios Farmacéuticos ROVI has managed to breathe energy management.*” Francisco José Ortiz, energy manager.