SENOPLAST

# ENVIRONMENT REPORT 2021

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# 1.
# Foreword from the CEO



SENOPLAST

SENOPLAST has decades of research experience and state-of-the-art production facilities for the development and production of coextruded films and sheets. These mainly consist of the plastics ABS, PC / ABS, PC, ASA, PMMA and PS and their compounds.

Our integrated environmental management system is intended to ensure that all activities that have an impact on product quality, the environment and safety are planned, controlled, monitored and sustainable.

Every employee is called upon to continuously contribute to process improvements. We want to secure our lead in the growing international competition through a market-oriented approach and by nurturing innovation.

The qualifications, motivation and identification of our employees throughout the company are important success factors for maintaing our leadership. Open and honest communication as well as socially responsible and ethically correct behavior are a matter of course in the company.

We do our part to ensure that the SENOPLAST group remains an independent, internationally-oriented and successful family company.

This environment report is valid for all companies at the Piesendorf site and for their respective production processes.

SENOPLAST senosan senco Research and Development GmbH & Co.KG

## General information about the company

| | | |
|---|---|---|
| Total number of employees: | 502 | |
| Employees: | 107 | |
| Total apprentices: | 18 | |
| Industry: | Production of plastic sheets and films | ÖNACE 2008:22.21-0 |
| Turnover: | 163.5 Mio € | Business year 2020 |
| Reporting period: | from January 1, 2020 | to December 31, 2020 |
| Balance sheet area: | Piesendorf Site | |
| Number of sites: | 1 (Province of Salzburg / Pinzgau) | |
| thereof plants: | 1 | |
| Management system: | | |
| EN ISO 9001 | Certified<br>REG.NO.: 00050/0 | EN ISO 14001 Certified<br>REG.NO.: 00144/0 |
| KBA | REG.NO.: 00050/0 | |
| EMAS<br>(Eco Management and Audit Scheme) | Verified<br>REG.NO.: AT-000521 | |

Günter Klepsch
CEO

SENOPLAST

# 2.
# Overview of SENOPLAST

*OUR WORLDWIDE LOCATIONS*

- Production sites in Austria, México and China
- Locations/sales offices and representatives worldwide

Since the company was founded in 1956, SENOPLAST has established itself as a technology leader in the highly complex production process of co-extrusion - a leading position that is sustained through numerous patent applications.

As the largest company of the international Klepsch Group, SENOPLAST produces high-quality plastic sheets and films for a wide range of applications. Over 50,000 tons of senosan® products per year are shipped to around 60 countries worldwide from the main site in Piesendorf, Austria, and from production sites in Querétaro, Mexico and Suzhou, China.

SENOPLAST is an internationally successful business, producing innovative, high-quality plastic sheets and films from the raw materials ABS, ABS / PC, PC, ASA, PMMA and PS.

This global success of the family-owned company is based on the following cornerstones of the company philosophy:

"Quality and innovation combined with environmental awareness and the knowledge that people are at the center of the corporate culture!"


SENOPLAST, S.A. de C.V.
Production site in Mexico

SENOPLAST global
Headquarters in Austria


SENOPLAST New Material (Suzhou) Co. Ltd.
Production site in China



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# 2.1 THE SENOPLAST SITE IN PIESENDORF

**Company headquarters in the heart of Europe**

The SENOPLAST headquarters are located in Piesendorf in the middle of Salzburg's Pinzgau district on the edge of the Hohe Tauern National Park. The production site on the eastern edge of the village borders the Pinzgau Local Railway and the B168 road to the north. There are mixed grassland and residential areas along the main road. The industrial zone and agricultural areas are to be found in the east and south of the village. A residential area to the west is demarcated by a noise barrier and an access road. Transport connections are via a works entrance in the northwest and a separate siding of the local railway.

With the establishment of a company for the production of co-extruded plastic semi-finished products, the Piesendorf community, which was previously structured around agriculture and small, local businesses, gained a modern plant with global connections.

Around 90% of the production from the Piesendorf site is exported, giving SENOPLAST a very strong international market position, especially in Europe.

With 540 employees, SENOPLAST Klepsch & Co. GmbH is one of the largest employers in the town, which has around 3,700 residents.

All production systems operate with extremely low levels of noise and emissions, resulting in no adverse effects on nature or the environment. For a long time there have been an excellent relations with all neighbours, supported by a successful symbiosis between people, nature and industry.

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# 2.2 THE PRODUCTION PROCESS

SENOPLAST obtains the granulates as raw materials from the plastics manufacturers. These are then formed into sheets and films in Piesendorf by the method of slot extrusion.

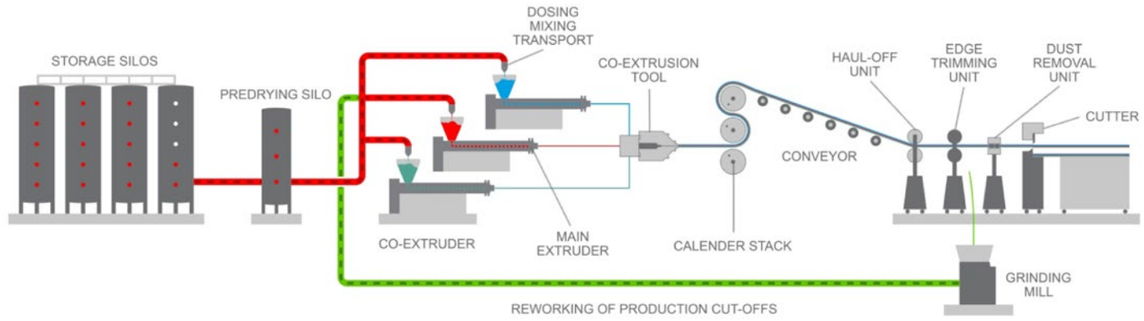


**Fig. 1:** Extrusion process

Extrusion is a process for the production of profiles, sheets, films, etc. from thermoplastics, such as polyethylene, polypropylene, polystyrene, ABS, etc.

This production process takes place in extruders - usually screw extruders, which are filled with powedered or granulated thermoplastics through filling funnels. The material is heated or cooled, homogenized, plasticized, moved by the screw and forced through a shaping nozzle.

There are different versions of extruders. For example, single or twin screw extruders, which use one or two screw conveyors respectively.

The wide nozzle oder die shapes used at SENOPLAST for sheet and film production, give rise to the term: "wide slot extrusion".

SENOPLAST's claim to technological leadership rests on the production of sheets and films made of polystyrene (PS), ABS, PET, PC, special types of multilayer sheets and films in PS / PS, ABS / ABS, ABS / PMMA and other products specified by customers.

# 2.3 INPUT-OUTPUT BALANCE OF THE COMPANY

The raw materials, auxiliary materials, operating materials and energy (inputs) required for the production process are recorded in the course of a year and the resulting product quantities as well as the waste and emissions that are inevitably associated with them are compared (outputs).

Figure 2 shows the material flow of the company SENOPLAST. Details on the quantities can be found in the appendix in the input-output balance table.

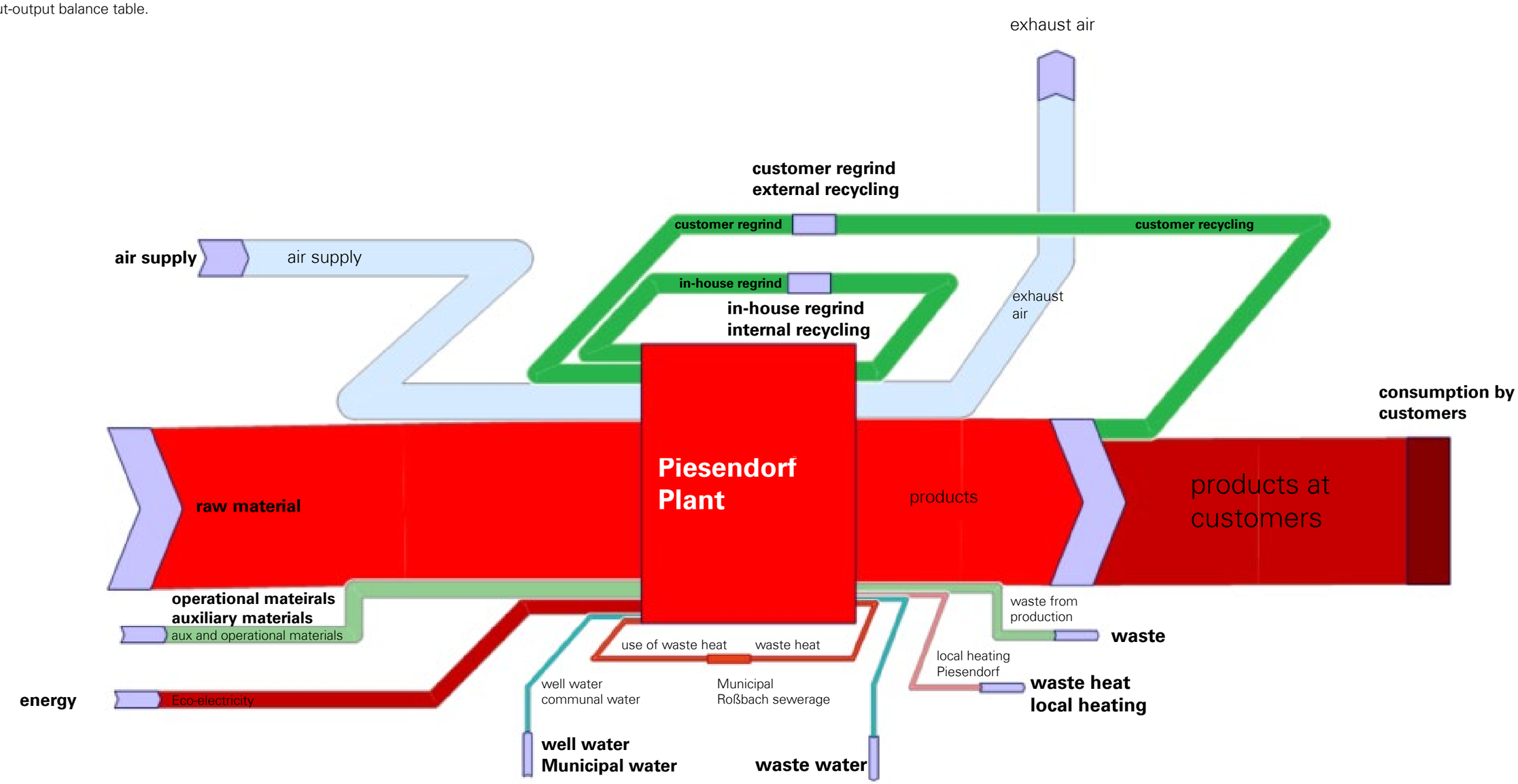


**Fig.2: Material flows at the Piesendorf plant**



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**Products**
*CO-EXTRUSION OF MULTI-LAYER SHEETS AND FILMS*

senosan®
PC SHEETS & FILMS

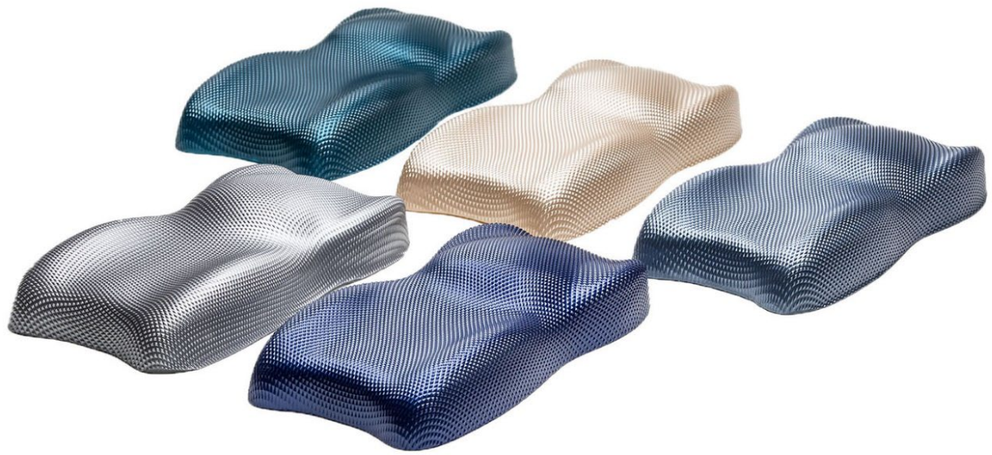
Co-extruded and in-house colored multilayer sheets and films for the suitcase industry and automotive applications

senosan®
ABS/PMMA

Co-extruded multilayer sheets developed for high-quality thermoformed parts used for indoor and outdoor applications

senosan®
ABS+ABS/ASA

Special mono and multilayer sheets developed to fulfil high demands of market  in respect of design, technology and optical appearance





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senosan®
PS PANELS & FILMS

Co-extruded sheets and films made from high-impact polystyrene

SPECIAL FILMS

senosan®
High-gloss films for the automotive industry as paint replacement

senosan®
Scratch-resistant high gloss and supermatt films for the furniture industry

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# 3.
# The pillars of our environmental management system

# 3.1 ENVIRONMENTAL POLICY AND POSITIONS

At SENOPLAST, future-oriented environmental management and careful production processes are seen as the company's most important responsibility. The family business has a new employee - a very important one. One who has insight into everything and is allowed to have a say everywhere. The **green spirit** is a symbol of our commitment to continual development and evaluation of our environmental protection measures.

SENOPLAST takes responsibility for its employees and customers, but also for the environment and society, because sustainability is a central component of our corporate policy.

The coordination of waste streams, the sustainable and environmentally friendly use of resources, the establishment of stable disposal networks and the efficient use of energy are given top priority. In addition to quality and occupational safety, active environmental protection is one of the highest corporate goals of SENOPLAST Klepsch & Co. GmbH.

The aim of the company, which as one of the largest employers in the region, also assumes structural policy responsibility, was and is to promote a fruitful symbiosis between people and the company.



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**Our products benefit people!**

In the Piesendorf plant, SENOPLAST produces thermoplastics from plastic granulates to meet people's needs and improve the quality of life of consumers. These products are environmentally friendly and we are constantly working to improve them. In order to take responsibility for our products and production, we continually develop recycling concepts and optimize our material flow management. Environment, safety and health protection are components of our business policy.

Safety and environmental protection are imperative for SENOPLAST. Forward-looking action and personal responsibility, safety and environmental protection are on an equal footing with corporate goals.

In addition to compliance with legal regulations, we formulate, pursue and review objectives for continuous improvement for environmental protection, safety and health protection, such as:

- reducing energy consumption
- maintaining clean air
- reducing noise
- reducing wastewater pollution
- reducing resource consumption
- waste reduction
- continuously seeking ways to recycle waste and residues
- enhancing plant safety
- improving occupational safety
- protecting health through prevention & monitoring

**Commitment and responsible behavior are expected from all employees. This includes:**

- Executives acting as role models
- Compliance with regulations
- Diligence and sense of duty
- Careful use of resources

**Communication with our partners in public**

SENOPLAST is in constant dialogue with the local community, with regular discussions with authorities and municipalities in excess of minimum requirements. An environmental statement is published every 3 years.

This environmental policy is checked in the course of the annual audits with regard to suitability and the requirements of ISO 14001 and EMAS and, if necessary, changed.

# 3.2 DEFINING THE ENVIRONMENTAL CONTEXT OF THE COMPANY

In order to maintain and sustainably develop our environmental management system, it is important to know the organizational context of SENOPLAST Klepsch & Co. GmbH in the area of environment, which is clearly shown in the following figure 3. It is intended to show the influence of external as well as internal topics and the interaction of the two and represents a basis for the processing of environmentally relevant topics.

Further environmentally relevant topics that are constantly being worked on and additional contextual topics that arise during the course of the year are determined together with the management and dealt with accordingly.

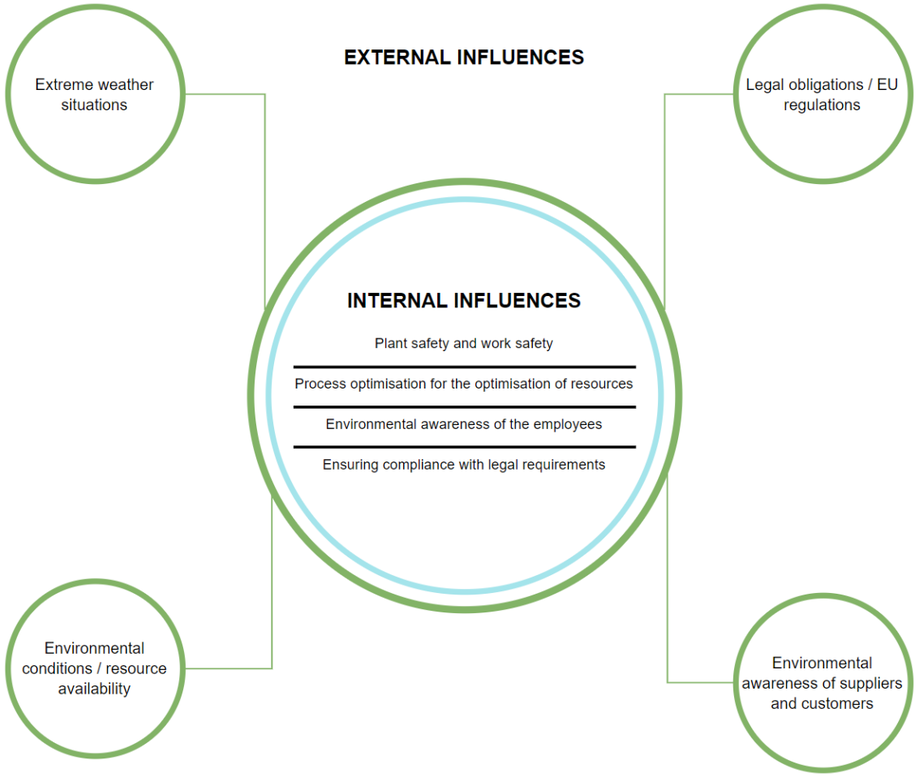



**Fig. 3:** Environmental context of the company





# 3.3 ORGANISATIONAL STRUCTURE FOR ENVIRONMENTAL PROTECTION

The management has set the corporate policy for environmental protection as a normative framework, with a commitment to quality, long-term quality objectives and to comprehensive, preventive, environmental protection.

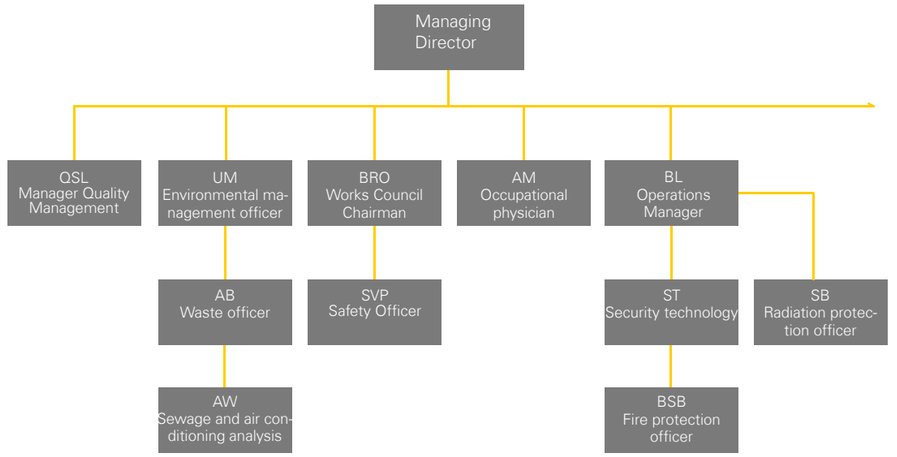



**Fig. 4:** Organization structure for environmental protection

As the senior management representative, the environmental manager has the following responsibilities:

✓Creation of environmental programs, their implementation and documentation, with the approval of the management.

✓Creation and maintenance of the environmental management manual as well as execution of environmental and internal audits.

✓A comprehensive duty to provide information to the management and the employees of the company who work in areas relevant to environmental protection.

✓An obligation to keep abreast of current developments in environmental protection.

✓To be the contact person for the authorities on environmentally relevant issues and to be involved in the processing of environmental, water and building approval procedures.

The activity of the UM includes the identification, analysis and assessment of all environmental impacts caused by the company's plants, processes and activities, whether in the form of air pollution, water and sewage pollution and the like.



# 3.4 COMPANY MILESTONES IN ENVIRONMENTAL PROTECTION

Active environmental protection is a declared corporate objective at SENOPLAST. As early as 1978, extensive planting, the generous arrangement of green spaces and the establishment of a biotope harmoniously integrated the company into the surrounding landscape.

We developed an ecological model back in 1982 and have since implemented it step by step in our operational practices. All relevant operational areas are constantly scrutinized for improvements from an ecological as well as an economic point of view.

For harmoniously integrating the company into its natural surroundings, establishing a biotope and creating a park landscape on the factory premises, we were awarded the Industrial Environmental Protection Prize in 1985.

After a short period of preparation, quality assurance was introduced in October 1992 with certification according to DIN ISO 9001. The system has become an indispensable tool in our operations. It was particularly gratifying to note that the first edition of the environmental report, "Environment Report 2000", was awarded the "Mother Earth" prize at the AERA (Austrian Environmental Reporting Award) awards, where it was selected as one of the best three environmental reports in whole Austria.

Another award at AERA 2000 followed in December 2001, where the company took second place in category I (sustainability)! One year later, in December 2002, the sought-after first place was achieved at AERA 2001, qualifying SENOPLAST for participation at a European level.

Conformity with the environmental standard EN ISO 14001 was confirmed in November 2000 with certification, which is regarded as a very good addition to the quality standard EN ISO 9001 that has already been implemented.

We have been members of the "climate alliance" since December 1999, which entails paying special attention to climate-relevant improvements, such as monitoring reductions in $CO_2$ emissions.

We are certain that we are making a contribution to building trust with our stakeholders through intensive dialogue with our employees and the public.

Projects are being planned and implemented on an ongoing basis. Our success in environmental protection reinforces our will to have these precautionary and exemplary measures officially recognized. It is our priority to maintain the healthy condition and the beauty of our country with its recreational value for us and our guests.

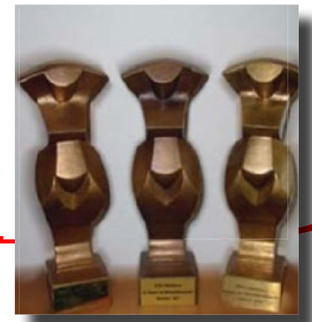
**1978**
Construction of a 1700m² bio-tope and creation of green spaces

**1982**
Ecology concept

**1985**
Environmental protection

Wir sind Klimabündnis Betrieb

**1999**
Climate alliance - voluntarily ensuring reduction in $CO_2$ emissions



**2000**
First environmental report receives "Mother Earth" award

ISO 14001 zertifiziert

**2000**
Environmental management system: EN ISO 14001

**2007**
Introduction of EMAS

Fraunhofer AUSTRIA

**2010**
Special prize for energy efficiency from Fraunhofer Austria

umwelt blatt salzburg 2018

**2018** "Umwelt Blatt Salzburg" Prize for special environmental commitment



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# 3.5 LEGAL COMPLIANCE

Legal requirements are based on EU guidelines, Austrian federal laws and state laws, and the associated implementation ordinances. In Austria there are currently approximately 377 environmentally relevant federal laws and ordinances and approximately 49 state law gazettes, of which SENOPLAST must observe a total of 218.

This is supplemented by the approval requirements for the Piesendorf site in the plant permit issued by the trade and water authority. Taken together, this forms the legal framework with which SENOPLAST is allowed to operate.

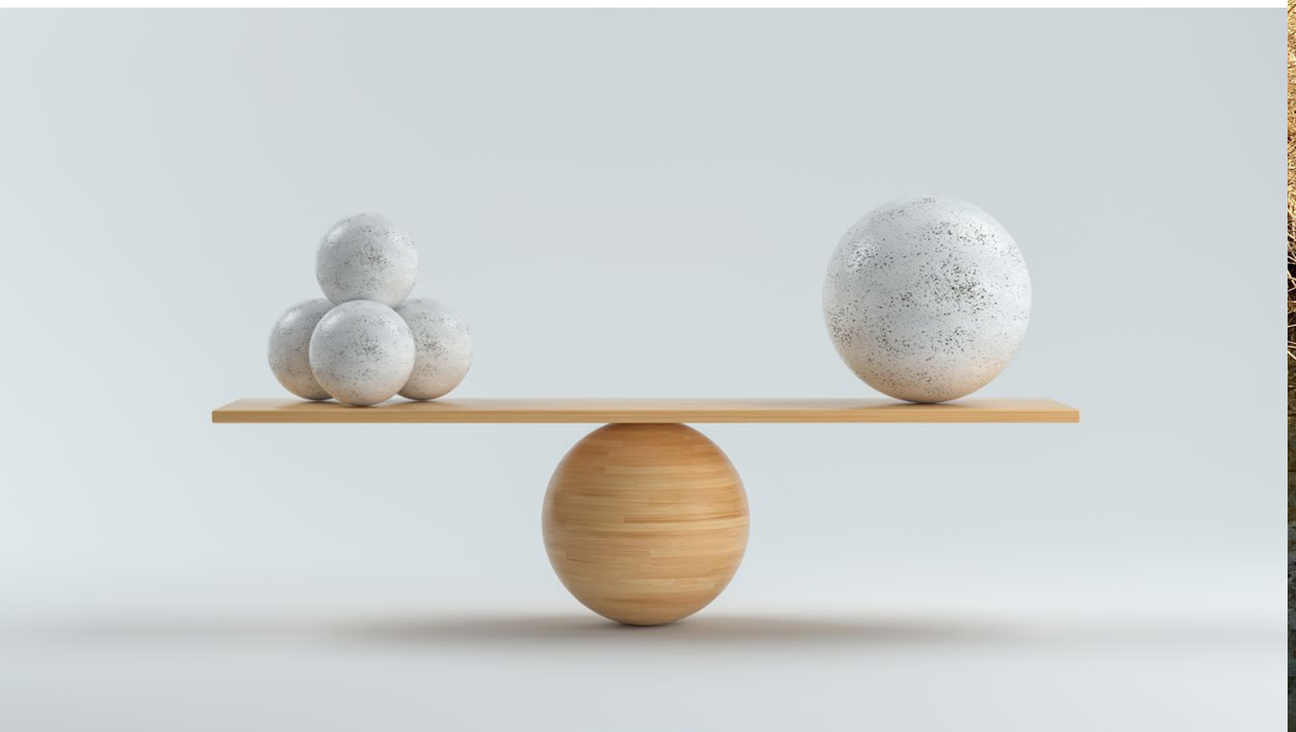
In order to be familiar with these provisions and to be able to take precautionary measures to ensure compliance, a legal register and a register of notices have been created, from which the relevant precautionary and inspection activities have been derived.

The Environment Manager is responsible for identifying environmentally relevant regulations and following pre-selection, informing department heads concerned in the company. The department heads are responsible for the appropriate implementation of measures to ensure compliance with legal requirements and official approval notices.

The original approval notices are available to management as the body with responsibility for most of the inspections.

The recurring inspections resulting from the various binding obligations (e.g. § 82b GewO, StrSchG, § 134 WRG, § 19a Railway Act, ASchG, etc.) are systematically monitored and their implementation is documented.

The annual radiation protection check is carried out by the State of Salzburg.



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# 4.
# In balance with the environment

# 4.1 ENVIRONMENTAL IMPACT AND GOALS

In order to determine the environmental impact of the SENOPLAST company at the Piesendorf site, direct and indirect environmental aspects are defined and their effects evaluated. Material flows are recorded metrologically and key indicators are developed in order to be able to define environmental strategies / goals with concrete measures.

This implementation aims to reduce the environmental impact while taking economic aspects into account. The main focus is to further reduce the specific energy consumption, the closure of the material cycle and the reduction of unavoidable waste and emission generation - while maintaining the use of 100 % renewable energies.

The achievements of the specified environmental targets are implemented through corresponding projects, the target achievements are assessed in the annual management review from which further corrective measures are derived. This Plan-Do-Check-Act (PDCA) principle is already a practice at all levels of the company.

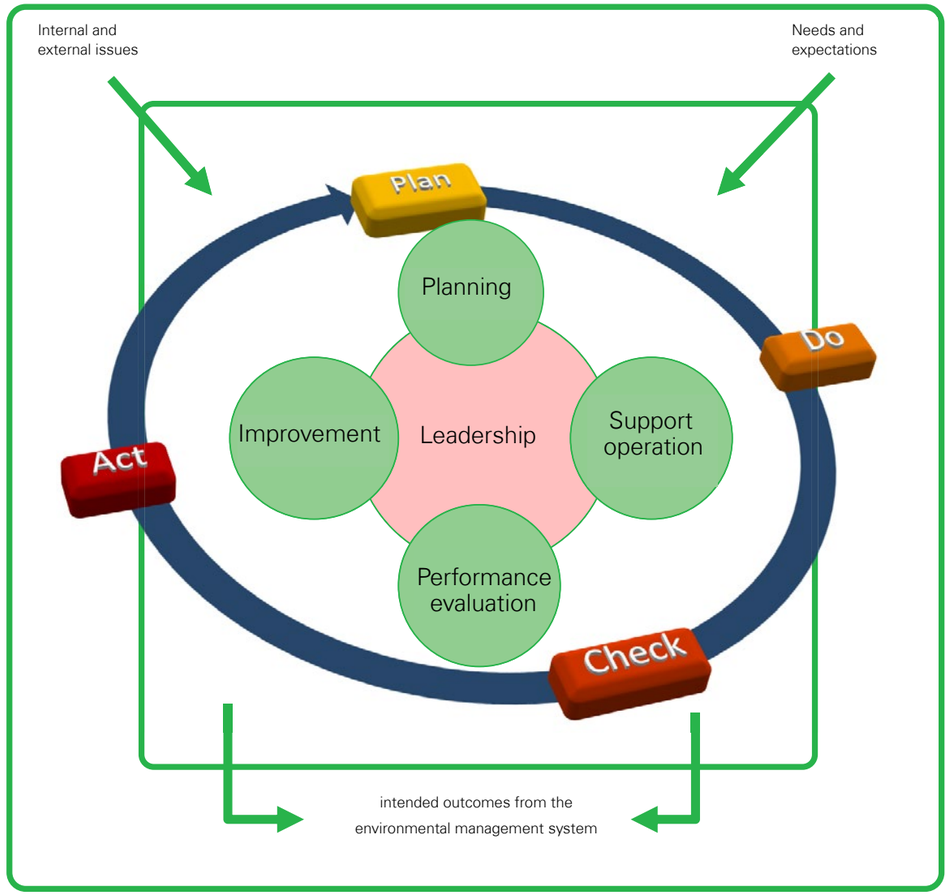


**Fig. 5:** PDCA-Cycle for achieving corporate goals



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# 4.2 DETERMINATION OF ENVIRONMENTAL ASPECTS AND THEIR IMPACTS

## The overall environmental relevance profile of the location

For us, environmental aspects are the components of processes, activities, products or services that have or might have an impact on the environment.

We use an process-related assessment of the environmental impacts to analyze the environmental aspects. This analysis enables us to identify the relevant aspects and to determine their environmental impact. In addition, we can prioritize the various environmental aspects and take measures to reduce any negative impacts.

The criteria for identifying relevant aspects were determined by taking the following points into account:

- ✓ The general state of the environment (local - regional - global)
- ✓ Potential damage or benefit to the environment in relation to confirmed environmental priorities
- ✓ Definition of process-related criteria
- ✓ Requirements of environmental regulations
- ✓ Opinions of employees and interested parties

The criteria were evaluated by considering the following points:

- ✓ Existing internal process data and flows
- ✓ In-house know-how of the different processes
- ✓ Company activities
- ✓ Knowledge of external influences and stakeholder expectations (e.g. climate change, Paris Agreement, supply chain requirements, enhanced producer responsibility EPR, etc.)

In preparation for a extended product life cycle assessment, we distinguish between our own implementation, management and support processes from those of our upstream and downstream production processes.

The weighting factor was determined internally on the basis of the relevance of the environmental aspect (local-regional-global). The ability to influence the process and its optimization potential were defined internally by analyzing the respective processes.

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# Environmental aspects 2021

| Environmental relevance of the process | |
|---|---|
| 3 | High environmental relevance |
| 2 | Medium environmental relevance |
| 1 | Low environmental relevance |
| 0 | not relevant/data unavailable |

| Regional relevance (local-regional-global) | |
|---|---|
| 1 | Low relevance |
| 2 | Medium relevance |
| 3 | High relevance |
| n.r. | not relevant |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Environmental relevance - local | | | n.r | 2 | 3 | 1 | 1 | 3 | 2 | 1 | 1 | 3 | 3 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | | |
| Environmental relevance - regional | | | n.r | 3 | 3 | 2 | 1 | 2 | 2 | 2 | 1 | 3 | 3 | n.r. | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | | |
| Environmental relevance - global | | | n.r | 3 | 3 | 3 | 2 | n.r. | n.r. | n.r. | n.r. | 3 | 3 | n.r. | n.r. | n.r. | 1 | n.r. | 1 | 1 | 1 | 1 | | |
| Classification factor based on relevance | | | **1** | **2.7** | **2.8** | **2.4** | **1.9** | **1.7** | **1.6** | **1.5** | **1.3** | **2.8** | **2.8** | **1.1** | **1.4** | **1.4** | **1.9** | **1.7** | **1.9** | **1.9** | **1.9** | **1.9** | | |
| classification: 1 = low; 2 = medium; 3 = high empty field: "not relevant / data unavailable“ | Lifecycle phase | Direct environmental aspects | Indirect environmental aspects | Thermal energy | Electrical energy | Fuel consumption | Consumption of raw materials and resources | Water consumption | Use of hazardous substances | Hazardous waste | Non-hazardous waste | Noise emissions | Air emissions - greenhouse gases | Other air emissions | Odor | Emissions into the soil | Waste water | Impact on biological diversity | Landscape - visual impairment | Compliance with environmental regulations | "Emissions due to extreme weather events / natural disasters" | "Emissions from fires and explosions (including extinguishing water)" | Other effects due to abnormal operating conditions | **Environmental impact** | **Process influencability** | **Potential for optimization** | **Environmental priority** |
| **Processes** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Upstream processes** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Crude oil extraction for the production of plastic granulate | Procurement | | X | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 1 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | **101** | 1 | 2 | 202 |
| "Procurement of plastic granulate (incl. transport)" | Procurement | | X | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 1 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | **92** | 1 | 2 | 184 |
| "Procurement of recyclate (incl. transport)" | Procurement | | X | | 1 | 1 | 1 | 2 | | | 1 | 2 | 1 | 1 | 2 | 1 | 1 | | 1 | 2 | | 1 | | **34** | 2 | 3 | 204 |
| "Procurement of colorant or color concentrate (incl. transport)" | Procurement | | X | 2 | 2 | 1 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | **56** | 1 | 2 | 112 |
| Procurement of auxiliary and operating materials | Procurement | | X | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | **74** | 1 | 2 | 148 |
| Procurement of wood (production of pallets) | Procurement | | X | | 1 | 1 | 1 | | 1 | | | 1 | 1 | 1 | | | | | 1 | 1 | | 1 | 1 | **24** | 1 | 2 | 48 |
| Procurement of packaging material | Procurement | | X | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **74** | 1 | 2 | 148 |
| Procurement of electrical energy (electricity) | Procurement | | X | 1 | 1 | | | | | | | | 1 | | | | | | 2 | 1 | 1 | 1 | 1 | **18** | 1 | 2 | 36 |
| Procurement of heating energy (heating oil) | Procurement | | X | 2 | 2 | 1 | 2 | 2 | 2 | 1 | | | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | **59** | 1 | 2 | 118 |
| Procurement of heating energy (district heating) | Procurement | | X | 2 | 2 | | 1 | 1 | | | 1 | 1 | 2 | 1 | | | 1 | | 1 | 1 | | | | **28** | 1 | 2 | 56 |
| "Procurement of chemical energy (propane and flammable gas)" | Procurement | | X | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | **74** | 1 | 2 | 148 |
| Procurement of technical equipment | Procurement | | X | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **74** | 1 | 1 | 74 |

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| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Environmental relevance - local | | | | n.r | 2 | 3 | 1 | 1 | 3 | 2 | 1 | 1 | 3 | 3 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | | | | |
| Environmental relevance - regional | | | | n.r | 3 | 3 | 2 | 1 | 2 | 2 | 2 | 1 | 3 | 3 | n.r. | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | | | | |
| Environmental relevance - global | | | | n.r | 3 | 3 | 3 | 2 | n.r. | n.r. | n.r. | n.r. | 3 | 3 | n.r. | n.r. | n.r. | 1 | n.r. | 1 | 1 | 1 | 1 | | | | |
| Classification factor based on relevance | | | | **1** | **2.7** | **2.8** | **2.4** | **1.9** | **1.7** | **1.6** | **1.5** | **1.3** | **2.8** | **2.8** | **1.1** | **1.4** | **1.4** | **1.9** | **1.7** | **1.9** | **1.9** | **1.9** | **1.9** | | | | |
| classification: 1 = low; 2 = medium; 3 = high empty field: "not relevant / data unavailable“ | Lifecycle phase | Direct environmental aspects | Indirect environmental aspects | Thermal energy | Electrical energy | Fuel consumption | Consumption of raw materials and resources | Water consumption | Use of hazardous substances | Hazardous waste | Non-hazardous waste | Noise emissions | Air emissions - green-house gases | Other air emissions | Odor | Emissions into the soil | Waste water | Impact on biological diversity | Landscape - visual impairment | Compliance with environ-mental regulations | "Emissions due to extreme weather events / natural disasters" | "Emissions from fires and explosions (including extinguishing water)" | Other effects due to abnormal operating con-ditions | **Environmental impact** | **Process influencability** | **Potential for optimiza-tion** | **Environmental priority** |
| **Processes** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Main and peripheral processes** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Goods receipt | Production | X | | | 1 | 1 | | | | | | 2 | 1 | 1 | 1 | | | | | | 1 | | | **17** | 3 | 1 | 51 |
| Raw material storage | Production | X | | | 2 | | 2 | | | | | | 1 | | | 1 | | | 3 | 1 | 1 | 2 | | **27** | 3 | 2 | 162 |
| Coloristics | Production | X | | | | | 3 | | 2 | 2 | 1 | | | 1 | 1 | 2 | 1 | | | 1 | 1 | 2 | | **31** | 3 | 3 | 279 |
| Compounding | Production | X | | 1 | 1 | | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | | 1 | | | 1 | | 2 | | **33** | 3 | 3 | 297 |
| Recyclate preparation | Produktion | X | | 2 | 1 | | | 1 | | | 2 | 1 | | | | 1 | 1 | | | 1 | | 2 | | **19** | 3 | 2 | 114 |
| Drying | Production | X | | 1 | 2 | | 1 | | | | | | 1 | 1 | 1 | | | | | | | | | **16** | 3 | 2 | 96 |
| Extrusion | Production | X | | 2 | 3 | | 3 | 3 | 2 | | 3 | | 2 | 2 | 3 | | 2 | | | 1 | 2 | 1 | 2 | **60** | 3 | 2 | 360 |
| Calendering | Production | X | | 3 | 2 | | | 3 | | | | 1 | | | | | 1 | | | | | | | **17** | 3 | 1 | 51 |
| Coating | Production | X | | | 1 | | 2 | | 2 | 3 | | | 2 | 2 | 2 | 2 | 2 | 2 | | 2 | 2 | 2 | | **50** | 3 | 1 | 150 |
| Lamination | Production | X | | | 1 | | 2 | | | | 1 | 1 | | | | | | | | | | | | **10** | 3 | 2 | 60 |
| Board cutting | Production | X | | | 1 | | 2 | | | | 1 | 2 | | | | | | | | | | | | **12** | 3 | 1 | 36 |
| Stacking | Production | X | | | | | 1 | | | | 1 | | | | | | | | | | | | | **4** | 3 | 2 | 24 |
| Packing | Production | X | | | 1 | | 2 | | | | 1 | | | | | | | | | | | | | **9** | 3 | 1 | 27 |
| Shipping storage | Production | X | | 1 | 1 | 1 | | | | | 1 | | | | | | | | 2 | | 1 | 2 | | **17** | 3 | 1 | 51 |
| Factory transport (forklift) | Aid process | X | | 1 | 1 | 1 | 1 | | 1 | | | 1 | 2 | 1 | 1 | | | | | 1 | | | | **23** | 3 | 2 | 138 |
| Compressed air supply | Aid process | X | | | 1 | | | | | | | 2 | | | | | | | | | | | | **5** | 3 | 1 | 15 |
| Material handling | Aid process | X | | | 2 | | 1 | | 1 | | 2 | 3 | | | | 1 | 1 | | | 1 | 1 | 2 | 1 | **29** | 3 | 1 | 87 |
| Cooling water supply | Aid process | X | | | 2 | | 2 | | | | | | | | | 2 | 3 | 2 | 1 | 2 | 1 | | | **28** | 3 | 2 | 168 |
| Quality assurance (product testing) | Aid process | X | | | 1 | | 1 | | | | 2 | 1 | 1 | 1 | 1 | | | | | | | | | **16** | 3 | 1 | 48 |
| Maintenance | Aid process | X | | 2 | 2 | 2 | 2 | | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | | | 1 | **39** | 3 | 1 | 117 |
| Fire protection equipment | Aid process | | X | | 1 | | 1 | | | | | | | | | | | | | | | | | **5** | 2 | 1 | 10 |
| Explosion protection equipment | Aid process | | X | | | | | | | | | | | | | | | | 1 | | | | | **2** | 2 | 2 | 8 |
| Office operation | Aid process | X | | 1 | 1 | 2 | 2 | 1 | | | 2 | 1 | 2 | 1 | | 1 | 2 | 1 | | 1 | 1 | 2 | | **42** | 3 | 1 | 126 |
| Waste disposal from production | Aid process | X | X | | 1 | 2 | 1 | | | | 3 | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | 2 | 2 | 2 | 1 | **47** | 2 | 2 | 188 |
| Hall ventilation / air conditioning | Aid process | X | | | 2 | | 1 | | | | 1 | 2 | | 2 | 2 | | | | 1 | 2 | | | 1 | **27** | 2 | 2 | 108 |
| Waste storage | Aid process | X | X | | | | 2 | | | | | | 1 | 1 | 2 | 1 | | | 2 | 2 | 2 | 2 | 1 | **31** | 2 | 1 | 62 |
| **Downstream processes** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transport of products | Transport | | X | | 1 | 2 | 1 | | 1 | | | 2 | 2 | 2 | 1 | 1 | | 1 | | 2 | 1 | 1 | | **38** | 1 | 2 | 76 |
| Further product processing | Production | | X | | 1 | | 2 | | | | 2 | 1 | 1 | 1 | 2 | | | | | 1 | 1 | 1 | | **25** | 1 | 1 | 25 |
| Use of the product | Usage | | X | | | | 1 | | | | 2 | | 1 | 1 | | | | 2 | | 2 | 1 | 1 | | **22** | 1 | 3 | 66 |
| Transport to product disposal | Transport | | X | 1 | 1 | 2 | 1 | | 1 | | 1 | 2 | 2 | 2 | 1 | 1 | | 1 | 2 | 2 | 1 | 1 | | **44** | 1 | 2 | 88 |
| Recycling | Disposal | X | X | | 2 | | 1 | 2 | | | 2 | 2 | | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | | **43** | 2 | 3 | 258 |
| Thermal usage | Disposal | X | X | 2 | 2 | 2 | 2 | 2 | 1 | 2 | | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | **81** | 1 | 2 | 162 |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Overall assessment of the environmental aspects** | 38 | 61 | 31 | 64 | 34 | 33 | 26 | 40 | 46 | 48 | 45 | 45 | 36 | 37 | 27 | 40 | 55 | 40 | 48 | 25 |
| **Significance of the environmental aspects** | 38 | 165 | 87 | 154 | 65 | 56 | 42 | 60 | 60 | 134 | 126 | 50 | 50 | 52 | 51 | 68 | 105 | 76 | 91 | 48 |



**Tab. 1:** Environmental aspects 2021

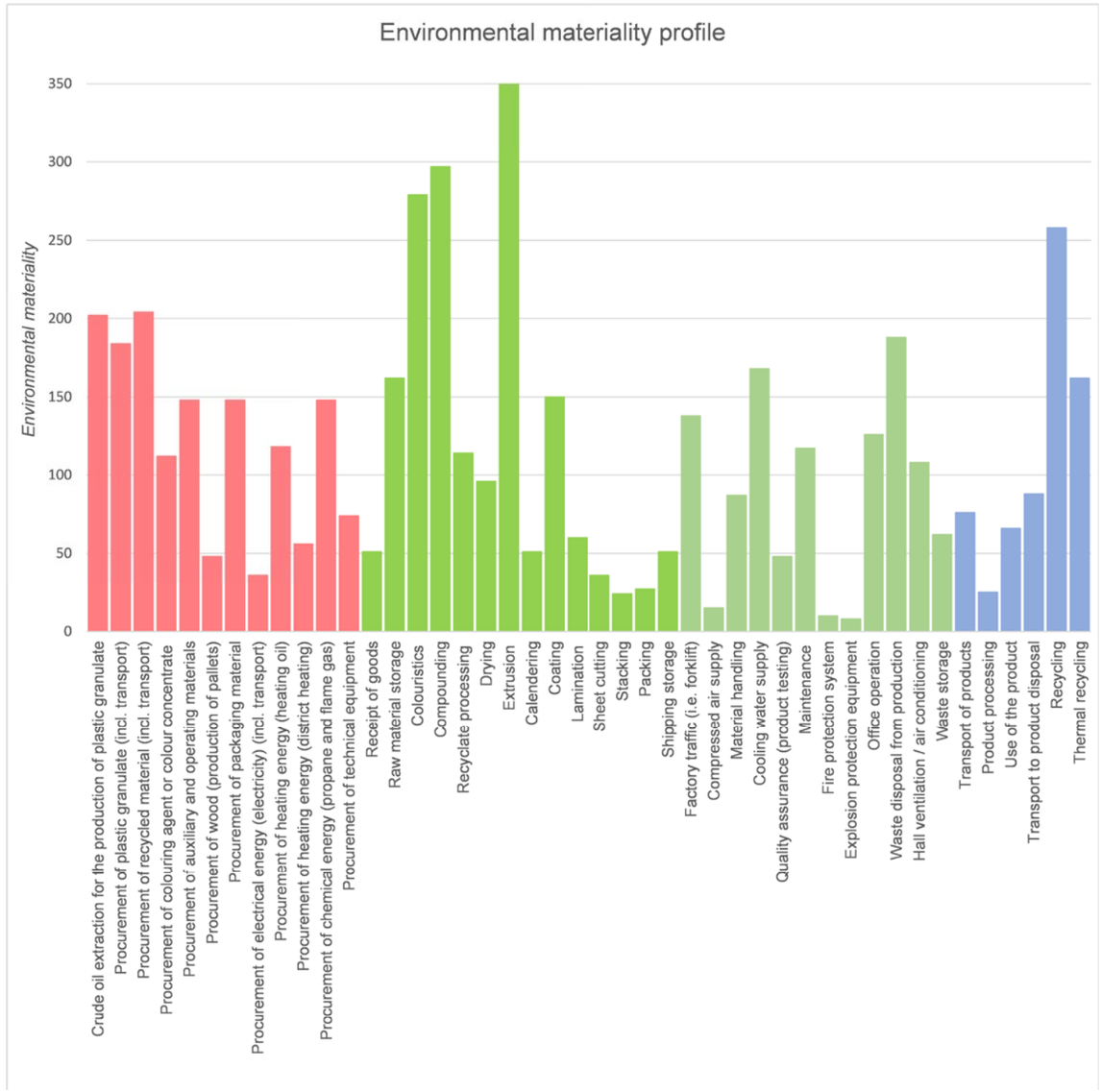


**Fig. 6:** Bar Chart: environmental aspects

After taking effective measures the environmental priorities are reprioritized and adapted. Currently, projects are being pursued to reduce raw material and resource consumption by increasing efficiency in the colouristics and extrusion processes which have a high environmental performance indicator.

Due to the relative difficulty to influence the upstream and downstream processes, effective measures cannot be taken in a short period of time. These environmental priorities are relevant for a future-oriented perspective (see point 7: “Outlook on future environmental priorities”). These priorities should be used as a lookout for an intensified cooperation between SENOPLAST and our supplier and clients addressing environmental issues and as a basis for supplier and customer evaluations.



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# 4.3 ENVIRONMENTAL FOCUS ON RAW MATERIALS

The risk potential of plastic granulates is very low. For years the usage of heavy-metal-free color concentrates for the color mixtures has become state-of-the-art.

The overriding goal of color development is to reduce the utilization of hazardous chemicals, as far as the quality requirements of the product allow. In order to identify and assess the risks to people and the environment an evaluation of the working substances is carried out.

This ensures that all employees are informed about the potential danger of these working materials in good time. To minimize the usage of these materials, less dangerous alternative working substances are sought for the future. Due to the environmental awareness of the employees, SENOPLAST hardly uses working substances with a high environmental hazard potential.

The overarching goal of responsible production and use gives us a challenging framework within which to act, namely, the "decarbonisation" of the economy by closing the cycle as much as possible:

- To use all opportunities for internal and external cycles in order to increase the use of recyclate without impairing product quality and properties. This reduces the use of "virgin material", which has to be generated from fossil sources.
- Intensive, ongoing research into the possible use of bio-based, renewable plastics to produce high quality plastic sheets.
- Customer-specific application developments to increase the longevity of our products and to increase their recyclability.

# 4.4 ENVIRONMENTAL FOCUS ON ENERGY AND HEAT

The forms of energy used in the plant are electrical energy, district heating, heating oil and energy for internal transport (electricity, diesel and propane).

## Energy economics

Table 2 shows a comparison of the energy inputs from 2018, 2019 and 2020. By switching from a cleaning bath operated with heating oil to one operated with natural gas, heating oil consumption decreased. The consumption of natural gas increased accordingly. Diesel and propane gas are used as fuel for the individual forklifts and for shriking packaging materials. In the last few years, the use of electric forklifts has been increasinlgy adopted and in the future, more investments will be made in electricpowered forklifts. The remaining heating oil consumption is due to the operation of company apartments for which a conversion to heat pumps is planned in the future.

| Energy input | unit | 2018 | 2019 | 2020 |
|---|---|---|---|---|
| **Total energy** | MWh | 36,220 | 40,495 | 37,826 |
| Electricity | MWh | 36,220 | 38,111 | 35,507 |
| Natural gas | MWh | - | 0.3 | 153.1 |
| Heating oil | MWh | 66 | 92 | 25 |
| District heating from biomass | MWh | 1,140 | 1,566 | 1,515 |
| Diesel | MWh | 364 | 421 | 388 |
| Propane | MWh | 281 | 305 | 238 |

**Tab. 2:** Energy inputs at the Piesendorf plant

## Environmentally relevant energy indicators

Table 3 lists various energy indicators calculated from energy consumed per ton of product produced. The increase in the electricity key figure in 2020 is due to the fluctuating order situation during the COVID19 pandemic, when all systems had to be kept at specific operating conditions. The increase in fossil energy consumption is due to the new operating mode of the cleaning bath.

As described, the old cleaning bath was operated with heating oil. The new cleaning bath is operated with natural gas, which is more environmentally friendly and produces less $CO_2$ when burned than heating oil.





| Energy indicators | unit | 2018 | 2019 | 2020 |
|---|---|---|---|---|
| **Total energy** | MWh/t Product | 0.908 | 0.973 | 0.975 |
| Electricity | MWh/t Product | 0.864 | 0.916 | 0.915 |
| Fossil fuels | MWh/t Product | 0.0016 | 0.0024 | 0.0046 |
| District heating | MWh/t Product | 0.027 | 0.038 | 0.039 |
| Energy for internal traffic | MWh/t Product | 0.0154 | 0.0174 | 0.0161 |

**Tab. 3:** Energy indicators for the Piesendorf plant

## Heat energy consumption

Table 4 lists the heat energy consumption in 2018, 2019 and 2020. By recovering waste heat from the production facilities, it was possible to reduce the proportion of purchased heat energy. In the colder months of the year, district heating is also obtained from the Piesendorf heating plant, while in the warmer months of the year, waste heat is returned to over 80 local heating customers. By using waste heat, the use of district heating can be reduced by around 45%.

| Heat demand | unit | 2018 | 2019 | 2020 |
|---|---|---|---|---|
| **Total heat demand** | MWh | 2.042,913 | 3.320,885 | 2.809,618 |
| Purchased energy (heating plant) | MWh | 1.139,88 | 1.755,22 | 1.515,03 |
| Heat from the waste heat system | MWh | 903,04 | 1.565,66 | 1.294,59 |

**Tab. 4:** Heat energy consumption of the Piesendorf plant

The following pie charts show the proportions of heat energy from recycled waste heat and purchased energy between 2018 and 2020. This ratio has remained constant over the past few years.

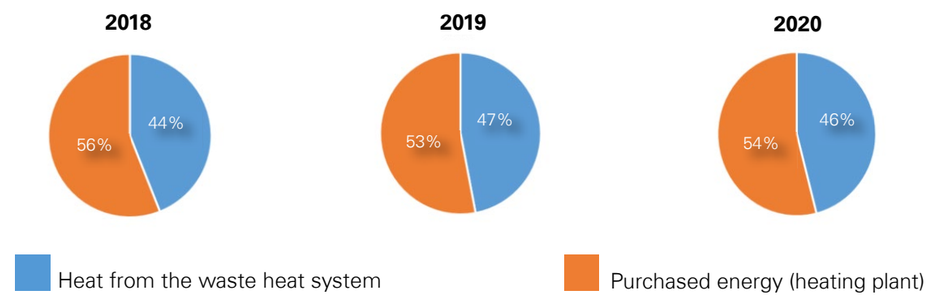


**Fig. 7:** Division of internal / district heating

Figure 8 shows the distribution of electricity consumption across the various production systems. The extruders account for the highest proportion (80%) of electricity consumption of the individual production systems.

The aim is to reduce the electrical energy requirement through continual process optimization.

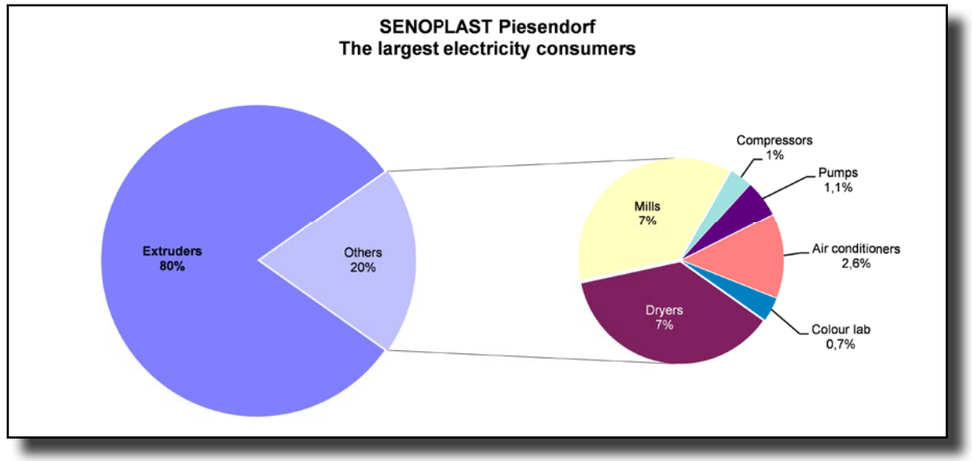


**Fig. 8:** Division of electricity consumption

## Sources of electricity Salzburg AG

The following pie chart shows the distribution of the various energy sources for the electricity purchased. This consists of 100% renewable energy, largely generated by hydropower.

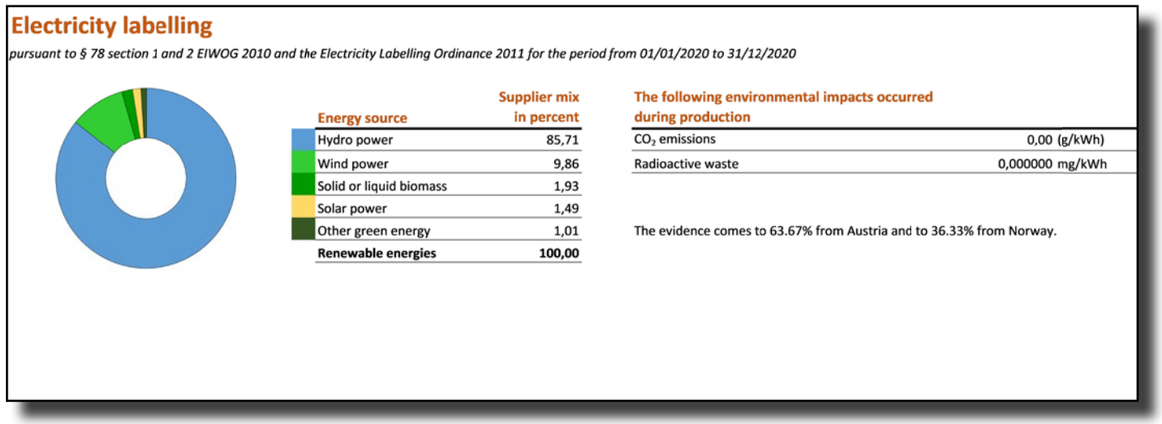


**Fig. 9:** Sources of electricity SAG





# 4.5 ENVIRONMENTAL FOCUS ON WASTE

## Waste balance

Appropriate waste collection points have been set up on solid ground (asphalt, concrete, floors) at the Piesendorf site. Waste is disposed of by authorized waste recycling or waste disposal companies.

Table 5 shows the relevant hazardous and non-hazardous waste according to waste code numbers. All of the waste generated at the site is listed in the appendix. Hazardous waste was reduced in 2020.

The accumulated construction site waste was caused by construction work carried out from 2019 to 2020.

Recycling of the secondary raw material "Plastic waste" is carried out to meet the corresponding environmental goals, which are explained under point 5: "Environmental program and environmental goals".

The proprtion of total waste that consists of commercial and residual waste has been reduced by an optimized separation process (-37% between 2018 and 2020).

| | unit | 2018 | 2019 | 2020 |
|---|---|---|---|---|
| **Hazardous waste** | **to** | **117** | **106** | **74** |
| Construction site waste | to | 0 | 0 | 1.54 |
| Electronic waste, electrical appliances, batteries, cables | to | 33 | 30 | 6 |
| Waste oil, oily waste | to | 71 | 62 | 53 |
| Old paints, solvents | to | 8.55 | 9.15 | 7.50 |
| Plastic packaging and containers with dangerous residues | to | 4.13 | 4.50 | 5.59 |
| Chemicals (laboratoy waste), spray cans | to | 0.10 | 0.13 | 0.21 |
| **Non-hazardous waste** | **to** | **1,971** | **2,083** | **2,002** |
| Wood waste | to | 677 | 728 | 785 |
| Waste paper | to | 10 | 10 | 0 |
| Waste glass | to | 3.00 | 0.22 | 8.00 |
| Plastic waste | to | 933 | 1,021 | 857 |
| Commercial and residual waste | to | 248 | 153 | 156 |
| Green waste | to | 21 | 78 | 57 |
| Cardboard boxes | to | 59 | 72 | 117 |
| Packaging composites | to | 21 | 22 | 22 |

**Tab. 5:** Waste balance at the Piesendorf plant

## Circular economy

Our recycling model is based on an agreement with our customers. The offcuts from production (pre-consumer plastic waste) are delivered to us in the form of regrind and re-integrated into the existing production process after various treatment processes.

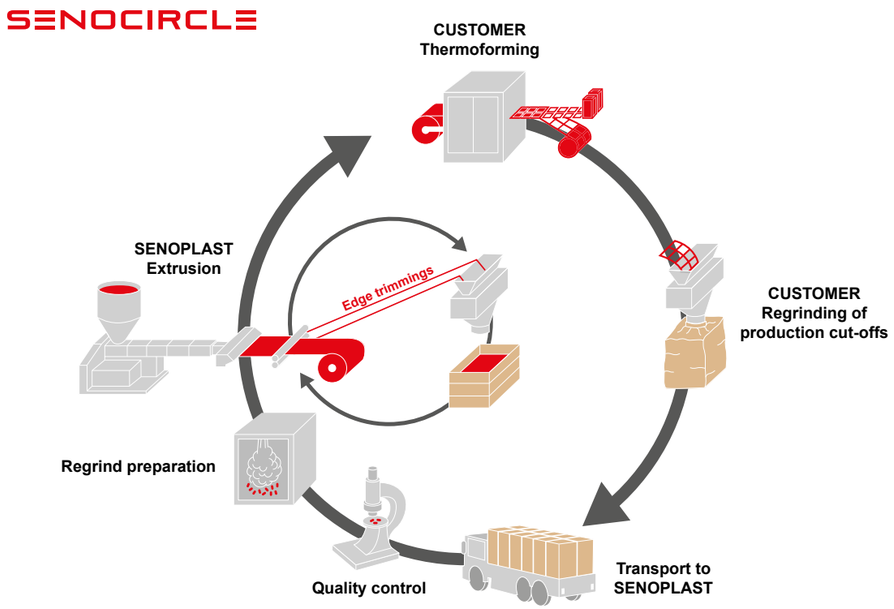


**Fig. 10:** Senocircle Piesendorf Plant

The following images show the difference in quality between inhomogeneous delivered recyclate mixed with foreign matter and the homogeneous secondary refined raw material after being processed. The separated dust particles and foreign substances will be re-used as secondary raw materials in the future (point 5: "Environmental program and environmental goals").

Delivered recyclate

Separated foreign matter and dust particles

End product





# 4.6 ENVIRONMENTAL FOCUS ON WATER

The production facilities are supplied with cooling water via a notification, number 20701-1 / 30908 / 283-2017 approved groundwater well.

Total water withdrawal was limited to a maximum of 75 l/s. The heated utility water that is released into the Roßbach must not exceed a withdrawal rate of 45 l/s and an inlet temperature of 20 ° C.

The water released via the soak away must not exceed a withdrawal rate of 30 l/s and an inlet temperature into ground water of 16.2 ° C. The industrial water, which is used for cooling machine systems, remains chemically unchanged.

Water required for sanitary and drinking water purposes is provided by the drinking water systems of the municipality of Piesendorf.

## Water balance

| **Total water consumption 2020** | **m³** | **1,212,881** |
|---|---|---|
| Well water closed-system | m³ | 683,581 |
| Well water open-system | m³ | 524,232 |
| Communal water (community water supply) | m³ | 5,068 |

**Tab. 6:** Water balance Piesendorf plant

Figure 11 shows the water consumption in 2018, 2019 and 2020. By regulating the cooling system, it was possible to reduce the cooling water throughout and thus save water.

Compared to 2018, 32% of usable water (well water + cooperative water) was saved in 2020. The amount of cooling water was reduced by 41% between 2018 and 2020.

Since the facility was approved, water consumption has been well below the maximum limit of 75 l/s that was agreed under water law.

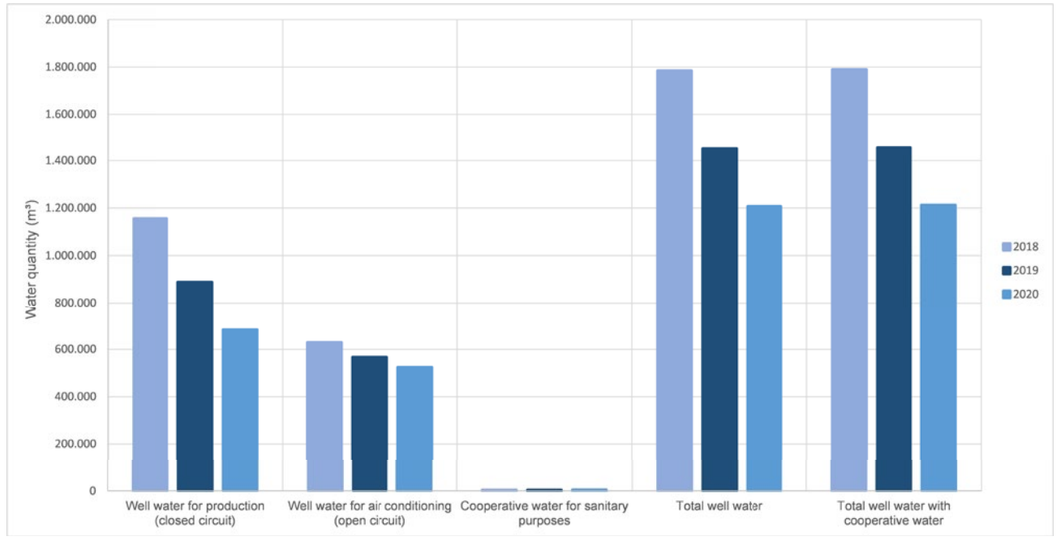


**Fig. 11:** Water consumption 2018, 2019, 2020

The following chart shows monthly water temperature measurements from 2020. Measuring points 1 to 3 must not exceed an inlet temperature of 20 ° C. Measuring point 4 must not exceed an inlet temperature of 16.2 ° C. The inlet temperatures were not exceeded at any of the measuring points.

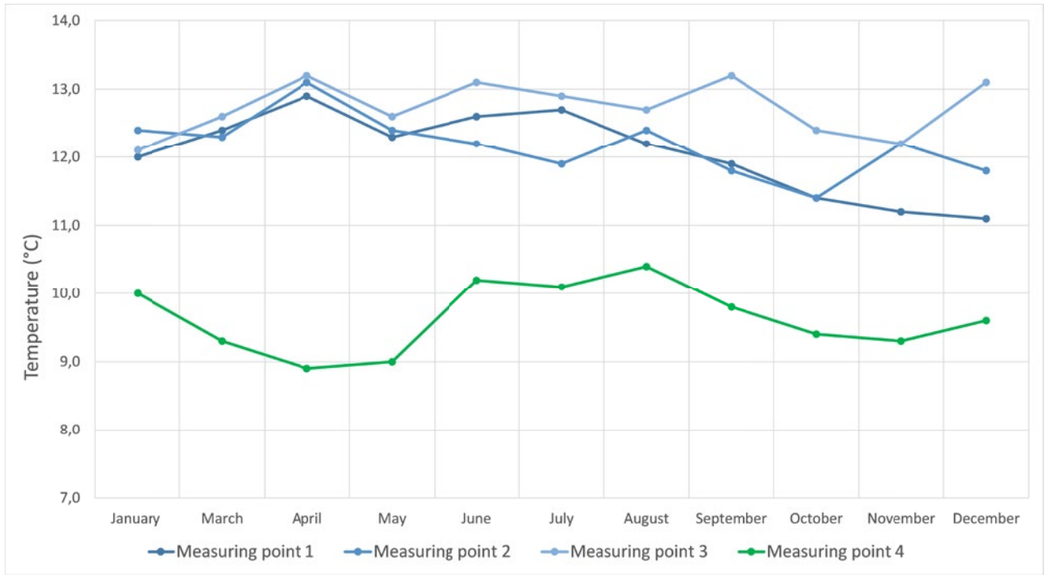


**Fig. 12:** Cooling water temperature profile

In order to increase the efficiency of the cooling water system and to minimize maintenance costs, a method for iron and manganese removal was designed. As a result, iron and manganese will be filtered out before the water reaches the system components. The project will be implemented in 2021 and will ensure that future production facilities can also be integrated into the cooling water supply without exceeding the agreed extraction rate of 75 l/s.





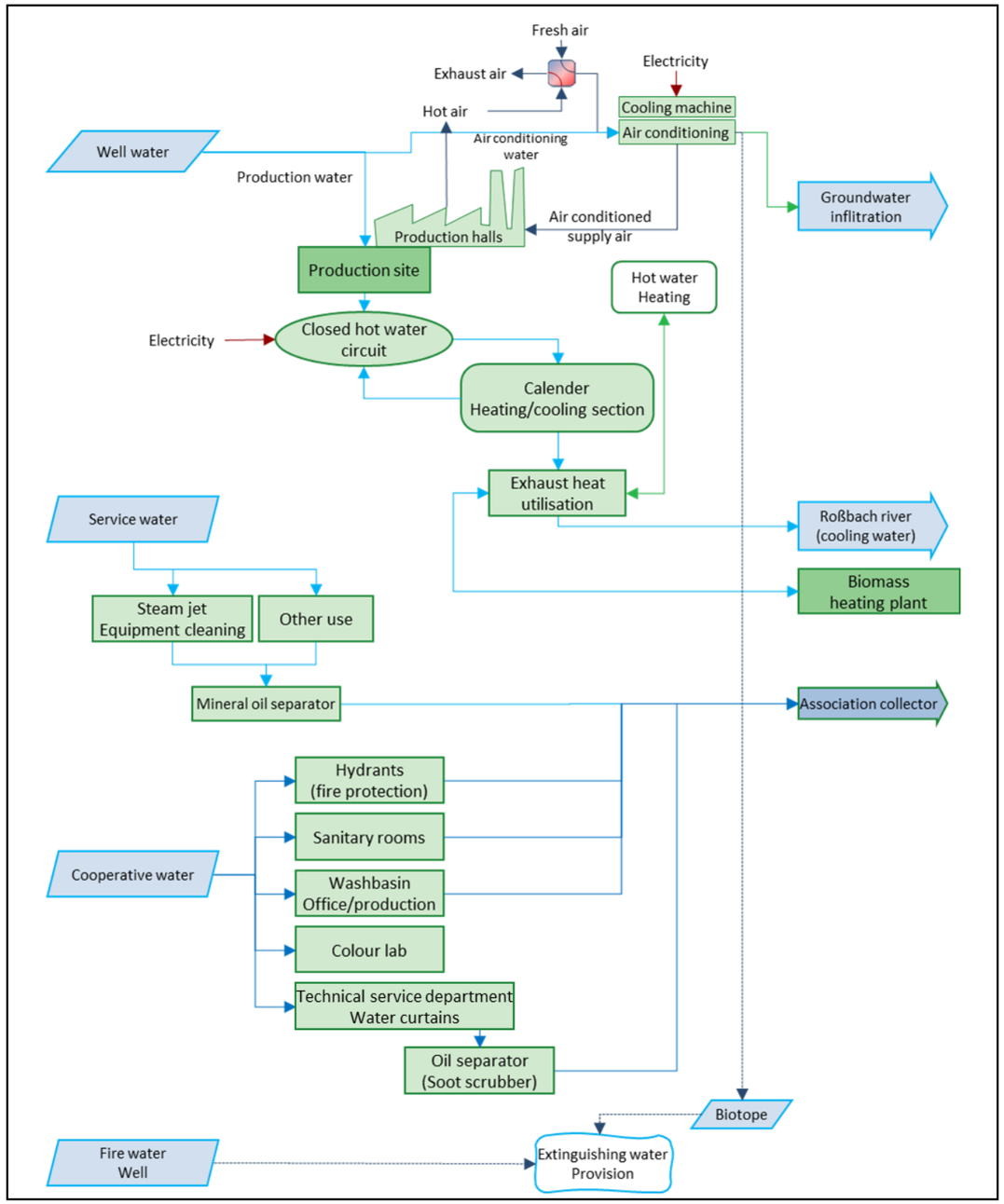


**Fig. 13:** Cooling and drinking water supply in the Piesendorf plant

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# 4.7 ENVIRONMENTAL FOCUS ON AIR AND NOISE

## Air cycle

An air conditioning system ventilates and extracts air from the production halls once it has been heated by the waste heat from production. Air is also required to provide compressed air (DL) to convey plastic granulates and to control the machines. This is released back into the atmosphere with practically no pollution. Polluted exhaust air is mainly caused by extraction at the extruders and in the nozzle assembly. The odor emissions from plastic extrusion have no negative influence on the local community as they are emitted at a sufficient distance from residents.

Nevertheless, work is being carried out to further reduce emissions and thus also odor emissions. The flow diagram for air supply and exhaust at the Piesendorf plant is shown in the following figure. 99.5% of the fresh air is used for the ventilation of the hall. Only 0.1% of the total amount of air used is for combustion leading to exhaust emissions. About 0.4% of the fresh air is used in the compressed air system.

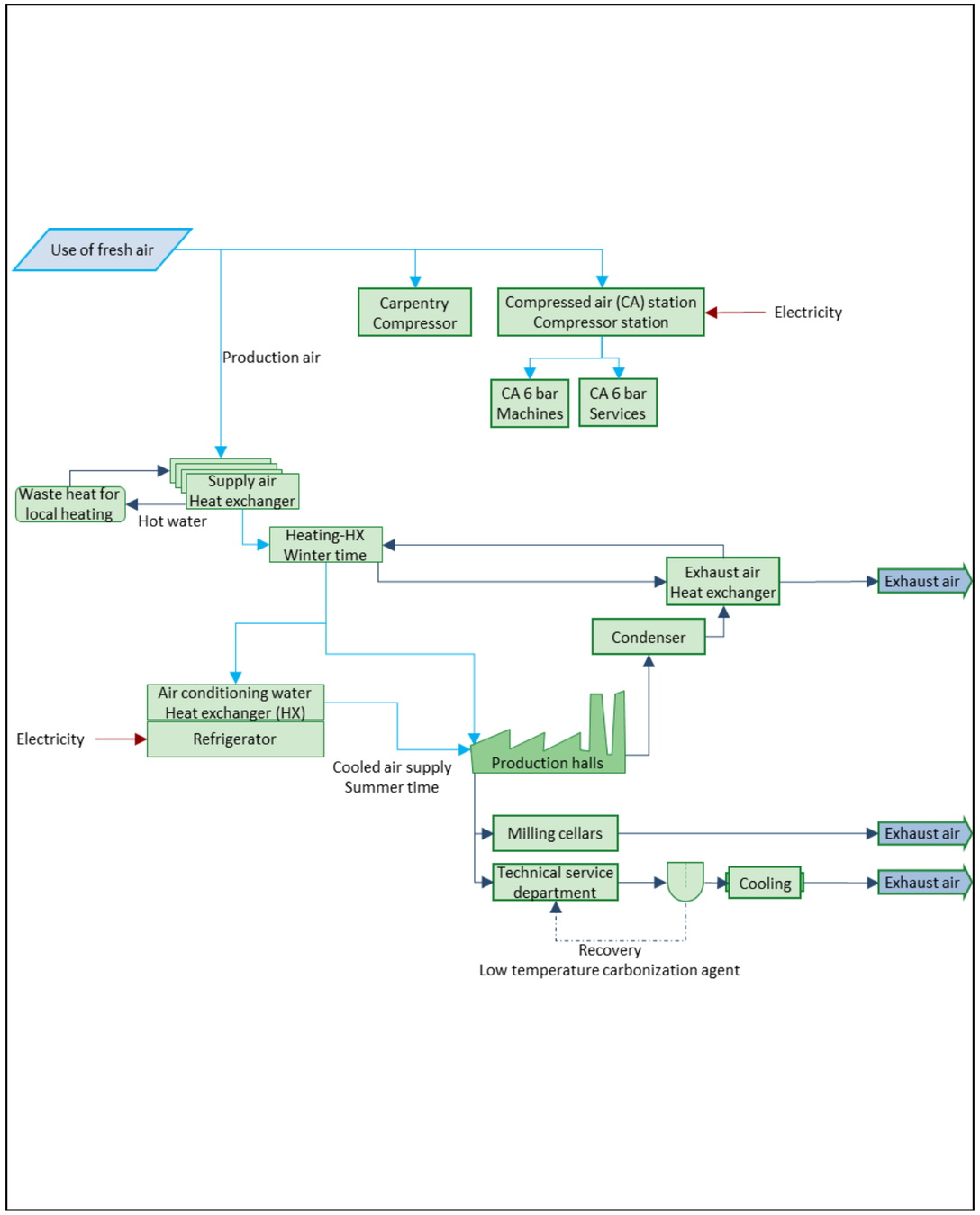



**Fig. 14:** Air cycle in Piesendorf plant

## Emissions to the atmosphere

The calculated emission loads from combustion are listed in the following table. The increase in $CO_2$ emissions is due to the purchase of a new cleaning system operated with natural gas. Although the combustion of natural gas produces less $CO_2$ per litre than heating oil (natural gas: 2.395 kg $CO_2$ / l; heating oil: 3.127 kg $CO_2$ / l), emissions have increased due to a greater requirement for cleaning in recent years.

Heating oil is used for the operation of company apartments. A replacement with heat pumps is planned for the future.

In the last few years, electric forklifts has been gradually adopted and in the future, further investments will be made in these vehicles.

| Emissions | unit | 2018 | 2019 | 2020 |
|---|---|---|---|---|
| **Total** | **kg** | **210,362** | **242,493** | **226,611** |
| $CO_2$ | kg | 203,815 | 235,242 | 221,265 |
| CO | kg | 538 | 598 | 437 |
| $NO_X$ | kg | 5,327 | 5,824 | 4,461 |
| $SO_2$ | kg | 256 | 359 | 102 |
| $C_{total}$ | kg | 417 | 460 | 342 |
| Dust | kg | 8 | 10 | 5 |

**Tab. 7:** Gaseous emissions from the Piesendorf plant

## Measurement of gaseous organic carbon compounds

Table 8 lists the concentrations of gaseous organic carbon compounds (org. C) that have been measured in exhaust air and their maximum permitted limits. It can be seen that the limits specified in the ordinance and notification have not been reached in recent years.

| Exhaust air measurements (11/2016) | Readings (mg org. C/m³) | Limit according to the ordinance from 1992 (mg org. C/m³) | Limit according to the VOC plant ordinance (mg org. C/m³) |
|---|---|---|---|
| Suction calender A9/PS-Prod. | 2.4 ± 0.5 | 100 | 150 |
| Suction calender A11/ABS-Prod. | 7.2 ± 0.7 | 100 | 150 |
| Exhaust air production hall | 2.8 ± 0.5 | 100 | 150 |

**Tab. 8:** Exhaust air measurements 2016





## $CO_2$-Balance

Environmental impacts caused by the transport of raw materials and products lead to traffic-related emissions, which have an impact outside the site. The following table lists $CO_2$ emissions related to the Piesendorf site. According to Salzburg AG, the electricity used comes from 100% renewable sources. From the electricity supplier's point of view, this creates 0.00 g $CO_2$ / kWh.

| | unit | 2018 | 2019 | 2020 |
|---|---|---|---|---|
| **Total** | **kg $CO_2$** | **203,815** | **235,242** | **221,265** |
| Diesel | kg $CO_2$ | 107,481 | 124,106 | 114,551 |
| Propane | kg $CO_2$ | 75,649 | 82,028 | 64,098 |
| Heating oil | kg $CO_2$ | 20,685 | 29,030 | 8,032 |
| Natural gas | kg $CO_2$ | 0 | 78 | 34.584 |
| Electricity | kg $CO_2$ | 0 | 0 | 0 |
| g $CO_2$ / kg Product | | 4.86 | 5.65 | 5.70 |

**Tab. 9:** Total $CO_2$ emissions by energy source - 2018, 2019, 2020

### The following data are used to calculate $CO_2$ emissions:

| | | | |
|---|---|---|---|
| Electricity** | 0,000 | kg $CO_2$ / kWh | State: 05/2021 |
| Propane* | 3.448 | kg $CO_2$ / kg | State: 10/2016 |
| Heating oil* | 3.127 | kg $CO_2$ / liter | State: 10/2016 |
| Natural gas* | 2.395 | kg $CO_2$ / liter | State: 01/2020 |
| Diesel* | 2.868 | kg $CO_2$ / liter | State: 10/2016 |

**Tab. 10:** Reference data: $CO_2$ emissions by fuel type

# Our contribution to a future with less $CO_2$

$CO_2$

OVERALL GENERATION:
221 tons in 2020

$CO_2$

SAVING

THROUGH HEAT RECOVERY AND DISTRICT HEATING FROM BIOMASS
966 tons/year

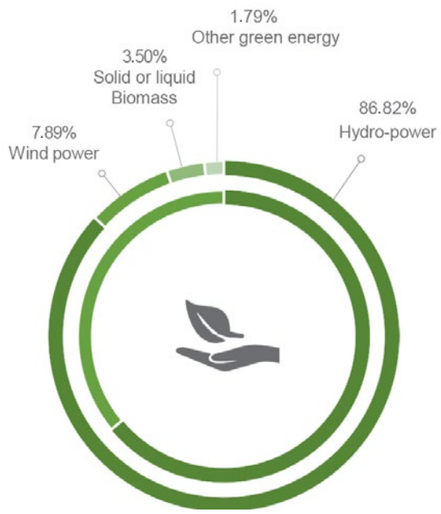
## USING WASTE HEAT SAVES HEATING OIL ($CO_2$)

By using waste heat from production to heat the company (approx. 50%), we save the environment emissions of approx. 260,000 liters of heating oil. This corresponds to 966 tons of $CO_2$ per year.

This also provides heating for the community of Piesendorf.

## LOW $CO_2$ - EMISSIONS

Producting 1 kg of senosan® generates 5.7g of $CO_2$ emissions in Piesendorf. Using a typical, economical, mid-range car generates 120g / km.


## ELECTRICITY FROM RENEWABLE ENERGY

Our electricity comes from **100% renewable energy.**





# Noise

We perform noise tests in the company carefully and regularly in cooperation with the accident prevention service of our accident insurance company. Improvement measures are continuously implemented in production in order to keep workplace noise pollution as low as possible. We have built noise protection cladding on the main extruders, noise protection cabins have been installed in the plastic milling area and we have invested in low-noise material feed pumps.

Areas exposed to noise are sound-proofed as far as possible. Nevertheless, the entire production area is classified as a noise zone and employees may only enter with hearing protection, which is freely and readily available.

Employees are informed about working in noisy areas and the possible health consequences if safety measures are not observed. The use of the appropriate hearing protection is prescribed by the management and is continuously monitored. Furthermore, the employees are sent to regular hearing tests.

When entering and leaving the hall, great care is taken to ensure that the gates remain closed at night and that forklift traffic outside is reduced to the bare minimum. No loading work is carried out at night.

# 4.8 ENVIRONMENTAL FOCUS ON TRAFFIC

## Works traffic

The following pie chart shows that the proportion of electric forklifts has increased from 13% to 32% in the last 3 years. Conversion to electric forklifts will be continued in the future.

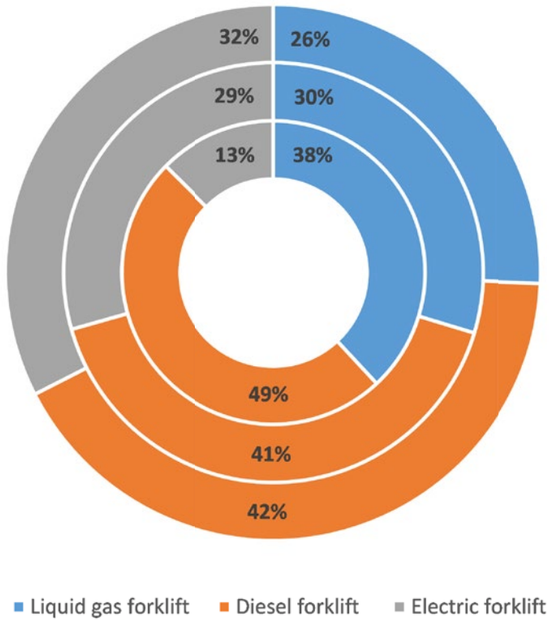



**Fig. 15:** Proportion of forklifts by type of drive



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## Delivery of raw materials and shipping of products

In general, the delivery of raw materials and the removal of products are assessed as an indirect environmental impact. Due to the locations of suppliers and customers, the choice of transport methods is severely limited.

Our raw materials are mainly delivered by truck. When procuring the raw materials, care is taken to ensure that the delivery route by truck is kept short. Container shipments are initially transported by rail. The goods are then shipped on to the truck at nearby mainline railway stations. Overseas deliveries are made by ship or air freight and onward shipments are by rail and truck.

Products are despatched from the Piesendorf plant by truck. Due to the decentralized location of many customers, there is often no direct rail connection, which means that it is not possible to use rail transport. Products that can be delivered by rail and ship are transported by truck to train stations and shipped onwards from there.

## Employee traffic

The company promotes the use of electrically powered vehicles by setting up e-charging stations for employees and actively encourages the use of electrically-powered shift buses.

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# 5.
# Environmental program and goals

Future-oriented management of the environment and careful production processes are seen at SENOPLAST as our most important responsibility. The family business has a new employee - a very important one. One who has insight into everything and is allowed to have a say everywhere. The **green spirit** is a symbol of our commitment to continual development and evaluation of our environmental protection measures.

SENOPLAST takes responsibility for its employees and customers, but also for the environment and society, because sustainability is a central component of our corporate policy.

The coordination of waste streams, the sustainable and environmentally friendly use of resources and the establishment of stable disposal networks are given top priority. In addition to quality and occupational safety, active environmental protection is one of the highest corporate goals of SENOPLAST Klepsch & Co. GmbH.

The aim was and is for the company, which as one of the largest employers in the region also assumes structural policy responsibility, to promote a fruitful symbiosis between people and itself.

# Environmental program and goals 2020/21

| Area | Goal | Actions | Status |
|---|---|---|---|
| **Environmental focus energy and heating** | | | |
| **Energy - Electricity** | Reduction of external electricity consumption per ton of product produced | Process optimization of the extrusion process<br><br>Evaluation of a photovoltaic system | The extrusion process is continuously optimized<br><br>A project to build a photovoltaic system will be drawn up in 2021 |
| **Energy - Heating** | Use of the compressor waste heat for heating purposes | Use of an additional waste heat source for heating in winter | The project has been drawn up. Implementation will take place in 2021 |
| **Environmental focus waste** | | | |
| **Recyclate processing** | The use of recyclates is to be increased<br><br>Self-recycled stocks need to be reduced | Investment in a recycling plant | Complete. The project was planned and implemented in 2020 |
| **Reduction of production waste from extrusion** | Reduction of production waste that can be recycled externally | Acquisition of a shredder system and further processing via a cutting mill to be used in house by production | A potential project (location determination, size of shredder, etc.) is currently being evaluated |
| **Processing of dust and chips** | Examination of options for processing and reusing dust and chips that are currently being disposed of | Assessment of dust quantities and dust compositions. Elaboration of a concept for conveying and processing the dusts and chips | The quantities and dust composition have been assessed.<br><br>Next steps: evaluation explosion protection and trials of conveying concepts |
| **Zero Pellet Loss** | Zero Pellet Loss | Voluntary participation in the FCIO's 'Zero Pellet Loss' initiative<br><br>Further progress through purchasing a Kärcher floor vacuum | complete |
| **Environmental focus water** | | | |
| **Iron and manganese removal** | Construction of a pressure filter system for the separation of iron and manganese from water.<br>This results in an improvement in water quality and as a result, an increase in the efficiency of the cooling water process | Procedural design of the filter system<br><br>Checking the water quality after filtering<br><br>Determination of the location and construction of a pressure filter system for the plant that is permitted under water law | The project is in the implementation phase and is to be completed in 2021 |
| **Environmental focus air and noise** | | | |
| **Reduction of noise from pneumatic conveying** | Reduction of noise in the outside area caused by the pneumatic conveying of recyclates in the silo system | Isolation of the pipe system in the outside area and verification of noise reduction after isolation is complete | Complete. The relevant pipe system was checked and insulated. Noise measurement showed a reduction in noise to almost 0 dB |
| **Environmental focus traffic** | | | |
| **E-forklift** | Use of electric forklifts to reduce $CO_2$ emissions | Continual conversion of diesel-powered forklifts to electric forklifts | 9 forklifts have already been converted to electrical power<br><br>Another 4 forklifts will be converted to electrical power in 2021 |
| **Personal transport** | Contribution to reduction of the employees $CO_2$ footprint | Promotion of electrically operated vehicles by setting up e-charging stations for employees<br><br>Investment in an initial electrically operated shift bus | Complete |

**Tab. 11:** Environmental goals and program 2020/2021

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# 6.

# Review of measures implemented so far

# BIOTOPE - AMPHIBIAN GUIDANCE SYSTEM AND RESTORING THE ROSSBACH HABITAT

When the plant was built in 1978, a biotope was created from a firefighting water storage pond. The biotope has developed into one of the most important bodies of water for spawning in the region in recent years - up to 500,000 amphibians find a safe habitat here.

With the expansion of the Piesendorf industrial park, the biotope is now shifting to the center of work areas that are heavily frequented by traffic. The enclosure of the pond and the installation of a guidance system in the direction of the adjoining amphibian underpass will ensure safe and undisturbed migration between habitats.

The existing guidance systems and safety fences were not an optimal solution, so SENOPLAST pioneered a new type of guidance system in the form of an ABS / ASA * multilayer composite.

** ABS/ASA = acrylonitrile butadiene styrene copolymer / acrylonitrile styrene acrylate rubber copolymer*

In a series of tests, an optimized surface structure was developed which makes it impossible for the amphibians to get over the safety fence.

**System benefits:**

- ✓ low cost (up to 80% savings)
- ✓ weatherproof
- ✓ modular - enables easy expansion
- ✓ low maintenance
- ✓ easy construction
- ✓ environmental friendly production
- ✓ 100 % recyclable

# LOCAL HEATING FOR THE PIESENDORF COMMUNITY

## HEAT GENERATION FROM BIOMASS AND SENSIBLE USE OF WASTE HEAT FROM THE SENOPLAST PRODUCTION PROCESS

The special thing about this project is the symbiosis between the production plant and the biomass heating of 85 of Piesendorf's heating customers. The ingenuity lies in the heat exchange during the year. In the colder seasons, district heating is obtained from the heating plant (2), while in the warmer seasons, energy is returned (3).

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In addition, there are a number of synergistic effects such as a closed circuit of the cooling water (clean water that has undergone treatment), which means fewer malfunctions in pumps, valves and heat exchangers, but also a reduction in the groundwater needed for cooling due to more efficient energy extraction.
By replacing more than approx. 260,000 liters of heating oil, $CO_2$ emissions are reduced by 966 tons per year.

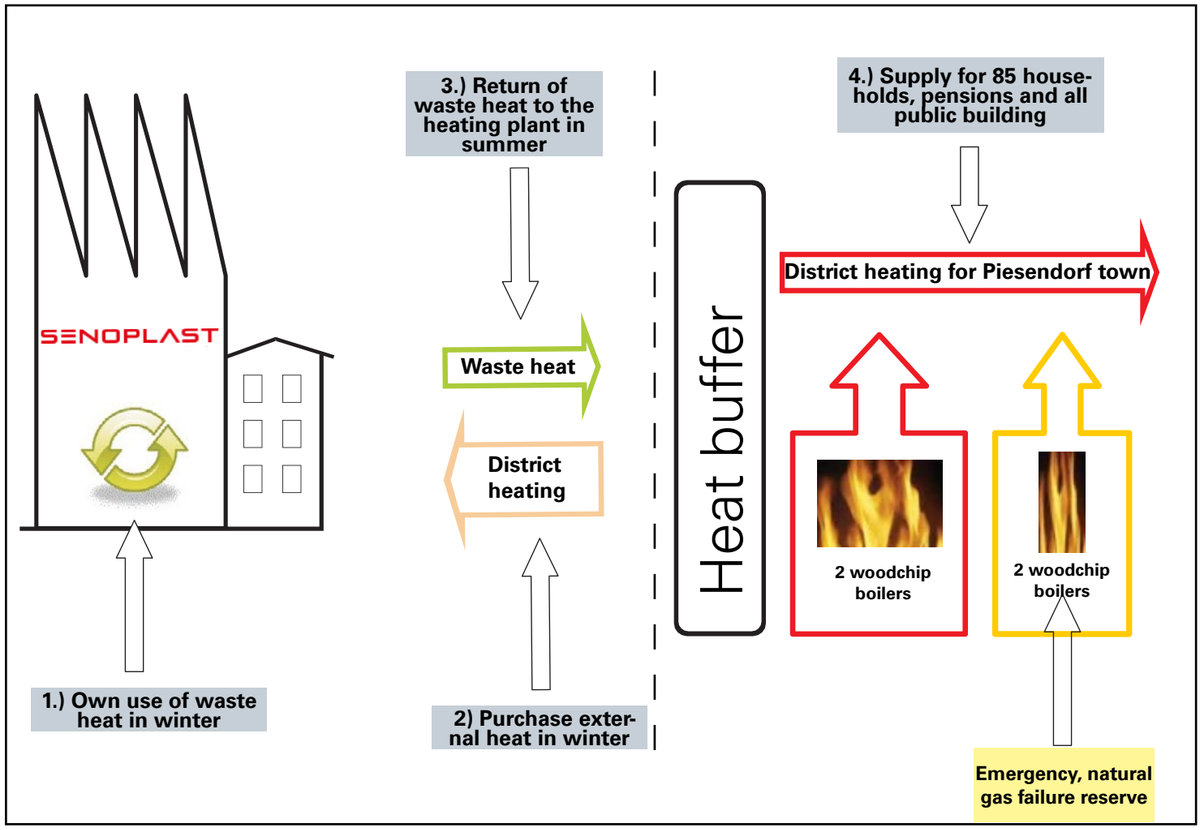


**Fig. 16:** Concept for waste heat utilization at the Piesendorf plant



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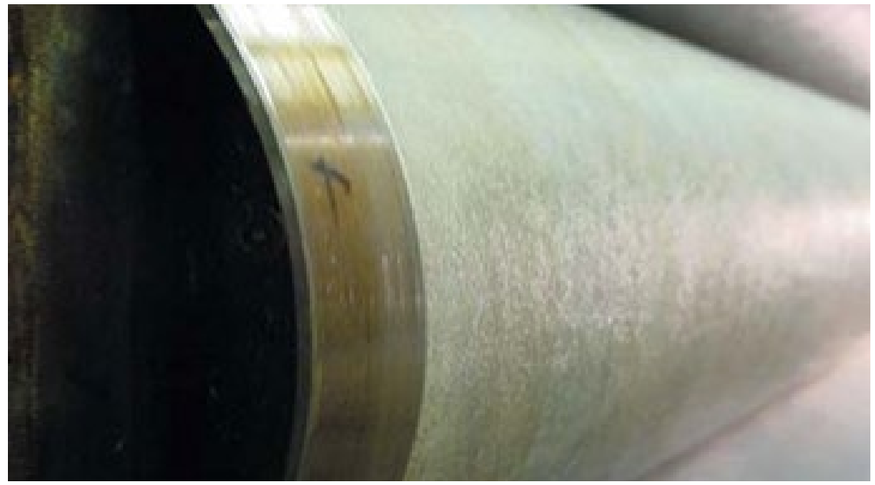

*Plastic sheets and films are given a smooth or grained surface by passing through hollow steel rollers. At the same time, the plastic, which has a temperature of around 220 degrees, is cooled down. At this point, the energy is extracted from the production process.*

*To remove the heat, water flows through the hollow steel rollers, transporting the thermal energy into the pump house via pipelines.*

*In the pump house, the usable energy is diverted either for heating the company premises or, in the warm season, it is fed back into the district heating network via a storage buffer.*

# THE POTATO PYRAMID PROJECT

The herb garden and potato pyramid sustainability project implemented by SENOPLAST and the Fürthermoar Alm (Family Aberger Dick) at 1800m above sea level is already yielding its first crop. Around 50 kg of organic potatoes were harvested from two potato pyramids.

Organic farmer Andrea Rieder from Hollersbach and Ulrike Haunschmid initiated the pioneer project "Potato Power". For both of them, potatoes are “all-around geniuses”. The aim is for the miracle tuber to grow in every Hollersbach home garden in a few years' time, because potatoes used to be grown on every farm here in Pinzgau and were served almost every day as a staple food. Andrea and Ulrike want to convince people of the power, biodiversity and the unbelievable number of uses of the potato, and to highlight the value of regional and organic foods. In order to exchange information about the miracle tuber, the association has published the brochure "The Potato - a tuber that has it all" by Ms. Rieder. A separate potato blog with interesting facts and culinary information about the miracle tuber was also set up.

SENOPLAST has rooted sustainability and environmental awareness firmly in the company philosophy and therefore supports projects that promote and consolidate these ideas in the region. Lebenshilfe Piesendorf helped with the creation of the herb garden and the potato pyramids, for which everyone involved would like to thank them very much.




# RECYCLATE PROCESSING

Processing recyclates allows a high proportion of recycled material of up to 100% (instead of a maximum of 50%) to be used in coextrusion composites with Class A surfaces and in thin, highly sensitive foils. The improvement in recycle quality due to the individual process stages means that the theoretical saving of new goods by using recycle is 100%. To be more specific, every ton of recycled plastic that is used instead of comparable new material specifically avoids between 1.45 t and 3.22 t of climate-relevant greenhouse gases in the form of $CO_2$ equivalents [source: https://www.bvse.de/gut-informiert-kunststoffrecycling/press-releases-plastic-recycling/5252-co2-credits-for-more-recycling-and-climate-protection.html].

In 2020, SENOPLAST bought around 5,600 tons of recycled material and thus achieved a $CO_2$ saving potential of up to a maximum of 18,000 tons of $CO_2$ equivalents in 2020. The recycle processing plant was completed in the middle of 2020, which means that the quantities can be significantly increased again in 2021.

**Fig. 17:** Recycle processing





# WASTE SEPARATION

A recycling area was established for waste containers, which were not in an orderly arrangement, to improve and simplify waste separation. The construction of the hall extension in 2017 enabled the existing area to be divided-up differently, creating space for the new arrangement.


**Fig. 18:** Recycling area Piesendorf plant

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# 7.
# Outlook for future environmental priorities

The overarching goal of responsible production and use gives us a challenging framework within which to act, namely, the "decarbonisation" of the economy by closing the cycle as much as possible for our research and development and production - or even rethinking them:

✓ Intensive, ongoing research into ways of using bio-based, renewable plastics to produce high-quality plastic sheets with less waste and less consumption of energy and water

✓ Customer-specific application developments to increase the longevity of our products, increase their recyclability and avoid waste

✓ To use all possible internal and external cycles to increase the use of recyclate without impairing product quality and properties. This reduces the use of "virgin material", which has to be generated from fossil fuels, further reducing the impact on the environment.

✓ Develop the delivery of our products to customers around the world based on $CO_2$-neutral logistics models with optimized transport sizes, intervals and packaging systems, the involvement of our distribution partners and the goal of ZERO emission transportation.

✓ Decarbonisation and the circular economy require companies and their stakeholders to be more willing to cooperate in order to come up with new solutions and still remain competitive. Our commitment to sustainable supply chains includes the responsibility to ensure fair business and working conditions and to strive for future-proof solutions in competence networks with our suppliers and customers.

The **green spirit** is also active beyond the Senocircle. SENOPLAST sees its role as a leading company, actively working to develop a sustainable regional economy. For example, by making our contribution to national and international initiatives based on the Sustainable Development Goals SDGs that were jointly comitted to in Paris in 2015 by many countries around the world.



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**Fig. 19:** Sustainable Development Goals

We strive to support regional initiatives in sustainability, the circular economy and decarbonisation in open discussions with all interest groups, in order to keep the region attractive and vibrant as a natural living and recreation area - a region that lives with nature, which can also provide a stimulating environment for young people.

The focus is on realizing the opportunities to fully exploit regional potential by digitization and networking of social and economic processes. Decentralization can be achieved with the help of digitization.

Finding sustainable symbioses between industry, trade and cities are the buzzwords of the future, and this is enacted by UN organizations around the world. We at SENOPLAST see our role as a leading company in this space and we will, within the scope of our possibilities, set the tone for a future worth living in.

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# 8.

# Economic, social and ethical aspects

# SENOPLAST - one of the leading companies in the Pinzgau region

SENOPLAST is aware of its special position as a leading company in the region and beyond. As a family company, SENOPLAST stands by its responsibility to society, nature, the environment and the people who work here.

A core body of values based on respect, trust and honesty, fairness and acceptance, recognition and appreciation, together with the present code of conduct, form the basis of our day-to-day actions and of corporate success.

The endeavor to create a pleasant working environment for the employees through an inclusive corporate culture goes beyond this, with the SENO auxiliary service, which takes on social tasks for active and retired employees and their relatives, as well as the Freizeitclub-Aktiv, which promotes good relationships within the workforce and with the community through joint leisure activities.

SENOPLAST's responsibility towards young people is a particularly focus. Developing talent via various apprenticeships is of the utmost importance for the company and for the locally trained apprentices it is often the springboard for an international career, which SENOPLAST can facilitate as a global player with locations in Mexico and China.

The company's social commitment is of particular benefit to associations and activities in the Pinzgau region. This is not only in the form of financial support, but orders placed with social organizations such as the specialist workshop of Lebenshilfe Piesendorf also testify to this commitment.

A very special concern of the Klepsch family is the promotion of specific development projects in Africa. For instance, the Rwenzori Association receives financial support for its project to build the vocational Holy Dove secondary school in Uganda.



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lebenshilfe Österreich

rwenzori e.V.

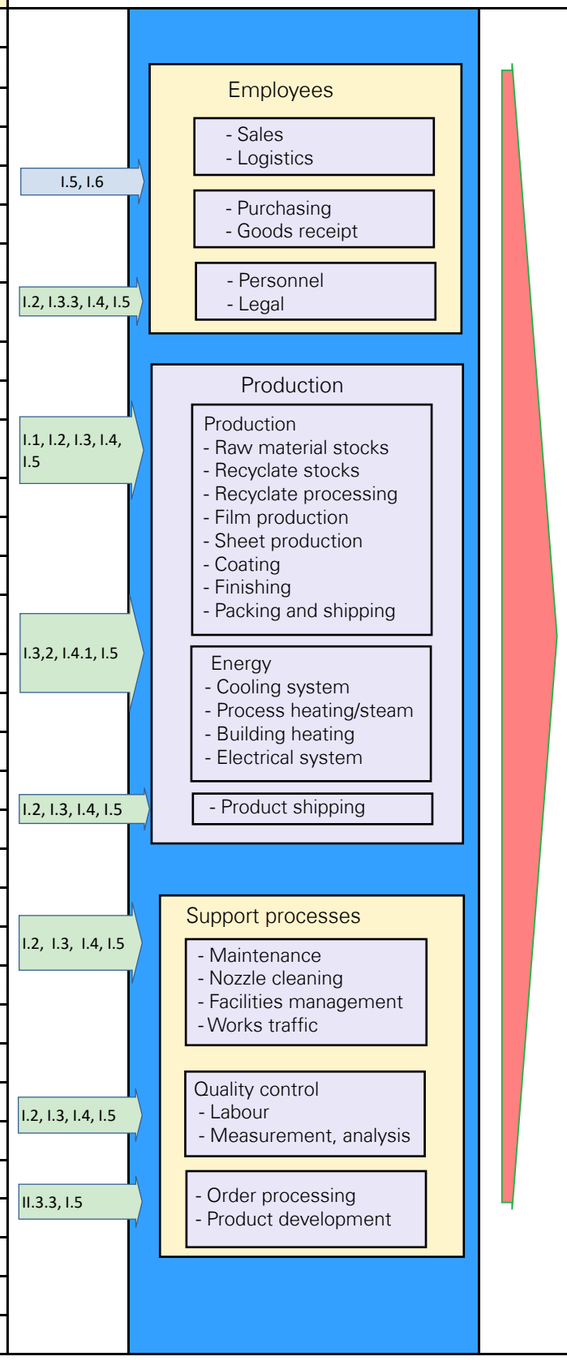
# APPENDIX

## INPUT-OUTPUT-TABLE

**Environmental Balance Sheet Piesendorf Plant**

**In-, Output Analysis**

| | For balance period (Financial year): | | | 2020 |
|---|---|---|---|---|
| I | **INPUT - Mass flows** | Unit | | **Quantity** |
| | | | | |
| **I.1** | **Raw Material** | ton | | 46,960 |
| I.1.1 | Plastic granulate (raw materials) minus sale | ton | | 35,024 |
| I.1.2 | Self-regenerated material (minus sales) | ton | | 4,690 |
| I.1.3 | Customer-regenerated material (minus sales) | ton | | 4,567 |
| I.1.4 | Color concentrate (minus sales) | ton | | 2,679 |
| **I.2** | **Auxiliary and operational materials** | ton | | **22** |
| I.2.1 | Solid and liquid auxiliaries, cleaning cloths, cleaners | ton | | 11.471 |
| I.2.2 | Oils, greases, lubricants | ton | | 6.940 |
| I.2.3 | Antifreeze and AdBlue | ton | | 0.825 |
| I.2.4 | Gases (synthetic gases, shrinkage gas or engine gas) | ton | | 2.924 |
| I.2.5 | Fluorescent lamps | ton | | 0.004 |
| I.2.6 | Varnishes, paints, varnish sprays, thinners | ton | | 0.763 |
| I.2.7 | Other sprays | ton | | 0.198 |
| I.2.8 | Packaging materials (wood, carton, plastic films...) | ton | | 3,868.469 |
| | | | | |
| **I.3** | **Water** | | | **1,212,881** |
| I.3.1 | Wellwater closed system | m³ | | 683,581 |
| I.3.2 | Wellwater open system | m³ | | 524,232 |
| I.3.3 | Municipal water (Community) | m³ | | 5,068 |
| **I.4** | **Air** | | | **1'679,075,155** |
| I.4.1 | Total air for combustion | Nm³ | | 836,682 |
| I.4.2 | Compressed air (8 compressors) | Nm³ | | 6.830,473 |
| I.4.3 | Hall air supply | m³ | | 1'671,408,000 |
| | | | | |
| **I.5** | **Energy** | | | **37,827** |
| I.5.1 | Electricity (Salzburg AG) | MWh | | 35,507 |
| I.5.2 | Natural gas (SalzburgAG) | MWh | | 153 |
| I.5.3 | Extralight heating oil (Fa. Grübler) | MWh | | 25 |
| I.5.5 | Diesel | MWh | | 388 |
| I.5.6 | Propane (vehicle gas and scarfing gas) | MWh | | 238 |
| I.5.7 | District heating from biomass | MWh | | 1,515 |
| | | | | |




| | | | | 2020 |
|---|---|---|---|---|
| O | **OUTPUT** | | | **Quantity** |
| **O.1** | **Products excluding packaging** | | | 38,796 |
| O.1.1 | Plastic products excluding packaging materials | | ton | 38,796 |
| O.1.2 | By-products | | ton | |
| **A** | **Waste (Waste management concept)** | ASN | | **Quantity** |
| | | | | |
| A.1 | Hazardous waste | Gruppen-SN | ton | 74 |
| A.1.1 | Hazardous construction waste | 31.xxx | ton | 2 |
| A.1.2 | Electronic waste, electrical equipment, batteries, cables | 35.xxx | ton | 6 |
| A.1.3 | Waste oil, oily waste | 54.xxx | ton | 53 |
| A.1.4 | Old varnishes, paints, solvents | 55.xxx | ton | 8 |
| A.1.5 | Plastic packaging and containers with hazardous residues | 57.xxx | ton | 6 |
| A.1.6 | Chemicals (laboratory waste), spray cans | 59.xxx | ton | 0 |
| **A.2** | **Non Hazardous waste** | Gruppen-SN | ton | 2,002 |
| A.2.1 | Waste wood | 17.xxx | ton | 785 |
| A.2.2 | Waste paper | 18718 | ton | - |
| A.2.3 | Waste glass | 31468, 31469 | ton | 8 |
| A.2.4 | Commercial and residual waste | 91101, 91401 | ton | 156 |
| A.2.5 | Green waste | 91701 | ton | 57 |
| A.2.6 | Cartons | 91201 | ton | 117 |
| A.2.7 | Packaging composites | 91207 | ton | 22 |
| A.2.8 | Plastic waste | 57.xxx | | 857 |
| | | | | |
| **A.3** | **Waste water** | | m³ | |
| A.3.1 | Waste water (sewerage) | | m³ | 4,341 |
| A.3.2 | Waste water - cooling water | | m³ | 1,455,779 |
| | | | | |
| **A.4** | **Exhaust air** | | m³ | 1,679,107,174 |
| A.4.1 | Total air from combustion: | | m³ | 859,012 |
| A.4.2 | Hall air (including compressed air): | | m³ | 1,678,248,162 |
| **A.5** | **Waste heat usage** | | | |
| I.5.1 | Waste heat from production | | MWh | 1,295 |
| $CO_2$ | $CO_2$-emissions from combustion | Scope 1 | t | 8.03 |
| $CO_2$ | Product Carbon Footprint | Scope 1 | kg / t | **5.70** |

# KEY INDICATORS

| ENVIRONMENTALLY RELEVANT KEY INDICATORS PER TON OF PRODUCT | | | NOTES |
|---|---|---|---|
| **General indicators:** | **2019** | **2020** | |
| Packaging materials (kg/t) | 72.75 | 99.71 | The quantity of packaging has increased, but cannot really be influenced as this increase is due to customer requests |
| Water for production ($m^3$/t) | 34.97 | 31.13 | Due to a change in the control system, the quantity was higher in 2019. A technical control change reduced the quantity in 2020 |
| Community water(l/t) | 0.104 | 0.131 | The communal water consumption is within the normal fluctuation range |
| Land use ($m^2$/t) | 0.597 | 0.640 | Increase in land consumption per ton due to the construction of the new warehouse and a decrease in overall production |
| Amount of product per employee (t/MA) | 79.90 | 75.48 | Reduction in the amount produced per employee due to the coronavirus pandemic |
| | | | |
| **Waste indicators:** | | | |
| Total waste (kg/t) | 27.59 | 53.51 | The total amount of waste has increased because of the greater proportion of old materials included in the calculation |
| Hazardous waste (kg/t) | 1.84 | 1.77 | The dangerous waste per ton of product has decreased due to less vacuum oil and less oil separator sludge |
| Non Hazardous waste (kg/t) | 25.75 | 51.74 | The non-hazardous waste per ton has also increased due to the fact that old materials are included in the calculation |
| Plastic waste from production (kg/t) | 18.51 | 17.71 | Slight reduction per ton by reducing the amount of product |
| Mixed commercial waste (kg/t) | 3.67 | 4.02 | The amount of mixed commercial waste remains constant thanks to better waste separation (dust separated, PVC cores separated ..) |
| | | | |
| **Energy indicators:** | | | |
| Total energy consumption (MWh/t) | 0.973 | 0.975 | Constant total energy consumption |
| Elecricity (MWh/t) | 0.916 | 0.915 | Total power consumption has decreased slightly |
| Heating oil (MWh/t) | 0.0023 | 0.0046 | Due to renting an external apartment house, the consumption of heating oil has increased again |
| District heating (MWh/t) | 0.038 | 0.039 | Heating energy is constant |
| Energy for traffic (MWh/t) | 0.0174 | 0.0161 | Reduction due to the increased use of electric vehicles |
| $CO_2$ generated (kg/t) | 5.65 | 5.70 | Constant $CO_2$ generation |

| | | | |
|---|---|---|---|
| Annual production WJ 2019 | 41,908 | | Metric tons |
| Annual production WJ 2020 | | 38,796 | Metric tons |
| % Change | | -7.4% | |

| | | | |
|---|---|---|---|
| Change in elecricity consumption | 0.001 | MWh/t | -0.08% |
| Change in total energy consumption | 0.038 | MWh/t | 3.89% |



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## Gültigkeitserklärung EMAS

**Gültigkeitserklärung**

Die vorliegende Umwelterklärung der Fa. **Senoplast Klepsch & Co GmbH, Senco Research & Development GmbH & Co KG, Senosan GmbH** wurde im Rahmen einer Begutachtung nach EMAS-VO von der

**Quality Austria Trainings-, Zertifizierungs- und Begutachtungs GmbH**
**Zelinkagasse 10/3, 1010 Wien**
**AT-V-0004**

geprüft.

Der leitende Gutachter der Quality Austria Trainings-, Zertifizierungs- und Begutachtungs GmbH bestätigt hiermit, dass die Umweltpolitik, das Umweltprogramm, das Umweltmanagementsystem, die Umweltprüfung und das Umweltbetriebsprüfungsverfahren der Organisation mit der Verordnung (EG) Nr. 1221/2009 vom 25. November 2009 (EMAS-VO), unter Berücksichtigung der Verordnung (EG) 2017/1505 vom 28. August 2017 und der Verordnung (EU) 2018/2026 vom 19. Dezember 2018, übereinstimmt und erklärt die relevanten Inhalte der Umwelterklärung nach Anhang IV, Abschnitt B, Buchstaben a-h, für gültig.

Piesendorf, am 05.07.2021

Ing. Wolfgang Hackenauer, MSc
Leitender Umweltgutachter


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The next environment report will be published in summer 2024.