EXPERIENCE AND COMPETENCE

CUSTOMIZED THERMOPROCESSING PLANTS



OUR EXPERIENCE 65 YEARS OF **SPECIAL INSTALLATION** CONSTRUCTION

"We develop and manufacture industrial furnaces for the productive and economic realization of a variety of thermal processing tasks."

Founded in 1998 as the successor to Kaminski Apparatebau GmbH of 1948, KGO has over 65 years of experience in the production of all forms of steel constructions. This experience ranges from furnace housings for the industrial heat treatment of steel components, to innovative and individualized special installation construction for thermal processing applications such as in environmental and process engineering.

With the acquisition of Schott Hydraulik GmbH in 2000, we have expanded our product portfolio to include wax injection machines for investment casting. These, in addition to furnace systems, are offered by KGO for a wide variety of applications – from furnaces to fully automatic evacuable nitriding furnaces - including a complete range of products and services for foundry and furnace system engineering.

Tailor-made system solutions and furnace systems in virtually any size, solutions for special designs and systems for special procedures complete our range for our clients, who are heat treatment specialists based all over the world.

Our clients' high quality requirements demand reliable systems with optimal processing technology that operate profitably and deliver precisely reproducible production results. And that's exactly what you'll get.



HEAT TREATMENT ACCORDING TO YOUR REQUIREMENTS

With the development and production flexibility of a medium-sized company, with our production depth and integrated microprocessor control, we deliver quality-guaranteed, long-lasting thermal processing technology, including all necessary peripheral components.

From Design Engineering, to production, to delivery, installation and commissioning, our systems undergo a controlled, optimized and, above all, a uniform production process. This guarantees – both for us and for our clients – the necessary transparency, planning security and adherence to deadlines.

In addition to systems engineering, our consulting services and support are of particular importance to us. This support is available to you for all system-specific problems – even for thirdparty systems. We provide support, from planning your specific system all the way to installation and commissioning, which makes KGO unique in the market place. We work together with you to first ascertain the correct heat treatment process for you and the product, the defined product characteristics, special batch load sizes and prescribed throughput. From there, we can recommend the optimal system concept.



This procedure encompasses consistent further development of our technology, quality and service for process technology procedures, which takes place in close cooperation with our clients. After intensive testing, these innovations are then incorporated into production and, to date, have been incorporated into all furnace systems. All of our systems are therefore equipped with the most modern and accurate sensors for atmosphere control, and computer-supported systems for the recording, control and evaluation of all process-relevant data.

All of our furnace systems are equipped with modern heating systems - either electrical or gas-fired. Accordingly, they are designated with 'E' for electric or 'G' for gas-fired.

■ VAN	Vacuum tempering furnace, nitriding
■ VA	Vacuum tempering furnace
■ 2VA	Dual chamber tempering furnace
■ 3VA	Triple chamber tempering furnace
■ SON	Shaft furnace, nitriding
■ SOC	Shaft furnace, cementing (carburizing)
■ SOA	Shaft furnace, tempering
■ MK	Multi-purpose chamber furnace
■ MKS	Multi-purpose chamber furnace with salt bath

KA	Chamber tempering furnace
KAR	Chamber tempering furnace with retort
WMT	Washing machine, immersion and spraying
WMS	Washing machine, shaft
WMV	Washing machine, vacuum
CW	Batch trolley
CWT	Batch trolley with telescopic forks
AB	Quenching bath



WE DEVELOP CUSTOM-MADE PRODUCTS SPECIFICALLY FOR OUR CUSTOMERS FOR THE FOLLOWING FORMS OF HEAT TREATMENT:

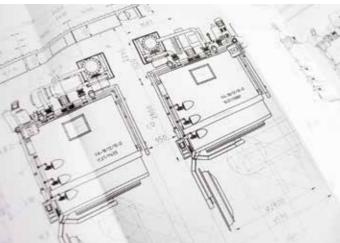
- Gas carburization
- Carbonitriding
- Nitrocarburizing
- Nitriding

- Hardening under protective gas with quenching in oil or salt
- Various tempering processes
- Various annealing processes



- 1998: Formation of KGO GmbH
- engineers, process technicians, industrial mechanics, electrical engineers, electronics technicians, welders, technical product designers, commercial representatives
- 5 trainees: Industrial mechanics, electronics technicians for industrial processes, technical product designers, commercial representatives for interoffice communications
- 55% export quota to Europe, Asia, North and Central America
- Customers: Automobile industry, hardening plants and tempering processes, aeronautical industry, machine and apparatus construction
- Certifications: Standardization committee for nitriding and case hardening, DIN ISO 9001-Quality management systems, patents on multi-purpose salt bath chamber furnaces, AWT annual innovation certificate





Following the project definition, we work with you to identify the ideal heating mode for the intended purpose of the furnace system.

In addition to functionality, the economic efficiency, energy efficiency and process time of our systems are always important factors for us, even in the planning and development phases. For the best possible results, we use both recuperators and burners using gap flow technology or other burner technology for gas-fired systems.

We trace the prescribed heating or cooling curves using an intelligent, fully controlled throttle system. In addition, we can combine our furnace systems with a variety of stainless steel or copper heat exchangers and with plates, pipes or finned pipes.

The temperature uniformity of our furnace systems regularly corresponds to the highest furnace class as per DIN and AMS.

We select the usual retort materials from 1.4828 through 1.4841 to 2.4816 depending on the temperature range and process variant. They are available for all furnace systems with retort.

The size of our systems is usually provided in abbreviated form. The volume measure provided, multiplied by 100, corresponds to the useable volume measure of the treatment room (D \times W \times H) in millimeters.

In addition to the usual furnace sizes, we produce non-standard sizes as per specifications.





Elektrokonstruktion - Schaltanlagenbau - Montage

- Planung und Projektierung von Elektroschränken
- Einzel- und Serienfertigung von Schaltanlagen
- Umbau und Modernisierung von bestehenden Anlagen
- Montage der gelieferten Schaltanlagen im In- und Ausland
- Unterstützung bei Inbetriebnahmen
- Revision von vorhandenen Schaltplänen

Ihr Spezialist für den Schaltanlagenbau im Bereich Wärmebehandlung





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EVACUABLE NITRIDING TEMPERING FURNACES VERSATILE ALL-ROUNDER UP TO 750 °C

With their array of options, VAN nitriding furnaces can be precisely adapted to the requirements of the type of treatment in question. Of course, the atmosphere controls correspond to the high requirements of DIN, CQI and AMS. All temperature ranges of thermochemical nitriding with ammonia are covered, from low-temperature nitriding to high-temperature nitrocarburizing up to 750 °C. Gas mixing stations are produced with all desired additional media. In addition to carbon dioxide, carbon monoxide, ethyne, endogas and exogas or methanol are used as carbon carriers.

Nitriding systems are controlled by computers and are monitored by sensors. The typical measuring arm for process data of a fully regulated nitriding furnace always contains an oxygen sensor in addition to a hydrogen sensor. This guarantees that the atmosphere is always completely monitored. The sensors' automatic testing systems and flow controllers can check and document functionality before or during every process.

Our APIN® and Io-flo® special procedures guarantee the highest atmospheric precision with the minimum consumption of unburnt gas.

VAN furnace systems can be connected with WMV vacuum washing machines, KA pre-warming tempering furnaces and CWT telescopic batch trolleys to create a fully automated line.

SUITABLE HEAT TREATMENT PROCEDURES:

- Nitriding
- Nitrocarburizing
- Oxynitriding
- Special nitriding

ADDITIONAL PROCEDURES:

- Pre-oxidizing
- Post-oxidizing
- Tempering
- Annealing





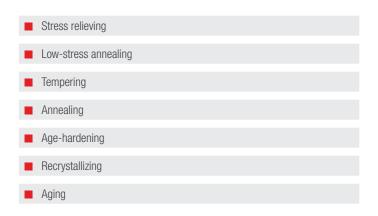
■ AVAILABLE FURNACE SIZES:

Useable volume measure [mm x 100]	Batch measurement [kg] up to 600 °C	Special features
4-3-3	300	
6-5-5	500	
9-6-6	800	
Furnace variant 9-9	1500–2000	Depth 9, 12, 15 and 18
15-10-10	2500	
18-12-10	3000	
20-12-12	4000	
24-16-15	7000	

VA EVACUABLE TEMPERING FURNACES

VARIABLE PRODUCTIVITY UP TO 750 °C

VA-type evacuable tempering furnaces are suitable for the following heat treatment procedures:





All of the described procedures can be combined with a variety of protective gases, such as argon, nitrogen and forming gas. Forming gas can be supplied to the furnace system using mixing taps with mass flow controllers. Tempering furnaces are operated with high performance blast chillers. Depending on the application, you can choose from a variety of vacuum pumping units.

■ AVAILABLE FURNACE SIZES:

Useable volume measure [mm x 100]	Batch load measurement [kg]	Special features
4-3-3	300	2VA and 3VA
6-5-5	500	2VA and 3VA
9-6-6	800	
Furnace variant 9-9	1500-2000	Depth 9, 12, 15 and 18
15-10-10	2500	
18-12-10	3000	
20-12-12	4000	
24-16-15	7000	

Types 2VA and 3VA feature tempering furnaces with two or three treatment chambers respectively. The treatment chambers share basic units such as vacuum pumps and external heat exchangers, but can run different procedural programs independently of each other. Of course, 2VA and 3VA heating can either be gas-fired or electric. A hardening load can therefore be divided into two or three different tempering loads.







MK AND MKS MULTI-PURPOSE CHAMBER FURNACES INNOVATIVE FLEXIBILITY UP TO 1,050 °C

The advantage of these multi-purpose systems with very flexible operation is that batch loads can be immersed into a variety of quenching media. The perfusion of the batch load is supported by a variety of systems: sprinklers, flow breakers, baffles and oscillators. All protective gassing variants, such as direct gassing, nitrogen/methanol or endogas, are monitored and controlled by atmosphere sensors in a variety of designs and measurement systems. Calculating sensors, gas analyzers and hydrogen sensors are also used in addition to oxygen sensors. All gases can be controlled with mass flow controllers. This guarantees an equal gassing. Special gassing technology distributes the gases equally across the entire treatment room.

PATENT WITH SALT

The MKS multi-purpose chamber furnace is a special feature in the MK family. The letter 'S' stands for salt. This multi-purpose chamber furnace design has been patented by us, and it allows the batch load to be quenched in salt. Other quenching variants with and in salt are possible. The airlock principle is the special feature of this furnace system. The batch load is loaded and unloaded via a lock chamber. The treatment chamber and the quenching chamber are separated by this airlock chamber. The batch load is implemented with exclusion of air by the optionally heatable airlock chamber.

MK furnace systems are combined with WMT immersion-spray washing machines, KA and KAR chamber tempering furnaces and CW batch trolleys to create semi-automatic or fully automatic lines.

AVAILABLE FURNACE SIZES:

Useable volume

measure [mm x 100]	measurement [kg]
10-6-6	800
12-7-9	1000
12-13-9	1400
15-13-8	3000

Batch load



SUITABLE HEAT TREATMENT PROCEDURES:

- Hardening
- Cementing
- Carburization
- Case hardening
- Nitrocarburizing

ADDITIONAL PROCEDURES:

- Blackening
- Intermediate cooling
- Gas quenching



KA AND KAR CHAMBER TEMPERING FURNACE **EFFICIENT SIMPLICITY**

KA tempering furnaces are the perfect supplement to the MK and MKS multi-purpose chamber furnaces. Chamber tempering furnaces can be operated with a variety of protective gases. In addition to these simple furnace variants, KAR retort chamber tempering furnaces are also used. The suffix 'R' means 'with retort'.



SUITABLE HEAT TREATMENT PROCEDURES:

Tempering		
Annealing		
Age-hardening		
Recrystallizing		
Aging		

■ AVAILABLE FURNACE SIZES:

Useable volume measure [mm x 100]	Batch load measurement [kg]
10-6-6	800
12-7-9	1000
12-13-9	1400
15-13-8	3000

SON EVACUABLE NITRIDING SHAFT FURNACES **UNIFORM PERFORMANCE TO 600 °C**

Our SON nitriding shaft furnace systems are available for all procedures and variants of the same performance level, which also feature our evacuable nitriding tempering furnaces. The optimal gas injection into the retort ensures uniform gas atmospheres even for very deep furnace systems.

Unlike the chamber furnace systems, the useable volume measures of shaft furnace systems is provided with the diameter and the depth, and can be widely varied.

Larger diameters or furnace depths over 10 m are individually planned and produced by us.



SUITABLE HEAT TREATMENT PROCEDURES:

- Nitriding Nitrocarburizing Oxynitriding
- Special nitriding

ADDITIONAL PROCEDURES:

- Pre-oxidizing
- Post-oxidizing
- Tempering
- Annealing

AVAILABLE FURNACE SIZES:

Useable volume measure [mm x 100]	Batch load measurement [kg]
5 x 10	1200
8 x 15	2500
13 x 25	4000
20 x 25	6000
25 x 40	12000







Hippler Steuerberater Das Unternehmen HIPPLED STEUEDBEPATED ist das beste Beisniel

FRAGEN?

3 0800-2520272 (kostenlose Zentralnummer)

oder per E-Mail

info@hippler.de

Das Unternehmen HIPPLER STEUERBERATER ist das beste Beispiel, wie mit dem richtigen Know-how, mit Erfahrung, Engagement und einer Portion unternehmerischen Mutes aus der Übernahme einer kleinen Steuerberaterkanzlei ein heute erfolgreiches mittelständisches Unternehmen mit mehr als 10 Mitarbeitern und über 700 erfolgreichen Mandaten werden kann.

Nach einem Studium an der Fachhochschule für Finanzen, einer langjährigen Tätigkeit als Betriebsprüfer und Dozent im Steuerbereich folgte als logische Konsequenz mit dem Ziel, strategisch arbeiten zu können, der Schritt in die Selbstständigkeit und zum heute meistbewerteten Steuerberater der Region Dortmund und Unna.

Die Basis dafür sind unsere gelebte Unternehmenskultur des Vertrauens und der Partnerschaft. Zu unseren Mandanten und Partnern genauso wie zu unseren Mitarbeitern.

Eine ganzheitliche Beratung und Betreuung, feste Ansprechpartner, langjährige Geschäftsverbindungen, regelmäßige unterjährige Gespräche sind keine leeren Versprechen sondern das Fundament unserer Arbeit für Sie.

Finden auch Sie bei uns Ihren kompetenten Ansprechpartner rund um die Fragen des Steuerrechts. Wir beraten bei Neugründungen, der laufenden Bearbeitung von Finanz- und Lohnbuchhaltung bis hin zum Jahresabschluss und den Jahressteuererklärungen kleinere und mittelständische Unternehmen. Wir helfen und unterstützen beim Aufbau einer eigenen in-house-Lohn- und/oder Finanzbuchhaltung. Über das Buchen auf unseren Server haben Sie immer online Zugriff auf Ihre Daten.

Wir arbeiten bei Fragen des Arbeits- und Sozialversicherungsrechts mit Fachanwälten zusammen.

Wir beraten und betreuen bei der Ausarbeitung unternehmerischer Zukunfts- und Absicherungsmodelle.

Wir optimieren den Ablauf zwischen Steuerberater und Mandanten. Wir horten keine Belege, die der Mandant im Zugriff haben sollte.

Wir garantieren kurze Bearbeitungszeiten in allen Bereichen, im Lohnbereich meist in einem Tag. Die Erstellung Ihres Jahresabschlusses in einem Monat nach Auftragseingang ist bei HIPPLER STEUERBERATER kein leeres Versprechen.

Holen Sie sich vertraulich eine zweite neutrale Meinung ein, sollten Zweifel bestehen.



www.hippler.de

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SOC CEMENTING SHAFT FURNACES **DEEP ECONOMIC** EFFICIENCY TO 1,050 °C



Shaft furnaces and vertical retort furnaces are developed in many sizes and specific designs and are available with a wide array of accessories. Thanks to their unbeatable value for money, the systems are frequently used for heat treatment of large gear parts.

All protective gassing variants, such as direct gassing, nitrogen/ methanol or endogas gassing, are also monitored and controlled in the shaft furnace by atmosphere sensors in a variety of designs and measurement systems.

Calculating sensors, gas analyzers and hydrogen sensors are also used in addition to oxygen sensors. To guarantee equal gassing, all gas can be controlled with mass flow controllers. It is distributed equally across the entire treatment room using special gassing technology.

ADDITIONAL PROCEDURES:

Blackening

Intermediate cooling

Gas quenching

■ AVAILABLE FURNACE SIZES:

measure [mm x 100]	Batch load measurement [kg]
8 x 15	1000
13 x 25	3000
20 x 25	5000
25 x 40	10000

SUITABLE HEAT TREATMENT PROCEDURES:

Hardening

Cementing

Carburization

Case hardening

Nitrocarburizing



Quenching procedure of a cementing system



Die Nitrier-Lösung

- H2-Sensor / O2-Sensor
- Nitrier-Regelung
- Verfahrenstechnische Unterstützung
- NHD/CLT Software
- Datenaufzeichnung
- Qualitätssicherung

Stange Elektronik GmbH * Gutenbergstraße 3 * 51645 Gummersbach





SPECIAL INSTALLATION **CONSTRUCTION CLIENT-SPECIFIC PROCESS SOLUTIONS**

In addition to furnace systems for hardening and surface technology, we develop and produce client-specific systems for investment casting based on the lost wax technique.

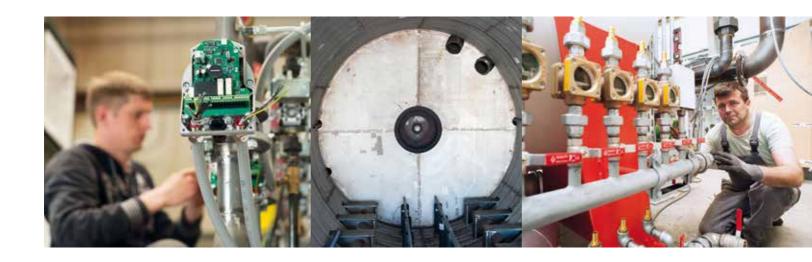
This includes all systems for all investment casting production steps, such as wax injection machines, sand molds and vibrating hammers. These systems are supplemented by foundry furnace systems.

Our double chamber sintering furnaces, dewaxing furnaces and rotary hearth furnaces also have the same high technical standard as our hardening and tempering furnaces.

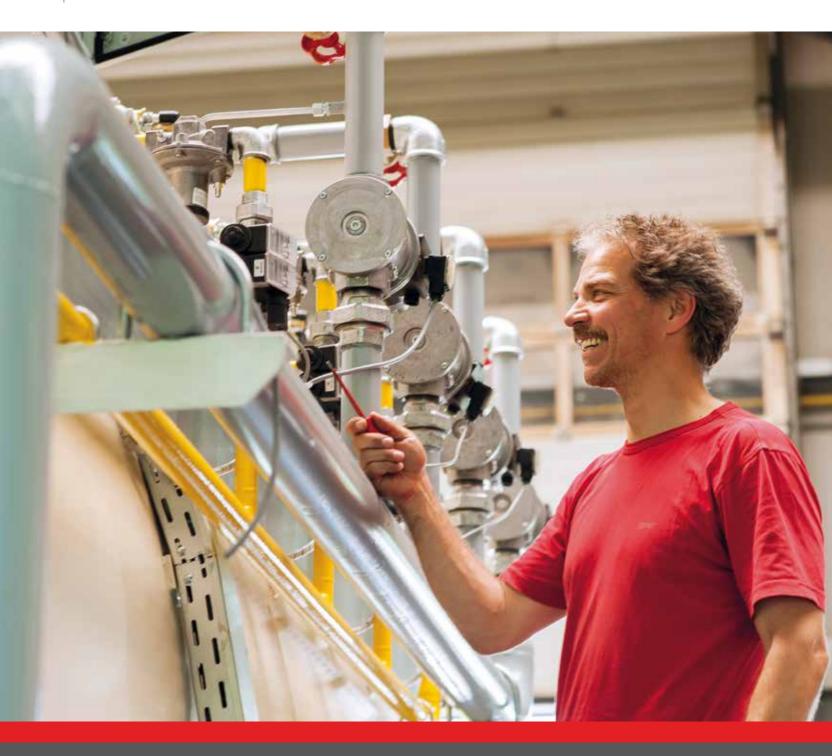




Quenching bath in special design as requested by client







IN ADDITION TO SPECIAL INSTALLATION CONSTRUCTION, **SUPPORT PROVIDED WITH:**

- Pipeline construction
- Heat exchangers
- Recooling systems
- Water basins
- Quenching basins
- Container construction
- Cleaning systems
- Sheet metal stacking systems
- Magnet conveyors





Final assembly of the nitriding furnaces and special systems

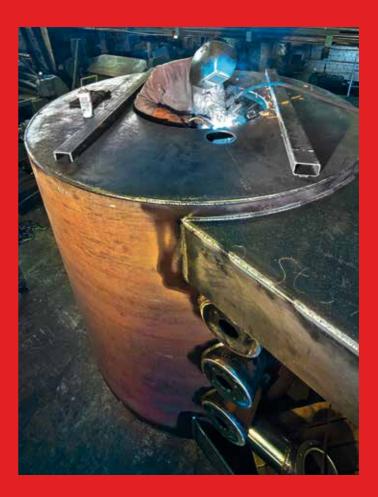


OUR SERVICE EFFICIENT SYSTEM MANAGEMENT FROM ONE SOURCE



As your reliable partner, we advise and support you from your first inquiry with a comprehensive range of services including regular maintenance and, if required, repairs to your system. This service is available to you regardless of whether it is our equipment or that of a third party. Our engineers, technicians, fitters and welders have the requisite professional and technical expertise thanks to many years of production experience. This allows us to offer you comprehensive service for your system, which is provided from the first drawing to the final weld by our experienced and skilled team of employees. If an emergency situation demands it, worldwide remote control is also possible. No matter where, no matter when.

We no only guarantee you long-lasting thermal processing technology and heat treatment systems - we also deliver them. For efficient, economic and environmentally friendly production processes of the highest quality with precise reproducibility.







Technical and procedural consultation

If you have process questions, we help support and improve your product quality with our aftersales consultation. Its efficient, optimized production processes are adapted to your scheduling and budget.

System training

We assure your production quality by improving the quality of your employees — with regular training at your location or in our training rooms.

Maintenance management

With coordinated and custom-fit maintenance intervals, enlargement of your heat exchange systems or modernization of current control systems, we achieve the highest degree of flexibility and economic efficiency for your productivity.

Modernization

With the modernization of current systems — regardless of whether they are ours or those of a third party — we ensure and increase your productivity with reasonable investment costs in comparison to new investments. We carry out modernization for all furnace systems, including updating with a distribution cabinet, programmable controller, a gas injection cabinet or a gas supply panel.

Spare parts / technical service

We produce spare parts in-house for all current furnace variants and types – this includes retorts, frames and batch load baskets. In emergency situations, our service teams move quickly into action all over the world – also by means of remote control.

Our range of services also includes temperature uniformity measurements as per DIN, CQI and AMS.





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KA (G/E) TEMPERING FURNACES

Application areas

Tempering / annealing / nitriding / nitrocarburizing

Special features:

Electrical or gas heating Direct cooling with protective gas Switch and control system with freely programmable controls Interface for process control systems

VA (G/E) EVACUABLE TEMPERING FURNACES

Application areas

Tempering / annealing / nitriding / nitrocarburizing / oxynitriding / low-temperature nitriding / blackening

Special features:

Electrical or gas heating Indirect cooling Rapid cooling Freely programmable controls Potential controlled nitriding facility Interface for process control systems

MK (G/E) MULTI-PURPOSE CHAMBER FURNACES

Application areas

Cementing / case hardening / carbonitriding / hardening under protective gas / annealing under protective gas / nitrocarburizing

Special features:

High temperature uniformity Cutting edge burner technology Either cooling under gas or quenching in an oil bath Interface for process control systems

SO (G/E) SHAFT FURNACES

Application areas

Gas cementing / annealing under protective gas / hardening / nitriding / nitrocarburizing / oxidizing

Special features:

Can be delivered with or without retort Electrical or gas heating Indirect cooling if desired Practical additional equipment Interface for process control systems



Deutscher Umweltpreis 2011 für die FLOX®-Erfinder.



Das Innovationspotenzial von WS ist ausgezeichnet. FLOX®: Die Entwicklung dieses besonders emissionsarmen Verbrennungsverfahrens – ganz ohne Flamme – eine umweltentlastende Schlüsseltechnologie im Bereich der energieeffizienten Hochtemperaturprozesse erfährt 2011 Europas höchstdotierte Würdigung durch die Deutsche Bundesstiftung Umwelt.









YOUR RELIABLE PARTNER

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