concept
wiesner hager

# Environmental Report 2023

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**What does sustainability mean?**

The term sustainability has its roots in forestry. Within the scope of a sustainable management removal and second growth should balance each other, thus avoiding overexploitation.

Today, the term sustainability is no longer interpreted along the lines of resource economics only. Sustainability has become a benchmark for us to see if our thinking and acting improves the life situation of our generation without affecting the future perspective of the generations to come.

## Foreword from the management

In the next 50 years, while the world's population is expected to grow by 50 %, global economic activities will rise fivefold. Energy consumption worldwide will increase threefold, driven by industrialization and the growth of infrastructure in the developing countries. Already now an exploding demand has led to a dramatic increase in prices of energy and raw materials. Moreover, we'll have to cope with the economic consequences of climate change that can't even remotely be assessed at present. All these developments make it clear: we have reached the much-cited limits of growth. Simultaneously, this means the end of conventional corporate strategies.

In future, the survival of enterprises will depend on their ability to develop effective strategies of sustainability, that is to say strategies establishing a balance between the interests of ecology and economy.

Long before the scarcity of resources and climate change became widely discussed issues, Wiesner-Hager was fully aware of the necessity of a sustainable development. Since the mid-1980s environmental problems have been analysed and solved systematically and step by step, and on the basis of our commitment to an active environmental policy. The rooting of eco-political principles in our corporate philosophy and the introduction of an environmental management system, first acc. to EMAS, later acc. to ISO 14001, were milestones on our road to sustainability. In 2009 we started to prepare company-wide life cycle assessments acc. to ISO 14040, the results of which will be incorporated in Environmental Product Declarations acc. to ISO 14025 as of 2012.

**Laura & Markus Wiesner**

# ① Company profile

Increasing efficiency while ensuring that employees are happy in their work environment – these are the pivotal issues Wiesner-Hager addresses by designing imaginative office and furniture concepts for customers.

Our scope of services includes the modules Office Consulting, Interior Design, and Furnishing – services that are incorporated into the conception and designing of offices, communication and recreation rooms, as well as filing and technology zones.

Due to this positioning Wiesner-Hager has been the market leader for swivel chairs in the home market Austria for many years. The internationally oriented enterprise is represented in numerous European countries either directly or via distribution partners. In the USA, in Japan, South Korea, and Austrialia the product lines of Wiesner-Hager are marketed under licence by special partners.

# ② Environmental policy

By mapping out our ecological policy we define the principles of acting for all our enterprises in terms of environmental protection. It is binding for all employees at all our locations. We understand nature and human society as an integral part of the global eco-system that has to be kept balanced by all means. As a commercial enterprise we recognize our special responsibility for preserving the natural conditions of living.

**In accordance with this insight we pursue the following principles:**

01 → WE act sustainably so that succeeding generations will find the same conditions we find and expect today.

02 → WE consider the protection of the environment as a concern of vital significance. The management of the enterprise will review these eco-political guidelines at regular intervals with regard to new requirements, and it will establish procedures required for their effective implementation into operational practice and provide the necessary means.

03 → WE strengthen the personal sense of responsibility for the environment in all employees, raising their awareness for possible environmental burdens caused by our business activities and our products.

04 → WE continuously reduce hazards and risks of production, marketing, use, recycling, and disposal of our products for the protection of our employees, neighbours, customers, as well as the environment. We take questions and doubts raised by the public regarding our business activities very seriously and respond to them constructively.

05 → WE actively inform the public about the environmental impacts caused by us, as well as the environmental performances we provide.

06 → WE inform our customers about the safe use, recycling and disposal of our furniture. We constantly work on expanding our knowledge of possible impacts of products, production processes and their environmental aspects on men and the environment.

07 → WE obligate our suppliers to keep the safety, health and environmental standards required by us.

08 → WE use resources conscientiously and sparingly.

09 → WE regard legal and regulative provisions as minimum requirements, striving to an even higher degree of safety, health, and environmental protection at all locations.

10 → WE undertake to maintain an environmental management system and to undergo current inspection by independent experts.

11 → WE are fully aware of our responsibility towards the social environment of the enterprise, i.e. towards the public, our business partners, and, in particular, our employees.

# ③ Life cycle assessment

Since 1992 Wiesner-Hager has prepared yearly input-output analyses.
The first full company-related life cycle assessment acc. to EN ISO 14040 was established for the financial year 2009/10, including a quantifiable ecological impact assessment. The gathered data are the basis for preparing the Environmental Product Declarations (EPDs) acc. to ISO 14025. The process to generate the so-called EPDs via the SAP system used is certified by TÜV Austria (the Austrian Technical Control Association).

## 3.1 Scope of examination

The company-related life cycle assessment investigates the environmental impacts of the production sites in Altheim and Humpolec (cradle to gate). Therefore, apart from environmental impacts immediately produced by the Wiesner-Hager factories, pollution caused by raw materials production, interim transportation, toll processing, and disposal processes is also included.

The time period covered by the life cycle assessment study extends over one full financial year starting on 1 March of each calendar year. Splitting the manufacturing processes to as many modules as possible, as well as separately investigating the respective process impacts allows for maximum transparency and provides the necessary prerequisites to ensure that the assessment system for preparing the product-related life cycle assessments reflects the polluter pay principle to the highest possible extent (‚rucksack' principle). The product-related life cycle assessments are then published in the form of Environmental Product Declarations (EPDs) considering the entire life cycle of a product from creation to disposal (cradle to grave).

## The following process modules have been defined:

### METAL PROCESSING

In metal processing raw materials like tubes and sheet metal plates purchased from suppliers are processed into frame elements for seating furniture and tables. The main operations performed in this module are mechanical processing steps such as sawing, milling, bending, die cutting, and welding or soldering. Finally, the mechanical treatment processes are followed by a surface cleaning procedure to ensure that the semi-finished products are corrosion-resistant while stored. The accumulating wastewater is pumped to the in-house wastewater treatment unit of the powder coating plant, where it is treated.

### WOOD PROCESSING

In the wood processing unit solid wood and plywood are processed into chair frame elements and seat brackets. In case of solid woods the raw material is provided by upstream suppliers in cut and dried form. Plywood parts are purchased as pressed blanks. The main operations performed in this module are mechanical processing steps such as planing, milling, drilling, and sanding, as well as gluing. The by-products of these processes, i.e. wood chips and shavings, are utilised energetically by a waste disposal company.

### POWDER COATING

In the powder coating unit paint is applied to metal furniture parts. First, the workpieces are iron phosphatized, rinsed and dried in a gas-heated facility in one continuous process.
The accumulating wastewater of these steps is treated in a wastewater system associated to this module, where precipitants (operating supplies) are added, and the pH-value is neutralized. The cleaned wastewater is discharged to the communal sewer system, the precipitated sludge is disposed of as filter cake by external service providers. The main process step consists of the fully automatic electrostatic application of the plastic powder from epoxy or polyester resin and the subsequent fusion bonding of the powder coat in the baking channel. The powder overspray is sucked off, screened, and re-fed to the coating circuit.

### FRAME LACQUERING

In the frame lacquering shop table and chair frames of wood are provided with water-based UV-stains and paints. The surface material is applied by means of electrostatic high-rotation atomization. Overspray is washed out and gets into the demineralized spray cabin circulation water. At regular intervals, the water-based paint is removed from the circuit by means of ultra-filtration and is re-used immediately after being re-concentrated to the original solids content. Thus expensive painting material is saved while simultaneously avoiding environmentally hazardous paint sludge.

### PANEL PROCESSING

In the panel processing section plate-type materials such as chipboard and fibre boards are processed to tabletops and elements of furniture bodies. The main operations performed in this section are mechanical processing steps such as sawing to size, milling, drilling, sanding, and veneering. The by-products of these processes, i.e. wood chips and shavings, are utilised energetically by a waste disposal company.

### PANEL LACQUERING

In the panel lacquering shop extensive workpieces such as tabletops and parts of frame furniture are stained and coated with water-based UV-paints. In an automatic spraying machine the parts geometry is scanned first to minimize overspray losses. Unavoidable overspray is recovered via mechanical scraping devices, and after being diluted with water it is used for coating the undersides of tabletops or hidden areas of furniture parts.

## UPHOLSTERY

Sewing work and the production of the upholstered elements are carried out in our Czech subsidiary plant in Humpolec. The Altheim plant now only produces prototypes and carries out urgent sampling. Using CAD drawings, an automatic cutter produces all the cut parts for further processing in the sewing and upholstery departments in line with customer orders. With the help of nesting software, the work preparation department first produces material-optimised cutting plans in the form of CAD files. These are then used to generate CNC programmes for the automatic cutting machine, the so-called cutter. The fabric panels are laid out in front of the cutter and the part geometries are cut and labelled fully automatically, taking into account the fabric pattern repeats. The subsidiary plant is operated according to the principle of the „extended workbench“ and can be compared to an autonomous external toll processor. The required upholstery materials are provided by the parent plant and entered in the balance sheet there. The branch just provides energy and water, invoicing these items to the parent plant together with labour costs. The effects of interim transportation are recorded within the scope of impact assessment, regarding the masses to be transported and the ecological potentials of the means of transport used.

@ PANEL PROCESSING


@ ASSEMBLY

## STORAGE AND ASSEMBLY

In the assembly areas the furniture is assembled and packaged on the basis of customer orders. The warehouse holds both purchased components and semi-finished goods from our own series prefabrication.

## INTERNAL SERVICES

The internal services process comprises maintenance, the model making workshop, and quality assurance.

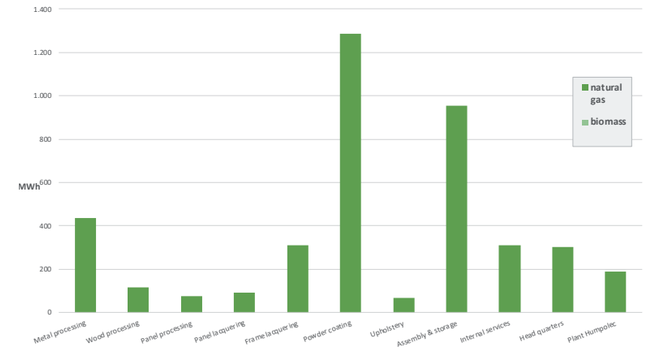
## ADMINISTRATION

The administration process includes all cost centres performing clerical work and similar activities, as well as the company restaurant and the showroom.

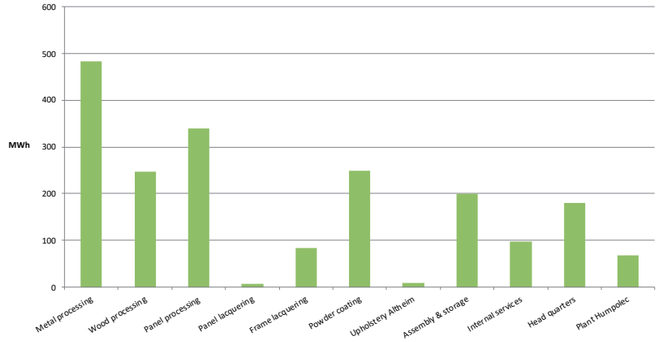
# 3.2 Life cycle inventory analysis

First, the life cycle inventory analysis establishes all material, energy, and elementary flows – the so-called inputs. These will leave the factory afterwards as outputs in the form of products, waste, emissions, and waste heat, which has to be ascertained as well. The most important criteria of the input-output balance are the difference of these two flows, and the percentage of flows not considered. These are the so-called cut-off criteria. The Wiesner-Hager life cycle.

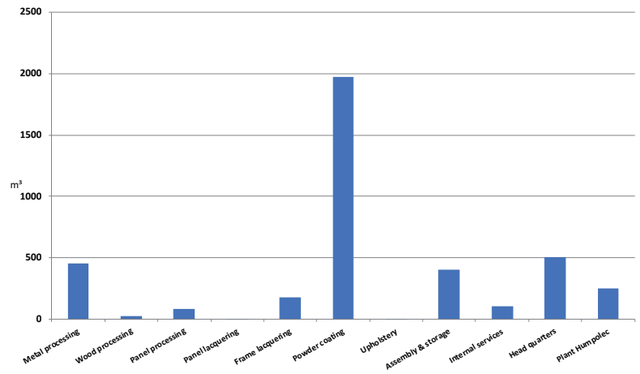
HEAT CONSUMPTION 2022/23



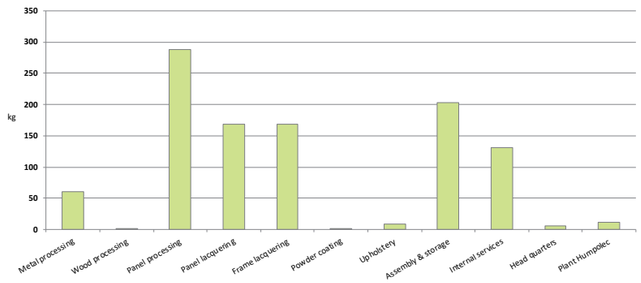

ELECTRICITY CONSUMPTION 2022/23



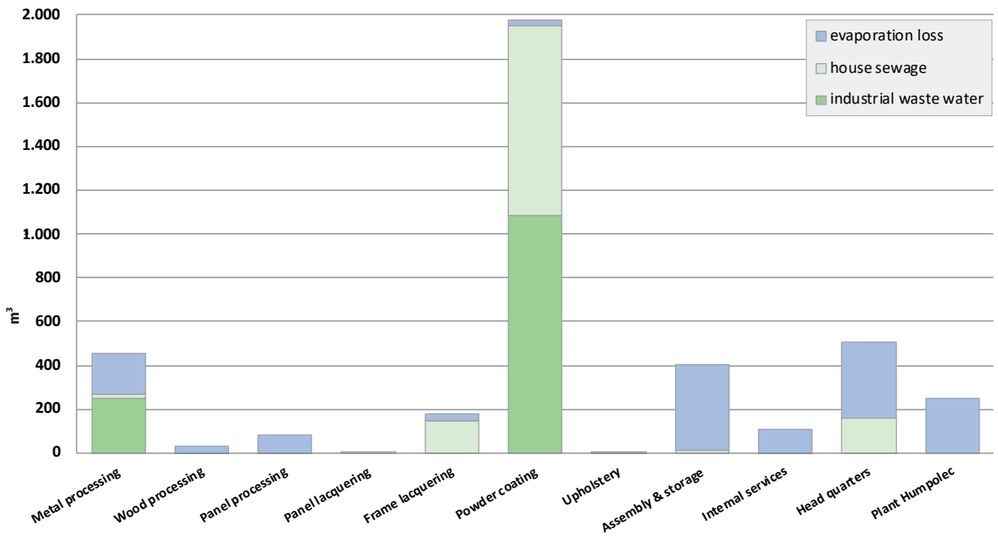

WATER CONSUMPTION 2022/23



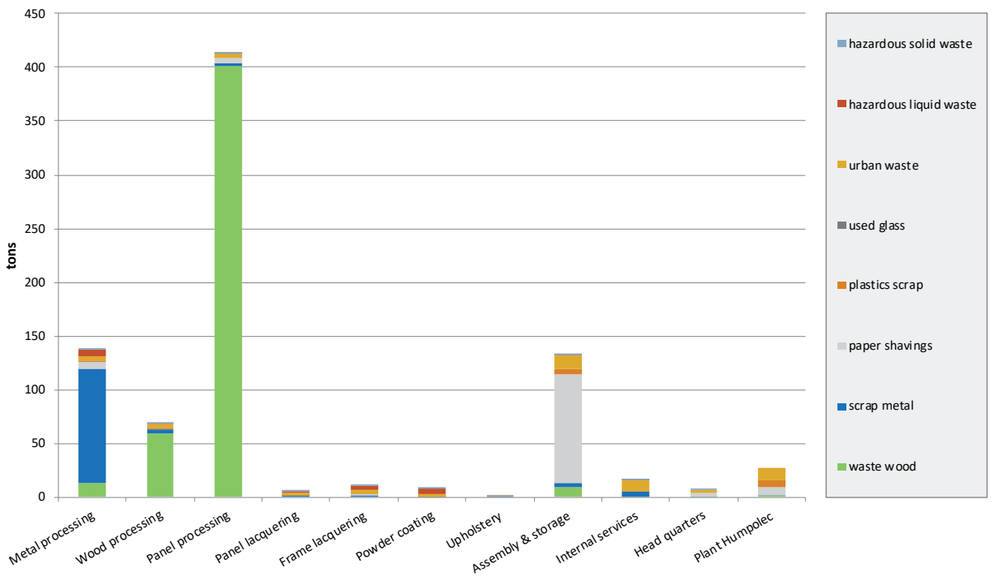

VOC EMISSIONS 2022/23



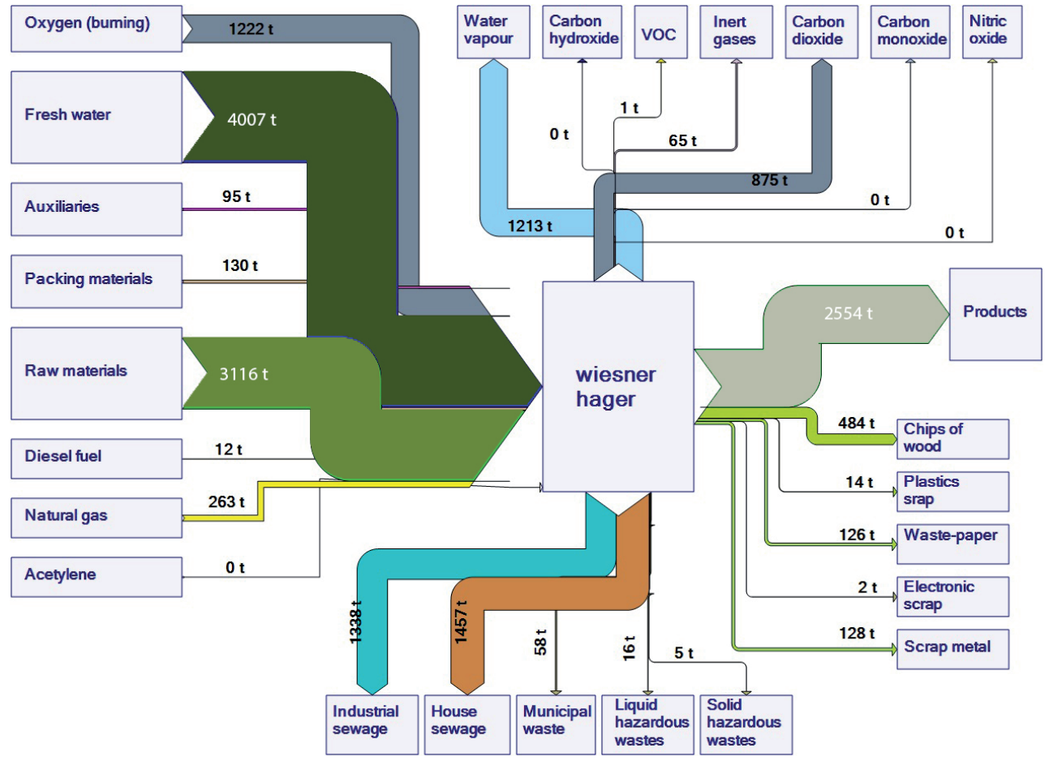
WASTE WATER 2022/23



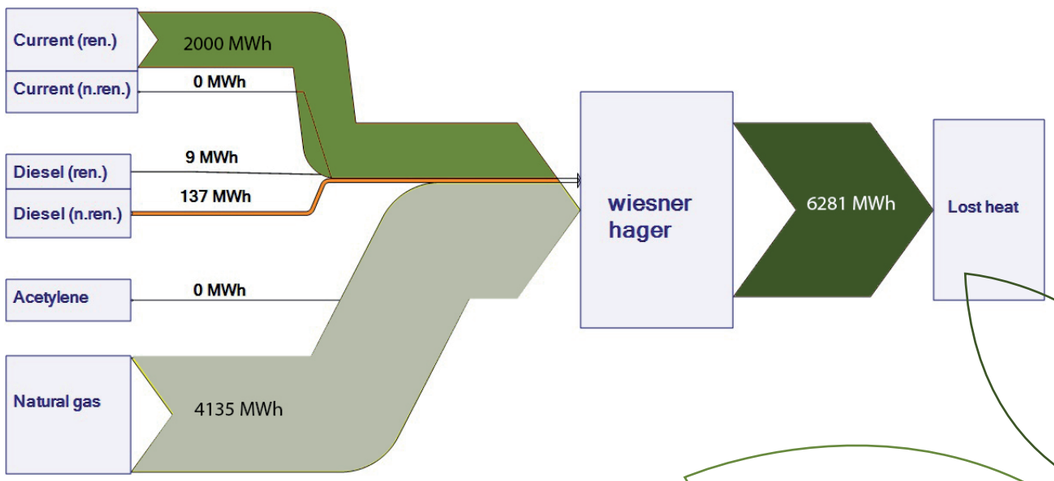

WASTE AND SCRAP ACCUMULATION 2022/23




MATERIAL STREAMS FY 2022/23




ENERGY FLOWS FY 2022/23

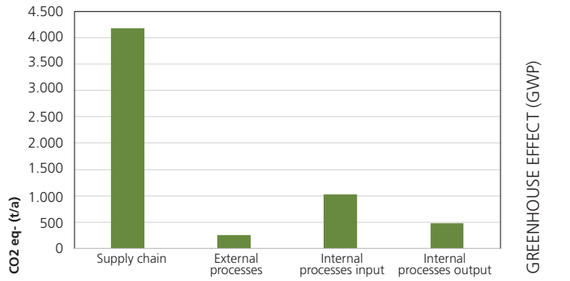


## 3.3 IMPACT ASSESSMENT

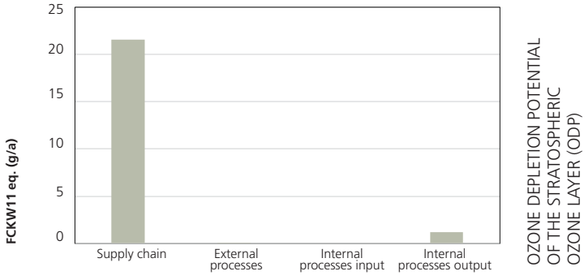
The impact assessment covers both the environmental impacts of the operational flows analysed in the life cycle inventory analysis and the effect of the upstream chain, transportation, and toll processing, as well as the disposal processes. ISO 14040 permits the application of various methods, both those based on quantity and on quality. Wiesner-Hager performs the impact assessment according to the scientific CML method, a quantity-based process permitting the investigation of various directions of environmental impacts and summarizing them in figures.

**IN THE LIFE CYCLE ASSESSMENT OF WIESNER-HAGER THE FOLLOWING IMPACT CATEGORIES ARE ANALYSED AND SHOWN, AMONG OTHERS:**

- Greenhouse effect (GWP) in carbon dioxide equivalents
- Ozone depletion potential of the stratospheric ozone layer (ODP) in trichlorofluoromethane equivalents
- Photo-oxidant formation and/or ozone smog formation potential (POCP) in ethylene equivalents
- Acidification potential (AP) in sulphur dioxide equivalents
- Eutrophication and/or nutrification potential (NP) in phosphate equivalents
- Abiotic depletion potential (ADP) in antimony equivalents




GREENHOUSE EFFECT (GWP)




OZONE DEPLETION POTENTIAL OF THE STRATOSPHERIC OZONE LAYER (ODP)

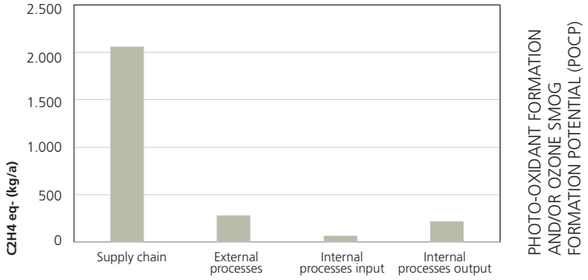
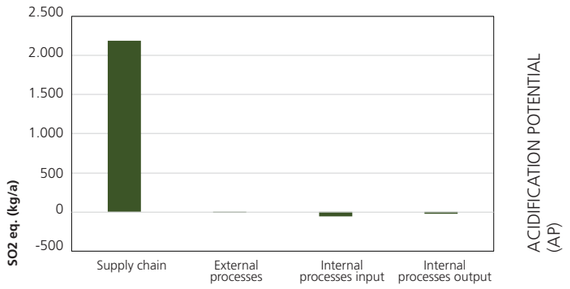
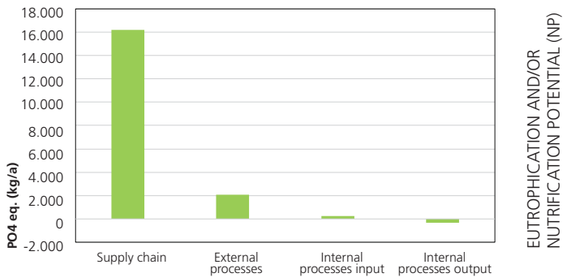


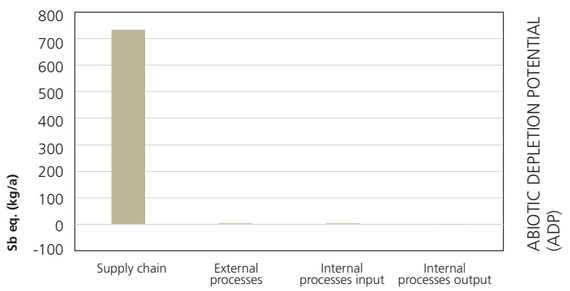

PHOTO-OXIDANT FORMATION AND/OR OZONE SMOG FORMATION POTENTIAL (POCP)




ACIDIFICATION POTENTIAL (AP)




EUTROPHICATION AND/OR NUTRIFICATION POTENTIAL (NP)




ABIOTIC DEPLETION POTENTIAL (ADP)

# ④ Product-related life cycle assessment

Wiesner-Hager also prepares product-related life cycle assessments (LCA), investigating its own products for their impact over the entire manufacturing chain from the cradle to the grave. The impacts ascertained in the company-related life cycle assessment are translated to the individual products according to the causative principle. A process developed together with environmental scientists and SAP specialists makes it possible to generate a life cycle assessment based on transport distances of any optional product variant. The process has been certified by TÜV (the Austrian Technical Control Association). Thus the prepared EPDs meet all requirements for the status of a Type III Declaration. On request, we'll be happy to provide these documents to our customers and any interested party as a decision criterion for buying.
Available at: ***www.wiesner-hager.com***

## CONTENTS OF AN ENVIRONMENTAL PRODUCT DECLARATION (EPD)

General information about the product, system boundaries and data origin

### LCA-INDICATORS:

- Primary energy demand renewable/non renewable
- Use of secondary materials
- Use of water resources
- Hazardous waste to landfill
- Residential waste
- Radioactive waste

### ENVIRONMENTAL CATEGORIES:

- greenhouse effect (GWP)
- destruction of stratospheric ozone (ODP)
- creation of ground-level ozone (POCP)
- acidification of the soil (AP)
- over-fertilisation (NP)
- depletion of non-renewable natural resources (ADPE)
- depletion of aboitic fossil fuels (ADPF)

### INFORMATION ABOUT WASTE DISPOSAL:

- metals
- synthetic materials
- renewable materials
- mineral materials
- laquer and adhesives
- auxiliaries

### MATERIAL COMPOSITION DIFFERENTIATED ACCORDING TO:

- metals
- synthetic materials
- renewable materials
- mineral materials
- laquer and adhesives
- auxiliaries

### INFORMATION ABOUT MATERIAL CERTIFICATES:

- Oeko-Tex
- EU Ecolabel
- FSC
- PEFC
- Blue Angel
- Cradle to cradle


Example of a productrelated life cycle assessment

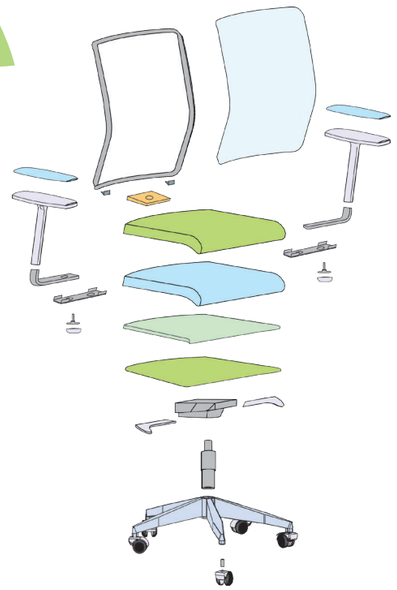
**Insights into the Wiesner-Hager Life cycle assessment**

# ⑤ Sustainable product design

Ecological requirements are always considered in the development process, starting with product specification to series maturity. This includes, amongst others, the selection of eco-friendly materials such as FSC-certified wood from forests cultivated according to sustainable forest management schemes, the use of non-toxic textiles with eco-labels such as the Ökotex certificate, the processing of solvent-free lacquers and adhesives, or the increased usage of renewable resources.

To ensure that our products are recyclable to a great extent we largely avoid composite materials and develop dismountable constructions. Material designation, repairability and a harmonised service life of the components used are also important requirements on the product design.

Sustainable product design using the example of the office chair series *paro*: The major part of the office chair series paro meets the criteria of the Austrian Eco-Label. The prerequisites are the ergonomic design, construction in conformity with recycling needs, a share of at least 50 % renewable primary products and/or raw materials based on secondary materials in case of non-metal parts, as well as the exclusion of PVC.



*paro_2*

# ⑥ Environmentally relevant production processes

## DIRECT RECYCLING

The direct recycling process implemented in important parts of production made it possible to substantially cut energy and material input and simultaneously reduce waste accumulation. It is part of the extensive environmental scheme that has marked the turnaround in Wiesner-Hager's environmental policy since the late 1980s. For example, by introducing ultrafiltration of the lacquer overspray plus material recovery in wood lacquering we could save up to 70% of the lacquers and were able to significantly reduce the accumulation of paint sludge. At the same time we also introduced eco-friendly water-based paints – a significant step towards the reduction of VOC emissions.

## POWDER COATING

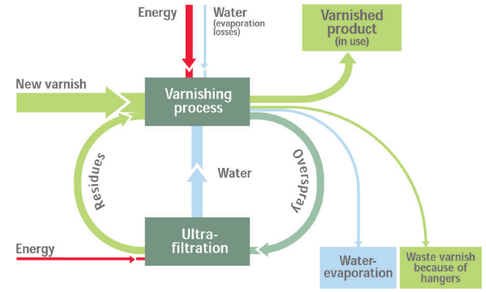
In the case of metal surfaces, the painting process was changed from stove enamelling with solvent-based wet paints to emission-free powder coating as early as the beginning of the 1990s, and has been continuously optimised over the years. Today's plant with its water-saving and heavy-metal-free pretreatment system is gas-heated, and overspray is minimised as far as possible by means of part recognition sensors. Any overspray that occurs despite this is recovered and almost completely reused.

## ENERGY-SAVING WOOD CHIP EXTRACTION

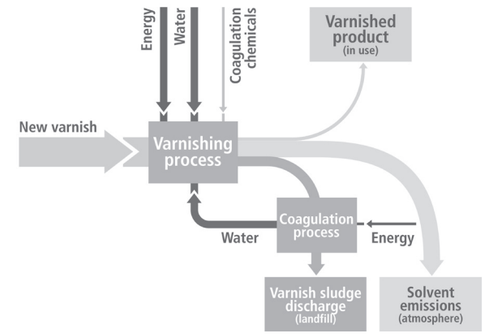
The extraction of wood chip from the processing machines is energy intensive. For this reason, the required power is permanently adapted to changing requirements by means of an intelligent control system. This is achieved by automatically switching other fans on or off, or by regulating the speed. The extracted and heated ambient air is cleaned in the filter to the point that the exhaust air can be conducted back into the building, thus avoiding heat losses. The technology thus saves on average 30 % of electrical energy and 80 % of heating energy. The high filter performance reduces the dust content in the circulating air to below 0.1 mg/m³.

*Direct recycling using the example of wood painting*

**Recycling of water-based paint at Wiesner-Hager:**



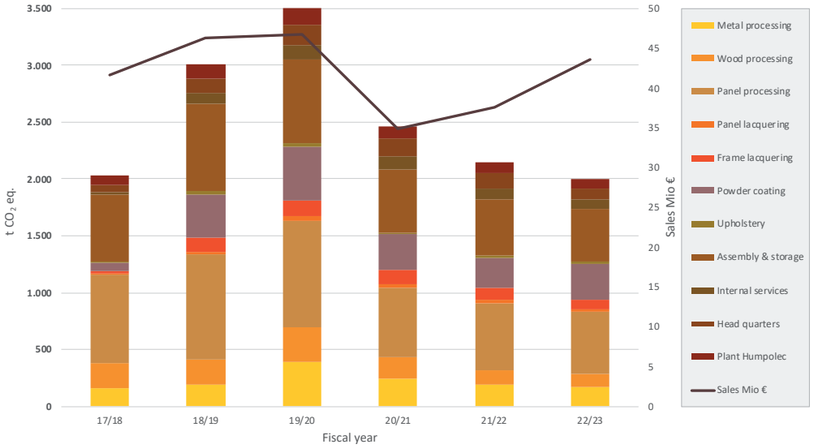

**Conventional paint:**




## TECHNOLOGIES TO REDUCE WASTEWATER

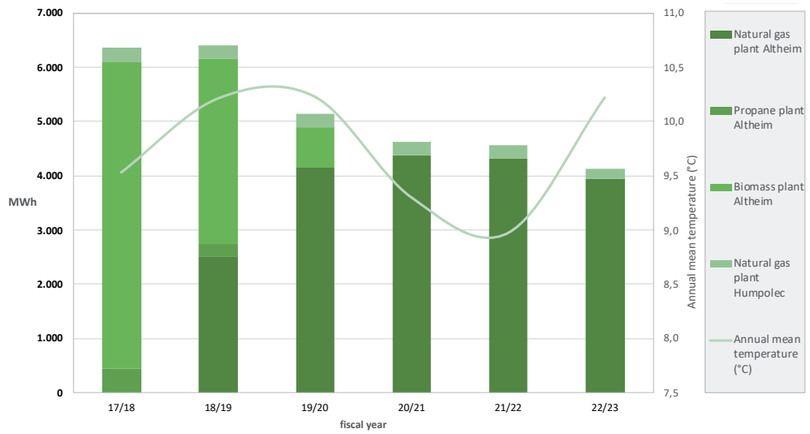
The removal of fats, oils and dust from metals is associated with a high water consumption and simultaneous wastewater generation, which can, however, be minimised through the intelligent use of technologies. At Wiesner-Hager, triple cascade flushing systems are used on all units; the pre-treatment chemicals are free of heavy metals and solvents. Oil separators on the treatment baths and a regulated supply of fresh water ensure that the baths have a long service life and that consumption of chemicals is low. The wastewater that is produced despite this is purified in a modern wastewater plant to such an extent that it can be discharged into the municipal biological treatment plant. Measuring equipment that records values, and sampling

# ⑦ Development on year-over-year basis



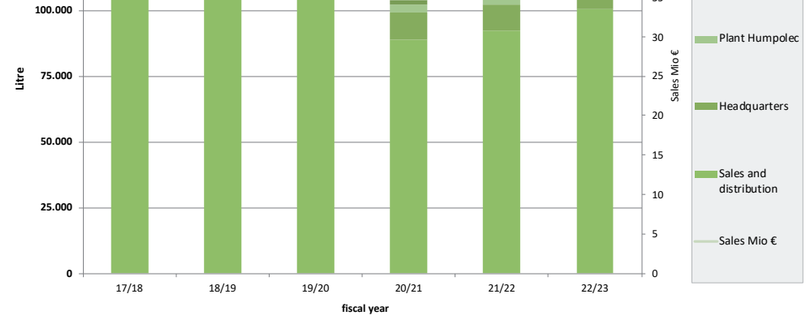

## GREENHOUSE GAS EMISSIONS

The chart includes all greenhouse gas effects, exempt upstream emissions.



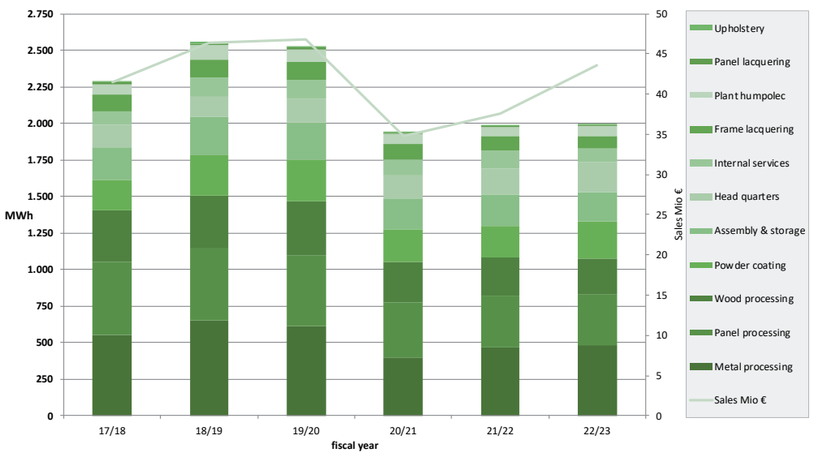

## CONSUMPTION OF HEAT TRANSFER MEDIUM

In the financial year 2018/19 Wiesner-Hager started using natural gas as new energy source in the heat supply. In return, the liquid gas supply was ceased and the old boiler plant for industrial wood waste stopped operating. Any wood waste from production processes is now given to a district heat producer with optimal combustion conditions and a modern emission control system. Continuous annual investments in thermal building renovation show a constant decline in energy consumption.



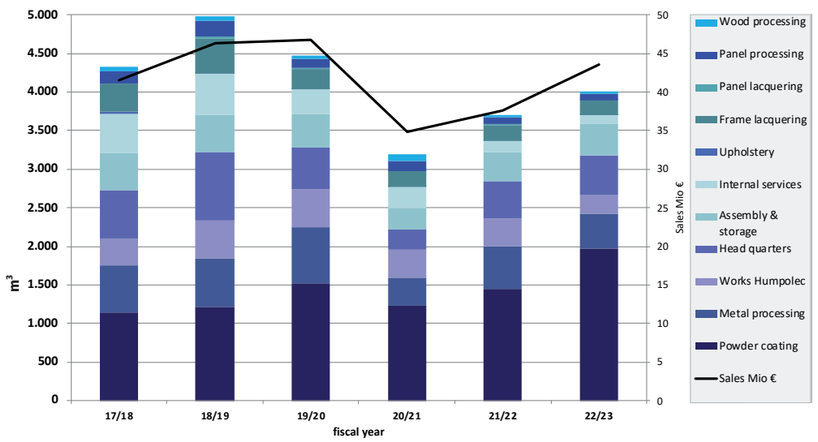

## DIESEL CONSUMPTION

The vehicles in the company fleet are constantly being replaced with more advanced models that produce fewer harmful emissions, which is reflected in lower fuel consumption. Since the fiscal year under review, electric vehicles have also been part of the fleet and journeys are avoided if video conferencing is a suitable alternative.



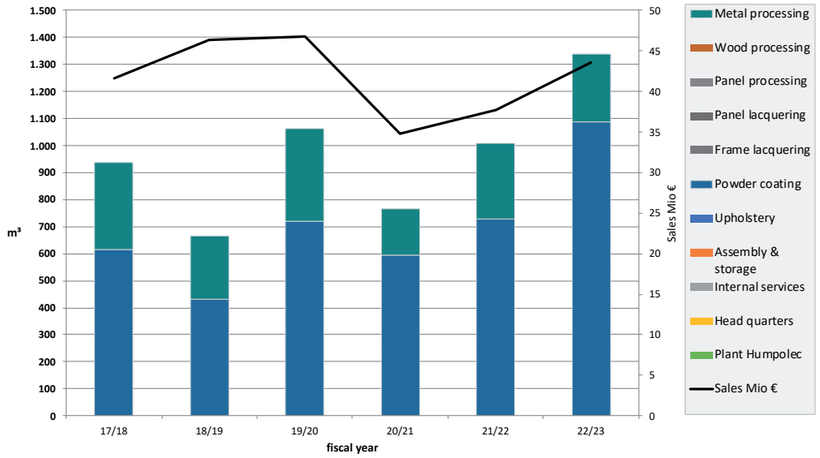

## ELECTRIC POWER CONSUMPTION

An energy management system ensures the constant measurement and monitoring of power consumption in the individual areas permitting a quick response in case of worsening.



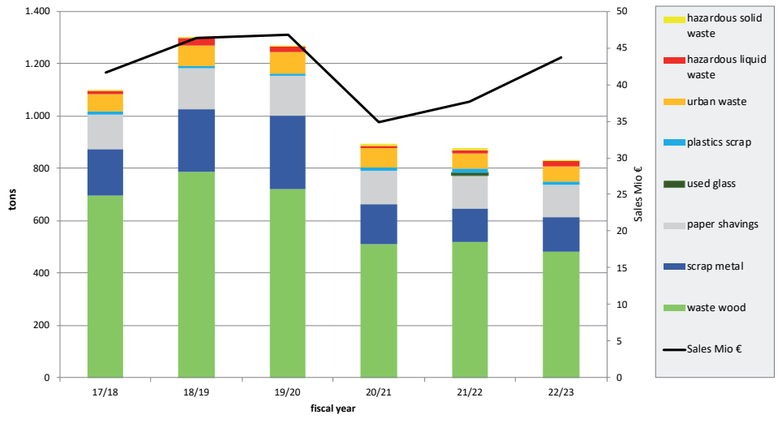

## FRESH WATER CONSUMPTION

More than ten years ago, the installation of 3-step cascade flushing combined with a state-of-the-art control technology has provided for a noticeable reduction of fresh water consumption at the pretreatment plant for metal and subsequent powder coating. Today, water consumption is largely proportional to production output.



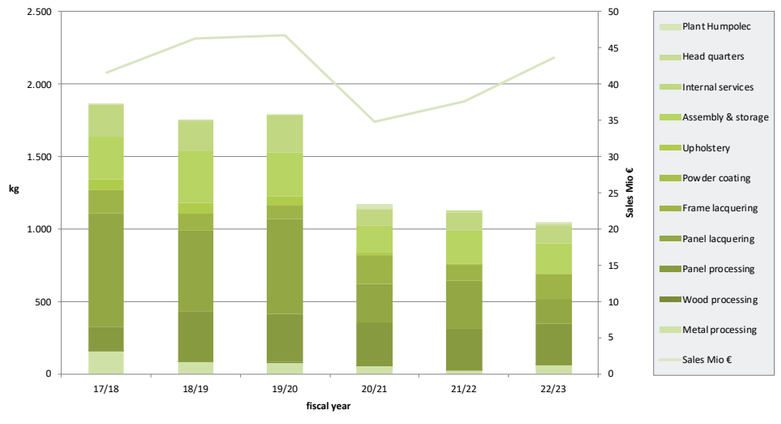

## WASTEWATER VOLUME

Wastewater from industrial processes is treated in batches in a state-of-the-art wastewater system before being discharged to the communal sewer system. Ion exchangers ensure freedom from heavy metals, automatic sampling devices and digital recording of the relevant data provide for maximum possible transparency in terms of the quality and quantity of the wastewater.




## WASTE AND SCRAP

The biggest amount of this fraction are reuseable materials which are added to material recycling centres, or, as in the case of wood waste, are put to energetic use. Wiesner-Hager has been able to reduce bigger amounts of problematic waste every year, due to appropriate prevention strategies.




## DEVELOPMENT OF SOLVENT EMISSIONS

Back in the late 1990s the coating of metal parts was changed to solvent-free powder coating. In the field of wood painting we switched to water-based paints in 1995. These two steps reduced the emission of solvents by more than 90 %. Some years later we started to use water-based upholstery glues. Today, the company focuses on substituting solvent-based operating supplies and doing without compressed gas cartridges operated by expanding agents.

# ⑧ Targets & measures for 2023/24

- **Energetic renovation of the semi-finished goods store**
- **New construction of a low-energy building for the powder-coating**
- **Purchase of additional electric vehicles**
- **Purchase of a low-emission truck**

# ⑨ Milestones

Milestones of Wiesner-Hager sustainability policy. What we have already achieved.

| Year | Measure | Effect |
|---|---|---|
| 1991 | Change from liquid coating to powder coating in metal fabrication | Raw material savings through overspray recovery, no more solvent emissions |
| 1992 | Installation of a central wastewater treatment plant for wastewater containing inorganic substances (from metal fabrication) | Minimisation of contaminant load in wastewater |
| 1992 | Consideration of ecological criteria in product development | Raw material savings through product adjustment, recycling of materials due to separability into mono-material parts |
| 1992 | First preparation of an input-output analysis | Making energy and material flows transparent, revealing waste of material |
| 1995 | Installation of a modern automatic large-surface painting machine with overspray recovery | Reduction of paint consumption and paint sludge accumulation |
| 1995 | Changeover to UV water-based paint in wood lacquering | Almost complete elimination of solvent emissions |
| 1995 | Installation of a paint recovery plant via ultrafiltration in chair lacquering | Raw material savings of paint, no more solid waste (paint sludge) |
| 1996 | Introduction of an environmental management system acc. to EMAS | Integration and systematisation of the company's environmental activities, improvement of accident prevention |
| 1998 | Installation of a wood chip extraction plant with variable and controlled extraction capacity | High electricity and heat savings, reduced dust loads due to improved separation efficiency |
| 1999 | Introduction of an environmental management system including certification acc. to ISO 14001 | Harmonisation of environmental management system with quality management system ISO 9001 |
| 2002 | Replacement of solvent-based upholstery glue by water-based materials | Reduction of solvent emissions |
| 2005 | Modernisation of powder coating plant by installing a quick colour change system | Reduction of overspray losses |
| 2007 | Introduction of an energy management system | Reduction of electricity, compressed air and heat consumption |
| 2008 | Changeover of stacker operation from diesel to electric drive | Reduction of exhaust gas and noise emissions on the factory premises |
| 2009 | Pretreatment plant for metal parts featuring 3-step cascade flushing technology | Reduction of water consumption and accumulation of wastewater |
| 2009 | Preparation of first company-related life cycle assessment | Investigation of environmental impacts of the company and its products (cradle to gate) |
| 2011 | Preparation of Type III EPDs Automatic, SAP-aided preparation of life cycle assessment of all Wiesner-Hager products | Buying decision aid for customers and architects |
| 2012 | Certification acc. to ISO 14025 for the preparation of Type III EPDs | Publication of environmental impacts caused by Wiesner-Hager series products in the form of EPD Type III documents |
| 2012 | Exchanging parts of the compressed air system for energy-saving compressors complying with modern standards | Reduction of energy consumption |
| 2012 | Installation of a ventilation system with heat recovery | Reduction of heat consumption |
| 2013 | Modernization of the hall heating in the wood workshop | Saving of thermal energy |
| 2014 | Energy optimization of the data processing centre (server virtualization) | Saving of electricity |
| 2014 | Heat recovery from waste heat from the powder-coating unit | Reduction of heat consumption |
| 2015 | Renovation of the compressed air supply and installation of a compressed air management system | Saving of electricity |
| 2018/20 | Replacement of the heating system | Reduction of heat consumption |
| 2012/22 | Energetic building renovation | Reduction of heat consumption |
| 2021 | Purchase of 5 electric cars for the fleet and installation of 6 charging stations. | Saving of fossil energy |
| **2022** | Replacement of the lighting with LED in hall 8 and hall 24 | Saving of electricity |

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08 - 2023 EN