

# ENERGY CONSUMPTION

## ELECTRICITY CONSUMPTION

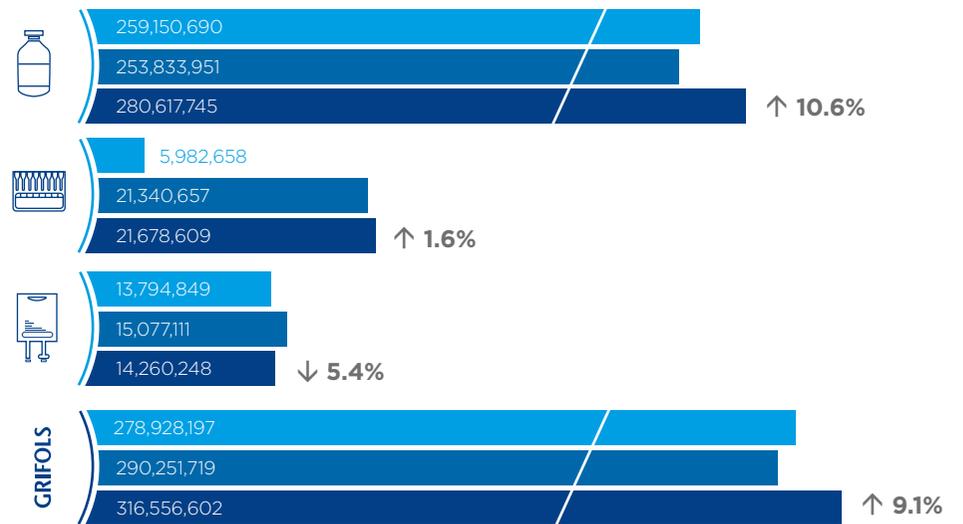
The Bioscience Division's electricity usage represents 88.7% of Grifols' total consumption. The increase in consumption in absolute values is due to production increases in the plants in Spain and the United States, as well as to incorporation of the new plasma warehouse in Clayton, North Carolina. The energy-saving measures implemented in these facilities are reflected in the 5.5% year-on-year decrease in consumption relative to production.

The Diagnostic Division's electricity usage represented 6.8% of total consumption. Consumption in absolute values remained stable, and declined 8.9% relative to production.

The remaining electricity consumption, some 4.5%, was associated with the activity of the Hospital Division, which reduced its energy consumption by 5.4% in absolute values. This reduction was due to the decline in production at the division's facilities at the industrial site in Barcelona and to new measures implemented in Murcia's new plant, whose activity has recently increased. This new plant was designed to eco-efficiency criteria according to the approved measures included in the 2010–2012 Grifols Strategic Energy Action Plan. These measures included installation of a high-efficiency distiller, an electric rather than hydraulic injector, and two steam autoclaves. Relative consumption has undergone the same trend, decreasing 0.8%.

*In 2015, electricity consumption totaled 316,556,602 kWh, a 9% increase on the previous year.*

### ELECTRICITY CONSUMPTION ABSOLUTE VALUE · kWh

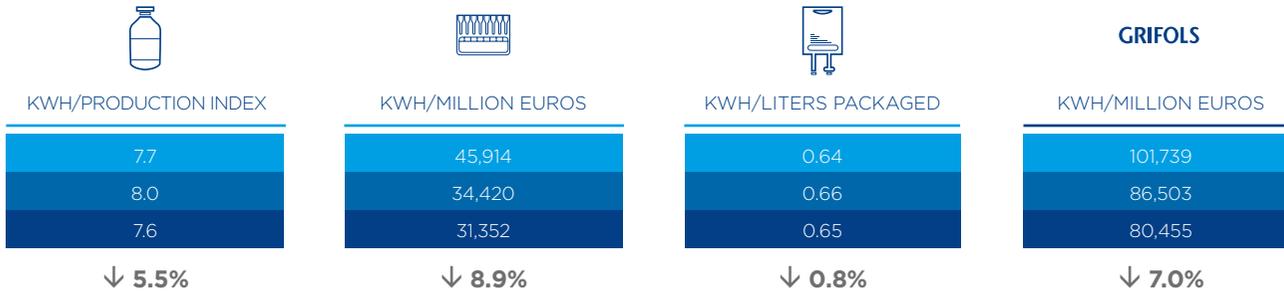


ENVIRONMENTAL PERFORMANCE

**ENERGY CONSUMPTION** · ELECTRICITY CONSUMPTION

**ELECTRICITY CONSUMPTION**

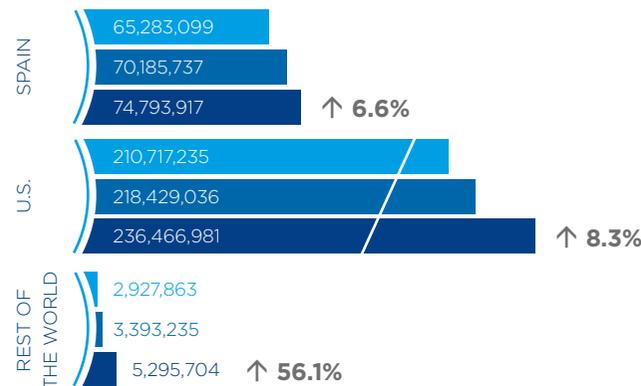
RELATIVE VALUE · kWh



*Total consumption relative to revenues decreased 7%.*

From a geographic perspective, the majority of electricity consumption occurred in the United States, where most of the Bioscience Division's activities are concentrated. Consumption in the rest of the world, though well below that of Spain and the United States, increased, primarily due to the incorporation of the new plasma logistics center in Dublin (Ireland), as well as to that of new commercial subsidiaries.

ABSOLUTE VALUE · kWh



**OPTIMIZATION OF THE INDUSTRIAL LIGHTING SYSTEM**

In 2015, a project was carried out to optimize electricity consumption associated with the industrial lighting in a warehouse at the Bioscience Division's plant in Parets del Vallès, Barcelona.

The project included:

- Substituting metal hydride lighting with high-efficiency fluorescent lighting custom-designed for these facilities.
- Long-life fluorescent tubes with an average life of over 45,000 hours.
- Improving light intensity to more than 200 lumens in work and transit areas.
- Installing light sensors that regulate lighting according to the amount of natural light available.
- Lighting is controlled using the DALI (Digital Addressable Lighting Interface) protocol, which allows for scene programming, complete automation, and remote control.

These improvements have produced a 50% reduction in installed power, reductions in electricity consumption of 220,000 kWh, and a decrease in atmospheric emissions of 66,000 kg of CO<sub>2</sub> per year.

## ENERGY AUDIT AT THE HOSPITAL DIVISION'S PRODUCTION FACILITIES IN PARETS DEL VALLÈS

An energy audit was carried out at the Hospital Division's production facilities in Parets del Vallès in 2015, with the following objectives:

- Analyze the plant's energy consumption and identify measures to minimize CO<sub>2</sub> emissions and costs.
- Establish an audit template applicable to the group's other facilities.

The audit focused on all energy vectors required by production in these facilities: electricity, natural gas, steam, compressed air, climate control, and lighting.

The analysis was based on a cost-effectiveness approach. Savings measures were analyzed for uses that form a significant percentage of the plant's energy consumption.

A total of 24 measures were looked at based on production conditions, maintenance operations, and planned installations. Of these, 16 were selected and analyzed in depth, producing a detailed proposal and return on investment estimate.

Among the main measures the following stand out:



For steam consumption, optimization of the climate control loop.



For electricity, creating and managing temperature zones, and standardizing motors to high energy-efficiency criteria.



For the compressed air network, carrying out a leak audit, and possible sectorization of consumption.

## COGENERATION PLANT FIGURES

The Bioscience Division's facilities in Parets del Vallès are equipped with a 6 MW cogeneration plant. This plant generates electricity that is sold back to the grid. At the same time, the useful heat generated by this process is used in Grifols' facilities.

In 2015, this provided primary energy savings of 14.85% and a 3,193-metric-ton reduction in CO<sub>2</sub> emissions (when compared with emissions produced by a conventional plant).

### COGENERATION FIGURES

	2013	2014	2015	Variation
 NATURAL GAS CONSUMED (KWH)	99,142,960	104,775,825	100,740,280	↓ 3.85%
 TOTAL ELECTRICITY GENERATED (KWH)	37,167,450	38,638,880	36,766,480	↓ 4.85%
 USEFUL HEAT RECOVERED (KWH)	25,882,360	26,788,850	27,230,480	↑ 1.65%
 GLOBAL OUTPUT	69.95	69.24	70.88	↑ 2.37%
 PRIMARY ENERGY SAVING (PES)	15.18	14.54	14.85	↑ 2.13%
 CO <sub>2</sub> EMISSIONS (T)	18,350	19,070	18,308	↓ 4.00%
 CO <sub>2</sub> EMISSIONS SAVINGS (T)	3,284	3,250	3,193	↓ 1.75%

## TOTAL NATURAL GAS CONSUMPTION

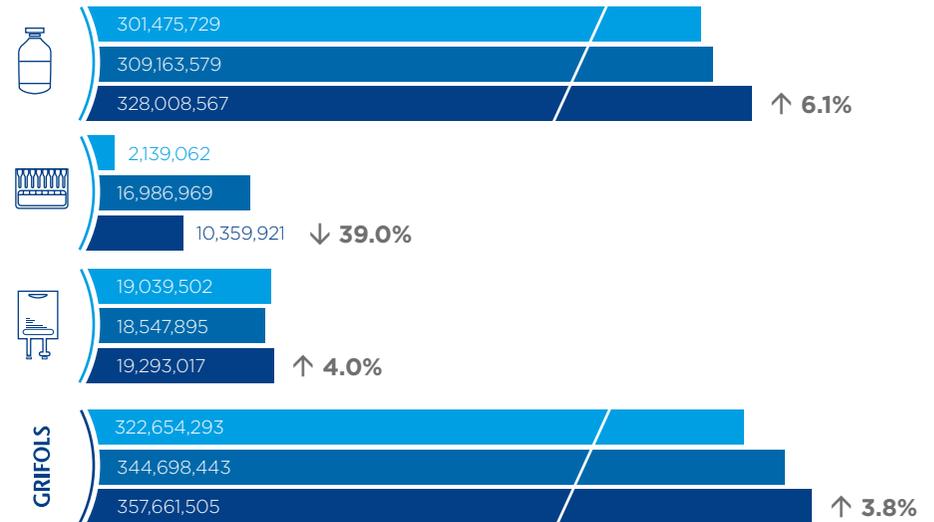
*In 2015, natural gas consumption totaled 357.66 million kWh, an increase of 3.8% on the previous year.*

The Bioscience Division accounted for the majority of natural gas consumption, with its cogeneration plant using 28% of the total. The division's consumption in absolute values rose by 6.1%, while consumption in values relative to production declined 9.3%.

The Diagnostic Division experienced a noteworthy 39% decrease in consumption in absolute values, and a 45% decrease in values relative to production. This change was influenced by complete separation of the buildings at the Diagnostic Division's facilities in Emeryville, California.

The Hospital Division's consumption increased slightly by 4% in absolute values, while the increase in relative values was 9.1%.

### NATURAL GAS CONSUMPTION ABSOLUTE VALUE · kWh

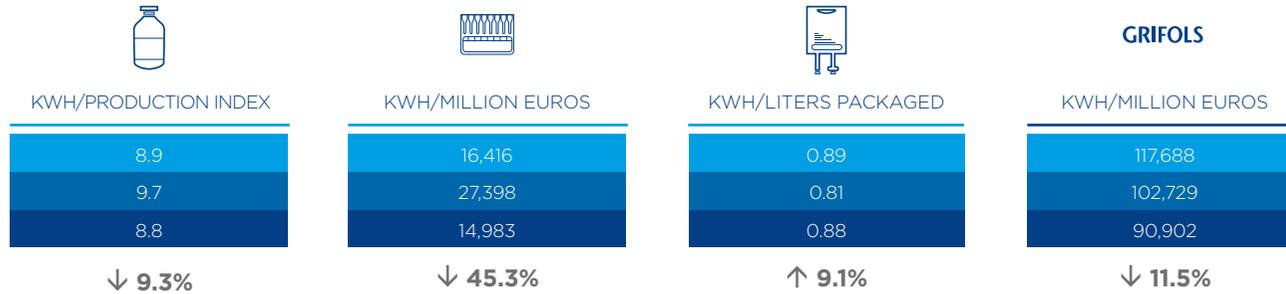


ENVIRONMENTAL PERFORMANCE

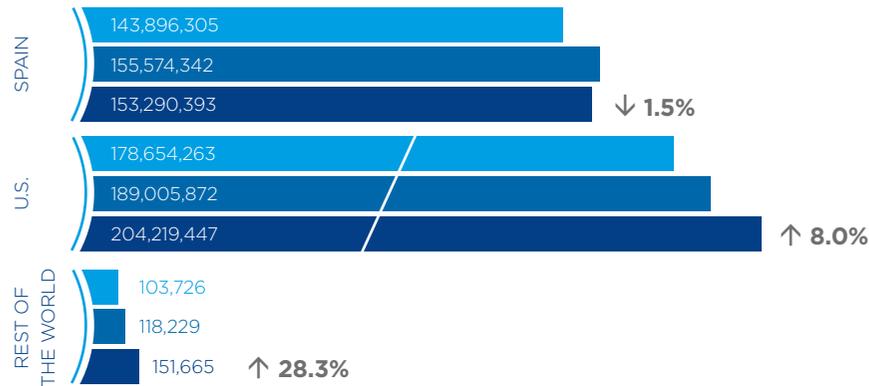
**ENERGY CONSUMPTION** · NATURAL GAS CONSUMPTION

**TOTAL NATURAL GAS CONSUMPTION**

RELATIVE VALUE



ABSOLUTE VALUE · kWh



As was the case with electricity consumption, the majority of natural gas consumption occurred in Spain and the United States, where Grifols' primary production centers are located.