TÖPFER
KULMBACH

ENVIRONMENTAL DECLARATION 2020

Updated declaration on the consolidated environmental declaration 2018

EMAS
GEPRÜFTES UMWELTMANAGEMENT
DE-108-00059

ALWAYS AROUND

Table of contents

Publication dates of the environmental declaration

This environmental declaration with adjustment according to the requirements of the EMAS innovation 2017 and 2019 was passed by the management in September 2020 and subsequently submitted to the EMAS environmental expert for inspection.

Every year, Töpfer Kulmbach GmbH publishes a simplified environmental declaration that is reviewed by the environmental expert and declared valid. Contents of this simplified environmental declaration essentially contain the updated environmental indices and the progress when implementing the environmental targets set.

The next consolidated environmental declaration will be published in 2021.

This environmental declaration contains the indices for the environmental performance of the reporting year of 2019.

Note: *For reasons of better legibility, the text uses the male form and does not use several linguistic forms in parallel. All person designations shall apply to all genders equally.*

Development of the site

Company and markets:

For Töpfer Kulmbach GmbH the year 2020 is an anniversary. The company has been producing at the Kulmbach site for exactly 100 years. Tradition and the modern world have ensured that Töpfer Kulmbach has established itself on its clients' supply market and belongs to the world's leading manufacturers in the field of label printing for the beverages industry and flexible packages for the food and luxury food industries. Customers include renowned German and international beverage and food manufacturers.

After Töpfer Kulmbach had been owner-managed by the Töpfer family for more than four generations, there has now been a change in the company **management structure**. Following the retirement of Rainer Töpfer in November 2019, Mark Töpfer announced his resignation in the spring of 2020. The resignation of both former managing directors was followed by the full integration of the company into the **Heiner Brinkhege Beteiligungsgesellschaft mbH & Co. KG** printing group.
The new managing directors are Peter Schneider and Axel Schucht.

Töpfer Kulmbach GmbH operates in the following printing sectors: rotation gravure printing, offset printing, UV flexo printing and digital printing.

Whether all-round labels, shrink sleeves or self-adhesive labels – the expanded production possibilities due to the newly implemented **UV flexo printing** and **digital printing** processes in 2019 offer implementation according to the latest technical standards for the economic production of very small, small and medium editions.

The cooperation of several printing companies also includes the consideration and comparison of processes with the goal of increasing cost effectiveness by optimisations – but also subsequently improving the environmental performance. Recognised need for optimisation at Töpfer Kulmbach led to the adaptation of human resources in the course of 2020.

Of course, the events of the world-wide Corona pandemic also had and have far-reaching effects on business activities at Töpfer in Kulmbach. Our customers in the brewery industry, for example, lost an important sales market with the closure of restaurants, bars and other public houses and the cancellation of public festivals to avoid the spreading of the Corona virus. The almost total collapse of barrel filling led to partly compensating the existing demand for beverages by increased bottle filling. Töpfer now needs to be able to deliver greater quantities for the labels required for this flexibly and on-time. Especially the demands for the resulting increased material availability of printing substrates and inks were and are major factors. Like everywhere in the world economy at the moment, it is hard to estimate where the road will take us in the future.

In order to inform interested parties about our activities in detail, Töpfer is presenting itself with a modern and dynamic **homepage**. **www.toepfer.de** offers a wide range of information which focuses in many case on environment-related topics.

Production and technology:

After extensive investments that were made in the company in 2018/2019 with the implementation of the UV flexo print process – that is, in addition to the UV flexo printing machine also in the complete hall infrastructure including a ventilation system with heat recovery, other planned investment in **new machines** were made in the reporting period.

The Töpfer philosophy is to regularly invest in new production plants to meet the market's quality and quantity requirements. With modern technology, we take advantage of the manufacturers' know-how to integrate the benefits of energy and material efficiency into our processes. In most cases, the effects are presented positively and transparently in the environmental performance.

For instance, Töpfer Kulmbach now has a **roll cutter** and a **sleever** which are explicitly designed for the relatively narrow track width of the UV flexo printing machine. This tailor-made equipment enables more energy-efficient and thus more economical further processing. In addition, a new **face cutting machine** was installed in the further processing at the end of 2019.

For some years now, it is our gathered positive experiences - the relatively easy implementation and the high reduction potential for the electricity consumption - that have induced us to carry out other projects such as changing over the existing lighting to energy-efficient **LED lighting**. The changeover for the cross cutter and incoming goods departments including the roller stores was implemented at the beginning of 2020, for example. An efficiency calculation in this section shows a reduction in the energy consumption of around 27.3%.
Hereby, complete light strips with almost 100 T8 fluorescent tubes were removed and replaced selectively by just 26 LED industrial lamps. A regulatable and currently effective light intensity reduction and the improved, requirement-based switching according to work areas further contribute to the efficiency of the lighting system.

Plans are also envisaged currently for a relocation of office workplaces from the administration building to existing empty premises in our production building. The installation of **LED lighting** here is the logical consequence of the aforementioned experience and an integral part of the planning. In the course of the planned conversions, elements are also to be installed which have an equally positive effect on the energy requirement. It is to be expected that the installation of new **windows with heat insulating glass** and the fitting of **outside blinds** will reduce the expenses for room air conditioning.

Smaller conversions also contribute to the achievement of energy-efficient solutions by new components – without having to constantly determine the benefits by measured values.
In this reporting period, the distillation system which recovers the solvent shares from no longer useful gravure printing inks and contaminated cleaning solvents with as high a yield as possible should be mentioned here. The installation of a new **thermostat** led to the possibility of limiting the heating up temperature needed to trigger the evaporation process much lower to ensure a stable process sequence. Heating up was previously exposed to a greater temperature fluctuation so that the limit was 20°C higher in order to achieve continuous evaporation.

From the indices, we are aware that the energy requirement for generating compressed air in the company plays a leading role. Therefore, Töpfer has considered working to improve the elements of our central ring grid as an important task for many years. After several older compressed air compressors were already replaced in recent years and the energy efficiency was provably improved, the replacement of the last compressor of the old generation has now been added to our plans. In its place, a **compressed air compressor** is to be installed which, when switched on, offers a more favourable ratio between the offered performance and the actual requirement than is the case with the greater graduations of the existing compressed air compressors.

An improved **control software** and an additional **sensor** integrated into the system round off the planned efforts to make the compressed air generator system more efficient and to reduce load peaks. As a result, it is conceivable that a further reduction in the **operating pressure level** in the central ring grid will be possible as soon as all elements are fully integrated into the system. A convincing level reduction has already been achieved in recent years.

We are expecting a lot from the integration of a new plant for **ecological water treatment** into the cooling water generation system. In the summer months of this year, this plant was integrated into the system for about 2 months for trials and achieved very good results. This investment helps us to keep the cooling water constantly free from bacteria and legionella even when dispensing totally with biocides. Measurement of the parameters at regular intervals ensures that only non-toxic active ingredients are added as and when required. On the whole, this promotes a deposit-free pipe system, reduces the cleaning efforts and reduces running costs.

Established environmental goals in the Environmental Declaration 2019 in the "Product and technology" section were the reduction of the fuel requirement for electricity and gas, the water consumption and diffuse emissions in offset printing. Current factors of influence lead to the need for thorough examination of the cost effectiveness of projects to be launched and partial re-evaluation of the relevance of their importance. This has an influence on the implementation time for the measures. This is documented in the chapter "Environmental program and targets" based on the current situation.

Products:

Labels with a sense of responsibility - Our extensive product line concept has a name: **"Natureline by Töpfer"**
This is the real alternative to conventional label papers. Expedient elements here are printing substrates, printing inks and production conditions.
The paper of Natureline labels consists of 100 % recycling paper. So, it comes either from 100 % post-consumer fibres or 100 % pre-consumer fibre material. The latter material has been newly qualified for our product line in the reporting period. The paper arises from post-industrial waste from paper manufacture and is then – separate from the actual manufacture – produced with its own sustainable material quality without the use of any additional fresh fibres. This separate manufacture assures the prerequisite of being listed as full recycling paper for Natureline.

But "Natureline by Töpfer" is more than just a label paper made of recycling fibres: A special treatment in the paper machine and the care in the printing make a label which, in terms of processability, lye resilience and brilliance, is in no way inferior to labels made from paper of fresh fibres.
Kind on resources, fully recyclable and impressively high quality, Natureline papers are the first premium solution without losses in quality, brilliance, advertising effect and processing possibilities.

After Töpfer Kulmbach had created good conditions in the course of 2019 with the use of the said paper and a special offset ink series which had already been awarded the Cradle to Cradle Silver environment label at this time, it was a logical next target to obtain a C2C certificate for the "Natureline by Töpfer" product line according to the criteria of the "Cradle to Cradle Products Innovation Institute".

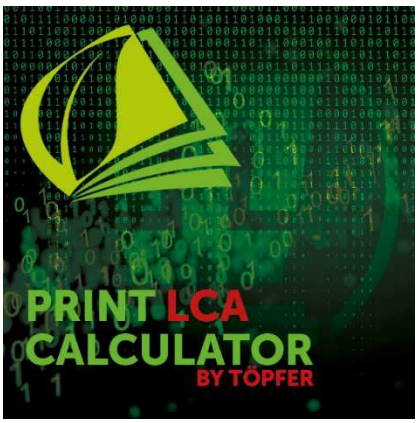
In addition to the sustainable developments in the printing substrates, environmentally relevant factors in the areas of inks, varnishes and additives are also very important.
Cradle to Cradle (C2C) is a fundamental principle with very high demands derived from nature. It is based on closed cycles which produce no waste and preserve valuable raw materials. This means, for example, that deinking sludge would no longer be waste but a valuable nutrient if the used materials in the printing product could be put back into a biological cycle. This system completely excludes many substances in the "Banned Lists of Chemicals" among other things.
Printing inks, varnishes and printing aids contain renewable raw materials and vegetable oils, have cobalt-free recipes and meet the criterion of deinking capacity according to the test method. Specification continues in printing and further processing. Doing without undesired substances and limiting solvent emissions are worthy of mention. Töpfer Kulmbach satisfies these prerequisites in printing and further processing.

In October 2019, our company was awarded the **Cradle to Cradle Silver Certificate** for our "Natureline by Töpfer" product line. This includes all substrates that were submitted for certification for the entire "Natureline by Töpfer" system.

It is gratifying that the sustainable developments in the field of ink series are also progressing and other products now also meet the C2C requirements and are certified. For example, Töpfer Kulmbach offers sustainable labels that were produced in cooperation with our ink suppliers in gravure printing with an appropriate C2C ink series.

An ink was also added to our portfolio for the already mentioned offset ink series in the reporting period, of which we are convinced that it will positively influence our customers' decision in favour of C2C-capable labels. Metal gloss inks help to attract greater attention. With the silver ink on offer that is certified with the "Cradle to Cradle Silver" label for our ink suppliers, Töpfer Kulmbach now also satisfies this customer wish.

On the whole, it is evident that our offensives - for example, the "Natureline-Day" in August 2019 as well as our fair presentation at the Brau Beviale 2019 in Nuremberg - helped to introduce "Natureline by Töpfer" to our customers and to arouse great interest in our sustainable products with existing customers and potential new customers. This was subsequently noticeable in the increase in incoming orders. The COVID 19 virus made an important cut here. It is clearly obvious that our customers currently set their priorities in protecting their economic power. Sustainable solutions have fallen somewhat behind. Töpfer Kulmbach hopes that the customer's focus will move back more in the direction of environmental protection in the near future.



Töpfer Kulmbach acts with foresight. Following Natureline and the Cradle to Cradle certificate in silver, the world's first **Print LCA Calculator** in the printing industry is another milestone on the road to a comprehensively sustainable company for labels and packaging. Together with our cooperation partners, Töpfer Kulmbach develops this instrument for calculating a correct life cycle assessment in accordance with EU guidelines.
The PEF (Product Environmental Footprint) will most probably be obligatory for all products in 2025. The consequences of the extended manufacturer responsibility will be felt above all by the industry for short-lived consumer goods. The main goal of the European PEF method is to improve the comparability of the environmental effects of products within certain product categories by reducing the flexibility and achieving reproducible results. The assessment of the environmental compatibility of labels and packages also covers all phases of the life cycle – from responsible raw material procurement right through to environmentally friendly disposal. The Product Environmental Footprint Category Rules of the European Union determine what the data model will look like in the future. Töpfer Kulmbach is already able to calculate the exact life cycle assessment according to these guidelines today. If our customers wish: for every single label.

Staying with the subject of sustainability, one of the aims of Töpfer Kulmbach was and is to improve the waste load in the Packaging product group after the life cycle. By setting the goal to reduce the proportion of heavy-metal-containing high-gloss inks in packing printing and replace the demand by **environmentally friendlier, heavy-metal-free high-gloss inks**, clear progress could be recorded in the final balance. In 2019, almost 47% of high-gloss inks containing heavy metals could be replaced by heavy metal-free inks in comparison with 2017. We therefore reached our set target of 40% replacement. At the moment, we can report that Töpfer Kulmbach will dispense almost totally with high-gloss inks containing heavy metals in future. We now offer heavy metal-free high-gloss inks in gravure printing under the name of "Light Metal Gold LMG".

Töpfer Kulmbach is always open for **innovations** which promote the concept of sustainability. Printing substrates were tested, for example, which replace wood as a raw material by portions of grass or hops and could present a real alternative. After all, grass grows fast and usually near to the paper factories. Of course, the processability of the printing substrate plays an important role. This has ultimately led to this material being declared unsuitable for use as label paper at the moment due to strength deficits of the material fibres. However, we will keep a close eye on scientific and technological developments to be able to offer our customers sustainable alternatives should they reach production maturity.

All-round labels on OPP film, among others, have belonged to the product portfolio for many years. The raw materials for this film material have had little environmentally friendly properties in the manufacture until now. A low to non-existent proportion of recyclables, supplemented by fossil raw materials, leave behind a considerable CO_2 footprint. Very pleasing, therefore, is the fact that, in addition to the previously good recyclability of PP films, developments are also reaching production maturity which considerably reduce or completely avoid the proportion of fossil raw materials. Mainly produced from renewable raw materials on non-food basis and fully recyclable, this film forms the basis for an environmentally friendly alternative to polypropylene films. Töpfer Kulmbach see themselves as a pioneer here, because our company tested the printability and processability of the product shortly after its fair presentation – with very good results.

Employees:

Töpfer Kulmbach has the commitment of its employees to thank for the previous successes in competition. However, in order to be able to continue to produce future-oriented and competitively, the result of the analysis of the economic situation made it necessary to reduce the number of personnel at the beginning of 2020. It can be seen as positive that this restructuring was achieved socially acceptable for the most part by the semi-retirement procedure. In addition, posts were not reoccupied after regular retirements and contracts for staff hire with temporary employment agencies were not extended. With now around 260 employees, Töpfer Kulmbach is facing the challenge of ensuring smooth processes in the fulfilment of their tasks.

As soon as the first increase in the number of Corona cases in Germany became public, the group reacted and took initial, extensive **protection and hygiene measures** at the end of February. From then on, Töpfer had clear rules which were valid for our employees and all external circles for avoiding spreading of the virus to the company. In the further course, the development was monitored daily by an internal crisis team and measures were adapted accordingly. A risk assessment in accordance with the SARS-CoV-2 Work Safety Standard of the BMAS was compiled and its requirements observed. With the issuing of this environmental declaration we can record that no single member of staff has had a positive COVID 19 test result to date. We see our early reaction as an important factor in being able to maintain operations without Corona infection-related absences.

Continuous optimisation of processes and systems along the production chain under the aspect of efficiency also requires the ideas and commitment of the employees. Many contents stood and stand in direct harmony with the improvement of our environmental results. Although the normal procedures of a structured **continuous improvement process CIP** are currently suspended due to Corona (personal contacts are reduced to a minimum to protect the employees), the staff are urged to pass on recognised potentials. It is our aim to form the future orientation of the company within the scope of the possibilities even in the phase of the known restrictions in communicative interaction.

Training is important! Especially in these times of demographic development which no company can evade – generally characterised by many retirements, fewer school leavers and little interest in technical careers in shift operation. It is also important for Töpfer to align itself with the future specialist needs as a long-term **training operation**. Good news is that, with the beginning of the training year 2019, all training posts could be filled by enthusiastic trainees and that all trainee posts for the coming year 2020/2021 have already been appointed. Our focus lies on a balanced relationship between the number of training posts and future requirements.

The term "commitment" is also reflected on the EMAS for our trainees: our trainees qualified for the final round of the four best companies at the **Kulmbach Training Prize 2019** on the subject of "My company protects the environment"! In a video clip that they produced themselves, they were very good ambassadors of the environmental work performed at Töpfer Kulmbach.

In addition to continued marketing measures (e.g. perimeter advertising on the Kulmbach railway), Töpfer Kulmbach was also represented at the Kulmbach ABITURA in 2020. This event was held at the beginning of February. The **training fairs** in the region which Töpfer had attended regularly in previous years, could not take place on the planned dates. We are closely following in what form fair participations will be allowed under modified presentation and hygiene concepts of the organisers. Alternatively and in cooperation with the exhibitors, the SCHULEWIRTSCHAFT Bayern work group, for instance, is planning an "Open Day" for potential trainees directly in the companies on the 17th of October. Töpfer Kulmbach will develop a comprehensive concept to present our training possibilities informatively to interested parties.

The employees also once more pronounced the **Safety Day 2019** to be a successful event. In addition to the general and workplace-specific tuition, lively lectures and demonstrations by internal and external specialists on profound topics of personal health protection, work safety and environmental protection were held in station operation.

This year's safety day is being held in October 2020 exclusively with instructional content – in compliance with all the necessary protection and hygiene measures in small and very small groups and without different stations.

Networks:

In view of the increasingly dynamic economy, Töpfer Kulmbach GmbH's participation in the **Environment and Energy Commission of the Chamber of Trade and Industry for Upper Franconia** in Bayreuth is gaining in significance. First-hand information on current topics can provide arguments for participation in the composition of basic environmental and energy conditions within the existing possibilities of the Chamber of Commerce and Industry. The topics of the committee meeting in November 2019, for example, show us that environmentally friendly production lays an important role in really sustainable management. Here, the continuing problems of waste management by capacity bottlenecks, the effects of measures introduced by the government to achieve the set climate goals by 2030 and the key element in the state's climate package – the fuel emissions trade law - were discussed.

Unfortunately, here too the consequences of the Corona pandemic are that the information is only being published by newsletters at the moment - This can only conditionally substitute real networking with spoken dialogue.

We consider it important and interesting to establish more contacts with fellow printing companies within the company group and thus to create a wider and wider network. How else could synergy effects be greater than in companies in the same branch? Initial talks have already taken place and experience swapped in the field of environment work. The topics, problems and goals are virtually identical – however, the ways to the goal are often varied. Communication and networking will help us to point out or take the better way in future.

The environmental management system

Compliance with applicable laws and environmentally relevant legal standards:

Consistent action in the scope of statutory requirements is specified in the company's environmental policy. It is ensured that these obligations are met in all company areas.

There have not been any complaints or notes in the reporting period according to which Töpfer Kulmbach violates any statutory requirements.

The task of the environmental management system is supporting the management by targeted internal evaluation of public information sources concerning changed or new legal provisions, with the relevance review and passing on of relevant information to the responsible persons.

In particular use of the internet rules of "umwelt-online" with specific adjustment of the directory set up there contributes to quick and targeted assessment of the relevance for the company in the monthly updates.

The internal legal directory with all legal provisions relevant for the company is regularly subjected to a review for whether it is still up to date and adjusted on demand. If a changed or new legal provision requires actions to be taken in the company, the requirements are determined and measures for implementation are initiated. This internal legal directory is available on the company's Intranet to everyone who is interested.

The further examination and fulfilment of company relevant requirements from the directive on evaporation cooling plants, cooling towers and wet separators (42nd BImSchV) should be mentioned here, for example, in the reporting period.

Employee involvement:

For all employees to be able to meet their responsibilities in the scope of the environmental management system, they will be informed and instructed at regular intervals. The requirements for the avoidance and reduction of environmental stress also apply generally for all activities. Examining the effectiveness of observation of these requirements always remains highly topical. The supervisors act as decisive examples in the entire process.

Further constant process optimisations often also have an important relevance for improving the company's environmental performance. Analysis of the processes, in finding solutions to optimise and implement improvements involves employees from all corporate areas more than ever. They are asked at all times to

contribute suggestions on the subject of the environment so that they proactively contribute to the continual improvement process.

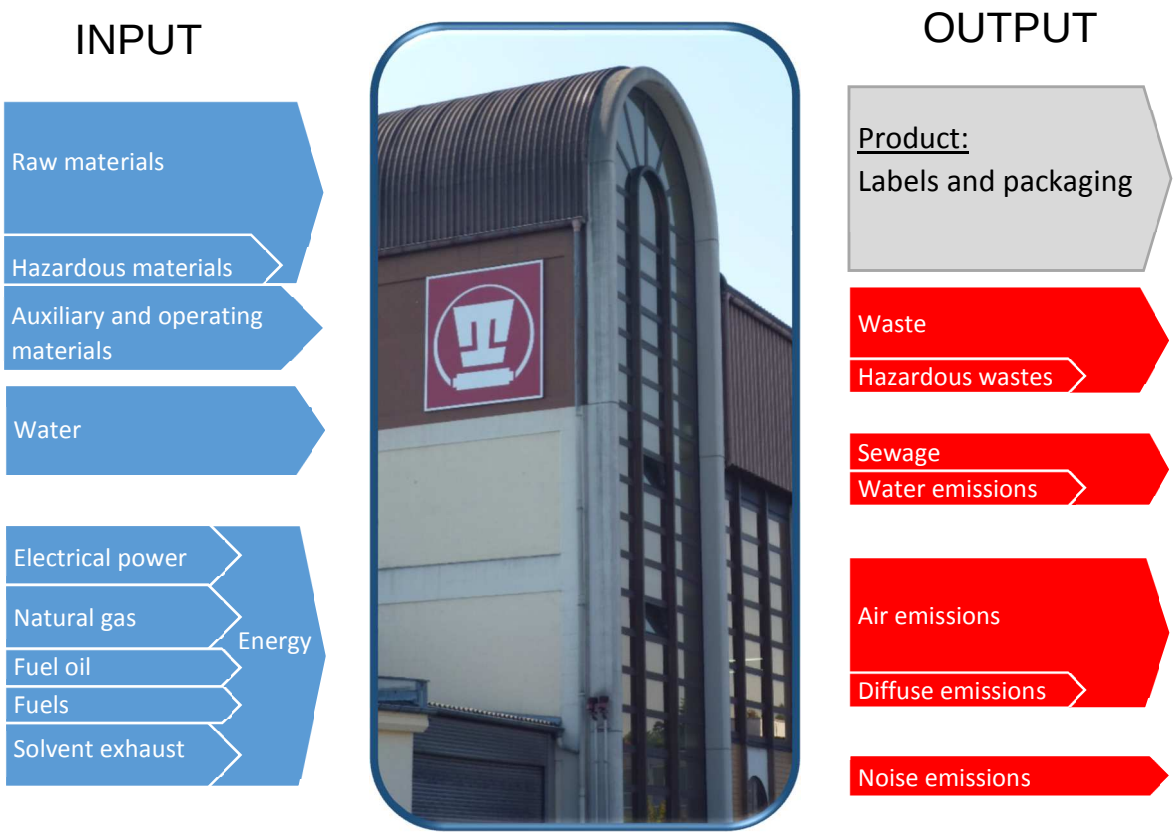
In order to actively involve the employees in EMAS and to promote communication, employee information concerning the environmental management system's activities appears at regular intervals in the “Töpfer-Info-Point” - an information platform in the Intranet. Thus, a permanently available digital medium for presenting current environmental data and selected subjects is available in addition to the classic EMAS information panel.

Internal environmental operating inspections:

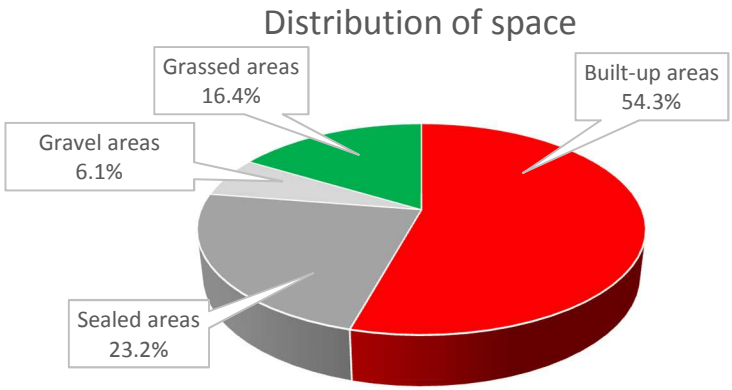
Review of effectiveness and permanent improvement of the environmental management system is very important for the company in order to ensure avoidance and reduction of environmental pollution at all times. Therefore, an internal audit was conducted based on our structured audit questionnaire, its results documented and analysed and measures for improvement introduced. The planning for conducting this audit also contained further audits. However, this could not be conducted due to the Corona pandemic and the resulting hygiene and protection measures. The aim here now is to conduct the pending internal audits as soon as possible at closer intervals to meet management system requirements - insofar as further COVID 19 developments allow.

Regular factory inspections were conducted by the responsible persons independently of scheduled internal audits in the course of the normal daily routine. Therefore, we were always able to guarantee timely reaction to recognised problems.

Environmental performance



Area consumption in relation to biological variety



No construction activities in the outdoor area of the site were performed in the reporting period. For this reason, the area distribution is identical to that of the prior year.

The area consumption is therefore

Total:	approx.	27,800	m²
Sealed area:	approx.	21,550	m²
Natural area at the site:	approx.	6,250	m²

Overview of the environmental performance

Important indicators are recorded as a basis for the documented environmental performance. The quantity flows of the environmentally relevant indicators necessary for indicators (input) and those caused by the company (output).

INPUT	Unit	Annual volume 2019
MATERIAL	t	15,912.45
Raw materials		
Printed material paper	t	13,321.65
Printed material film	t	918.69
Ink / varnish gravure printing, offset and UV flexo printing	t	762.21
Solvent gravure printing	t	725.13
Auxiliary and operating materials		
Plate winder	t	2.52
Offset printing plates	t	9.01
Printing additives offset	t	11.84
Offset cleaner	t	9.59
Packaging cardboard	t	146.31
Water additives	t	3.98
HAZARDOUS SUBSTANCES of listed material	t	1,417.35
WATER	m³	15,122.00
ENERGY	kWh	26,090,831
Electrical power	kWh	7,197,134
Natural gas	kWh	9,146,882
Fuel oil	l kWh	2,000 21,400
Solvent exhaust	t kWh	1,073 8,029,356

OUTPUT	Unit	Annual volume 2019
WASTE	t	3,619.78
Production waste paper	t	2,977.19
Production waste film	t	124.37
Waste ink gravure printing, offset printing and UV flexo printing	t	20.07
Production-related residual materials (packaging, etc.)	t	246.46
Other residual materials	t	251.69
HAZARDOUS WASTE of listed waste	t	34.30
SEWAGE	m³	2,503.00
EMISSIONS		
Air emissions from fuel combustion		
CO_2-equivalents / Scope 1-2 (calculated)	t	3,999.61
SO_2-equivalents / Scope 1-2 (calculated)	t	4.09
Dust and particles / Scope 1 (calculated)	t	0.01
Air emissions VOC as diffuse emissions		
from gravure printing	t	35.66
from offset printing	t	18.23
Water emissions		
Chemical oxygen demand (COD)	t	0.31

In order to make the indices comparable between the individual business years, the reference standard used is the produced annual volume in million square metres of printed material. Detailing – in particular in the area of material and waste - increase the quality of indices and their comparability considerably. For example, the annual volumes of printed goods were broken down by printing method and by printed material type.

Production volumes

	2017	2018	2019
Printed material, total, in M m²	194.547	185.438	176.588

The classification of relevance took place after evaluation of the effects on the environment regarding resource consumption / volume and environmental pollution / hazard level. Evaluation of the influenceability is based on the analysis of current operational processes and the state of the art, as well as the ability of economically reasonable improvement.

Current developments can lead to more effects on the environmental indices. If an improvement was not considered in the stipulation of the "strategic environmental targets by 2020", influence that can be taken in the short term is to contribute to positive development. This is made clear with the term "operative" in the column "target" of the following overviews and explanation in the chapter "environmental program and targets“.

Environmental indices

Material / raw materials:

	Unit	Volume 2017	Volume 2018	Volume 2019	Trend	Relevance	Influenceability	Target
Printed material paper	kg/M m² Paper	86,401	83,768	90,531	⇗	high	low	
Printed material film	kg/M m² Film	36,870	33,221	31,799	⇘	high	low	
Ink / varnish gravure printing	kg/M m² Gravure printing	4,757	4,625	4,469	⇘	high	medium	✓1
Ink / varnish offset printing	kg/M m² Offset printing	3,754	3,627	3,807	⇨	medium	medium	
Ink / varnish UV flexo printing	kg/M m² Flexo			7,216		medium	medium	
Solvent gravure printing	kg/M m² Gravure printing	5,633	5,227	5,444	⇨	high	low	

Not only the characteristic of the end product - for example, label papers have a lower grammage than packaging papers / the film material used for production of shrink sleeves affects the indices in the raw materials area.

What has already been evident for some years, continued in 2019. The high type diversity in beverages and the associated ordering behaviour of our customers have had a direct influence on the raw material use in the company. The trend towards smaller print editions has significant effects on the number of equipment

processes. Especially in offset label printing, which represents the most economical printing method for our customers' small editions in many respects, the percentage of editions less than 10,000 sheets increased by a further 3.9% in comparison with the previous year. The required equipment raw material of printed materials and ink reduce the share of printed goods that can be sold.

The considerable increase in the relative index for paper as a printing substrate is due to the consideration of the used quantities of label papers and packing papers here in total although the paper percentage on the finished end product differs essentially. Whilst there is almost no further processing waste for all packages and the used quantity is included almost completely in the delivered goods, a considerable proportion of the paper used in the label processing section is waste, for example due to the necessary punching. Production technology can have very little influence on this. Since the quantity of delivered packages was almost identical to the previous year and the predominant increase in used quantities was accounted for by the label section, this has a rather considerable effect on the relative index.

It is notable that there is an increase in the used quantities of metallised papers for the first time. Whilst we were able to declare the halving of this quantity since 2013 last year, the customers' demand for labels on metallised paper has now increased again. This can indeed be considered critical because a high-quality alternative in the combination of white paper and printing with our high-brilliance, metal gloss inks MIC®-Gold and MIC®-Silver is available. The CO_2 footprint of this combination in raw material production is much lower than that for the required aluminium vaporisation of the paper.

In the new UV flexo printing process that has been in operation since March 2019, it was necessary to provide an "initial supply" of printing substrates, inks and varnishes of course. This leads to a certain distortion between the raw material quantities and the produced quantity. We are well aware that the determined indices for 2019 only have conditional significance and will only be able to issue a detailed statement in the coming year. An analysis of the development and examination of the possibilities of taking action to improve our environmental performance will therefore have to wait until the following years.

Material / auxiliary and operating materials:

	Unit	Volume 2017	Volume 2018	Volume 2019	Trend	Relevance	Influenceability	Target
Plate winder	kg/M m² Offset printing	55	63	59	⇨	medium	low	
Offset printing plates	kg/M m² Offset printing	194	211	210	⇨	medium	low	
Printing additives offset	kg/M m² Offset printing	448	385	276	⇘	medium	medium	
Offset cleaner	kg/M m² Offset printing	272	268	224	⇘	high	medium	✓2
Packaging cardboard	kg/M m² Labels	1,486	1,335	1,484	⇨	medium	low	✓3
Water additives	kg/M m² Total	19	20	23	⇗	medium	medium	

Material consumption of auxiliary and operating materials is also influenced by the number of printing orders. There was after all a 20.6% increase in offset printing in relation to 2018. It is therefore gratifying that equipment and cleaning processes can be carried out more material efficiently here. The roller washing

technology by means of felt cloths in both offset printing machines has now halved the use of detergents in comparison with 2016 and the more economical handling of manual cleaners has led to a considerable reduction in the consumption.

The use of a low-emission moistening additive has now established itself. This noticeably reduces the quantity of isopropanol and considerably reduces the need for additives in the offset moistening agent on the whole.

To explain why no gravure printing cleaners are listed: cleaning work for set-up processes in gravure printing are carried out here with recovered solvents from distillation. The quantities are therefore proportions of the consumed quantities of solvents and gravure printing ink from the “Material/Raw Materials” section and are not considered again in the “Material/Auxiliary and Operating Materials” section.

Composition of the packaging cardboard depends strongly on the individual customer wishes for packaging and the logistic feasibility of using our recyclable packaging. This indicator therefore remains subject to fluctuations and is hardly influenceable.

It is evident that the demand for water additives increases in years with a much hotter summer. This was also the case in 2019. Only a slight reduction in the demand for air conditioning can be recorded in comparison with 2018. It was mainly our corrective measures to stabilise the water circuits of both evaporation cooling towers so that the legally specified test values are always reliably kept that led to an increased demand for water chemicals. See the sections “Water” and “Microbiological emissions” for detailed explanations.

Hazardous substances:

	Unit	Volume 2017	Volume 2018	Volume 2019	Trend	Relevance	Influenceability	Target
Share of hazardous substances in material use	%	9.77	9.52	8.91	↘	high	medium	✓4

Once again, the greater percentage reduction in the consumed quantities of gravure printing inks and solvents had a much greater effect that the decrease in the production quantity in gravure printing. In this printing process, hazardous substances in paints, varnishes, additives and pure solvents are predominant for production reasons. They therefore have a greater influence on this index. This underlines that our consistent ink management – that is the specific planning of the sequence of orders with identical inks and the considered re-use of remaining inks have a positive effect on the reduction of hazardous substances. The reduction of dangerous auxiliary and operating materials in offset cleaners and printing additives also has a positive effect in offset printing. Inks, varnishes and cleaning agents from UV flexo printing are now also included in the analysis.

Water:

	Unit	Volume 2017	Volume 2018	Volume 2019	Trend	Relevance	Influenceability	Target
Water	m^3/M m^2 Total	65.02	68.98	85.63	↗	medium	low	✓5

The demand essentially results from the areas of steam generation, air humidification, cooling water generation and production. Air conditioning of the storage and production areas is a basic prerequisite for optimal printing and further processing of the printed materials. The air conditioning effort is essentially

influenced by external weather and utilisation of the production capacity. The cooling water generation is also determined significantly by these two components.

The absolute water consumption increased considerably in 2019 by 18.2% in comparison with the previous year. Our evaluation revealed that especially in the winter months November 2018 to April 2019 35.2% more water was needed for air conditioning of the production halls than in the same period of the wetter previous winter. The rest of the year and a wetter winter 2019/2020 at least ensured that the air conditioning segment only amounts to an increase of 16.4% in the annual balance.

Another clear reason for the increase was recognised and counteracted in time:
After regular examinations of the recooling water of both cooling towers were conducted based on the 42nd BImSchV by an accredited laboratory, which, with regard to legionella concentrations, were always below test value 1 and therefore in order until the end of April 2019, problems arose with increasing temperatures. The test value 1 was exceeded for the first time in April 2019. The measures introduced as recommended (impact dosing, cleaning, etc.) only conditionally brought the desired success as the additional laboratory examinations required because of exceeding the value showed. The envisaged modus operandi to reduce the legionella concentration by an increased fresh water supply remained without effect. The additional fresh water evaporated in the summer months of July and August even more and made only a minor contribution to the recooling and reduction of the concentration. The actual cause of the infestation was discovered. It was found that the internal packed beds and drip traps of the cooling towers which, for installation reasons, are not sufficiently accessible during normal cleaning, were heavily calcified and contaminated. Since more thorough cleaning was not possible, replacement of the packed beds and drip traps was contracted. Replacement as well as chemical cleaning and disinfection of the cooling towers including the pipe systems was carried out by a specialist company in November. The values in the subsequent laboratory examinations were well below test value 1 again. The misjudgement that a greater quantity of fresh water could contribute to a reduction in the concentration led to an expensive and unfortunately also to a result that impaired the environmental performance. The increased fresh water supply was cut back in September after realising the massive increase in the water consumption.

Energy:

	Unit	Volume 2017	Volume 2018	Volume 2019	Trend	Relevance	Influenceability	Target
Electrical power	kWh/M m² Total	37,972	39,656	40,757	↗	high	medium	✓6
Natural gas	kWh/M m² total	57,674	52,742	51,798	↘	high	medium	✓7
Fuel oil	l/M m² Total	139	5	11	⇨	low	low	
Solvent exhaust	kg/M m² Gravure printing	8,454	8,227	8,052	↘	medium	low	

Since 2016 we have succeeded in reducing the annual absolute electricity consumption continuously. A reduction by 2.1% was also achieved in 2019. The factors of influence are easier to identify by the stationary energy measuring technology that is installed on our defined main consumers. Of course, it was an advantage that about 9.2% less electricity was needed for room air conditioning and cooling water generation in 2019 due to weather conditions. But the compressed air generation measures taken in 2018 have by now unfolded their full effect and consequently had a significant influence. Again, a reduction of 11.2% in comparison with the previous year was recorded.

The continued conversion of the present lighting to LED lighting in the cross cutter and incoming goods sections including roller stores is responsible for a positive contribution to the reduction.

After the lowest value since commencement of the recording for the environmental management system was achieved in 2017 for the relative index of power consumption, this value has increased slightly again for the first time by approx. 2.8% after 2018. We see the reason for this as being the extension of the machine park in 2019 with the putting into operation of the UV flexo printing machine, the roller cutter and the sleever, the contribution to the production of customer goods of which was still too low, however. The new, extensive room air conditioning of the entire flexo hall also went into full operation in 2019. With an increasing flexo printing workload, we are expecting a corresponding reduction in the relative index.

Solvent steams from gravure printing are burned via the regenerative thermal exhaust cleaning system RTO. The waste heat use of the hot exhaust flow of solvent combustion for the heating of thermal oil, hot water, steam and warm water reduces the demand in fossil fuels considerably. However, since the combustion process must be kept up permanently to heat up thermal oil for reasons of viscosity, an insufficient solvent concentration must be compensated by use of natural gas as fuel. It is gratifying that less natural gas was used than in the previous year. Reduction of the relative index was approx. 1.8%.

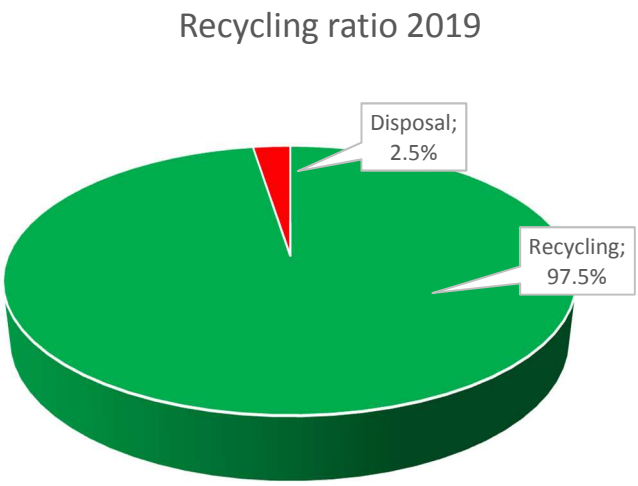
The common supply of building and production facilities with hot water or steam takes place through the heat exchange named. Only demand-dependent coverage of load peaks for heating of water for hot water and for steam takes place through combustion of fuel oil. It was necessary to cover the basic supply through the fuel oil burners in two situations in 2017. The repairs to the standard plants had considerable effects on consumption and index. The fuel oil consumption of the last two annual reports has now reached the peak load coverage status again.

Waste:

	Unit	Volume 2017	Volume 2018	Volume 2019	Trend	Relevance	Influenceability	Target
Production waste paper	kg/M m² Paper	20,160	20,133	20,232	⇨	high	low	✓8
Production waste film	kg/M m² Film	4,070	4,500	4,225	⇨	high	low	✓9
Old ink gravure printing / offset / UV	kg/M m² Total	60	91	114	⇗	high	low	✓10
Production-related residual material	kg/M m² Total	1,250	1,387	1,396	⇨	medium	medium	✓11
Other residual materials	kg/M m² Total	780	941	1,425	⇗	medium	low	

Hazardous waste:

	Unit	Volume 2017	Volume 2018	Volume 2019	Trend	Relevance	Influenceability	Target
Share of hazardous wastes in the total	%	0.43	0.88	0.95	⇗	high	low	



The strict separation of waste according to the principle of “avoidance before recycling before disposal” was effectively performed. Raw materials could be recycled sorted this way. Waste that has been put aside for alternative usages or disposal was kept separated internally in such a way that hazardous waste especially constituted no increased hazard due to intermixing. Only waste for which no more effective disposal option was available at the time was disposed of as commercial domestic waste. This is also reflected by the only slight drop from 98.6% to 97.5% but nevertheless convincing recycling ratio in relation to the total waste volume.

For production-related reasons, paper waste forms the main share of our wastes. Waste will occur automatically depending on product type - more waste for punched labels / very little for cut labels and packaging. Several years in succession, the absolute waste volumes for paper were reduced. There was another reduction by 6.3% as compared to the prior year in 2019. The slight increase in the index in relation to the production volume by 0.4% is due to the volume distribution of the production types. The greatest growth in orders resulted in the label printing. The increased equipment processes and mentioned punching wastes in further processing led to more paper material that needed to be disposed of.

In the case of film waste, a more moderate increase in the number of processed orders and a slightly higher absolute waste volume was faced by a relatively clear reduction of the index for the arising waste volumes. Ultimately, a pleasing careful handling of materials also contributed to an approximately 6.1% reduction in the relative index.

Mainly additional solvent-containing ink waste from a gravure printing ink series, the volume of which could not be reduced by distillation, but also ink waste which now also came from flexo printing, led to an increase in the relative index for old ink and the proportion of hazardous waste of the total waste quantity in 2019 in comparison with the previous year. The ink wastes from flexo printing, however, result mainly from different test series which bring us the experience and enable us to offer reliable and optimum solutions for special customer requirements and market trends. The provided inks and varnishes that did not meet maximum requirements had to be disposed of. On the whole, it can be observed that flexo printing is a printing process in which only small volumes of old inks arise to be disposed of. This should also have a positive effect on the index determination in the future.

Töpfer Kulmbach had a clear-up day in January 2019. This covered the whole company and concerned numerous waste contingents - from old machine parts to old furniture. This action had a considerable influence on the index for residual materials outside of production. The annual disposal volume with a plus of around 77 tons leads to an increase in the relative index of about 51%. A realistic comparison to the prior years is hardly practical here due to the uniqueness of this action.

Sewage:

	Unit	Volume 2017	Volume 2018	Volume 2019	Trend	Relevance	Influenceability	Target
Sewage	m³/M m² Total	14.98	14.72	14.17	↘	low	low	

The calculated volume of sewage introduction into the public sewers dropped by 226 m³ in comparison with the previous year. This has a direct effect on the relative index with a reduction of approx. 3.7%.

Despite the described efforts for multiple cleaning of the evaporation cooling plants and the necessary water change, the lower consumptions in the offset printing and pre-press stage production departments and for sanitary and social facilities predominate. Consequently, the sewage introduction is reduced by 260 m³.

Actual sewage and, as a result, effects on the environment do not generally occur. For example, the water consumption is specified as moistening agent of the offset printing machines. Although no sewage returns from this process (the moistening agent evaporates by oxidative drying), the quantity is calculated via sewage.

Emissions:

	Unit	Volume 2017	Volume 2018	Volume 2019	Trend	Relevance	Influenceability	Target
Air emissions from fuel combustion								
CO_2-equivalent (Scope 1 + 2)	t/M. m² Total	25.53	23.57	22.65	↘	high	medium	✓12
SO_2-equivalent (Scope 1 + 2)	t/M. m² Total	0.03	0.03	0.02	↘	medium	medium	
Dust and particles	t/M. m² Total	< 0.01	< 0.01	< 0.01	⇨	low	medium	
Air emissions VOC as diffuse emissions								
Share of emissions in the solvent use TD	%	5.01	2.81	3.08	⇨	low	low	
Share of emissions in the solvent use OD	%	98.12	91.73	88.36	↘	medium	medium	✓ (operative)
Water emissions								
COD, BOD, ammonium-nitrogen, phosphor	t/M. m² Total	0.01	0.01	0.01	⇨	low	low	

Energy carrier combustion considers emissions that come from the energy conversion of natural gas, fuel oil, and solvent exhaust.

Töpfer Kulmbach has demonstrably been using electricity from wind, water, solar or biomass sources since 2017. CO_2 emissions are thus totally avoided. Töpfer thus makes a considerable contribution to avoiding air pollutants. This becomes particularly clear in the development of the indices. Without this commitment, we would have caused around 1,650 tons of CO_2 in 2019 based on the current electricity mix.

Consumption of all essential fuels could be reduced in 2019. Only the fuel oil consumption, which was only minimal on the whole, increased slightly. CO_2 emissions for the goods produced thus could be reduced by 3.9%.

Extraction of the gravure printing solvent vapours at the site of occurrence, the very high efficiency of the exhaust cleaning system and an almost constant volume of escaping, freed VOC continues to keep the share of diffuse emissions in the area low.

All in all, the consumed amounts of solvents with volatile organic carbon compounds in offset printing are low (only 1.8% of the volume consumed in gravure printing in 2019). The high percentage share of diffuse air emissions in solvent use in offset printing of 88.36% must therefore be viewed in a differentiated manner:
Fewer released solvent steams are captured in offset printing. There is no technical extraction acting directly at the source of occurrence on the roll cleaning, sheet drying etc. Binding is effected by absorbing the solvents in cleaning rags and wiping fleeces. A large proportion is released into the environment again by evaporation especially with the fleeces of the roll washing plant. Isopropanol as a moistening agent additive evaporates 100% by oxidative drying.
The use of materials with a low VOC percentage is still the aim of our efforts. A significant step was taken with the use of the low-emission moistening additive.
The used volumes of offset cleaners in 2019 were also reduced in comparison with the previous year - with an increase in the production volume. This led to a noticeable reduction of the emissions there in the assessment.

Töpfer has remained clearly below the emission limit of 1100 mg per litre at most for chemical oxygen demand in sewage for years.

Microbiological emissions:

	Samples taken for laboratory examination									
	02/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019
Legionella	🟢	🟡	🟡	🔴	🟠	🔴	🟠	🟠	🟠	🟢

Interpretation:
- 🟢 *= test value 1 not exceeded*
- 🟡 *= test value 1 exceeded (more than 100 CFU/100 ml)*
- 🟠 *= test value 2 exceeded (more than 1,000 CFU/100 ml)*
- 🔴 *= action value exceeded (more than 10,000 CFU/100 ml)*

CFU = Colony Forming Units

The tabular overview summarises the result of both cooling towers. The respective poorer result of the simultaneously taken samples is shown in the presentation.

Töpfer Kulmbach has two evaporation cooling plants – i.e. cooling towers in each of which the heated cold water is cooled down by a recooling circuit and then fed back into one of our two refrigerating machines. The filling water was regularly examined by a contracted laboratory already before the 42nd BImSchv entered into effect. Disinfection with biocides with an oxidising effect took place continuously and cleaning at regular intervals.

With the entering into effect of the 42nd BImSchV, a legal basis was created which was a conscious reaction to world-wide incidents as a result of legionella outbreaks. Töpfer has been working strictly according to this directly since then. The regular laboratory examinations were and are conducted every three months. The specified measures were observed reliably where limits were exceeded. Among other things, these included immediate measures for reducing the concentration by impact dosing, cleaning and additional legionella examinations.

On exceeding the action value in June and August 2019, the responsible authorities were also informed. Additional demands regarding the sewage introduced into the public sewers were not made by the authorities.

The main path of infection for an illness caused by legionella is primarily the inhalation of respirable aerosols. With regard to a possible impairment of the neighbourhood by legionella, it can be assessed that there is no significant formation of aerosols in the recooling process. The minimal movements of the fans for necessary support of the evaporation process as well as the constructional height of the cooling towers above the ground exclude effects by airborne legionella in the exhaust air.

Subject of our measures on exceeding the limit was of course the clarification of the causes of this exceeding. We have to express self-criticism here in that we spent too long trying to find other methods of reduction. If the packed beds and drip traps had been replaced earlier, the "no exceeding" result would have been achieved sooner.

Environmental program and targets

In the environmental program of the published, past environmental declarations, future targets were defined. Evaluation of the degree of performance of these targets takes place in the following overview.

In order to achieve the desired strategic targets that are to be implemented by 2020, the targets for the period from 2017 to 2022 are expanded by new measures that can be achieved. Since Töpfer Kulmbach is also unable at the moment to foresee what economical effects the Corona pandemic will have in the planning period, the targets that they set are rather cautious. Our benchmark should be to effect a few measures successfully instead of setting several goals for which we might be forced to define new finalizing dates later.

Changed market conditions, many different new requirements for materials and products, the feasibility of implementation of planned measures in terms of time and economic aspects, etc., essentially influence the achievement of strategic environmental targets. This is made clear by reconciliation of the current indices of our environmental performance with the intended targets that were recorded in 2015. Five years after the first specification, we are on a good path. Targets achieved must be stabilised. We will objectively assess development over the next few years and consider it in time. Where adjustments may be necessary, we will give factual reasons for these.

Töpfer not only looks at direct environmental aspects that can be influenced by its own actions. Indirect influences that already arise in production of the materials we need from suppliers or aspects that are relevant for the environment in the use and disposal of our products by customers are included in the considerations as well.

We still see potential for increasing energy efficiency, reducing fuel consumptions and saving water. Since Töpfer is a company that uses considerable amounts of hazardous substances for production-related reasons, this is also where we put our efforts to reduce volumes and dangers.

Measures for the years 2017 – 2022

No.	Environmental target	Expected use	Measure	Status of implementation	Start	End	Refers to target
1	Reduction of the fuel demand for electricity	Reduction of the electricity demand for transport of thermal oil by 30% as compared to 2016	Removal of the conveyor pumps of the thermal oil system for line strands no longer in use	The end date had to be extended. Target achievement still uncertain!	03/2017	12/2021	✓6
2	Reduction of the fuel demand in natural gas	Reduction of the natural gas demand per operating hour of the burner for heating thermal oil by 5% in comparison to 2016	Removal of line strands no longer needed / shortening of the thermal oil line system	The end date had to be extended. Target achievement still uncertain!	03/2017	12/2021	✓7
3	Reduction of the hazardous substance share in material use	Reduction of the hazardous substance share in offset cleaners by 40% in comparison to 2016	Partial to complete replacement of dangerous offset cleaners by cleaners with harmless contents	Target achievement still uncertain!	03/2018	12/2020	✓4
4	Reduction of waste load at disposal	Reduction of the share of heavy-metal-containing high-gloss inks in packing printing by 40% in reference to 2017	Replacement of heavy-metal-containing high-gloss inks by heavy-metal-free ones in packaging printing	The reduction is 46.8% as compared to 2017. Environmental target achieved!	10/2018	12/2019	General indirect environmental aspect
5	Reduction of the fuel demand	Reduction of the electricity demand for production of compressed air by 7% as compared to 2017	Reduction of the pressure level at the compressed air compressors	The electricity required for generating compressed air dropped by 9.1% as compared to 2017 Environmental target achieved!	10/2018	12/2019	✓6
6	Reduction of the water consumption	8% water saved in sanitary areas for 2017	Exchange of water fittings with mix by dial valves for modern single-lever mixing taps	The water consumption in sanitary areas dropped by 17.7% as compared to 2017 Environmental target achieved!	03/2019	12/2019	✓5
7	Reduction of the fuel demand	Reduction of the power demand for production of compressed air by 5% as compared to 2018	Reduction of compressed air loss by leakage management and repair of leaks	Target achievement still uncertain!	10/2019	12/2020	✓6
8	Conservation of natural resources	Consumption of fresh fibres for paper production reduced by 10% in comparison with 2018	Conventional label papers without a recycling paper percentage are replaced by Natureline paper from 100% recycling fibres	Target achievement still uncertain!	08/2019	12/2020	General indirect environmental aspect
9 NEW	Reduction of the quantity of hazardous substances in cooling water generation	Reduction of the consumption of biocides with hazardous properties by 90% as compared to 2019	Investment in a plant for ecological water treatment and integration in the existing system	Test phase achieved a very good result. Planning of integration of the plant into the existing system is in progress.	01/2021	12/2022	✓4

TÖPFER KULMBACH

Declaration of validity

DECLARATION OF THE ENVIRONMENTAL EXPERT ON THE INSPECTION AND VALIDATION WORK

The next consolidated environmental declaration will be submitted for validation no later than December 2021.

Environmental expert / environmental expert organisation

The following environmental expert / environmental expert organisation was contracted:

Dr.-Ing. R. Beer (license no. DE-V-0007)
Intechnica Cert GmbH (licence no. DE-V-0279)
Ostendstraße 181
D-90482 Nuremberg

Confirmation of validation

The undersigned, Dr.-Ing. Reiner Beer, EMAS environmental expert with registration number DE-V-0007, accredited or licensed for area 18.12 (NACE-code Rev. 2) confirms to have assessed whether the site as named in the updated environmental declaration of the organisation

Töpfer Kulmbach GmbH
Am Kreuzstein 5
D-95326 Kulmbach

with the registration number DE-106-00059 meets all requirements of the regulation (EC) no. 1221/2009 of the European parliament and the council from 25th of November 2009 and change VO 2017/1505 from 28.08.2017 and 2018/2026 from 19.12.2018 on the voluntary participation of organisations in a common system for environmental management and environmental audit of operations (EMAS).

The signature under this declaration confirms that

- the inspection and validation were performed in full correspondence with the requirements of the regulation (EC) no. 1221/2009 and change VO (EU) 2017/1505 and 2018/2026,
- the result of the inspection and validation confirms that there is no proof for non-compliance with the applicable environmental provisions,
- the data and information of the updated environmental declaration of the site provides a reliable, credible and true image of all activities of the site within the area indicated in the environmental declaration.

Nuremberg, this day of 4. 11. 2020

Dr.-Ing. Reiner Beer
Environmental expert

Glossary

Cradle to Cradle	Principle with the solution for a continuous and consistent recycling management in the sense of “from the cradle to the cradle”. “Cradle-to-cradle products” are therefore those which are either fed back into biological cycles as biological nutrients or can be held continuously in technical cycles as “technical nutrients”.
Deinking	Removal of printing ink from printed waste paper. Printed products are considered verifiably deinking-capable if they meet the references of the "Deinkability score card" after application of the INGEDE test methods.
Printing viscosity	Toughness of printing inks. The higher the viscosity, the thicker the ink. In gravure printing, viscosity of the delivered, already-thickened ink is optimised by adding solvent. This is important for best printing results.
Diffuse emissions	Volatile organic compounds released by evaporation of liquids that are not collected and that will be emitted to the environment without defined exhaust volume flows.
CO_2-equivalent	Substances with greenhouse gas potential. Töpfer evaluates CO_2, CO, methane and volatile organic compounds without methane for this (NMVOC).
COD	Chemical oxygen demand - indicator and sum parameter for quantification of the pollution of sewage with organic substances.
EMAS III	Eco-Management and Audit Scheme – Voluntarily instrument of the European Union that supports companies and organisations of all sizes and industries in improving their environmental performance continually.
MIC®-Gold / MIC®-Silver	High-brilliance, heavy-metal-free metallic inks in gravure printing to reinforce the refined impression of labels for sales-promoting effects. Considerably reduces stress on the environment.
PEF	Product Environmental Footprint Method developed by the European Commission for the life cycle-based modelling and analysis of the environmental effects of products and services due to occurring material and energy influences as well as the attendant emissions and waste streams. The method pursues the “comparability over flexibility” approach, i.e. it aims at unifying existing methods for life cycle assessment-aided analysis of products. This is intended to improve the information value and comparability of the environmental performance assessment over already existing methods.
RTO	Regenerative thermal oxidation system for exhaust cleaning. Stores the thermal energy of the combustion process in ceramic materials of the combustion chambers and emits them again to the exhaust to be cleaned. Thus, the combustion process can be continued without use of other fuels with sufficient energy.
Natureline by Töpfer	Sustainable labels and packaging. The first premium solution without losses in quality, brilliance, advertising effect and processing possibilities. Printed on paper made of 100% recycling fibres. Manufactured using a cradle-to-cradle silver certified printing ink system. Produced with electricity from 100% renewable energies.

Safety Day	Campaign day for legally required employee instructions for general operational and workplace-specific subjects such as safety and health, supported by annually changing lectures and practical demonstrations by external technical competences.
Shrink Sleeves	All-round labels printed on a film type with optimised thermal shrinking properties. The film is glued into a hose, separated above the bottle and applied true to shape by the heat.
SO2-equivalents	Air pollutants that may, among others, be the cause for acid rain. Töpfer evaluates sulphur dioxide, nitrous oxides and ammoniac.
UV flexo printing	A roller rotation printing process in which flexible printing formes and low-viscous printing inks are used. This is a relief printing process. The choice of ink system is significant. Thanks to UV-hardening inks which have already hardened almost completely directly after the printer - as a result of a reaction of photo-initiators in the inks and varnishes as well as the effect of artificial UV radiation - excellent printing quality can be achieved at high running speeds. The omission of inks containing solvents avoids pollutant air emissions and the physical dangers of handling highly inflammable materials. Technical devices ensure that the developing ozone is sucked off and disintegrates again before reaching the outside air.
VOC	Volatile organic compounds – carbon-containing substances that evaporate easily and that are gaseous even at low temperature.

Imprint

Editor:

Töpfer Kulmbach GmbH
Am Kreuzstein 5
D-95326 Kulmbach

Phone: +49 (0) 9221 / 70 8-0
Telefax: +49 (0) 9221 / 70 8-1 65

Internet: www.toepfer.de
Email: info@toepfer.de