

XtraBlatt

A MAN WITH PASSION, HEART AND MIND

In Memoriam
Dr -Ing. E.h. Bernard Krone



As a visionary entrepreneur and counsellor who played a decisive role in shaping the international agricultural machinery and European commercial vehicle industry over many years, Dr Bernard Krone was always highly valued for the quality of his contribution to any discussion, for example in 2016 during the visit of the German President Joachim Gauck to Spelle.



EDITORIAL



DEAR READERS,

The death of my father is a painful loss and has come as a profound shock to us as a family, as well as to friends, long-time companions and all members of the Krone Group. The incredible outpouring of sympathy from all around the world has touched us deeply. On behalf of our entire family, I would like to take this opportunity to thank everyone who has expressed their condolences, shared their memories and sent us their good wishes.

Even though the death of my father leaves a deep wound at the heart of the company, the values by which this far-seeing yet down-to-earth Emsländer lived continue to provide the basis for our sustainable corporate success today. As the fourth generation of owners – and here I am speaking not only for myself, but also for my sister Dorothee, who runs LVD Krone, one of Europe's leading specialist retail companies – our goal is not only to uphold our father's life's work, but also to lead the Group into the future with dedication and with success.

In view of the rapidly changing market circumstances, this involves a variety of challenges for which the right course must be set. Amid the increasingly fragile supply chains of a globalised economic world and against the backdrop of rapid advancement in engineering and technology that are development characterised by seismic shifts, it is vital that

we get our company on a firm footing and fit for the future. And there's more: The Krone Group sees itself not only as a specialist in forage harvesting technology, but also as part of a production chain from pasture and livestock sheds to the consumer's table, in which it is more important than ever to think in terms of systems and develop the optimum solutions system solutions. Take, for example, our recent partnership with Organic Garden, a highly innovative food start-up that you can read more about in an article towards the end of this issue of XtraBlatt. We seek to make our contribution to putting the value of agriculture and its products back where it belongs – centre stage – and also to offering new, sustainable business fields. Because a successful agriculture and healthy and affordable food matter more than ever.

On this note, I wish you and your family all the best for the coming year!

A handwritten signature in blue ink that reads "Bernard Krone". The signature is written in a cursive, flowing style.

Yours Bernard Krone

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DR-ING. E. H. BERNARD KRONE

THE MAN WHO SHAPED AN ERA

Over a period of half a century, Dr Bernard Krone not only stamped his mark on his own company but also played a decisive role in shaping the development of the German and European agricultural machinery and commercial vehicle industries. He passed away on 14 October 2022 at the age of 82. We look back on the 'BK3' era.



1 A historic moment: In a ceremonial transfer of stewardship at Circus Krone in 2010, Dr Bernard Krone symbolically presented his son with his great-grandfather's pocket watch.

The family of Dr Bernard Krone are joined in the mourning of his passing by more than 7,000 members of the company and the international agricultural engineering and European commercial vehicle industries, on which the passionate family entrepreneur exerted such a powerful influence during his many years of stewardship. Staying in contact with our customers – a personal chat with the people in these industries – was always particularly close to his heart.

Dr Bernard Krone was regarded as a visionary and a man of action. He lived his life according to the principle formulated by the philosopher Dante Alighieri: "Some wait for the times to change while others seize the day and act." And he was, very much, a man of action. He worked steadfastly to develop the company and made pioneering decisions to diversify the business. One was the entering of the commercial vehicle sector, another the introduction of self-propelled machines to the agricultural machinery portfolio. He was also the one who made Krone a specialist manufacturer of forage harvesting equipment. After shaping the destiny of the Krone Group over many years, developing products and setting a course for the future, he officially retired from the operational side of business in 2010 and handed over the baton to his son Bernard Krone. In making these timely arrangements for managerial succession to the great benefit of the Krone Group, he once again demonstrated



1



1 Three generations spanning 50 years: The three Bernards – Dr Bernard Krone with his father (pictured left) in the mid-1960s and with his son in 2017.



3



2

2 One of the highlights of the 'BK3' era was undoubtedly the introduction of the BiG X self-propelled forage harvester, shown here at the official presentation to the international trade press at the turn of the millennium.

3 Always on the spot – and happy to be there! For example, on the occasion of the 25th anniversary of the Cham mowing cooperative and the handover of the 20th BiG M.

entrepreneurial foresight. He extended this key piece of advice to his successor: "Never forget your roots as 'the blacksmith from Emsland', just like your great-grandfather, your grandfather and your father before you."

His commitment and dedication had an impact far beyond the boundaries of the company. He also put a great deal of energy into work on behalf of the industry as a whole as a prominent member of the Chamber of Industry and Commerce and of the agricultural machinery and tractor association LAV, as President of the European Agricultural Machinery Association (CEMA), as a member of the German engineering federation VDMA, as Vice-President of the German Association of the Automotive Industry (VDA) and as Chairman of the Trailers, Bodies and Buses manufacturers' group. Numerous tributes have been paid to his achievements. Carolus Wilhelmina Technical University in Braunschweig awarded him an honorary doctorate. He received the Tilo Freiherr von Wilmowsky Medal for "many years of inspirational service on behalf of people employed in agriculture" and the Max Eyth Gold Medal. The then Prime Minister of Lower Saxony, Christian Wulff, presented

him with the Cross of Merit on Ribbon of the Order of Merit of Lower Saxony; the later Prime Minister Stephan Weil presented him with the Cross of Merit 1st Class of the State of Lower Saxony. In addition, Dr Bernard Krone received the LEO industry award in the Innovation/Idea category for the concept of the Lang-LKW (long truck). He was also awarded the Emsland Medal, the Grashof Denkmünze – the highest award of the Association of German Engineers – and the Grosser Wagen medal of the Federal Association of Freight Transport Logistics and Disposal (BGL). The VDA inducted him as an honorary member in 2013.

Dr Bernard Krone grew into the company from a very early age. Even as a child, he was often allowed to accompany his father on his rounds of the factory and to meet customers. At the age of six, he told his teacher that he could learn more on the factory floor than at school. But of course, he continued his education, completed an apprenticeship after leaving school and then began his academic training as a mechanical engineer in Cologne in 1959. At that time, he was the youngest student to have ever embarked on the course. Three years later, after successfully completing his

studies, he joined the company. His father then sent him to Ireland for a stay abroad. The idea was to prepare him as early as possible to take over the company. In 1970, his father died suddenly and at far too young an age. As sole heir, Bernard junior took over the company's agricultural machinery factory in Spelle. These were big shoes to fill, but Dr Bernard Krone easily slipped into the role.

In his private life, the father of three and grandfather of many was a passionate huntsman and farmer who took a keen interest in the preservation of nature in his home region and beyond. Active participation in and support for local associations were, of course, an integral part of his life.

Even though the death of Dr Bernard Krone leaves a deep wound at the heart of the company, the values this far-sighted yet down-to-earth Emsländer lived by continue to form the basis for the ongoing success of the company today. Honesty, reliability and straightforwardness are qualities which many friends and colleagues associate with him. It was always important for Dr Bernard Krone to be a role model and to actively embody this role.

The family, the entire management and all employees will resolutely continue his life's work for generations to come.





For more than sixty years, Dr Krone saw trade fairs and exhibitions as an unmissable opportunity to showcase innovative products and, above all, to cultivate in-depth customer contact.

A MAN OF IMMENSE CHARISMA

In 1962, a 63-year-old German and a 43-year-old Czech shook hands on a business deal. Just 17 years before that, the older man had been manufacturing armaments for the German Airforce and the younger man had been a tank driver with the Czechoslovak Exile Army in northern France. 60 years ago in Ireland, these two men became business partners. They agreed to work for prosperity and peace, and they sealed a friendship that is now entering its third generation. These men were great Europeans – Dr Krone’s father Bernard and my father Dennis.

I myself met Dr Bernard Krone for the first time when I was just eleven and he was 22. At that time, Bernard was helping my father to set up our company, Farmhand. I always admired Bernard – he was like the older brother I never had. He loved Ireland, and the Irish loved him in return. Even today, in places like Kerry or Tipperary, you can meet old farmers who still remember the blond giant from 60 years ago. A man of immense charisma who came to repair an Optimat manure spreader or to deliver a much-needed spare part. A farmer said to me recently: “Even if you met Bernard only once, you would never forget him.”

For me, Bernard exemplified the very best of the German business class, an SME superstar. But of even greater significance for me was that he was a thoroughly honest person,

a man who respected everyone and treated everyone fairly. Bernard was someone who constantly strove to make the world a better place, and the magnificent Krone company is proof of that, I would say. We will all miss Bernard. He was truly a unique person. «

(Excerpt from a speech given by John Scrivener, former managing director of the Irish Krone importer Farmhand, at the memorial service for Dr Bernard Krone)



A LIFELONG DEVOTED FRIEND

I got to know Dr Bernard Krone over many years at DLG, especially during my time as DLG President. The DLG owes him a debt of gratitude for his indefatigable commitment to the world’s largest and most successful agricultural machinery trade fair Agritechnica. And this applies both to his services as Chairman of the manufacturers’ association LAV/VDMA and his role as an exhibitor and producer of multiple award-winning agricultural machinery. The DLG bestowed its highest distinction, the Max Eyth Gold Medal, on him.

‘BK3’, as he was affectionately and appreciatively known, had an impact far beyond the confines of the Krone Group. He was an outstanding representative of medium-sized family ownership and a great agricultural engineer. Down-to-earth and always deeply attached to his home in Emsland, he expanded his sphere of activity into a global market. In doing so, he never forgot his origins and remained very close to his employees and customers.

Under his leadership, the Krone brand became not only a jewel in the agricultural machinery and commercial vehicle industries but also an institution in Emsland and far beyond. Dr Bernard Krone was an extraordinarily colourful personality – independent-minded, generous, charitable, home-loving and a lifelong loyal friend. And he expressed his opinions with great determination, indeed with passion and power of oratory – but never in a dogmatic way.

In addition to his role as the eloquent “Zeus of Spelle”, he occasionally enjoyed playing the role of Cassandra. In truth,

however, Dr Bernard Krone was anything but a doomsayer, but rather an inveterate optimist whose glass was still three quarters full when others believed they were staring at the last drop in the bottom. He was an active presence on the supervisory board, contributing fresh ideas and counselling caution right up until the end. His intuition was legendary – he could see potential pitfalls long before the active members, and he did not keep these insights to himself. People sometimes speak of an irreplaceable loss when a great person has passed away. That is not really right, because a life’s work as valuable as this must and will be continued. But one thing is certain: Emsland and the German business world have become the poorer for the loss of Dr Bernard Krone. «

(Excerpt from a speech given by Philip Freiherr von dem Bussche, member of the Advisory board of Krone-Holding, at the memorial service for Dr Bernard Krone)



Time to say goodbye: The year 2010 marked official handover of the company from father to son in a moving ceremony at Circus Krone, and we have now witnessed the final act. On 14 October 2022, Dr Bernard Krone passed away at his home in Spelle after suddenly falling gravely ill.

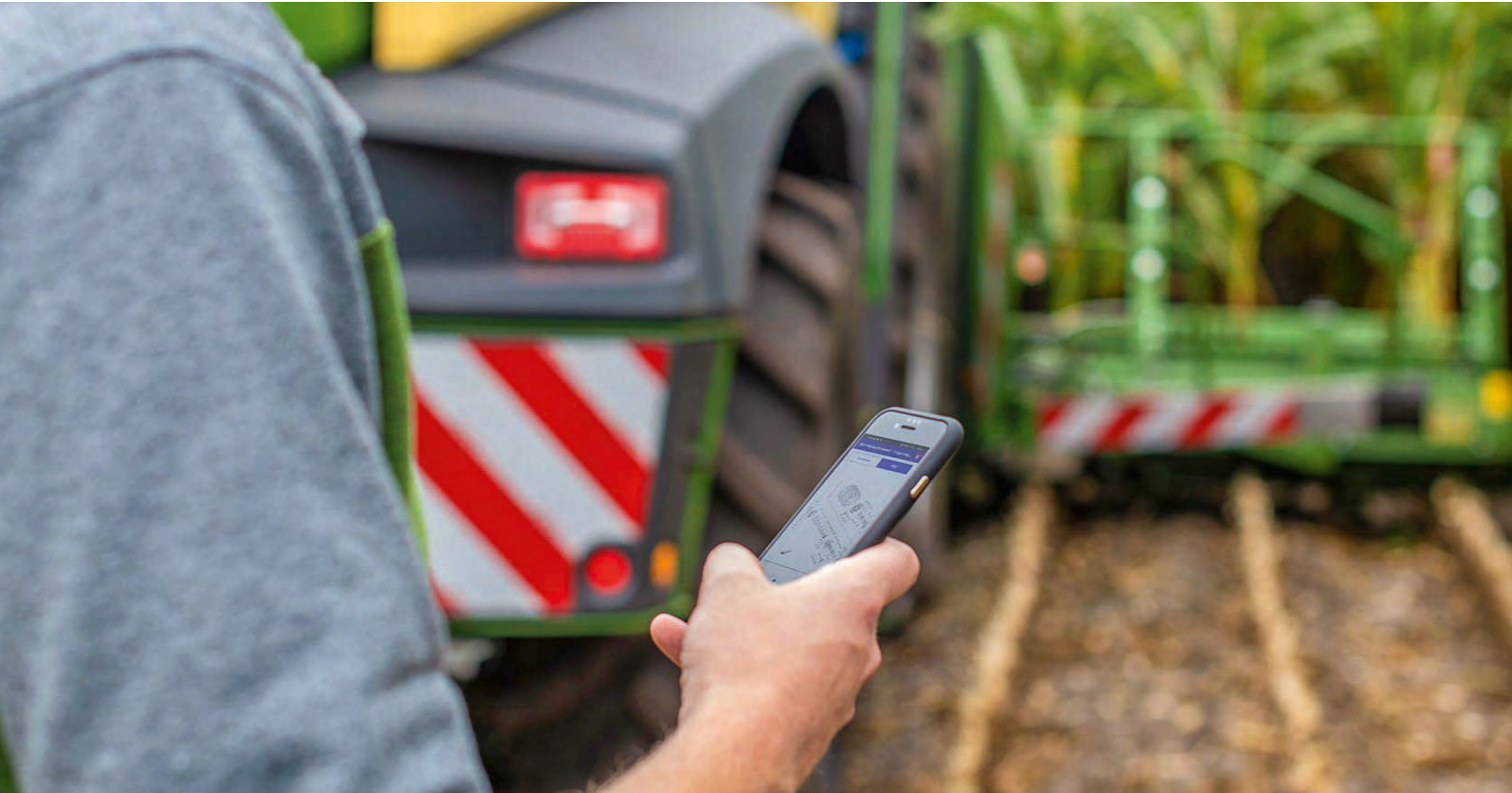
ONLINE PARTS SHOP

ONLINE SALES OF ORIGINAL PARTS ON THE RISE

Consumers are increasingly turning to internet shopping – farmers and contractors are now sourcing their spare parts there too. Krone set up a shop in 2021 to support dealers and make it easier for customers to order original parts online.

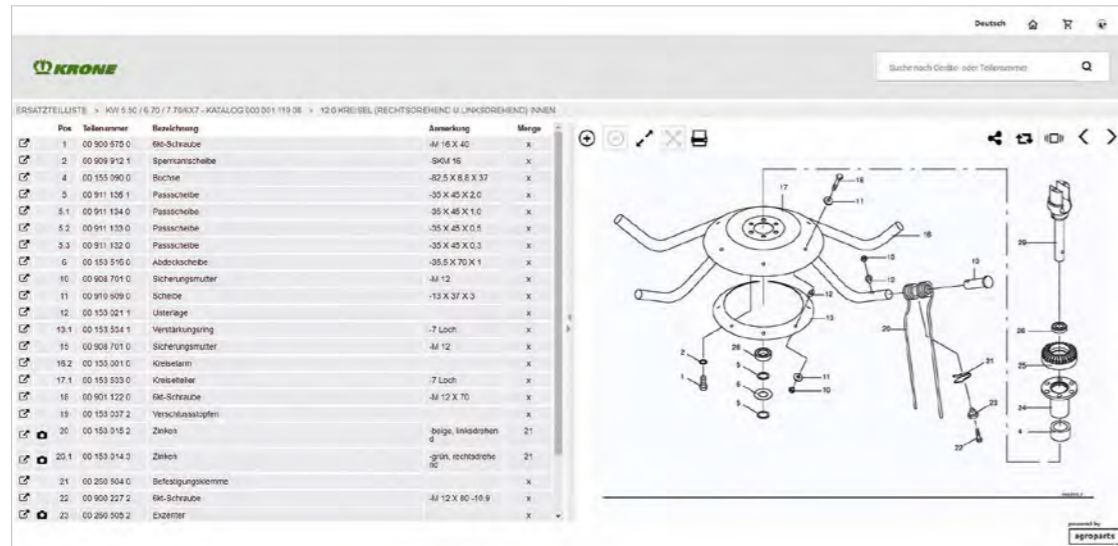


Online shop specialists: Vitali Heidelmann (responsible for “parts warehouse application systems” at Krone) and Roman Opora (Parts Manager who looks after dealerships in Germany and neighbouring European countries).



The figures are revealing: according to a survey conducted by the German Engineering Federation (VDMA), in spring 2021 the percentage of farmers ordering spare and wearing parts for agricultural machinery online rose by 4% to around 44% within a two-year period. In the contractor sector the increase was even greater, rising by 14% to 62% at the time of the survey. And you don't need to be a clairvoyant to have predicted that these figures would be pushed up further at the start of the corona pandemic – it's not just Joe Bloggs that has been prompted to shift more and more of their shopping online. “The move towards ordering clothing or hobby products on the internet does not translate directly to the spare parts business, but there is a recognisable upward trend,” says Roman Opora, who as Parts Manager at Krone looks after dealerships in Germany and its neighbouring European countries.

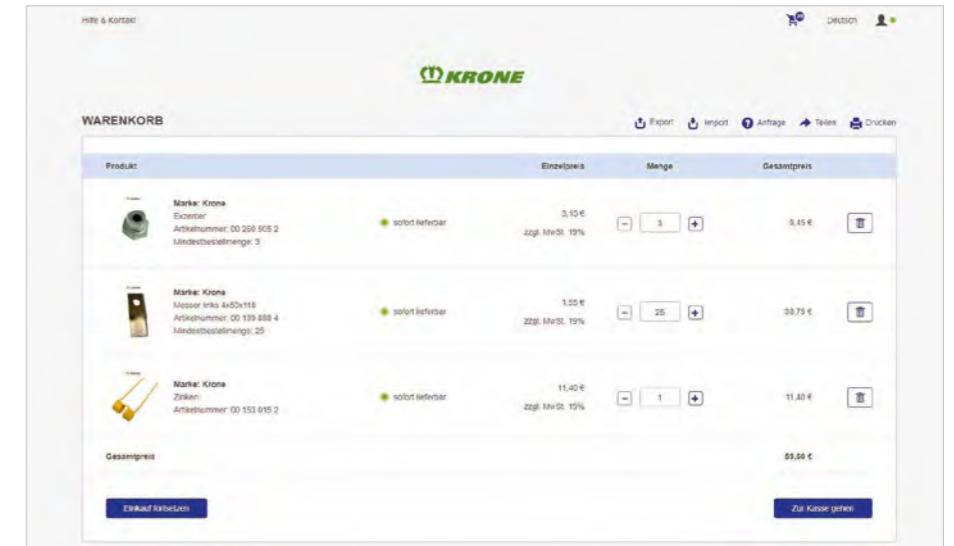
This makes it all the more important that specialist retailers and thus manufacturers don't miss out on these orders. Roman Opora is keen to stress that although some wholesalers on the internet offer parts for Krone machines, they are categorically not original parts: “A Krone spare or wearing part is only original if it is sold under our brand and is manufactured by us or our suppliers, who produce these parts under our name and to our precise specifications. Any other parts marketed for our machines by third parties are therefore not original parts. The quality of our original parts is determined by several essential factors which together provide the crucial added value for the customer and thus the corresponding value for money.”



Parts from the Krone Parts Centre are shipped either to the dealer or straight to the customer.

In the shop, customers can identify the relevant parts from the exploded drawings and order them with ease.

The prompt “available for immediate delivery” indicates that the dealer in question has this part in stock. “Available at short notice” means that the part will be dispatched from the Krone Parts Centre.



LINKING UP INTELLIGENTLY

In order to connect these changes in consumer behaviour to the greatest possible availability of original parts, the Parts managers at Krone have joined forces with online service provider LexCom to develop a special shop concept which we have been gradually rolling out since last year. Vitali Heidelmann, who is responsible for “parts warehouse application systems” at Krone and thus the shop, explains how it works: “Up to now, only our authorised dealers – not the end customers – were able to order parts directly from us at the factory, and they still can,” says Vitali Heidelmann. “But we think it would be very sensible if farmers or contractors themselves were able to identify the parts they need online if they wish to do so, and then order them electronically from their local dealer. Especially for common wearing and maintenance parts, this proactive approach by the customer would save dealers time, which the latter could then spend advising on more complex issues or other processes. Yet not all our dealerships were running an online shop on their home page, and some didn’t even have an IT department to help them do this,” explains Vitali Heidelmann.

So it was decided that the best way forward would be to put reasonable effort and expense into intelligently linking all the protagonists – manufacturers, dealerships and end customers. To this end, Krone provides LexCom with all the key up-to-the-minute information, such as item numbers, item use, weights, recommended retail prices, manufacture availabilities and item images, which LexCom incorporates into the new online shop system. Unlike the existing multi-brand shop www.agroparts.com where only Krone dealer can place orders, the new online shop allows private or trade

end customers to order parts from an authorised dealer of their choice. All the authorised dealer has to do is enable the shop on their system and populate it.

“This basically gives dealers a front end for their dealerships which they can also co-create to a certain extent; which means they get a customised online presence,” Roman Opora explains. The LexCom software running in the background is continuously updated with the latest Krone content. Furthermore, through their access to the back end, dealers can update their terms and conditions and their product range, thereby enhancing the shop’s offerings. The dealer can of course link the finished shop to their home page, but also to [agroparts](http://agroparts.com) and the Krone portal mykrone.green. This gives them at least three new channels to reach out to their customers. “In short, LexCom and Krone provide the platform and the back end; the front end though is customised by the individual dealers to their needs. So, from a legal perspective, each shop belongs solely to the individual dealership and they alone determine what is offered there,” Vitali Heidelmann explains.

DEALERSHIP AUTONOMY

This level of control also relates to the prices displayed. Access is granted only to customers who have registered with [agroparts](http://agroparts.com), which is free. Krone always enters the gross list prices into the new shop system, whereas the dealer determines the range of products to be displayed. And they also specify whether a registered customer is eligible for a discount and at which height. “Our trading partners are completely free to arrange for discounts and specific terms, Krone as the manufacturer has no involvement in this,” Roman Opora is keen to emphasise. The sales partner also

decides on the payment options, i.e. payment on account, payment in advance or cash on receipt.

Dealerships also have the option of integrating other suppliers of theirs into the system to create a broader online offering similar to the multi-brand concept. The various options available to the dealer for parts delivery is also worth mentioning, as Vitali Heidelmann outlines. In the ideal scenario, the dealer has the desired parts in stock in their own warehouse. The online shopper can identify such items by the “available for immediate delivery” button. “In such cases customers can choose whether to pick up the parts themselves or have them delivered. The shipping costs are included in the price as necessary,” he explains.

However, if the part is not in stock at the dealer’s, the prompt “available at short notice” pops up, which means it is in stock at the Krone Parts Centre in Spelle. In this case the part can be ordered by the user in the normal way, but the dealer decides whether to have the part delivered to themselves first, or have it sent straight out to the customer. “For the system to function effectively, it is of course essential that dealers consistently tend to the system and monitor the incoming orders for prompt service,” Vitali Heidelmann points out. A dealer can also refuse an online customer if this person is unknown to them or if they had a bad experience with him or her in the past.

ACCEPTANCE IS GROWING

Is the reverse also true? Do farmers and contractors have the freedom to choose which dealership to order their parts from? Yes, absolutely, says Vitali Heidelmann. For example, after logging in to [agroparts](http://agroparts.com), for example, the

user sees all Krone dealerships which are running an online shop ranked in ascending order by distance relative to the location entered. “But experience indicates that purchasers generally use their trusted local dealer. Ultimately, the customer experience is based not only on price, but on many other services they get from their dealer. This tends to ensure a high degree of customer loyalty,” says Roman Opora (speaking from his own experience!). Especially since the online shop is not intended to diminish or even replace the dealer’s advisory service. On the contrary, it is a timely enhancement of the service offering.

And how many dealerships have signed up so far? According to the parts specialist, the number is 22 dealerships in Germany and six in Austria, which is still relatively modest, but this is only the beginning. After various in-depth consultations by Krone, more dealerships have made enquiries. “Also, the success of those dealers who signed up so far – such as Rademacher from Halver, a small town in Western Germany – is spreading by word of mouth and encouraging other dealers to find out more,” say Roman Opora and Vitali Heidelmann with genuine delight. Krone plans to stimulate further interest by promoting the participating dealerships, which in turn will further boost the profitability of the shop concept. “Krone is keen to explore all options in the interests of our customers and partners so that we can offer the best quality and most cost-effective service for original parts procurement. And this also includes e-commerce – actually more than ever,” Roman Opora concludes. “



RADEMACHER LANDTECHNIK

ONLINE SERVICE JUST AS COMPREHENSIVE

“Rademacher Landtechnik” is one of the first specialist dealers to use Krone’s new online shop in their effort to bolster both customer loyalty and their range of services. XtraBlatt visited them to find out more.

If something is worth doing, it’s worth doing well – this attitude underpins every aspect of Jan Rademacher’s work at his agricultural machinery dealership in Halver, a small town in North Rhine Westphalia in Western Germany. One reflection of this systematic approach is his focus on exclusive core brands, as the dealer is keen to stress: “Our strength lies in our knowledge and expertise in terms of advice and technical services. We can only achieve this by offering a convincing, rock-solid product range which we are happy to champion.” In exchange, he expects a correspondingly high level of support from his suppliers. “Only by working together can we transfer the necessary power to the ground – in the figurative sense,” he adds. “We have been cultivating this close and successful partnership with Krone for a very long time and it works brilliantly,” he concludes.

TOP-NOTCH PROFESSIONALS

According to Jan Rademacher, this outstanding support from Spelle comes from various departments including sales and marketing, parts and sales promotion by organising grassland days, for example. The wide range of technical training and development courses on offer is another important form of support. “I think it’s important

for us to make use of these opportunities. After all, we can only provide the premium service that our customers rightly expect from us if our mechatronic engineers and master craftsmen and women are at the top of their game,” says Jan Rademacher. Here too, a systematic approach is the guiding principle – “even when it extends to products that we don’t pick off the shelves every day,” he says with a grin.

He is, of course, referring to the BiG X, the flagship of the Krone range. Rademacher has sold over 100 Krone machines, but forage harvesters make up only a small proportion of these – based on unit numbers. “The hilly, heavily forested Sauerland region is not known for large-scale agriculture. Although grassland plays an important role here, the density of contractors and thus the harvesting machinery fleets are lower than in other regions. Forage wagons, balers and hay harvesting equipment are still our mainstay. Despite this, three of our mechatronic technicians are highly trained in dealing with forage harvesters. As I said before – when we do something, we do it well. And our high market shares in the region indicate that we are on the right track,” he adds. By 2022 Rademacher had captured around 20% of the tractor market – not bad considering that they switched manufacturer in 2019. They have between

25% and 30% of the market for Krone equipment, depending on the product and this “ok really”, thinks the boss.

SHOP TESTER

So when Krone approached Jan Rademacher in 2021 to see if he would be willing to participate in the online parts shop project, he was very open to the idea. Krone’s aim was to help dealers sell original parts on the internet using a concept developed jointly with the online service provider Agroparts. The dealer had some initial misgivings, as he admits: “Overall, we have very good ties with our customers and are regularly in direct contact with farmers and contractors. Replacement parts are either pre-ordered in annual reviews or ordered directly from us, usually by phone, when needed urgently. And during harvest when it’s all hands on deck, no one has time to sit at their computer, identify parts and order them from us online,” Jan Rademacher surmises.



- 1** Managing the shop involves updating prices and stock as well as continuously monitoring incoming orders.
- 2** Jan Rademacher is one of the first dealerships to implement the new Krone shop concept.



- 1** An excellent warehousing policy forms part of the dealer's service philosophy.
- 2** Although many customers still order parts via telephone, the number of online-shop orders is on the rise.

On the other hand, he has noticed that due to growing price pressures contractors and large-scale farmers tend to spend more time than before trawling the internet for parts offers. Although the cost of a part is only one of several aspects that influence a purchasing decision, he feels that it is becoming more important. "So as a specialist dealership, our task is to continuously draw our customers' attention to the benefits of original parts, such as product quality, durability, availability, and of course our advisory service – benefits that are provided by the machine manufacturer and us alone. Nevertheless, it is important to take market trends seriously and find solutions – such as by setting up the online shop," says Jan Rademacher, who decided to become one of the three test dealers piloting this project.

PART OF THE SERVICE CONCEPT

However, he soon discovered that introducing a new feature like this took up more time than originally anticipated, as he freely admits. The boss and the parts team broached the subject with customers during discussions and there seemed to be plenty of interest, but access to the online shop, never mind actual orders, were vanishingly small initially. It was only when Jan Rademacher decided to help several

customers set up access to the shop, and then offered new customers a one-off discount, that take-up really started to grow. The mykrone.green customer portal has proved very helpful as Krone customers who register on it can access diverse support services from the manufacturer.

"Via this portal, customers can connect to our shop in just a few clicks and then identify and order parts with ease. It works well, at least for contractors and large-scale farmers," explains Jan Rademacher. He has seen online parts sales grow to a five-figure sum within a year, and the trend is continuing. "There's no doubt that initially we were merely redirecting telephone sales to the online shop, but I am convinced that we can generate genuinely extra sales from the shop," he maintains. He sees growth potential primarily in his own sales area rather than in other corners of Germany. "The most important thing for me is to provide my customers with the best possible support, in person as well as on the internet," he says, outlining his philosophy.

The time required to run the online shop is appreciable but acceptable. It involves updating the price list, which has the advantage of enabling customers to immediately see their costs. Handling inquiries and emails is also important, as the dealership

receives a confirmation email with every online order. This is even the case if the part is not in stock locally and the customer has to submit their order directly to the manufacturer, as per the system. "The dealer is always included and notified," he notes with satisfaction. The specialist dealer has identified another reason to welcome the online shop: the error rate for parts orders is declining. Customers ordering by phone usually know roughly what product they require, but often they don't have the serial number to hand. And when long numbers are read out over the telephone, there is a risk of transposing the digits, resulting in the wrong parts being shipped and time wasted. "Customers can use the exploded drawings at the online shop to quickly identify the correct parts and order them with confidence. That benefits everyone involved," says Jan Rademacher with conviction, though he tempers this by adding: "For me, the shop is only one part of the service concept, we will focus on a personal approach, because this, together with our ability to provide expert advice, is where our true strength lies." «

BIG X 980/BIG X 1080

TWO V12 FORAGE HARVESTERS ADDED TO THE BIG X PROGRAMME

Krone expands its forage harvester range by two models, the BiG X 980 and the BiG X 1080. Like the BiG X 1100 flagship, the two additions are powered by a Liebherr V12 engine which scores on very practical details and features. For example, the service intervals for oil, filters and valves have been extended to 1,000 hours while the modified PowerSplit feature allows operators to match the current engine speed to conditions just by flicking a button, thereby boosting efficiencies and greater fuel economy.



The two machines also boast numerous Krone innovations including the crop flow system with six pre-compression rollers, the massive chopping drum and the OptiMaxx 305 CornConditioner which is the biggest kernel processor on the market. Another unique feature is the VariStream system which consists of a spring-loaded floor under the chopping drum and a spring-loaded plate behind the crop accelerator – all of which combine to ensure blockage-free and smooth crop flows through the machine. Further popular options on these Krone forage harvesters are the Krone lift cab and the unique XtraPower system, an online feature that allows operators to temporarily book more engine power into the machine. Equally useful and efficient is the recent "NIR Control dual sensor" which

measures and records nutrient levels in the field as the material is being harvested. As a speciality, this sensor, which received several DLG awards, is suitable for use on a BiG X forage harvester and also on a Zunhammer slurry applicator. Last but not least, the new BiG X 980 and BiG X 1080 are also equipped with SmartConnect - the standard telemetric technology that collects and transmits all machine data in real time. «

GPS GUIDANCE

BOOSTING OPERATOR COMFORT

The autoguidance system Krone GPS Guidance is now also available for the Krone BiG X forage harvesters. The system allows operators to steer the forager conveniently by using auto pilot - a technology that is particularly beneficial in whole crop silage using the direct cut XDisc header or the XCollect maize header on a BiG X. The autoguided BiG X cuts along the crop line at maximum precision and with minimum overlapping no matter how fast it is going, thereby exploiting its work width to the fullest for maximum efficiency and productivity. The system is a boon for the operator who can now focus on the harvest chain. BiG M and BiG X operators use the Krone GPS Guidance either with Real Time Kinematic (RTK, +-2cm accuracy) or an EGNOS correction signal (+-20cm accuracy depending on the country). Of course you can also import existing GPS ISO-XML waylines from rakes or maize drills to the autoguidance system. «



THE HEILOS FAMILY, YBBS (AUSTRIA)

DIRECTLY SELLING FOR THE PAST 40 YEARS

Producing and directly selling your own products does not suit every farm business, but for the Heilos family it is exactly this strategy that forms an important part of their income. We take closer look at the concept and the farm itself.



The Heilos family farm 50 hectares in Lower Austria. They sell some of their own dairy products in their farm shop.

Ybbs is a small, friendly town of approximately 6,000 inhabitants which is located on the Danube in Lower Austria. Upriver, right on the edge of the town, you find the Heilos' family farm. As I pull into the tidy yard, I take a look around: Alongside the sheds for machines and animals, the farmhouse in particular catches my eye as it exudes a certain Mediterranean charm. Matthias Helios and his wife Claudia are waiting for me as I arrive, and they bring me to a garden house. Their children Jakob (3) and Simone (a newborn) join us as the couple tell me about their farm business over coffee, cake and cherry yogurt made from their own milk.



Alongside their own products, their farm shop also sells products from other producers in the region. Apart from yogurt, cheese is also in demand, and the family use returnable and recyclable glass jars for their products.



Today, they no longer produce sheep's cheese though. "We said goodbye to the last few sheep seven years ago, because it's a seasonal business. When we had too much sheep's milk and we could not process all of it, it was difficult to sell on. Cow's milk is different. Nowadays, we deliver the majority of it to the dairy. We can simply draw off the milk that we require to make our own products." The Heilos milk 67 Fleckvieh cows, making them an above-average sized dairy farm in Austria. "Including the calves, we have around 110 animals on the farm," Matthias reports. The animals are housed in an open shed.

The workload on the family farm is divided up as follows: Claudia along with her mother-in-law Barbara take care of cheese making and marketing, Matthias and his father look after the shed and harvesting.

IT ALL STARTED WITH SHEEP'S CHEESE

Matthias Heilos along with his wife Claudia is the third generation to run the family farm. "Our farm was originally located elsewhere. When the hydro-electric power station was built on the river Danube around 60 years ago, our family and the farm had to move to this place," Matthias explains. The family has always been involved in milk production, and Matthias' father Johann started selling his products directly to consumers as early as in the late 70s. "Back then, he sold cheese made from our own sheep's milk. He absolutely loved producing cheese. That's why he tried selling his own cheese here locally," Matthias reminisces, continuing: The sheep's cheese market in the region turned out to be much bigger than we had anticipated, and so our business grew year and year, as did our flock of sheep."

WIDE RANGE OF PRODUCTS

The family sell their products in their own farm shop as well as through retail chains, which sell the dairy products regionally in their shops within a radius of around 20km. "Some retail chains in Austria have discovered this trend and see good sales opportunities," Claudia explains, continuing: "The pandemic also saw an increase in demand for products that are grown locally. Also, many consumers started shopping more consciously. At our farm shop, they can see with their own eyes how we produce and process our milk. This creates trust and so customers are willing to pay that bit extra."

- 1** Farmer Matthias Heilos feeds his dairy cows grass and maize silage, grain meal, molasses and Brewers' grains. In addition to this, he also feeds hay. The herd's average performance of 10,600 litres per cow can only be achieved by feeding an optimum base ration.
- 2** The forage is harvested with Krone machines. Matthias seeks efficiency and high quality of work.
- 3** The hay is baled and then dried. Although this is a lot of work, they get a feed of an excellent quality that the cows eat with great appetite.



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3



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cream cheeses as well as natural and fruit yogurt. However, they also sell products from other farms, including farmhouse bread. "The bread is on sale once a week. Customers can pre-order the bread and they really make use of this system," Matthias states, continuing: "Naturally enough, many customers use this opportunity to stock up on yogurt and cheese for the week. Some of our farmer colleagues whose products we sell also have their own farm shops and sell our dairy products in turn. This has proven successful over the years."

To avoid waste, the milk and yogurt are filled into returnable glass containers. This in itself presents extra work, because the glass containers have to be cleaned properly before refilling. "But the customers like this, because avoiding waste is becoming an increasingly important topic," Claudia states.

Needless to say, the dairy is inspected annually by food inspection authorities. Claudia and her mother-in-law also take part in regular obligatory hygiene training sessions. "We have to precisely document all quantities that we process and sell, because we have to pay tax on it," she explains. "It's a lot of work. While other people have free time for hobbies, we are often still looking after our direct sales," Matthias adds. But he is certain that this concept suits the family farm very well. In conclusion, he says: "We have a solid customer base consisting of private people and retail chains. Cooperating with other farmers also works well. It makes for extra work, but the added value is greater in comparison to simply supplying the bigger dairies. It suits us!"

IN CHARGE

In total, the family farm approximately 50ha, divided equally between crop- and grassland. They grow lucerne, grass, winter barley and maize. "We use everything that we harvest for feed on our own farm," Matthias explains. He says that he is very happy with last year's yield. Thankfully, it rained regularly and at the right time in Lower Austria in 2022, unlike in many other regions in Europe where there was not enough rain. "Each year, we do four to five cuts of grass," he explains. Some of the fields are on hillsides, however they are not too steep and therefore they do not need special Alpine machines for harvesting.

He has contractors do the threshing, and chopping grass and maize, but otherwise Matthias looks after all the harvesting himself. "We always mow, ted and rake ourselves. We also harvest the later cuts ourselves, either with the forage wagon or the round baler," Matthias continues, adding: "An excellent grass quality is extremely important in times when concentrate prices are so high. Our herd produces an average of 10,600 litres – and that's a herd of dual-purpose cattle. That's why we want to be in charge of everything and decide ourselves when's the best time to cut grass. We decide the settings for the mower, and the same applies to the tedder and the rake. We have to be efficient, especially in periods of undependable weather. We have to deal with mistakes made by contractors in the grass harvest for the rest of the year and these cost us a lot of money."

QUALITY IS THE NAME OF THE GAME

When it comes to the grass harvest, Matthias Heilos relies on Krone technology. He uses a front-rear combination for mowing with a working width of 6.4m. He uses a 6.8m-wide tedder, and a 6.8m-wide twin rotor side delivery rake. His forage wagon is also a Krone machine – an AX 2500 with tandem axle. "Krone equipment is perfect for us. Even if a machine breaks down, we get help quickly. The same applies when we need a replacement part, thanks to Krone themselves, as well as our Krone dealer, Januschkowitz, who are very close by. This is exactly how it should be."

He produces about 900 round bales per year using a Comprima baler. "As elsewhere, our aim is producing top quality forage. That's why we bale at a moisture content of 20 to 25% and then ventilate the bales before storing them. The soft core option on the Krone Comprima is perfect for this. Within around 12 hours, the moisture content of a bale is reduced from 25% to under 14%, and it can then be stored. Our animals love eating hay, it's like medicine for them. It promotes rumination and the animals are noticeably less susceptible to disease," Matthias states convincingly and continues: "We want to produce top quality products. This applies in equal measure to the feed as well as the milk and its processing into cheese and yogurt. Directly selling our products suits our business concept really well, and in future I see this as a stable source of income for our family business."

DIRECTLY SELLING SUITS OUR BUSINESS CONCEPT REALLY WELL.

MATTHIAS HEILOS, FARMER

WE HAVE TO BE EFFICIENT, ESPECIALLY IN PERIODS OF UNDEPENDABLE WEATHER.

MATTHIAS HEILOS, FARMER

Up until the beginning of the pandemic, the farm shop was located in the farmhouse. "The restrictions that were imposed as the pandemic unfolded, meant that we decided to relocate," Claudia explains. They acquired a shipping container and turned this into a farm shop, complete with shelves and fridges. "We are open Mondays, Wednesdays, Fridays and Saturdays, and on these days we also offer pre-ordered raw milk. Pasteurised milk is always available. Our customers buy from us on a basis of trust with honesty boxes, and this has been a good experience for us so far," Claudia continues. She still checks the farm shop now and again to make sure that everything is ok and to see if any products need to be re-stocked or ordered. They sell their own products such as various types of cheese and



PURCHASE

THE PARTS MARKET IS A ROLLERCOASTER

Purchase may not be a very conspicuous but an important department which is pivotal for the success of any manufacturing company. Dennis Reker, Head of Purchase of Krone's Agricultural Machinery division, tells us why purchase is so important and why it turned into a rollercoaster ride in 2020.

Exploding prices, an immense shortage of parts and the energy crisis make purchasing bulk quantities anything but a fun job these days – this is at least the impression you would get as an observer. Indeed, Dennis Reker confirms that since the Corona pandemic broke out in spring 2020, there has been no business as usual. As Head of Purchase at the Agricultural Machinery division in Spelle, Dennis is in charge of any item that needs purchasing in the “green world” of the Krone Group. “Before Corona, it was possible for us to make supplier agreements that fixed the prices for about 12 to 14 months, for example,” he tells us. “Yet since 2020, these terms have shrunk to 3 to 8 months.”

What may seem only a minor problem does have very serious implications. Dennis Reker gives us an example from the steel sector: “We have a great demand for hot-rolled steel strip. At the beginning of Corona, the price for these strips was €600/t. By early 2021, it was more than €1,000/t and to €1,200 by the middle of the year. The war on Ukraine led to another hike by €400 to €1,600/t on the spot market – to a level that was more than three times that before the pandemic.” By September 2022, the price had dropped again to less than €1,000/t. Such an erratic situation is very difficult to deal with and this applies to both partners of the deal, because the price must also suit the supplier. “After all, it’s not only about

buying the best possible parts and components at the best possible price, but also about fostering a longstanding partnership with our suppliers who often come in at a very early stage of machine development. This explains why a good and longstanding collaboration is so important for us.”

At this point, Dennis stresses the close relationships between Purchase, R&D and QA. The complex and key assemblies and the large components such as the chassis or gearbox are usually developed in collaboration with the supplier in a process referred to as “simultaneous engineering”. “In these interdisciplinary teams it is our job as the purchase department to watch the budget and determine the final costs by applying value analysis. This approach ensures that an assembly meets all requirements with regard to functionality, quality and costs,” explains Dennis.

A CLEAR DIVISION OF TASKS

This begs the question about the general structure of the purchase department and its interfaces with the other departments. Dennis Reker explains that purchase splits into the so-called operative and strategic sides. The operative purchase team are



The purchase department at the Agricultural Machinery division in Spelle manages more than 40,000 items – from the smallest screw to the BiG X engines.

concerned with material planning and focus on the actual procurement of those materials that are needed for the manufacturing processes and which need to be available at a specific date. This team is directly linked to the manufacturing department. “These colleagues make sure all orders are placed in good time and the materials are supplied to the assembly line on time,” explains Dennis.

By comparison, strategic purchase is arranged ahead of operative purchasing; it is not so much concerned with the daily material flows. Instead, the strategic purchase team observes the markets and the suppliers’ industry and always on the lookout for new partners. They negotiate the framework agreements and the prices, scout the markets for new manufacturing technologies and identify potential bottlenecks in procurement. Especially this last aspect has been the biggest focus since the outbreak of the Corona pandemic. “Yet, it’s not only about short-term perspectives but also about long-term trends, about developing suitable strategies and finding a partner that suits Krone best,” tells Dennis Reker

referring to electronics and digitalisation as examples of fast growing areas.

Such a diverse range of tasks calls for a team in which each member is an expert in a specific field. Therefore, strategic purchase splits into two areas: the larger area is direct purchase of production material which is material that is used in manufacturing and indirect purchase which takes care of all orders that will not be assigned an article number. These items include forklifts, manufacturing equipment, tools and services such as cleaning, reception, security. “As such, the purchase department at the Agricultural Machinery division handles 40,000 materials and products”, concludes Dennis.

A MATTER OF AVAILABILITY

As useful as this clear division of materials planning and strategic planning may be, it has not been possible to draw a strict line between these activities since the outbreak of the pandemic when availability became



a more pressing issue than the price. “Before 2020, we discussed any supply issues with our traditional points of contact at the suppliers’ side. Today, supply issues have been escalated to a higher level in the organisation”, explains Dennis Reker and goes on: “This is not because there’s disagreement but because of dramatic limitations on the suppliers’ side which make it impossible for them to keep deadlines and deliver the typical batch sizes. In the past 24 months, very many suppliers have accumulated tremendous backlogs at every level of the value chain. The solution is to reduce the deliveries for all customers rather than leaving one customer in the lurch. This however translates into a significant amount of extra work. We at Krone have accumulated a very tangible backlog, too. In times before Corona it would take three Saturday shifts to catch up. No longer. Saturday shifts have become quite a regular policy for our suppliers since Corona. So this is no longer an option.”

Dennis Reker says semiconductors are a very good example of a dramatic market situation. This market has been subjected



The strained situation in the semiconductor market has made electronic components nearly “black market” items.

to several self-reinforcing mechanisms. While the lockdown led to a huge demand for consumer electronics, many industries and in particular the automotive industry changed their planning towards lower production numbers - obviously in anticipation of a recession. Yet, this recession never happened. Yet, the industry has not been able to reverse the situation at short notice. “The situation was aggravated when the freight ship got stuck in the Suez Canal and Asian countries adopted a zero Covid strategy.” The backlog on semiconductor

orders is reckoned to last until the end of 2023 – provided there won’t be further distortions and turbulences. “Yet despite all these bottlenecks we have not gone as far and buy washing machines as sources for semiconductors – as the rumour mills had it on other agricultural machinery manufacturers: “This would have been an idiotic thing to do,” he adds with a smile.

Nevertheless, the bottlenecks beg the question whether we are seeing a hoarding effect among manufacturers to brace for a

When suppliers were running low, they reduced batch sizes and extended timelines. The logistics chain that is supposed to feed the assembly line was challenged tremendously.



Dennis Reker is Head of Purchase at Maschinenfabrik Bernard Krone.

potential situation of unavailability – just as German households hoarded toilet paper at the beginning of the pandemic. And yet indeed, we do see certain politics in place – in particular in the mentioned semiconductor market – true to the motto “better have than need”. Yet, from a business point of view it doesn’t make sense to keep excess inventory. “Of course, in periods when prices rise, we tend to buy today rather than tomorrow,” continues Dennis, “but right now we’re anticipating a downward trend for component prices. In that case we would be left with an inventory that was purchased too dearly. As ever so often, a middle-of-the road approach is usually the best strategy. Putting on his strategic lenses, Dennis says: “In view of the massive change that the automotive industry and especially motorcar electrification is undergoing, I do see good long-term opportunities for the smaller industries like farm machinery and drivelines. We can see already that suppliers are adjusting; and this will open new opportunities and potential for purchasers like us.”

THE PUBLIC PARKS DEPARTMENT OF THE CITY OF DORTMUND

“PRESSING” ALL THE TIME

Every autumn, city council depots are faced with the challenge of removing autumn leaves from parks and public spaces. The Public Parks Department of the city of Dortmund discovered that a Krone round baler is very suitable for baling autumn leaves.



The idea came to Sönke Janssen from the Dortmund Parks Department who had been looking for new solutions for dealing with autumn leaves in public spaces.

It's autumn. In one of Dortmund's public parks which stretches from the inner city to the south most of the countless maple trees, beeches and oaks have shed their leaves and the Parks Department staff are busy removing them. The person in charge of leaf removal in this part of the city is Soenke Janssen who holds a degree in agricultural business administration. As the parks management expert, he says: "Every year, municipalities are obliged to clear streets, parks and recreational areas from fallen leaves – a great challenge, not only because it is very labour intensive, but also because it is hard physical work although we do use machines," says the expert.

"Naturally, one constantly thinks about making this job less exhausting and optimising our processes," he goes on. His team have a large arsenal of tools and equipment at their disposal – from simple leaf blowers to powerful ride-on sweepers. The idea of using a Krone big baler for baling leaves occurred to Soenke when he was watching a round baler baling grass in one of the city's extensively farmed grasslands. The particular baler was a Krone Bellima F130 fixed chamber round baler. Indeed, Soenke

is delighted at the machine's performance in leaves: "Naturally, leaves are very different from grass, but the baler handles them very well."

This however takes great patience and accuracy when setting up both the rake and the baler. For example, the pick-up wheels on the baler must be adjusted with greatest precision to the current conditions. Another important detail for optimum results is the proper forward speed, explains Soenke and continues: "The wetter the leaves, the slower should you go in order to give the pick-up enough time to gather the leaves and feed them into the baling chamber. Every day, it's trial and error for tractor driver Joachim Schäfer to find the optimum forward speed for the baler. Ensuring a consistent flow of leaves into the machine is the single most important detail that needs observing. If this is the case, the baler is very efficient. "We can produce about 25 bales of leaves on one day, even if the leaves are a bit wet. We then apply a net wrap. This is necessary to prevent the bales from falling apart the moment they are ejected. After the bales arrive at the depot, the net wrap is cut open and removed, which is easy.

The Krone baler reduces the time but also the cost of leaf removal. "Baled leaves are more easily disposed of and transported to the composting sites," stresses Soenke. That's quite an important aspect in times when many cities struggle with rising costs. «



Ready for pick-up – rolling leaves into bales before transporting them to the composting facility is much more cost effective.

METHANE EMISSIONS

TIME TO STOP THE BLAME GAME

Whenever environmentalists express concern about the greenhouse gas methane, the farming community is usually singled out as one of the main polluters. But according to Professor Frank Mitlöhner (University of California Davis), who is an expert in this field, such accusations are unjustified. He tells us why in the following XtraBlatt interview.



XtraBlatt: Professor Mitlöhner, can you give us an idea of just how much greenhouse gas (GHG) is being produced worldwide? And what percentage of the total can be attributed to agriculture?

Frank Mitlöhner: All of the greenhouse gases produced by human activity worldwide add up to just under 50 gigatonnes a year. Agriculture accounts for up to 10% in most industrialised nations. According to the German Federal Environment Agency, the figure for agriculture in this country was approximately 7.2% in 2021.

XtraBlatt: However, agriculture is not just a producer of greenhouse gases; after all, it also contributes to the sequestration of such gases. In other words, it also acts as a sink. Is that correct?

Frank Mitlöhner: Precisely! One example is carbon sequestration in the soil. Plants absorb carbon into their biomass in the course of photosynthesis. Some of it remains above the soil surface, but most of it goes into the roots, where it is

then incorporated into the soil by means of microbial activity. Carbon sequestration is a very important contribution made by agriculture and forestry to reducing global warming. The process has the potential to capture and store one-third of all the carbon that human activity releases into the air.

Ruminants subsequently eat some of the above-ground vegetation and produce methane during digestion. Within a subsequent ten-year period, this is then converted into CO₂ in the atmosphere, and the journey starts all over again. Carbon sequestration as a result of agricultural processes therefore constitutes a form of recycling. By contrast, the burning of fossil fuels is an irreversible one-way street, because oil, coal and gas, which have been stored in the ground for millions of years, are now in the atmosphere forever. That is one of the reasons why I have an allergic reaction when people compare cars to cows. It's a really bizarre and unscientific comparison!

XtraBlatt: How does the impact of methane on the climate compare to that of carbon dioxide?

Frank Mitlöhner: When drawing comparisons about the effect of different GHGs, we speak of 'Global Warming Potential' and apply a measurement unit of GWP 100. These values are so-called CO₂ equivalents which denote the relative contribution of a gas to the greenhouse effect, specifically its average warming effect on the atmosphere over a given period of time, usually 100 years. The GWP 100 of CO₂ is by definition 1. Relative to this, the GWP 100 of methane is 28, which means that 1kg of methane contributes 28 times more to the greenhouse effect than 1kg of carbon dioxide in the first 100 years after release. And here is another comparison: the GWP 100 of nitrous oxide is 265, which means that this particular GHG has 265 times the impact of CO₂.

FARMERS SHOULD NOT SHY AWAY FROM THE DEBATE ON METHANE EMISSIONS. WE SHOULD SEE OURSELVES AS PART OF THE SOLUTION.

PROFESSOR FRANK MITLÖHNER,
UC DAVIS, USA





Increased dairy productivity reduces methane emissions per kilogram of milk.

Apart from the role methane plays in agriculture, the gas is also produced by the combustion of fossil fuels. It also escapes naturally from rotting biomass and even from wetlands. Total global emissions amount to 558 tera-grams of CH₄ per year, in other words 558 million tonnes. A large proportion of this methane is eliminated by chemical processes in the atmosphere – so-called ‘sinks’ – and is thus removed from the equation. Hydroxyl oxidation in particular is a major sink for this gas. On average, the process is complete ten years after a CH₄ molecule has been released. In order to draw up a reasonable account balance for GHGs, these sinks must be included. This is because their annual global contribution amounts to around 548 tera-grams. In total, 558 tera-grams are produced and 548 tera-grams are eliminated, and when you subtract one from the other, the net difference is 10 tera-grams of methane a year remaining in our planet’s atmosphere.

XtraBlatt: So you’re saying that methane has a much shorter lifespan than other GHGs?

Frank Mitlöhner: Yes, that’s right. For example, while N₂O (nitrous oxide), remains in the atmosphere for more than 100 years and CO₂ for an even longer period of 1,000 years, CH₄ has the significantly shorter lifespan of ten years. For that

70% OF THE WORLD’S AGRICULTURAL LAND WOULD NOT BE USABLE FOR FEEDING THE WORLD, IF IT WASN’T FOR GRAZING RUMINANTS.

PROFESSOR FRANK MITLÖHNER,
UC DAVIS, USA

reason, agricultural emissions should also be assessed differently than many critics are prepared to concede. They fail to take into account the natural methane sinks and this distorts the figures.

XtraBlatt: What are the implications for cattle farming?

Frank Mitlöhner: If cattle herds remain at the size they are now, then of course they will continue to produce methane. But the amount of GHG they generate is decomposed again by the atmosphere within ten years. Therefore, as long as herd size remains constant, cattle do not contribute to an increase in the amount of methane in the atmosphere and thus to global warming. That would only be the case if herd sizes increased, for example in developing countries where cattle populations are increasing. This would produce more methane than is being decomposed, and the increased methane concentration would accelerate global warming.

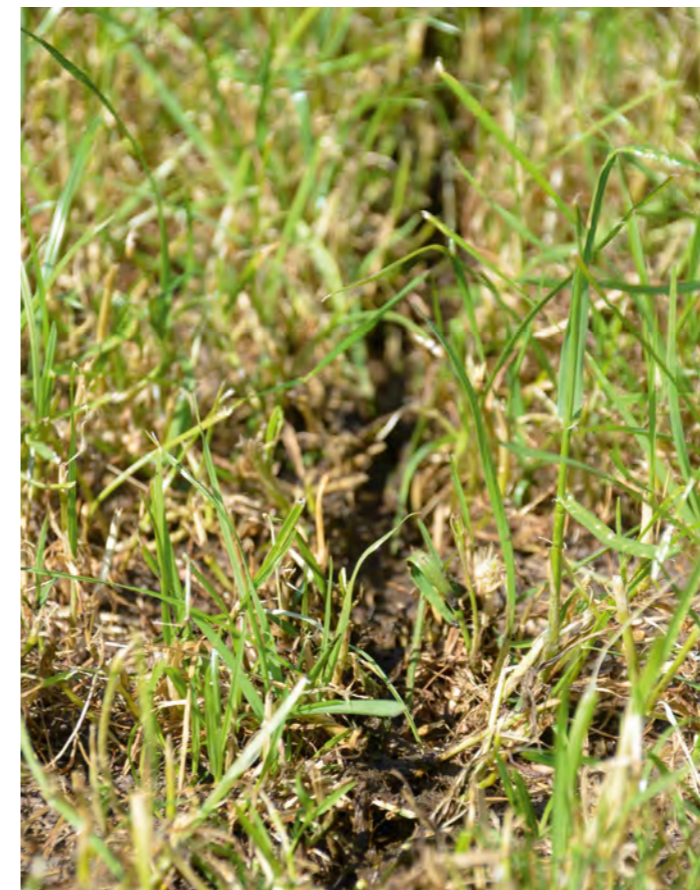
XtraBlatt: Are there any estimates that include this constant methane decomposition in the atmosphere and thus go beyond the comparison based on GWP 100?

Frank Mitlöhner: Yes, there are. Two years ago, colleagues at the University of Oxford in England challenged the way



The general public and much of the media do not realise that thanks to modern technology organic fertilisers are applied at precision rates and in a climate-friendly way.

in which we quantify methane production and its influence on climate change. They said that methane sinks – which continuously decompose and thus remove methane from the atmosphere – were not taken into account and that quantification by means of GWP 100 was simply wrong. These same colleagues had already pointed out years ago that estimates calculated by this method exaggerated the effects of global warming by a factor of four. I’m inclined to agree.



The Oxford academics eventually came up with a new unit for classifying methane in a scientifically sound manner, which they have designated GWP*. This unit of measurement takes atmospheric methane decomposition into account. The Intergovernmental Panel on Climate Change (IPCC) published a report last year in which experts confirmed that the influence of unvarying methane sources was exaggerated by a factor of four.

XtraBlatt: How can we now use this newly acquired knowledge of methane sources and sinks to develop a solution for agriculture?

Frank Mitlöhner: Here in Germany, we have been steadily reducing our cattle population over the past few decades – we have become more efficient. This has already made some contribution to the reduction of methane emissions, though not yet to a significant decrease. But in other regions of the world, methane generation has already been reduced. In the USA, for example, there were around 25 million dairy cows in 1950, whereas today that figure has fallen to only 9 million. And these 9 million animals produce 60% more milk than the much larger herds of the past. The GHG ‘footprint’ of dairy production in the USA – by which we mean GHG emissions in relation to milk production – has decreased by two-thirds since 1950. And this is not unique to North America; it also applies to many other developed countries.

GHG emissions from dairy production are directly related to productivity: when productivity goes up, emissions go down in relative terms. Unfortunately, many commentators do not understand this. They claim that productive animals also emit more. It is true that a high-yielding cow emits more than a low-yielding cow, but increased productivity also means that we have much smaller herds these days.

XtraBlatt: Could you please give us an example of how production intensity impacts on climate protection?

Frank Mitlöhner: If the cows in a 200-head herd produce 10,000kg of milk a year instead of 4,000kg, it only takes 80 cows to yield the same amount of milk per year. The methane footprint per kilo of milk then drops by 47%!

In the developed countries, as I said, we have made good progress in this regard. In most developing countries, however, this is not the case; as disposable income increases there, people tend to buy more eggs, meat and milk. But the greater availability of such foodstuffs has unfortunately been brought about by increasing the size of herds, not by improving efficiency. That is the problem. Farmers in India and Brazil now keep more cattle than the rest of the world combined.

If not used by ruminants, 70% of the world's agricultural land would not be usable and therefore make no contribution to feeding the world. This applies not only to developing countries but also to permanent grassland in Europe, for example in mountainous regions.



According to experts, a change of diet and the use of special concentrates in animal feed could reduce methane emissions from cows by up to one third.

70 to 80 percent of global emissions from livestock production come from developing and emerging countries. But I'm not going to point the finger at anyone. What I'm trying to do is emphasise the urgent need to significantly increase productivity in these countries. In the USA, we have 9 million dairy cows, compared with India where there are 300 million dairy cows and buffaloes. The same amount of milk produced there today could be achieved with 10% of the herd size.

XtraBlatt: So, despite all claims to the contrary, why do you think dairy herds will continue to be indispensable in the future?

Frank Mitlöhner: On the one hand, we have the challenge of a steadily growing world population. This leads to considerable problems with food supply and the prospect of the industrialised nations coming under increased migration pressure. On the other hand, there are natural limits to the sum total of viable agricultural land on our planet. So, the only option is to use the available land as efficiently as we can. One

factor that is not fully appreciated is that 70% of the world's agricultural land would not be usable, if it wasn't for grazing ruminants. As such and due to local conditions, it would make no contribution to feeding the world. The land may not be fertile enough or too steep or too dry. The only plants that can be cropped there are grasses containing cellulose, which can only be digested by ruminants.

XtraBlatt: So we can't do without ruminants. But how can we optimise herd management to meet our climate protection targets?

Frank Mitlöhner: There are four approaches that can increase the efficiencies in milk production that also result in reduced greenhouse gas emissions. These have been systematically pursued in developed countries over the past few decades. The first approach is to increase fertility and reproducibility, and significant success has been achieved in this regard. Veterinary systems have been installed to prevent and treat diseases. Feed supply and animal nutrition have also been optimised. The most important contribution to reducing the environmental impact of agriculture has been the optimisation of genetics over the past 40 or 50 years – this applies to both forage crops and animals. For example, attempts have been made to breed animals that emit relatively lower volumes of methane. Research has already been conducted into vaccines that reduce methane production. There will certainly be a lot more work done on this in the next few years.

AS LONG AS THE CATTLE POPULATION REMAINS CONSTANT, CATTLE DO NOT CONTRIBUTE TO AN INCREASE IN THE AMOUNT OF METHANE IN THE ATMOSPHERE AND THUS TO GLOBAL WARMING.

PROFESSOR FRANK MITLÖHNER, UC DAVIS, USA

»» ABOUT OUR INTERVIEWEE:

PROFESSOR FRANK MITLÖHNER

An agricultural scientist by education, Professor Frank Mitlöhner is also an air quality specialist working at the Department of Animal Science at UC Davis. In this capacity, he shares his knowledge and research with students, scientists, farmers and ranchers, policy makers and the general public, both nationally and internationally. Professor Mitlöhner is also Director of the CLEAR Center, which has two main focuses – research and communication. According to its own mission statement: “The CLEAR Center brings clarity to the intersection of livestock farming and the environment, helping our global community understand the environmental and human health impacts of livestock, so we can make informed decisions about the foods we eat while reducing environmental impacts.”



XtraBlatt: What recommendations would you make to farmers, apart from increasing efficiencies and cutting back on herd size, to drive methane reduction?

Frank Mitlöhner: For example, there are ways of optimising cattle rations. Even without feeding concentrates, the potential of reducing rations is 5 to 10 percent. If concentrates are fed, a reduction of even up to 30% is conceivable. We have already carried out promising trials in this area.

XtraBlatt: So, how would you sum up the whole issue?

Frank Mitlöhner: Cows can be part of the solution to reducing greenhouse gas emissions from agriculture and thus global warming. Farmers should not shy away from the debate on methane emissions; they should see methane as an opportunity. OK, we do produce methane in agriculture, but we also have enormous leverage to reduce emissions, with a direct impact on the climate. And so I would repeat: We can

be part of the solution. And one model for the future will be to work towards climate-neutral farming. Once a farmer has achieved this target, they can obtain financial recompense for their contribution to reducing emissions – a special kind of emissions trading, so to speak – and thereby generate additional profit. «



KNAPEN TRAILERS

MULTI TALENTS IN LOGISTICS

When the Dutch manufacturer Knapen joined the Krone Group in 2019, it added semi trailers with walking floor technology to the Group's portfolio in the area of logistics. XtraBlatt pays the company a visit.



Superficially, a layperson would find that most semi trailers look identical. The only obvious difference are the sides that are either tarp or steel. Yet on closer inspection, the differences increase, one being the walking floor. “Semi trailers with walking floors account for an estimated market share of 3-4% in the European trailer market,” explains Jandrik Knapen, Managing Director Sales & Marketing at Knapen in Deurne, a town situated about half way between Eindhoven and the German border. He goes on: “There was a reason for us to specialise in this small and yet lucrative niche. By specialising in walking floors back in 1984, our company founder Piet Knapen built the foundations for today’s success. Today, we benefit from an extensive expertise in this field and great customer proximity. Based on these facts, we are able to provide custom solutions. Our focus is on high standards and tailor-made designs instead of mass production,” adds Jandrik Knapen.

SYNERGY EFFECTS

In the past few years, the strategy of producing tailor-made rather than mass products has led to a continuous growth. In fact, the annual production figures for 2022 reached record levels according to the company and translated into a 20-22% share in the European market for semi-trailers with walking floors, reckons the Head of Sales and Marketing. This welcome process has certainly also been attributed to the fact that the company joined the Krone Group in 2019. “Knapen continues operating as an independent business unit and has kept its brand name “Knapen Trailers”. After all, this is what our customers identify with,” explains Jandrik Knapen. “As Krone and Knapen share the same philosophy on brand names as well as on the company philosophy and culture, we are indeed an excellent team. At the same time, by being part of the Krone Group we tap into synergy effects and opportunities we didn’t have in the past.

These comprise the Group’s investment in our processes and factory that are vital for our future growth. During the last few years we expanded considerably; this included moving house of our two subsidiaries “Trailned” and “Knapen Service”; this drove the factory to its limits. “Therefore, we’ve put further changes to the manufacturing processes on the agenda,” explains Jack Boekholt on our factory tour. He is in charge of aftersales services and parts and is the product specialists for agricultural trailers. Last year, they invested in two robotic welders that increased the number of robots to four and boosted our overall efficiency. “Apart from that, shortage of skilled labour is a major issue for us as it is in



Defining farmers as the target group for walking floor trailers – Jandrik Knapen (in the middle; Managing Director for Sales and Marketing), Ruud Verhoeven (r., Product Manager) and Jack Boekholt (After Sales, Parts and Product specialist for agricultural trailers)

Germany. Therefore it is necessary to continue automating our processes. This is the only path to further growth without expanding the team,” he adds. In between them, the three Knapen firms employ about 240 people, 200 of whom work on the shop floor. Another area where teaming up with Krone increases Knapen’s leverage is the new ERP software (Enterprise Resource Planning) which is to be introduced shortly. This software will integrate all processes relating to finance, human resources, manufacturing, supply chains, services and procurement and take our efficiency to a new level – and also help to embed these processes into the parent company Krone. “Another clear push comes from the purchase synergies and the expertise in series production of our colleagues at Krone,” says Jandrik Knapen.

DETAILED COUNSELLING

Yet among all the changes there is surely one thing that will not change – the custom-made trailer solutions, points out product manager Ruud Verhoeven. He is the product manager at Knapen Trailers and like his colleagues at Sales he has his finger on the pulse of their customers. “A walking floor semi trailer is available in a wide range of different configurations that enable us to customise the machine

- 1** The walking floor makes loading stackable material (straw bales or pallets) a fast and safe operation.
- 2** The assembly hall is uncluttered and yet packed with advanced technology: new robotic welders (pictured on the left-hand side) have boosted capacities and production numbers.
- 3** Unlike a tipping trailer, a walking floor trailer can also unload materials indoors.



perfectly to the needs of the specific customers. This in turn requires detailed research into their requirements or detailed counselling. We at Knapen attach great importance to this," he explains and adds: "After all, a walking floor will not sell from the brochure." So it goes without saying that aftersales service is about more than just providing a dealer network and a top-notch parts service.

Yet, how should we picture a Knapen dealer network? "It certainly won't compare with an agricultural machinery dealer network where the nearest dealership is just a 20-30km ride from the farm or contracting business. But then you can't compare the agricultural industry with the logistics industry. And on top of that, a Knapen trailer needs repair only very rarely," winks Jandrik Knapen. Ruud Verhoeven adds: "Our German network currently consists of six Knapen dealers, each of whom covers an area that is defined by postal codes. The area near the German-Dutch border is serviced by the headquarters here in Deurne. And of course, we benefit superbly from the Krone Commercial Vehicles division and its trailer sales team."

These trailer specialists say that this network is fine for the major target groups in the logistics industry. "This said, we are keen to gain a larger share of the huge agricultural market, because there is still plenty of untapped potential for walking floors", adds Jandrik Knapen. Naturally, this doesn't mean that these trailers will be on show at the farm machinery dealers on the day of tomorrow. Instead, as a first step, German contractors and farmers will be able to make an enquiry to the sales engineers at the Krone Agricultural Machinery factory. These will then establish the



contact. "But of course, enquiries from potential agricultural customers can also be made to our dealers directly," says the Sales & Marketing manager and adds: "In fact, we do have quite a number of customers in the agri industry."

YEAR-ROUND USE

Among the main agricultural applications for a walking floor trailer is the transportation of compost, big bags, straw bales and bulk goods such as grain, sugar beet, maize and potatoes, tells Ruud Verhoeven; and not to forget silage or palleted goods. "A walking floor is very versatile and as such makes a trailer more productive, which in turn is very intriguing for a contractor. After all, productivity is not only about purchase costs but also transport costs per km as well as wages and time. A walking floor trailer offers year-round use. In our experience, it can easily be used to

» HOW IT WORKS

WALKING FLOOR SEMI-TRAILER

A walking floor is a hydraulically powered floor on a semi trailer where it conveys the cargo in both directions. The floor is made up of multiple plates that are arranged like floorboards, with three of these boards forming one set; several sets – depending on their width – make up the floor width. The total number of floorboards is always a multiple of three and 21 boards or seven sets are considered a typical number. For unloading, the entire floor walks a few centimetres to the rear. Then the individual plates retract one after the other. From each set, the third retracts, i.e., first plate in every set retracts; then the plate in the middle, then the remaining plates. The clever part of the system is that it unloads the material in intervals. As one third of the plates retracts, the cargo pauses on its way to the rear so that the material is unloaded in intervals.

The system also works in the other direction for filling the trailer. As such, it is very convenient for loading pallets, for example, and filling the trailer progressively to capacity. Watch a short video by scanning the QR-Code or go to <https://kurzelinks.de/Schubboden>.



80% and more of its capacity. This is often not achievable by other agricultural transport solutions," is Jandrik Knapen's opinion.

For the future, he not only perceives potential in the agricultural market but also for the need of more configuration options that suit these applications. There are a number of initial designs in the R&D pipeline, according to Jandrik who however is unable to give any details as this would be too early. "But especially the so-called agro-trucks suggest promising possibilities – not only on the road, but also in the field," says Jandrik Knapen. Asked about the advantage of a walking floor trailer over a belt floor trailer or semi-trailer tipper, Jack Boekholt explains: "Unlike a tipping trailer, a walking floor trailer can go into halls and unload materials indoors. In our experience, it also offers a better stability. Compared to a belt floor, a walking floor is slightly slower in unloading, but the trailer has a lower deadweight and the floor is at a lower height, courtesy of a different driveline. A lower floor is good for large transport volumes. This makes it possible to fill up to 100 m³ into our trailers, depending on model and cargo weight. A clear advantage for long-distance hauls."

NEW PARTS WAREHOUSE

“IT’S GOING TO BE AWESOME!”

With the new parts warehouse a superlative project is taking shape. Parts & Service Managing Director Heiner Brüning and Head of Parts Sven Mense explain why the opening of the warehouse in 2023 will mark a milestone for the company.



The structures started rising in early October.

XtraBlatt: In times when even private construction projects struggle to take off, a large-scale project like the new parts warehouse is unlikely to be a walk in the park either, isn't it?

Heiner Brüning: You're certainly right – a project of this scale is a superlative also for Krone and an enormous challenge for the entire team. Yet it's a positive challenge, because this new warehouse will be an enormous relief for the parts logistics department – and this motivates everybody immensely. And yes, we too are struggling with delayed deliveries of building materials. Yet, I'm happy to say that everything has been going more or less to plan and that the construction work is making progress. The structure has meanwhile been completed and we can now see the sheer size of the new building. Knowing its way of operation in the future, we can say without exaggeration: it's going to be awesome! Krone invests heavily in its aftersales service performance and the new warehouse will make a substantial contribution to an improved parts service. State-of-the-art is our benchmark here, too.

XtraBlatt: Why is it so important to relieve the existing warehouse?

Heiner Brüning: Quite frankly, the existing warehouse has reached its absolute limits – both in terms of storage capacity and staff. Let me give you some numbers: when this warehouse was built in 2006, we were turning over replacement and wear parts

worth more than €25 million. Compare this to €130 million in the 2021/2022 financial year. In the years ahead, we reckon this figure will increase by another 5% to 8% per year on average. We have achieved this growth by several recruitment and restructuring measures, for example by employing more people and introducing a third shift during the peak season. We also modified our pricing terms in 2021, giving incentives to our dealers to order early and keep their own stocks. These measures proved successful in reducing peak-period demands in 2022. Yet, by now we have exhausted all our options and resources

and so I'm extremely happy that the owner, the supervisory board and the executive board took the decision to build this new warehouse, which has certainly not been the only major construction project in the past five years. However, at an estimated €40 million, this is the biggest project we've embarked on in the past ten years. It will help us take the Krone parts service to an absolutely new level.

XtraBlatt: Please tell us what this means.

Sven Mense: A swift and reliable supply of all replacement and wear parts for dealers and retail customers has always been our philosophy in service and this has contributed significantly to the success of the Krone brand. This said, we have to admit that our performance hasn't always met our own expectations, especially in the



The new "auto store" will stock 52,000 boxes using a very space-saving system. The speciality about the system is the fact that the boxes aren't stored on shelves but in stacks of 16 boxes. The complex is managed by 15 computer-controlled robots that operate near the ceiling.

years 2021/2022. The main reasons were external factors, especially the faltering or disrupted supply chains. Yet these were not all. During the first phase of the pandemic we replenished our stocks to excessive levels, which helped us meet our commitments to our customers yet aggravated the space situation. Another aspect of parts supply is the large variety of the parts. After all, the number of items we keep in stock have increased since new products were added to the company's product range. Today, we manage more than 110,000 different parts ...

Heiner Brüning: ... to the value of two-digit million euros are shelved up waiting for retrieval ...

Sven Mense: The new warehouse will offer multiple times this space – even at its initial capacity level. This is a major relief and contribution to improve our performance in parts supplies. In fact, the blueprints provide for several expansion options. The 7.2ha premise gives us a building area of 58.000m2 of which only 24,000m2 are being used during the first stage of construction.

Yet, the size of the building area isn't really the clincher, because we build much higher than we used to do in the past. After all, the building will house an automatic high-bay warehouse with 21,600 bays that will accommodate standard pallets and mesh boxes that are handled by three warehousing robots. If necessary, we can triplicate this area by building an annex. Another boost will come from automating our processes - not only in the high-bay warehouse but also in the small parts stockroom, the so-called auto store which can be operated 24/7.

ing robots. If necessary, we can triplicate this area by building an annex. Another boost will come from automating our processes - not only in the high-bay warehouse but also in the small parts stockroom, the so-called auto store which can be operated 24/7.



Parts & Service Managing Director Heiner Brüning and Head of the Parts Division Sven Mense are pleased with the rapid progress the new warehouse is making.



This is a computer image of the new warehouse. The 7.2ha premise gives us a floor area of 58.000m2 of which we will initially be using only 24,000m2.

XtraBlatt: What is this auto store exactly?

Sven Mense: This area stores 52,000 containers in a very space-saving way. The highlight about the system is the fact that the boxes are stacked rather than stored on shelves, with stacks consisting of up to 16 boxes. The complex is managed by 15 computer-controlled robots that select and pick the correct box automatically.

XtraBlatt: What happens if you have to pick a box from the bottom of a stack?

Sven Mense: The robot lifts the top boxes out of the shaft and places them into another shaft. The 16 robots are synchronised and operate simultaneously and autonomously. The parts are selected by order slip and conveyed to the dispatch area where they are commissioned, packaged and made ready for dispatch.

XtraBlatt: The system seems complex and indeed it does have similarities with Tetris...

Sven Mense (with a chuckle): Well, that's quite a good analogy - with one difference: in our system, all items have a proper storage space. The so-called "chaotic storage principle" which stores every pallet or box in the nearest space available is not new – neither

at Krone nor at other manufacturers. Our new auto store perfects this system by optimising the space needed and the efficiency, which in my view is a real benchmarker.

Heiner Brüning: In most areas of the warehouse, we no longer see people walking down the aisles and hand pick items from the shelves. In fact, the plan is to have 70% of all material handling taking place in the auto store, one fifth in the high-bay warehouse and only 6% in the bulk product area. The new system will speed up all processes significantly and it is possible to achieve higher outputs.

XtraBlatt: What are the further plans?

Sven Mense: If all goes to plan, we'll finish and furniture the building during the 2023/2024 season. Then we embark on the testing stage. After all, the system is very complex and many things will surely need finetuning and we certainly want to avoid creating a Bermuda Triangle that absorbs things so they are never seen again. Serious, we will test the technology thoroughly and then – step by step – take it into live operation. After that, the stocks will move house. Yet, this doesn't mean we pack up all items and move them to the new building. No, instead we'll have a scenario that stretches

over several months. First of all, the so-called "slow movers" will move house first and all other materials will follow one by one. The two warehouses will be operated in parallel for some time, yet we will keep that period of time as short as possible. The last step will be to move all remaining items to their new shelf spaces in one big sweep.

Heiner Brüning: We have scheduled the various moves along the seasonal cycles. Moving house is scheduled for the winter when the peak season is over - at least in the northern hemisphere. Yet it is clear that the challenge will be enormous for the entire team. And still – everybody is looking forward to the new opportunities.

XtraBlatt: What plans are at hand for the existing warehouse?

Heiner Brüning: The Agricultural Machinery division, too, has an increasing demand for stockroom so the space is actually booked already. Actually these colleagues can't wait to see us moving out...

NEWS TICKER



FURTHER GROWTH IN SALES VOLUMES

In the 2021/2022 financial year, the Krone Group's combined sales figures reached €2.5 billion, which is about €2.2 billion up on the previous year's result. €1.69 billion were generated by the Commercial Vehicles division and €828 million by the Agricultural Machinery division.



IDEENEXPO ATTRACTS LARGE CROWDS

At the IdeenExpo 2022 show in Hannover, the about 200m2 Krone stand proved to be a real crowd puller. Among the visitors were about 400 students from three Emsland schools in Lingen, Spelle and Haselünne which maintain a cooperation partnership with Krone.



JUST LIKE ON THE FIRST DAY

Mathias Kriner from Krün in Bavaria has been operating his Krone AM 242 Z mower since 1991. He says the quality of cut is still the same as on the first day. In the background we can see the Zugspitze - Germany's highest mountain.



GRAND OPENING IN TASMANIA

Krone's dealer TSMAC recently inaugurated their new building in Devonport on the island of Tasmania. Luckily and despite the rainy season, the event went forward without being hampered by rain. TSMAC operates as many as four branches on the island.

COMING OUT ON TOP IN BRAND IMAGE COMPETITION

At the end of September, the German trade association for agricultural and construction machinery dealers LBT published their 2022 satisfaction survey report. Scoring 17.7 out of 20 points for overall satisfaction, KRONE clearly tops the charts as the strongest brand in the survey on customer satisfaction with dealers.



HIGH HONOUR

In honour of his pioneering developments and outstanding commitment to the agricultural machinery industry, Dr Josef Horstmann, Krone's long-standing Head of R&D and Managing Director of Krone Agricultural Machinery, was awarded the Max Eyth Medal in silver.

KRONE CUSTOMER CENTER

The well-known Drive & Train in Spelle will be called the "Krone Customer Center" in the future. In addition to the new name, the facade of the building has been given a makeover. So, not only the interiors of the showrooms have a splendid new look but the exterior too.



A GOOD IDEA

Bringing your own bed is certainly a good idea when shifts turn into night shifts in the peak season ...



JUBILEES SIMA

The SIMA farm machinery show celebrated its 100th anniversary in 2022. As usual, Krone was an exhibitor this year, too. The first time after the Corona pandemic, the Krone France team were delighted to be exhibiting at the show once again.



SCHOLARSHIPS AWARDED

True to the adage that performance is always rewarded, the Dr Bernard Krone Foundation once again awarded scholarships to outstanding students at the Faculty of Engineering at Osnabrück University of Applied Sciences. Following a two-year delay due to the Corona pandemic, it was possible to award the scholarships for 2020 and 2021.

CALENDAR 2023

The new Krone 2023 calendar is now available. It is packed with stunning photos of Krone customers in action. The jury had the unenviable task of selecting the twelve best photos from about 1,200 that had been sent in from 27 countries.



SOUGHT AFTER

The international show "agraria" with an indoor show area of more than 76,000m2 recorded a record number of 80,000 visitors. Among the crowd pullers was certainly the redesigned Krone stand.

THE VENDRO MODEL RANGE

TURNING TO A NEW LEVEL

Markus Sauter farms 17ha of grassland as a sideline business where he produces up to six cuts and up to 700 hay and silage bales per season. All of his high-quality feed is sold off to farmers and feed traders.

Introducing four new rotary tedders to the Vendro programme, Krone presents efficient machines for the production of excellent forage. Farmer Markus Sauter and Krone's product specialist Leon Hohmann share their experience.



Sideline farmer Markus Sauter uses a Vendro T 1020 tedder that offers a 10.20m working width.



The production of high-quality green forage requires farmers to pull all the stops; and every single step in the harvesting process is important for the final outcome. This takes expertise and the proper equipment that delivers in terms of timing the cuts, the cutting height and the wilting process. "A critical factor for high-quality forage is a uniform wilting process before the crop is gathered by the harvester," says Leon Hohmann who is the product specialist at the Krone product marketing department and in charge of the Vendro range. "Uniform wilting is enabled by the rotary tedders which ensure an excellent circulation of air and reduced wilting times," explains Leon and adds that this reduces the risk of wet pockets significantly.

"Using a rotary tedder leads to an optimum forage quality and helps us make the most of a dry spell," he adds. In 2022, Krone added four trailed Vendro models to their existing three-point linkage mounted model range – the Vendro T 900, T 1020, T 1120 and C 1120. These "Models T" have a new transport running gear that folds very rapidly whereas the Vendro C 1120 has a so-called chassis running gear. The speciality of the C models is also that they are available with four different tractor attachment options. The clevis is standard

specification, the ball hitch and floating drawbar are options and there is also a three-point headstock, the so-called Plus Package. Another speciality of the Vendro C 1120 is the hydraulic suspension of the transport axle when this is in working position.

FOR CHALLENGING CONDITIONS

One of the very first buyers of a Vendro T 1020 was part-time farmer Markus Sauter in southern Bavaria, a region with rolling hills and undulating grass fields that are not particularly easy to harvest. After the Sauter family withdrew from dairy farming a few years ago, Markus has been farming the 17 hectares of grassland as a business sideline. Half of his crop is used for hay and half for silage making. Since the cows left the farm, he has been selling all his high-quality forage to livestock farmers. "Most of the about 700 hay and silage bales that we produce every year are sold directly to retail customers in Austria and only a small percentage is sold to traders," adds Markus.

His fields are farmed intensively and most of them are rather small. "On average we do five or six cuts per season, but we have

also seen seven,” tells the farmer. The hilly terrain and the large number of cuts are quite a challenge for forage harvesting. One field is situated on a very steep slope and is cut with a Krone front-rear mower combination. As the mowers have no conditioner, it is necessary to bring in a rotary tedder in order to get a uniform wilt. When the family had to replace their existing tedder last year, they opted for a Vendro T 1020.

EFFECTIVE CONDITIONING

Equipped with ten rotors, this offers efficient tedding at a working width of 10.20m. The driveline is completely mechanical and the main gearbox is maintenance-free. Octo-Link finger clutches ensure frictional connections in any position. “Obviously we shopped around before we decided for the Vendro range from Krone,” tells Markus. One of the reasons is the transport running gear which allows him to hitch the tedder to a 75hp tractor. Another important reason is the special design of the rotors on the Vendro models. “First up, there is the small 1.37m diameter rotor which translates into much better gathering than large-diameter rotors,” explains Markus who also praises the special design of the tines, which combines with the fact that the gauge wheels run close to the rotors for producing a much better spread pattern: “This is a clear advantage in our rather undulating fields.”

It is the special design of the tines and the fact that the two tines in a pair are of different lengths, which results in an optimum spread pattern. “Thanks to our OptiTurn 3D tines, we’re able to pick up the grass loss- and contamination-free and spread it optimally, too,” says Markus. “We can adjust the angle of spread to adapt the conditioning intensity to current conditions. For example, I set the spreading angle to a nearly vertical position when tedding freshly cut material and choose a shallower angle



Thanks to a larger ground clearance, the Vendro T 1020 running gear offers optimised road travel.

when tedding dryer material, which helps avoid fragmentation,” says Leon Hohmann.

Another very important Vendro T 1020 feature for Markus Sauter is the hydraulic border spreading curtain: “The hydraulic version allows me to adjust the angle of the rotor wheels steplessly - which avoids losses along the boundary and is a clear boon on slopes.” Adapting the machine to the prevailing field conditions is easy via the lower links of the tractor which control the working height. A gauge wheel is also available as an option to improve the ability to follow ground contours even further. If the machine is specified with this gauge wheel, then this is used to set the working height.

MORE GROUND CLEARANCE

Another important aspect for Markus Sauter is road transport. The Vendro T models have a separate transport running gear and feature a double-acting folding mechanism which is sequence-controlled for preventing operator errors. Check valves ensure that the wings won’t fold/unfold by themselves.

The running gear offers a larger ground clearance in transport position than the Krone KWT tedders.

“This reduces the risk of bottoming which is very real when entering a sloping field,” explains Markus Sauter. As a sideline farmer, he is very pleased with the overall performance of his new Vendro T 1020 which contributed significantly to the high quality of his forage as his customers confirmed. More than that, the new tedder has also boosted the overall efficiency of his one-man harvest operation – an aspect that cannot be underestimated, especially considering the many cuts per season. The material from the sixth cut was rolled into silage bales only recently. Now, it is time to make his equipment winter-proof and store it until the first cut in the next season. “

EXACTUNLOAD UNLOADING SYSTEM

FOR A PERFECT MAT

The operator assistance system ExactLoad was awarded the 2022 Agritechnica Silver Medal for producing exceptionally uniform grass mats on the clamp. Farmer Martin Tenambergen and contractor Andreas Seifert gave the system a try.



Producing a nice and uniform mat is the very first step in achieving a well compacted silage clamp. Although this shouldn't be too much of a problem for seasoned silage trailer operators who know exactly which settings and ground speeds suit a specific unloading rate, it is usually more difficult for less experienced operators who may tend to produce a mat of varying thicknesses which then needs levelling before it can be compacted.

The ExactLoad assistance system is a Krone development that controls the unloading rate relative to the length of the clamp and the current forward speed, thereby unloading the material at the most consistent rate. The system received plenty of advance praise and passed its baptism of fire in 2022. One of the first dairy farmers who explored the advantages of the system is Martin Tenambergen who attaches great importance to premium quality roughage. He farms 100 hectares of land in northern Germany. Half of the roughage feed is grass silage, half is maize silage.



The assistance system delivers uniform unloading rates from the very start to the very end of a run.

A speciality about producing roughage in autumn is that grass and maize are clamped to a so-called sandwich principle. "This method calls for a particularly uniform mat and it is the only way to ensure a consistent quality across the entire stock," explains Martin. He also wants to distribute the various grass crops from the various fields as consistently as possible throughout the clamp to get feed rations of a consistent quality. As these are very high standards

Martin relies on professionals who are experts in grass and maize harvesting. He is the customer of contractor Böscher-Seifert who founded his business in 1998 and is one of the first few owners of a forage wagon with ExactUnload technology.

USEFUL OPTION

When contractor Andreas Seifert ordered a new GX forage wagon from Krone last



They enter the length of the clamp and the forward speed to the ExactLoad assistance system and the wagon is ready to go.

year, he was going through the options list wondering whether he shouldn't opt for the ExactLoad assistance system. He was intrigued by the idea of automating most of the unloading process. "The focus about clamping is that the grass is deposited in a uniform mat down the full length of the clamp. It is this uniform thickness that is critical for optimum compaction," explains the contractor. This is the theory. The practice is not that simple, because many silage trailers do not unload the material as uniformly at start and end. Apart from that, not all operators have the experience it takes to produce a flawless mat. Another drawback is that the bottom mat is not spot on. Such deficits must be corrected by the rolling tractors as the heap grows. "If the rolling is done by the farmer and his staff and if they don't have the proper equipment, it will be very difficult to obtain a consistent heap," tells Andreas Seifert. So, Andreas had plenty of reasons to opt for the ExactLoad feature.

The tandem-axle GX 440 has been in his service for one year now, transporting mostly compost and woodchips albeit the universal wagon is also suitable for grain, maize and forage. It has the optional discharge rollers, so it also harvests grass. The ExactLoad performed smoothly and perfectly in the two cuts that the contractor did for the Tenambergen family.

"The biggest challenge was to measure the length of the clamp," tells Andreas. Most farmers have never been asked about the length of their clamp, but this information is critical for the ExactLoad assistance system. Clamp length and ground speed are the two parameters that are entered to the system for controlling the unloading process. The clamp length is certainly not measured with a measuring tape but with a smartphone and a special app that supplies the most accurate data to be entered to the ISOBUS terminal of the silage trailer.

LESS OPERATOR STRESS

Let's see how the system works. "Based on the parameters entered to the system, the software determines the speed at which the unloading unit, which consists of the floor belt and the headboard, advances towards the tailgate," explains Benedikt Lambrecht-Speller who is in charge of the marketing of the GX silage trailer and hence also the ExactLoad system. The commands issued by the system control the hydro motors which pull the unloading assembly to the rear end of the machine. The speed at which the belt advances controls the rate at which the material is discharged by the rollers. The only detail the driver is in charge of is to maintain a consistent forward speed which was entered to the terminal beforehand. "This system is a substantial help for

uninitiated drivers," says Benedikt Lambrecht-Speller. The consistent distribution of the crop is indeed a major stress factor for young and inexperienced drivers who appreciate ExactLoad as it enables them to concentrate on the safe crossing of the heap. At the same time, it makes the job much safer.

Martin Tenambergen is very happy with the results delivered by contractor Böscher-Seifert and his team. Two samples that were meanwhile taken indicated an excellent feed quality. In his view, this is basically attributed to the uniform unloading rate and consistent thickness of the mat – but also to taking the right decisions in terms of management and timing of the cut plus the cutting height. He considers ExactLoad one piece in the puzzle of making high-quality forage.

Although the Krone ExactLoad was developed with clamping in mind, it is equally suitable for other types of scenarios such as the precise unloading of sugar beet and potatoes. The system is an exclusive feature on the GX silage trailers which were launched in autumn 2021. At the heart of automated unloading at consistent rates is the floor belt.

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Farmer Martin Tenambergen is very pleased with the unloading accuracy ExactLoad delivers on the clamp. This leads to the possibly optimum compaction and feed quality.



Contractor Andreas Seifert considers ExactLoad as a useful assistance especially for young and/or less seasoned drivers.

NON-FOOD CROPS

GROWING IN IMPORTANCE



The cultivated landscape can be enriched by growing perennial non-food crops such as *Silphium perfoliatum*.



Contractors with suitable machinery are generally used to harvest non-food crops – here miscanthus in April.

Growing non-food crops other than biogas maize is becoming increasingly attractive, not least because of the current energy crisis. Prof. Dr Ralf Pude from the University of Bonn explains the situation in Germany.

Germany has recorded a steady increase in the amount of land dedicated to growing non-food crops during the last 20 years. Since 2016 however, this trend has been stagnating and the figure currently stands at 2.6 million hectares – which still accounts for 20% of the arable land in Germany. According to a report by the German Agency for Renewable Resources (FNR), at 2.3 million hectares, energy crops account for the largest share of non-food crops, followed by industrial crops growing on only 293,000 hectares (FNR e.V., 2022). These are used as raw materials in a wide variety of fields, such as for the manufacture of insulation material or in the chemical industry.

However, the trend from 2019 to 2021 indicates that the cropping area has increased for both energy and industrial crops – by 30,000 and 35,000 hectares respectively. In particular, the land given over to sunflowers for the production of “technical oil” doubled during this period. By comparison, there has been a very sharp decline in land

given to maize for biogas production and an increase in grassland by 100,000 hectares. Another crop worth mentioning is *Silphium perfoliatum* (the cup plant) – a traditional alternative crop. Following significant improvements to the cropping system, hectare sizes of this promising option have rocketed to over 10,000ha. But the war in Ukraine coupled with the EU CAP reforms make it difficult to predict how the land is going to be used in the future. As a result, it is all the more important for farmers to establish reliable production and sales structures which are not dependent on EU subsidies alone.

The Faculty of Renewable Resources at the University of Bonn has been researching into perennial crops for more than 20 years. Their research indicates that fast-growing

PERENNIAL CROPS MUST BE INTEGRATED INTELLIGENTLY INTO EXISTING CROPPING SCHEMES.

perennial natural resources can deliver so-called ecosystem services in the cultivated landscape. For example, these dense crops provide refuges for beneficial insects and since they often have very long flowering seasons, they also provide an additional source of nectar for bees. Furthermore, low-input crops such as these generate enormous biomass yields and fix extraordinary quantities of CO₂ in the above- and below-ground biomass during the

growing season. One hectare of miscanthus, for instance, is capable of producing dry matter yields of 20t and storing up to 30t CO₂ per year. Despite its rapid growth, the crop makes high-quality raw material which should be used to manufacture durable products whenever possible. The material should be considered for energy generation only at the end of one or several cascades of applications.



The rings of fast-growing Paulownia trees can grow up to 4cm per year. The crop shown here is in the establishment phase.

MISCANTHUS

Researchers at the University of Bonn's Klein-Altendorf Sustainability Campus are trialling a range of perennial (long-lived) non-food crops. Their main focus is on the grass crop miscanthus, the herbaceous crops *Silphium perfoliatum* and *Sida* (Virginia mallow) and the woody crop Paulownia. The campus is even home to the world's largest gene pool for *Silphium perfoliatum*.

In Germany, miscanthus is currently grown on roughly 7000 hectares, 4600 hectares of which is envisaged for energetic use (FNR e.V., 2022). Miscanthus is planted in April by placing around two rhizomes per square metre using a modified potato planter. The crop can be harvested from the second year and for at least 25 years thereafter. The tussock-forming, non-spreading plant is undemanding in terms of site, warmth or rainfall requirements. Furthermore, it is very resistant to pests thanks to its relatively high silicon content so that only minimal pest or weed control is needed in the first two years. This can be mechanically or chemically by applying maize herbicides that are specifically approved for miscanthus. Miscanthus thrives on many soil types; maize sites are particularly suitable, but also adapted types are on marginal sites are being explored.

ONE HECTARE OF MISCANTHUS CAN PRODUCE DRY MATTER YIELDS OF 20T AND STORE UP TO 30T CO₂ PER YEAR.

The crop is harvested with a regular forage harvester, albeit in late spring when the moisture content is below 15%, which saves subsequent drying and ensures trouble-free storage. Miscanthus has a fuel value of 19.1MJ/kg. The yield is between 15 and 21t DM/ha, depending on the specific site. This translates into 7000 litres of heating oil per hectare (at 20t DM/ha). The drawback of miscanthus is that its low bulk density (120–180kg/m³) makes for high transport costs, so regional distribution channels are still critical. But this low bulk density can also be turned to advantage by using this lightweight and high void-volume material in the construction and insulation materials industry. Harvesting miscanthus is quite straightforward. Then, multiple passes with a cultivator in the following year will dry the rhizomes on the surface, preventing them from regrowing.

SILPHIUM PERFOLIATUM

While many issues relating to growing and harvesting miscanthus have been addressed and solved by now and various applications – such as horse bedding, substrate, construction material or raw material for paper – *Silphium perfoliatum* is used almost exclusively as a biogas substrate

and only to a limited extent for the production of paper. The fact that it was planted rather than sown proved a major obstacle to growing this crop initially. Once a successful direct drilling strategy was developed, the cropping system was further optimised to take advantage of the fact that *Silphium perfoliatum* remains in the rosette stage during the first crop year; sowing it in conjunction with maize as a cover crop even earns farmers an income in the first year. This cannot be done with the C4 crop miscanthus as it requires plenty of direct sunlight and water.

Studies at the Professorship have clearly demonstrated that *Silphium perfoliatum* also makes an excellent insulating material due to its special stalk morphology. However, as with miscanthus, this calls for a targeted approach to harvesting followed by conditioning, because the product is marketed in various grades and particle shapes. Ideally, conditioning would be carried out by the farmers or contractors themselves to ensure that they have the greatest possible share in the value-added chain.

PAULOWNIA

The Paulownia is one of the fast-growing trees that the University of Bonn has been studying since 2008. The tree's annual growth rings measure up to 4cm and the timber can be harvested after around 14 years – depending on the site of growing. By comparison, spruce takes up to 70 years to reach a comparable trunk girth. On agricultural land it is possible to produce very straight and round growth, although this requires a corresponding level of care during the first three years. Requirements for the site are not especially high, although Paulownia does develop very deep roots to reach water (but has no tap root). Exposed sites should be avoided as the leaves are spectacularly large during the establishment phase. After harvesting, Paulownia produces new growth from the rootstock, which must be thinned to a single shoot. At present it is too early to accurately state the number of harvest cycles that can be achieved in practice.

Paulownia wood is very light, weighing approximately 270kg/m³. By comparison, oak weighs 770kg/m³. Because of its honeycomb cell structure, the wood of Paulownia combines high tensile and flexural strength with high load-bearing capacity. Another advantage is the timber's high flashpoint of around 420°C (oak 280°C), which makes it flame retardant. Paulownia is currently being trialled as a substitute for spruce in the construction industry. However, Paulownia can only be planted on arable land as it is not currently authorised for forestry cultivation. It

is most commonly grown in plantations. Short-rotation plantations in agroforestry systems could also be a suitable model in future.

There are already numerous areas of application for the timber, for example for fitting out ships and mobile homes or making furniture and sports equipment, e.g. surfboards. Paulownia flowers prolifically in spring even before the leaves appear, forming a canopy of open, highly scented "blue bells" (hence its common name, the foxglove tree). This abundance of flowers is very valuable from an ecological point of view, attracting a wide range of insects in search of nectar and providing high yields of honey.

INTERDISCIPLINARY RESEARCH

Many product lines for these perennial crops are still being refined and only gradually finding their way into practice. At the same time, the Professorship of Renewable Resources is investigating more and more potential uses for these low-input crops. The research themes within the professorship are bundled by topic according to the slogan "from plant to product." An interdisciplinary approach is taken to tackling these ideas, which have already spawned several start-up companies.

The aim is to integrate these perennial crops intelligently into existing agricultural cropping systems to ensure that farmers profit from growing energy and industry crops as well as food and fodder. These low-input crops have the potential to enrich the cultivated landscape.

More information about the research fields is available at www.nawaro.uni-bonn.de.

Prof. Dr Ralf Pude, University of Bonn



Prof. Dr Ralf Pude holds the Professorship of Renewable Resources at the University of Bonn, Faculty of Agriculture on the Klein-Altendorf Campus.

RELAMA STUDENT COMPANY

PRACTICE MAKES PERFECT



Helmut Klöhn (left, retired headteacher) is ReLaMa project manager. He is assisted by Ludger Gude (former managing director of Krone Trade & Services), who has been running the Krone Museum since his retirement.

KRONE MUSEUM

The Krone Museum received a complete makeover during its refurbishment in 2019. It now tells the fascinating story of the history of agricultural machinery tied in with the company's history going back almost 120 years. Among the museum's highlights is a unique collection of historical machines and implements, some of which can be seen nowhere else in the world, such as the 1917 Lanz Landbaumotor or a trailed John Deere combine harvester dating back to 1940, as well as the first Big X and Big M. The Museum is open every Thursday (except public holidays) from 2 till 5pm. Group tours are available by prior arrangement outside these hours.

It's not enough to bemoan the lack of skilled labour – ideas and actions are called for. The High School in Spelle joined forces with the Krone Agricultural Machinery division a few years ago to promote an exciting concept: a company set up by students to restore agricultural machinery, known by its German acronym “ReLaMa”. XtraBlatt paid them a visit to find out more.

Young people have increasingly few opportunities to get hands-on experience of trades and working lives in their family environment. Three-week work placements during school time or apprenticeship fairs can help provide some degree of orientation, but are often not enough to give young people a realistic impression of working life and career opportunities. That's Helmut Klöhn's opinion anyway. As head of Spelle High School before retiring in 2015, he has decades of experience in careers guidance. "Unlike the regular short placements, we wanted to focus on long-term projects which enable students to hone their strengths and skills alongside their schoolwork. That was what motivated

our staff at the High School to support the setting up of 'student companies' more than ten years ago," explained the former school head. And he discovered a positive spin-off too – improvements in the school results of those who were involved in the projects. "With age-appropriate reference to working life and practical experience of the requirements, they see the school curriculum in a new light, with the result that many engage more positively than before," the former teacher explains.

Over the years, the High School in Spelle has helped launch eight different companies involving a very wide variety of trades. One of these companies set itself the task of

"restoring agricultural machines", which is where the name ReLaMa comes from. The word "company" is deliberately placed in inverted commas because we are not talking here about businesses on the companies register. The sponsor is in fact the High School. Nonetheless, the students run the company as if it were a proper registered one, with managers, division of tasks and a balance sheet in the form of income-expenditure-profit calculations. A further aim of these projects is to help young people develop their decision-making skills and encourage joined up thinking and teamwork.

MOTIVATED BY SUCCESS

"We feel that it's particularly important for young people involved in the student companies to enjoy the work and gain a sense of achievement from a job well done," adds Ludger Gude. Up until the end of 2021, he was managing director of the specialist trading company Krone Trade & Services, Europe's largest John Deere dealership. Since his retirement, he now runs the Krone Museum, which was completely refurbished in 2019, as well as supporting the ReLaMa, which is housed within the Museum.

The Krone Agricultural Machinery division supports ReLaMa in partnership with the

Helmut Klöhn (left) is assisted by volunteers Bernd Höving, Josef Kamping, Günter Kuschat and Walter Jüring (from left), who are happy to share their technical expertise with the young people.



Spelle local authority, which takes care of the student company's finances, among other things. Between them, they provide support in a variety of ways, as Helmut Klöhn explains. It starts with "recruiting" the new intakes. The student company is open to pupils in years 9 and 10, and participation is limited to two years. In the first year the young people play the part of apprentices and familiarise themselves with all the various activities and tasks. Then in the second year they become "student skilled workers" with managerial responsibilities. Ideally, we want six or seven students per year, says Helmut Klöhn. To be accepted, prospective recruits have to submit a routine application form and attend an interview conducted by two of the student skilled workers – supported by the Agricultural Machinery division's HR department.

In addition to Helmut Klöhn and Ludger Gude, the team of supervisors includes four retired colleagues from the Agricultural Machinery division and Trade & Services who are only too happy to share their extensive experience of agricultural engineering with the young people. Every Thursday afternoon from 2 till 5 during term time is the core time for the student company. Then it's down to the nuts and bolts in the repair shop. The current job is a Case IHC 744 tractor and the first step is to restore the engine and gearbox. But a far greater range of activities is on offer to the students. The ReLaMa team also take on a number of commissions which create revenue that can be reinvested in the company; such as constructing a bicycle trailer which they design themselves, repairing lawnmowers and fabricating metal implements. Cost calculations, execution and marketing are core components of every project. Of course, they also have to take on internal responsibilities such as negotiating with the parts warehouse and the accounts

department. It goes without saying that the budding entrepreneurs can always rely on the support of the Agricultural Machinery division when it comes to materials or specialist help, says Ludger Gude.

MAKING THEMSELVES KNOWN

ReLaMa students are also encouraged to hone their public speaking and PR skills, Ludger Gude adds. For example, by presenting the student company at Krone Trade & Services Open Days or taking part in the annual holiday activity initiative organised by the High School in Spelle. They also take part in a certified sustainability audit. In 2018 the team was awarded "sustainable student company silver proficiency level" by the Lower Saxony education authority. The gold proficiency level had to be put on hold during the corona pandemic, but preparations for this next step are once again underway, reports Helmut Klöhn.

The students get to see their meticulously restored machines at work in the field too.



ReLaMa is available for year 9 and 10 students at the High School in Spelle.

For example, a few years ago we harvested maize with a single-row harvester mounted on a beautifully restored Hanomag. We have also harvested potatoes with a potato spinner and cereal with a mower-binder. "These special vintage events obviously attract a lot of attention and motivate the students," states Ludger Gude. The young entrepreneurs even overcame their nerves and coped admirably with VIP visitors – such as German president Joachim Gauck, who paid a flying visit to the ReLaMa while on a factory tour at Krone – reminisces the former headteacher with pride.

Helmut Klöhn and Ludger Gude are delighted that this year students from two school years once again have the opportunity to join ReLaMa and keep this rewarding project alive. Several school years missed out on this opportunity due to the coronavirus restrictions. "All our places have now been taken. And the first weeks of this school year have gone very well. It's very encouraging, not only for the students, but also for us retirees on the team," concluded the retired head of the High School.

ORGANIC GARDEN A STRATEGIC PARTNERSHIP

Organic Garden, a corporation headquartered in southern Germany, partnered up with the farm machinery and trailer manufacturer Krone – as was released by the two companies only recently. Organic Garden is a start-up firm in the Food Tech sector which was founded in 2019 and focuses on a holistic approach to food production. The firm not only operates a Food Lab but also produces and markets cooked dishes, their own brand products and beverages at their Organic Garden restaurants (so-called "Eateries") and at their online shops. They also provide catering to schools and large organisations under the label "the healthier option". (www.organicgarden.de).

Krone's investment in this start-up firm marks a new approach of thinking and a commitment to new action fields in the food industry with its multitude of producers. The new strategic partnership provides the food pioneers at Organic Garden access to the expertise and network of the Krone Group both in the agricultural and logistics sectors. "This investment sets our sights to the future and the provision of food in the future. Organic Garden is a pioneer in this sector," comments Bernard Krone, Chairman of the Supervisory Board of the Krone Group. "As people change their ways of eating,



our industry has to think ahead and will do so. We seek to put the achievements of farmers centre stage and offer them new and future-proof fields of business."

FRONT-MOUNTED CAMERA SYSTEMS NOW DLG APPROVED

Any tractor driver is familiar with challenging situations like trying to steer ever bigger tractors – possibly with a front mower attached – through a narrow farm or field gate. Another challenge is that the AHJ requires tractor drivers to call a helper to manage such situations whenever the distance between the steering wheel and the front edge of the rig exceeds 3.5 metres. Krone has had a solution for configurations like this since 2017. This is a small camera system which is installed to the front end of the mower. This system has now been approved by DLG (German Agricultural Society) for all existing mower models.

The certification test was carried out on each Krone front mower model with the EasyCut Highland and the EasyCut F 400 CV Fold models having passed the test only recently. This means that all Krone front mowers that are currently on the market are now available with a DLG-certified camera system. A camera kit comprises two cameras, one display screen and the appropriate leads. The split-view screen displays the feeds from both cameras side by



side, so the tractor driver is able to manage all tight spots safely and without a helper.



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