



ALUTRONIC
SOLUTIONS FOR COOL RESULTS

Corporate Carbon Footprint 2016
Alutronic Kühlkörper GmbH & Co. KG

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climatepartner.com

Athens | Berlin | Düsseldorf | London | Munich | Vienna | Yerevan | Zurich

About Alutronic

Since 1977, Alutronic Kühlkörper GmbH & Co. KG ("Alutronic") has offered its customers optimum solutions for every task of component heating. Alutronic stands for a wide range of standard materials, the competence to adapt each standard to the customer's specific requirements and to offer its own solutions such as special aluminium profiles. With several decades of experience, Alutronic has the ability to identify the best possible solution for the customer's application. Cost-conscious, precise manufacturing and prompt, reliable delivery are the hallmarks. To handle every order to the customers absolute satisfaction, Alutronic has the latest generation of CNC machinery and its own surface finishing (anodising) equipment, supported by an efficient organisation and IT.

About ClimatePartner

ClimatePartner is a leading business solutions provider for climate protection, assisting companies across all industries in achieving growth through voluntary climate protection. Founded in 2006 with headquarters in Munich, ClimatePartner currently employs around 30 staff members and runs offices in Berlin, Düsseldorf, Vienna and Zurich. The scope of services offered by the company includes carbon balancing, climate protection strategies and IT-solutions in the area of climate protection.

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1 Introduction

ClimatePartner Deutschland GmbH („ClimatePartner“) has calculated the Corporate Carbon Footprint („CCF“) for Alutronic Kühlkörper GmbH & Co. KG („Alutronic“) for the fiscal year 2016. The total emissions at the production site in Halver were 4,092.5 tons CO₂.

A Corporate Carbon Footprint is an overview of the carbon emissions emitted as a result of the company’s business activities for a specific time period. It was calculated based on the standards defined in the *Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (GHG Protocol)* as well as the *Corporate Value Chain (Scope 3) Accounting and Reporting Standard* and includes both direct and indirect greenhouse gas emissions caused by the company’s business activities.

The Corporate Carbon Footprint was calculated in cooperation with ClimatePartner, an experienced international consultancy, specialized in carbon accounting and climate protection strategies with headquarter in Munich, Germany. This report contains the core results of Alutronic’s Corporate Carbon Footprint for the fiscal year 2016. Information about the calculation methodology and climate neutrality is described in the appendix.

2 Corporate Carbon Footprint 2016

2.1 System boundaries

Table 1 gives an overview of the accounting standard and relevant emission sources which have been taken into account in the Corporate Carbon Footprint.

Table 1: Standards and system boundaries

| | | |
|--|---|----------------------|
| Accounting Standard | <i>Greenhouse Gas Protocol Corporate Accounting and Reporting Standard</i> | |
| Organisational Boundaries | Operational approach. Assessment of the facilities in Halver | |
| Accounting period | 01.01.2016 - 31.12.2016 | |
| Operational Boundaries | | |
| <i>Source of GHG emissions</i> | <i>Explanation/ Examples</i> | <i>Consideration</i> |
| Scope 1 Direct GHG Emissions | | |
| Stationary combustion of fuels | Generation of electricity, heat, or steam | included |
| Combustion of fuels in mobile combustion sources | Direct emissions occurring from transportation of materials, products, waste, and employees in owned or controlled vehicles | included |
| Physical or chemical processing | Manufacture or processing of chemicals and materials and waste processing | no emissions |
| Fugitive Emissions | Hydrofluorocarbon (HFC) emissions during the use of refrigeration | no emissions |

| Scope 2 - Indirect GHG emissions from energy | | |
|---|---|--|
| Electricity | Generation of purchased electricity | included |
| Steam | | no emissions |
| District heating | | no emissions |
| District cooling | | no emissions |
| Scope 3 - Other indirect GHG emissions | | |
| Purchased goods and services | Raw materials, paper, print products | included, for products from extruded aluminium |
| Capital goods | Production of machinery, IT equipment etc. | not included |
| Fuel and energy related activities (not Scope 1/2) | Upstream emissions related to the consumption of fuel or energy | included |
| Upstream transportation and distribution | Transportation of purchased materials and goods | included |
| Waste disposal | Disposal of waste generated in operations | included |
| Employee business travel | Flights, train, taxi, public transportation, rental car, etc. | included |
| Employee commuting to and from work | Everyday transportation of the employees | included |
| Leased assets | Emissions from rented facilities that are not counted under Scope 1 or 2 of the company | not applicable |
| Investments | Emissions from investment activities that are not reported under Scope 1 and 2 | not applicable |
| Downstream transportation and distribution | Transportation of sold materials and goods | not included, outside of the system boundaries |
| Usage phase of sold products | Emissions through usage of sold goods | not included, outside of the system boundaries |
| Disposal of sold products | Disposal at the end of lifecycle | not included, outside of the system boundaries |
| Franchises | Emissions from franchising that are not counted under Scope 1 or 2 of the company | not applicable |
| Purchased finished products | Emissions from purchased finished products | not included |

According to the Greenhouse Gas Protocol, the calculation of carbon emissions in Scope 1 and Scope 2 is mandatory. Some sources of GHG emissions might be presented with a different indication or in another order corresponding the business process to facilitate the comprehension. Not included or not relevant sources of GHG emissions will not be mentioned in the following sections.

2.2 Results

With reference to the described system boundaries, the total emissions of the business activities of Alutronic were 4,092.5 tons CO₂ equivalent (CO₂e).

The most important emission source is processed aluminium with 93.5% of the balance sheet total, followed by energy for heating with 2.7% and emissions from employee commuting with 1.7%.

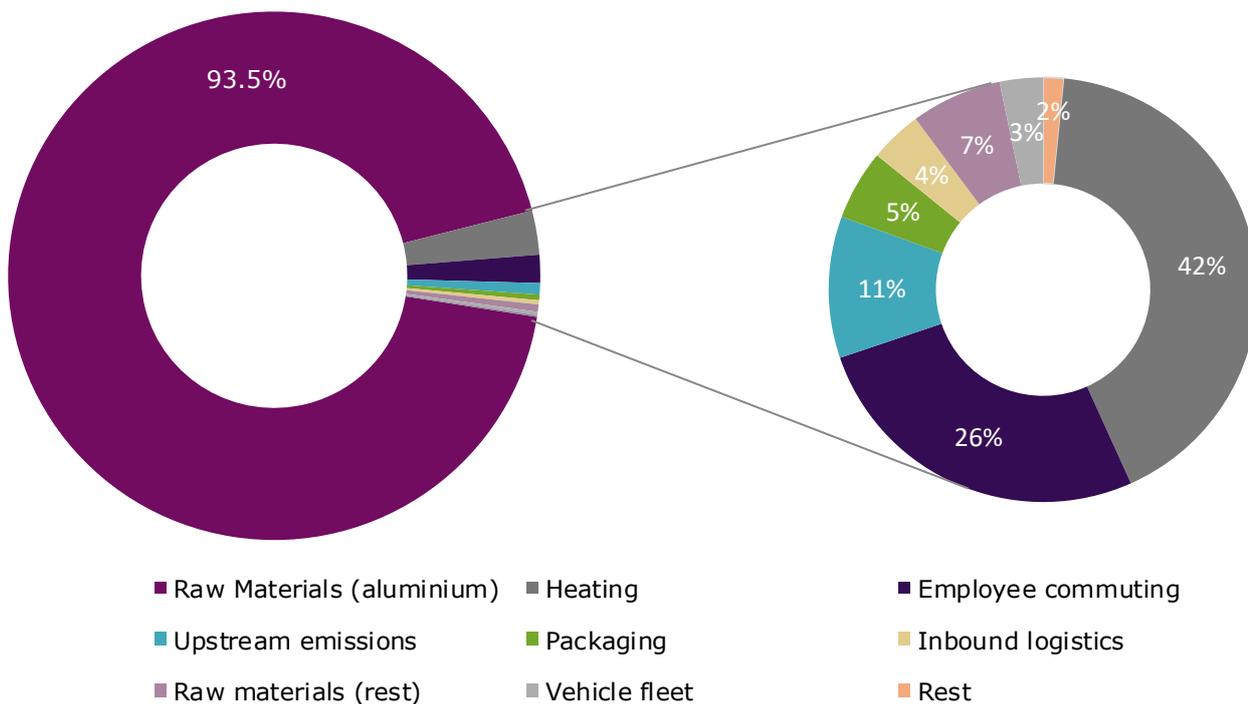
An overview of the corporate carbon footprint is presented in Table 2. Figure 1 depicts the percentage of emission per emission source.

Table 2: Corporate Carbon Footprint 2016

| | Emissions [t CO ₂ e] | Share [%] |
|--|---------------------------------|---------------|
| Scope 1 | | |
| Heating | 110.3 | 2.7% |
| Vehicle fleet | 8.6 | 0.2% |
| <i>Subtotal Scope 1</i> | <i>119.0</i> | <i>2.9%</i> |
| Scope 2 | | |
| Electricity | - | 0.0% |
| <i>Subtotal Scope 2</i> | <i>-</i> | <i>0.0%</i> |
| Scope 3 | | |
| Raw materials (aluminium) | 3,827.9 | 93.5% |
| Employee commuting | 70.2 | 1.7% |
| Upstream emissions of fuel and energy generation | 28.5 | 0.7% |
| Packaging | 14.1 | 0.3% |
| Inbound logistics | 10.5 | 0.3% |
| Raw materials (rest) | 18.2 | 0.4% |
| Waste disposal | 1.6 | 0.0% |
| Water usage | 0.9 | 0.0% |
| Office paper/ print production | 0.7 | 0.0% |
| Business Travel | 1.0 | 0.0% |
| <i>Subtotal Scope 3</i> | <i>3,973.6</i> | <i>97.1%</i> |
| Total | 4,092.5 | 100.0% |

Any deviations in the sums are due to rounding.

Figure 1: percentage of emissions per emission source



2.3 Scope 1

The direct carbon emissions caused by heating as well as the vehicle fleet contributed 119.0 tons CO₂ (2.8%) to the total emissions:

2.3.1 Heating

The direct emissions from the combustion of natural gas amounted to 110.3 tons CO₂. For the calculation of the carbon emissions generated by heating, ClimatePartner has been provided with primary data for the heating energy consumption.

2.3.2 Vehicle fleet

With 8.6 tons CO₂, the emissions related to the vehicle fleet account for the smallest share within Scope 1. For the calculation, ClimatePartner was provided with data on fuel consumption, which was multiplied by an emission factor for the corresponding fuel. Gasoline consumption contributed 5.8 tons CO₂ and diesel consumption 2.8 tons CO₂. The emission factors are retrieved from GEMIS.

2.4 Scope 2

Indirect emissions under Scope 2 contribute zero tons CO₂ to the total carbon footprint. The calculation is based on the procurement of electricity from renewable energy. By using green energy, a total amount of 373.8 tons CO₂ were saved compared to conventional power generation.

2.5 Scope 3

Other indirect emissions generated 3,973.6 tons CO₂, or 97.1% of the balance sheet total. The emissions can be subdivided into following emission sources¹:

2.5.1 Aluminium

The emissions from purchased aluminium amount to 3,827.9 tons CO₂. With a share of 93.5% of the total emissions this is by far the largest emission source. For the calculation, ClimatePartner was provided with primary data on the total amount of purchased extruded aluminium. In consultation with Alutronic the aluminium composition was based on a 20% secondary- and 80% primary aluminium mixture. The corresponding emission factor was determined by Alutronic in collaboration with Effizienz Agentur NRW.

2.5.2 Employee Commuting

This emission source, which covers the carbon emissions caused by the daily commute of employees between home and work, contributes 70.2 tons CO₂ to the Corporate Carbon Footprint. The calculation is based on primary consumption data which includes information on distance traveled (employees' addresses or an estimation of the average distance) and the mode of transportation used. The emission factors are retrieved from ecoinvent and GEMIS.

2.5.3 Upstream emissions of fuel and energy generation

This emission source includes the extraction, production, and transportation of fuel and energy generation, meaning the upstream emissions of the relevant emission sources reported in Scopes 1 and 2. In total these emissions amount to 28.5 tons CO₂.

The upstream emissions of diesel and gasoline consumption of the vehicle fleet as well as natural gas consumption for heating were calculated using emission factors from GEMIS.

2.5.4 Packaging

The emissions from the production of packaging materials amount to 14.1 tons CO₂. The calculation was based on primary data of the consumed packaging materials, using emission factors from ecoinvent.

2.5.5 Inbound logistics

Carbon emissions from inbound transportation amount to 10.5 tons CO₂. The calculation was based on primary data on the transportation distance and weight of raw materials and packaging materials. The emission factors were retrieved from ecoinvent.

2.5.6 Raw materials (remnant)

The emissions from raw materials excluded aluminium amount to 18.2 t CO₂. For the calculation, ClimatePartner was provided with primary data on the total amount and type of the raw materials. The emission factors were retrieved from ecoinvent and Eco Cockpit of the Effizienz Agentur NRW.

¹ Only emission sources that contributed to more than 0.3 % of the balance sheet total will be listed.

2.6 Comparison 2015 to 2016

Compared to 2015 (3,523 t CO₂) the amount of Carbon emissions increased in 2016 (4,092.5 t CO₂) of 16.2%. The main reason is the significant rise of the emissions caused by the source aluminium, which is based on the growth of purchasing. An overview of the comparison of the carbon footprint 2015 and 2016 is presented in Table 3.

Table 3: Comparison of the Corporate Carbon Footprint 2015 & 2016

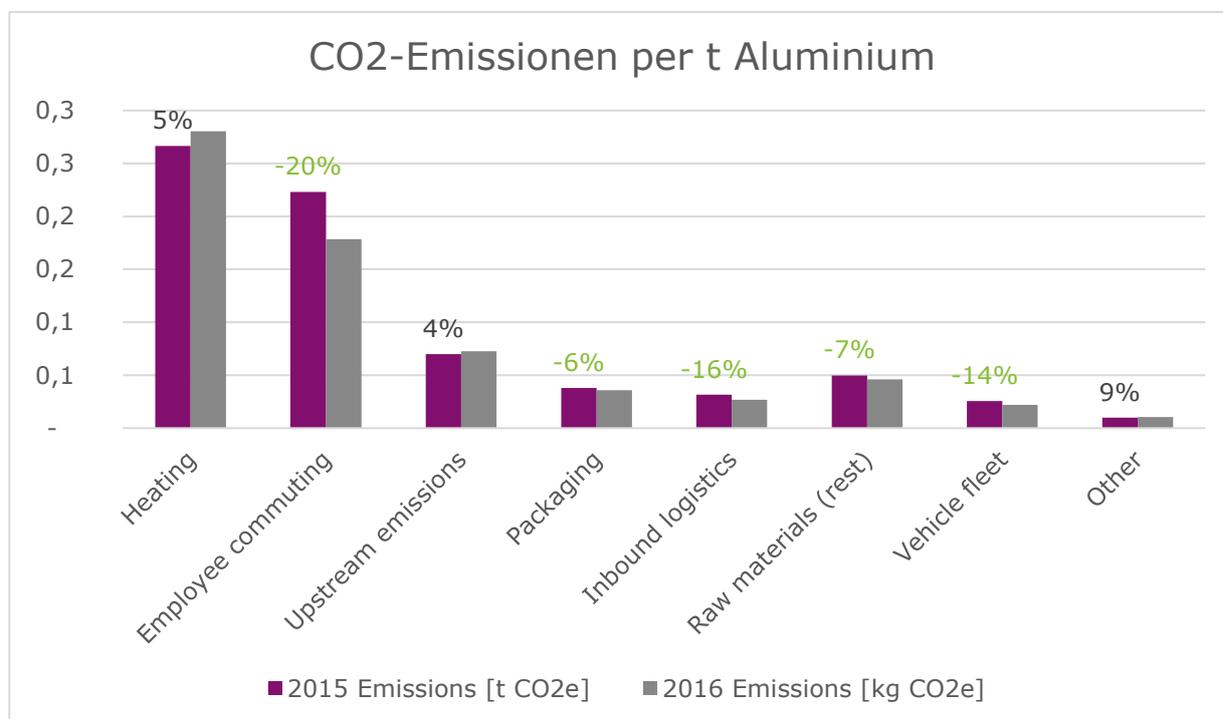
| | 2016 Emissions [t CO₂e] | 2015 Emissions [t CO₂e] | Difference 2016-2015 |
|--|---|---|---------------------------------|
| Scope 1 | | | |
| Heating | 110.3 | 90.0 | 22.6% |
| Vehicle fleet | 8.6 | 8.6 | 0.4% |
| <i>Subtotal Scope 1</i> | <i>119.0</i> | <i>98.6</i> | <i>20.7%</i> |
| Scope 2 | | | |
| Electricity | - | - | |
| <i>Subtotal Scope 2</i> | <i>-</i> | <i>-</i> | <i>0.0%</i> |
| Scope 3 | | | |
| Raw materials (aluminium) | 3.827.9 | 3.282.0 | 16.6% |
| Employee commuting | 70.2 | 75.3 | -6.8% |
| Upstream emissions of fuel and energy generation | 28.5 | 23.6 | 20.8% |
| Packaging | 14.1 | 12.8 | 10.0% |
| Inbound logistics | 10.5 | 10.7 | -2.1% |
| Raw materials (rest) | 18.2 | 16.8 | 8.2% |
| Waste disposal | 1.6 | 1.5 | 10.1% |
| Water usage | 0.9 | 0.9 | 2.1% |
| Office paper/print production | 0.7 | 0.6 | 10.0% |
| Business Travel | 1.0 | 0.3 | 200.0% |
| <i>Subtotal Scope 3</i> | <i>3,973.6</i> | <i>3,424.5</i> | <i>16.0%</i> |
| Total | 4,092.5 | 3,523.0 | 16.2% |

Considering the emissions as a key figure per purchased t of aluminium a slightly decrease of the total emissions compared to 2015 (-0.4%) is visible. If the emissions caused by aluminium are excluded the remaining emissions per sold t of aluminium are reduced by 5.9%. Table 4 summarizes the indicators and figure 2 shows the key figures per category.

Table 4: Emissions per t CO2

| | 2015 | 2016 | Difference 2016-2015 |
|--|--------|--------|-------------------------|
| Total weight aluminium [t] | 337.4 | 393.5 | 16.6% |
| Emissions [CO2/t aluminium] | 10.442 | 10.400 | -0.4% |
| Emissions (excl. raw material aluminium) [CO2/t aluminium] | 0.714 | 0.672 | -5.9% |

Figure 2: Emissions compared (excl. raw material aluminium) [CO2/t aluminium]



3 Conclusion and outlook

As a company that is deeply conscious of its environmental responsibility, Alutronic is taking an important step towards transparency through the calculation of its Corporate Carbon Footprint for the second time. Furthermore, the emissions of the company (excl. raw material aluminium) have been offset by investing in a climate protection project. Thus, Alutronic is a carbon neutral company.

www.climate-id.com/12274-1702-1001

ClimatePartner recommends annual updates of the Corporate Carbon Footprint for the future to assess the development of emissions over the course of time.

The carbon footprint is a useful tool for analyzing business activities that impact climate change. Furthermore, the update of the corporate carbon footprint serves to better communicate climate protection to employees, suppliers, and customers.

4 List of references

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Appendix

I Climate protection and climate neutrality

Climate protection

Integrated climate protection follows the principle: avoid unnecessary emissions, reduce existing emissions and compensate unavoidable emissions.

A regularly updated carbon footprint is an important tool for companies and organisations to identify significant emissions mitigation and reduction potential and to track climate protection measures over time.

The principle of carbon offsetting

Companies, products, or services are climate neutral if their carbon footprint was calculated and offset via emission certificates from recognized carbon offset projects.

The principle of offsetting greenhouse gas emissions is based on the mechanisms spelled out in the Kyoto Protocol and does receive general recognition.

The so called "Clean Development Mechanism (CDM)" is one of the main instruments of global climate protection and should support the realization of climate protection measures especially in developing and emerging countries. For these countries this mechanism is an essential driver for the transfer of clean technologies and sustainable economic growth.

Carbon offset projects reduce greenhouse gas emissions in a verifiable manner by generating renewable energy (such as hydro, wind, solar power) or by saving carbon emissions (such as reforestation). These projects make it possible for developing and emerging market countries to be provided with the corresponding technologies and to save carbon emissions - co-financed by selling these carbon savings as carbon credits. Thus, carbon offset projects make an important contribution to sustainable economic and ecological progress in these countries and reduce greenhouse gases on a global level.

Criteria for carbon offset projects

In order for a project to be recognized as a carbon offset project and receive the right to issue carbon credits for international trade, specific international criteria and quality standards have to be met:

a) Additionality

It must be ensured that the implementation of the project would not have been possible without the additional financing provided through emissions trading. In other words, the project must be dependent on revenue from emissions trading in order to cover its financial needs.

b) Exclusion of double counting

It must be ensured that the avoided carbon emissions are only counted once (meaning credited once against the certificate owner's emissions). Specifically, this means that emission certificates can only be sold once and must subsequently be retired.

c) *Permanence*

The emission reductions must be secured in the future – for example carbon sequestration in forests must be long-term. Afforested land that is transformed into a pasture again through slash-and-burn practices after just a few years cannot generate emission certificates as a carbon offset project.

d) *Regular verification by independent third parties*

Carbon offset projects must be screened periodically by independent third parties (e.g. TÜV, SGS, DNV) to verify that all the above criteria are met. Through the verification, the real avoided carbon emissions are determined retrospectively before the emission certificates can be traded.

Emissions trading: Mandatory vs. Voluntary Market

It is important to differentiate in emissions trading between the mandatory (e.g. European Union Emissions Trading System, EU ETS) and the voluntary market. The above described criteria derive from the voluntary market. Carbon offset projects in this market are used by companies that have no legal obligation to reduce carbon emissions. The companies decide voluntarily to invest in climate protection.

II Procedure & Methodology

Reporting Standard

The Corporate Carbon Footprint was determined according to the internationally recognized guidelines in the *Greenhouse Gas Protocol Corporate Accounting and Reporting Standard* ("GHG Protocol") for calculating and reporting companies' greenhouse gas emissions. The GHG Protocol is the established international standard for greenhouse gas accounting on corporate level. It defines five fundamental principles for the calculation of carbon footprints:

- **Relevance:** The principle of relevance requires that all major emission sources be considered in calculating a company's carbon footprint.
- **Completeness:** The principle of completeness means that all relevant emission sources within the boundaries² must be respected.
- **Consistency:** To facilitate the comparison of results over time, accounting methods and boundaries have to be adhered to and maintained in the following years. Any changes in methodology and boundaries must be mentioned and justified.
- **Accuracy:** Distortions and uncertainties should be reduced as much as possible so that the results offer a solid basis for decisions.
- **Transparency:** The results should be presented in a transparent and comprehensible manner.

² The GHG Protocol differentiates between organizational und operational boundaries

Process Steps

a) Goals

By generating its carbon footprint, Alutronic thrives to fulfill the following five goals:

- 1. Benchmark for future emission reduction:** The carbon footprint sets benchmarks for the emission intensity of certain activities and is an essential building block for the development and implementation of emission reduction measures.
- 2. Assess carbon intensity of different business activities:** The carbon footprint contains an overview of the carbon emissions from Alutronic's business activities by emission source. This has the effect that, based on the carbon footprint, Alutronic may develop a better understanding of the relevance of different business activities with respect to their carbon emissions across the entire value chain.
- 3. Basis for reporting:** A carbon footprint is the basis for reporting of climate protection activities and the progress towards emission reduction targets.
- 4. Identify relevant fields of action for emission reduction:** A carbon footprint generally provides a good starting point for identifying the reduction potential across a company's value chain.
- 5. Raising awareness within the company:** Experience from other companies clearly shows that generating awareness and support for climate protection among key decision makers is key for successfully implementing any kind of emission reduction strategy.

b) Definition of boundaries

Carbon accounting based on the GHG Protocol requires a clear determination of boundaries for the carbon footprint. This includes organizational and operational boundaries.

The organizational boundaries describe the organizational unit and the timeframe to which the Corporate Carbon Footprint refers.

The operational boundaries describe the emission sources that are considered within the organizational boundaries (see Table 1). For the classification of different emission sources, the GHG Protocol differentiates between three categories ("Scopes"), which are the basis of each Corporate Carbon Footprint:

- **Scope 1:** Scope 1 includes all carbon emissions that can be directly managed by the accounting corporation (direct carbon emissions). This includes the combustion of fossil fuels (mobile and stationary) and carbon emissions generated by chemical and physical processes.
- **Scope 2:** Scope 2 represents indirect carbon emissions. All emissions that are caused by fossil fuel combustion by external energy providers are listed here.
- **Scope 3:** All remaining carbon emissions belong to Scope 3 (other indirect carbon emissions). This includes all carbon emissions that are related to products and services used or processed by the accounting corporation. Carbon emissions that are associated with the use of sold products and services are also included, if direct carbon emissions are caused.

According to the GHG Protocol, the calculation of carbon emissions in Scope 1 and Scope 2 is mandatory. Since emission sources under Scope 3 such as emissions from aluminium

production are paramount in Alutronic's Corporate Carbon Footprint, all relevant emission sources under Scope 3 are considered in the carbon footprint as well.

c) Data Collection and Calculation

For the calculation of carbon emissions, consumption data and emission factors were translated into carbon emissions. In terms of quality, the data collected and evaluated is classified as primary and secondary data.

Primary data is data that is collected in direct relation to an object of investigation. Secondary data represents data obtained by the processing and modeling of primary data.

The consumption data was mainly available as primary data from the year 2016. For the conversion of consumption data into carbon emissions, primary as well as secondary data from lifecycle analysis databases (e.g. ecoinvent or GEMIS) were used.

Disclosed Greenhouse Gases

Greenhouse gas emissions are disclosed as CO₂ equivalents (CO₂e). All greenhouse gases regulated by the UN Kyoto Protocol have been accounted for: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).³ For better legibility, the emissions are simply referred to as carbon emissions and reported in units of tons of CO₂.

³ The greenhouse gas nitrogen trifluoride (NF₃), which was newly adopted by the IPCC, is not included in the calculation because it is currently not included in available emission factors. If emission factors for NF₃ are available in the future, this greenhouse gas will be included in calculations as well.

Imprint

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