

AVOIDED EMISSIONS

WHITE PAPER

LIVING
better

SOMFY 

AGENDA

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EXECUTIVE SUMMARY

At SOMFY we're deeply concerned by global warming and in order to reach the European Union's goal of reducing greenhouse gas emissions by at least 55% by 2030 we're launching an ambitious policy of decarbonization.

Our aim is to lower the environmental footprint of our products and the buildings they are installed in. As part of our policy, we commissioned this study which analyses the impact of automated shading technology on building performance and sustainability.

Key findings include:

- Managing the movement of roller shutters reduces buildings overall energy usage due to an optimised use of incidental solar energy. The heating consumption can be reduced by up to 30% and the cooling consumption can be drastically reduced or even vanished in some cases.
- On average, the use of SOMFY roller shutter solutions avoids 1.7 times more carbon than is emitted to manufacture, distribute and operate them.
- Use of automation is key to increasing overall energy savings within buildings.

For building designers, architects and consultants, this study will provide strong evidence that demonstrates why implementing motorised and automated shading technology is key to the future energy efficiency of buildings.

It will also show why partnering with SOMFY could be extremely beneficial for those organisations wanting to address their sustainability and building efficiency strategies.

VALIDATION

This white paper follows the Net Zero Initiative framework. Its content and avoided emissions methodology has been reviewed and approved by Carbone 4, the first independent consultancy specialising in low-carbon strategy and adaption to climate change.

INTRODUCTION

Founded in 1969 in France, and now operating in 58 countries, SOMFY is the world-leader in window and door automation for homes and buildings. For more than 50 years, SOMFY has been driving durable positive motion as a pioneer in window and door automation.




Developed with comfort, ease of use, security and sustainability in mind, our seamless and connective solutions are designed to help people make the move to living spaces impactful for humans and with a reduced impact on nature.

SOMFY Sustainable Development strategy

SOMFY's heritage is in the French Alps and as such we've always been aware of the effect of global warming and our responsibility to the environment. However, we know more needs to be done and it's for that reason at SOMFY we've created a new sustainable development strategy embodied in our mission of «Living Better».

The idea of Living Better guides our actions to contribute to preserve the environment, making the production and performance of our products more sustainable. Another key element of our strategy is how SOMFY can contribute to reducing emissions on a global scale and ensure buildings and homes have a sustainable future.

Through Living Better, our commitment to comfort and well-being goes hand in hand with the desire to make our solutions more energy efficient, for the PLANET, our PEOPLE and for PROSPERITY. Our low carbon strategy sits within PLANET.

PLANET 	PEOPLE 	PROSPERITY 
<p>Reduce our environmental impact to help address the climate crisis.</p> <p>Make solutions accessible to all, improving building energy performance, and contributing to occupant well-being.</p>	<p>Offer our employees a fulfilling work environment that is fair and inclusive.</p> <p>Contribute to their long-term employability through the development of personal skills</p>	<p>Work with partners to develop best practices that are respectful and ethical.</p> <p>Embrace agility each and build trust within the organisation, which is essential to future prosperity.</p>

SOMFY environmental strategy

SOMFY’s commitment to a greener future starts with our own processes and procedures. In order to meet the ambitious targets, set out by the European Commission there is a need to analyse the organisation’s infrastructure to see what measures can be taken to reduce our carbon footprint.

This assessment is based on three scopes, minimise embodied emissions, maximise avoided emissions and increase carbon removals.

Net Zero Initiative: concept definitions

Minimise embodied emissions	Maximise avoided emissions	Increase carbon removals
The first step in lowering the organisation’s direct and indirect emissions, including those of our products.	Encourages all areas of the business to assess and increase their contribution to decarbonization within third parties.	Investment in carbon sinks such as reforestation, which captures carbon already existing in the atmosphere.

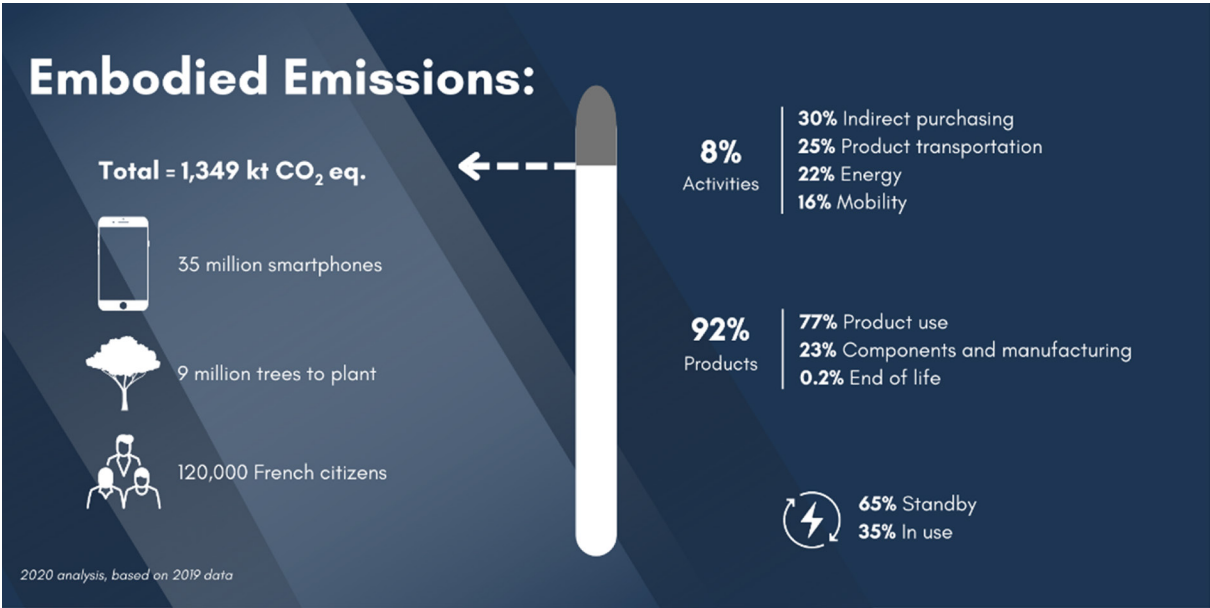
Each of the three scopes is treated in parallel with the others and together they are the driving force behind SOMFY’s environmental policy.

1. Embodied emissions:

A carbon assessment was conducted to examine the Group’s environmental impact. It found the primary reason for change was global warming. In response SOMFY set out a detailed strategy of how the organisation plans to reduce its carbon footprint by 2030.

The latest carbon assessment was carried out across the entire Group in 2021. The assessment found the Group’s carbon footprint was approximately 1,350 kt of CO₂ equivalent, comparable to a French city of 120,000 inhabitants. SOMFY has committed to reducing its CO₂ emissions by 50% in 2030 vs 2019 in line with the targets recommended by the Science-Based Targets Initiative (SBTi).

The below chart is a breakdown of SOMFY’s main sources of emissions:



Currently, **92% of SOMFY’s carbon footprint** is a direct result of how its products are manufactured, packaged and used. As a result, SOMFY is committed to reducing its environmental footprint across all aspects of the business in the following ways:

In terms of design	In terms of usage	In terms of lifespan
<p>Through eco-design, SOMFY aims to limit the negative impact of raw materials used to reduce energy consumption.</p> <p>Currently, more than 60% of products sold are certified ACT FOR GREEN.</p> <p>This is achieved by using the latest energy-saving technologies and improving the manufacturing and packing of products.</p>	<p>SOMFY is committed to reducing the energy consumption of its solutions by up to 40%.</p> <p>This will be achieved by optimising the power consumption of products while in standby mode.</p>	<p>SOMFY is committed to using batteries to optimise and manage the lifespan of its products.</p>

The remaining **8% of CO₂ emissions** are linked to SOMFY’s production sites. To reduce each site’s carbon footprint SOMFY is making greater use of green electricity, encouraging employees to use low carbon mobility, and implementing a policy of energy efficiency.

2. Avoided emissions:

Avoided emissions form part of SOMFY's contribution to decarbonisation. It consists of measuring the positive carbon impact of SOMFY products or services once installed by customers. This follows the Net Zero Initiative framework led by Carbone 4, the first independent consultancy specialised in low-carbon strategy and adaptation to climate change.

Solar protection allows for the management of natural daylight within buildings. In winter, opening shutters when the sun is shining will heat rooms naturally meaning there is no need for artificial heating systems to be in use. Similarly, when the weather is cloudy or at night time, lower shutters to add an extra layer of insulation and reduce heat loss. In contrast, during the summer months solar protection can be used to reduce internal temperatures and negates the need for air conditioning systems to be continuously running.

Compared to manual control, motorised or automated control of solar protection allows shutters to be raised or lowered in accordance with outdoor conditions. This reduces reliance on HVAC systems and optimises energy usage.

The difference between manual and motorised or automated control generates extra energy savings. The amount of energy saved is converted into the CO₂ equivalent, taking into account the energy emission factor of the country where the solution is installed. This constitutes the number of reduced emissions.

How to calculate avoided emissions:

(Reduced emissions) – (Embodied emissions) = Avoided emissions

SOMFY's ambition is to continue to develop solutions that optimise building performance. However, the business faces a number of challenges, none more so than the fact that the construction sector is the single largest cause of CO₂ emissions.

3. Carbon removals:

Carbon removal encourages the organisation to assess and increase its contribution to the enhancement of the world's natural and technological carbon sinks. This can be achieved in one of two ways:

- Either in its value chain, by developing SOMFY's own carbon sinks (direct removals) or those upstream (in the supply chain) and downstream (within its costumes and end-users).
- Or outside its value chain, by funding sequestration projects (purchases of certified carbon sequestration or direct participation in projects).

SOMFY's carbon removals roadmap by 2030 is under construction and will be a combination of several approaches. These will mainly be based actions outside of the value chain and using nature-based solutions such as trees or blue carbon.

AVOIDED EMISSIONS METHODOLOGY

Scope of study

The scope for this white paper is:

- The residential market
- Exterior motorised and automated rolling shutter solutions
- Main SOMFY countries of sale within Europe: France, Germany, Belgium, Poland, Spain, Italy. Collectively representing the majority of SOMFY's rolling shutter sales.

Exclusions

The replacement sales for renovation have been excluded from the calculation scope. At the end of life of the motorised or automated solution, it is usually replaced by a similar solution. That does not produce avoided emissions because the situation before/after remains the same.

Applying avoided emissions to SOMFY products

As stated earlier in this document, rolling shutters play an important role in the energy efficiency of homes. Rolling shutters significantly impact natural energy usage. For example, during winter, closing shutters provides an extra layer of insulation and reduces reliance on heating systems, opening shutters to let daylight in will heat homes naturally.

Alternatively, during the summer months, closing shutters can limit heat gain within a room by preventing solar radiation from entering a house. This results in a reduction in air conditioning usage and thermal comfort improves.

SOMFY develops solutions that prioritise solar protection. The automation of shutters and the addition of a centralised management system and remote control encourages users to use solar protection more often. Opening shutters more on sunny days, closing them more on cold nights and warm days.

Automated controls allow for the optimisation of solar protection. The system uses artificial intelligence to adjust the shutters to the optimum position in accordance with conditions outside, even when the house is empty.

At each stage of solar protection management, from manual to motorised, motorised to automated, there is a decrease in energy consumption and greenhouse gas emissions. These reduced emissions exceed the embodied emissions, and the result is avoided emissions within SOMFY solutions.

Reference scenario

The corresponding reference scenario applies to a building that is identical in all respects. Where the solution required is not known it has been replaced by the most common product on the market that fits the requirements of the building.

There may be several reference scenarios if multiple alternatives occupy a significant share of the market. In this case, it will be necessary to weight the avoided emissions in correlation with each solution's market share. A solution that does not exceed the performance of the market standard will not generate avoided emissions.

Reference scenario - Main influence criteria

The calculation of total avoided emissions is the sum of all unit emissions coming from each installed motor of an automated control system. In theory each individual product installed in a building should have its own avoided emissions calculation applied.

However, in practice, this is virtually impossible to achieve as it would represent millions of buildings and situations to model with limited amounts of customer information. To simplify the approach, all products sold are grouped by a limited number of reference buildings according to the most influential parameters.

SOMFY's marketing team conducted a sales analysis of the residential marketplace and it is now known for each country how sales are distributed between:

- Individual housing or collective residential buildings
- New, renovation or replacement

The grouping is completed using the following building stock statistics:

- Building type: Single family houses, terraced houses, multi-family houses and apartment buildings
- Construction period
- Location by climate zones
- Heating and air conditioning systems

Each identified reference building is modelled based on the following building stock data:

- Building size: Area of walls, windows, roof and ground floor
- Building envelope element: U-value, solar gain, insulation thickness, construction components

The main data sources are three publicly available data sources delivered by these EU funded

projects which are focused on monitoring and analysing the European building stock and on the construction of a synthetic and detailed database of buildings characteristics.

- TABULA
- Hotmaps
- Ambience

Impact of SOMFY solutions on energy consumption

The impact of SOMFY solutions on energy consumption (heating and cooling) is quantified for each reference building by numerical simulations using IDA Indoor Climate and Energy (IDA ICE) software. IDA ICE is a new type of simulation tool that accurately models the building, its systems and controllers and ensures optimum energy consumption as well as occupant comfort.

For each reference building three scenarios are evaluated and compared:

- Manual control of rolling shutters
- Motorised control of rolling shutters
- SOMFY automated control

Both manual controls (with and without motorisation) are based on the French building thermal regulation RE2020 which provides a description of the shading ratios applied by occupants according to the time of day and year as well as the environmental conditions at the time. The assumptions of RE2020 are adapted to each country according to the schedules of the occupants.

The automated control is based on day/night detection with two modes:

- Winter mode: Opening of rolling shutters during the day, closing during the night
- Summer mode: Closing of shutters during the day and partially closed during the night

Impact on CO₂ emissions

The impact of SOMFY solutions in terms of CO₂ emissions is calculated in post-processing using the energy consumption from previous numerical simulations.

A conversion from energy consumption to CO₂ emissions is realised by using the carbon intensity factor. For example, the quantity of CO₂ emitted by one kWh of energy for each country and energy source.

RESULTS

Quantified results

France, Germany, Belgium, Poland, Spain and Italy are responsible for the majority of SOMFY rolling shutter sales. These countries cover various climate and building stock types, meaning an estimate of reduced emissions for the whole of rolling shutter sales can be extrapolated.

This amounts to an estimated 600,000 tons of CO₂, 46% of the total SOMFY carbon footprint, 1.3 million tons of CO₂.

The emissions for the different countries included in this study are detailed in the table below.

Country	Embodied emissions	Reduced emissions	Avoided emissions	Ratio Avoided/ Embodied emissions
France	40,751	160,704	119,953	2.9
Germany	93,429	186,034	92,605	1.0
Belgium	6,943	48,690	41,747	6.0
Poland	30,409	64,741	34,332	1.1
Spain	4,534	13,337	8,802	1.9
Italy	6,155	10,487	4,332	0.7
TOTAL	182,221	483,993	297,439	1.7

Carbon emissions by country in tons of CO₂ equivalent

The main outputs of these results are as follows:

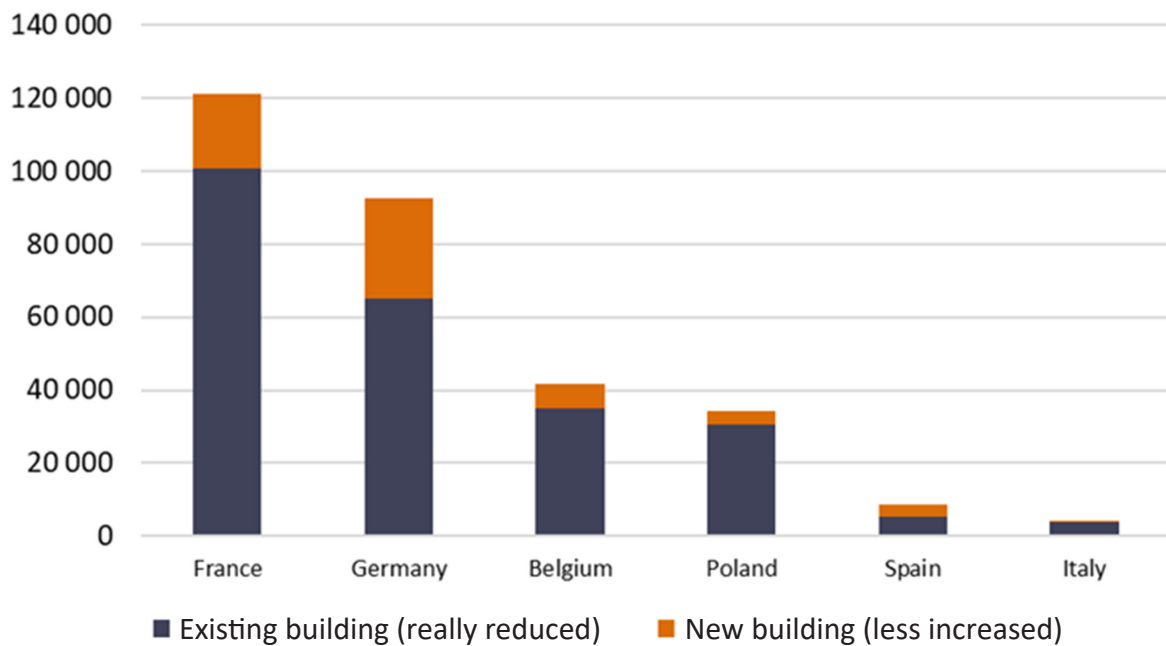
- SOMFY products demonstrate a positive intent to avoid CO₂ emissions, averaging 1.7 times the embodied emissions of its products
- There is country to country variations, which are mainly linked to the automation rate. E.g., in Belgium the automation rate is four times higher than in Germany

Visual results

The avoided emissions generated by automated solutions are more than three times higher than those generated by a motorised solution for this study parameter.

The below graph shows the proportion of **avoided emissions due to the motorisation and automation** for France, Germany, Belgium, Poland, Spain and Italy.

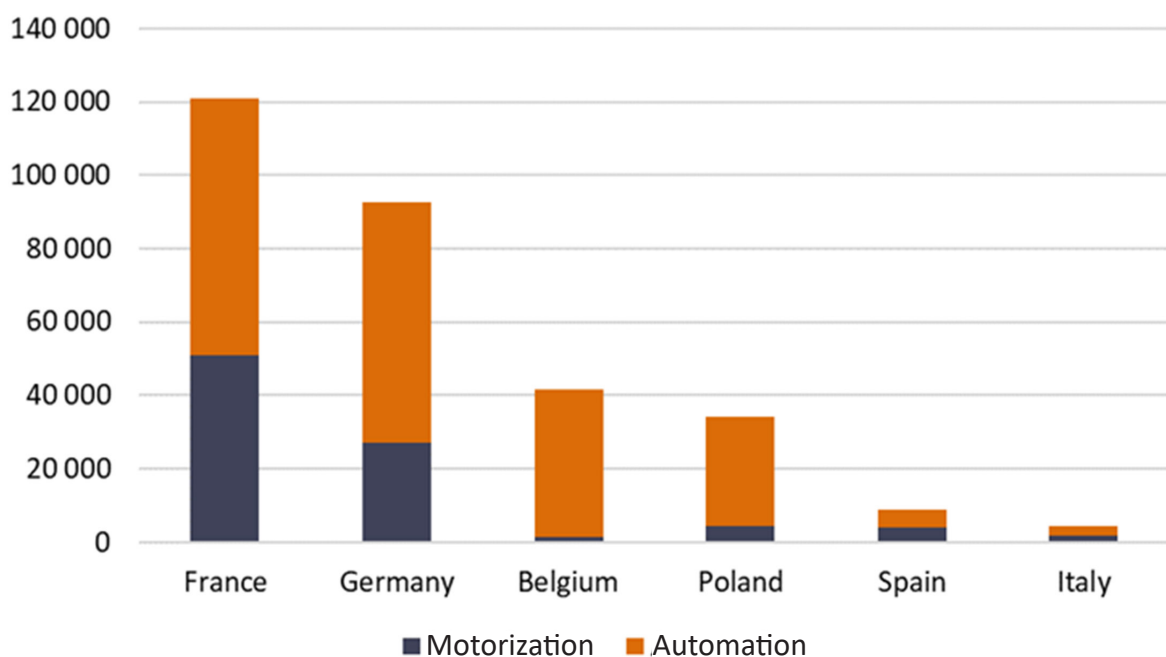
Avoided emissions (tons CO₂) thanks to SOMFY solutions for existing buildings and new buildings



The graph below shows the proportion of avoided emissions coming from existing buildings (really reduced) and new buildings (less increased) for France, Germany, Belgium, Poland, Spain and Italy.

SOMFY's primary focus is the renovation market. Results show the majority of avoided emissions are generated when SOMFY products have been installed.

Avoided emissions (tons CO₂) thanks to SOMFY motorization and automation



CONCLUSION

SOMFY is committed to halving its embodied emissions by 2030. Through its sustainable development strategy SOMFY wants to make a positive contribution to the solution for making homes and buildings more sustainable.

Findings highlight that focusing on the renovation market will help maximise avoided emissions and managing the movement of roller shutters through the optimisation of incidental solar energy will reduce buildings overall energy usage.

Evidence also suggests embracing automated technology over motorised or manual solutions will reduce emissions even further. For example, on average, the use of SOMFY rolling shutter solutions avoids 1.7 times more carbon than is used to manufacture, distribute and operate them.

The encouraging results within this report demonstrate SOMFY are making positive strides toward a net zero future and achieving its SBTi goals.