# (7) GAWGROUP SUSTAINABILITY REPORT 2022 



## Table of contents

Reclaiming the future

$\qquad$ ..... ${ }_{0}$In the beginning was the word
$\qquad$08Know the past.
$\qquad$10
Sustainability as a key objective of thecorporate strategy
$\qquad$ 18
Our values, actions and corporate prin- ciples ..... 46

$\qquad$
46

In the beginning was the word 08 Know the past


Merely contributing to achieving these goals is definitely not enough for us. We want to play an active role in shaping them and, above all, make them a living reality. "

Alexander Rinderhofer \& Robert Assl-Pildner-Steinburg


# Let's reclaim the future! 

The "Sustainability Report 2022" is a profound opportunity to dedicate ourselves to the topic of sustainability and the social responsibility of our group of companies. Only here and now can we learn from the past for the benefit of our future.

Limiting global warming is the declared goal of European and Austrian climate and energy policy, enshrined in the United Na tions' Sustainable Development Goals and the European Commission's Green Deal.

But merely contributing to the achievement of these goals is definitely not enough for us. We want to play an active role in shaping them and, above all, bring them to life. This aspiration grows out of our corporate commitment to future generations and can be traced back to the corporate philosophy conceived by our founder.

The GAW Group is built on the solid foundations of a family business whose founders have always prioritised social responsibility and the social utility of their undertakings. As such, we follow a sustainable business model that adopts a long-term view, investing for generations to come.

For decades, we have been working hard to create a sustainable future by moving towards energy-efficient and environmentally friendly production. Join us in looking back at what we have achieved and be convinced by the path we have taken.
Right now, at this very moment, we are working hard to find sustainable solutions to our upcoming future challenges, all of which will take into account a combination of economic, environmental and social factors.

Being able to make this change requires not only an enormous effort, but above all an approach based on partnership.



The projects...

Joint action is essential - all actors from the industrial, electricity, heating and transport sectors, as well as politicians, advocacy groups and private households are called upon to make their contribution.

Our group of companies is setting a good example in this respect and cooperates closely with renowned industrial partners and globally leading organisations for application-oriented research in order to realise the forward-looking projects needed to achieve the Sustainable Development Goals.

- Circular packaging
- Phosphorus recovery
- Wastewater-free workstations and starch processing
..have been launched and will accompany us over the next few years, with more already in the pipeline.

We want to emphasise that for the GAW Group "sustainability" and "social responsibility" are not fig leaves for public relations purposes, but are implemented in our Group on a daily basis.

This includes addressing the impacts of our activities along the entire value chain. The involvement of our stakeholders is essential in this respect.


In 2021, we conducted a stakeholder survey to find out which sustainability issues they consider particularly important. The high level of participation shows how important the efficient and careful use of energy and resources is to our stakeholders.

Join us in taking a detailed look at the GAW Group's sustainable and socially responsible corporate world on the following pages.

We will present our strategy, take stock, show you the specific measures we are implementing to become even better, and intraduce you to a selection of our research projects.

## Malar sal-Cen

## In the beginning was the word.

We see ourselves as an excellent group of companies. An internationally leading role in professional breadth and diversity, as well as in pronounced special topics requires the highest efforts. Of course, this also applies when we process words.


Back to the origin, where it all began revealing the past.

In preparing our first sustainability report, we first looked at the abstract term "sustainability" and then specifically at the way we have dealt with it to date. And in the process we uncovered some astonishing things.

In the beginning was Von Carlowitz

The path leads back to the forestry of the 18th century, when Hans Carl von Carlowitz wrote sustainability history in 1713 with his work "Sylvicultura oeconomica, oder haußwirthliche Nachricht und Naturmäßige Anweisung zur wilden Baum-Zucht", by using the term for the first time.

The German universal dictionary, the so-called "Duden", still refers to the forestry origin in its explanation of the term. Thus, in addition to the first option "long-lasting effect", one finds in it the reference to Von Carlowitz, the word creator, and the definition of sustainability as a "forestry principle according to which no more wood may be felled than can grow back at any one time". The term was also expanded by a nuance, as it was generally elevated to an "ecological principle according to which no more may be consumed than can grow back, regenerate, be forthcoming in the future".

## Followed by Grimm and Göthe

The German adjective "nachhaltig" (sustainable), which is currently used in an almost inflationary manner, is a deduction from the obsolete German word "Nachhalt". This stands for something that is kept back for times of need, for a backstop. The famous Grimm's dictionary from the 19th century provides various examples from literature in which the term was used. "In jenen Tagen des Festes hab' ich mich, wie ich nicht läugnen will, männlicher benommen als kräfte nachhielten", a certain Mr "Göthe" once wrote to Carl Friedrich Zelter; "wie leicht geht barschaft ohne nachhalt zugrunde", Bentzel-Sternau says there; "er schien nunmehr zum ersten mal zu merken, dasz er äuszerer hülfsmittel bedürfe, um nachhaltig zu wirken", Jeremias Gotthelf is quoted elsewhere.

## Sustainably in the Brockhaus Encyclopaedia

The Brockhaus Encyclopaedia of the 21st century already focuses on the ecological aspect. The reference work already devotes a whole page to the term "sustainable development". On it, two words in particular come into focus: "sustainable" and "equitable". In essence, it is about creating a balance that permanently conserves resources, thus guaranteeing their continued use. Life chances of future generations should not be endangered by this, but, on the contrary, protected.

In addition, the Brockhaus contains numerous examples of the application of the principle of sustainability in the general process of global civilisation, as well as a critical comment criticising the word "sustainability" for its blurred meaning. The term itself is said to be too vague and offers too much scope. But what do you think?

We would be happy to provide the answers to this question, but this would probably go beyond the scope of our search for the beginnings, and so we would like to humorously observe that:

Words in themselves do not have a material quality, but sometimes their impact is just as strong as the paper on which they are written.

Due to the vague meaning of the word "sustainability", the unchanging sound may only be subjected to "PR-creative" violence up to a certain point.

At the end of the day, there is the realisation that sustainability must be put into practice by companies and their employees, otherwise it remains just an empty phrase.


[^0]

# The reason why GAW has always cultivated sustainable planning and development can be retrospectively traced back to our ancestral business area of the paper industry, because there the topics of sustainability and the will to shape society are immanent. 

Those who do not know the past cannot understand the present

For a better understanding, we would like to give you a practical example. We jump back in time to the year 1872. A young entrepreneur acquires a water-powered factory for the production of agricultural iron products and converts it into a production facility where he produces paper from secondary fibres.

In the process, a raw material is processed that was already used for paper production in ancient China: bast fibres - cheaply acquired from residues of the domestic, in this specific example the German, textile industry. With "extremely tough, natural brown bast paper" as packaging material, the company produces an innovative and competitive product at that time. In other words, an early and sustainable enterprise of the circular economy.

Today, the company serving as an example is a system-relevant and world-leading manufacturer of newsprint and corrugated base paper made from $100 \%$ selected waste paper, which, thanks to its integrated recycling companies, is in the advantageous position of being able to close the entire raw material cycle. For us as the GAW Group, it is an honour to be able to count this exemplary company among our customers.

It all starts with water - so close to water

One topic inextricably linked with the concept of sustainability is water. When GAW first emerged as a company in 1951, it was already very close to water. Its first products were special
fittings for the paper and cardboard industry, for pulp mills, but also for the chemical industry and for hydroelectric power stations.

As the company evolved from a component manufacturer to a plant manufacturer, it increasingly focused on the environmental compatibility of its plants. Forward planning of sewer outlets and wastewater collection pits, the separation of sewer systems, the treatment and recirculation of reusable wastewater and the treatment of non-reusable wastewater to a quality level that allowed the filtrate to be promptly fed into the public sewer system were standard practice for us long before the Water Resources Act came into force.

For us, this was standard and complete-
ly in line with our idea of environmentally friendly paper production and finishing..

Through in-house research, we began to develop sophisticated and environmentally compatible systems. The key to this was the design of dispersing machines with the lowest possible energy consumption, as well as filtering devices that enable the recovery of the "filtered-out coating colours".


We taught our control systems to calculate the coating colour requirement precisely and to produce just enough so that at the end of the production of a paper grade only small residual quantities remain in the system and not, as is usually the case, several thousand litres of coating colour are emptied from containers and pipelines into the sewer system. Then as now, we were concerned with precision landings in raw material consumption.

In the 1990s we were already vehemently campaigning for environmentally friendly paper production and finishing, which naturally caused us to lose one or two orders worldwide. And yet we continued unwaveringly along the path towards achieving our sustainable goals.

To this end, we anchored the sustainable concept of environmentally compatible paper production and finishing in our corporate strategy and developed the first plants for recovering the raw materials still to be recycled from the wastewater produced and returning them to production.

In the research activities, a combination of environmentally friendly and economically reasonable aspects is pursued as a goal. This supports the thesis that the two aspects are not mutually exclusive, but, on the contrary, are strongly interconnected and even positively influence and strengthen each other through synergy effects.

The main starting point for this is cost parameters such as the recovery of raw materials yet to be recycled from the wastewater produced and the return of the same to production. On the one hand, this leads to a reduction of costs in the area of raw material input, and on the other hand to a drastic reduction of disposal costs.

Based on the company's now extended process chain, GAW is developing two solution approaches for the different requirements in the areas of paper production and paper finishing. For the area of paper production and the wastewater generated in this context from the paper machine area, a process based on various mechanical cleaning processes is used, which is marketed under the term "separation technique".


Separation technique for paper production

The process removes all solid components from the water and separates fibres and pigments, so that they can be fed back into the production process separately, depending on the production requirements.

At the same time, all rejects are sorted out and removed from the cycle. The system, installed for the first time in Germany in the fine paper sector, provides valid data. With GAW's separation technique system, $85 \%$ of the raw materials still contained in the paper machine wastewater are recovered and $100 \%$ are returned to production.

## Membrane technology for paper finishing

GAW is developing an ultrafiltration solution for coating plant wastewater (paper finishing) that works with ceramic membranes and filters coating colour components out of the wastewater, allowing this approach to be used for new coating colours, but also directly as a primer.

Sustainable process improvements for the further development of our partners' sites

Together with our development partners, we made an early commitment "to an environmental policy of ecological and social responsibility". South African Pulp and Paper Industries, or Sappi for short, and GAW are linked by a partnership that has grown over decades and has been consolidated in major projects in South Africa, North America and Europe.
The listed company has a long tradition in environmental protection and continuously strives for sustainable process improvements at its production sites. So it is not surprising that Sappi plants are now among the most environmentally friendly locations for pulp and paper production in the world.

In the further development of the German sites in Alfeld and Ehingen, Sappi (2006) faces a special challenge in terms of water protection when converting the coating machine.
This is where GAW's developments for environmentally compatible paper production and finishing come in handy. The companies are jointly developing a patented process for coating colour recovery.
The process makes it possible to recycle 100\% of the precious pigments back into the process, resulting in considerable potential savings for the benefit of the environment:


For example, about $70 \%$ less energy is required for reprocessing than for grinding a fresh pigment.


The amount of wastewater is considerably reduced and there is less work for the wastewater treatment system.


In addition, the disposal of thousands of tonnes of pigments, which previously ended up in the paper sludge via the sewage treatment plant, is completely eliminated.



Transporting water a long way was never an option for us

When the paper industry began to use ground calcium carbonate as a filler in the mid-2000s, GAW recognised the ecological challenge of delivering the slurry by rail or truck, and we began to convince our industrial partners of the benefits of onsite calcium carbonate processing plants.

And our efforts to convince them have paid off. Calcium carbonate is now the most important filler in the world in terms of sales volume. The largest industrial user of white calcium carbonates is the paper industry with a volume of more than 10 million tonnes per year, followed by the plastics and construction industries with a total of another 15 million tonnes annually.

Although more than five percent of the earth's crust consists of calcium carbonate rocks, only a few deposits are suitable for the extraction of fillers, which should be as white as possible.

And now imagine the ecological footprint of a system in which slurry would be transported hundreds of kilometres across the countryside. Just imagine if the potential of geographically favourably located deposits could not be tapped.

The GAW Group's industrial partners also think in terms of sustainability - orders for turnkey plants for the production of liquid calcium carbonate follow worldwide. In addition to the pro-cess-engineering equipment, GAW's scope of supply includes the entire building complex, the collection of the purification water generated during operation, as well as its treatment and ultimate recycling.

Today, approximately one third of the paper industry's global demand for ground calcium carbonate is processed using GAW Ultramill technology.


GAW's contribution to sustainability in the plastics industry

So what could be more obvious than to transfer the company's very own expertise in the preparation of coating compound and its applied attitude towards sustainability to the plastics sector?

With UNICOR and ECON, GAW integrates two companies from the plastics sector into the Group. Both companies enjoy the reputation of a technology and innovation leader and position themselves with a focus on a global niche market.

ECON is a technology leader in the field of granulation systems for the manufacturing and processing plastics industry. The innovative technology of the group company makes it possible to pelletise plastics that would otherwise be difficult or impossible to pelletise. In this context, we refer to high-performance pelletising systems for high-performance plastics.

High performance for sustainability

These sustainable "materials of the future" are used above all when the highest demands are placed on the mechanics, chemical or thermal resistance or also on the sliding properties of the products.

This is the case, for example, in electrical and electronic applications, in lightweight construction, in medical technology, in charging devices, battery solutions, sensors for automatic driving, in engine housings, as well as in the infrastructure of e-mobility, for example in charging stations.

UNICOR production lines make a valuable contribu-
tion to the water self-sufficiency of cities and entire
regions.

Pipes for the storm

UNICOR is one of the largest employers in the Franconian region, Haßberge. The company claims to develop and build the best machines for sustainable corrugated pipe production.

UNICOR production lines manufacture plastic profiles that make a significant contribution to solving our future tasks as protective tubes for glass fibre lines, medical technology hoses or as water pipes.

No future without water

A future in which water, especially in arid and drought-prone climates, as well as with an ever-growing urban population, is understood as the most important resource for urban environments, which with the right storm water harvesting and purification techniques can lead to water self-sufficiency for cities and entire regions.

This requires modern drainage systems, which in turn require sustainably produced pipes. And pipe production with UNICOR plants is achieved extremely well almost all over the world. UNICOR can also do big things - the double-wall corrugated pipes with diameters of up to $1,800 \mathrm{~mm}$ are used in particularly sustainable infrastructure projects for wastewater and drainage due to their maximum load-bearing capacity, the resource-saving use of materials and their outstanding ecological balance.


# Sustainability as a key objective in the corporate strategy. 

## Our credo.

Sustainability has always been at the heart of GAW's corporate world.

We have already drawn from this in the past and we are now shaping the future on the basis of this principle.

The future will be climate-friendly, open to technology and networked.

To achieve this change requires the efforts of all stakeholders, from business and politics
to consumers.

Specialisation in plant engineering for the paper and cardboard industry. The control system for coating compounds and pigment preparation developed in-house ensures a hitherto unprecedented increase in production efficiency.

## 1996

Anchoring of the concept for environmentally compatible paper production and finishing. The recovery of raw materials from waste water is chosen as the starting point.

Alignment with the Sustainable Development Goals of the 2030 Agenda, in particular SDGs 6, 9, 12 and 17.

Establishment of TRL9 qualified systems to recover high-purity PE recyclates from mixed plastic waste. We achieved a closed loop from film application to film application.

Our credo is firmly anchored in the approach of all our group companies and our core business areas of paper, plastics and automation.

Today, we as the GAW Group stand for sustainable innovation with the following technologies...

Debinding
Filltration

Grinding
Dispersion

Worldwide patents in the fields of paper, plastics, automation and digitalisation underline the GAW Group's expertise.

The GAW Group companies invest around nine million euros annually in research and development.

## R\&D budget 2022:

 9.1 millionWithin the framework of periodic, group-wide strategy meetings, the implementation of the anchored strategy and the goals derived therefrom are individually reviewed for their effectiveness for each Group company and adapted where necessary.

## Sustainable Development Goals.

In 2021, our sustainability concept from 1996, which was previously anchored in our corporate strategy, was for the first time aligned with the nearly identical goals of the United Nations (Sustainable Development Goals - SDGs).

As the 2030 Agenda for Sustainable Development, they were adopted by all UN member states and thus also by Austria. GAW is fully committed to the SDGs.

In the course of the 2021/2022 materiality analysis, we determined that in the future we want to make a positive contribution to SDG 6, 9, 12 and 17 through our core competencies and our sustainable corporate orientation.

CLEAN WATER
AND SANITATION






## Clean water and sanitation.

## Ensuring availability and sustainable management of water and sanitation for all.

In the traditional business area of our group of companies, the paper industry, the topic of water and its treatment is immanent.

From the very first plant, we make a valuable contribution to the conservation of natural water resources. We...

- plan sewer systems and wastewater collection pits with decades foresight,
- cultivate solutions for water and process water treatment,
- and with our plants for the recovery and recycling of the raw materials still to be utilised from the wastewater, ensure
... that wastewater volumes are significantly reduced and sewage treatment plants are substantially relieved. Consequently, the disposal of hundreds of thousands of tonnes of pigments, which previously ended up in paper sludge via wastewater treatment plants, is completely eliminated.

The companies of the GAW Group have made paper production sustainably more environmentally friendly over the past seventy years, and their journey is not over yet.

The current milestone projects on sustainable paper production all have the same aim of reducing fresh water consumption in the plant and closing the water cycle.

To achieve these goals, the companies of the GAW Group are developing technologies for wastewater-free workstations and starch processing that operate with minimal fresh water use and are integrated into sustainable water management concepts for the entire paper mill.




In developed environments such as cities, continued surface sealing is causing increasing flooding and water pollution.

In the plastics division, our group of companies plays a major role in reducing these contaminants in surface water, groundwater and storm water, thus establishing sustainable water management.

Our plants enable the construction of...
modern drainage systems that collect run-off from sealed surfaces and also ensure that water is efficiently transported through pipe networks to waterways.

The transport requires pipes that have been produced in a re-source-saving and energy-efficient manner. Pipe production with an excellent eco-balance is very successful with the UNICOR plants worldwide.

UNICOR can also do big things - the double-wall corrugated pipes with diameters of up to $1,800 \mathrm{~mm}$ are used as drainage pipes for fields, roads, squares and buildings with the best static properties for sustainable infrastructure projects.

Homogeneous material distribution, minimal wall thickness differences, perfect shaping and minimised manufacturing tolerances ensure maximum load-bearing capacity even when exposed to external influences and guarantee excellent suitability for sewage and drainage applications.

Although urban and rural areas still differ widely in their degree of surface sealing, the changes in rainwater run-off predicted due to climate change have the potential to increase the amount of rainwater to such an extent that the associated drainage, flooding and pollution problems can get out of control.

Our group's automation and digitalisation division plays a key role in reducing these contaminants in surface water, groundwater and storm water, thus establishing sustainable water management.


The solutions from our automation division enable the...
> centralised, predictive monitoring and control of waterways, integrated into sustainable water management,

...thereby ensuring the health and improvement of water supplies for all.

Aquafin, for example, collects wastewater from Flemish municipalities and treats it before it returns to nature. The quality of the watercourses in Flanders has improved enormously as a result. To keep track of the 4,000 installations around the clock, Aquafin is installing a new central monitoring system along the AutomationX solution concept. More than 13,000 process images are made available to the more than 1,000 operators. This is predictive water management at its purest.

## Industry, innovation and infrastructure.

Building resilient infrastructure, promoting more widespread and sustainable industrialisation and supporting innovation.

In the infrastructure and industrial sectors, the innovative companies of our plastics division make a significant contribution to solving our future tasks.

From the...

- preparation of particularly resistant high-performance materials to the
- production of plastic profiles
...that serve as water pipes or as protective tubes for fibre optic cables.

The innovative technologies of the ECON plants enable the granulation of high-performance plastics that are used, for example, in electrical and electronic applications, lightweight construction, medical technology, charging devices, battery solutions, sensors for automatic driving, in engine housings and in the infrastructure of e-mobility, for example in charging stations.


High-performance plastics, the "materials of the future", are used above all when the highest demands
are placed on the mechanics, chemical or thermal


In the infrastructure sector, the monitoring,
control and networking of traffic, tunnels and
sewage systems are at the heart of the
activities of our group of companies.

With the solutions from our Digitalisation and Automation business unit, we guarantee the intelligent...

```
monitoring, control and networking of
systems in the traffic, tunnel, parking and
wastewater sectors,
```

...and thus ensure the highest availability of infrastructure, adequate route control, fast responses to risk situations and the best possible use of parking space.

The Austrian Asfinag operates and monitors twelve tunnels and more than 430 kilometres of motorway fitted with traffic control systems, cameras, car parks, building services and pumping stations at the regional traffic management centre in Wels. To
maintain a round-the-clock overview of the Austrian motorways and highways, Asfinag is setting up a new regional traffic management centre.

AutomationX supplied the new control technology with over 3,300 process images. This means that 1.1 million data points and 1,100 integrated cameras are monitored at three workstations.

# Responsible consumption and production patterns. 

Ensuring sustainable consumption and production patterns.

In paper production, the blessing of the circular economy has been appreciated for well over a hundred years. Nevertheless, it is necessary to close the loop further, optimise technologies and develop new processes.

To achieve this goal, we provide solutions that...

- process raw materials efficiently while protecting the environment to the greatest extent possible, recover them from wastewater and return them to production,
- enable the coating of papers, paper-based composites and cardboard packaging so that they can take over the barrier function of plastics - i.e. repel water, grease and gaseous substances and at the same time remain recyclable,
- enable the closing of the water cycle and a significant reduction of water and wastewater volumes.

Paper now offers an impressively high recycling rate of around $60 \%$ worldwide. However, large quantities of graphic paper, such as that used for newspapers and magazines, drop out of the market, while
plastic packaging continues to grow. An opportunity presents itself to replace plastic with paper, paper-based composites and cardboard products, which themselves have excellent recycling properties. The coating of sustainable papers is the biggest challenge here.

The circular economy has the potential to develop into a market of the future for special machinery and plant construction. The companies of the GAW Group have the necessary knowledge and experience for this. Therefore we can offer solutions that others cannot.
$1 ?$ RESPONSIBLE
CONSUMPTION and production



The GAW Group's plastics division has set itself the goal of addressing the problem of currently non-recyclable plastic packaging waste with innovative technology in order to make a substantial contribution to achieving European and global recycling targets.

With our business activities, we are able to...

> process plastic packaging waste that was as yet not recyclable into high-purity, recycled plastic granulate in a closed cycle, which has virtually the same properties as new plastic and is used for the production of new packaging films.

The innovative technology is ecologically doubly effective, on the one hand by reducing plastic packaging waste and, on the other hand, by avoiding CO2 emissions.

The process enables CO2 savings of up to $90 \%$ compared to film packaging made from new plastics. Using suitable solvents, plastics are selectively dissolved out of the multilayer packaging films.

The result is a liquid plastic solution that can now be relatively easily cleaned of unwanted residues. The solvent is subsequently separated from the plastic in a closed circuit and reused. What remains is a highly pure, recycled plastic granulate that has virtually the same properties as new plastic and is used for the production of new packaging films.

Whether in the plastics or paper sector, the automation division of the GAW Group has set itself the goal of creating predictive solutions that ensure optimum production conditions at all times.

A sustainably optimised production site enables operators to exploit the full potential of their production plants, thus ensuring a serious competitive position.

The software and hardware developments of AutomationX...

- link industrial manufacturing and information technology in terms of Industry 4.0,
- enable fully-networked process optimisation across all process stages,
- optimise individual, critical process stages.


Maximised de-inking yield, optimisation of the steam network, a reduction in drying energy and batch-optimised biodiesel production are just some of the ways in which the GAW Group's automation division can contribute to tackling the challenges of the future.

# Partnerships to achieve goals. 


#### Abstract

A turnaround towards sustainable development can only succeed through a global partnership with joint efforts of all states, civil societies, national economies and individuals.


In collaboration with world-leading organisations for applied research and industrial partners that have made an early commitment to an environmental policy of ecological and social responsibility, we develop, establish and optimise...
processes that allow valuable pigments to be $100 \%$ recycled back into the process, heat recovery systems that allow otherwise unused thermal energy escaping into the atmosphere to be recovered and reduce the amount of direct steam.

In partnerships with industry partners that have been consolidated over decades, we continuously strive for sustainable process improvements and develop sites that are now among the most environmentally friendly in their industry worldwide.

In GAW's patented process for coating colour recovery in paper production, $100 \%$ of the precious pigments are recycled back into the process. The reprocessing treatment requires about $70 \%$ less energy than for grinding a fresh pigment. The CO2 emissions resulting from the replacement of the lost pigment by production and transport are completely eliminated. The amount of wastewater is considerably reduced because the separated sewage water is also entirely returned to the process, which means less work for the wastewater treatment system. This also eliminates the disposal of thousands of tonnes of pigments that otherwise end up in the wastewater treatment system and thus in the paper sludge.




In cooperation with world-leading organisations for applica-tion-oriented research and other industry partners, and as part of the Circular Packaging project funded by the German BMBF, our Group companies are dedicated to the...
development of a commercial recycling plant for flexible post-consumer packaging which will enable a high-purity PE recyclate to be recycled in a closed loop from the film application to film application.

The development team is implementing the technology in commercial industrial plants in partnership with investors and plant operators. The Fraunhofer Institute for Process Engineering and Packaging IVV acts as the process provider, while the GAW Group companies LÖMI and GAW technologies act as plant manufacturers. The model productions reveal that the level of maturity of the technology meets industrial requirements and that only final technical details remain to be solved for commercial and technical scale-up.

In our automation business unit, cooperation in partnership is the be-all and end-all.
This is the only way that allows us to understand our clients' processes from start to finish and create customised concepts for them to...


ments and optimise their sites in terms of environmental compatibility.

To ensure this sustainable development, Smurfit Kappa and AutomationX, for example, have entered into a partnership.

Drying processes in the paper industry consume about 70\% of the total energy demand. The need to reduce steam consumption is unavoidable. AutomationX's established solutions achieve significant steam reduction without undermining quality limits. The entire paper machine is virtually mapped by means of hybrid process models (empirically and physically) and the drying process is optimised in the closed loop during full operation of the plant.

## Sustainability management.

## We base our sustainability management on ISO 26000, the international guideline for social responsibility.

Therefore, we see Corporate Social Responsibility (CSR) as an integrative approach. Our CSR working group is made up of representatives from the following relevant core areas:

- Production
- Human Resources
- IT
- Controlling
- Marketing \& Communication
- Assembly

The CSR working group met for the first time in 2021 in order to align the sustainability that was anchored in our corporate strategy twenty-five years ago (1996) with the sustainability goals of the 2030 Agenda (see the following chapter).

This year (2022), it is aimed to hold regular meetings of the working group in order to review the CSR goals and measures to ensure that they are up-to-date, thus achieving continuous improvement in sustainable behaviour.

The management is periodically informed by the head of the CSR working group about the progress of CSR activities and, in its function, makes important strategic decisions about the sustainable strategic orientation of the company.

Economic, ecological and social sustainability issues are regularly dealt with and promoted by the members of the management boards, particularly with respect to the strategic orientation of the company.



## Materiality analysis -

## corporate strategy with sustainability objectives.

In 2021 we used an online survey to involve GAW employees and external stakeholders in determining the key issues for our company for the first time.

Almost 100 representatives of different stakeholder groups took advantage of this opportunity for active participation, which corresponds to an overall response rate of over $65 \%$. The evaluation of the topics was almost identical for both groups - external and internal. The results of the online survey were summarised in six main topics:


In the table below, we provide a summary of the impacts that our topics identified in the materiality analysis may have on the economy, environment and society, and at the same time outline the measures the GAW Group is implementing to enhance positive impacts and avoid or mitigate any negative impacts.

The aim is to build on what has already been achieved and on existing systems, and to continuously address the impacts over the next two years so that we can adapt or improve our measures where necessary.

## Key issue

Safe Plants \&
Work Processes
Most of the GAW
Group's customers operate in key system-relevant industries, which is why the readiness and functionality of their production facilities must be ensured at all times.

## Climate \&

Environmental Protection
means that the protection of our climate is the
focus of a sustainable corporate orientation.
The GAW Group aims to contribute to decarbonisation by developing and implementing projects for the environmentally friendly processing of primary and secondary raw materials and their recovery.

| Economic impact | Ecological impact | Social impact |
| :---: | :---: | :---: |
| + Reliable plant availability <br> + Planning reliability/ risk minimisation for customers <br> + Economic benefit <br> - High technical expenditure and investment costs for pioneering R\&D work | + Fewer or no emissions <br> + Release of considerable savings potentials for the benefit of the environment <br> + Closing the cycles <br> + Elimination of disposal | Increased recycling, as well as correct sorting, recovery and packaging create greater environmental awareness and a passionate willingness among the population to collect packaging. <br> Significantly fewer accidents <br> Increased safety for employees <br> Protection against cyber attacks |
| + To develop innovative solutions for the recovery of pigments, heat and high-purity PE recyclates and to close water cycles and significantly reduce wastewater volumes through research and development. <br> - High technical expenditure and investment costs for pioneering R\&D work | + Release of considerable savings potentials for the benefit of the environment <br> + Closing the cycles <br> + Elimination of disposal <br> + Efficient use of energy <br> at GAW sites <br> + Short transport routes | Increased recycling, as well as correct sorting, recovery and packaging create greater environmental awareness and a passionate willingness among the population to collect packaging. <br> + Supporting European and Austrian climate targets |

## Measures

Ensure a high level of technical plant safety through measures and management of:

- Health, safety and the environment (HSE)
- Integrity of installations, pipelines and piping (integrity management)
- Safeguarding information systems (ISMS)
- Regular risk analyses
- Conversion to CO2-neutral self-generated energy supply (photovoltaics)
- Energy and emissions management
- Continuous reduction of energy use

Key issue

Sustainable
Solutions
The GAW Group has
set itself the goal of tackling the problem of currently non-recyclable packaging waste with innovative technology in order to make a sub-
stantial contribution to achieving the European
and global recycling targets.

Stakeholder
Engagement
means that it is the
GAW Group's respon-
sibility to inform all
stakeholders openly and comprehensively,
to treat them with re-
spect and to take their concerns into account
where possible - we
see open and proac-
tive communication as
indispensable for our business activities.


Measures

- Development of fu-ture-oriented plant technologies
- Technical experts and partners for politics and business
- Partnerships with companies and universities
- International partnerships
- Construction of the test facility at Lober
- Communication guidelines for projects
- Open and transparent communication
- Online survey on key topics
- Sustainability report
- Information on website and social media channels
- Personal discussions with communities
- For more information, see "Forms of Stakeholder Engagement", p. 50 ff .

Key issue

Responsible
Employer
means that GAW
treats its employees
with respect, offers
them flexible and safe
working conditions and
creates an environment
in which they can
apply and develop their
talents to the best of
their abilities.

Sustainable
Procurement
means that our
purchasing conditions
for suppliers are
transparent and
comprehensible and
sustainability aspects
are part of the award
process.

Economic impact

| +Creation and safe- <br> guarding of jobs | +Supporting awareness <br> raising for ecological |
| :--- | :--- |
| + Economic benefit | action |



## Measures

- Training for all staff
- Staff appraisals
- Leadership principles
- Technical equipment for mobile working
- Office infrastructure for a flexible working environment within the framework of New Work
- Business trips (by train or video conferences instead of business trips)
- Measures to protect employees during the pandemic
- Compliance with CSR criteria
- Expansion to include ecological and social criteria in the procurement process
labour market for technical professions
+ Regional creation of technical-scientific jobs

Raising awareness and strengthening the image of employees and suppliers through compliance with CSR principles

Social

+ Attractive working environment
+ Increased work-life balance through flexible working conditions
+ Training and further education also for students and interns
+ Prospects on the



# Our values, actions 

and corporate
principles.

# Our corporate culture is shaped by values and actions that consider respectful and appreciative interaction, as well as open, honest and proactive communication as the basis for sound collaboration. 

Today is tomorrow's yesterday - guided by values and corporate principles

What we are responsible for today as the GAW Group can be traced back to the corporate philosophy conceived by Erhart Pildner-Steinburg. Almost 70 years ago, he developed a sustainable business model based on the guiding principle of the honourable merchant*.

No people, no business

For Erhart Pildner-Steinburg, the social responsibility of a family business is always paramount. His approach is simple and is aimed at creating lasting value for all stakeholders involved, without merely limiting himself to controlling the impact on the environment. He considers information, knowledge and ideas as the most important resources for creating value. The providers of these resources are the employees, who thus become the guarantors of corporate success. GAW's customers should benefit from the experience and innovative strength of our employees, which in turn means a secure and bright future for our employees. A Swiss entrepreneur once put it this way: "No people, no business!"

Erhart's sons Jochen and Jörg Pildner-Steinburg seamlessly continued this corporate philosophy, and even more than that. In the late 1980s, a development began in Europe that can perhaps best be described as a move away from the welfare state towards the social investment state, in which private responsibilities and commitments are once again given more scope to
develop. This withdrawal of the state from many areas of social life leaves a vacuum that entrepreneurs, in our case Jochen and Jörg Pildner-Steinburg, fill, thereby assuming this social responsibility. Their social commitment goes far beyond the usual corporate social responsibility measures. It reveals not only the economic entrepreneur but also the social creator: As a result, their entrepreneurial creative drive not only acts in the economic sphere, but to a considerable extent also in the social sphere.

It would have been obvious to position the company merely with activities close to the core business - such as supporting the Papiermachermuseum (Paper Museum) in Steyrermühl or various trade associations - but the brothers Pild-ner-Steinburg thought further, bigger and more socially inclusive. Always guided by local needs, they are committed to the people in their companies and try to make the regions around them more culturally attractive. For instance, they are committed to promoting education and science, fostering the spirit of community and sport - both in breadth and at the top - as well as promoting high and popular culture. They are well aware of what long-term success in Austria depends on. And so they succeed in fulfilling their social responsibility in a special way and in keeping the reputation of the company high.

> Today's management seamlessly picks up where the concept left off and expands it to include the following corporate principles:

## Inspiration:

the prerequisite for progress, enthusiasm and long-term economic success.

## Growth:

required so as not to disappear into insignificance in the long term.

## Profitability:

secures our long-term existence and our independence.

## Precision:

in customer orientation enables us to be market and technology leaders.

## Networking:

we consider this the establishment of intelligent networks.

Entrepreneurial responsibility in the 21st century - creating shared experiences.

Companies today are modern places of community. Traditional institutions and organisations such as schools, churches, associations and political parties have often lost their role as a bonding force for social inclusion. All this leads to a search for trust and closeness among colleagues at the workplace, giving them an important role in one's life as a whole. This includes the daily exchange about family matters, as well as the joint organisation of leisure time outside the workplace.

## The world of GAW - creating together

Today, GAW is a globally active technology group consisting of many independent companies. Each company adopts its own approach with respect to this issue, but they all act within the framework of our corporate governance.

Corporate governance guidelines

Our corporate principles and guidelines on corporate governance and compliance form the foundation for transparent conduct with integrity by all GAW employees. Our responsibility towards employees and other important stakeholders, as well as towards society and the environment is an integral part of the management's decision-making processes.

## Anti-corruption and transparency

We are known for our long-term business relationships with contractors and suppliers.
These relationships are characterised by fairness, respectability, integrity and transparency. Likewise, we are committed to free and honest competition and to complying with all legal requirements regarding graft and corruption.
As a matter of principle, our employees are prohibited from demanding or accepting benefits and from offering or
granting benefits. They must avoid conflicts of interest between their personal affairs and the tasks they perform on behalf of the company.
In order to counteract misconduct, there are mandatory training courses on proper conduct for all employees, internal reporting systems and annual reporting to the management and audit committee.
Donations to and sponsoring of third parties always require the approval of the management; they are registered centrally and also reported annually.
The company does not engage in party politics, nor does it make financial contributions to political parties, organisations or their representatives. We represent the interests of the company vis-à-vis public bodies in order to clarify our position in matters that affect either GAW itself, its employees, customers or representatives of the owners.
This is done through membership and participation in working groups of various associations and interest groups.

## Data protection

Our data protection policy, based on the General Data Protection Regulation (GDPR), regulates the handling of personal data in the company. To ensure effective data protection, a data protection management process has been set up with the aim of continuously improving data protection and adapting to new requirements. If employees have questions, the data protection officer, the HR department or the legal department can provide answers.

## Awareness training

As part of the Security Project 2020, which is scheduled to run for two years, a comprehensive awareness training course was held for employees. Employees can be both the strongest and the weakest link in the security chain.
With the training of and raising awareness amongst our employees, we have taken a big step towards sustainable IT security.

The planning for 2022 includes:

- Individual training for groups of employees
- Online tool on security topics as further training for colleagues
- Changeover from 2-factor to 3-factor authentication
- Advanced Thread Inspection (penetration test) by external specialists
- Further constant adjustment of the security strategies to current issues

Internal control system

Compliance with our internal guidelines and processes is ensured by an internal control system (ICS). Characteristics of this system include a functioning organisational structure, the dual control principle, separation of functions and internal guidelines for business processes.
All business transactions conducted on behalf of GAW must be accounted for or documented in accordance with existing regulations and be verifiable. As part of a process-oriented ICS, selected business transactions are subjected to systematic controls - the individual control steps are documented and their implementation is also reviewed.
The timeliness of the ICS is regularly checked by means of an annual evaluation, and its effectiveness is continuously monitored by means of an audit.
The focus of the ICS is primarily on financial reporting, but now also includes essential elements from the operational area.

## Transparent procurement

We value fair and transparent business relationships with suppliers and partners who act in accordance with our principles and are also committed to ecologically and socially responsible corporate governance.
In 2020, a Supplier Code of Conduct with corresponding sustainable requirements for conduct was developed for this reason.
Our Supplier Code of Conduct includes content on human rights and social re-
sponsibility, as well as environmental concerns, compliance and conduct with integrity.
The Supplier Code of Conduct can be consulted on our website.

## Procurement guideline

All GAW procurements above a fixed net order value are subject to the Groupwide Procurement Policy of GAW.
This governs ethical principles and the competitive awarding of supplies and services. Measures have also been introduced to increase transparency.

Annual supplier audits
in preparation

The Procurement Department is working on the development of a supplier audit that will include sustainable criteria and be carried out annually for all suppliers with a net annual procurement volume of EUR 1 million or above, and for busi-ness-critical suppliers with a net procurement value of EUR 50,000 or above.

The evaluation of suppliers is planned in the following three steps:

1. Checking the completeness and correctness of all information
2. Examination of the information with respect to legal compliance
3. Consideration of previous experience and a risk assessment of the supplier concerned with respect to sustainability aspects

In addition, and although we are not required to do so due to the size of our company, we voluntarily pay close attention to the Supply Chain Due Diligence Act implementing the EU-wide CSRD directive.

Because from our past we know about the importance of environmentally compatible and social standards and see the legal securitisation thereof as a huge opportunity to further increase the competitiveness of our group companies in the future.

## Stakeholder engagement our responsibility towards our stakeholders.

We take responsibility towards the people, communities, but also businesses in the region that may be impacted by our decisions and actions.
We communicate actively, openly and respectfully with all stakeholders and take their concerns into account to the extent possible - open and proactive communication is essential to our business.

## Through honest and sincere dialogue

- we want to maintain the trust placed in our companies,
- be able to implement our projects economically,
- identify and eliminate potential conflicts at an early stage
- and enable an ongoing improvement process.


## Stakeholders

We defined our interest groups for the first time in 2015 by means of a structured stakeholder analysis. This analysis is regularly reviewed to ensure it remains current; the last adjustment was made as part of preparing the report.


## Regional integration \&

 regienal engagement II

From grassroots sport to the top.

We listen, inform comprehensively and exchange information on an ongoing basis with the general public, communities, the responsible authorities, but also with important local institutions. This is particularly important to us in the spirit of a good partnership.
Our declared goal is to inform stakeholders in a transparent, comprehensible and traceable manner during the various phases of our projects and to involve them in a timely manner within the scope of official procedures. Our communication guidelines for our projects help us to pursue these goals in a structured manner.
We promote open dialogue. Our managing directors also seek direct dialogue with citizens and communities.

Some other established dialogue formats, such as tours of our facilities, the "Long Night of Research 2021" and open days, had to be postponed due to the coronavirus pandemic. The platforms will be made up for in the next two years.

We see ourselves as part of the communities in which we operate our plants because of our ties to the regions in which we operate, some of which go back decades. Therefore, we prefer to promote regional procurement and create or maintain regional jobs.

In addition, we specifically support regional organisations that are important for the common good, such as emergency services organisations and social and
charitable institutions.
Furthermore, we support various training partners, and for the next two years we are planning to cooperate with other companies that have been awarded the MINT quality label.

Promoting students' enthusiasm for mathematics, computer science, natural sciences and technology is particularly close to our hearts. To be able to make decisions according to a transparent guideline in the future, a donation and sponsoring concept will be drawn up in 2022 to determine which institutions and organisations in the region are particularly worthy of support.

## Forms of stakeholder engagement:

| Stakeholders | Importance for GAW | Interest \& expectation in GAW | Dialogue form |
| :---: | :---: | :---: | :---: |
| Employees | - They enable the conception, production, dispatch, assembly, commissioning and maintenance of our plants <br> - Sustainable corporate success through joint efforts and achievements <br> - Continuous improvement through an active feedback and innovation culture | - Attractive working environment <br> - Health \& safety at work <br> - Opportunities for further development <br> - Meaningful task <br> - Crisis-proof jobs <br> - Ensuring and promoting work-life balance | - Personal conversations <br> - Direct communication via emails, Teams, Skype etc. <br> - Annual staff appraisals <br> - Events <br> - Intranet, email, newsletter, info emails and e-learnings <br> - Social media |
| Owners | - Coordination of sustainable corporate strategy with management <br> - GAW ambassadors to a wider public | - Positive returns <br> - Future-oriented corporate strategy <br> - Transparent reporting | - Personal conversations <br> - Press releases <br> - Advisory Board meetings |
| Shareholders | - Long-term trustworthy and reliable partner for the strategic corporate development of the GAW Group | - Return on investment <br> - Strategic cooperation with other holding companies | - Regular individual exchange at management level (verbal, written) |
| Suppliers | - They enable our operations to run smoothly through their services and products | - Transparent and comprehensible tenders <br> - Long-term business relationships and good orders | - Letters, individual exchange at operational level, purchasing-tendering tools etc. |
| Project partners | - Promotion of technologies through synergy effects of joint projects <br> - Risk sharing <br> - Exchange of best practice experiences | - Information and transparency on joint projects <br> - Joint business success | - Regular exchange (verbal, written) |
| Customers | Stable turnover and longterm business relationships <br> - Increase in the share of plants for the recovery of fibres, pigments, steam, phosphorus, pure plastics | - Bespoke solutions <br> - Life cycle support <br> - Plant safety | - Website <br> - Dialogue at regional events |
| Communities \& regions | - Ambassadors of the sustainable corporate strategy <br> - Partners in the regional economy | - Support | - Personal exchange with mayors, governors, provincial councillors, regional representatives |


| Stakeholders | Importance for GAW | Interest \& expectation in GAW | Dialogue form |
| :---: | :---: | :---: | :---: |
| Educational Institutions / universities | - Cooperation and promotion of young researchers | - Support in research and education <br> - Internships <br> - Dissertations | - Cooperation in research projects with universities, especially the Montanuniversität Leoben <br> - Supervision of diploma students and holiday interns |
| Authorities \& administration | - Official notifications form the basis for economic activities <br> - Cooperation is a prerequisite for good neighbourliness | - Involvement of stakeholders in a timely and comprehensible manner within the framework of official procedures <br> - Submission documents of the highest quality <br> - Transparent and fair relations <br> - Compliance with all legal requirements | - Regular and project-based exchange of information <br> - Participation in regional events |
| Policy \& legislation | - The European Union and the Austrian government set the framework for our business activities | - Tax payment <br> - Contribution to climate protection <br> - Innovative strength <br> - Regional value creation and development of know-how clusters | - In the course of developing the Austrian sustainability strategies, GAW has been intensively and constructively involved in the dialogue process with ministries, regulators and interest groups |
| Interest groups | - We act jointly vis-à-vis politicians in order to better represent our interests <br> - Generally, setting the agenda on the subject of junior staff in the public sphere | - Innovation contribution | - Participation in working groups of professional associations and interest groups in Austria and Germany, as well as at European level |
| Banks \& insurances | - Link for European Regulation for Green Finance | - Sensitive approach to the issue of sustainability <br> - Dealing with CSR issues by means of a sustainability report | - Regular direct exchange (verbal, written) |
| Media | - Inform the public <br> - Shape public opinion | - Open information culture <br> - Transparency <br> - Correct and honest information | - Press briefings for specific projects, project information <br> - Brochures <br> - Website <br> - Social media |
| NGOs | - Inform the public <br> - Shape public opinion <br> - Help people in need (e.g. charities) | - Open information culture <br> - Transparency <br> - Correct and honest information <br> - Support | - Regional support for social and charitable institutions <br> - Information on the website and sustainability report |



# Safe plants and work 

## processes.

Most of the GAW Group's customers operate in key system-relevant industries, which is why the readiness and functionality of their production facilities must be ensured at all times. From Europe's largest monitoring system in the wastewater sector to large-scale plants for the recovery of phosphorus from sewage sludge ash, and manufacturers of packaging for pharmaceutical and medical technology - in most cases, they all produce continuously 24/7. This constantly presents our group companies with challenging tasks in terms of "safe plants and work processes".

COVID management - looking back

The global COVID-19 pandemic presented the internationally active plant manufacturers with extraordinary challenges, which also required extraordinary measures to overcome.

Due to the extensive automation in our companies and our decentralised organisation, the functionality of our operations was fully guaranteed from the very beginning.

As a sustainably oriented, diverse group of companies, we are crisis-proof and have quickly come to terms with the new framework conditions. We were able to rapidly implement safety precautions and rules of conduct.

These include ...

- the physical separation of key personnel
- the increased use of video conferencing
- the switch to virtual meetings
- mobile working, home office and
- the deployment of an internal crisis coordination team

The spirit and the will to cooperate exhibited by our staff to accomplish the tasks at hand has proven to be invaluable. The willingness to take leave, work from home, accept short-time work and stick to new rules of togetherness in a disciplined manner show the high commitment and sense of responsibility of our colleagues in all companies of the group. Entrepreneurial responsibility only works with employees who have a high level of personal responsibility and identification with the company, and vice versa.

Together, we have managed to cope well with the pandemic-related upheavals to date.

Safe and resilient systems

Safety is the top priority at GAW. We do not distinguish between the safety of the systems at our customers' production sites (external) and the production facilities of our Group companies (internal).
GAW adheres to the highest safety standards in order to provide a safe working and living environment for everyone who works for us and to encourage the communities and regions in which we operate to do the same.


Safe production sites and work processes have the highest priority, therefore. To ensure safe operations and plant availability, a variety of management systems have been implemented, which are interrelated and cover the following topics:

- Health, safety and the environment (HSE)
- Integrity of the systems, pipelines and piping (integrity management)
- Safeguarding information systems (ISMS)


## HSE management system

Health, safety and the environment (HSE) are key components of our management system, to which we attach the highest priority within the company.
The defined framework includes HSE policy and objectives, as well as clear responsibilities, safety organisation, risk assessment methods to be applied and processes for control and corrective actions in the area of health, safety and the environment. The management system is continuously updated and approved by management.

The basic procedure for identifying and assessing hazards is risk analysis. It is conducted annually within the scope of the HSE management review. Potential health and safety hazards are identified and assessed for new projects as early as the
planning stage. The project is considered over its entire life cycle, from commissioning to final completion or liquidation.

## "Zero accidents" goal

We aim for "zero accidents" in all our activities. A separate management area in the internal HSE management system contributes to the continuous implementation and improvement of our processes.
In addition to targeted occupational safety measures for our own employees, we also integrate external companies working for GAW into our safety activities to a high degree.

Our aim is to raise awareness of the direct responsibility of managers, employees and external companies for employee protection and safety. For example, we make sure that everyone involved carries out a last-minute risk analysis (LMRA 5x5) prior to commencement of a project in order to be aware of the potential risks and to take precautions accordingly for their own safety and that of others.


## Integrity management

Our integrity management system assesses our assets for resilience to disruptive influences and exceptional operating conditions using established risk assessment systems. This allows steps to be taken to minimise the risk of operational failure or improve the ability to restart.

A higher-level integrity manager bundles all information on the sub-areas in a central report and initiates appropriate technical processing projects.

Crisis and emergency management

In emergencies and crisis situations, rapid, coordinated action is crucial. For this reason, we have had an established emergency and crisis management system in place for a long time, which includes regular training sessions for responsible supervisors and employees, as well as drills with the regional emergency response organisations.

## Cyber security

Within the scope of our information security management system, the individual measures are recorded in an implementation plan according to priority and will be realised within a period of three years.

Under implementation:

- New installation of a firewall cluster
- Division of the network into more than 100 individual segments, i.e. VLANs
- New installation of 2 different virus scanners
- Expansion of the backup strategy from 2 to 4 independent concepts
- AD optimisation
- External email entry system via various filters and scans including sandbox
- Awareness training for all employees
- Reconstruction of the SAP Basis environment
- Internal password management and restriction of administrator access and rights
- Optimised procedures for update and patch management

Also planned:

- Individual training for groups of employees
- Online tool on security topics for training intensification
- Changeover from 2-factor to 3-factor authentication
- Advanced Thread Inspection (penetration test) by external specialists
- Further continuous adjustment of the security strategies to current issues


# Climate and environmental 

## protection: reduction of energy use and emissions.

Protecting our climate should be the focus of every sustainable company. And so as not to wait until 2040 to do so, GAW had the roofs of its headquarters fitted with solar modules as early as 2014. GAW generates around 127 megawatt-hours of electricity per year on around 830 square metres of photovoltaic surface. At the time of writing this sustainability report, the photovoltaic area is being expanded by an additional 400 square metres.

GAW's solar power activities began back in 2004. At that time, a subsidiary was founded in Munich, GAW Energy, which from the beginning focused on solar power and specialised in the construction and operation of photovoltaic power plants in the Bavarian region.

From the outset we were aware that the technology was unsuitable for energy-intensive production. Nevertheless, we wanted to take a pioneering role in order to demonstrate that we can contribute to the increased generation of clean electricity in the sector using our roof surfaces.

By 2040 at the latest, we want to cover the energy consumption of our own facilities in a climate-neutral way from renewable energy sources.

Energy management system -
energy monitoring -
electric vehicle fleet

Adequate measures are needed to achieve our ambitious goals. To this end, we are continuously optimising our ener-
gy management system, which, among other things, is responsible for energy monitoring and the evaluation of consumption (electricity, gas, heat, etc.) and the assessment and implementation of potential savings.

The focus here is on detailed recording of emissions. These are recorded in a modern reporting system, possible reduction potentials are identified and suitable measures to avoid emissions are implemented.

Wherever possible, we already produce the energy required for our plants ourselves and use it efficiently. Furthermore, we try to avoid greenhouse gas emissions (GHG) in our own facilities through the best possible planning of maintenance and inspection activities. We reduce transport-related emissions by using electric cars and by creating the necessary refuelling infrastructure. This can and has significantly reduced particulate matter, for example, compared to conventional fuels.

## Environmental protection

At the beginning of this report, we took you on a short journey into the past to give you an understanding of our historical approach to environmental protection and the responsible use of resources.
And nothing has changed to date, on the contrary. Along with safety, the protection of the environment and the responsible use of domestic resources are among the highest principles in all our activities and work processes.

## Conservation of resources

The concept of environmentally friendly paper production and finishing, which has been anchored in our corporate strategy since 1996, is based on the premise that "nothing" (no raw material) should be lost, but everything possible should be kept in the cycle, reprocessed and recovered for production.
The same applies consistently to our group companies in the plastics sector. With more than 30 years of expertise in the field of processing and recovery,

these companies are sought-after industrial partners for universities and research institutions, and in the process they lay essential technological foundations for the plastics recycling economy. Together with the Fraunhofer Institute for Process Engineering and Packaging IVV, we have already implemented several projects, e.g. for recycling metal and plastic composites or for the reprocessing of waste plastics containing pollutants from the electrical appliance and automotive refurbishing sectors.
Last year, despite a lock-down, GAW Group companies succeeded in commissioning the first European recycling plant for multi-layer packaging films.

The pilot plant was developed as part of the European Union's major "Multicycle" research and development project with the aim of recovering multilayer films and fibre-reinforced plastics as mono-frac-
tion materials for the first time. In this way, they are transferred into the circular economy and thus into further life cycles.

The in-house control systems (masterminds) were taught as early as the late 1970s to calculate the coating colour requirement precisely and to produce just enough so that at the end of the production of a paper grade only small residual quantities remain in the system and not, as was customary at the time, several thousand litres of coating colour are emptied from containers and pipelines into the sewer system.
Today, ERP (Enterprise Resource Planning) and MES (Manufacturing Execution Systems) solutions from our automation division ensure resource-saving precision landings in the areas of building materials, paper, infrastructure and food.

Sustainable procurement

In the chapter on responsible corporate governance we already mentioned the code of conduct for suppliers and transparent procurement processes.

Our GAW procurement guidelines already consider individual environmental aspects when selecting defined products. From 2023 onwards, the procurement department plans to successively consider the entire life cycle of products. In addition, the plan is that the Group companies covered by the Austrian legal system will voluntarily commit to the German Supplier Due Diligence Act (see also chapter "Sustainable procurement" on page 70 ).

## Sustainable solutions.



## Solution to disposables recycling composite films

Composite films are successfully used in the packaging industry to reduce the weight of the packaging and increase product shelf life. As a result, they contribute significantly to CO 2 reduction. However, due to functional requirements, composite structures made of incompatible plastics are often used, which prevent recycling in the proven re-extrusion process. Solvent-based recycling plants from our company LÖMI offer an attractive and technically mature solufion for this.

CreaSolv ${ }^{\circledR}$ makes it possible

Flexible packaging materials have become indispensable in food and household goods packaging, for example for sausage, cheese, snacks or detergents and soap products. Multi-layer structures made of different polymers are often chosen for optimum product protection, thereby significantly extending the shelf life of food packaged this way. The good sealability, light protection and water vapour barrier of polyolefins are com-

bined with the good oxygen barrier or stiffness of EVOH, PET or PA.

In terms of weight, the polyolefin content usually dominates in composite packaging, but such composite film structures also contain other intermediate layers, as well as printing inks and aluminium content - either as aluminium foil or as a vapour-deposited aluminium layer.

Physical dissolving of plastics from composite structures

From a recycling point of view, multilayer composite packaging is almost impossible to integrate into a circular economy due to the heterogeneity of the materials, so that the current models for assessing the recyclability of composite packaging only produce a good rating for recyclability in exceptional cases and advise the use of mo-no-material multilayer composites consisting of combinations of PE and PP with small amounts of barrier coatings.

Whether these materials offer the same product protection as conventional packaging and whether real waste management is able to collect, sort and process these novel composites into high-quality recyclates with high yields is still the subject of research and development today.

## Partnership with Fraunhofer IVV

Thus, the Fraunhofer Institute for Process Engineering and Packaging in Freising has been working on innovative technical solutions for the recycling of complex plastic waste based on the physical dissolution of target plastics from compounds and composite structures for two decades.

Compared to mechanical recycling, this process achieves a very high cleaning potential. This is where CreaSolv comes into play, a registered trademark of Creacycle GmbH . The process is based on patents that describe the dissolution of polyolefins and combines these approaches with innovative and technically highly efficient cleaning technologies. The process was already developed in the early 2000s for various packaging wastes and has since been continuously technically and economically optimised, scaled up and validated

with industry partners. Due to its high cleaning capacity, the process is particularly suitable for flexible packaging, as well as for composite films from industrial waste and post-consumer waste.

The cycle is already operational in Indonesia

Unilever became aware of the CreaSolv ${ }^{\circledR}$ process as early as the beginning of the 2010s and evaluated the process, first in the laboratory and then on a small scale. The preferred application of the process was primarily small-volume multilayer film bags, so-called "sachets", which have a high market share in South-east Asia and are not given adequate waste treatment there. Instead, in the best case scenario, they end up in large landfills, but more realistically, far too often in the environment, unfortunately, and ultimately contribute to the plastic pollution of water bodies and oceans.

In collaboration with Unilever and LÖMI, the process developers of the Fraunhofer IVV designed an industrial CreaSolv ${ }^{\circledR}$ plant, which was built in Germany and shipped to the site in Indonesia after a short test phase. Following commissioning in 2018 and a ramp-up phase at the beginning of 2019 - we reported on this - the plant has since been producing PE-LD recyclate. Composite film

After the end of the project in 2022, the demonstration plant will be available to research and industry partners for further sampling tests.
waste collected and pre-cleaned by so-called waste pickers at Indonesian landfills is used as input material. The recyclate is now successfully used in new composite film packaging for detergents.

## The European MultiCycle project

Based on this successful initial plant, the European H2O20 MultiCycle project was launched at the end of 2018. As part of the project, proof had to be provided that the CreaSolv ${ }^{\circledR}$ technology can be applied to other target polymers in multilayer packaging and plastic composites (including PP, PA, PA-GF or PET).

For this purpose, a flexibly adaptable demonstration plant was set up at a LÖMI site. The plant is designed for alternating demonstration operation for different waste and plastic fractions and reaches a capacity of $25 \mathrm{~kg} / \mathrm{h}$, depending on the operating mode.

## MultiCycle for different plastic fractions

The MultiCycle plant has been used to process post-consumer composite films, as well as production waste from various composite films into PE-LD and PP recyclates.

The table lists typical product characteristics of the recyclates that are currently being sampled by MultiCycle project partners and used for the production of non-food packaging demonstrators due to their property profile that is virtually the same as that of new plastic.

After the project ends in 2022, the demonstration plant will be available for further sampling tri-
als by research and industry partners who want to test or evaluate solvent-based recycling on a pre-commercial scale. Recyclate quantities of 500 kg to $1,000 \mathrm{~kg}$ can be produced at the plant under representative process conditions. The plant is not only used for the preparation and conceptual testing of new commercial plant projects, but can also aid in demonstrating the recyclability of plastic packaging. To handle the numerous enquiries from industry, another comparable demonstration capacity is currently being set up at the Fraunhofer IVV in Freising.

That was the second step, closely followed by the third - the Circular Packaging Project

The industrial implementation of the CreaSolv ${ }^{\circledR}$ technology is advancing rapidly on a national basis as well. The data available from the aforementioned projects clearly prove the technical and economic attractiveness of the process on an industrial scale. This is shown by model calculations and business plans for large-scale industrial plants, which are based on the respective national framework conditions, site conditions and waste specifications.

Against this background, the industrialisation of CreaSolv ${ }^{\circledR}$ is currently being investigated in more detail and continued in the r+impulse Circular Packaging project funded by the BMBF.

The project partners Lober GmbH Abfallentsorgungs GmbH \& Co. KG, Fraunhofer IVV and LÖMI are developing a commercial plant concept for flexible post-consumer packaging for a site in north-eastern Bavaria. The envisaged technology scale-up is accompanied by technical optimisation tests on the one hand, and results in detailed

|  | PE-LD | rPE | PE-LLD |
| :--- | :--- | :--- | :--- |
| Density | $0.921 \mathrm{~g} / \mathrm{cm}^{3}$ | $0.925 \mathrm{~g} / \mathrm{cm}^{3}$ | $0.940 \mathrm{~g} / \mathrm{cm}^{3}$ |
| Melt flow index (MFR) | $2.1 \mathrm{~g} / 10 \mathrm{~min}$ | $1.1 \mathrm{~g} / 10 \mathrm{~min}$ | $1.0 \mathrm{~g} / 10 \mathrm{~min}$ |
| Melting point | $109{ }^{\circ} \mathrm{C}$ | $124^{\circ} \mathrm{C}$ | $120-125^{\circ} \mathrm{C}$ |
| Tensile strength | 21 MPa | 27 MPa | 44 MPa |
| Elongation at break | $280 \%$ | $680 \%$ | $690 \%$ |
| Secant mode $2 \%$ | 177 MPa | 274 MPa | 270 MPa |

engineering for a commercial recycling plant on the other.
Economic plant operation
from 8,000 tonnes per year

For Germany and Central Europe, current calculations indicate that the plant can be operated economically with capacities starting at 8,000 tonnes per year. Waste fractions from the sorting plants of the dual systems can be used as input, for example fractions 323 or 352.

Current product samples of PE-LD and PP recyclates achieve a quality that allows their use in new packaging films with a high proportion of post-consumer recyclate (PCR). This depends on the film structure and area of application, but a PCR content of $50 \%$ is certainly achievable.
The sample productions reveal that the level of maturity of the technology meets industrial requirements and that only final technical details remain to be solved for commercial and technical scale-up.

Available test data, calculations and market developments confirm the assumption of the team of process developers, plant engineers and waste management experts that the solvent-based CreaSolv ${ }^{\circledR}$ process can make a significant contribution to the circular economy of complex plastic waste in the future, especially in the area of flexible packaging. The volume of this waste is immense, amounting to 1 million tonnes annually in Germany alone, which is currently mainly recycled as secondary fuel and thus removed from the plastics cycle.

If solvent-based processes achieve even a $20 \%$ market share despite their significantly higher cleaning capacity compared to mechanical recycling, this would result in a potential of 10 to 20 processing plants with capacities of 10,000 tonnes/ year to 20,000 tonnes/year.


The development team will implement the technology in commercial industrial plants in close collaboration with investors and plant operators. Fraunhofer IVV is acting as the process provider, while LÖMI, jointly with its group affiliate GAW technologies, is acting as the plant manufacturer.

As operator of the first commercial CreaSolv® plant for packaging plastics in Germany, Lober Abfallentsorgung plays a leading role.

In the ongoing Circular Packaging project, a commercial plant concept for flexible post-consumer packaging is already under development.


## Urban mining - phosphorus recovery

Honestly: if you had to list off the top of your head resources that are particularly important for survival, would phosphorus be one of them? Probably not.

Phosphorus is not only of immense importance for the human organism as the main component of the skeletal substance for bones and teeth, but also for biological growth, ergo the entire food production.

In a nutshell: without phosphorus there is no life.

It is all the more problematic that this important building block of life is in limited supply on our planet and that phosphorus resources are concentrated in a few countries.

Of the approximately 180 million tonnes (as at 2010) of rock phosphate extracted annually worldwide, about $90 \%$ is used for the production of fertilisers. In addition, phosphorus in fertilisers cannot be replaced by any other substance.

Europe is almost entirely dependent on imports and the raw material is increasingly polluted. Reducing this dependency requires the development of innovative methods for recycling phosphorus.

One of these approaches is being pursued under the heading of "urban mining". This involves recovering phosphoric acid from sludge from urban sewage treatment plants.
OSMO Membrane Systems, a highly specialised company of the GAW Group, was commissioned by Hamburger Phosphorrecyclinggesellschaft mbH to supply ultra-fine separation stages as part of such an urban mining project.

The large-scale plant in Hamburg recovers phosphorus and marketable raw materials of consistent quality and availability from the sludge of sewage treatment plants. For example, RePacid phosphoric acid for industrial applications and fertiliser
production. Or iron and aluminium salts, which in turn can be used for phosphate elimination in the sewage treatment plant and close an additional important cycle. Gypsum is another valuable material for the building materials industry.
Phosphor recycling in Hamburg is supported by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

In 2021 the plant went into operation and now produces around 7,000 tonnes of high-purity phosphoric acid, 36,000 tonnes of iron and aluminium salts and 12,000 tonnes of gypsum annually from around 20,000 tonnes of sewage sludge ash.

## Water scarcity - wastewater-free starch processing

> The issue of saving water, energy and resources is omnipresent in the technology areas of GAW technologies. This also applies to the processing of starch, an essential raw material in the production of paper and cardboard.

Starch is used as an auxiliary agent for mass sizing, surface sizing and finishing, and in the preparation of coating mass. Increasing resource consumption in the preparation process and rising prices for the starch itself are the cost drivers par excellence for paper and cardboard producers, worldwide.

Wastewater-free operation through the cycle line

The GAW system for continuous starch processing avoids permanent start-up and discharge sequences and is characterised by a constant steam/hot water demand without peaks.

The technology can be used for all starch types, temperatures, solids contents and viscosities. The special process design enables our customers to produce customised starch paste with
desired viscosity and molecular weight distribution, with a minimum of wastewater and almost no starch losses, and makes it easier for our partners to achieve their sustainability goals.

Numbers mean strength

The lagging operation of a GAW plant with significantly fewer stop-and-go cycles than is customary in the industry saves about 107 tonnes of starch and $3,400 \mathrm{~m}^{3}$ of rinsing water in a year for a medium-sized starch plant (consumption of about $3,500 \mathrm{~kg}$ of starch per hour).

In addition, we are working intensively on ongoing research and development projects to enable our partners to switch to a promising cavitation process in the near future.

## Employer with responsibility

Today is tomorrow's yesterday - guided by founding ideas:
What we are responsible for today as a company can be traced back to the corporate philosophy conceived by Erhart Pildner-Steinburg. Almost 70 years ago, he developed a sustainable business model based on the guiding principle of the honourable merchant.

No people, no business!

For Erhart Pildner-Steinburg, the social responsibility of a family business is always paramount. His approach is simple and is aimed at creating lasting value for all stakeholders involved, without merely limiting himself to controlling the impact on the environment. He considers information, knowledge and ideas as the most important resources for creating value. The providers of these resources are the employees, who thus become the guarantors of corporate success. GAW's customers should benefit from the experience and innovative strength of our employees, which in turn means a secure and bright future for our employees.

Social responsibility - we fill the vacuum

In the late 1980s, the "welfare state" withdrew from many areas of social life. The resulting "vacuum" is seamlessly filled by many companies. And even more than that.

Entrepreneurial responsibility in the 21st century - creating shared experiences

Always guided by local needs, GAW is committed to the people in their companies and tries to make the regions around them culturally more attractive. For instance, it is committed to promoting education and science, fostering the spirit of community and sport - both in breadth and at the top - as well as promoting high and popular culture. GAW is clear about what longterm success at its locations depends on. And so it succeeds in fulfilling its social responsibility in a special way and in keeping the reputation of the group companies high.

Today, the companies of the GAW Group are modern places of community. Traditional institutions and organisations such as schools, churches, associations and political parties have often lost their role as a bonding force for social inclusion. All this leads to a search for trust and closeness among colleagues at the workplace, giving them an important role in one's life as a whole. This includes the daily exchange about family matters, as well as the joint organisation of leisure time outside the workplace.

## Working and time models

In a socially responsible company it is important to offer employees good, flexible and safe working conditions and to create an environment in which they can apply and develop their talents to the best of their abilities.
For some years now, demand-oriented working and time models such as...

- part-time retirement models,
- part-time arrangements,
- four-day week
...have been offered to meet the needs for flexibility and a good work-life balance.

The COVID-19 pandemic has accelerated the digitalisation process of the workplace and taught us how to work together efficiently and effectively despite home office and online meeting formats. Based on the consistently good experiences, we intend to continue to enable our employees to work remotely in the future, insofar as it is compatible with their respective jobs.

## Education for innovation

Within the framework of our academies, we offer numerous training courses, certifications, as well as further education and management programmes for the professional development of our employees. In addition to personal development, the aim of the academies is to facilitate the interdisciplinary transfer of knowledge within the workforce and to pass on experience to new employees.

In 2021 and 2022, expenditure on further training has continued to rise despite the COVID-19 pandemic.
Not only does the GAW Group invest heavily in development programmes and training each year, but management also pays close attention to the health of employees and proactively takes measures to improve their well-being, including the following measures:

- Training workshop
- Work council outings
- Fitness programmes
- Vaccination programme (ticks, flu, etc.)
- Academy (leadership development programme)
- Girls Day
- Healthy at work
- In-house sports courses
- Height-adjustable desks, ergonomic chairs
- Health days
- "An apple a day...."
- First-aid training
- MINT kindergarten and school promotion


## Treating each other with respect

Equal treatment, integration and diversity are key elements of our corporate philosophy. GAW unites the most diverse nationalities through absolute equal treatment with respect to pay and
career, irrespective of ethnic origin, gender, culture or religion. Hence, we see different language and cultural skills not only as a great enrichment for the respective teams, but also as a valuable expansion of individual horizons. On several occasions, GAW has already benefited from the diverse mother-tongue skills and the country- and culture-specific knowledge of our employees, as it has significantly supported and positively influenced new business development opportunities in international markets. In GAW's often mixed-age teams, different ways of working, values and levels of experience sometimes come together. We see a difference in age as a great added value and are happy to draw on the wealth of experience of older employees in the GAW Group's internal training programmes and use this for the valuable transfer of knowledge to younger colleagues. In order to meet the individual needs of our older employees in the best possible manner, the broad range of partial retirement options offered as part of GAW's flexible working time models plays a key role.

For some years now, we have also seen a positive development in employees taking paternity leave - by now 10\% of men are taking parental leave - and it shows a rising trend. The share of men taking part-time parental leave is also steadily increasing.

Leadership creates the manager

In a leadership workshop, leadership principles were developed that reflect the corporate values and are intended to contribute to leadership competence.
In 2021, department and team leaders were asked in the course of further workshops to flesh out these guiding principles with specific content and to work out practical examples for use cases. Afterwards, the leadership principles were rolled out across the entire company and implemented in all departments.

GAW from the employees' point of view

To be able to exchange information with existing and potential new employees, the HR department uses evaluation platforms such as "Kununu" or survey tools such as "Great Place to Work"; constructive feedback from employees is taken up and processed.

In 2022/23, we plan to conduct a survey in every group company; the aim is to find out how GAW is perceived as an employer and in which areas there is still room for improvement for the staff.
"Appreciative cooperation, respectful interaction, as well as mutual support and sharing information, experience and knowledge are essential values and behaviours that shape the way we work."


## Sustainable

## procurement.

Our chains, our duty:
ethical business practices and their securitisation in the Supply Chain Due Diligence Act.

There is a new ordinance that business people should know the Supply Chain Due Diligence Act.

In essence, the Supply Chain Due Diligence Act is a key to more sustainable business management (i.e., environmentally and socially responsible) and obliges manufacturers throughout the EU to comply with social and environmental standards, not only within their own company (CSRD) but along the entire supply chain.

Although we are not obliged to comply with the directive or the Supply Chain Due Diligence Act implementing the directive due to our (too small or limited) company size, we consider the matter intensively and voluntarily.

Our positive experiences with the preparation and implementation of the EU General Data Protection Regulation (GDPR) in the period from 2016 to 2018 have taught us that you can never be early enough when it comes to implementing concrete measures. And thus we already see it as our duty to identify risks in our supplier chain and to scrutinise both direct and indirect suppliers.

Our past has taught us about the importance of environmentally compatible and social standards and we see the legal securitisation thereof as a huge opportunity to further increase the competitiveness of our group companies in the future.

(e) GAWGROUP


[^0]:    ## 69 NACHHALTIG - NACHHÄNGEN

    hängt, wenn er sie zwischen dem vorderrade und dem nachhalter ausspannen und spinnen will. Jacobsson $3,116^{2}$.

    NACHHALTIG, adj. und adv. auf längere zeit anhaltend und wirkend: nachhaltiger ertrag des bodens wird nur erzielt, wenn der boden in gutem stand erhalten wird. Weber öcon. lex. $382^{2}$; eine nachhaltige wirkung des bades u.s.w.; wenn sie (anlage) wirklich urkräftig und nachhaltig ist. Güthe 45,237 ; er schien nunmehr zum erstenmal zu merken, dasz er äuszerer hülfsmittel bedürfe, um nachhaltig zu wirken. 20,118 ; ob nachhaltig etwas besseres . . zu verspüren sei. Gotthelf erz. 3, 93.

    NACHHALTIGKEIT, $f .:$ dann legten sie sich auf ihr tage werk, lagen ihm auch mit groszem fleisz und staunens

