

Knowledge | Values | Change





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Founding of the  
needle factory Witte

1785

1894

Founding of first  
press shop Iserlohn



Production of hand tools  
instead of needles

1950

Electric, heating,  
and household appliances



1955



Acquisition  
M. Kutsch, Attendorn

1984

Acquisition  
FAUN



1994



Acquisition  
ZOELLER



225 years of  
KIRCHHOFF Group



47 plants in 16 countries,  
on three continents

2006

2011

2005

2010

Today

Acquisition  
REHA



Acquisition of  
majority share Van-Rob



# 230 Years

Knowledge | Values | Change



Dear customers and business partners,  
Dear readers,

For some 20 years already, we have been keeping you regularly informed of the developments in our business areas with the KIRCHHOFF Group's magazine K>Mobil. And now, 230 years after the founding of our Company, we would like to give you an additional and more detailed insight into our family-owned company.

We will not only report about our products and product developments, new business areas, trade shows, company expansions, and new factory constructions, but also

about our history, as well as economic and social events. The theme "Knowledge, Values, Change" sets the tone for the articles and, at the same time, expresses what has contributed to our success over 230 years.

#### **Accelerating growth**

After an increase of 3.5 per cent in 2014, the global economy will continue to recover during our anniversary year, despite existing political instabilities. The poor

economic development in a few European and South American countries strain the prospects, as do the conflicts with Russia in regard to eastern Ukraine and the ISIS in the Middle East.

Our own growth is also seeing a recovery: in the course of the current year, we were able to increase our turnover by 10 per cent compared with the same period of the previous year, while currency effects had a positive impact. For the year 2015, we expect a turnover of 1.8 billion EUR and stable employment opportunities.

In the past fiscal year 2014, we improved our structures and were able to open three new production locations: one for disposal vehicles in Poland and two plants for automotive components in China and the USA.

The global automotive industry is developing steadily and has, after an increase of 3.6 per cent to 87.5 million units in 2014, grown once again in the course of the current year: the U.S. market is experiencing an increase of over 4 per cent in the sale of new cars, whereas in China the increase amounts to 5 per cent, and in Europe even 8 per cent.

The disposal vehicles business unit, KIRCHHOFF Ecotec, has further expanded its international presence with the acquisition of the majority shares in the market leader for refuse collection trucks in Turkey.

We have formalised the key points of our strategy for the upcoming fiscal years in the "Agenda 2020": inspired by our vision and our values, we are developing seven detailed individual strategies on the topics of customers, markets, technical development, culture and human resource

development, lean production and administration, earnings development, and risk development.

### Germany needs structure reforms

We are currently encountering strategic challenges, particularly in our domestic market. While the worldwide locations of our group of companies are, without exception, recording a positive development, the conditions in Germany are increasingly a cause for concern: apart from the continually rising energy costs, the rise of labour costs by about 14 per cent in the last three years alone has impaired our competitive position.

In addition, since the introduction of the pension starting at 63 years of age, many older and more qualified employees are leaving the work force at an earlier stage. In light of the demographic change, this loss of experience and qualifications is hard to replace with young skilled staff. The burdens of bureaucracy are also on the rise again in the social sector in comparison with other countries, which negatively affects our position in the world market.

To counteract this trend, Germany urgently needs renewed structural reforms. Performance has to be worthwhile, and an investment programme in infrastructure has to secure the future of the commercial and industry location Germany. Apart from the restoration of traffic routes, the expansion of energy and data networks is an indispensable prerequisite for the energy revolution and the promising networking and digitalisation with high-speed data transmission.

The KIRCHHOFF Group, however, is not going to wait until conditions have changed: we move our ventures forward with great innovation effort towards products and processes in order to continue providing improved solutions to our customers. In the automotive sector, we are working on the higher stability of our parts at lower weight and are reviewing our production costs. The business division Mobility is expanding its product range in support of mobility for the elderly. In the area of disposal vehicles, the reduction of operating costs is a focal point of our efforts. To this end, we are developing solutions for reduced emissions, higher payload, and an overall increase in efficiency.

We hope you will find this reading matter stimulating and are looking forward to an ongoing dialogue with you.

Dr. Johannes F. Kirchhoff

Dr. Jochen F. Kirchhoff

J. Wolfgang Kirchhoff

Arndt G. Kirchhoff





*"Companies are managed  
like families:  
with heart and soul."*

*( Kim Höhne )*

# A family-owned company is defined by family

How much Kirchhoff is part of KIRCHHOFF



She lovingly calls him “Opi” (or grandpa), the most dedicated family man she knows, the one with the big heart. But he is also a walking dictionary of economics, a man driven by ambition, who really knows the answer to everything, but whose manner is wise and not know-it-all.

He is delighted by her cheerfulness and her positive attitude. She always looks ahead and searches for possibilities to improve. Simply put, the born entrepreneur, who tackles problems and wants to shape things.

When the 30-year-old Kim Höhne, née Kirchhoff, and the 88-year-old Dr Jochen

F. Kirchhoff come together, they span three generations of very successful family entrepreneurs with extensive knowledge, experience, and drive. But first and foremost, they are two members of a family that love and genuinely cherish each other.

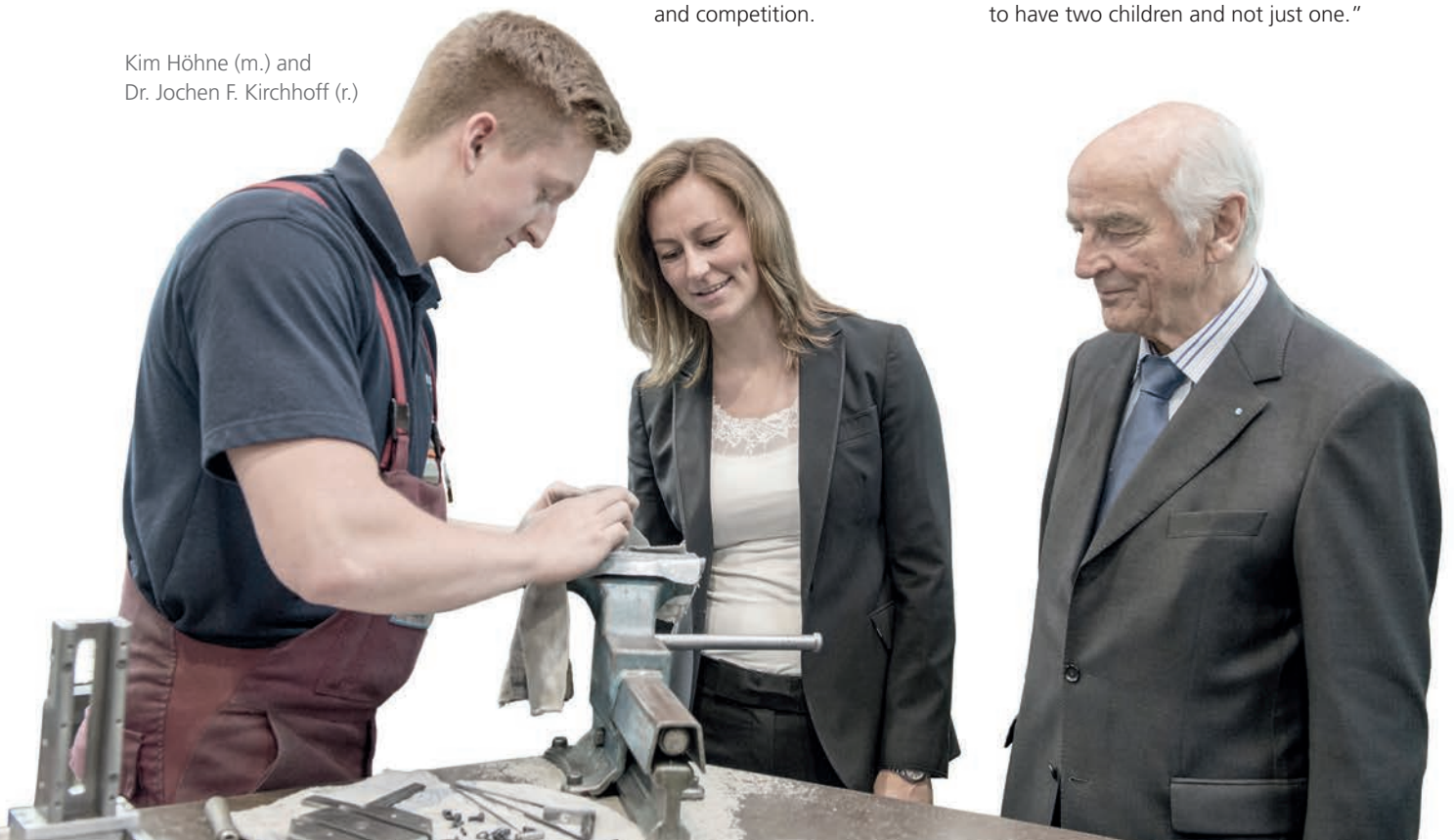
This can be sensed in every description of family life and of working together, as well as in every smile they share during a conversation. And they agree on the values of what family truly means, on what family offers, on what each individual has to contribute, that family can be the basis for multiple generations living together—and what it can be for a company. The most important elements of this consensus are team, critical ability, and competition.

## Team and competition

“I always carried a stop watch in my pocket”, Jochen Kirchhoff remembers. “The children always competed against one another, be it while swimming or running. They wanted to measure themselves against each other and were encouraged to develop rivalry. We even built an obstacle course in the garden.”

This is the model that Kim Höhne follows as well. The daughter of Johannes Kirchhoff has just given birth to her second child: “I shall raise my children the same way I was raised: with a spirit of competitiveness and teamwork at the same time. That is also the reason I chose to have two children and not just one.”

Kim Höhne (m.) and Dr. Jochen F. Kirchhoff (r.)





Team and competition go together in Kirchhoff family tradition. This combination rests on the ability to both offer and accept constructive criticism. According to Jochen Kirchhoff: "The children always wanted to get along well. Criticism must be offered in such a way that it is bearable and not offensive. In a benevolent manner."

This belief can be carried over from family life to business life: "The only way to successfully work together is if you are not shy to criticise something you do not like", says Jochen Kirchhoff. His children were likewise encouraged to critically assess each other—something that has not damaged their relationship in the least. "Today, all of them are independent individuals. Each one with their own personality, but they get on so well that they still go on holidays together. This is, of course, a great gift."

Jochen Kirchhoff has a simple formula for why this approach has success: "Because I love my children and grandchildren, and they know I do. Then you can afford to offer a critical remark as a father—as long as you do not forget to praise them as well." This works for the generation of grandchildren as well, as Kim Höhne confirms: "Each individual is taken into consideration and shown respect, at times with approval and sometimes with criticism, always in the right mix. Surely that is not just a question of life experience or attitude, but also part of his personality. You cannot develop such a big heart by experience alone."

Having been raised like this, it is only natural that her own company should operate like a family. Following her studies, Kim Höhne started her own communications agency that already has several employees. "In principle, companies are managed like families", she says. "Namely with heart and soul. We are a young and small team that wants to continue growing together. I always make sure that those who start at our company enjoy working in a team."

But, of course, there is always a difference between business and private life, and sometimes it is difficult to find the right balance: "On the one hand, you want to treat everyone as family, but on the other hand, you have to maintain a certain distance in business. In difficult times, for example, you have to restructure, something the staff might not like."

#### **"The nicest job you can have"**

The (family) business life is not always completely harmonious, as Jochen Kirchhoff is well aware. But he is convinced: "If you have the independence to do something with and for people, then that is still the nicest job you can ever have in my opinion." He has worked in the Company that bears his family name for more than 50 years. But the management of the Company he decided to pass on to his sons Arndt, Johannes, and Wolfgang already some years ago: "You have to be able to let go in due time, be willing to step back, and transfer responsibility. I know many fathers that are not capable to do this. They have good intentions and the

presence of mind that they need to withdraw. But to do just that and really stay out of it, that is difficult.”

Even so, Jochen Kirchhoff still serves the Company as Chairman of the Advisory Board and the Shareholder Circle. And his enthusiasm shows: “You have to enjoy being an entrepreneur. During the highs and lows, delighting in the successes, and mourning the failures. This creative task, to lead a company, needs to be subject to an ongoing development. New impulses must continue to be set and ideas created, while recognising that you are limited on your own, but can only be successful as a team.” The most important quality of a successful entrepreneur, in his opinion, is the commitment to the employees. “The main task consists in creating lasting, competitive jobs, and then improving the working conditions of the employees.”

This commitment has long extended beyond the borders of the Company, for example, as evidenced in the charitable work of the Dr Kirchhoff Foundation. Following the tradition of his grandfather Friedrich Kirchhoff.

“He was the first of the Kirchhoffs. He moved up to the Executive Board in 1894 and was essentially our pioneer entrepreneur.” Even the grandfather had already



taken a great interest in the community and founded a gymnastics club. His son Friedrich, Jochen Kirchhoff’s father, started a ski club as well as a commercial association.

“Since there was no television back then, they would get together to listen to talks. Interesting speakers came to give lectures on foreign countries, such as China, Russia, and South America. They spoke about all the countries to which the merchants from Germany, and Iserlohn in particular, delivered their goods. This was exactly what they wanted to know: what is going on there, what is their culture like, and how do people live?”

#### Even envy is part of it

But when the company is so intrinsically tied to the family, entrepreneurship does not only have benefits. The kidnapping of entrepreneur son Richard Oetker in 1979 also affected the youngest members of the Kirchhoff family: “As the President of the Employer Association, grandpa held a position that was not popular in all parts of society at that time”, states Kim Höhne. Kim and her older sister Senta were the first grandchildren. “Everyone was constantly afraid for us. That’s why we could not be like regular children and spend an hour at the playground without being watched. You don’t easily forget that.”

And Jochen Kirchhoff also remembers being confronted with jealousy at school: “The factory was located right across from the building of a secondary school, the Altes Märkisches Gymnasium. During

my childhood there were people who said that the Kirchhoff family had bags of gold lying around in their cellar. I simply replied that I had never seen a bag of gold in our house.” These are experiences that even his granddaughter had to go through 50 years later: “Even at a young age you learn to differentiate between the people that want to become your friends because they really like you—and those that just want to be around you for their own advantage. That has proved to be beneficial for me later in life: those that have remained my friends from that time are the most honest, loyal, and closest ones.”

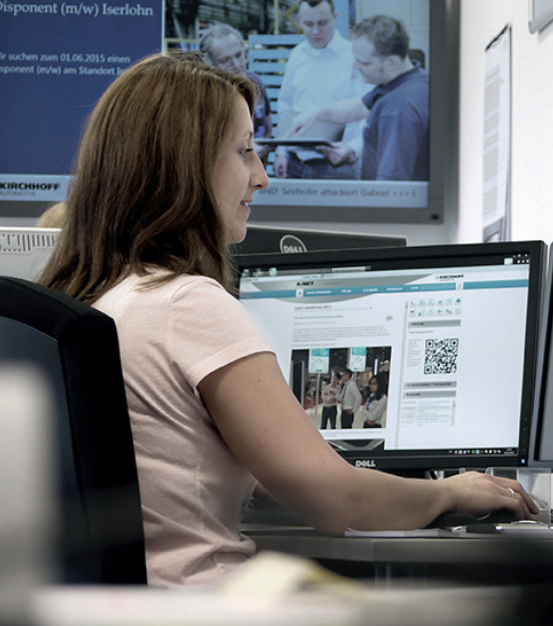
Looking back, and even into the future, the happy moments clearly dominate. When asked about the fondest memory in his business life, it is not surprising that Jochen Kirchhoff comes back to both worlds, the family and the enterprise: “It was the moment when my first son Arndt joined the Company. From then on I had a dialogue partner that shared the same goals and interests.” And it seems as if the family’s commitment to the KIRCHHOFF Group will not end with the generation of Kim Höhne: “We have always approached this matter with great pride. I want to impart the same sense of pride and ambition to my children.”





*"In the past, we were able to regularly walk through each production in person. Today, we have plants worldwide and need other means to remain close to our employees."*

*(Andreas Kirchhoff)*



# Staying informed

— Good internal communication unites employees and company

Anja Hawellek is happy. How nice that the blog is working out. Exciting Company stories that will surely interest the colleagues. Hawellek works at KIRCHHOFF Automotive in Germany. In the Marketing and Communication department, she is in charge of reports for the “Corporate” section of the global Company intranet. The team that is currently looking after the booth at Auto Shanghai in China has sent her a lot of pictures. Pictures of the set-up phase, when the exhibition stand was still ruled by total chaos. Pictures of clients that came by for a visit on the first day already. Interesting and entertaining texts are added in the specially created trade fair blog. They describe just how much work such a trade fair entails—but also how much fun the international team has in the process and the dedication they show.

Hawellek is looking for a particularly expressive picture, writes a short teaser text, and posts both on the intranet. Here is where the story from Shanghai appears on a slider, along with alternating reports

on the award for the best suppliers and the commitment of the Chinese automobile manufacturer Great Wall in Russia. Whoever clicks on the field is presented with a short story accompanied by pictures. A further click leads to the page of the trade fair blog. It also contains a video in which Managing Director Dr Thorsten Gaitzsch (CTO) explains directly from the exhibition stand why Auto Shanghai is so important for the Company.

## The goal is transparency

The intranet is the most current medium of internal communication at KIRCHHOFF Automotive. It is accessible to all colleagues worldwide via their office computers. And more and more locations use large flat screens in the cafeterias as a means of informing their production employees of new developments. “The screens in the cafeterias do not only convey our own corporate news”, explains Andreas Heine, Director of Marketing and Communication at KIRCHHOFF Automotive.

“Production employees generally do not have quick access to check the weather report or the scores of their favourite team during breaks. That is why we present



## A strong team

Andreas Heine (top right, centre) is Director of Marketing and Communication at KIRCHHOFF Automotive. With his team he develops innovative formats for rapidly sharing information with all of the Company's employees.

Anja Hawellek (top left) works in Heine's department and is responsible, among other things, for managing the Corporate category in the KIRCHHOFF Automotive intranet. She publishes news from all of the global Company's locations.

additional news reports on politics, society, and sports in the production areas. News you can use.”

The goal of all such services is the greatest possible transparency in communication: all employees should be well-informed about the Company and the economic environment, whether they work in an office or in production. For Heine, timeliness plays a very important role: “Family-managed companies are often rather reserved in terms of news coverage. They generally fail to report on something before it is already public knowledge. It can be catastrophic for the identification with the company if the employees have to find out through the newspaper, or hear it from their neighbours, that their employer is opening a plant in Romania.” Poor communication results in sensing a lack of appreciation: “Since I’m not told anything, I’m obviously not important enough to the company.”

### Making performance visible

But if the reverse is true and the company makes sure that the employees feel well-informed and valued, this strengthens identification and solidarity. As in the case of Ice Quan. The personnel manager at KIRCHHOFF’s Chinese location in Suzhou just wanted to switch off her computer and leave the office at 7 p.m. But in hindsight she is glad that she took the time to read the latest story posted by Anja Hawellek. Quan regularly checks the Chinese intranet at the end of her workday, which is, of course, translated into

Mandarin. “I’m happy that the Chinese team was able to look after the booth almost entirely by themselves this year in Shanghai”, she comments after reading the trade fair blog. During the previous trade fair, the team was still supported by a few colleagues from Germany. “Now, just two years later, that is no longer necessary.”

Thanks to internal communication, the KIRCHHOFF world also finds out about Wayne Wong’s accomplishments. He works in product development at KIRCHHOFF Van-Rob in Canada, and he is always early to work. Wong turns on his computer at 7 a.m. That is when he has time to concentrate, without incoming calls and hardly any colleagues around. He always begins with an overview: what happened in our company while I was sleeping? He boots his computer, goes online, and the intranet page automatically opens. Immediately he notices the aluminium cross car beam that was showcased at the trade fair in Shanghai. It is featured in various pictures on the trade fair blog. Wong refers to it as his “masterpiece”. Together with his team, he worked on its development for months. “It definitely makes me proud that KIRCHHOFF is also using the product to win over customers in China.”

### Strengthening the team spirit

Solidarity through good communication is something that is deliberately encouraged by the KIRCHHOFF owners. Four years ago there was an age-related change in the Marketing department and the sharehold-

ers Arndt G. Kirchhoff and J. Wolfgang Kirchhoff did not pick an engineer as the new department head. Instead they chose the experienced journalist Andreas Heine and gave the department a new focus, that of internal communication.

“In the past years, we have experienced strong growth around the world, which makes internal communication ever more important. That is why we wanted someone with experience in media”, points out Wolfgang Kirchhoff. Arndt Kirchhoff adds: “In the past, we had fewer plants and were able to regularly walk through production in person. We knew the employees and the contact was quite close. Today, with 30 plants worldwide, that is no longer possible. We need other means to remain close to our employees.”

Heine and his team are creating this close connection. By means of the intranet and



### Everything in sight

Panels show the production workers at KIRCHHOFF Automotive where the part they are working on will be installed in the car.

Via video on the Company intranet, Managing Director Dr Thorsten Gaitzsch reports directly from Auto Shanghai, explaining why the trade fair is so important for KIRCHHOFF Automotive (p. 17, top).



the new employee magazine, all those working for KIRCHHOFF worldwide get to know how the shareholders support the Company as well as the economy as a whole. Whether it is Wolfgang Kirchhoff visiting the American plants and supporting management with changes, such as the SAP introduction, or Arndt Kirchhoff travelling with Chancellor Angela Merkel's economic delegation to China—the employees at KIRCHHOFF Automotive are informed. And their interest in the activities of the shareholders is digitally measurable: the "Next Generation" article, reporting about an annual event where the children of the entrepreneurial family are introduced to KIRCHHOFF, had by far the most clicks in the month it was published.

Not only does digital media strengthen the ties between shareholders and employees, but it also extends the team spirit across country borders. Previously, when discussing a new plant construction in China, rather sceptical references were made at times about "those Chinese". The new colleagues were thus quickly mistaken as an anonymous threat to their own jobs. Thanks to transparent communication, it is now commonly understood that foreign locations also secure the plants in Germany long-term. And through numerous videos and pictures, the employees shown at their workstations and at trade fairs are more familiar. They are no longer

the anonymous Chinese, but have a name and a role. They are our colleagues in China.

#### Work becomes emotionally charged

Another important aspect of transparent communication: employees find out why their day-to-day work is so important. On large panels above the welding cells in the plants, they can see where the part they are producing at the moment is installed in the car. Pictures of these vehicles also have an emotional impact on the day-to-day work: who does not want to have a part in ensuring that the Audi TT or Porsche 911 has a safe passenger compartment or a stable chassis? Graphic representations of KIRCHHOFF parts installed in cars are additionally featured in the employee magazine K>NEWS, which is published each quarter. It is distributed at all locations, in the national language, and contains a local section to begin with so that everyone is up to date with the events at their own plant.

All 8,000 employees worldwide are thus pleased to note that many chassis parts

for the new Chevrolet Camaro are supplied by the KIRCHHOFF Van-Rob plant in Lansing, Michigan. And when they watch a "Transformers" movie and see how a black-and-yellow Camaro sports car turns into the robot Bumblebee, they can proudly say: that is our work!







*"The key is to create jobs that are competitive in the long term, in other words to offer something to the employees."*

*(Dr. Jochen F. Kirchhoff)*

# Development opportunities for everyone

How KIRCHHOFF Automotive is contributing to human resources development

“Mr Kirchhoff, you are the first to declare the subject of education policy as a concern for employers, and you indicated how important it is to implement such policy.” Prof Dr Rolf Rodenstock, the former President of the Cologne Institute for Economic Research, had a lot of praise for Dr Jochen F. Kirchhoff, who promoted further education for employees in his family-owned enterprise in the 1970s. In 1971, the regional employers’ associations founded the education organisation of the North Rhine-Westphalian industry. Jochen Kirchhoff recalls that his fellow employer colleagues were of the opinion that education was “a topic for schools and politics”. But even back then he was convinced of this: “Only if the employees profit, will the company do so as well.”

Projects for employees have become part of the Company over the years. In the first half of the 20th century, during the time of Jochen Kirchhoff’s father Otto Heinrich

Friedrich Kirchhoff, the spirit of solidarity was still strengthened by holiday celebrations and communities within the company: everything was offered, from ballet to gymnastics to excursions for apprentices.

“Unlike today, mobility was severely restricted, which is why the Company offered opportunities to broaden the horizon”, explains Jochen Kirchhoff. The Works Council has always been an integral element of the Company, as well as the weekly discussions with the personnel director. And the senior evenings that were introduced back then are still ongoing.

## “Offering something to the employees”

In 1855, KIRCHHOFF nucleus Witte was a true pioneer, particularly regarding the company health insurance and relief fund. Even prior to the introduction of insur-

ances under Bismarck, the 1,100 employees received social benefits.

This demonstrates that at KIRCHHOFF Automotive, social responsibility is more than mere lip service, it is practised as part of its corporate philosophy. This is emphasised by Jochen Kirchhoff: “All of this is about making jobs competitive in the long term, in other words to offer something to the employees. They are not solely interested in good and sustainable working conditions, but also in the setting in which they live and work.”

As an internationally operating company, KIRCHHOFF Automotive feels responsible to assist its employees by contributing to human resource development—and doing so worldwide. Paul Dilworth is Executive Vice President and Global Human Resources Manager in Aurora, Canada. To him, the people are most important in a company: “Every company can buy appropriate technology. Employees, on the other hand, are the true competitive advantage of a company. I am truly convinced of this.”

For a global organisation like KIRCHHOFF, it is important to offer all employees the same opportunities. “No matter if they are employed in North America, Europe, or Asia. Our standardised employee programmes are designed to ensure this.” Standards in Human Resources as a basis for healthy employee relationships as well as a uniform understanding of good personnel policy—a clear advantage for Paul Dilworth: “Not only the Company profits



The participants of the KIRCHHOFF talent promotion programme KATE complete a diversified seminar course.

from ongoing human resource development. More importantly, the programmes benefit our employees' careers."

Such standards do not appear overnight. Global HR project teams regularly exchange their experiences in order to optimise the employee programmes. The teams, which are made up of employees of the personnel and other departments, can thus contribute their different geographic, cultural, and linguistic backgrounds. And how is this cooperation working out? "Fantastic!", according to Paul Dilworth.

**Talent promotion with KATE**

In 2013, KIRCHHOFF Automotive developed a special programme for human resource development: the internal talent management programme KATE (KIRCHHOFF Automotive Talent Education). "The purpose of this is the targeted advancement of so-called 'talents', meaning employees

that have a significant potential for growth", explains Tatjana Schutte, consultant in Human Resource Development and Marketing. "The project runs for three years. It consists of seminars, projects, and feedback discussions."

KATE, however, does not simply follow a standardised model. Rather, the competencies of the high potentials are furthered by individually tailored offers. To begin with, the superiors recommend suitable employees. These have to fill out an evaluation form, in which they are asked to assess their competencies. "And from these recommendations the KATE participants are chosen and invited to a development centre. That is when the employee finds out he has been nominated", says Schutte.

Alexander Pies, tool mechanic in the Attendorn toolmaking plant, still vividly remembers his invitation to the development centre: "I was thrilled! At that time,

I only had a vague idea about KATE as it had just been implemented. My boss thus presented the project to me in full detail." For Pies, his nomination was a sign of appreciation shown to him by KIRCHHOFF Automotive: "To know that you belong to the talent pool gave me a great motivational boost."

"In the development centre we develop a detailed potential profile together with the candidates", says Tatjana Schutte to explain the extended KATE procedure. "The jury, made up of employees that do not know the candidates, grade them in role plays, discussion rounds, and cognitive tests." It could be compared to an assessment centre, but has 'a much stronger focus on development'. Self-evaluation by the candidates is also required. During this process, Alexander Pies quickly realised that some areas were easier for him than others. "It was difficult to act as a superior and manage conflicts. I had never done that before."



Promising talent: the first KATE project group, which Alexander Pies (front, third f. r.) was part of

### “It is well thought out”

The capabilities of the group are further developed in seminars over a time span of three years, closely linking theory and practice. “That is why project work constitutes an important element”, says Schutte. “A specific topic relevant to the Company is optimised, such as inbound logistics. Participants share their skills and knowledge and learn to deal with critical situations.” Tatjana Schutte looks back positively at the KATE project: “The team worked together very well and did not despair in view of challenges. I was also very happy that Alexander Pies volunteered as project leader.”

At the start, the tool mechanic did not have any experience with leadership tasks. Nonetheless, the team supported his decision to take the plunge and make use of this learning opportunity. “I received tremendous support. The team backed me up in all my decisions.” And that is the key of KATE: to encourage growth where each individual has the greatest potential for development.

“It is well thought out”, comments Alexander Pies. “Each person was able to profit from the different modules. In the beginning we learned a lot about ourselves and about how others perceive us. I was able to use many of the skills, such as team and conflict behaviour, even in everyday life.” Tatjana Schutte adds: “We prepare the candidates for higher positions and projects, but we also want to see individual initiative. During the feedback discussions that take place in autumn, we want the candidates to tell us where they see themselves in the future. Together we can make many things happen, such as a stay at a foreign location.”

Alexander Pies wants to further his technical education in particular: “I want to train as a master craftsman and can imagine taking on the role of group leader and then foreman.”

KATE has equipped him well for these tasks. When the talent development test phase ends in Poland, Portugal, and Germany in 2016, it will have to be decided



Since 2011, the corporate day-care centre KiCoKids has provided KIRCHHOFF parents with child care (pictured is the anniversary celebration 2012).

whether KATE should be extended to all KIRCHHOFF Automotive locations.

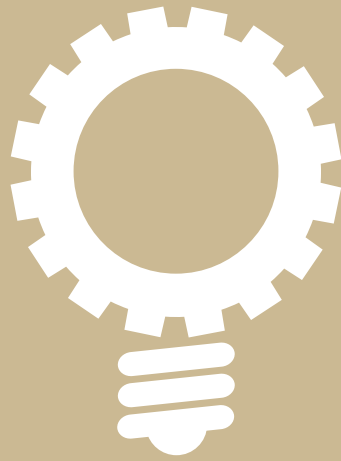
Of course, KIRCHHOFF Automotive does not forget its other employees beyond the talent promotion programme. The so-called Employee Development Process (EDP) is open to all. Tatjana Schutte names profession- and job-specific career profiles and individual development programmes that are developed with superiors in the annual EDP discussions. In accordance with global standards, needless to say. “Individualised development programmes for managers, English courses, computer courses, and seminars on subjects such as conflict management and team building are always very well received”, she says. These offers are based on the premise to not only find the right employees, but also keep them—a very important part of the KIRCHHOFF Automotive entrepreneurial understanding.

### Support for parents

As of 1 July 2011, this support has been reflected in the laughter and singing of children at the Attendorn location: The opening of the corporate day-care centre KiCoKids offers parents at KIRCHHOFF Automotive the possibility to return to their workplace within a short time—and to have their children close, confident that they are in good hands. “KiCoKids is

a great provision that responds very well to the needs of working parents—unlike the many public establishments that many friends and acquaintances tell me about”, says Silvia Rauterkus, Key Account Manager in the GM Team. She gave birth to her first child in September 2011 and is currently expecting her second. After her first child, she took maternity leave until mid-January 2012, and then started back on an hourly basis. Her daughter began attending the corporate day-care centre when she was 15 months old and has been very comfortable there.

Silvia Rauterkus not only appreciates the flexible drop-off and pick-up times, but even more so the language offers: “One of the teachers speaks only English with the children.” The young mother sees not only the benefits for her children, but also for the fulfilment of her own career: “My re-entry into the job was problem-free. I did not have to take a long leave and was in contact with my colleagues during my absence, for example through the home office arrangement. I will definitely do it the same way with my second child.” Silvia Rauterkus is grateful that the principle of work-life-family balance is practised at KIRCHHOFF Automotive: “This makes the compatibility of family and career possible. That is what I call future-oriented.” A conclusion that can be drawn from the various initiatives related to human resource development.



*A successful company is not content to serve the market with tried-and-tested products. It develops products for the market of tomorrow.*

# From the sewing needle to the screwdriver

— The requirements change, the competencies of WITTE Werkzeuge remain the same

And suddenly you realise you have been using the wrong term for years: “The German language has two terms for the word screwdriver: ‘Schraubendreher’ and ‘Schraubenzieher’. For many years, the term Schraubenzieher was used. But this term denotes the pulling out of a screw. When have you ever pulled out a screw?”, Frank Rohlf asks with a wink. He is the development director at WITTE Werkzeuge in Hagen and greets the visitor in the entrance hall. A large old machine dominates the room. It dates back to the time of needle production at WITTE, because that is how the story of the company began in 1785, with great success.

In those days, WITTE produced sewing needles for the household, as well as craftsman needles for upholsterers, shoemakers, and sailmakers. Ten million of these were shipped out every year. The company developed export markets outside of Europe, such as in North and South America and in Asia, particularly China. Thanks to machine production, WITTE’s British competitors were able to manufacture products of previously unattainable accuracy and quality, and to reconquer the world market. As a result, the industry in Iserlohn experienced a serious crisis—until the ingenious WITTE employees succeeded in further automating the British machines. In 1857, company records indicate 1,100 to 1,300 employees. Every day they produced up to two million needles.

As early as at the end of the 19th century, Friedrich Kirchoff already anticipated that there would be a profound struc-

tural change in the needle industry due to the upcoming machine production of clothing. In the year 1894, he convinced his fellow partners to diversify at the right time with the construction of a press and punch plant. From this time on, WITTE became a supplier for the vehicle industry, at first for the locomotive and waggon construction, and later also for the budding automotive industry.

The 1950s mark the decade that made WITTE what it is today: a tool manufacturer. Initially, screwdrivers are still fitted with a wooden handle, but from 1952, they were produced with a plastic handle. Starting in the 1960s, WITTE added an

ergonomic handle design. Over the decades, the company continued producing needles, using the gained expertise in the other fields of activity.

But 1954 was the turning point: the needle production is discontinued. In 1982, WITTE ultimately expands the production to include magnetic holders, bits, guide sleeves, and bit holders.

## Knowledge matures throughout the centuries

More than 200 years of history that impacts the present: many things have



Frank Rohlf is the development director at WITTE Werkzeuge. He knows why the screwdriver should be referred to as “Schraubendreher” instead of “Schraubenzieher” in German.

changed at WITTE Werkzeuge, but those worthy of preservation remained. That becomes obvious on a tour of the plant.

“Since 1986, screwdrivers ‘Made in Germany’ are produced here in Hagen”, says Frank Rohlfis proudly while he walks the guest by the offices in the production halls of WITTE Werkzeuge. “At the moment, production is about ten million a year. In this warehouse, our finished screwdrivers are stored and are just waiting to be shipped out into the world.” A few more steps take the visitor to the centre of the machine park. There is a robot, in the background you can hear how metal collides, and in another corner the air is shimmering with heat. One by one, Rohlfis explains the production process that encompasses a total of six departments.

It starts in the raw material warehouse. No matter how the steel is delivered, whether in coils or bars, the first step is to always cut the raw material. “Cut to length is the professional term”, explains

Rohlfis. “We gained this expertise as early as in 1785, during the time of our needle production. Even back then, the wire had to be cut to length. The machine that you saw at the entrance was used for this with the fine wire.”

The second production phase is also a core competency of the company. “The blade blank is pounded. The blades are thus given a flat side that ultimately is put into the slit of the screw. For this we use the cold forming process. Likewise a technology that dates back to the early beginnings of WITTE Werkzeuge.” Another machine handles the finishing of the blade. “The shape must have a precise fit and be standardised so that the screw can easily be unscrewed”, says Rohlfis, winking at all those that thought that screws are pulled, referring to the misuse of the German term.

But the blade is not yet finished at this time. “The steel is still soft and would not withstand the loads during use. That

is why all blades go through the process of tempering, where the material is hardened.” With that being said, Rohlfis enters the comfortably heated adjacent hall. The tempering equipment takes up most of the room, blazing flames covering everything in orange-coloured light. The development director explains: “The oven is between 800 and 900 degrees hot and is the first in line to receive the blades. The heated metal parts are then quenched in a cold oil bath. In a subsequent step they are degreased, and finally heated up again.” Exact timing is crucial for this process: “If the tempering process does not run as smoothly as it does here, then the material could end up with cracks. In this case, a high level of quality could not be guaranteed.”

**The handle is key**

Once the blade is cleaned and plated with chrome, then only the handle is missing—the key, the critical part of the screwdriver.



One tempering process step takes place in the oven (top left), which is crucial to the stability of the screwdriver. With the flocked handle of the MAXXPRO (bottom left), good results are guaranteed at the torque measuring station (bottom right).



New in WITTE's bit range is the product series COMBITBOX-6.

Since the beginning of the screwdriver production at WITTE Werkzeuge, "all that is left is the handle" has turned into a complex research field: "Screwdrivers are operated by humans and must therefore be adapted to human abilities in order to reach the maximum power transmission", states Rohlfs. From the production hall, where the plastic handles are cast in a moulding tool, he continues to the show room. There the expert presents certain features that characterise the ideal handle. Above all ergonomics: "Here you see an old screwdriver. It is formed in a cylindrical fashion and does not fit very nicely into the hand." Rohlfs holds the tool in his right hand and points out the hollow spaces between the palm of the hand and the handle. "If you want to turn the screwdriver at full force, you generally have to use both hands. That is not practical."

He then puts the outdated tool to the side. "This here", he proudly continues and reaches for another screwdriver, "is the MAXXPRO nature. This screwdriver is ergonomically formed. We have been developing handles with this triangle form since the 1960s. It is very practical because humans have a turning radius of 120 degrees, which corresponds exactly to one side of the handle." He hands on the screwdriver and instantly you feel

how it perfectly fits the natural shape of the hand. "Moreover, the handles are no longer straight. Do you notice how the curvature of the handle clings to the inside of your hand?"

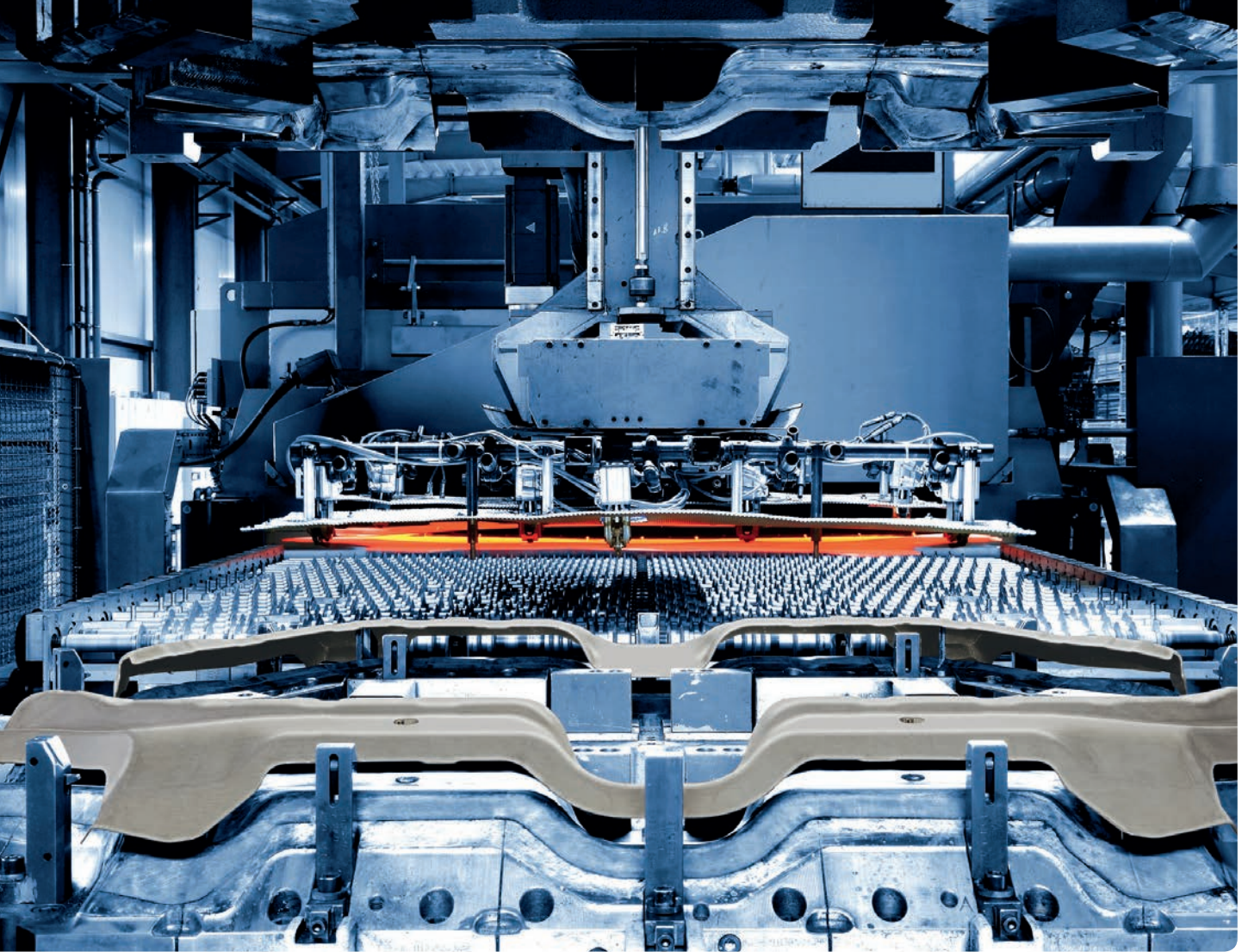
"The true innovation, however, lies in the surface coating of the handle", adds Rohlfs, while he turns to a measuring station. Porous plastic handles offer more grip than smooth hard plastics. Cork handles, like those used for the MAXXPRO nature, absorb moisture and provide a better grip. "Our pride and joy though—the unique innovation—is the flocking of the handles. It is a procedure to apply a microfibre coating. WITTE Werkzeuge has patented this procedure."

The benefit is demonstrated by a torque transfer test of different screwdrivers. For this test, the blade is put into the slit of the measuring station and is then turned with full force. First, a non-flocked screwdriver in combination with a dry hand, which leads to a mediocre result. Then, using a flocked screwdriver—the result is already much better. Now it gets interesting as Rohlfs reaches for the baby

oil. Oiled hands, non-flocked screwdriver: it slips. Oiled hands, flocked MAXXPRO: "Almost ninety per cent of the torque with dry hands was measured", Rohlfs reports. "This confirms that we have reached our goal. The handle offers the best conditions, even when used with oily or greasy hands." A true innovation.

It comes full circle, the screwdriver 'Made in Germany' is ready. One last quality inspection and then the print is added. "We offer the greatest possible flexibility: private labels, assembly, presentation, and packaging are adapted to our customers' wishes", explains the development director while walking through the warehouse for the finished products. Forklifts drive back and forth between the ceiling-high shelves where brown cardboard boxes are stacked. "Another little relict from the times of needle production", says Rohlfs. "The cartons are also perfectly suited for packaging the screwdriver blades."





## From steel to the material mix

— How materials have developed in body construction

There is no reason to say farewell to steel. As a material it will continue to play an important role in body construction for the automotive industry. Today, steel is competing with alternative materials. Most of the times it is not about either/or, but rather as well as: modern body construction has been

combining different materials for some time, according to the intended purpose.

The growing material diversity is like a red thread that runs through the history of body construction at KIRCHHOFF. With its first press in Iserlohn, KIRCHHOFF was already producing steel parts for the bodies

of the young automotive industry in the 19th century. For decades, this was limited to parts for trucks. After the acquisition of the supplier Kutsch in Attendorn in 1984, the aspiring Company started with the production of passenger car components, which now represents the largest business unit of KIRCHHOFF Automotive.

In most of the 30 plants in North America, Europe, and Asia, A and B pillars, floor assemblies, front ends, or cross car beams are produced for nearly all automobile manufacturers worldwide.

### Steel becomes stronger and lighter

Steel still plays the largest role. It is inexpensive, can be used anywhere, and, above all, is recyclable. While carbon fibre that has once been shredded can never regain its characteristics prior to recycling, melted down steel can time and again. And throughout the years, stronger and harder steel types have emerged. In all crash-relevant areas of the car, hot formed steels are used today. Currently, there are

four hot forming lines in Germany and Hungary on which KIRCHHOFF Automotive produces, for example, A and B pillars, or so-called tunnels, that make the interior of modern cars safe. Ovens that are more than 30 metres long slowly heat the steel blanks to around 900 degrees before the forming tool quickly quenches them. The resulting vehicle parts are so hard that they can no longer be cut mechanically, but only by laser.

Changed requirements concerning safety go hand-in-hand with the customers' wish for weight reduction: while formerly very thick, and therefore heavy, steel parts were used, today's hot formed parts are just a few millimetres thick and thus light—offering the same or even

better protection. Even though the public primarily thinks about carbon and aluminium in the context of lightweight construction, economic lightweight construction in the automotive industry is currently unthinkable without steel. The worldwide top-selling passenger cars are part of the compact and mid-size range. The integration of carbon or aluminium parts would make them unaffordable to the buyers.

Arndt Kirchhoff, CEO and shareholder of KIRCHHOFF Holding, is also convinced of the lasting importance of steel: "If you want to keep up in this area, then it is essential to primarily work with steel grades. Steel is still the cheapest material, and is



Great diversity: examples from the product range of KIRCHHOFF Automotive

also the most environmentally friendly." In contrast to aluminium or plastic, steel can be recycled on a one-for-one basis. This is exactly the Company goal: "We want to be as raw-material-independent as possible, especially in the highly industrialised countries, which do not have as many raw materials as other regions in the world. And we plan to achieve this by collecting and recycling materials. We therefore believe that all grades of steel will be used in vehicles for a long time."

**Playing a leading role in the material mix**

A successful company is not content to serve the market with tried-and-tested materials. It develops products for the market of tomorrow. "On the one hand,

we have built up our own research and development department in the last few years, not just in Germany but around the world", says Arndt Kirchhoff: "Our development network." On the other hand, KIRCHHOFF is also involved in competence centres such as the Automotive Center Südwestfalen, which is committed to lightweight construction (see box on p. 29). "This leads me to believe that we are already at the forefront concerning multi-material and hybrid construction."

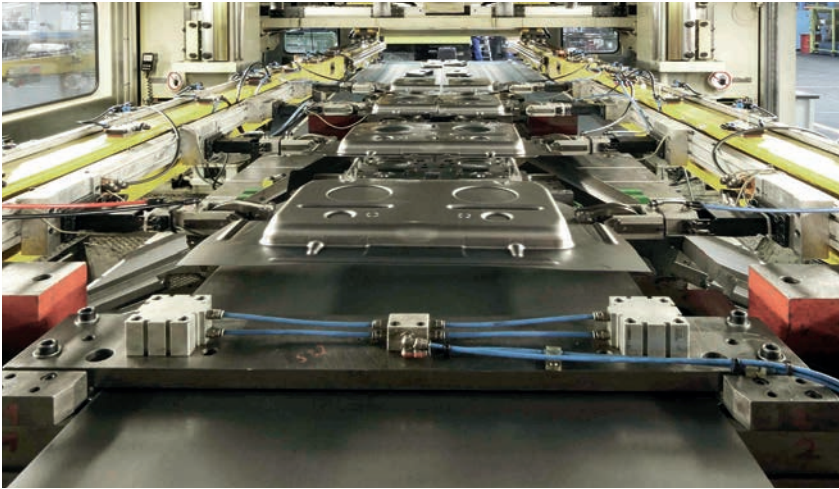
While expensive sports cars are becoming lighter and lighter thanks to an increasing number of carbon components, engineers at KIRCHHOFF Automotive are developing lightweight construction solutions in the material mix that are economically sensible for the mass market because of their affordability. The lamp bracket for different BMW models is

made of steel and plastic. Both materials are permanently connected with an internally developed glue. Aluminium and fibre-reinforced plastics keep the weight to a minimum for the radiator support in various pickup trucks and SUVs from General Motors. And a steel axle beam with a zinc flake coating guarantees driving stability in the Porsche 911. In the case of Porsche, the steel product developed by KIRCHHOFF Automotive even replaced one made of aluminium, because the combination of weight and price was convincing.

Professor Christoph Wagener, Director of Research and Product Development at KIRCHHOFF Automotive, is certain that the newly developed bodies will be produced out of a mixture of different materials. According to the model and price of a vehicle, different materials in terms of weight and cost will be used, ranging



Prof Christoph Wagener (left), Director of Research and Product Development at KIRCHHOFF Automotive, together with his colleagues.



A glimpse at a transfer press in Iserlohn

from steel to aluminium to fibre-reinforced plastics. This material mix requires a process technology that poses considerable challenges to Christoph Wagener and his team. "So far, pure steel structures are normally joined in a spot welding process. But in a combination of steel and aluminium, this does not work anymore. That is why we increasingly require technologies such as glueing and mechanical joining, so that various procedures can be used in one body in the future. This, of course, makes the production process more demanding."

After all, each material requires a customised construction. A typical project is the development of a front end in multi-material design. For this purpose, so-called organic sheets made of fibre composite are combined with steel and aluminium. The assembly is subsequently joined by riveting, screwing, and glueing. At a later stage, it could even replace the current front end of the series vehicle that is made up of conventional and modern steel grades. Christoph Wagener is satisfied with the project progression: "The first prototype trials show an improvement in performance with significantly reduced weight. These are exactly the properties demanded by the customers, and that is why this project underlines the relevance of multi-material

construction for future developments. Our approach can be summed up as the right material in the right quantity in the right location at the right price'."



## Automotive Center Südwestfalen

KIRCHHOFF Automotive is a founding partner of the Automotive Center Südwestfalen (acs) in Attendorn, which is working on lightweight constructions for the automotive industry. The acs business model is based on a holistic analysis of the development process for a vehicle component: the form, material, and process are equally important parts of every solution. It is also important to consider the entire life cycle of a component during development—from design to manufacturing and operation to recycling of materials.

acs was founded in early 2011 by representatives from industry and the sciences. The driving interest was to share the essential investment and development costs of regional automotive suppliers. Global competition increasingly demands that suppliers contribute to the development of materials and process technologies—and acs, as an operationally independent joint enterprise, provides a platform where they can combine their strengths instead of taking on the entire burden alone.

## E-mobility drives change

The requirements will keep changing, for instance through electric mobility. In the car, where the combustion engine used to be located, there is now either a much smaller electric motor or no central power source at all, because the small electric engines power the car directly at the wheels. This has an effect on body construction. The engine compartment size is reduced, which in turn calls for a safe place on the vehicle floor to hold the large batteries. The design thus can be completely new, possibly with different materials.

Last but not least, the subject of autonomous driving. According to Professor Wagener, the material question might have to be fundamentally revisited: "If this will really work one day, will there even be any accidents? And will we still need the high-strength materials in bodies that are in use today?" No matter what happens, KIRCHHOFF Automotive will find the right answer.

# From the file to the mouse

## — The technical progress in toolmaking of KIRCHHOFF Automotive

In the past they came home from work with blisters on their hands. The own workbench was the sanctuary of every toolmaker, and every tool was cared for by the same team, from the first draft to construction.

### That is history.

In the past ten years, KIRCHHOFF Automotive has not only merged the individual toolmaking locations, but also established

computer workstations and the so-called box production. Major changes that have completely restructured toolmaking in the Company. Totally new and totally useful.

### Restructuring ensures competitiveness

Joachim Schröder has been working for KIRCHHOFF Automotive for 15 years. As a toolmaker, he experienced all these

changes. In the toolmaking plant in Olpe, he and his colleagues still manufactured smaller tools in the classic way: "In small groups we mostly worked on two to three projects simultaneously and tackled each production step as a group, from beginning to end", Schröder relates. "I thus knew about each step, and my tool bench together with the workpiece were the centre of events. You could almost say it was also my workpiece."

Jürgen Wlochowicz, Director of Tool Manufacturing in Attendorn, made the same experience during his apprenticeship as a toolmaker. He remembers a different market situation: "Toolmaking has a long tradition in Germany, but due to cost reasons, production has been increasingly relocated to foreign countries." Previously, the seal 'Made in Germany' was enough to be awarded the order, but today that is no longer the case. "KIRCHHOFF Automotive and its toolmaking in Germany, however, remain interesting as a production location", says Wlochowicz. "Because we have secured our competitiveness. We recognise our core competencies, know that we can demonstrate our excellence, especially with complex components, and possess the latest technologies and optimised processes."

Until we got to that point, quite some things had to be restructured in the Company. At the beginning of the century, toolmaking experienced a drastic shift towards industrial production. The toolmaking manager remembers: "In the year 2004, I received overall responsibility for tool manufacturing at KIRCHHOFF. Our tool manufacturing locations at that time—Iserlohn, Olpe, and Attendorn—



Jürgen Wlochowicz (left) heads the tool manufacturing at KIRCHHOFF Automotive. Here he is speaking to his colleague Joachim Schröder.

had different product ranges: In Iserlohn, parts for commercial vehicles were produced, while the plant in Olpe specialised in transfer tools, and our Attendorn plant produced progressive tools for passenger cars. Making use of all locations was difficult due to economic fluctuations." In 2008, the decision was made to merge the tool manufacturing of Attendorn and Olpe, and in 2012, the tool manufacturing from Iserlohn was also incorporated in Olpe.

In mid-June 2013, the division eventually moved from Olpe to Attendorn, and Joachim Schröder went along. It was not "a big deal". "The hall in Olpe was no longer up to par, and the conditions for modern toolmaking were not given anymore. And who does not get excited about a new hall? The same way you get excited about a new car." Schröder already knew the employees from the toolmaking plant in Attendorn before the move: "We came here all the time for tool testing." The centralisation at the main plant has a further positive effect: thanks to the close proximity, consultations between the toolmaking and development departments are faster and more interactive.



In his 15 years at KIRCHHOFF Automotive, Joachim Schröder has experienced a constant change in his daily working life.

### Making work more efficient

Jürgen Wlochowicz reports on the strategic consideration that preceded the modifications: "What is our competitive edge? What are our core competencies? What is sustainable?" The result of the analysis: "Especially for large structural parts with high degrees of deformation and strength, we can offer high-quality tools."

"But even regarding subjects such as hot deformation, we have a clear technological advance." In the price competition, it is therefore crucial to focus on core competencies and complex components—"as our customers are willing to pay the appropriate price for high quality."

Staying competitive also means working efficiently. That is why KIRCHHOFF has introduced a new system in toolmaking: the box production. It is governed by the

principle of division of labour: "Production takes place in different steps, so-called boxes", explains Jürgen Wlochowicz. "Each employee has since worked in a box, meaning that a tool is put together through many individual competencies of the employees. The all-knowing has moved into the background and made way for specific knowledge." Accordingly, workbenches are no longer found at the workstations. Instead, the employees use rolling tool trolleys wherever they are needed at that moment. The process optimisation makes the toolmakers more flexible, it reduces throughput times and travel paths, and the turnover increases.

This represents a major change, especially for long-standing employees. Not only were locations merged, but also different

working methods. In Iserlohn, programmers used to configure the CAM systems of the milling machines and then handed them over to the machine operators. In Attendorn, each employee should now be able to create the programmes themselves. All employees in Iserlohn were thus trained in a very short time frame. Jürgen Wlochowicz knows the pros and cons of this decision. But the machine operators felt comfortable in their new role, he says: "They are happy to take on more responsibility."

Joachim Schröder can also exactly remember the reorganisation: "After getting used to doing things a certain way in your daily work for 30 years, it takes a while to grow accustomed to change. For me, the division of labour represent-

ed a greater risk because I cannot rule out mistakes with certainty. That is why I quickly check the processing status of the tool before I continue. This is important because I do not want to experience any nasty surprises.”

### Distinguished performances

Since humans are creatures of habit, it is only natural that changes are not always welcomed with open arms. At the same time, change is part of a dynamic market such as the automotive industry, with its short product life cycles and high competitive pressure. “Ongoing development is always important for toolmaking”, agrees toolmaker Schröder. “Until the year 2000, the toolmaking industry stood for a lot of manual labour. Today, we could not meet the required amount without the appropriate technologies.” And the employees see the benefits: more responsibility for the individual, more intensive and structured work thanks to box

production, and facilitated programming at modern computer workstations.

That they managed to accompany the change very well was publicly attested to the employees in tool manufacturing in 2013: in the nationwide competition “Excellence in Production”, the team from Attendorn was the winner in the category “Internal toolmaking under 50 employees”. “This competition lets us know if we are on the right track”, says Jürgen Wlochowicz. “Are our strategies sustainable? Which possibilities are still open to us? What is the competition doing? By means of this evaluation, we were able to compare ourselves to other well-known German manufacturers from the same industry.”

Wlochowicz is proud that the chosen strategy is visibly bearing fruit. Joachim Schröder also feels proud and vindicated because he knows that he had his share in

the success: “Indirectly, our jobs are being secured in this way. Other countries are becoming even stronger, the competition is growing. But we can keep up with the competition.” “In order to keep it that way, the team held a debriefing session following the competition”, says Schröder. “We wanted to compare detailed notes on backlog and further improvements.”

KIRCHHOFF Automotive is one of the few domestic companies that still ascribe such high priority to toolmaking in Germany. “We should not take it for granted that there is such a strong investment”, Wlochowicz stresses. “The general direction is towards outsourcing.”

Why has KIRCHHOFF decided differently? The answer is simple: you do not simply give away knowledge and expertise that has been acquired over decades.

Two employees in toolmaking at KIRCHHOFF Automotive



# From the rubbish carriage to the hybrid vehicle

How modern disposal vehicles are produced at FAUN

“Ohhh look, a rubbish truck.” Full of enthusiasm in their voices and sparkling eyes, more than a dozen children stand at the fence of their kindergarten, pressing their little faces against the wood. The dustman extends a friendly greeting from the driver’s seat, the men at the rear drag the rubbish bins to the lifter and empty them with the push of a button, flanked by children shouting in amazement. A common occurrence that does not lose its fascination even in adulthood, and that can only be dampened by the occasional morning traffic jam behind the rubbish truck on the way to work.

It has been pointed out though that the correct term should be refuse collection truck. Refuse has long become sought after in the waste and recycling industry, and the requirements in handling it have risen at the same time: in times of limited resources, whatever can be recycled in modern plants is made use of. This constantly developing cycle has also been maintained in the case of FAUN vehicles for 170 years.

## With the customers, for the customers

The carriages had wheels from the start. Only the structures and purposes have changed over the decades. Justus Christian Braun laid the foundation in 1845 with his “Rothgießerwerkstatt” (name of foundry



FAUN ancestors: a tractor from 1910 (left) and a rubbish truck with rotary drum built in 1951

shop). Mobile fire hoses were manufactured later on, and already at the beginning of the 20th century the Company built the first rubbish collection truck and street sweeper. Under the brand name FAUN (Fahrzeugwerke Ansbach und Nürnberg), the waste transporters and street cleaning vehicles have since captured the hearts of dustmen and the public.

The oldest functional principle dating back to that time is still employed to this day. In 1928, the first drum roll vehicle was constructed, and the main FAUN plant in the town of Osterholz-Scharm-

beck in Lower Saxony still produces them under the name ROTOPRESS. This is what makes the corporate division successful: a strong penchant for pragmatism, where functional systems are not fundamentally changed but are improved by means of small adjustments, until the optimum is achieved. It is not surprising then that the vehicle classic ROTOPRESS has seen a timely rejuvenation. The design of the exterior was changed, functionality and ergonomics were adapted.

With the customers, for the customers— Company owner Dr Johannes F. Kirch-



hoff has remained loyal to this maxim throughout all transformation processes. "Without the waste disposal companies, we would not be producing vehicle structures, and without a chassis, these structures would not move. And a chassis without a structure makes no sense either", says Johannes Kirchhoff. "Synergies result from this interrelation of connections." Since his entry into the waste disposal vehicle business in 1994, the mechanical engineer has continuously advanced vehicle technology together with his team. Engineers, developers, and sales representatives are constantly in contact with the disposal companies, asking themselves questions like: Which kind of vehicles do the companies need? How will the material flow change? Do disposal vehicles always have to be so loud? How can waste be carefully treated when being picked up from households? How can we reduce the weight of the vehicles so that more load can be transported? And makes an ideal waste collection tour?

### Quieter and greener

Thanks to these close connections, their ideas, and both modern as well as reliable developments, Ecotec, the environmental division of KIRCHHOFF, has become the market leader in Europe. 2,500 employees in twelve plants located in eight countries are producing high-tech systems that benefit the disposal companies on a daily basis and by means of which they clearly stand out from the competition.

Accordingly, most of the developments in the industry originate from FAUN and ZOELLER. Already in 2008, FAUN presented the first refuse collection vehicle that is driven and operated electrically. Vehicles with this DUALPOWER option switch off the chassis engine when collecting waste, and an electric engine takes over the drive train and brakes. The brake energy is stored in supercaps, special condensers that can store large quantities of electric charge with limited losses and can release it again.

If more energy is required than is provided by the braking processes, an economical TDI engine turns on. In contrast to purely battery-powered vehicles, there is no range limitation with the DUALPOWER option. In combination with the high torque of the electric drive, the short but energy-intensive accelerations during the waste collection tour are faster and more economical than with conventional diesel drives. DUALPOWER makes waste collection more efficient and, depending on territory and topography, generates up to 50 per cent in fuel savings.

Furthermore, FAUN even contributes to quiet waste disposal: the good noise encapsulation of the POWERBOX drive makes DUALPOWER the quietest refuse collection truck. Its sound pressure levels are below 90 dBA, which is comparable to the volume of a normal conversation. FAUN thereby promotes the reduction of emissions and noise, as well as contributing to an ever greener refuse collection.





Committed to cleanliness:  
the ROTOPRESS DUALPOWER (p. 34, bottom) and a VIAJET 6 street-sweeping machine (top).

Besides mobility, the material steel is a binding element for all companies of the KIRCHHOFF Group. The robust metal is the main component of FAUN products. But as strong as it is, it is just as heavy. The challenge lies in constructing the refuse collection truck as light as possible, since a high payload is a convincing argument for potential customers. That is why FAUN is working in close collaboration with the Hanover College in developing hybrid materials that are light but can withstand the high pressing forces in a refuse disposal vehicle.

### Also pioneering in street-sweeping machines

The KIRCHHOFF environmental division is also a pioneer in street-sweeping machines. After a period of international division of labour, the FAUN street-sweeping machine constructed in Grimma, Saxony was the first to be

completely manufactured in Germany in 17 years. In the meantime, this product line has developed into the industry leader and produces more than 350 vehicles a year. Furthermore, the company has been a leader in the development of new drive technologies for years. It follows the motto of always trying to improve the good—not because of the engineers’ playfulness, but with the intention of offering true advantages to customers and the environment.

FAUN street-sweeping machines of the new Streamline generation combine the unique FAUN air circulation system with improved airflow: due to the V-shape suction shaft, the debris is picked up significantly better and is directly conducted to the collection tank. As a result, the machines not only achieve a considerably higher suction capacity. Their range increases, the operators save fuel and comply with even the strictest emission standards, and drivers as well as

passersby profit from less machine noise. And in case too much dust is whirled up, then the VIAJET FILTAIR comes into play: the filter elements separate the finest microparticles from the intake air and release it back to the environment after being purified by 99.98%—this air is thus cleaner than what we are constantly breathing in.

Such occasionally venturesome technical ideas must be affordable in order for the general public to benefit. That is why FAUN works with standard components and places importance on a balance of quality and cost. This blend will allow FAUN to continue developing modern disposal vehicles and street-sweeping machines that fulfil the requirements of the customers. But why limit production to street machines? Perhaps refuse collection and disposal transport will be taking place out of sight, possibly underground. That would disappoint the kindergarten squad though.

# From the manual tipper to the electric lift

How ZOELLER has made rubbish collection dust-free, safe, and ergonomic

Hans Zöller was a pioneer: Long before environmental awareness was a popular topic, the master craftsman of the town of Mainz realised the importance of a reliable disposal technology. During the difficult post-war years, Hans Zöller laid the foundation for the globally active group of companies, doing so with industriousness, readiness to assume risks, and a keen sense for products that would benefit his customers.

Today, with about 1,100 employees, ZOELLER-KIPPER is among the largest manufacturers of lift systems and refuse collection trucks. As a member of the KIRCHHOFF Group, ZOELLER, along with FAUN, has been under the umbrella of KIRCHHOFF Ecotec since 2005.

## Successful step towards independence

The medium-sized family-owned company from Mainz is profiting from more than 68 years of experience in a market with very special requirements.

Already in 1938, Hans Zöller—back then still a clerk of the town—designed the first device that made the emptying of 110-litre ring barrels easier for dustmen. In the same year, he patented his self-developed, so-called barrel tipper. Finally, he went into business for himself in 1947. Successfully: his first customers were from the Ruhr district, with the cities of Duisburg and Essen buying larger quantities of these barrel tippers.

Hans Zöller worked tirelessly at further future-oriented designs. His efforts on behalf of the dust-free emptying of ash bins are among his pioneer achievements: Zöller solved the problem by putting the edge of the bin on a board during the emptying process, which made the process dust-proof. Even beyond rubbish collection, his inventions proved to be convincing, ranging all the way to snow ploughs.

The technical innovations and quality of ZOELLER products got around and contributed to a good reputation, even abroad. And the number of employees grew along with the markets: In 1955/56, the company was already employing 45 people. In 1958, a two-storey administrative build-

ing was inaugurated, and ZOELLER went on to meet the needs of the market with 82 employees.

## Schulz-Zöller promotes internationalisation and innovations

In the mid-1950s, the so-called open disposal, in which any container was tipped into a vehicle by hand, was the standard in the waste disposal industry. Towards the end of the decade, cities and communities started to introduce the systematic disposal—using 35- or 50-litre rubbish bins and ring barrels with a volume of 60 or 110 litres.

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Strong team: the ZOELLER staff in Mainz

The 1959 exhibition of the municipal city cleaners' association in Mönchengladbach was where the first attempts at standardisation between ring barrel and rubbish collection truck were seen—and thus good future prospects for the company from Mainz.

In the same year, Helga Schulz-Zöller took over management after the early death of her father, and she skilfully advanced standardisation and internationalisation. In the course of internationalisation, the German term for tipper was replaced by the English expression "lifter". In 1968, ZOELLER-KIPPER was significantly involved in the development of standardised large rubbish containers with wheels—a change that kicked off the development of special lifter systems to assist dustmen in emptying the new containers into the disposal vehicles without too much effort. The development of the automatic lifter at the end of the 1980s represented the next big step for Helga Schulz-Zöller and her team. This technology greatly increased productivity and occupational safety in the disposal industry and was able to establish itself quickly on both the domestic and international market. Meanwhile, the product range comprises more than 450 lifter variations, ranging from simple manual lifters to automatic lifters, as well as a series of universal special lifters.

### Development towards full-range supplier

All lifter models are combinable with the well-known disposal vehicles. The consistent modular system on different platforms offers a broad variety that presents all ZOELLER customers with a solution to their disposal tasks, whether in the product range high level, low level, or commercial, or in the system model series DELTA, ROTARY, OMEGA, GAMMA, and MEGA. The low-dust, odour-neutral, and noise-optimised container emptying of refuse collection vehicles has developed into a core competence of ZOELLER. Safety, quality, and automation level of lifter systems are continually optimised and professionalised.



New name, new functions: what was once (left) the tipper is now called the lifter.

In the meantime, ZOELLER has become even more firmly established on the market as a full-range supplier thanks to the development of its own refuse collection vehicles: the portfolio encompasses rear-loading press plate vehicles with structures between 3 and 32 cubic metres in volume and are suited for all common chassis and equipment carriers. The platforms MICRO, MINI, MEDIUM, and MAGNUM represent a range that has been adapted to the tough requirements of the market. Through the acquisition of the long-standing company HALLER-Umweltsysteme GmbH und Co. KG and the French SEMAT AG, the company was able to further expand its know-how in the

area of refuse collection vehicles and internationalisation.

Today, ZOELLER is the development centre for efficient lifters, while relying on the newest 3D CAD technologies. Prototype assembly and comprehensive test phases enable simulation that is close to reality. New energy and drive concepts are the two leading trends at the centre of all development efforts in disposal technology. And here as well, ZOELLER is a pioneer, as it has been the case throughout its 68 years of corporate history: with electric lifters, electrohydraulic drive units, and a series of energy-saving measures, so-called ECO functions, for lifters and vehicles.



# When mobility means freedom

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— How KIRCHHOFF Mobility is giving back freedom of movement to people

Driving: for most of us this is a normal part of day-to-day life. Walk over to the vehicle, unlock it, get inside, start the engine, and go. There are no limits to mobility. Or are there?

In Germany, about 4.6 million severely disabled persons live with a physical handicap. According to the Federal Statistical Office of Germany, more than a quarter of that number is limited in walking or even tied to a wheelchair. Just getting into the car and meeting friends for a cup of coffee is an obstacle that they usually cannot overcome without outside help. And also elderly people reach their limits in daily life due to diminishing physical abilities. What used to be easy can now only be accomplished with great exertion. To ad-

mit to this apparent weakness is difficult for many—the alternative seems too frustrating, having to fall back on assistance.

## Constantly growing demand

Limitations due to sickness or age greatly restrict the freedom of those concerned. With the business unit KIRCHHOFF Mobility, the KIRCHHOFF Group wants to give back to these people a measure of freedom. Since 2006, the REHA Group Automotive has belonged to this unit along with the companies Pruckner (Austria), HAAG Rehattechnik, and Jelschen GmbH. In the year 2014, the Haueter AG—now KIRCHHOFF Mobility AG—was added with two locations in Switzerland,

so that KIRCHHOFF Mobility is now represented by a total of twelve subsidiaries in Germany, Austria, and Switzerland. Since modifications are always made on the basis of a series vehicle, the cooperation with different automobile manufacturers has become quite close: with a few such as BMW, Daimler, and VW Commercial Vehicles, KIRCHHOFF Mobility is one of the premium partners and comes recommended. This status is only attained by certified conversion manufacturers that fulfil the special requirements of the car companies.

A conversation with Norbert Eiteljorg, in charge of marketing at REHA Group Automotive, highlights the increasing importance of mobility. “Customers approach

us because they are limited in their mobility. But we also modify commercial and municipal vehicles”, says Eiteljorg. The demand has steadily grown since the establishment of REHA in 1981: “We started in a small workshop in Düsseldorf, but already eight years later had to look for additional rooms. In the following years, more and more subsidiaries came into existence and mergers were formed with other vehicle converters.”

The underlying reasons are the increasing affluence and the changed social value of mobility: “There were not nearly as many cars on the roads in the 1960s and 1970s as there are today. It has become standard for a family to have two cars. We have become more mobile—and persons with disabilities want to as well.”

### **Creativity and sensitivity are required**

The technical possibilities to provide greater mobility used to be rather limited. But individual solutions have always been found: “The range has not changed too much: boarding aids, seating systems, driving aids, or lifting platforms. But with the increasing presence of technology in vehicles, the demands on our conversion measures have grown as well.” At the same time, changes to the electronics of the vehicle are ever more difficult to implement because the technology is more and more complex. “In short, it is no longer enough to run two cables in order to operate the blinker with the push of a button”, says Eiteljorg. Decoding, protocols, and systems have to be known precisely to ensure accurate programming. Close contact to the manufacturers is therefore essential for the successful and effective conversion of a vehicle.

The conversion measures must be individually tailored to the respective needs of each person. Creativity and sensitivity are required: “First of all, we need to get acquainted with the customer, so they can give us an idea about their challenges. That isn’t always easy for them.” Afterwards, a solution is sought. For simple conversions, standardised elements such

as manual controls, remote controls for secondary functions, or accelerator pedal relocation can be employed, but that is not the rule: “At least 80 per cent of conversion measures are individual solutions. Every person is a different height, has a different amount of strength, and wants a different car.” That is why the motto of KIRCHHOFF Mobility is: we build cars made to order!

“Oftentimes, the vehicle model poses one of the greatest challenges”, says Eiteljorg. He gives an account of clients who bring their own car, sometimes a vehicle that has already been modified, and wish for a specific solution. But that is difficult: “You cannot convert just any car on the market.” The selection of suitable vehicles shrinks due to the trend towards sleek—and therefore space-constrained—models. Lush interiors limit the possibilities further. “This design trend creates new challenges for us, which is why the degree of individual solutions is increasing”, says Eiteljorg.

### **“She felt free again”**

All the greater is the joy over a successful conversion. For Eiteljorg, seeing the customers’ facial expression when they get into their modified car for the first time is always a very special moment. He remembers a client who was dependent on an electric wheelchair and hardly had any strength in her fingers. “She accepted a job that was 50 kilometres from her

home, and in the beginning was driven to and from work by KMP, a vehicle used for the transport of people with reduced mobility.” In the long run it became very expensive, which is why she decided to purchase her own car with appropriate conversions. The experts at KIRCHHOFF Mobility created a passage, so that the customer was able to drive her electric wheelchair up a ramp, directly to the steering wheel. They also installed electric power steering and a manual control, similar to a joystick.

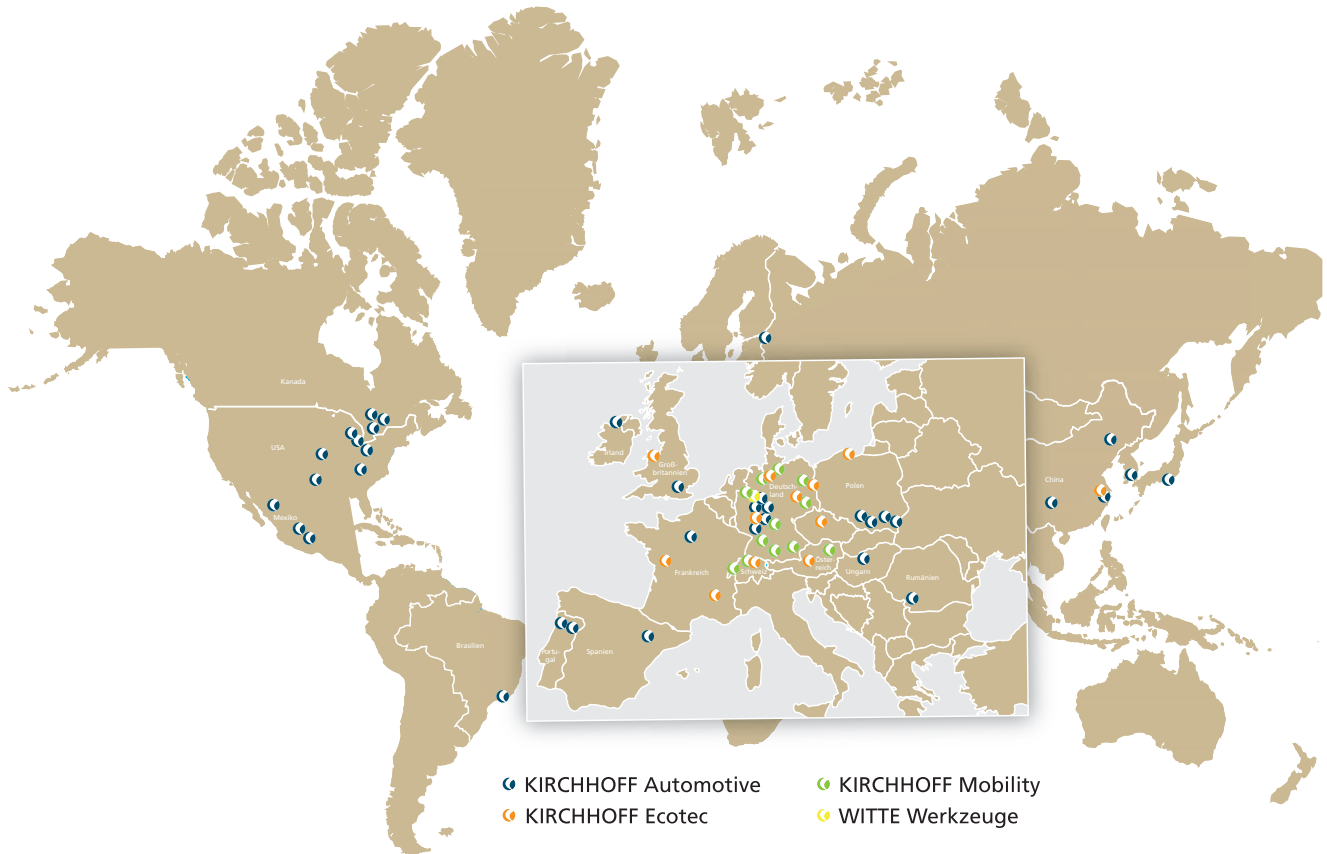
After completion, the customer had to solve one more problem: “She had no driving license. We therefore equipped the driving instructor with the same operating system and he taught her how to drive this vehicle. Sometimes it was more difficult for him than for her”, adds Eiteljorg with a smile. When she returned one year later for maintenance, the KIRCHHOFF Mobility employees were astounded: “She had driven 40,000 kilometres. And with joy. She felt free again.”

“In recent years, more and more older people have made use of vehicle conversions”, says Eiteljorg. This is a result of the demographic change. In the beginning, these customers did not like to admit that they needed assistance. But Eiteljorg also knows that they are grateful as soon as they notice that, for example, a swivel seat makes getting in and out of the car easier—and gives them back a bit of their mobility.



Versatile support: a self-lowering vehicle with access ramp (p. 38), the operating aid Easy Speed (top left), and the swivel seat Turny 1

## Locations of the KIRCHHOFF Group



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## Turnover and employee statistics of the KIRCHHOFF Group

