



# KURZ and the environment



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# Preface

Dear reader,

KURZ has made enormous efforts in the areas of sustainable environmental protection, conservation of natural resources, and recycling of waste and scrap.

We take environmental protection into consideration from development to purchasing, and from production to waste disposal. Energy and materials are used sparingly. Waste is minimized, and recycled wherever possible. We make no distinctions between our plants in Germany, Switzerland, the USA, Malaysia, and China. The environmental aspects are the same everywhere, and our strategies and measures are identical throughout the world. But that's not enough for us.

Scarcity of resources, rising energy costs, and climate change are driving us to make an even more sustainable commitment to these key issues. Our goal is to take no more from Mother Nature than she can regenerate.

This brochure provides information on the most important measures taken by LEONHARD KURZ.

**Worldwide adherence to high standards for environmental protection and occupational safety:**

Not only do we ensure a very high level of occupational safety and health for all employees, we optimize processes and procedures in order to constantly improve environmental performance.

**Innovative product solutions:**

Our products provide solutions for the enhancement of surfaces. They are applied dry with lower overall energy input than with conventional procedures, and emit less greenhouse gases.

**Sustainable development:**

Potentially returning the carrier back into the cycle of materials, and utilizing technical and organizational opportunities to configure our processes and manufacturing methods even more efficiently, are challenges we eagerly and creatively take on.

Enjoy your reading.

  
W. Kurz

  
P. Kurz



# Company profile

## Top quality coating technologies

KURZ is the global market leader in thin-film technology and distributes a premium range of products, consisting of foils and machines for finishing, decorating and marking products.

In order to be successful in an increasingly global economy, companies must understand and realize the concept of urbanization. KURZ has more than 30 subsidiaries throughout the world, and an on-site service team in every country to stand by customers. True to the company principle: Think globally, act locally.

In addition to standard foils, KURZ also fabricates products specifically requested by its customers. Whether design and color, manufacture or purpose – customer specifications form the basis for experienced development engineers, while designers implement custom color requests and specifications.

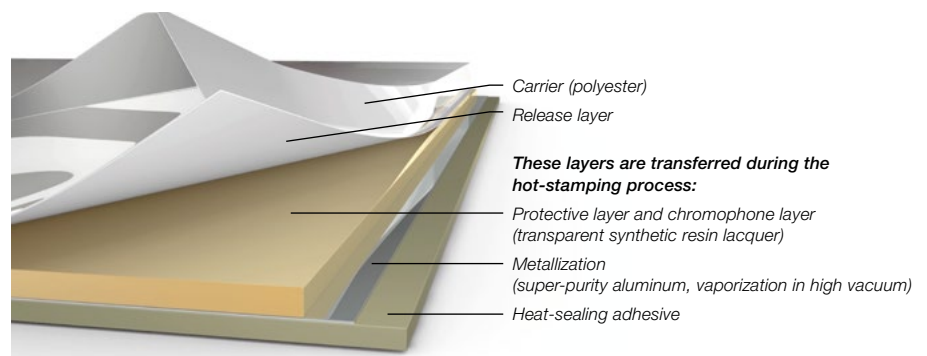
## Tradition and progress

Tradition and progress are not contradictory at KURZ, but rather company philosophy.

While boasting the expertise and experience stemming from its 100-plus-year history, KURZ sprints into the future with expanding product innovation. With a steady spirit of innovation, KURZ has grown into a major partner for business, government, and research in the fight against counterfeiting, as well as in printed electronics.

## Consistently high standards

With over 100 years of experience, KURZ develops all applied process technologies itself. Even in production machines, our know-how has yielded high product consistency, at the same level worldwide. KURZ considers itself an all-round provider of perfect coating solutions. The efficient use of foil, tool, and machine is delivered right from the start. Training, installation, and maintenance are as much part of the scope of service as the development of specialized machines for specific needs.



Typical composition of a LUXOR®/ALUFIN® hot-stamping foil for the graphic industry



## KURZ Core Competencies

### Best practice for all market requirements

- Most extensive processing spectrum
- In-house development of coatings
- Consistently secure production output with unvarying foil properties
- Reliable quality management
- Suitable foil fabrication

### Worldwide service

- Reliable global logistics concept
- Well positioned round the world
- Asia experts for over 40 years
- Support team for application technology

### Technologies for today and tomorrow

- Sustainability from ongoing development of machines, foils, and technologies
- Grasp of trends by in-house design department
- Our future print prospects: printed electronics and function

# Surface decoration from KURZ

## appealing



High-gloss metallic tones, glittering color effects, and artistic reliefs: KURZ coatings bathe products in a glamorous light.

## functional



Touching and experiencing – KURZ's comprehensive know-how transforms products into multifunctional tools with surface protection, touch sensors, and much more.

## protective



KURZ develops tailored digital solutions. We use multiscan technology to deliver custom security packages for brand protection and authentication.

## communicative



KURZ turns products into ideal instruments of communication. Whether on or offline, KURZ solutions create brand worlds and add value to products.



# Environmentally Relevant Information about Stamping Foils

Stamping foils represent no hazardous materials due to the Ordinance on Hazardous Substances (11/2010). According to REACH they have to be classified as articles (1907/2006/EG) and therefore are not subject to registration. KURZ does not use any raw materials containing volatile, ozone depleting halogenated hydrocarbons, cadmium, lead, mercury or hexavalent chromium for the production of stamping foil.

The vast majority of our stamping foils fulfill the requirements of the various national and international regulations, taking into consideration their formulations, the specifications provided by raw material suppliers and their usage in their respective specialized applications.

Some examples are:

- EU Packaging Directive 94/62/EC and CONEG
- Restriction of Hazardous Substances Directive – RoHS (2011/65/EU)
- Restriction on bromine compounds (2003/11/EC)
- 2005/84/EC no phthalates
- 2006/122/EC no perfluorooctane sulfonates
- No CMR substances (materials that are carcinogenic, mutagenic or toxic for reproduction) that belong to the Category 1, 1A or 1B or to the hazard class Acute Toxicity (Category 1-3) according to the CLP Regulation (EC) No. 1272/2008 including its amending regulations
- None of the approval-requiring substances listed in Annex XIV of REACH in its version 06/2017
- No substances depleting the ozone layer. Stamping foils of KURZ fulfill the requirements of the Regulation (EC) No. 1005/2009 and are not products as described in Article 17 (export) of this regulation
- EuPIA's (European Printing Ink Association) raw materials exclusion list
- In the automotive area, the requirements of the End-of-Life Vehicles Directive of 2002 (2000/53/EC), which requires the individual components to be stored in the IMDS system to ensure traceability during vehicle disposal
- In the food sector (1935/2004/EC; 10/2011/EU) and the toy industry (2009/48/EC; EN71/3:2013), KURZ will provide assistance with external certifications for its materials upon request



## Titanium dioxide

### What does the reclassification of titanium dioxide mean?

After lengthy discussions at EU level, the European Commission adopted the 14<sup>th</sup> adaptation of the CLP Regulation as Delegated Regulation (EU) 2020/217 on October 4, 2019, which was published in the Official Journal of the European Union on February 18, 2020. This Regulation entered into force on 9 March 2020 and must be implemented by 9 September 2021 at the latest.

The Regulation classifies titanium dioxide in powder form with at least 1 % particles of aerodynamic diameter  $\leq 10 \mu\text{m}$  as carcinogenic (suspect substance, category 2) and introduces additional EUH statements:

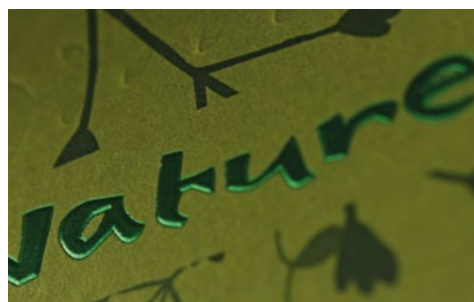
- **The classification applies only to pure titanium dioxide powder and to all powder products containing at least 1 % titanium dioxide in particle form or incorporated in particles with an aerodynamic diameter  $\leq 10 \mu\text{m}$  in the mixture**
- **It does NOT apply to products, i.e. articles such as wallpaper, paper or foil products containing titanium dioxide**

### Do KURZ foil products have to be labeled additionally?

The additional labeling according to EUH212 for mixtures containing  $\geq 1\%$  titanium dioxide particles, as required by the Regulation, is not applicable for our foil products, but only for solid or liquid mixtures (e.g. powder coatings, paints).

### Conflict minerals:

In regards to requirements stipulated in the Dodd-Frank Act (Section 1502 – ‘Conflict Minerals’), KURZ continues to work with our suppliers to trace raw material content determining whether minerals from mines or uncertified melting plants located in conflict regions are utilized. No conflict minerals originating in the Democratic Republic of Congo and adjoining countries are used for the production of KURZ foils intentionally. KURZ requests our suppliers to supply written confirmation of steps taken to prove the origin of material contents classified as conflict minerals.



# EU Chemical Regulation REACH

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## Protection of human health and of the environment



**Current status at  
LEONHARD KURZ  
Stiftung & Co. KG  
(January 2020)**

Under EU Regulation 1907/2006 of 12/18/06 (REACH Reg.), our foils are classified as 'products' and thus not subject to registration. Safety data sheets are not required for our foils. For you as a customer, the duty to check whether specific requirements or limitations must be met on the raw material employed does not apply. Moreover, the foils (products) fulfill Article 67 of the REACH Reg., thereby meeting the limitation requirements under Annex XVII.

As a downstream user, we use only raw materials and substances for our foils which, according to our suppliers, are subject to registration under Annex XIV of 13 June 2017. Neither do our foils contain any SVHC with more than 0.1 weight % on the list of candidates of 16 January 2020.

If changes to raw material or reclassification make it obligatory to inform on material in products (REACH / Art 33; > 0.1 % weight material liable to registration), we will inform you accordingly.

**For our customers this means that no further action with regard to REACH is required in the intended use of our foils for the finishing of your products.**





**REACH:**  
Registration  
Evaluation  
Authorization of  
Chemicals

## What is REACH?

### General information on REACH

The official purpose of REACH is to protect human health and the environment, while ensuring the free circulation of materials in the single market, and more competitiveness in the chemical industry so as to spur innovation. The European Chemicals Agency in Helsinki (ECHA) monitors compliance with REACH.

REACH is based on the principle that manufacturers, importers, and downstream users must ensure that the materials they manufacture,

put into circulation and use, do not negatively affect human health or the environment. Its provisions are based on the precautionary principle.

If the manufacturer has not complied with its registration requirements, then the materials or formulations can no longer be marketed. Nor can users apply them.

## Who is affected?

### Manufacturers – importers – downstream users

#### Who must register or have their materials authorized?

All manufacturers and importers within the EU, if:

- They produce or import substances containing an amount greater than >1 t/a (registration),
- If substances are released under normal use (registration),
- The material is designated in Annex 14 of the REACH Reg. and product contains a concentration of > 0.1 percent by weight (registration).

Downstream users are subject to a duty of information and inspection:

- They must check the Safety Data Sheet (SDS) and implement the risk-management measures listed in it.
- They must inform their suppliers of the specific purpose of the delivered material.
- They must create a corresponding SDS and present it to their customers for any proprietary preparations.

# Recyclability of packaging finished with KURZ thin-film technology

## What does recyclability mean?

Recyclability is the gradual individual suitability of packaging, or of a single product, to actually replace new goods of identical material in the post-use phase. In this context, 'actually' means that sorting and recycling structures exist at an industrial scale.

## Is my packaging recyclable?

Important for recyclability are three main aspects:

- Substrate is plastic / paper / cardboard / glass / metal and is suited to material recycling
- Sortability in an industrial recycling plant must be guaranteed.
- Recycling path for collected material must exist (country-specific)

## Does stamping foil interfere in the recycling process?

Stamping foil does not interfere in the recycling process, provided that it does not affect the sortability of packaging. Sortability describes the sensor-supported detection of the following materials in an industrial sorting facility: glass, plastic (except film fractions), metal, cartons for liquids and paper / paper-board / cardboard.

## Where can I have the recyclability of my product tested?

Independent institutes can test the recyclability of packaging. By way of example, the company LEONHARD KURZ Stiftung & Co. KG had a PP bottle with silver hot-stamping foil tested for recyclability by an independent institute. It determined recyclability of 99.6%. For this example there are appropriate collection and recycling structures available in Germany, the Netherlands, Austria, the United Kingdom, and Norway.

## Recommendations for new developments and reworking of product packaging

Before developing or reworking new packaging, the Design-for-Recycling guidelines (DfR), in particular, must be taken into account. There are evaluation catalogs and, for instance, the online tool RecyClass, which assists with the DfR. DfR guidelines can also be derived from DIN EN 1343, RECOUP, CHI, EPBP and similar regulations.

## Which materials interfere with recycling?

In order not to hinder the recycling process, no combinations of materials or substances must be included which interfere with the recycling process (e.g. non-water-soluble adhesives in combination with wet-strength labels on PP).





# Sustainability

## Are we, as a technology provider ecologically sustainable?

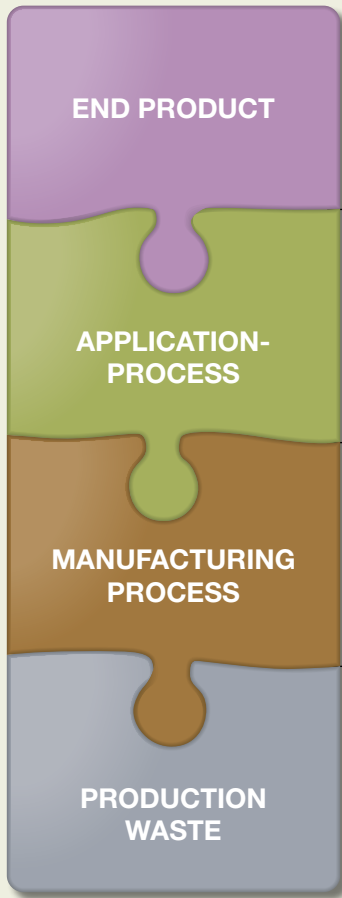
### Sustainability is nothing new to KURZ

Our company fulfills the standards for quality, environmental responsibility, health management, and energy efficiency. As long ago as 50 years, our daily activities already included the issues of conservation of resources, energy saving, limiting the use of hazardous substances, and emission protection, long before government regulations such as the Immission Control Act and hazardous substances legislation came into effect. Since then, the company has steadily advanced its tradition of sustainability, as well as its focus, through innovative processes and by boosting energy efficiency. Nowadays CO<sub>2</sub> emissions also come under scrutiny: To cut our CO<sub>2</sub> company footprint we have set ambitious goals for the next five years at all our sites, e.g. for LKG 20 % based on the year 2018!

### Sustainable handling of resources:

- We use only PET foils as a carrier for our decorative coatings. We look out for material strength, optimized for manufacturing and application processes – as thin as possible.
- PET material itself is still largely manufactured from petroleum. But there are initiatives for making PET out of renewable raw material, or using 100 % PET recycling material for foil manufacture. We are testing both options; there are currently no industrial-scale quantities on the market.
- Foil scraps are outstanding for energy recycling. The high heating value allows for fueling specially equipped facilities which would normally use gas, oil, or coal. This also preserves resources.
- Products recycled from PET foils or PET bottles can also be used in the production of new carrier foil. This improves material recycling and preserves valuable resources by using rPET.
- Recycling of stamping-foil scraps is also possible. Here too, we are working on methods for unlocking new plastic applications for the material.
- The lacquer raw materials used are non-toxic and meet regulations for compliance with the warranted foil properties.
- We work using solvent-based lacquer systems in the manufacture of extremely thin decorative coatings. This allows us to accomplish drying processes in film lamination in closed facilities with very little energy input. The required heat of evaporation of the solvents is approx. five times less than that of water. The required energy input is also proportionately less, and the process more environmentally friendly.
- Some of the solvents can be recovered and reused in the process. The solvents we use now are up to 18% regenerated or from organic source.
- The high thermal efficiency of 95 % for our regenerative exhaust-air cleaning plant allows a large part of the energy content of the solvents to be returned to the drying process of our foil production. The difference is compensated with latest-generation boiler plants heated with natural gas at approx. 94 %. By the way, these days there is a bit of biogas in natural gas.
- In the electrical energy supply for stamping-foil manufacture, sustainability is a priority as well. We use electrical energy from renewable resources. We generate a part ourselves with photovoltaic technology; for power supply we have long-term supply contracts with 100% renewable energy!
- We can thus manufacture 1 m<sup>2</sup> LUXOR® cold-stamping foil – from an energy-input perspective – with approx. 15 W/m<sup>2</sup>. This means that by applying surplus regenerative heat in the manufacturing process, by generating on-site solar-energy and purchasing green electricity, our environment is impacted with only 1.5 g CO<sub>2</sub> equivalent/m<sup>2</sup> for this stamping foil.

# The four elements of sustainability



1. No PET foil on the product, max. 1 % decoration weight
2. Problem-free recycling of hot- and cold-stamped paper and cardboard (Pira study, Ingede test)
3. No hazardous materials – worldwide
4. No aluminum foil, just environmentally-friendly high-gloss metal effect in thin-film technology

5. Dry process, no liquid coating involved
6. Emission-free process
7. Minimum application of energy required (resulting CO<sub>2</sub> emissions: 10 g CO<sub>2</sub>/m<sup>2</sup>)

8. No waste water generated in coating process
9. 100% exhaust air evacuation with energy return – worldwide
10. Best Practice in stamping-foil manufacture generates the lowest possible CO<sub>2</sub> footprint

11. PET foil employed: no hazardous waste
12. The only PET recovery initiative worldwide
13. Initial material recycling concepts and initiatives

## Application of KURZ transfer layer

Stamping itself is inert and does not consist of raw materials that are of particular concern for the environment (SVHC). The decorative coatings for LUXOR® products are demonstrably deinkable. Our high-gloss coatings (20 nm to 25 nm), high-vacuum metalized without solvents, are 250 to 1,000 times thinner than aluminum foil (coating thickness 4 µm to 20 µm), and are converted into inert aluminum oxide in common paper-treatment processes.

Nor is the recyclability of packaging negatively affected in suitable foil application. We have also engaged in research in this area.

The stamping process manages to apply decorative coatings with a minimum of energy, and is an emission-free process.

## Waste handling is also important with regard to sustainability.

The top priority is waste prevention. But wherever waste is unavoidable, we have sought sensible ways to recycle it. Initiatives for reducing waste arising are an important component of our process development. Examples of implemented measures include optimization of foil widths, use of thin substrate wherever possible, reduction of coating weight, and use

of polyester off-specification batches for press proofs. Any unavoidable waste that must be discarded is recycled in an environmentally sound and meaningful way. As a manufacturer, we feel responsible for the fate of our waste. We value the capability to retrace and manage its path to the end. Disposal partners must thus be authorized, and processing techniques must be viable and sensible from an energy standpoint. As a basic principle, we deliver waste only to facilities that have been previously assessed and audited by our qualified personnel.

## Energy generation from foil waste

The stamping-foil waste generated by us and our customers involves a polyester foil with a thin layer of dry coating that is used as a substrate. In other words, a quite common and non-hazardous trade refuse containing no dangerous or toxic substances whatsoever. It could be handled as normal household waste, but that's not enough for us: A large part of our stamping foil waste is used for energy recycling. Thanks to the polyester substrate's high fuel value of approx. 34,000 kJ/kg, its fuel mass fraction is very well suited to producing fuel surrogates. The fuel surrogates are primarily used in the cement industry, but also in power stations. This replaces and sustainably

replaces fossil energy carriers like coal and fuel oil. We recommend that our customers also energy recycle foil waste from the stamping process. Our stamping foil waste meets the comparatively very stringent limit values of most fuel surrogate plants (chlorine, arsenic, etc.).

## Sustainability and emissions

In order to comply with the stringent requirements of the Federal Immission Control Act, it is and has always been a challenge to significantly beat it with our modern systems engineering. We are below the legally mandated values by up to 85 %. All process steps are examined and optimized on an ongoing basis. Application of the stamping foil is itself an emission-free process!

# Environmental management without borders

As a worldwide manufacturer of stamping foil, we are aware of our great responsibility toward mankind and the environment, and work continuously to minimize our production processes. Beyond national, cultural, and legal borders, we set the same high environmental standards and goals for all our production sites. There are core specifications and environmental directives, such as in the selection of raw material and handling, issued by corporate management and valid throughout the world. In order to ensure compliance with these standards, to reach these goals and to target continuous improvement, an environmental management system has been set up at each site, and an environmental officer appointed who reports directly to management.

Our EHS model applies to all employees of the KURZ Group. It forms the basis of the environmental, energy, and occupational policies at our subsidiaries throughout the world:

**We encourage** our staff to be engaged and take competent and responsible environmental and safety-conscious actions, and to make healthy lifestyle decisions.

**We provide** safe work places. Conditions that are hazardous to health are determined and the hazards eliminated or, at least, minimized wherever possible.

**We take precautions** to reduce the environmental effects of our operations, and to provide a healthy and safe working environment for our employees.

**We focus** on economical use of resources and energy, in production as well as in product development and plant layout.



# Commitment in numbers

Ongoing, environmentally-relevant optimizations affect the following areas in particular:

## Energy

(optimization of thermal exhaust air purification systems [TA], minimized use of gas, worldwide service team; energy efficiency research at sites in China, Sulzbach-Rosenberg, and Fuerth, Germany)

## Emissions

(compliance with limit values, taking measurements, comparison across countries)

## Waste

(measures for reducing quantities via brisk information exchange, recycling instead of disposal)

## Minimization of emissions

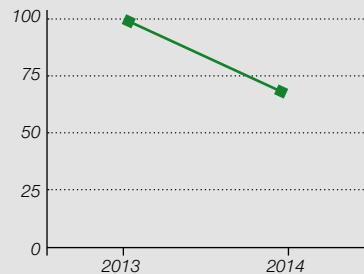
### Solar power plant



A PV facility was set up and started at our production site KST (China). It generates 900.000 kWh electricity per year, most of it for own consumption.

### site China

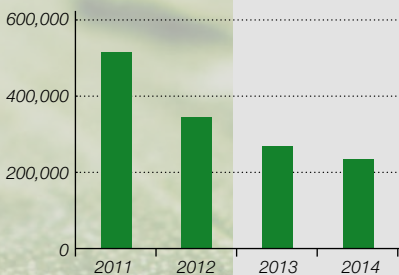
### CO<sub>2</sub> equivalent value in %



In the spring of 2014 at the site in Doebeln, the existing post-combustion system (TNV) was replaced with a newer and more modern TRA. The higher efficiency of this system led to the lowering of CO<sub>2</sub> equivalent value of total gas consumption reduced by approx. 37%.

### site Doebeln

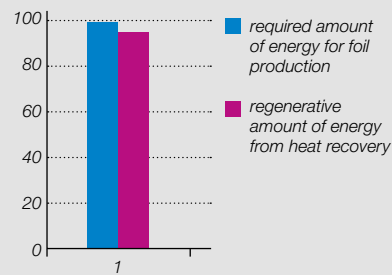
### Gas consumption OVD in kWh



At the beginning of 2012 the existing thermal-regenerative waste-air treatment plant was replaced with a new and more modern one. Additional tweaking of the production process has further reduced gas consumption significantly.

### site Switzerland

### Thermal energy demands in %



The efficiency of the post-combustion system and the loading of exhaust air with solvent were increased. This makes it possible to not only run the regenerative post-combustion system autothermally, but also to cover the thermal energy needed for the foil production process to over 90% with surplus energy from clean air heat recovery.

### site Malaysia

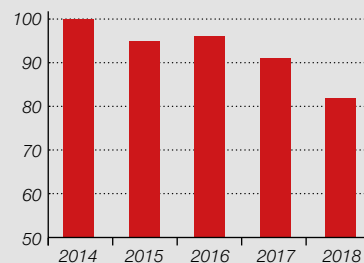
### PV system



A Photo Voltaic (PV) system with 205.2 kWp is also being installed at the Sulzbach-Rosenberg plant, which should produce approx. 215.000 kWh annually.

### site Sulzbach-Rosenberg

### Specific electricity consumption in %

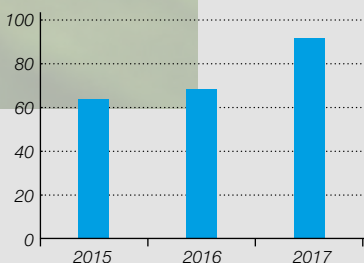


Via programs for boosting energy efficiency, the specific electricity consumption has been cut by almost 20% since 2014. The following efficiency measures are listed as examples:

- Reduction of compressed-air needs by replacing inefficient pneumatic drives
- Conversion from UV high pressure lamps to UV-LED lamps
- LED room lighting and lighting concepts

### site Sulzbach-Rosenberg

### Increase in the regenerative amount of energy in thermal post-combustion TA 105 in %



Thanks to the starting of a CO-guided furnace-chamber temperature regulator in December 2016, energy recovery was increased by 27%.

### site Fuerth

### New lacquer-mixing center



In the new lacquer production area at the KTP / USA plant, exhaust air is captured as needed in the individual mixing and preparation cabins. This not only improves the occupational safety of employees, but also cuts energy consumption and emissions.

### site USA

# Certificates

The effectiveness of our management systems is tested and verified by external inspectors at our production sites in Germany, Switzerland, China, and Malaysia.

Our environmental management system has been certified under ISO 14001, our energy management system under ISO 50001, and our occupational safety management system under OHSAS 18001.







## ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE

Registration No. 02117E10250R3M

This is to certify that the environmental management system of

### KURZ Stamping Technology (Hefei) Co., Ltd.

social credit code : 91340100731644694C  
Registration Address: Jinxiu Avenue, Economic and Technological Development Zone,  
Hefei City, Anhui, P.R. China  
Office/Production Address: No.168, Jinxiu Avenue, Economic and Technological  
Development Zone, Hefei City, Anhui, P.R. China  
is in conformity with

GBT 24001-2016/ISO 14001:2015



## Certificate

SQS herewith certifies that the company named below has a management system which meets the requirements of the standards specified below.

**OVD KINEGRAM**

**OVD Kinegram AG**  
Zählerweg 12  
6301 Zug  
Switzerland

Scope of certification

**Whole Company**

Field of activity

**Development, manufacturing and distribution of optical and electrical security elements for banknotes and documents**

Normative basis

**ISO 9001:2015** Quality Management System  
**ISO 14001:2015** Environmental Management System  
**OHSAS 18001:2007** Occupational Health and Safety Management System

Scope(s) 9

Validity 17.11.2016 – 16.11.2019  
Issue 17.11.2016

Reg. no. 14922

*X. Edelmann*  
X. Edelmann, President SQS

*R. Glauser*  
R. Glauser, CEO SQS



Swiss Association for Quality and Management Systems SQS  
Bernstrasse 103, 3052 Zollikofen, Switzerland



**BUREAU VERITAS**  
Certification



**KURZ PRODUCTION (M) SDN BHD**  
LOT 22, SERI ISKANDAR TECHNOLOGY PARK,  
32610 SERI ISKANDAR, PERAK DARUL RIDZUAN, MALAYSIA.

*Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below*

**ISO 14001:2015**

Scope of certification

**MANUFACTURE OF STAMPING FOILS.**

Original Cycle Start Date: 17 June 2008  
Expiry Date Of Previous Cycle: 14 September 2018  
Recertification Audit Date: 25 August 2018

Recertification Cycle Start Date: 15 September 2018

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: **14 September 2021**

Certificate No. E130457 Version : No. 1 Revision date: 14 September 2018

*Ir. Hj Othman Abdul Kadir*

**Ir. Hj Othman Abdul Kadir**  
Country Chief Executive



0008

Certification body address: 5<sup>th</sup> Floor, 66 Prescot Street, London, E1 8HG, United Kingdom  
Local office: Bureau Veritas Certification (Malaysia) Sdn Bhd  
Level 11, Menara Dayabumi  
Jalan Sultan Hishamuddin  
50090 Kuala Lumpur  
Malaysia

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation. To check this certificate validity please call: +83 2267 2888

# CO<sub>2</sub> footprint



There are different approaches around the world for describing an overall Carbon or CO<sub>2</sub> footprint, as an ecobalance from 'cradle to grave'. The most comprehensive is ISO 14040/44. A research framework must first be established to define what is considered in this process. But it can be freely defined! For this reason, CO<sub>2</sub> footprints cannot always be directly compared. Other standards, such as ISO 14067, or in accordance with the GHG protocol, describe the carbon footprint of a product (CFP) without associated effects from the product life cycle, or a corporate carbon footprint from which, under certain circumstances, a CO<sub>2</sub> index for a product can be derived.

As for us, we have researched various foil groups under the ecobalance standard CO<sub>2</sub> value. Our research framework was laid out to capture the manufacture of raw materials as the beginning of the product cycle, to the manufacture of the different stamping-foil types and transport logistics, through to the processing of the foil by customers.

This yields better comparability than alternative processes. If only the manufacture of the stamping foils was taken into consideration and not their processing, it might be lost on readers that, on the one hand, a simple application process accompanies the environmentally-friendly and elaborate manufacture of stamping foil.

On the other hand, the finishing of customer product surfaces with galvanic processes or complicated lacquer applications is larger in scale and thereby produces considerably more CO<sub>2</sub>.

High-gloss surfaces can be achieved not just with stamping foils, but by applying metallic lacquers, and alternatively with galvanic coating.

A comparison of alternative processing options for the application of 1 m<sup>2</sup> of enhanced surface leads to the following assessment:

**Using stamping foil instead of classic enhancement processes for surface decoration improves your CO<sub>2</sub> balance by approx:**

<b>Metallized surfaces (e.g. ALUFIN®)</b>	<b>50 %</b>
<b>Chrome plated design</b>	<b>95 %</b>
<b>Pigmented surfaces (e.g. COLORIT®)</b>	<b>80 %</b>
<b>Plastic surfaces enhanced with IMD</b>	<b>70 %</b>

# Energy management at the company

Intelligent, sustainable action and economic activity at KURZ also applies to energy consumption. We are working toward the systematic optimization of energy use on an ongoing basis, from energy purchase through to consumption. It is not only an effective instrument for lowering costs and thereby boosting competitive capacity, but also helps conserve resources and cut CO<sub>2</sub> emissions.

To implement this undertaking, an energy management system under ISO 50001 was integrated into our existing environmental management system in 2014. Within the context of energy management, a cross-departmental energy team identifies potential energy savings and continuously sets new goals and measures for boosting efficiency. In order to sustainably reduce yearly specific energy consumption, we have set the following strategic goals to meet by 2020:



Site	Electricity [kWh/a]	Heat [kWh/a]
Fuerth	-980,000	-3,280,000
Sulzbach-Rosenberg	-2,025,000	-10,765,000
Doebeln	-267,500	-923,000

*(the figures refer to output for base year 2014)*

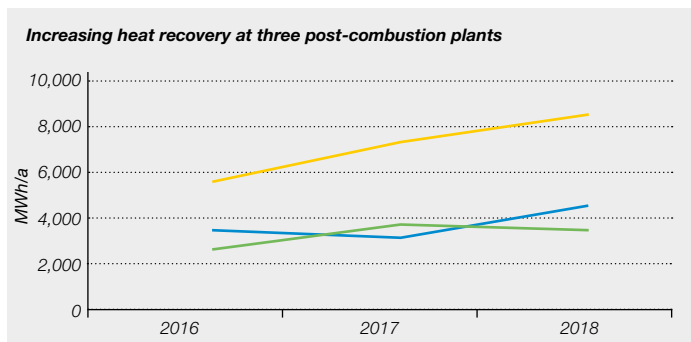
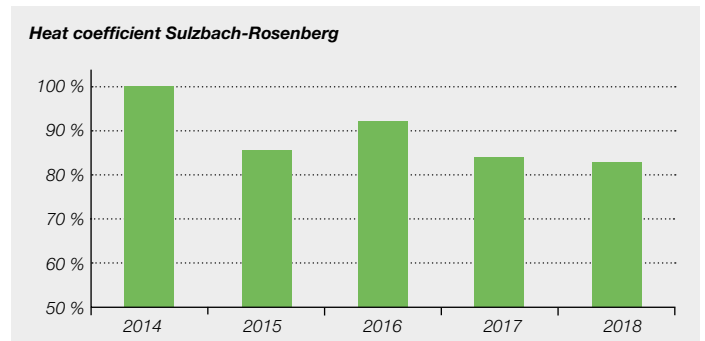
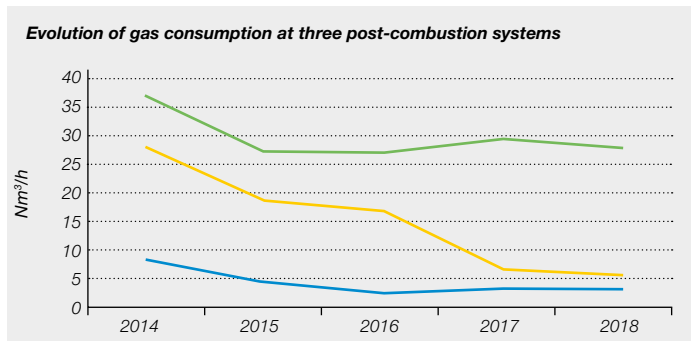
To reach these goals, we work continuously on efficiency-boosting measures, which also helps reduce specific energy needs.



By using an energy-consumption recording system and comprehensive energy-consumption analyses, we have already been able to undertake a comprehensive energetic evaluation of our sites in Germany allowing us, among other things, to identify our primary energy consumers and to identify other efficient and viable energy-saving measures, despite our good initial starting point.

A major part of our energy consumption involves the burning of solvent-based exhaust air, which is why the energy efficiency of post-combustion systems is a major focus with us. We have carried out many optimization measures in this area. By replacing an inefficient system or by increasing the effectiveness of others, we have boosted efficiency even more and further cut the use of gas. Moreover, at some post-combustion systems at the plants in Fuerth and Sulzbach-Rosenberg, more regenerative energy was recovered. The increased heat recovery allows us to reduce the workload for the furnaces and also significantly lower their gas needs.

At our plant in Sulzbach-Rosenberg the use of natural gas related to output has been cut by almost 20 % since 2014.



— TA202 — TA205 — TA105

Other measures for reducing specific energy use include:

- increasing waste heat recovery
- optimization of process steps
- lighting management
- implementation of energy efficient drives
- replacement of inefficient consumers
- implementation of CHP systems

In addition to increasing energy efficiency, which is accompanied by a reduction of CO<sub>2</sub> emissions, KURZ aims to increase the proportion of renewable energies in its energy needs.

Selecting a provider of sustainable energy who currently supplies 100 % renewable energy at our sites in Fuerth and Sulzbach-Rosenberg is as much a matter of course as increasing our own generation of renewable energies, for instance, at large-scale PV facilities at our production sites throughout the world.



# Outlook

The increasing demand for raw materials, and the steep price increases in commodity markets worldwide are cause for concern at many companies. If raw material supplies are at risk, the entire value chain can be affected. To make matters worse, industry has till now had to absorb a large part of raw material price hikes itself and could not pass them on. Despite corporate efforts, raw material prices are becoming a risk to the economy.

In the long term, there is no doubt energy prices will rise. For industry and compared internationally, high power costs pose an increasing threat to competitiveness because for one thing, they increase

production costs and for another, they severely curtail consumer purchasing power. The demand for energy efficient products and efforts to configure production processes yet more efficiently stems from high energy prices.

We would like to make even more progress here and make a push to reduce specific energy consumption and its associated CO<sub>2</sub> emissions, especially with regard to governmental greenhouse-gas reduction targets by 2020 (or 2050) by at least 40 % (80–95 %) compared to 1990.

## KURZ worldwide

The KURZ Group is an international leader in thin-film technology and supplies products for surface finishing and decoration. With over 5,500 employees at more than 30 sites worldwide, KURZ has an international presence and manufactures under uniform quality and environmental standards in Europe, Asia and the USA. Thanks to KURZ's many years of experience and the constant expansion of our portfolio, we can offer our customers a wide range of products – and all from one source. A global network of subsidiaries, representatives and sales offices ensures short paths and individual, on-site consulting.

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## Fields of expertise

KURZ is always investing in new technologies. KURZ subsidiaries develop innovative solutions for functional integrations into surfaces as well as products for labeling and counterfeit protection along with the corresponding software. A comprehensive range of stamping presses and stamping tools rounds off the versatile KURZ product portfolio. Furthermore, KURZ subsidiaries use their expertise to provide future-oriented, custom-made complete solutions including project consultancy and machine and tool technology.

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