CO_2 optimized lubricants

Recycling + Bioeconomy

Zeller+Gmelin
The brand with the clear plus

Zeller+Gmelin GmbH & Co. KG is a medium-sized, international, manufacturer of lubricants, printing inks and chemicals. With the headquarter in Eislingen/Fils the company still is family-owned. With our 16 subsidiaries worldwide we are well connected and deliver our high quality products in more than 80 countries.

Understanding + providing solutions – that's what we have been doing for over 150 years – and will keep on doing so in future. Thus, we create a noticeable plus for our customers. For we understand the customer and develop solutions – reliable, flexible and customized.

The recycling concept is deeply rooted at ZG. Through our subsidiary SÜDÖL Recycling GmbH used machine and engine oils are recycled and reprocessed into new base oils and fuels.
Since 1935, Südöl has been involved in the collecting and recycling of lubricants and cleaners.

CO_2 optimized lubricants

Table of contents

CO_2 optimized lubricants
Conserve resources + Protect climate

We know the markets' growing demand for sustainable solutions. To this end, we are pursuing a number of developments and measures, that avoid and reduce emissions.

The conscientious use of resources and responsibility towards our environment are central components of our philosophy. Our research and development department is continuously working on innovative solutions that reduce the burden on the environment and improve the processes of our customers.
Another step in this direction is the development of CO_2 optimized lubricants.

In the production of CO_2 optimized lubricants, ZG pursues three process technologies:
- Recycling with "soft splitting"
- Recycling with "refining"
- New development from biogenic raw materials

Recycling of used oils

Save costs
+ Protect the environment

Our thought

The recycling and circular economy concept is anchored in the core of our company.
As a rule, large quantities of high-quality, non-water-miscible metalworking oil are towed out. The used machining oil is in the parts washing plant after the work process has been completed. It contains water, surfactants and solid particles and until now had to be disposed of at high cost.

This is exactly where our concept comes in.

Used metalworking oil is a valuable raw material!
We take back used products, process them and recycle them for reuse.
At the same time, we improve their waste balance and the CO_2 footprint.

Your advantages

+ CO_2 savings
+ Independent of rising base oil prices, due to the use of the own raw material (recyclate)
+ Planning security on the procurement side
+ No disposal costs! The oil-cleaning mixture is recycled.
+ Environmentally friendly use of our resources through the use of recycled materials in product manufacturing
+ Consistently high quality of the recyclate thanks to constant testing in our research and development laboratories
+ No creeping deterioration of the circulating process oil in circulation

**"Many valuable resources are lost through disposal!
We pursue the goal - less disposal through recycling!"**

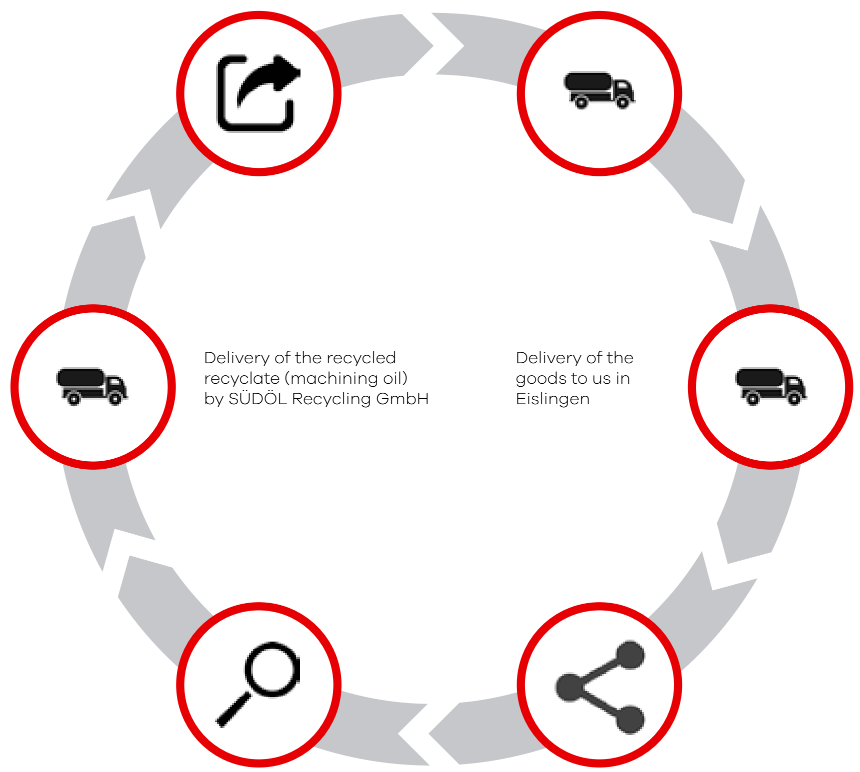
Gentle splitting

Filtration of used oils

During the process of "gentle splitting", oil-water phases are separated and deposits are removed and cleaned by filtration. The result is a clean product that is suitable for direct reuse.

Full service

We transport the used oil directly to your site and take care of the economic and ecological recycling for you.



Gentle splitting
Filtration of used oils

CO_2 footprint

Returning used raw materials and products to the economic cycle is an important building block for increasing resource efficiency, for the natural resources and ultimately to safeguard our future.

The product carbon footprint is an important approach to evaluate the resource efficiency of a product and to make it comparable.
The product carbon footprint records the greenhouse gas emissions that occur during the entire product life cycle. It captures the impact of:

+ Raw materials and prefabrication
+ Production
+ Distribution and sales
+ Use phase
+ Recycling and recovery

CO_2 footprint using the example of the cutting oil *Multicut Recyclat MB UT*

For our **Multicut Recyclate MB UT** cutting oil, the PCF (Product Carbon Footprint) was determined according to **DIN EN ISO 14067:2019** using the "cradle to gate" approach – including the transport of the used oil for reprocessing.

The underlying reprocessing method is simple, efficient and resource-conserving: Used oil is transformed into a high-quality cutting oil with a significantly lower CO_2 footprint than conventionally produced products.

Zeller+Gmelin has made targeted investments in the necessary infrastructure to make such sustainable cycles economically and ecologically sound. Our goal is to continue implementing projects that conserve resources, reduce environmental impact, and improve our customers' CO_2 balance.

"Recycling instead of incineration – waste oil is a valuable raw material!"

Since the base oils are already present, fewer steps are required in the recycling process than in the case of production from fresh oil.
This results in lower energy consumption and thus also lower CO_2 emissions.

Refining

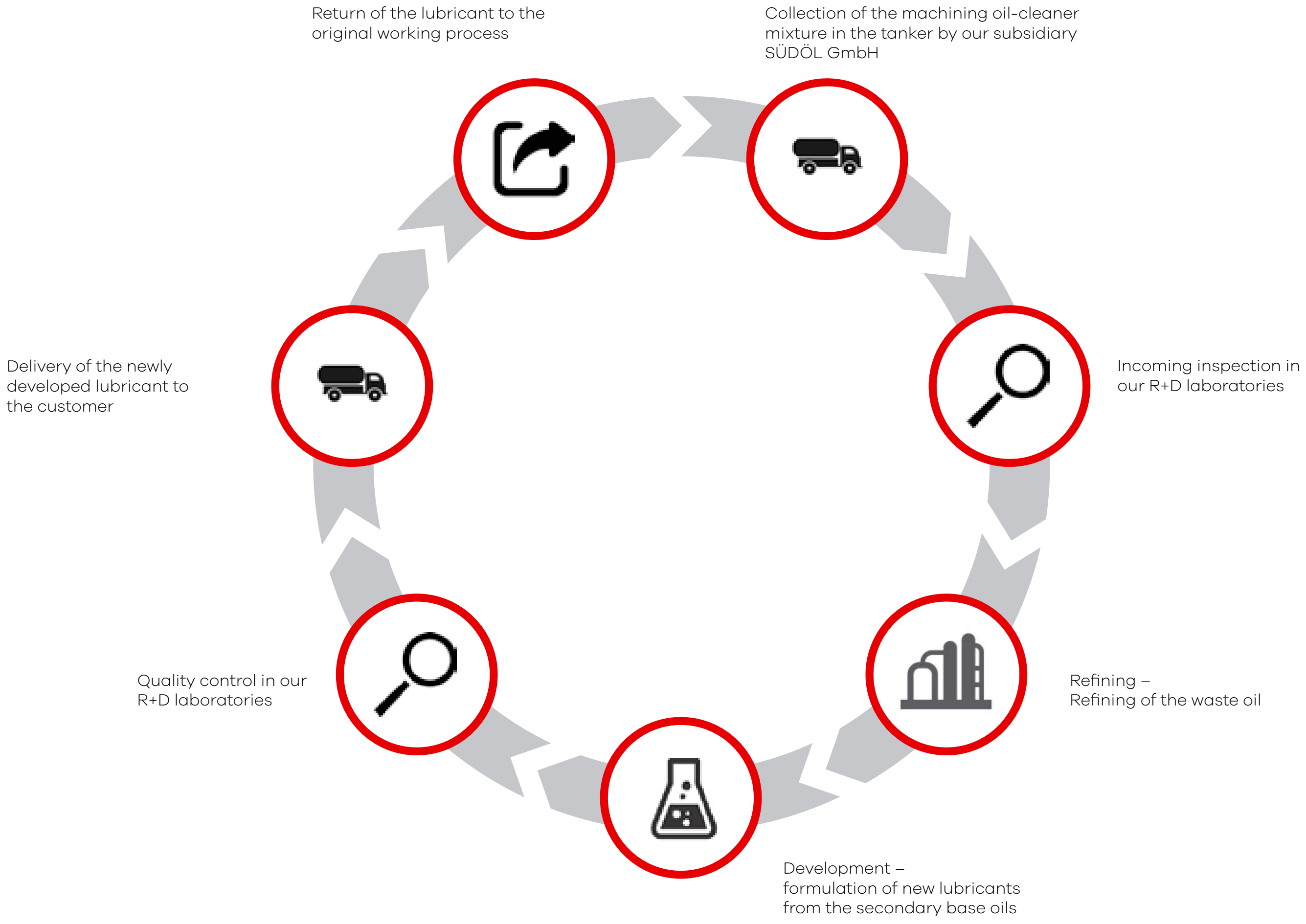
Refining of used oils to sustainable secondary raffinates

Closing cycles sustainably!

With the help of our refining, a base oil for the future is created – exceptional, sustainable and virtually waste-free.

Through our integrated value-added cycle, we have the opportunity to offer sustainable lubricants with guaranteed CO_2 savings.

Our refinery products are sustainably produced, resource-conserving and high-quality lubricants.



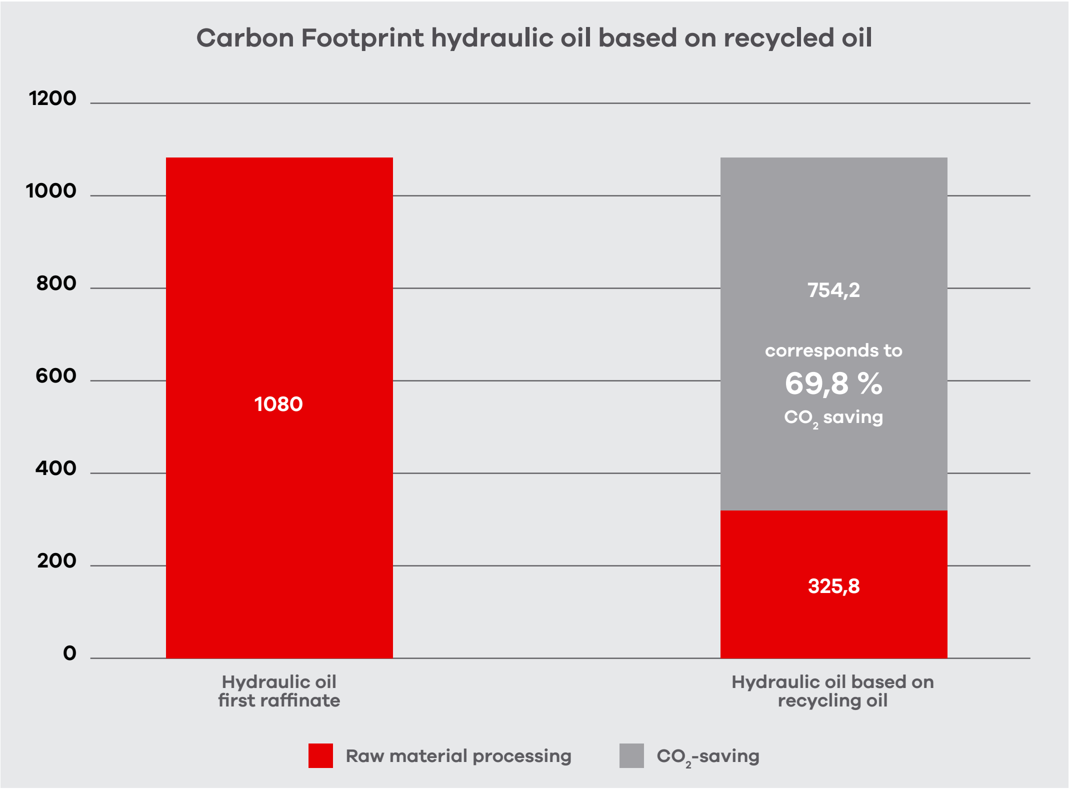
"Waste oil recycling saves money and protects the environment"

CO_2 footprint using the example of hydraulic oil *HLP 46*

The lubricants produced by "refining", save up to **75 % CO_2** in comparison to conventionally produced lubricants, as shown below using the example of our hydraulic oil *HLP 46*:

The product CO_2 footprint of our hydraulic oil *HLP 46* is 0.3258 kg CO_2/per kg. The value for a conventionally produced first raffinate is in comparison over 1.0 kg CO_2/per kg – i.e. **3 times higher**.

The use of our hydraulic oil *HLP 46* contributes to resource efficiency and improves the CO_2 footprint of our customers!



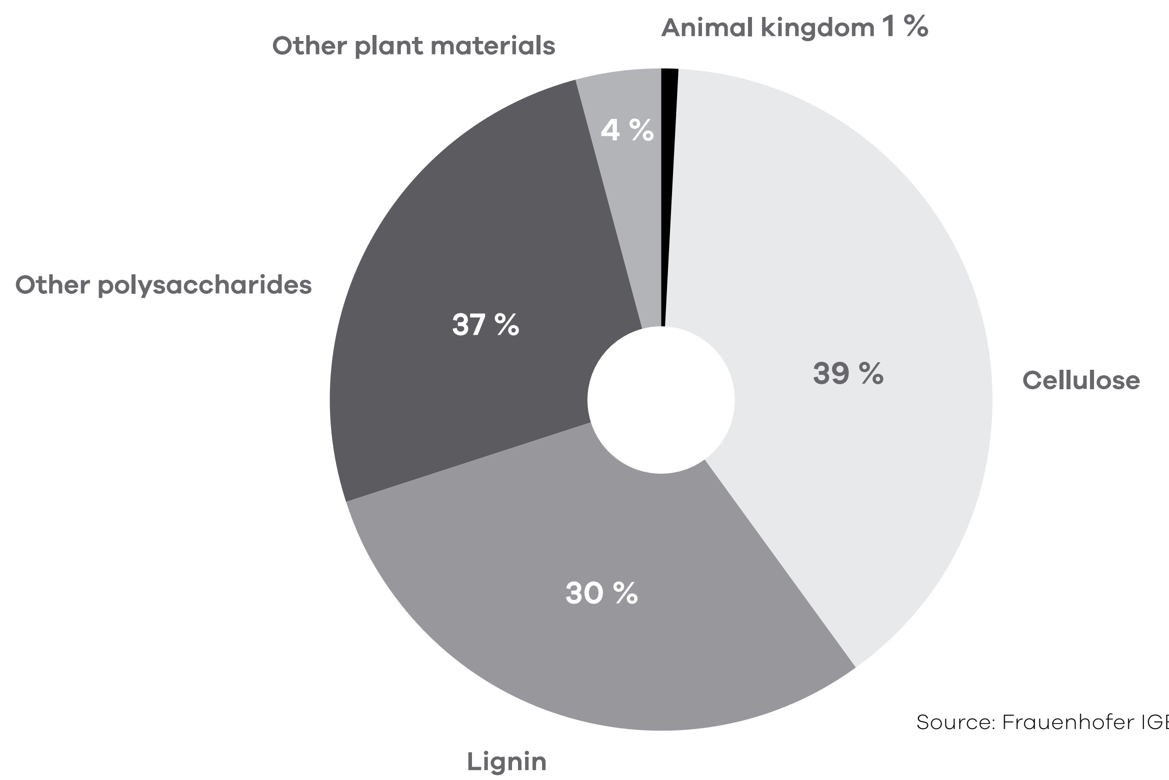
Cradle-to-gate consideration

Biogenic
Lubricants made from biogenic base oils

Another possibility for the production of CO_2 optimized lubricants is the development of lubricants with biogenic raw materials.

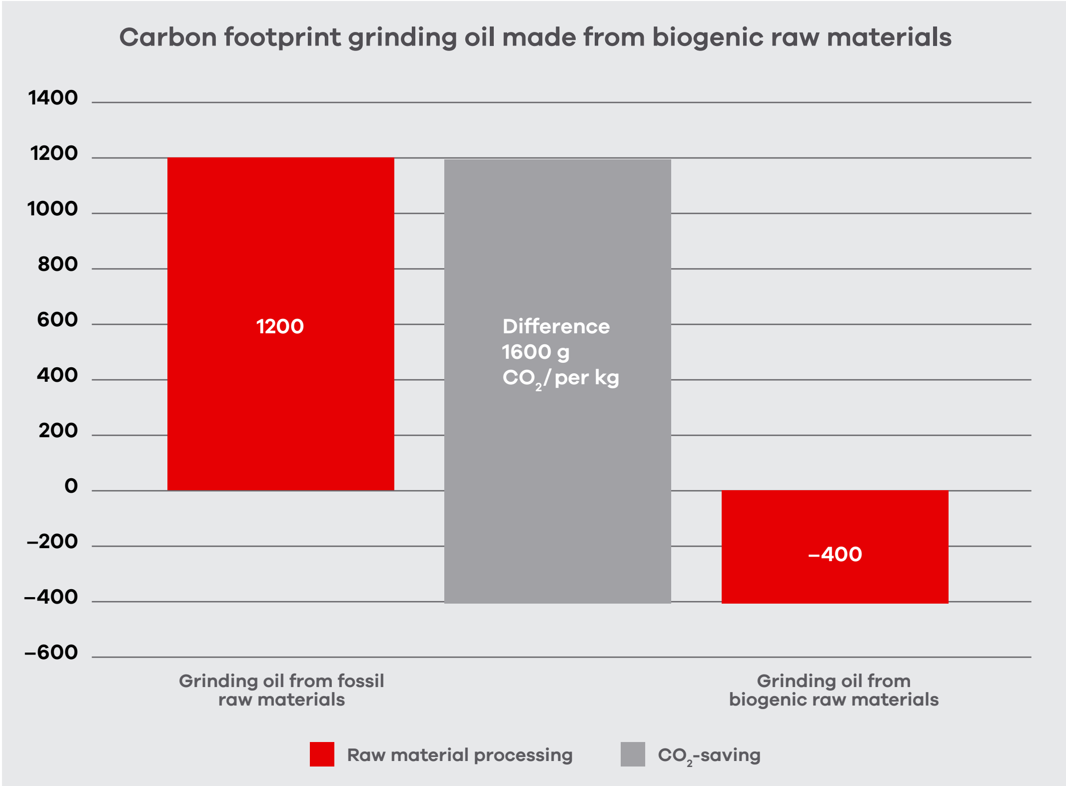
Biogenic raw materials offer potential for CO_2 optimized development, if recycling is not possible. Example: Loss lubrication punching oil, corrosion protection, etc.

Main components of biogenic raw materials



Source: Frauenhofer IGB

"CO_2 reduced for our ecosystem"



Cradle-to-gate consideration

CO_2 footprint using the example of *Multicut Honogrid FSB 5*

By developing lubricants from biogenic raw materials, we save up to **40 % CO_2** compared to mineral oils from fossil raw materials.

Practical example high-performance grinding oil *Multicut Honogrind FSB 5:*

The base oil exchange enables PCF reduction of the end products up to 1,600 g CO_2/per kg. Our high-performance grinding oil *Multicut Honogrind FSB 5* conserves resources and improves the CO_2 footprint of our customers!

In addition, it has a significantly improved foam and air separation capacity and has extremely low pour points, high flash points and low evaporation losses.

Our way to Net-Zero

Zeller+Gmelin stands for healthy and sustainable growth. This means acting in a socially and ecologically responsible manner. The conscientious use of resources and responsibility towards future generations are central components of the company philosophy.
For years, we have been working successfully to reduce our ecological footprint and are continuously improving our CO_2 balance. Now we are taking the next step: Through process optimisation, we aim to further reduce our energy consumption and achieve Net-Zero emissions – not through offsetting, but directly by adapting our processes.

In a comprehensive project, Zeller+Gmelin and its subsidiaries Südöl and Fluidmanagement determined the CO_2 balance at their Eislingen site.
The three-pronged approach of the Kyoto Protocol, which entered into force in 2005, was applied.
The Kyoto Protocol was superseded by the Paris Agreement in 2015.

Strategic triangle approach to resource conservation

In the long term, we also aim to sell CO_2-reduced products to our customers. The research and development departments are continuously working on innovative solutions that reduce the burden on the environment and improve customers' processes.

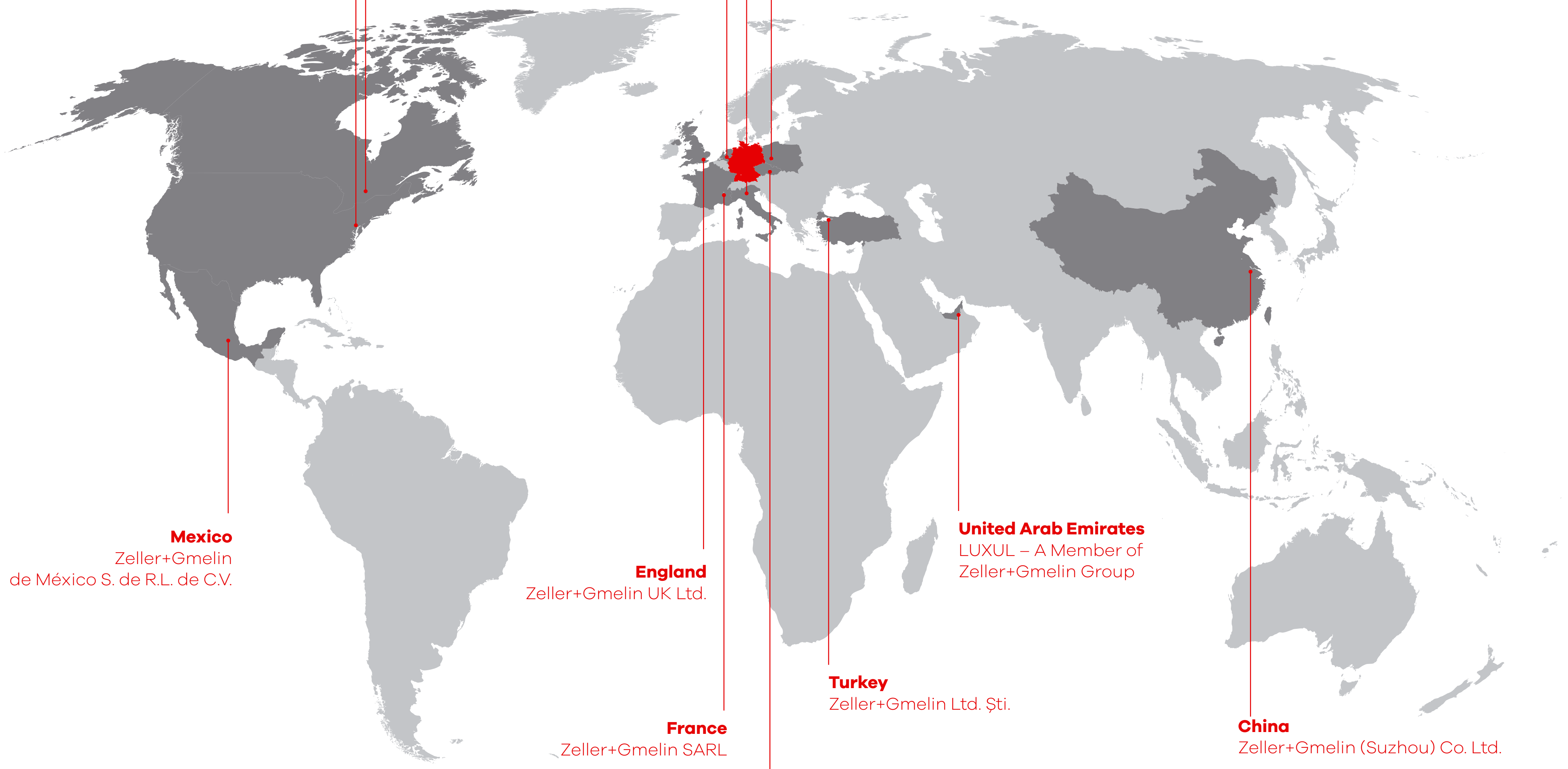
At home + Abroad

We are your plus.

Zeller+Gmelin has got offices worldwide, plus its head office in Eislingen in Baden-Württemberg. Our name stands for reliability and quality, at all times. Our subsidiaries and partners with all their employees ensure this on a worldwide basis.

The distinct expertise of our sites and our smooth cooperation are beneficial not just to us, the company as a whole – but also to you, the customer.

The concentrated competence and understanding of processes, application and development, coupled with problem-solving skills and personal advice, are what make Zeller+Gmelin a global figure when it comes to understanding and solving your problems.



EXPERTLY DONE.

Zeller+Gmelin GmbH & Co. KG · Schlossstraße 20
73054 Eislingen/Fils · Germany
Phone: +49 7161 802-0 · info@zeller-gmelin.de
www.zeller-gmelin.de

1125