

**ES IST EIN
VORWERK!**



**IT'S A VORWERK!
WHEN NOT ONLY
ITS LOGO IS GREEN.**

Vorwerk Life Balance
Environmental and Energy Report
2018



EINZIGARTIGE BODENBELÄGE *seit 1883.*
UNIQUE FLOOR COVERINGS *since 1883.*

CONTENT

05

**FOREWORD
BY THE EXECUTIVE BOARD**
6 | Environmental and
energy guidelines
7 | Portrait of our environmental
and energy management system

08

**INTRODUCING
VORWERK FLOORING**
9 | Production- and location-specific
environmental issues
10 | Precedent-setting examples
of environmental protection
11 | The production of textile flooring
12 | Dye dosage and batch preparation
station
13 | Substances that endanger water
14 | Hazardous substances
15 | Waste water figures
16 | Emissions

17

RECYCLING PROCESS
18 | Internal recycling
19 | External recycling process
20 | Reducing fine particles in production
20 | Recycling in the product

21

INPUT / OUTPUT
22 | Energy data

24

**OCCUPATIONAL SAFETY
AND HEALTH PROTECTION**

26

**REQUIREMENTS FOR
THE PRODUCT**
27 | Information about REACH

28

GREEN BUILDING
28 | LEED
29 | Green Label Plus
30 | A+
30 | EPD
31 | DGNB

32

**VORWERK FLOORING –
PRODUCTS FOR ECOLOGICAL
BUILDING**
32 | TEXTiles – the ecological
carpet tile
33 | RE/COVER green

34

LIFE BALANCE

35

**CORPORATE SOCIAL
RESPONSIBILITY**

36

**ENVIRONMENTAL AIMS
2016 – 2018**
37 | Energy management /
programme 2013 - 2018

38

PUBLICATION DETAILS

LIFE BALANCE 2018

FOREWORD

It's a Vorwerk! And it's not just the logo that's green ...

As a traditional yet innovative family business, we bear a great responsibility to our customers, our employees, and our home town of Hameln. The basis of this is protecting the natural foundations of life; products and production methods that are gentle on the environment and energy; and social responsibility. This concept, and the way Vorwerk flooring sees itself, are summed up in the expression Vorwerk Life Balance, and we are constantly striving to think and act in a long-term context so that future generations can live in a green world.

To achieve the greatest possible transparency in all of this, we regularly and voluntarily submit to monitoring by independent testing institutes, far beyond what is required by law. As a result, Vorwerk flooring carries all the latest major green product labels, numerous internationally recognised signets, and health-relevant certificates.

se certifications are evidence of one of Vorwerk flooring's most sustainable characteristics of all. Our floor coverings are of the very highest quality and durability, which means they have to be replaced less frequently, and they generally improve places where they are used through their dust-binding and noise insulating properties.

We achieve product performance as defined in the Vorwerk Life Balance System through the effective use of recycled and recyclable materials and by avoiding waste by recycling during production – and we have been doing so since the 1960s.

This of course includes the efficient use of energy sources and the best possible protection of resources.

Our vision is to develop products that consist almost entirely of recycled material and which themselves can be recycled.

Social and economic aspects belong to Vorwerk flooring's holistic approach alongside these ecological components. An honest commitment to charitable institutions like SOS Children's Villages throughout the world, as well as family and health management for our own employees, are an expression of the social responsibility to which we as a company are daily committed.

The Vorwerk Life Balance concept and all of its activities and visions show that Vorwerk flooring consciously embraces its responsibility to people and the environment as part of society, and will continue to embrace future challenges as well.



*Kirstine Seitzberg
Executive Board*

ENVIRONMENTAL AND ENERGY GUIDELINES

ENVIRONMENTAL GUIDELINES

1. Environmental protection is a corporate aim in its own right for Vorwerk flooring.
2. All of our corporate decisions are assessed for environmental compatibility.
3. Vorwerk does more than the law demands in the conservation field, with the aim of constantly intensifying environmental protection.
4. The Executive Board carries overall responsibility for environmental protection.
5. Production is done using a minimum of resources.
6. Unavoidable environmental impact is kept to the lowest possible level.
7. Instead of using end of the pipe techniques, we tackle causative processes to reduce environmental impact.
8. We aim to educate our employees and the public in an appropriate way about the aims and successes of our environmental protection efforts.
9. Annual internal audits are performed and collated into environmental audits every three years, so as to uphold our environmental management system.
10. We demand the same of our suppliers as we do of ourselves.

11. We aim to proactively communicate our ecological concept to our customers to persuade them to follow our standards.
12. It is as a matter of course that we are committed to complying with environmental and energy regulations.

ENERGY GUIDELINES

1. It is the Executive Board which initiates any activities that reduce the use of resources in our energy flows and the means we use to generate them.
2. Recording energy data in every relevant area is mandatory.
3. Continuous energy consumption monitoring ensures that corrective measures are applied quickly in the event of deviations.
4. We are committed to continuously improving the energy consumption of our buildings and systems.
5. We promote the rational and responsible use of energy in our daily work by educating and training our employees.
6. When we procure equipment, systems and spare parts, we ensure that we use the best available technology and that we evaluate the energy efficiency of the equipment, systems and services we acquire.

7. Our use of renewable energies is regularly assessed and is implemented in the light of business considerations.
8. All of our employees are committed to using the available energy sources in a careful and responsible manner.
9. Preventative maintenance ensures that the running of our systems is optimised from an energy point of view.
10. Energy data is made available on our website to anybody who is interested.

PORTRAIT OF OUR ENVIRONMENTAL AND ENERGY MANAGEMENT SYSTEM

The following personnel are responsible for applying the environmental/energy management system in their areas of responsibility:

- **Executive Board**
for the entire operation
- **Process owner**
for their process
- **Shift manager**
for the machinery in their shift
- **Every employee**
for their area of work

The environmental and energy management representative is appointed by top management and carries the responsibility of maintaining and developing the environmental and energy management system. Regular internal and external environmental audits help us to uphold our high environmental standards, thus helping to secure our site.

The environmental and energy management representative has no power to direct; they have an advisory function only – but at every level.

INTRODUCING VORWERK FLOORING

Ever since 1883, Vorwerk flooring and its products have represented a unique blend of superior quality, sustainable innovation and global prize-winning design. Millions of satisfied customers have furnished their apartments, houses and offices with products made for the past 130 years by this traditional German manufacturer. Vorwerk has regularly redefined flooring, and offers products that do not lose any of their appeal or quality even after many years. Product development, production and quality assurance happen at our headquarters in Hameln, guaranteeing that our-embracing brand promise – It’s a Vorwerk! – is kept by means of perfect performance.

Millions of possibilities making millions of wishes come true.

Carpets and carpet tiles are woven, tufted, dyed, printed, coated and made up at our headquarters at Kuhlmannstraße 11 in Hameln.

Our site extends over around 10 hectares and is located in the southern industrial area of Hameln. To the south of the site flows the Fluthamel river, to the north the Stadthamel. Bordering further to the north is a residential area. Other companies have their offices and headquarters to the east and west of our carpet factory.

The factory was built as a greenfield site in the mid-1950s and has since been gradually extended in accordance with the demands of production. Around 4.0 million square meters of flooring are produced each year by 360 employees



Location of
Vorwerk Teppichwerke in Hameln

PRODUCTION- AND LOCATION- SPECIFIC ENVIRONMENTAL ISSUES

Vorwerk flooring manufactures high quality tufted and woven carpets using the latest processes. Some substances with environmental relevance are used in the various production processes.

OUR PROCESSES ARE DIVIDED UP AS FOLLOWS:

| PROCESS | ENVIRONMENTAL RELEVANCE | AIMS FOR AVOIDING ENVIRONMENTAL IMPACT |
|-------------------|---|---|
| Weaving machines | Oil, grease, particulates, noise, general waste, energy | Regular noise monitoring, waste avoidance concept, correct storage of hazardous substances, reduction of energy use |
| Tufting machines | Oil, grease, particulates, noise, general waste, energy | Regular noise monitoring, waste avoidance concept, correct storage of hazardous substances, reduction of energy use |
| Dyeing systems | Oil, grease, acid, alkaline substances, dyeing and textile agents, noise, waste air, energy | No CMR substances, no use of APEO, regular waste water inspections, regular noise monitoring, fire protection training, waste avoidance concept, correct storage of hazardous substances, workplace measurements, emission measurements, reduction of energy use |
| Finishing | Oil, grease, coating agents, dyes, extinguishing gas, waste air, carpet remnants, energy | No WHC 3 substances, no CMR substances, No use of: APEO, brominated flame retardant finishes, PFOA, PFOS Regular waste water inspections, regular noise monitoring, fire protection training, waste avoidance concept, correct storage of hazardous substances, workplace measurements, emission measurements, reduction of energy use |
| Packaging systems | Propane gas, sheeting, energy | Explosionsschutz nach ATEX und BGR 104/132, Abfallvermeidungskonzept, Reduzierung des Energieeinsatzes |
| Maintenance | Solvents, welding gas, oil, grease, energy | Explosionsschutz nach BGR 104/132, keine Stoffe mit WGK 3 Abfallvermeidungskonzept, keine CMR-Stoffe, sachgerechte Lagerung von Gefahrstoffen, Ausbildung zu Brandschutzhelfern |

PRECEDENT-SETTING EXAMPLES OF ENVIRONMENTAL PROTECTION

We left the end of the pipe mindset behind a long time ago and began to tackle the production process itself.

Instead of extracting the production residue we create from the environmental media of air and water and then disposing of it, we have changed processes so that it is not created in the first place.

This is made especially clear by three large-scale products with which Vorwerk has significantly reduced its environmental impact. The first is the building of a dye dosage and batch preparation station, which, in conjunction with the amendment of the process, prevents the creation of residues which previously had to be disposed of.

Secondly, there is our recyclable flooring and the associated internal recycling plant. This processes around 40% of textile remnants from production, and feeds them back into the production process

Furthermore, harmful emissions are not generated in the production of tiles, because we have eliminated bitumen and PVC.

Our RE/COVER green elastic flooring stands out on account of its design and its ecological composition. When we developed it, we placed a lot of emphasis on using a high proportion of renewable raw materials. We succeeded in replacing synthetic polyurethane with a natural version derived from castor and rapeseed oil.

TO SUMMARISE, THESE PROJECTS ILLUSTRATE FOUR APPROACHES THAT VORWERK TEPPICHWERKE TAKES TO REDUCING ENVIRONMENTAL IMPACT:

1. Changing the production process and eliminating end of the pipe techniques.
2. Changing the product to reduce the environmental impact of production.
3. Developing new products with the intention of keeping environmental impact as low as possible.
4. Including our suppliers at the start of development to ensure as much lasting transparency as possible in the supply chain.

THE PRODUCTION OF TEXTILE FLOORING

Optimising and amending existing processes is a way of reducing environmental impact to an absolute minimum. A greater challenge is to optimise products and achieve a product which is ecologically improved at the end, including for the customer.

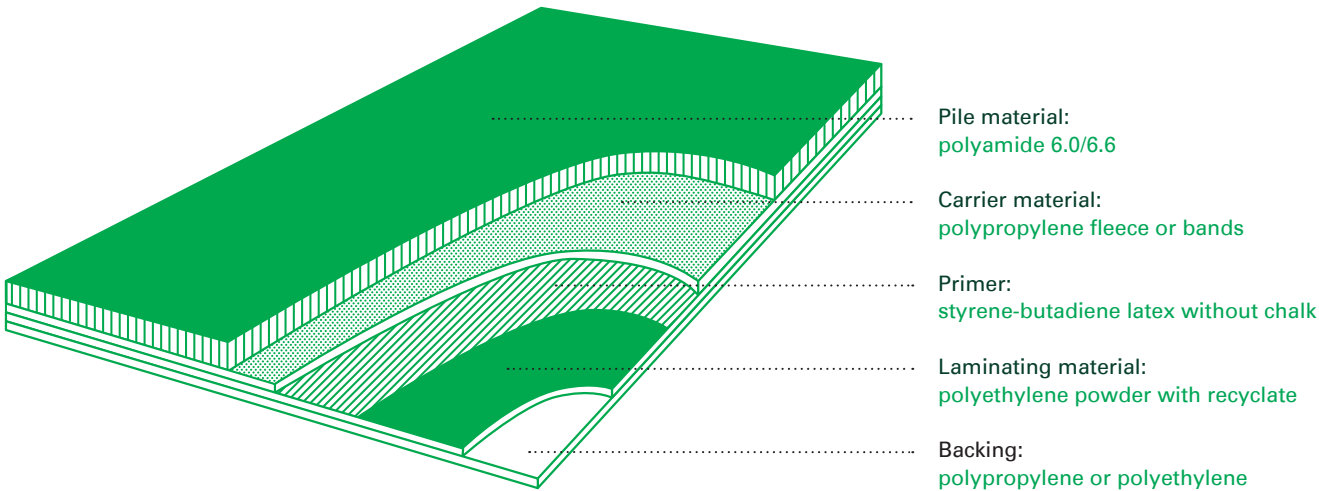
Vorwerk flooring replaced environmentally harmful foam backing on its carpets with a fully textile version right back in the 1990s.

And with its TEXtiles carpet tiles, Vorwerk has even managed to eliminate PVC and bitumen entirely as heavy coatings. This remains the case in the newly developed SL SONIC acoustic carpet tiles.

Almost all our products are made entirely of synthetic fibres and are therefore highly recommended for allergy sufferers and are easy to recycle.

BENEFITS OF POLYAMIDE CARPETS

- They use recycled material
- No mothproofing required
- Flame retardant agent uses aluminium hydroxide
- Fully recyclable
- They insulate the sound of footsteps
- Recommended for allergy sufferers



STRUCTURE OF A TUFTED CARPET

DYE DOSAGE AND BATCH PREPARATION STATION

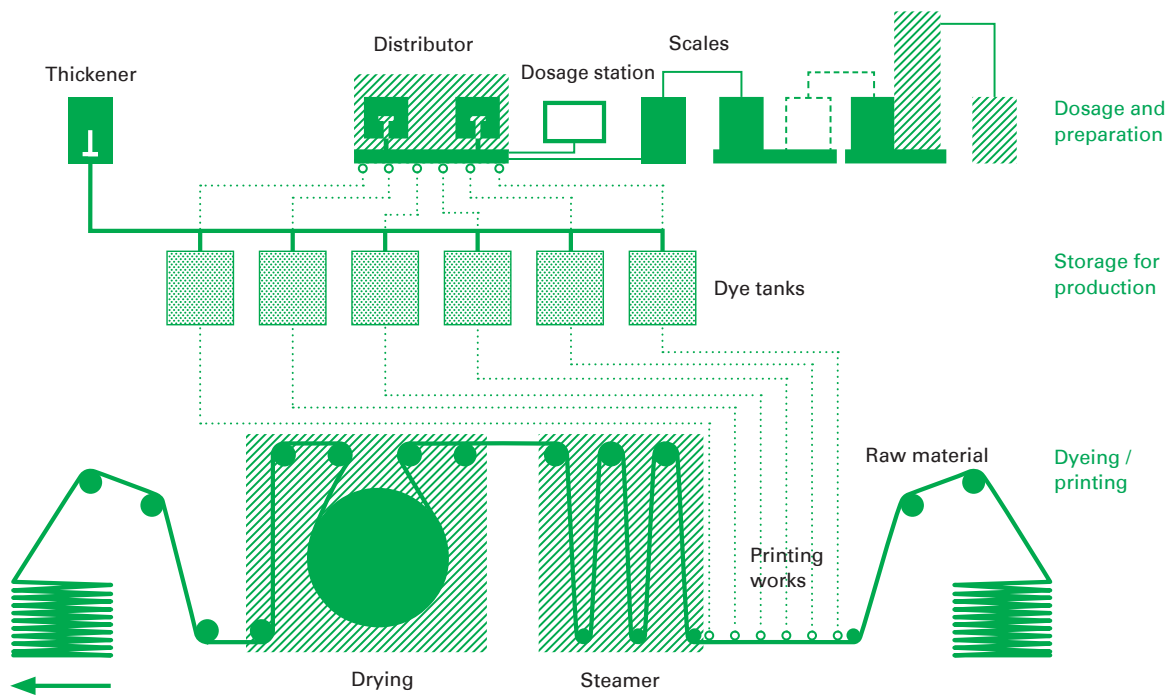
Our dye dosage and batch preparation station was built above the dyeing systems so as to enable a vertical flow of material.

In the upper level, the dye baths are computer controlled which makes dosages and preparation processes more precise than ever before. This reduces faulty batches

and bath remnants that can no longer be used to a minimum.

It also enables us to produce smaller dye preparations to dye smaller areas than with the technology that was previously available.

We therefore avoid waste even in the manufacturing process, so we do not have to filter it out and dispose of it expensively after it is created. Installing this new system has enabled us to reduce the dirt load in the waste water coming of our dye dosage and batch preparation station by around 80%.



DYE DOSAGE AND BATCH PREPARATION STATION

SUBSTANCES THAT ENDANGER WATER

Vorwerk carpets are dyed using various processes. All of these, however, are water-based, which means we use no organic solvents or allergenic substances whatsoever.

The dyeing process produces waste water which is processed in our own multi-stage preliminary purification system until it complies with the limits of Hameln council's waste water statutes.

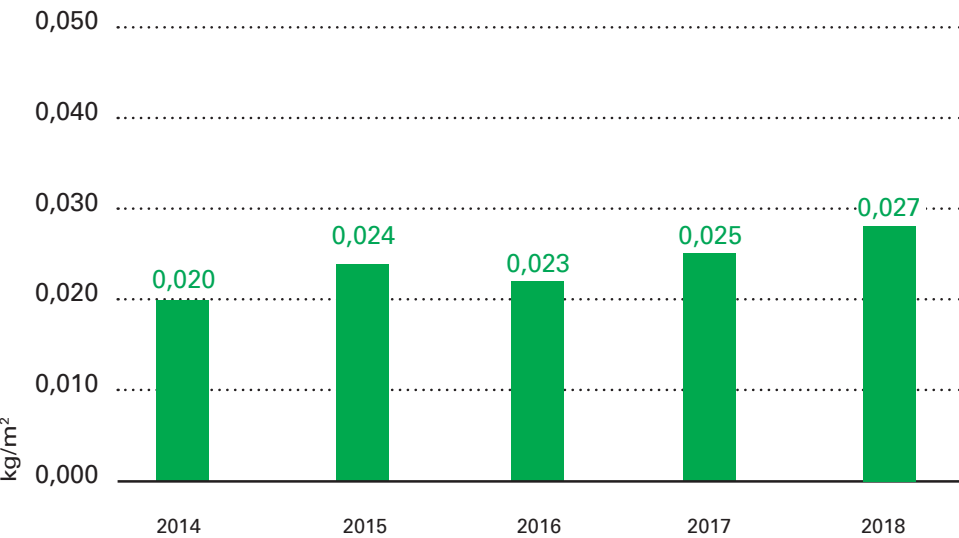
The waste water is cooled, suspended solids are filtered out of it, it is neutralised, and it is then fed indirectly into the sewage system, which takes it to the municipal sewage works.

All of the chemical, dyeing and auxiliary agents that are used are approved by the environmental representative on the basis of their safety data sheets; they are not procured until approved.

Strict stipulations on environment relevance are negotiated with suppliers before we actually buy textile agents, dyes, oil, grease, acid or alkaline substances.

The processes in which we work with hazardous substances run automatically and in largely closed systems, which keeps to a minimum their impact on the environment and people.

Recategorisation of substances by manufacturers means that many substances we use are now more strictly rated; some of our auxiliary agents have been upgraded from water hazard class 1 (WHC 1) to WHC 2. This will happen more and more frequently over the next few years as part of REACH and the new Global Harmonised System (GHS).

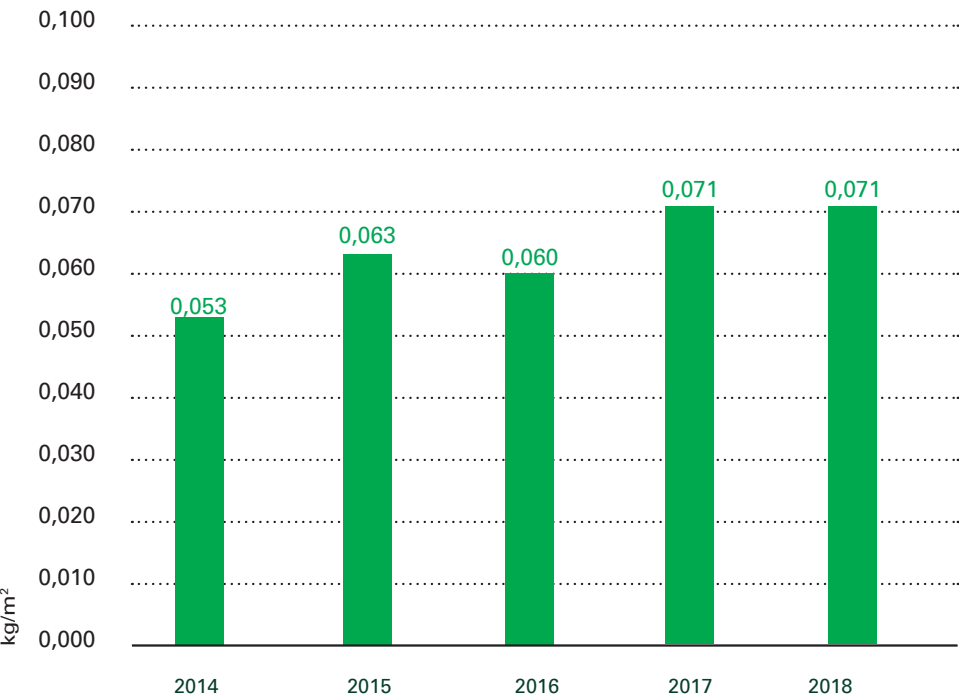


SUBSTANCES THAT ARE A HAZARD TO WATER IN WHC 1 + WHC 2

HAZARDOUS SUBSTANCES

Use of hazardous substances has been kept to a consistently low level for many years at Vorwerk flooring. This is due especially to environmentally gentle production in

our dye works and finishing, and to strict monitoring of the substances used.



HAZARDOUS SUBSTANCES ACCORDING TO ORDINANCE ON HAZARDOUS SUBSTANCES

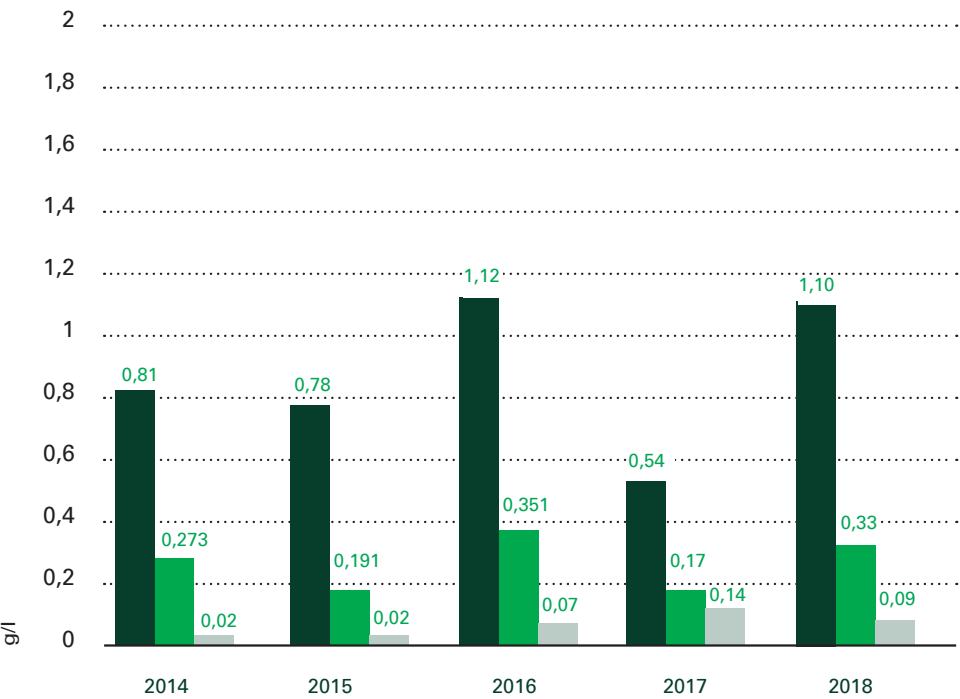
WASTE WATER FIGURES

Vorwerk is obliged to maintain a waste water registry and report its waste water emissions in an emissions declaration submitted to Hameln council and the factory inspectorate.

The legal basis of this is the Federal Water Act and the waste water statutes of Hameln council.

Waste water emissions are tested by independent assessors every three months. The materials used are regularly inspected for AOX, COD and BOD content.

- COD**
chemical oxygen demand; the quantity of oxygen needed to break down harmful substances in water
- BOD**
biochemical oxygen demand; the quantity of oxygen used by microorganisms within five days.
- AOX**
adsorbable organic halides; e.g. fluorine, chlorine and bromine



WASTE WATER FIGURES 2014 - 2018 (AVERAGE FIGURES)

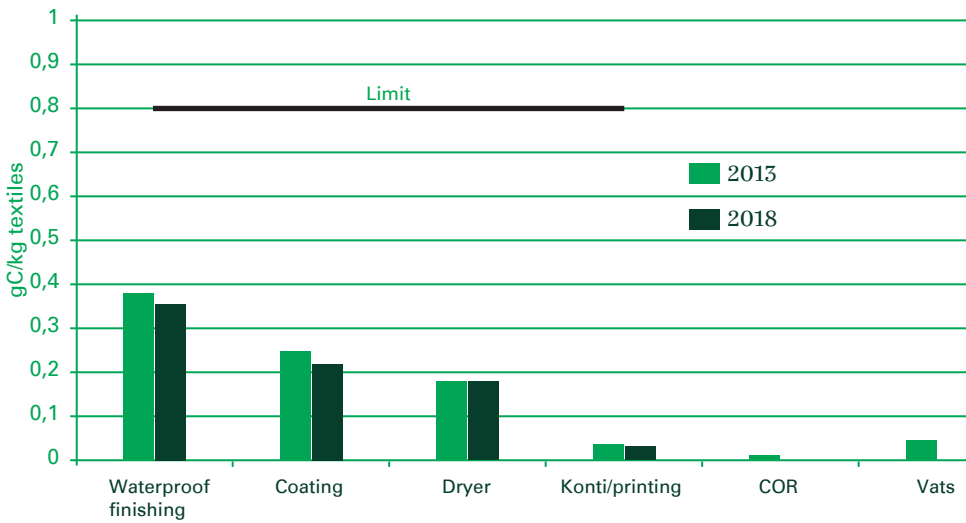
EMISSIONS

Vorwerk operates two plants that are subject to approval under the Federal Emissions Act. The first of these is the dye works, the second the coating plant. Emissions of harmful substances have been reduced in both by changes to products and processes. By continuously measuring our producer gas levels, we ensure that there is no dangerous air contamination. Vorwerk

naturally complies with the figures of TA Luft (2002), and sometimes improves on them. The COR plant was demolished in 2017, so that produces no emissions at all. The new tile coating plant is not subject to the 4th Federal Emission Protection Ordinance due to its low-emission production processes.

Vorwerk's commitment to environmental protection and the introduction of its DIN ISO 14001 environmental management system has meant that state emission measurements no longer have to be performed every three years, but at a five year rhythm instead. The most recent emission test was in January 2018.

This graph shows specific carbon emissions in gC/kg of textiles.



TOTAL CARBON EMISSIONS COATING AND DYEING

RECYCLING PROCESS

Textile remnants generated in production are processed in a plant built specially for the purpose, then they are used in the production of texback® products.

The processing of recyclate is a multi-stage system. To begin with, remnants, such as carpet cut-offs and sheeting, are shredded in a preliminary shredder and stored in an intermediate silo.

This shredded material is then agglomerated, cut again, cooled, and transported to another silo for interim storage.

The granulate is ground, sieved and put in a silo, from which it is mixed with PE powder on demand using a mixing system.

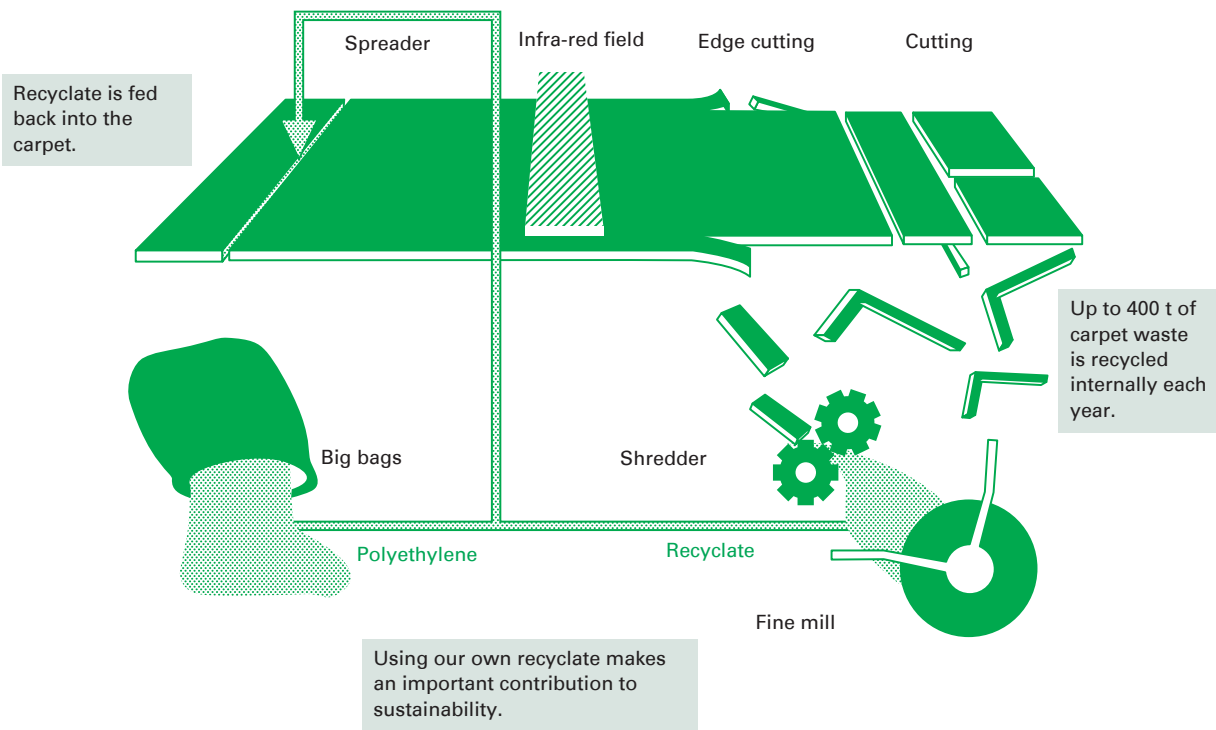
The PE/recyclate blend is then finished and can be taken to the coating plant.

This system allows us to process several hundred tons of textile remnants each year, which were previously burnt as waste by Enertec Hameln GmbH (waste incineration plant). We then feed them back into our internal production processes

INTERNAL RECYCLING

Vorwerk flooring has operated its own recycling plant since the early 1990s. We managed to internally recycle 301 tonnes of carpet waste in 2018.

Using our own recyclate makes an important contribution to sustainability, since it saves around 17 truckloads of latex.



RECYCLING CONCEPT SINCE THE 1990S

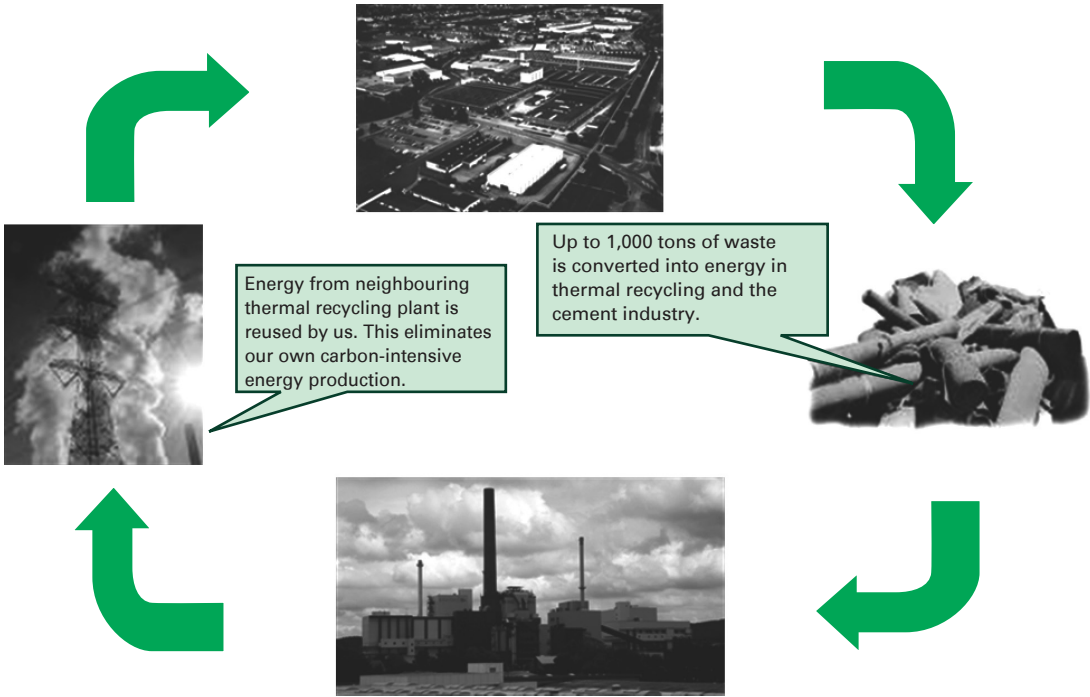
EXTERNAL RECYCLING PROCESS

Vorwerk makes use of the advantages of its location by bringing the municipal solid waste it produces to the neighbouring incineration plant. The steam produced there supplies the processes as an energy source.

Other production waste is used as a substitute fuel in the cement industry.

These processes help reduce CO₂ emissions, since no additional resources like oil, gas or other fossil fuels are needed to produce the energy.

Furthermore, 106 tonnes p.a. of yarn remnants that are not needed in further processes are fed into an external recycling process.

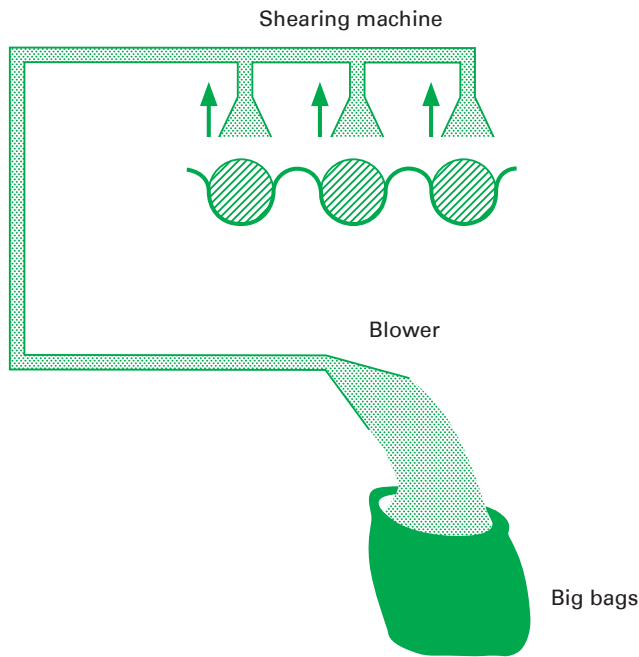


EXTERNAL RECYCLING PROCESS

REDUCING FINE PARTICLES IN PRODUCTION

Vorwerk operates particle filter systems that filter 44 tonnes p.a. of fibre particles and yarn fibres from the air and feed them into an external recycling process, where they are used as filling for new synthetic products.

DIAGRAM OF DUST FILTRATION AT THE
SHEARING MACHINE



RECYCLING IN THE PRODUCT

Vorwerk has been using recycled material in its products for years.

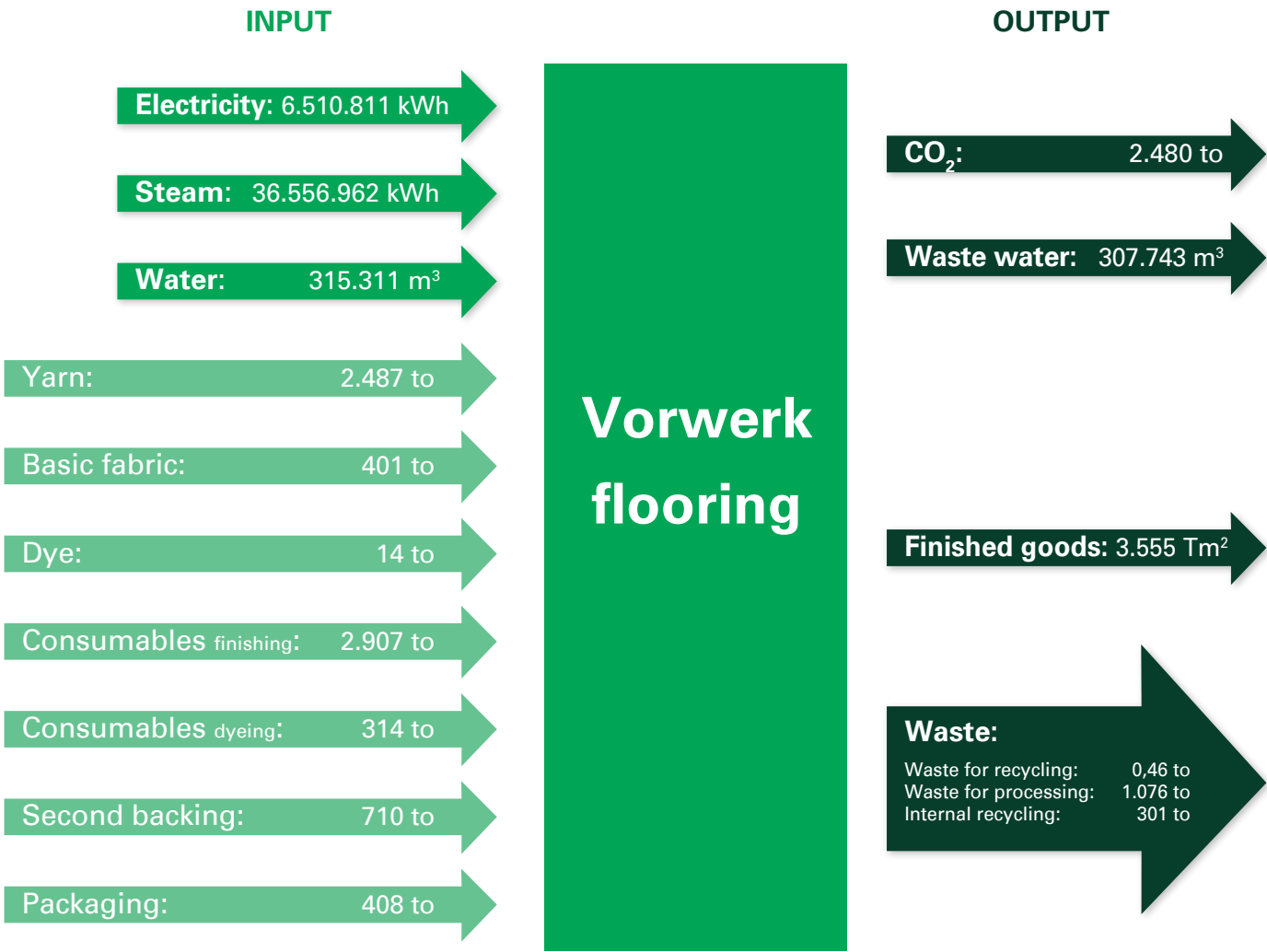
The long term aim is to keep increasing the proportion of recycled material in products. It is already possible to use up to 40% recycled material per product, depending on the design

TEXTiles and SL SONIC tiles, for example, use 100% recycled material for their backs, and the proportion of recycled material is even greater because we use a fibre specially procured from Aquafil, called Econyl® 100, which is produced largely from old fishing nets collected from the world's oceans.

We managed to further increase the proportion of recycled fibres in 2018 by using a type of backing which is 100% recycled. A total of over 800 t of recycled materials was used.

INPUT / OUTPUT

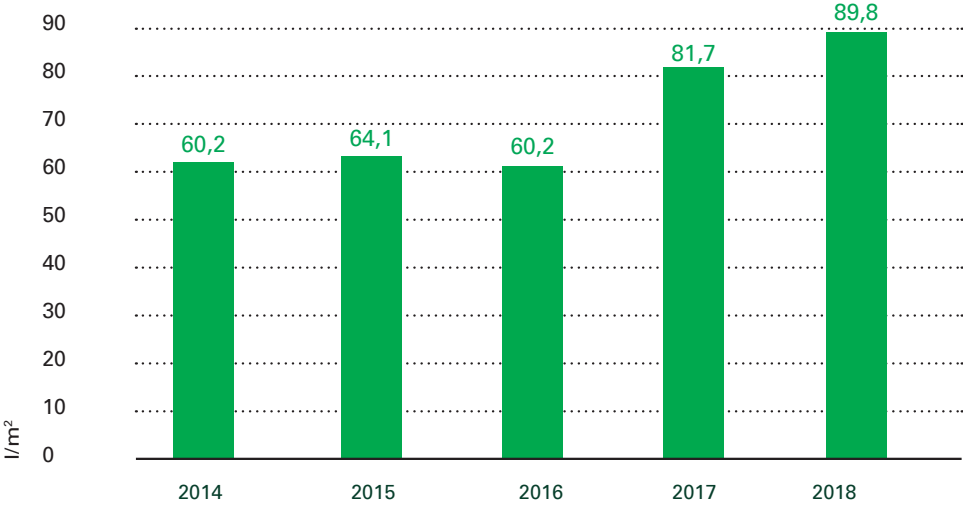
Vorwerk products are made using a wide range of raw materials. We ensure that our basic materials contain a high proportion of recycled material and are harmless to people and the environment. We will keep striving to increase the proportion of recycling in our raw materials.



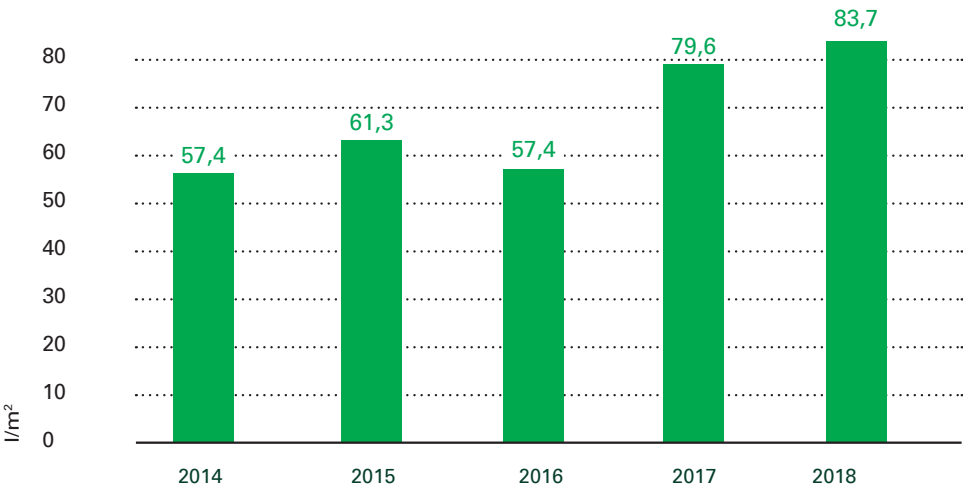
ENERGY DATA

Vorwerk flooring introduced a DIN ISO 50001 energy management system in 2015. This management system aims to better analyse and evaluate the quantities and flows of energy used in production, from which we can derive long-term measures that reduce energy consumption.

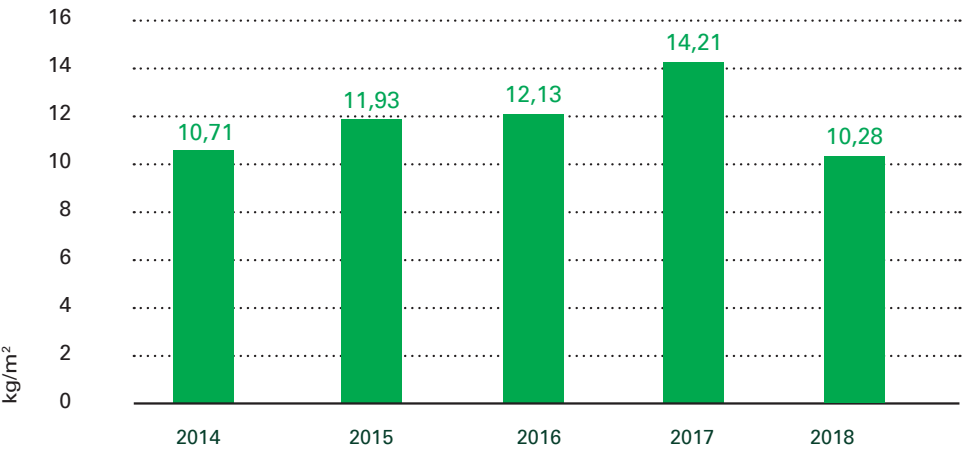
Investing in three new dye vats and demolishing our cold dyeing plant has meant that energy consumption per m² of carpet has risen since 2017. But the vat process achieves a better quality result during dyeing, and because of our quality standards, we wish to maintain this and offer it to our customers.



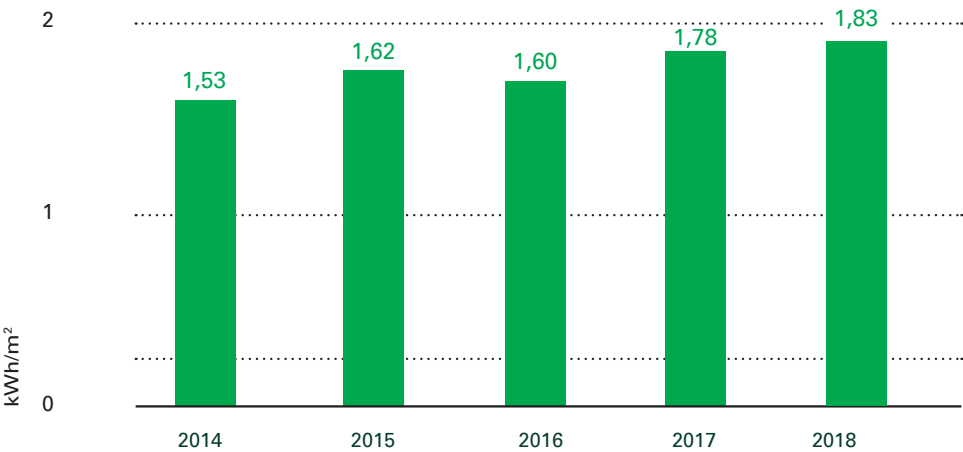
WATER CONSUMPTION



WASTE WATER



STEAM CONSUMPTION

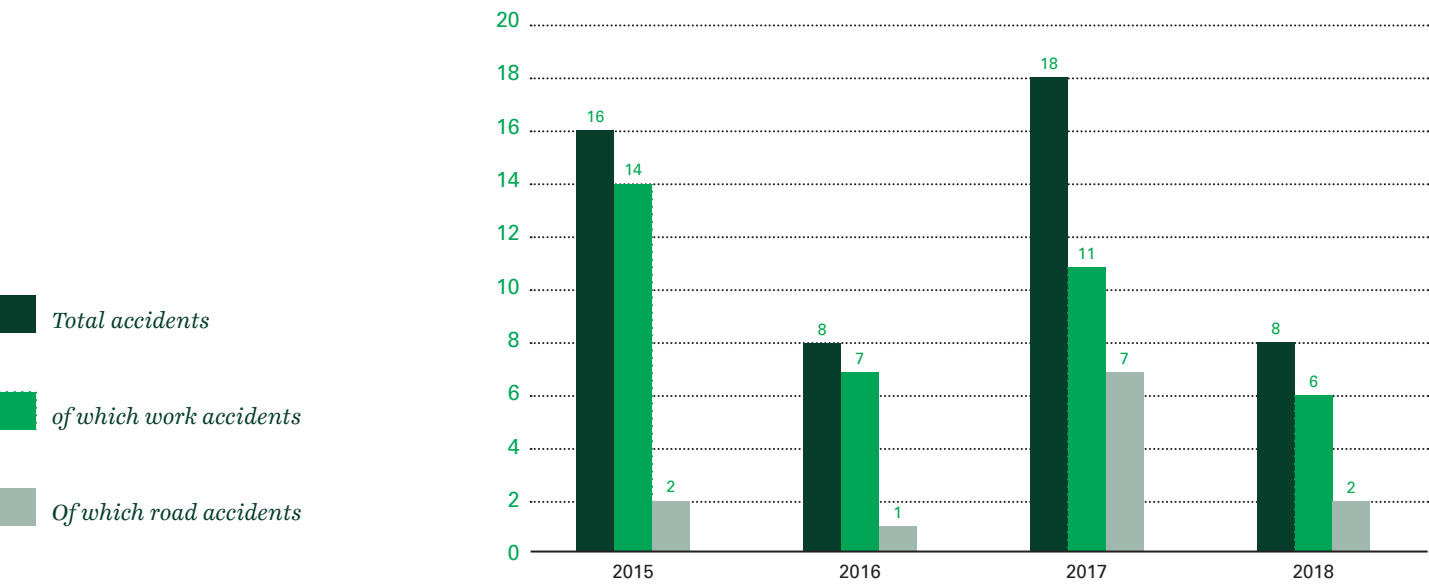


POWER CONSUMPTION

OCCUPATIONAL SAFETY AND HEALTH PROTECTION

There is always the risk of accidents wherever lots of people work together. That is why Vorwerk is obviously committed to the occupational safety and health of its employees.

Prevention constitutes much of this work. We place a lot of emphasis on regularly training our employees in occupational safety, the handling of hazardous substances and fire protection.



ACCIDENTS DIVIDED BETWEEN ROAD AND WORKS ACCIDENTS

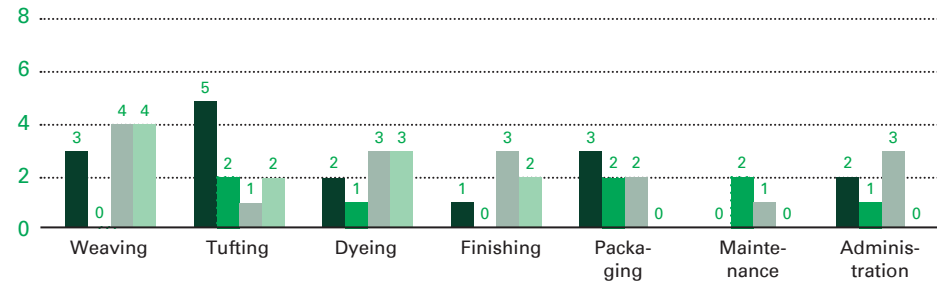
Safety officers, first aiders and works paramedics are regularly trained from among our staff so as to ensure that safety activities gain widespread acceptance, and this helps an awareness of safe behaviour to filter into every level of working processes.

The scheme is completed by regular health checks for employees, such as cancer prevention, dietary advice and blood tests in collaboration with actimonda health insurance.

Because we are very near to a residential area, the protection of our neighbourhood is of course a major aim of our safety and environmental policy.

An example of this is having our technical systems checked regularly by TÜV and VdS. Preventative maintenance activities on machines and equipment also ensure that they run safely.

A complete sprinkler system throughout our factory ensures that excessive smoke is not produced in the event of a fire. This means that impact on our neighbourhood is almost entirely eliminated.



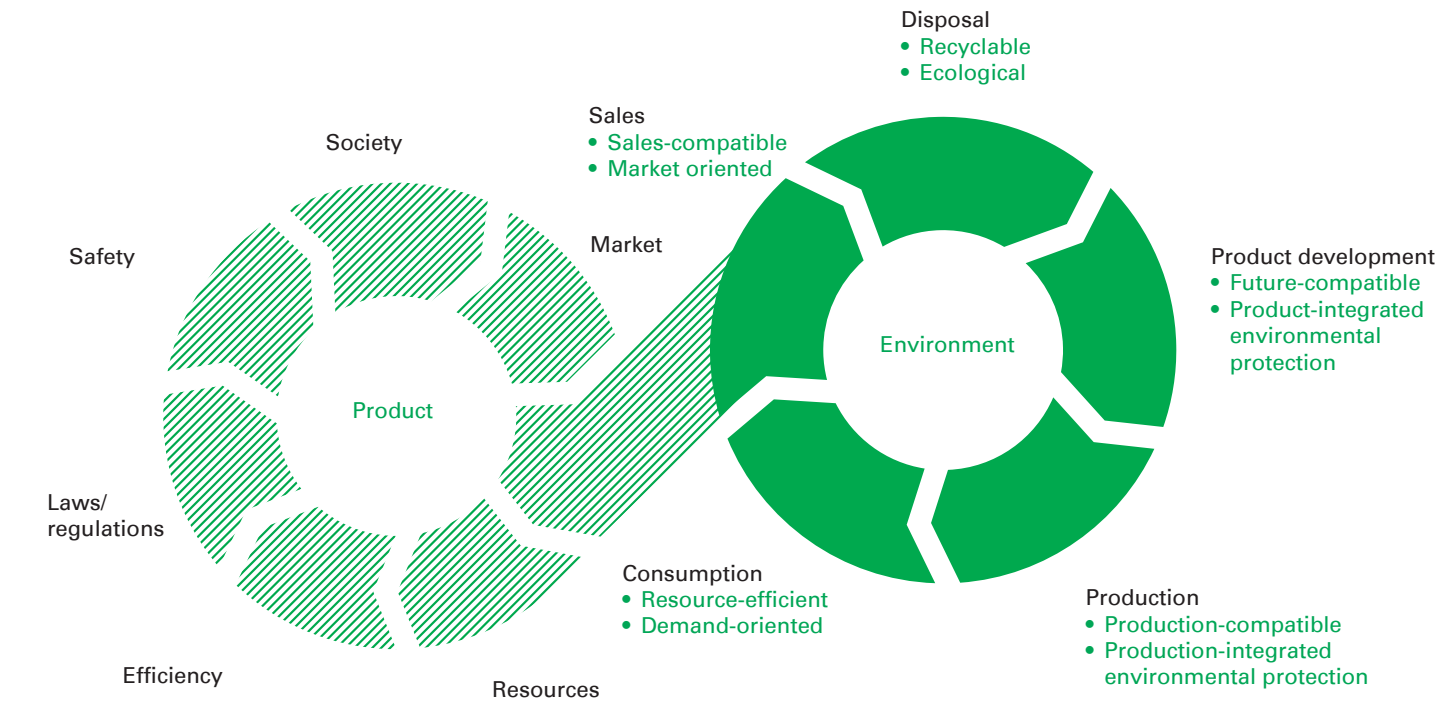
ACCIDENTS BY DEPARTMENT

REQUIREMENTS FOR THE PRODUCT

Vorwerk flooring products have to meet a wide variety of requirements. When we develop a new product, the effects which it may later have must first be considered, while taking into account risks and opportunities.

All the criteria listed are checked for relevance by multiple departments, and products pass through different internal approval processes before being delivered to customers.

Source:
Institut für ecological Wirtschaften



CRITERIA FOR DEVELOPING A SUSTAINABLE PRODUCT

INFORMATION ABOUT REACH

REACH stands for Registration, Evaluation and Authorisation of Chemicals. This EU regulation has been in force since 2007 and obliges manufacturers and importers into the EU, to have not only their chemicals but also their materials and compounds registered with ECHA in Helsinki. The REACH regulation applies to all manufacturers and importers of substances > 1 tonne per year.

REACH removes the distinction between the approximately 100,000 old materials – substances that entered the market before 1981 and about which little is known – and the approximately 4,000 new materials which are now being investigated for their potential dangers.

A key to REACH is its ‘candidate list’ itemising every substance that is a cause for particular concern.

Our REACH representative Mr Kunze is available should you require further information.

CONTACT DETAILS:
Andreas Kunze
Kuhlmannstraße 11
31785 Hameln
Tel.: +49 (0) 5151 / 103-406
andreas.kunze@vorwerk-teppich.de

TIMETABLE:

- Substances produced at more than 1,000 tonnes per year have had to be registered with the ECHA since 01.12.2010; so too have carcinogenic, mutagenic and reprotoxic substances above 1 tonne per year and environmentally hazardous substances over 100 tonnes per year.
- Substances in quantities of more than 100 tonnes per year have had to be registered since 01.06.2013.
- Substances in quantities over 1 tonne per year have to be registered by 01.06.2018.

As a user of materials or downstream user, Vorwerk is obliged under Article 33 REACH Regulation to provide its customers with information about the use of CMR (carcinogenic, mutagenic, reprotoxic) substances and any substances that are a particular cause for concern and that constitute more than 0.1 mass percent.

This is why all of the chemicals we use are managed in a database and only procured once their safety data sheets have been inspected and approved. We also regularly cross check our substances with the ECHA candidate list.

GREEN BUILDING

Green buildings are those in which a lot of emphasis was placed on resource efficiency when they were made. In the planning phase, the impact on the environment and health is considered, and a design is aimed for which reduces harmful effects during the construction, use and post-use phases. In an ecological analysis, all of the building products are analysed for their harmful effects on people and the environment. This applies also to carpets, tiles and RE/COVER green hard floorings that are subject to the Building Products Directive.

LEED

More and more structures are being built throughout the world in compliance with LEED criteria. LEED is a US standard for assessing the sustainability of buildings. One of its aims is, during the building and post-uses phases, to ensure that the building saves as much energy as possib.

To achieve this, LEED evaluates a building in six categories, including interior quality, and awards points which are added up to produce a distinction.

40-49 points Certified
50-59 points Silver
60-79 points Gold
Buildings with more than 80+ points are awarded Platinum.



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GREEN LABEL PLUS

All of the building products in a building have to be made using ecological criteria. Vorwerk flooring was awarded the Green Label Plus in 2019 by the US Carpet and Rug Institute. Our emissions are tested on a regular quarterly basis by the CRI.

Green Label Plus demonstrates that our carpets and carpet tiles are especially low-emission. If you use Vorwerk carpets, you can achieve the highest possible certification level, Platinum, for your building.

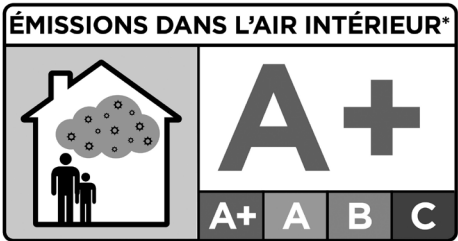
More than 10,000 buildings have been certified since LEED began in the year 2000.



A+

In France it has been obligatory to evaluate building products according to their emissions, and label them accordingly, since 2012. Our low emission products have

gained us the highest rating, A+ for our carpets, carpet tiles and RE/COVERgreen hard floors.



EPD

Environment Product Declarations – EPDs for short – form the data basis for ecological building evaluation in compliance with DIN EN 15978 Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method.

Environment Product Declarations are based on international standards (ISO 14025; ISO 14040ff) and Europe’s DIN EN 15804, and are therefore internationally coordinated. They serve as a demonstration of environmental standards in public procurement.

Environment Product Declarations also offer a relevant data basis for demonstrating a product’s environmental properties in marketing and sales.

Vorwerk flooring began in 2014 to post EPDs for its floor coverings on the website run by the Institut Bauen und Umwelt (Construction and Environment Institute), and will continue to do so. The EPDs can be viewed at the following website.

<http://ibu-epd.com/epd-programm/veroeffentlichte-epds/>



DGNB

The Deutsche Gesellschaft für Nachhaltiges Bauen e.V. – DGNB for short, the German Sustainable Building Council – was founded in 2007 by 16 initiators from different sectors of the building and property industry. The aim was to give even more lasting impetus to sustainable building.

The response to the founding of DGNB was extremely positive: by early 2008, 121 organisations had already joined. The association now has over 1,200 members throughout the world.

As a supporting member, Vorwerk flooring has been helping DGNB in its efforts since 2012.

In the DGNB Navigator, Vorwerk flooring has set up several product groups on the basis of an EPD (Environment Product Declaration), so that building planners have direct access to our products’ environmentally relevant specifications.

SUSTAINABILITY ACCORDING TO DGNB.

At DGNB, sustainability is more than just a word: DGNB understands it to include the whole of society’s duty to take responsibility for today’s problems, like climate change and resource scarcity, instead of leaving

them to future generations. Sustainable building can play a major part in this:

According to the Federal Environment Ministry, around a third of resources consumed in Germany are used by buildings. Similar applies to the creation of waste and CO2 emissions.

The DGNB sustainability concept extends beyond the familiar three-pillar model. As well as ecology, economics and user convenience, there are functional aspects, technology, processes and location, all of which are focussed on when planning and building sustainable structures and urban areas.

(DGNB quote)



VORWERK FLOORING - PRODUCTS FOR ECOLOGICAL BUILDING

Our aim is to make products that comply with modern, ecological building methods. Our flooring fulfils the emission criteria of every major European and US label, and is therefore an important part of a healthy, ecological working environment.

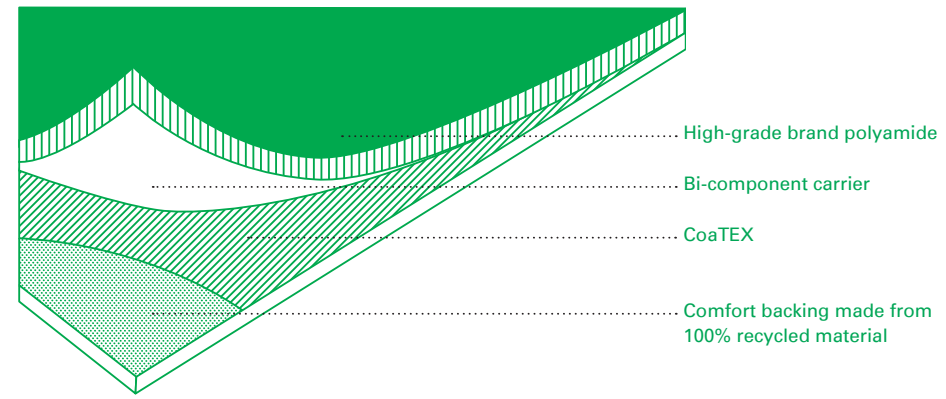
TEXTILES - THE ECOLOGICAL CARPET TILE

Vorwerk flooring will continue to be active in the field of ecological innovation so as to support sustainable building.

The construction of our own tile laminating system shows that this is more than merely lip service. It is the first time we have been able to make our own PVC and bitumen free carpet tiles without relying on other manufacturers and without the process involving a lot of transport.

In terms of building ecology, TEXTiles reduce fine particles in rooms and emit no harmful emissions because they have a PVC and bitumen free coating.

This means there are no harmful softeners as there are in PVC coatings. The polycyclical aromatic hydrocarbons, or PAH, which are found in bitumen coatings, are not contained in TEXTiles either.



STRUCTURE OF TEXTILE BACKING

RE/COVER GREEN

Polyurethane made from renewable raw materials:
Vorwerk's eco design covering RE/COVER green represents a whole new generation of sustainable, elastic flooring:

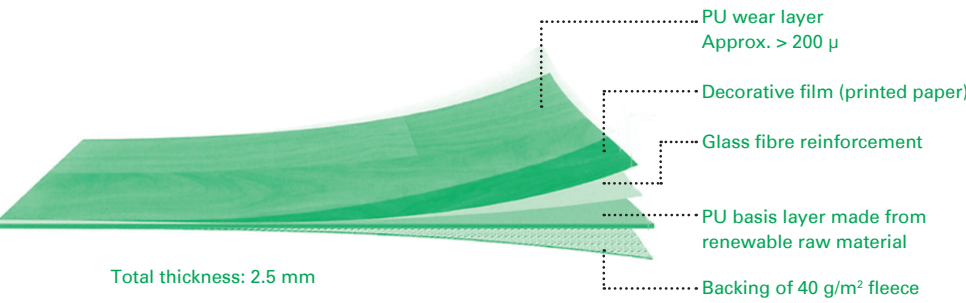
- RRapeseed and castor oils (biopolyols) replace petrochemical raw materials in polyurethane
- Chalk is used as a natural filler
- Vorwerk's eco design covering is therefore made mainly of renewable raw materials
- The covering is very tough and therefore very durable (lifespan-cost analysis)
- The covering is recyclable

This floor covering carries all of the test marks relevant to sustainable building, and therefore meets the requirements of Blue Angel, the US Greenguard for Children and School, the French A+ and the Finnish M1 Standard.

RE/COVER green is naturally approved as a building product by DIBt, the Deutsches Institut für Bautechnik (German Construction Technology Institute), and is completely free of PVC.

VWith this product, Vorwerk flooring demonstrates responsibility and a caring attitude towards our habitats.

PRODUCT STRUCTURE



THE LABELS:

These three labels guarantee that RE/COVER green complies with European and American emission limits.



Note: the three labels shown above will no longer be carried from 2019. From then on, we will only be working with one label, TÜV Proficert, for our RE/COVER green product.

LIFE BALANCE

OUTSTANDING QUALITY

Vorwerk has always been concerned about people's wellbeing and health in their homes. The company has made the production of environmentally and health aware products a major part of its corporate philosophy. High-grade carpets and tiles for a better quality of life. For many years, the ecological quality of Vorwerk carpets has been repeatedly confirmed by German and international and environmental labels – including GUT and Green Label Plus.

LOWEST PARTICULATE FIGURES

A study by the Gesellschaft für Umwelt- und Innenraumanalytik (Environmental and Interior Analysis Society, GUI) commissioned by the Deutscher Allergie- und Asthmabund (German Allergy and Asthma Association, DAAB) on particulate solutions inside buildings confirmed in 2005 that carpets reduce fine particles by half. Particulate pollution in a room with a smooth floor is 62.9 µg/m³, which is above the legal limit for fine particles in outside air, whereas carpet achieves a low particulate pollution level of 30.4 µg/m³. That is why Vorwerk carpets and tiles are recommended for allergy sufferers. The latest medical textbooks also speak expressly in favour of Vorwerk carpet because of its tested allergenic compatibility.

The Vorwerk Life Balance Label combines every distinction and recommendation into one reliable and comprehensive seal of quality.

THE VORWERK LIFE BALANCE LABEL

The Vorwerk Life Balance Label is a seal which tells you that all Vorwerk carpets and tiles are outstanding quality. It represents our comprehensive approach of offering sustainable health and environmentally aware products across the entire value added chain and producing them under optimum social conditions. The label is therefore synonymous with the particular benefits of Vorwerk products: carpets and tiles absorb noise and help save energy. They are especially good at binding in harmful fine particles in interior air, which would otherwise irritate allergy sufferers.

LIFE BALANCE BENEFITS AT A GLANCE:

- Quality that is tested for harmful substances,
- Energy-saving, and recommended for allergy sufferers
- High quality standards and comprehensive testing criteria

Applies to all Vorwerk carpet and tile products



CORPORATE SOCIAL RESPONSIBILITY

Aside from the Life Balance programme, Vorwerk flooring has long exercised external and internal social commitment.

Tradition, sustainability and social awareness – as a family business, Vorwerk feels committed to these values. That is why Vorwerk works worldwide for society and the environment. This begins in developing ecological production systems and extends into our support for international aid organisations.

Working with SOS Kinderdorf, family business Vorwerk has helped children grow up in the care of families since 2003. Vorwerk flooring has also decided that its suppliers must also commit themselves to the BSCI Standard, just as it does.

THIS STANDARD LAYS DOWN GLOBAL STANDARDS FOR WORK AND VALUES. THESE INCLUDE THE FOLLOWING:

- Adherence to national laws
- Freedom of assembly and the right to negotiate collectively
- Prohibition of all discrimination
- Compliance with statutory minimum wages and the securing of livelihoods
- Maximum of 48 working hours per week and a limit of 12 hours overtime
- Clear rules and processes for health and safety at work
- Prohibition of child labour
- Prohibition of enforced labour and disciplinary measures
- Compliance with minimum requirements in waste management, the handling of chemicals and other dangerous substances, their disposal, emissions and water treatment

An EAR employee survey is performed every two years. This provides the Vorwerk Group with valuable insights into how particular activities can help increase employee satisfaction.

Our continuous improvement process (CIP), ideas management in our operations, and project groups – all these give Vorwerk flooring employees lots of opportunities to help shape their working processes.

ENVIRONMENTAL AIMS

2016 – 2018

Vorwerk flooring has aims which are constantly assessed from a sustainability point of view. Aims that appear to make no economic sense are reconsidered and reevaluated, as are targets that do not meet ecological and social standards.

| ENVIRONMENTAL AIMS | ENVIRONMENTAL PROGRAMME | RESPONSIBLE |
|--|---|--|
| <i>Continuous development of the environmental management system</i> | 1.1. We aim to minimise the environmental risk of river pollution in the event of an accident by providing ongoing training in how to operate our culvert system. Mechanical sliders were installed in 2017, meaning that culverts can now be closed without opening them. <i>Target: by 2018</i> | Process owner Occupational safety officers |
| | 1.2 We aim to improve our preventative fire protection through regular fire protection exercises. <i>Target: ongoing</i> | Fire protection officer |
| <i>Reduce harmful emissions</i> | 2.1 We aim to increase the number of EPDs to achieve a better CO ₂ balance in our products <i>Target: by 2018</i> | Environmental management / marketing management |
| | 2.2 Test on reducing temperature in dye works (72°C instead of 94°C) <i>Target: by end of 2018</i> | Process owner – dye works |
| <i>Development of our recycling systems</i> | 3.1 We aim to achieve at least 50% recycled substances in our products. <i>Target: ongoing</i> | Development / production |
| <i>Life Balance Report Sustainability as a Group project</i> | 4.1 Draw up a Life Balance Report and a Group sustainability report containing all of the environmental and energy relevant key figures <i>Target: ongoing</i> | Environmental management officer Environmental management |

ENERGY MANAGEMENT /

PROGRAMME 2013 - 2018

| ACTIVITY | START | COST € | PLANNED SAVING p.a. IN € | kWh p.a. | KgCO ₂ p.a. | STATUS |
|---|-------|---------|--------------------------|----------|------------------------|--------------|
| <i>Acquire a mobile current measurement unit</i> | 2013 | 4.500 | Not quantifiable | | | Completed |
| <i>New air compressors</i> | 2013 | 12.000 | 1.000 | 160 | 46,6 | Completed |
| <i>Pressure retention valves</i> | 2015 | 10.000 | | | | Completed |
| <i>Replace old drives with frequency controlled drives</i> | 2013 | 100.000 | 500 | 145.5 | 42,3 | Completed |
| <i>Extend chart recorder systems</i> | 2016 | 30.000 | Not quantifiable | | | 75% complete |
| <i>Dryer upgrade</i> | 2018 | 1 Mio | 50.000 | 8.000 | 2.328 | Planned |
| <i>Insulate all steam lines</i> | 2015 | 3.000 | 1.000 | | | 75% complete |
| <i>New outside lighting concept using LED technology, to replace old mercury arc lighting</i> | 2015 | 7.500 | 3.500 | 560 | 162,9 | 60% complete |
| <i>New inside lighting concept using LED technology</i> | 2016 | 50.000 | 10.000 | 1.600 | 465,6 | 15% complete |

Source: CO₂ = 261g/kWh (WSW Wuppertal municipal works)

PUBLICATION DETAILS

If you require more information or have queries or suggestions, please contact our environmental and energy management representative:

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