



**100%**  
ISO 14001 certified plants



**-13.2%**  
Emissions of CO<sub>2</sub> per cast tonne compared to the previous year



**-18.3%**  
Emissions of CO<sub>2</sub> per unit of finished product compared to the previous year



**21%**  
Electricity coming from renewable sources





# Commitment to the environment

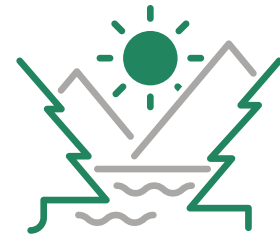
Thinking responsibly,  
acting concretely



# Commitment to the environment. Thinking responsibly, acting concretely

## 7.1 Efficiency and environmental protection in production processes

As a responsible and sustainable business, Brembo is actively engaged in constantly innovating its production processes and transforming its operating model to be increasingly more focused on countering climate change, using water resources rationally and protecting the environment in all its forms.



To give concrete shape to its commitment in the environmental field the Group has defined a structured process founded on a systematic, organic and shared approach involving all the production plants in a gradual reduction in their environmental impact.

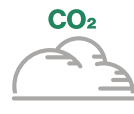
for several years on developing its own energy procurement processes, also by adding specific sustainability requirements to the traditional energy purchasing procedures.

Alongside the reduction in emissions the Group seeks energy efficiency and rational use of energy in its own production processes. These activities are fundamental for achieving the targets that Brembo has set itself regarding the reduction in CO<sub>2</sub> emissions in all the production plants. In addition, since 2018 these objectives form part of the performance assessment scheme for each of the Group's managers.



Since **2018** every site has maintained an **environmental identity card**, containing all the environmental information.

This process is founded on creating a solid culture of sustainability within the Brembo community, as a fundamental tool for stimulating the creation of innovative ideas aimed at constantly reducing energy consumption, atmospheric emissions and use of water resources. In this way all employees are hence asked to make a daily contribution to achieving the business objectives defined by the Group for environmental protection.



**910,879 t of CO<sub>2</sub> eq** greenhouse gas emissions into the atmosphere

Brembo also aims to analyse in greater detail the emissions generated by its business activities. The identification and quantification of all the direct and indirect emission sources means that it is possible to identify the priority action areas for which specific objectives and improvement measures have to be defined. For this reason Brembo has drawn up an internal procedure that describes the process of building the emissions inventory in all the Group's factories and the data collection and processing procedures.

Finally, the environmental protection process embarked on by Brembo also includes rational use of water. In this area



About **21%** of the energy purchased in 2018 came from renewable sources, compared to 8% in 2017.

The focal point of Brembo's commitment in the environmental field concerns reducing polluting atmospheric emissions through a gradual transition to production processes featuring reduced CO<sub>2</sub> emissions and an ever-increasing use of energy from renewable sources. In particular, the Group has been working

the propensity for technological innovation and awareness of the water resource's value has led the Group to identify and gradually introduce new production processes requiring less water use or allowing it to be reused.

The careful management of the environmental impacts of Brembo's activities has received growing attention from its stakeholders, not only the local communities, but also customers and investors.

For example, for several years now, there has been an ongoing exchange of information regarding the Group's environmental performance with almost all its customers. A particular focus has been placed on strategies, technical and organisational solutions, which have led Brembo to highly mitigate risks for the environment.

The values, the vision and the mission of Brembo are reflected and made available in the Environmental and Energy Policy, which sets out the commitments, objectives and areas on which to intervene. This document is an integral part of the Management System and is an element of assessment by investors.

In order to ensure transparency and accurate information about these aspects, Brembo has voluntarily adhered to CDP initiatives since 2011. This independent organisation promotes synergies between the financial community and the business world, monitoring and advocating for commitment to limiting climate change and ensuring responsible and sustainable use of water resources.

Brembo has progressively extended this monitoring and reporting activity over the years, making it possible to include all Group sites as of 2015. This commitment has allowed not only to paint a full mapping of greenhouse gas emissions deriving from both energy and fuel consumption during production processes and from the Group's logistic activities, but also to identify the main mitigation actions put in place to reduce the environmental impact. In addition, since 2016 Brembo has extended its reporting to water resources as well, identifying improvement measures with particular regard to the plants located in geographical areas where there is a greater water risk.



In recognising this commitment, in 2018 CDP named Brembo as one of the 136 leading companies at global level for its commitment and capacity to respond to climate change, awarding it an "A" score (on a scale ranging from the lowest D- up to the maximum of A), maintaining its position in the Climate A List, already achieved last year.



Moreover, in 2018, Brembo was named by CDP also as one of the 31 world's leading companies in terms of commitment to guarantee water security. At world level 18 companies are included, together with Brembo, in both the A-lists Climate Change and Water Security. Of them only 7 are European companies. 3 Italian companies are included in the Climate Change A-List and only Brembo is included in the Water Security A-list.

## System for the effective management of environmental impact (ISO 14001)

In a complex aspect such as the environment, which is characterised, at world level, by the constant evolution of regulatory requirements, a growing attention from stakeholders — communities, governments, customers, investors — towards the Group's environmental impacts, and the need to reduce non-compliance risks related to effective and applicable regulations, Brembo has developed and maintains an up-to-date Environmental Management System based on the ISO 14001 standard. The Group voluntarily submits its system for periodical assessments by independent third-party organisations to ensure its full compliance with international standards.

During 2018, the management system was radically changed

to also include elements useful for implementing energy topics in the near future, adopting the requirements expressed in the new version of the reference standard ISO 14001:2015. This was done with the aim of reinforcing the strategic direction, as well as ensuring that environmental issues are safeguarded effectively on all the Group's sites.

The new Environment Management System obtained the third-party body's certification in July and this is applied by all the plants now included in a single Group certificate. The Buenos Aires and Chinese plants have kept their previous environmental certification and will be subsequently included in the Brembo certificate. The recently constructed sites, which are in the



closing stage of the commissioning process, are currently going through the certification process which is expected to be concluded during 2019.

One of the elements featured in the new management system is the introduction of common requirements for all sites, inspired by best internal and external practice and focused on environmental risk prevention — including risks linked to climate change and water management —, going beyond the concept of respect for requirements defined by local legislation, which remains an essential element to be assured for all the sites. The system also aims to involve the entire value chain — including suppliers — in the risk prevention and environmental impact reduction process. The centrally defined guidelines prescribe common methodologies for managing each process, such as for example environmental risk assessment and environmental impact management (water, waste, energy, emissions, etc...), the final objective of which is to build a homogeneous management model throughout the Group, ensuring that all the requirements are met whilst at the same time producing a highly competitive edge through greater production efficiency and cost optimisation.

In addition, each plant is required to prepare an “Environmental identity charter“ in order to ensure precise and structured safeguards against environmental risks and respond effectively to the rapid legislative changes in the environmental field. This lists the sensitive features of the surrounding local area, the binding requirements, environmental authorisations in force, a description of the processes with an environmental impact and the systems for their control.



**100%**  
plants with ISO 14001 certified  
Environment Management System

One of the subjects on which Brembo is most focused is its coexistence with the local communities in accordance with legislation, and its readiness to listen to them. As a binding requirement for all the Group’s sites, the management system introduces suitable channels for listening to local communities,

for example, dedicated email boxes that can be used to promptly resolve any complaints reported. All reports are always analysed to understand their cause and identify the best corrective measures to be implemented.



**Over 5,900**  
hours of environmental management  
training provided to employees

Lastly, in addition to investments in technology and services to protect the environment, the human factor is a decisive element for ensuring the effective protection of the environment in everyday corporate activities. Because of this, as part of its Management System, Brembo invests in training activities designed to provide indications on how to deal with the main environmental aspects. In 2018, besides standard training, more than 5,900 hours of training on environmental issues were provided across the Group’s sites.

### The path towards ISO 14001:2015 certification

The first audit by the certifying body was carried out in June 2018 at the Apodaca plant to check full compliance with the international standards of the new Environment Management System. During the three-day audit the independent external company certified the full compliance of the Management System implemented in the plant with the requirements of ISO 14001:2015. After Apodaca the Environment Management System of another 7 production plants was audited successfully (Mapello cast iron foundry, Mapello machining, Mapello aluminium foundry, Czestochowa, Pune, Niepolomice and La.Cam), and the positive results led to the Group’s global certification.

## Energy consumption

It is claimed by the world's scientific community that one of the main contributors to the emissions of climate-altering substances lies with CO<sub>2</sub> emissions due to electrical energy production.

For this reason Brembo is working hard to reduce its impact due to electrical energy use to a maximum, undertaking to play its part in containing global warming. On the one hand, this commitment translates into related choices in the energy procurement area, trying to use renewable energy sources as much as possible — to the detriment of fossil fuels — and self-production, through the installation of photovoltaic cells. On the other hand, it aims to promote a reduction in energy consumption to the maximum, in other words to always use less energy in relation to production growth. From this point of view, 2018 saw Brembo define a series of challenging objectives to reduce consumption at its production sites.

Regarding the Green energy quota which the Group procured during 2018, this almost tripled over the previous year, rising from 8% in 2017 to 21%. This result was achieved thanks to the purchase of Certificates of Origin equivalent to 50% of electricity consumption in the Italian sites and about 40% in the Polish sites. The result achieved in Mexico is worth noting. Thanks to the adoption of a new purchasing strategy, the Mexican factories will move gradually to a totally renewable supply as from 2019. Self-production also represents one of the action areas in Brembo, where, thanks to the new photovoltaic plants installed in recently constructed buildings in the Stezzano area and in the Curno building, an installed capacity of about 1MW was achieved.

The promotion of energy saving, which is reflected in the rational use of energy and hence in reduced consumption, is a topic that involves all the Group's operating units, which were asked to help achieve Brembo's energy efficiency objective set for 2018 at 1.58%.



**About 1.8%**  
reduction of energy consumption compared to 2017 thanks to the energy saving measures undertaken.

The actual goal achieved was about 1.8% thanks to measures such as the gradual extension of LED lighting and the optimisation of compressed air management in the different production, distribution and usage phases.

The cast iron foundries, the processes of which make up about 60% of total consumption, have implemented energy efficiency projects that have helped achieve about 50% of the goal set for the Group.



**60%**  
of Group's consumption are cast iron foundries.

The energy consumption optimisation measures have produced major savings and reduced costs significantly, both in the Group's older plants built with previous-generation technology, and in the more recently constructed plants which, built with high energy efficiency, cutting-edge technologies, have focused on the management procedures connected with electricity use. Overall the measures implemented in 2018 in the various production hubs have reduced energy consumption by more than 12,000 MWh, equivalent to more than 8,800 tonnes of emissions of CO<sub>2</sub> eq (equivalent).



**50%**  
of energy efficiency comes from plant projects.

Special technology investment programmes and research projects supported by the Group, also in partnership with other qualified bodies in the sector, are also heading in this direction. The industrial strategy decision, taken in more recent years by Brembo, to vertically integrate at the same plants the production process, the machining process and the metal alloy casting and production phase, as well as to give a definite competitive and industrial edge, allows the Group to intervene more effectively and more quickly in applying innovative solutions to reduce the environmental impact of one of the most significant phases in the production cycle, namely metal casting.

**Analysis of main measures to reduce energy consumption at global level**

Area of intervention	Energy consumption reduction (KWh)	Estimate of CO <sub>2</sub> eq tonnes avoided*
Lighting system optimisation (installation of LED lamps in offices and production departments)	1,765,371	1,112
Compressed air system optimisation (replacement of compressors, leak detection and repair, optimised use during production processes)	2,072,393	1,492
Replacement of processing systems with more efficient technology	1,519,344	1,131
General production process optimisation	6,613,509	4,939
Optimisation of general technical equipment management	83,825	74
Installation of photovoltaic plant	137,703	70
<b>TOTAL</b>	<b>12,192,145</b>	<b>8,818</b>

\* For all the above-mentioned intervention categories, the reduction regards scope 2 type emissions. It bears recalling that the only gas included in the calculation of CO<sub>2</sub>eq avoided emissions is carbon dioxide.

**Nanjing times compressed air flow**

Nanjing Machining has set up an Energy Team to manage electricity consumption in the most efficient way possible. The team has focused on inefficiencies in the use of compressed air in the production process, particularly in the various blowing points, intervening where air delivery was continuous, even when the piece was not physically on the machine. Hence the decision to time the blowing action in a machine and then on the entire line, a process innovation that has produced a significant energy saving equal to 4% of total consumption. After an initial monitoring phase, the solution was extended to all the machines and to all the lines.

**Apodaca: an example of energy saving**

Apodaca started its energy saving programme as far back as 2014, following a detailed analysis of the plant's processes by an internal working group called the Green Team. Various energy efficiency opportunities were then identified and important projects undertaken which produced major savings and recognition with a special Award for environmental sustainability during the 2015 "Brembo Excellence Awards".

One of the main activities carried out, which could potentially be implemented in most disc machining plants, involves changing the process for evacuating cast iron swarf from lathes and drilling machines. In the past swarf was eliminated by means of a conveyor belt which operated continuously; as a result of the project it is left to accumulate for defined cycle times and is removed in small piles. This means that the machine motors are not always on and the energy saving is about 84% compared to the initial solution. This innovation was also adopted subsequently in the disc machining plant in Homer (USA) and from 2018 in the Nanjing plant (China).

## Curno: the software change saves 80 thousand kWh/year

A major energy efficiency measure has been carried out on the caliper machining systems in the Curno plant. These systems, by their very nature, are always active, even during periods of production inactivity. So, the plant operators identified an opportunity to reduce machine consumption when the machine is not in production.

This is due to a change in the software which acts on the system's management logic and allows the work centre to

recognise situations of production inactivity or stand-by and shut down the lubrication and cooling pumps, as they are not required.

Thanks to this solution, which is due to be extended to similar machines in other Group plants, the Curno system has achieved an energy saving estimated to be in the region of 80,000 kWh/year.

Overall in 2018 Brembo consumed around 4.5 million GJ (Gigajoule, the joule is the unit of measurement of energy), up compared to 2017 mainly due to the start of production and entrance into full production of the cast iron foundries in Homer

(USA) and Escobedo (Mexico), the start of production in the aluminium foundry in Nanjing (China) and the expansion of the Dabrowa foundry. This consumption was primarily in the form of electricity (about 69% of total consumption).

### Annual energy consumption broken down by source (GJ)

	2016*	2017	2018
<b>DIRECT CONSUMPTION</b>	<b>1,024,066</b>	<b>1,165,662</b>	<b>1,385,284</b>
<b>Energy from non-renewable sources</b>			
Natural Gas	651,329	795,293	1,017,612
Other fossil fuels**	370,891	372,118	365,975
<b>Energy from renewable sources***</b>			
Photovoltaic	1,422	1,564	1,627
Other sources (thermal solar, etc)	424	224****	70*****
<b>INDIRECT CONSUMPTION</b>	<b>2,048,842</b>	<b>2,673,431</b>	<b>3,151,771</b>
Electrical energy	2,037,390	2,647,302	3,124,939
from non-renewable sources	2,037,390	2,429,422	2,458,899
from renewable sources	-	217,880	666,040
District heating	11,452	26,129	26,832

\* The figures for the Langfang (China) production plant, which entered the consolidation scope during 2016, are excluded from the energy consumption calculation.

\*\* "Other fossil fuels" include: diesel, petrol, LPG and other.

\*\*\* In 2018, the Group did not generate any energy destined for sale.

\*\*\*\* The entry does not include production at the plant in Homer (USA), which manufactures discs, because the data was not provided by the plant operator in time to draw up this document.

\*\*\*\*\* The entry does not include production at the US and Chinese plants because the data was not provided by the plant operator in time to draw up this document.





## The Brembo Energy Platform

In 2018, Brembo launched a new project to permanently monitor the energy consumption of every facility, every department, and where consumption levels are significant, even production machinery. A new IT platform called Brembo Energy Platform (BEP) is currently being built and implemented. Thanks to a network of sensors and measuring equipment it is able to monitor the consumption patterns of each site and to provide more targeted energy efficiency programmes. Besides being able to monitor their consumption, every facility will also be able to see the consumption levels of other facilities with similar processes, thus enabling the creation of an internal benchmark and the

implementation of tried and tested improvement measures. Finally, since abnormal consumption - including in terms of energy - can be a tell-tale sign of malfunctioning machinery, the platform will be an important source of information for maintenance and production teams, enabling the deployment of preventative and predictive actions which can ensure production continuity at optimal machine capacity levels. The project started as a pilot at the Curno site and will be rolled out across all of the Group's production facilities by mid-2019. It is a smart energy project which applies the typical concepts of the "Industry 4.0" initiative.

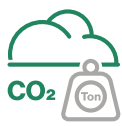
## Greenhouse gas emissions

The CO<sub>2</sub>eq emissions generated by Brembo's production activities in 2018 amounted to 910,000 tons (scope 1+2+3), higher than those of 2017. The factors that contributed to the increase are the greater production volumes, the inclusion of the Chinese site of Langfang in the calculation, the launch and running of recently built facilities in Mexico, the USA and China, which led to greater power consumption.

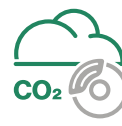
In 2015, which is considered the benchmark year for the monitoring of emissions improvements, emissions amounted to 440,000 tons (scope 1+2). In a like-for-like comparison with

2015, over the last year a total of 402,000 tons of CO<sub>2</sub>eq were produced, marking a reduction of almost 9%. This result was achieved thanks to energy efficiency-boosting projects totalling 8,818 tons of CO<sub>2</sub>eq and to the implementation of renewable energy solutions equal to 147,000 tons, which made up for emissions caused by increased production volumes.

Like every year, the emissions inventory and calculation methodology underwent assurance certification by a third-party body in accordance with the ISO14064 standard.



**-13.2%**  
reduction of CO<sub>2</sub> emissions  
per cast tonne compared  
to the previous year.



**-18.3%**  
reduction of CO<sub>2</sub> emissions  
per unit of finished product  
compared to the previous year.

**Greenhouse gas emission by scope (t CO<sub>2</sub>eq)\***

	2016*	2017	2018
<b>Scope 1</b>	<b>68,342</b>	<b>74,911</b>	<b>87,691</b>
Emissions from foundries	33,039	34,959	35,379
Emissions from production plants and heating systems	30,339	35,381	46,845
Coolants for air-conditioning systems**	1,323	1,200	1,234
Emissions from company vehicles and other fuels	3,641	3,371	4,233
<b>Scope 2</b>	<b>410,679</b>	<b>444,525</b>	<b>492,821</b>
Indirect emissions due to power consumption and heating district			
market based	410,679	444,525	492,821
location based	369,212	498,005	584,916
<b>Scope 3</b>	<b>201,866</b>	<b>270,687</b>	<b>330,367</b>
Emissions due to product distribution logistics and waste transport	102,616	161,001	201,594
Emissions due to employees commuting between home and workplace	23,503	34,303	29,199
Emissions due to business trips	13,752	7,623	3,934
Emissions due to product transport within the Group	37,730	38,762	54,595
Emissions due to the energy lost through power distribution and transmission	24,265	28,998	41,044
<b>Total</b>	<b>680,888</b>	<b>790,123</b>	<b>910,879</b>

\* The calculation of the CO<sub>2</sub>eq (which includes CH<sub>4</sub>, NO<sub>2</sub>, HFC, PFC and SF<sub>6</sub> emissions, when present) was carried out in accordance with the indications contained in the "Global Warming Potential Values" guide from the Greenhouse Gas Protocol (calculation methodology and emission factors as per the GHG Protocol. See <http://www.ghgprotocol.org/calculation-tools/all-tools>), which is based on the latest scientific studies carried out by the Intergovernmental Panel on Climate Change (IPCC): "IPCC Fifth Assessment Report, 2014 (AR5)", "IPCC fourth assessment report, 2007 (AR4)" and "IPCC second assessment report, 1995 (SAR)", supplemented by data from the EPA (Environmental Protection Agency) for US emissions and ASHRAE34 for coolants. The 2016 and 2017 data does not include the plant in Langfang (China), acquired in 2016, as some utilities and some general systems are still shared with other activities that are not controlled by Brembo.

\*\* The figure includes the quantities of coolants dispersed into the atmosphere and reported in the special registers when air conditioning systems are refilled periodically. In the absence of such a record or other evidence of gas refills carried out during the year, all the gas contained in the air conditioning systems is considered to be dispersed into the atmosphere — as a precautionary measure.

**Scope 1**

Climate-changing emissions generated directly by Brembo come from plants, assets and vehicles operated directly by the Company. This scope includes emissions from the combustion of fossil fuels in melting furnaces, leakage of coolants in air conditioning systems or use of the company fleet.

**Scope 2**

Indirect emissions of greenhouse gases resulting from the generation of electricity purchased by Brembo, as well as the heating of water/steam procured by the Group through district heating systems. With these purchases Brembo indirectly contributes to the emissions generated by electricity or heat suppliers.

**Scope 3**

Emissions that are not included in the previous scopes linked to Brembo's value chain. This scope includes emissions from Brembo product distribution and handling among plants, personnel commuting from home to workplace or business trips.



The Group has set specific medium- and long-term objectives to reduce greenhouse gases and implement Brembo's commitment to environmental protection and combating climate change:

Brembo's commitment to the reduction of CO<sub>2</sub> has been transformed into an internal reduction objective using the following formula:

<p><b>-19%</b> by 2025</p>	<p>Brembo is committed to reducing Scope 1 and Scope 2 direct and indirect emissions by 19% compared to the levels measured in 2015 (on a like-for-like consolidation basis), through actions aimed at improving the efficiency of plants and increasing the percentage of energy used that comes from renewable sources.</p>
<p><b>-41%</b> by 2040</p>	<p>Brembo is committed to reducing Scope 1 and Scope 2 direct and indirect emissions by 41% compared to 2015 levels (on a like-for-like consolidation basis).</p>

**CO<sub>2</sub>eq reduction achieved through improvement actions**

**≥2.1%**

**CO<sub>2</sub>eq emissions of the previous year**



**-18.78%**

**CO<sub>2</sub>eq emission reduction**

compared to the previous year thanks to improvement actions undertaken in 2018.



## Atmospheric polluting emissions

Gas emissions are also periodically monitored, in accordance with authorisation regulatory requirements at all Group plants. Although national and local laws set different limits and pollutants, as part of Brembo's new Environmental Management System common requirements have been defined for all the Brembo plants, to control the risks associated with this topic and ensure uniform emission control at all plants.

The substances chiefly present in Brembo's emissions are those typical of melting processes and the use of fuels (NO<sub>x</sub> and SO<sub>x</sub>), as well as those generated by mechanical processes such as powders (PM) and volatile organic compounds (VOC). With regard to the emission trend, it is specified that it is not possible to make a comparison with previous years as the emissions are subject to the variability of the production mix, which can also significantly influence the quantity of substances emitted. Furthermore, the 2018 report was highly influenced by production growth and the entry into full operation of the foundries in Dabrowa (Poland), Homer (USA), Nanjing (China) and Escobedo (Mexico).

Every emission subject to authorisation is monitored periodically to ensure compliance with the established limits set out in the authorisation documents.

In the same way it monitors pollutants, Brembo also monitors the quantity of coolant gases (HFC and HCFC) released into the atmosphere, calculating the relevant CO<sub>2</sub> equivalent impact. In 2018, 0.64 tons of gas capable of damaging the ozone layer were released into the atmosphere, including 0.25 tons of coolant gases with hydrofluorocarbons and about 0.39 tonnes of freon 22 gas (R-22). The figure includes the quantities of coolants dispersed into the atmosphere and reported in the special registers when air conditioning systems are refilled periodically. In the absence of such a record or other evidence of gas refills carried out during the year, all the gas contained in the air conditioning systems is considered to be dispersed into the atmosphere — as a precautionary measure.

With the aim of anticipating legal requirements in every country where it operates, in 2018 Brembo officially banned the use of R22 in all its factories, an early move ahead of the phasing-out programme schedules of those countries where the use of the gas is still allowed. As a consequence, every factory is required to plan the replacement of this gas with an environmentally friendlier one. With this in mind, 2018 saw both the Chinese and Indian factories initiating the replacement process.

### Emissions of harmful substances (t)\*

	2016	2017	2018
Nitrogen oxides (NO <sub>x</sub> )	118.75	131.90	95.13
Dusts	79.43	160.95	315.07
Volatile organic compounds	146.51	118.02	165.66
Sulphur oxides (SO <sub>x</sub> )	45.95	49.35	40.11
Hazardous pollutants	35.14	4.29	12.03
Persistent organic compounds	0.69	0.00	0.00
Other	-	-	-

\* the values shown are based on precise measurements made in plants that are subject to regular spot checks. Each plant's emissions is calculated based on these precise measurements, since the concentration of harmful substances, the mass flow and the operating time of the plant are already known. Hence, the values shown only refer to the plants equipped with measuring instruments.



## Management and use of water resources

One of the UN SDGs concerns water, a precious and indispensable resource for the human beings.

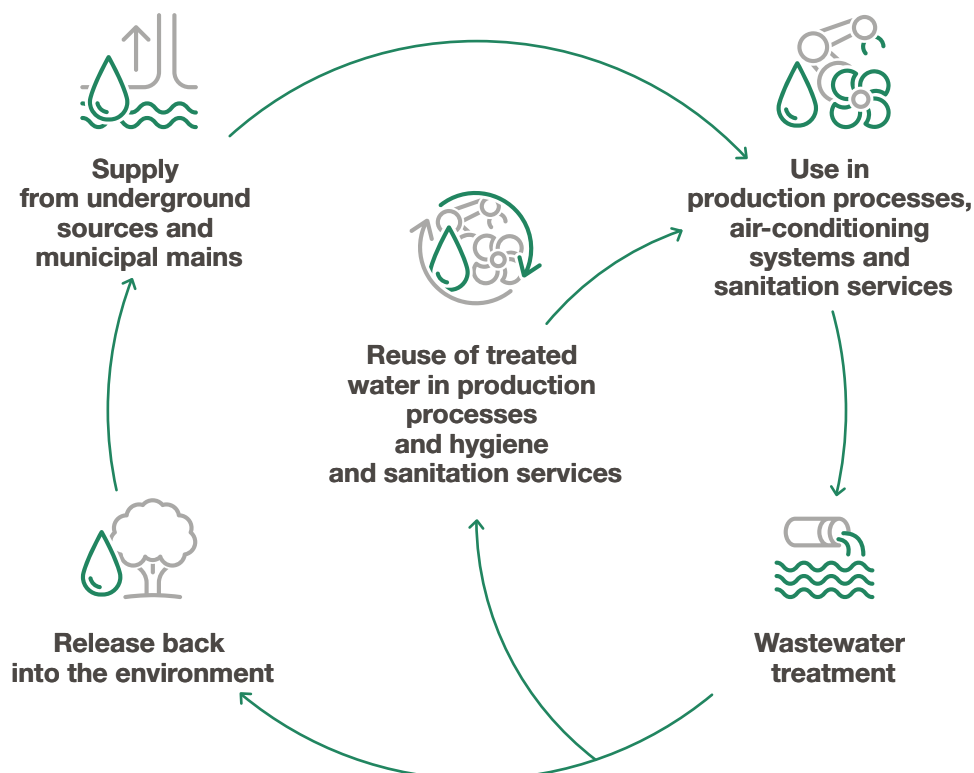
The demographic growth in world population, with the resultant increase in demand for water particularly for agricultural production purposes, and the gradual desertification of increasingly large areas of the planet due to climate change are forcing industrial complexes with a significant need for water resources, such as Brembo, to essentially commit towards a more rational use of this resource, through both progressively reducing its use and minimising the risk of potential pollutants that could cause water not to be released back into the environment. This is the prerequisite on which Brembo has built its strategy, which is reflected in the rules set out in its Environmental Management System. These rules define a water management model shared across all the Group's facilities.

As far as water performance is concerned, 1,335 million cubic meters of water were used, a slight increase compared to 2017, following the launch and running of the Homer (Michigan) and the Escobedo (Mexico) cast iron foundries, the start of

production at the Nanjing (China) aluminium foundry, and the expansion of the Dabrowa foundry (Poland). The water mains still constitutes the main source of supply (approximately 70%) which not only ensures suitable quality levels, but also a reliably constant supply over time. Groundwater supply has decreased by 2% compared to 2017, and constitutes a significant supply source only in Italy and the USA, although this type of source — where available — can ensure greater autonomy without impacting the water supply of neighbouring communities.

The use of water is mainly needed in Brembo's process to cool the industrial plants (melting furnaces), for surface treatments and for the preparation of cooling lubricating fluids, i.e. 7- 10% oil emulsions required for the cooling and the elimination of shavings generated by machine processing.

Brembo is constantly looking to reduce water consumption in its processes by re-using and internally recycling water, or by implementing less water-intensive processes. In this respect there are some noteworthy initiatives undertaken by the Indian facility at Pune, where all the water used for both industrial and



civilian purposes is collected and processed through a water-treatment facility, and then re-used internally for the irrigation of the green areas or for toilet flushing. In 2018, a similar system was launched at the Betim factory in Brazil, where the water coming from mechanical processing, which used to be disposed of as waste water, is now being treated and made suitable for internal re-use.

In 2018, a new braking systems factory has been launched in Nanjing, where an oxidation plant especially designed to avoid the generation of any waste water is used, which translates into significantly lower water consumption on the site, but also into a remarkable reduction in contamination risks for the downstream water catchments, precisely because of the absence of a point of discharge. Moreover, the progressive replacement of certain types of mechanical processing plants requiring water with water-free ones continued in 2018.

With reference to waste water, nearly all of it – about 579 million litres – is destined for the local water consortium sewers to which the sites are linked. Only a tiny fraction (about 2%) of waste water is released into surface water bodies, after ensuring that the relevant local legal specifications on acceptability are met.

To enable increasingly accurate water reporting, the company set itself as a target the deployment of measuring equipment at every water entry and exit point, making every instance of waste easier to pinpoint. In 2018, the installation of flowmeters at the entry points of every production facility was completed.

It should be noted that throughout the year Brembo's production facilities did not report any significant instances of leaks of hazardous substances into the environment.

#### Water consumption by supply source (megalitres)

	2016*	2017	2018
Public water mains	668	782	948
Water well	326	374	387
<b>Total</b>	<b>994</b>	<b>1,156</b>	<b>1,335</b>

\* The figures for the Langfang (China) production plant, which entered the consolidation scope during 2016, are excluded from the water consumption calculation.

#### Water discharges by destination (megalitres)

	2016*	2017	2018
Public sewage system	232	430	565
Surface waterbodies	208	54	14
Other	-	18	-
<b>Total</b>	<b>440</b>	<b>502</b>	<b>579</b>

\* The figures for the Langfang (China) production plant, which entered the consolidation scope during 2016, are excluded from the water discharges calculation.



## Waste management

Brembo has long been convinced that waste is to be viewed as a resource rather than as something to be disposed of, and hence as still capable of generating value through both potential cost reduction and benefits to the environment, in a manner fully consistent with the logic of the circular economy. The typical situation at certain production facilities — such as cast iron foundries — is a clear example of how this concept is put into practice at Brembo. A foundry primarily uses ferrous scrap, such as cuttings and discarded materials produced during mechanical processing, thereby contributing to circular waste management. The vertical integration of Brembo's factories is a positive example of how having a foundry near the machining and assembly facility — typically housed within a single industrial complex — in most cases enables immediate reuse of scrap metal in melting furnaces. In 2018, Brembo generated approximately 382,000 tons of

waste, an increase of 20% on 2017, due to the start-up and transition to full operational status of the new plants in USA, China and Mexico. Most of the waste generated — approximately 95% of the total — is classed as non-hazardous, and 50% of the total is recovered.

Noteworthy, waste reuse initiatives undertaken by Brembo include those currently in place at the plant in Buenos Aires (Argentina), where the wood from packaging materials — previously disposed of — is now supplied to an association devoted to re-educating convicts in a local prison by teaching them woodworking. The plants in Dabrowa (Poland) and Apodaca (Mexico) and the LaCam plant in Sellero (Italy) have systems in place for processing cutting emulsions and oils that reduce the amount of waste oil and contaminated water to be disposed of.

### Waste generated (t)\*

	2016**	2017	2018***
Hazardous waste	18,300	18,427	20,644
of which: discharged	-	-	12,799
of which: reused	-	-	7,821
Non-hazardous waste	199,979	301,118	362,180
of which: discharged	-	-	172,507
of which: reused	-	-	183,923
<b>Total</b>	<b>218,279</b>	<b>319,545</b>	<b>382,825</b>
of which: discharged	-	-	185,306
of which: reused	-	-	191,744

\*Data on waste's final destination (reuse/discharge) referring to fiscal years 2016 and 2017 are not available as they were not specifically subject to monitoring by the Group.

\*\* The figures for the Langfang (China) production plant, which entered the consolidation scope during 2016, are excluded from the calculation of waste generated.

\*\*\* The entries "of which: discharged" and "of which: reused" do not include waste generated in the year but not discharged by the Langfang and Nanjing plants (5,774.42 tonnes).