

2.3.2. Climate change management and energy efficiency

Viscofan is committed to energy efficiency and global climate protection. We seek to reduce the intensity of our atmospheric emissions by investing in and developing more efficient production technology, increasing the use of renewable energy, and leading the change in the industry towards technology that helps to fight against climate change. We also wish to positively influence the value chain, through sustainable casings that help our customers to reduce their emissions.

The reduction in energy consumption with new technologies and the availability of renewable energy sources are essential aspects of Viscofan's commitment to contribute to climate change protection and, hence, Viscofan works on three main axes:

- **Development and investment in more efficient production technologies:** As far as possible, Viscofan invests in improvements to reduce energy consumption and to make the most of the different ways in which this energy is present in our processes. Viscofan's strategy for reducing overall CO₂ emissions includes using heat, even in the effluents from our production processes, or replacing systems requiring high amounts of energy with more efficient systems.

During the year, the start-up at the Cáseda factory (Navarre) of a new evaporation plant that works with mechanical vapor recompression (MVR) technology is worthy of mention. This technology increases evaporation capacity and reduces energy consumption, and consequently CO₂ emissions.

- **Fostering the development of technologies that help to combat climate change:** In the current technological state, the most efficient way to generate energy to produce casings is on the basis of natural gas combustion. Nevertheless, within its decarbonisation plan, Viscofan boosts collaboration with public bodies and companies in the energy sector to develop green hydrogen capacities as a source of energy in the future casing production process.

During the year, Viscofan has successfully performed a second test using green hydrogen in a co-generation engine, this time with a greater capacity than the first one carried out in the previous year.

- **Viscofan promotes the use of renewable energy:** within this commitment, in 2023, Viscofan increased the use of renewable electricity at its plants, representing 58.0% of the total electricity acquired by the Group (54.8% in 2022).

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Energy consumption

The internal energy consumption expressed in Giga Wh is the following:

Energy consumption	2023	2022	2021	2020	2019	2018
Gigawatt-hour (GWh)	2,393	2,526	2,465	2,371	2,294	2,276

In fiscal year 2022, internal energy consumption increases by 2.5% compared to 2021 in a context of greater productive activity.

The breakdown by type of energy is as follows:

In GWh	2023	2022	2021
Natural gas	2,001	2,118	2,091
Electricity and other non-renewables	172	190	259
Renewable electricity	220	213	115
Renewable fuels	0	5	0
Total energy	2,393	2,526	2,465
Total renewable	220	218	115
% of total	9.2%	8.6%	4.7%

Due to the decarbonisation measures framed in the Sustainability Action Plan, the use of renewable energy has increased compared to 2023. Given the characteristics of the production process, the greatest energy intensity corresponds to thermal energy, the most efficient alternative being the use of natural gas. However, to the extent possible and as long as the processes have been able to be electrified, the use of a greater percentage of electricity from renewable sources has been actively sought. Thus, in 2023, 58.0% of the group's electricity was from renewable sources, compared to 54.8% in the previous year.

The detail of the Group's production plants with electricity purchased from renewable sources is as follows:

Detail of plants with electricity from renewable sources	2023	2022
Cáteda, Spain	100%	100%
Urdiain, Spain	100%	100%
Weinheim, Germany	100%	100%
Alfhausen, Germany	100%	100%
Novisad, Serbia	100%	100%
San Luis Potosi, Mexico	100%	100%
Itu, Brazil*	100%	33%
Ermelino Matarazzo, Brazil	100%	32%
Zacapu, Mexico *	4%	50%
Hasselt, Belgium **	12%	0%
České Budějovice, Czech Republic ***	10%	0%
Group	58%	55%

* There is a fall in electricity from renewable sources at the Mexico plants due to the change of supplier. Work is being done to obtain the renewable energy certificate in 2024.

** The Hasselt plant in Belgium installed solar panels in 2023, covering part of its operational energy needs.

*** The České Budějovice plant in the Czech Republic acquired electricity from renewable sources for the first time in the months of November and December 2023.

The energy efficiency measures implemented in the year and the consolidation of projects from previous years have led to an improvement in 2023 in the ratio of energy consumption intensity over metres of extruded casings. Its evolution is as follows:

Additionally, the Group promotes and drives the implementation of energy efficiency projects in its operations. The most relevant have been:

- **The installation of production capacity for collagen casings in several plants of the Group under dry-tech technology**, in which the lower use of water in the process implies less use of heat for drying the casing.

- **At the Cáseda plant, operational temperature parameters have been optimized in different production phases** in fibrous, cellulosic and collagen facilities.

- **Installation of LED lights** in Weinhein plants in Germany, Serbia, Belgium, Czech Republic and Australia.

- **Renewal of equipment with greater energy efficiency** both in the production process and in energy equipment.

The energy efficiency measures implemented in the year and the consolidation of projects from previous years have led to an improvement in 2022 in the ratio of energy consumption intensity over metres of extruded casings. Its evolution is as follows:

Base 100 year 2018	2023	2022	2021	2020	2019	2018
Consumption in GWh/ Metres produced	84	87	90	94	102	100

Emissions

Calculation method

For scope 1 CO₂ emissions, Viscofan is using the GHG Protocol tool "GHG emissions from stationary combustion".

For scope 2 CO₂ emissions, Viscofan uses a conversion factor requested from the supply company or, the official factor provided by the government or by the IPPC (Intergovernmental Panel on Climate Change).

Scope 1 and 2 CO₂ emissions

Casing production is an on-going process all year round that requires a lot of heat, especially in casing drying processes. The main energy input used in the process is natural gas, electricity, and steam.

In the case of Cáseda (Spain), it has a co-generation plant with an installed capacity of 48MW for part of the energy demand of the Viscofan plant. This operation allows greater efficiency in the production of casings from an environmental and cost efficiency point of view as the combustion of natural gas allows to heat water, steam, and electricity is produced. A part of the latter is sold to the grid.

Viscofan avoids CO₂ emissions with its co-generation plant in Cáseda compared to another equivalent alternative of heating water, producing steam, and generating electricity. However, the overall activity of the co-generation plant, including the production of electricity sold to the grid, entails for the case of Viscofan more Scope 1 emissions compared to those theoretically emitted to obtain the co-generation steam by means of conventional boilers.



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Under this premise, in 2023, CO₂ emissions associated with the Cáseda co-generation plant represent 23.7% of total CO₂ of the Group compared to 76.3% of the production of casings and new business:

In tonnes	2023	2022	2021	2020	2019	2018
Scope 1 emissions						
Cáseda cogeneration	112,175	121,615	113,365	120,884	126,083	127,628
<i>% of total emissions</i>	<i>23.7%</i>	<i>24.4%</i>	<i>20.7%</i>	<i>21.5%</i>	<i>23.3%</i>	<i>23.5%</i>
<i>Group (scope 1 and 2)</i>						
In tonnes	2023	2022	2021	2020	2019	2018
Scope 1 emissions Traditional Business and New Businesses	281,08	293,567	291,934	277,075	260,138	250,5
Scope 2 emissions Traditional Business and New Businesses	79,932	83,444	142,682	165,228	154,58	164,138
Total emissions Traditional Business and New Businesses	361,012	377,011	434,616	442,303	414,718	414,638
<i>% of total emissions</i>	<i>76.3%</i>	<i>75.6%</i>	<i>79.3%</i>	<i>78.5%</i>	<i>76.7%</i>	<i>76.5%</i>
<i>Group (scope 1 and 2)</i>						
Total Group emissions	473,187	498,626	547,981	563,188	540,801	542,266

In 2023, CO₂ emissions were reduced by 5.1% compared to the previous year, partly due to the energy efficiency measures in our production processes discussed above and to a greater use of electricity from renewable sources.

Within the decarbonisation projects, it should be noted that Viscofan has successfully completed new tests, with greater capacity to use green hydrogen as fuel in one of the co-generation engines at the production plant in Cáseda (Navarre) that supplies to this production centre hot water, steam, and electricity. This project lays the foundation for the engine supplier Bergen to develop an engine powered by 100% green hydrogen. Likewise, investment is being made in the installation of two electric boilers in Spain.

Also, the installation of solar panels at the Hasselt plant (Belgium) has made it possible to generate renewable electricity for self-consumption. During the year, emissions from this plant were down by 1,574 tons compared to 2022.

Other greenhouse gas emissions of the Viscofan Group

In tonnes	2023	2022	2021	2020	2019	2018
NOX	720	762	735	713	657	643
SOX	30	32	29	29	32	n.a.

Emission intensity on extruded metres

Base 100 year 2018	2023	2022	2021	2020	2019	2018
Intensity of Group CO ₂ emissions/millions of extruded metres	70	72	84	94	101	100
Intensity of NOX emissions/millions of extruded metres	90	93	95	100	103	100
Intensity of SOX emissions/millions of extruded metres	74	77	74	80	100	n.a.

The Viscofan Group has begun the preliminary analysis for the calculation of Scope 3 emissions, i.e., the other indirect emissions that occur in the value chain, with the aim of obtaining a better understanding of the Viscofan Group's complete carbon footprint, and of meeting future reporting obligations for this indicator.

In this analysis, taking for reference the Scope 3 calculation technical guide published by GHG protocol, the most relevant categories would be: "Procured goods and services", "Activities related to fuels and energy not included in scope 1 or 2" and "End of life-cycle treatment for products sold".

Emission savings:

Electricity production through co-generation

In 2023, Viscofan avoided the emission of CO₂ into the atmosphere, by using co-generation compared to the theoretical emissions from co-generation steam using conventional boilers at the Cáseda (Spain) and Weinheim (Germany). Below is a detail of the equivalent tonnes of CO₂ avoided:

In tonnes	2023	2022	2021	2020	2019	2018
CO ₂ avoided by energy optimisation	76,745	85,845	94,033	90,449	90,531	91,715

Thanks to the co-generation installed, it is worth noting that over the last ten years, the Viscofan Group has managed to avoid the emission of nearly one million tonnes of CO₂ into the atmosphere.

Commitment to reduce the intensity of CO2 emissions and Pursuit of the Net Zero objective in Viscofan

The United Nations Global Compact, of which Viscofan is a signatory member, is committed to SDG 13. Climate action. Viscofan's commitment has materialised with a target by 2030, of a 30% reduction in scope 1 and 2 CO₂ emissions over a million extruded metres with respect to 2018.

The promotion of the use of renewable energies and the energy efficiency measures of recent years have allowed Viscofan to achieve in advance in 2023 the goal set for 2030.

The variations in the ratio on a baseline of 100 for 2018 are as follows:

Base 100 year 2018	2030 Commitment	2023	2022	2021	2020	2019	2018
CO2 emissions scope 1 and 2/Extruded metres	70	70	72	84	94	101	100

At Viscofan we work with the objective of limiting the rise in the planet's temperature to below 1.5C within our possibilities. In this regard, having met in 2023 the emissions intensity reduction target set for 2030, Viscofan is working on the design of a plan, based on the Science Based Targets initiative (SBTi), to achieve climate neutrality by 2050.

The preliminary work will involve detailed analysis of the energy equipment in all the Viscofan Group plants on 4 continents, the technological alternatives for the replacement of fossil fuels, the viability and promotion of renewable electricity in different countries, and analysis of scope 3 greenhouse emissions to determine if they are material with respect to scope 1 and 2, and, if so, work will be carried out to study and establish objectives.

