



The only constant in life is change.

(Heraclitus, Greek philosopher, 500 BC)

Dear Readers,

What have you done in the last year which you did exactly the same the year before? Probably ... absolutely nothing! But nevertheless – welcome to 2021.

Despite all the restrictions in 2020 in both our professional and private lives, we sought out and found new ways of doing things by working creatively and flexibly with you. That is really fascinating. And it is something for which I would like to express my gratitude. For bearing with us, keeping going, for your understanding and your confidence. The result of it all is here for us all to see and read.

We particularly learned a lot about the digital world in 2020 – new, powerful machines – no trade shows – what to do? The planning and staging of our digital world premiere for the launch of the “Jewel of your fleet” was both challenging and exciting. You can read about it from page 22. The global response was overwhelming, prompting us to prepare the way for more such projects. Our crane handovers also took place virtually, including for our 40,000th crane and the first LTM 1650-8.1. We are delighted to be able to offer you new digital opportunities today with our steadily growing MyLiebherr customer portal, such as our Crane Finder and Crane Planner 2.0 on page 27. We look forward to continuing constructive exchanges with you about

digital services – hopefully in person once that becomes possible again.

The fact that teamwork results in success even outside the own company is demonstrated on page 54, in our article about the transition of the legendary Bernabéu Stadium in Madrid. Several of our customers are working closely together on this project despite them actually being direct competitors. We hope you also enjoy reading about fascinating crane jobs from your everyday lives, including the one featuring the maximum on eight axles, the LTM 1650-8.1 (page 42). And as you read, we want to whet your appetite a little, for example about our very latest crawler crane, the LR 1700-1.0, starting on page 50.

Finally we have another real treat for you – you can be a fly on the wall at the final interview with our long-serving managing directors, Dr Hubert Hummel and Mario Trunzer. This respectful, yet witty conversation with the two of them and their successors, Ulrich Heusel and Daniel Pitzer, starts on page 70.

Despite the fact that many things in 2020 took place very differently to what we expected, we have certainly discovered that the major asset of our close partnerships with you has very little, if anything,

to do with physical distance. That definitely creates a basis of trust – and we are grateful to you for it.

With this in mind, let us wish you a good start to the year 2021 and hope that we will soon be able to see each other again face to face.

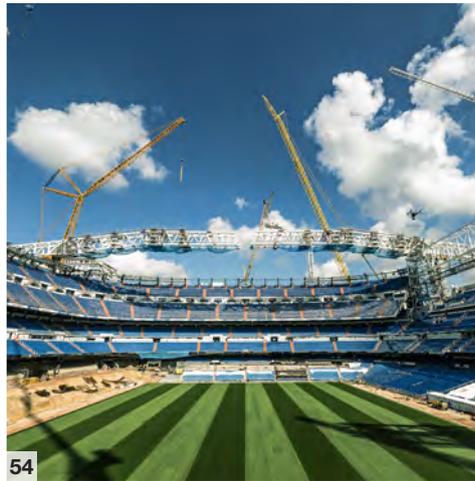
Christoph Kleiner

Managing Director Sales of Liebherr-Werk Ehingen GmbH





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www.liebherr.com/upload







Moments

A picture is worth a thousand words: in the following we have captured some extraordinary crane moments for you (and posterity).

Wherever the wind blows...

...Liebherr cranes are not far away! Crane contractor Wiesbauer undertook a job at Rugendorf wind farm (in Bavaria) with a new LR 11000.

Four turbines with rotor diameters of 120 metres were erected quickly and successfully with the help of the new V-frame.





Tandem power

An LTM 1500-8.1 and an LTM 1750-9.1 unload a 287 tonne hydraulic hammer in Singapore together.

It is designed for ramming monopiles, used for the foundations of offshore wind turbines, into the seabed.



First ever LTM 1650-8.1 handed over

The first ever LTM 1650-8.1 left the Liebherr plant in Ehingen during November with a black-and-red livery. It went to Dutch crane and heavy haulage contractor, Mammoet. After all the prototype tests were successfully concluded, deliveries of the crane are now up and running. This crane was unveiled at the Bauma in 2019 with the slogan "The ultimate crane on eight axles" and was handed over in virtual form due to the global coronavirus pandemic.

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Liebherr-Fahrzeugkran-Service
Liebherr Mobile Crane Service worldwide







Pegasus & Dragon

The largest horse sculpture in the world stands in Gulfstream Park in Florida (USA), a bronze Pegasus and Dragon sculpture measuring 33 metres high and 63 metres long. The new statue is a magnet for visitors and an eye-catching symbol for a new equestrian sports park featuring various attractions and leisure facilities. An LTM 1400-7.1 was involved in its erection.

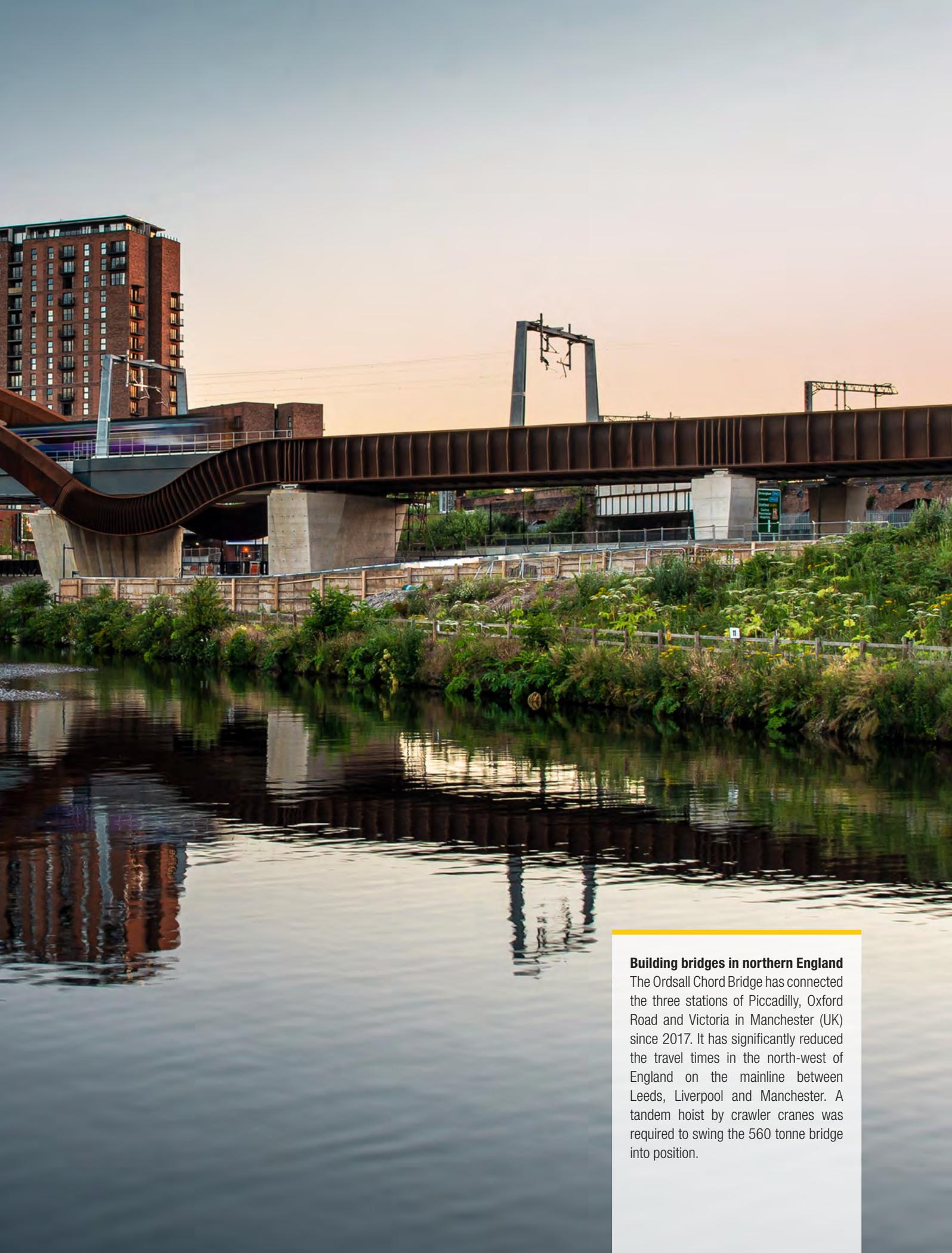


A genuine Berlin landmark

Berlin Cathedral, built on Museum Island on the banks of the River Spree, is the largest Protestant church in Germany in terms of area. Built between 1894 and 1905 by Julius Raschdorff in the Neo-Renaissance and Neo-Baroque styles, the cathedral is also used for state ceremonies, concerts and events. In 2008, an LTM 1500-8.1 installed the new gold-plated cross on the cupola.







Building bridges in northern England

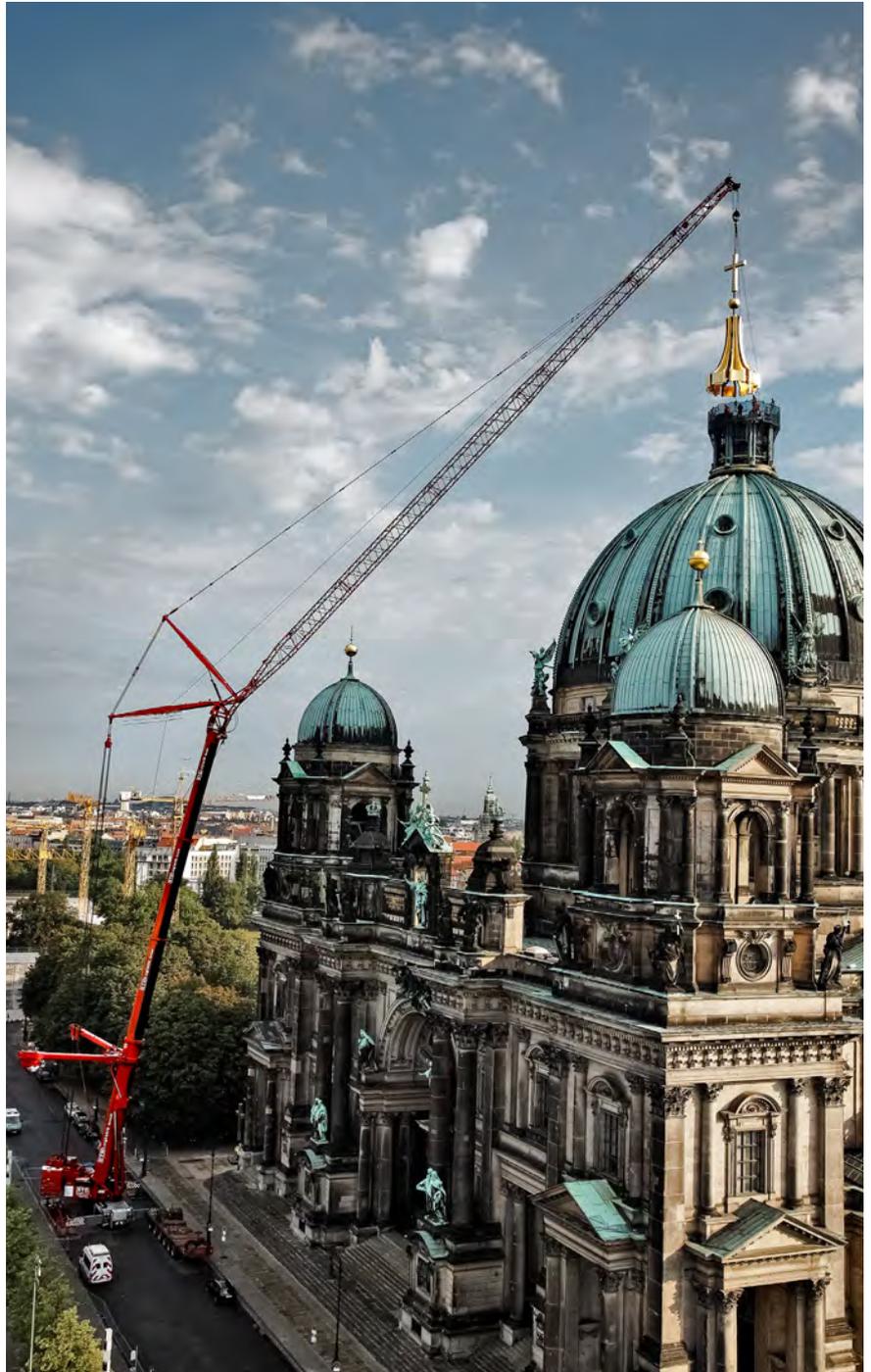
The Ordsall Chord Bridge has connected the three stations of Piccadilly, Oxford Road and Victoria in Manchester (UK) since 2017. It has significantly reduced the travel times in the north-west of England on the mainline between Leeds, Liverpool and Manchester. A tandem hoist by crawler cranes was required to swing the 560 tonne bridge into position.

Made with Liebherr

Mobile and crawler cranes from Liebherr are in action every day on behalf of horse fans, history buffs, efficiency experts, churchgoers, art lovers, train drivers, crane fans and many more. A very wide range of structures has been and continues to be created all over the world – made with Liebherr.

Berlin Cathedral's crowning glory

For two and a half years, the people of Berlin looked at their city's landmark with deep regret as it was missing a very important component. A replacement for the cathedral's cupola cross, which crowns the building, was under construction and being gold-plated from December 2006 to August 2008. Originally, the plan was to restore this jewel. However, the rust damage proved to be so bad that it was irreparable, so a new cupola cross had to be made. Metal construction company Breidenbach based in Peiting was engaged to design the new cupola cross. A Berlin-based specialist then undertook the production of the new piece, consisting of a cross, sphere and crown, with 1.5 kilograms of gold leaf. After a brief prayer, an LTM 1500-8.1 from Berlin crane contractor BTB hoisted the 15 metre high, 12.5 tonne cupola cross to a dizzying height onto the cathedral's cupola. Since then, the landmark has been shining with a whole new level of brilliance.





Pegasus & Dragon

The largest bronze horse statue in the world, in the form of Pegasus and Dragon, was created in 2015 at Gulfstream Park in Florida. A Liebherr LTM 1400-7.1 mobile crane operated by American contractor Allegiance Crane worked on the project. The order for the statue was awarded to art foundry Strassacker in Süssen. Strassacker engaged Stark, an engineering agency based in Ludwigsburg and Miami and comprising a team which specialises in special support structures, to develop the technical design, plan the erection work and produce the wide-ranging complex engineering solutions required for the statue.

The 400 tonne crane was equipped with Y-guying and full ballast for this job. The crane took care of its own erection procedure. The left wing of the Pegasus was the heaviest single component, weighing in at a massive 58 tonnes. The Liebherr crane had to hoist this component at a radius of 22.3 metres. The new statue is now a magnet for visitors and an eye-catching symbol for a new equestrian sports park featuring various entertainment and leisure facilities.

With combined forces

An LR 1750 and an LR 11350 from Scottish crane contractor Weldex hoisted a 560 tonne bridge arch in 2017 onto the substructure of the Ordsall Chord Bridge, a new railway bridge in the English city of Manchester. Prior to this, the crawler cranes had to move the bridge arch in stages around 30 metres to the river bank. After several hours of hard work, the job was then finished – the bridge arch was hoisted onto the bottom section of the bridge with great care and precision and, more importantly, with no complications. At 89 metres in length, the structure is the first railway bridge in Great Britain with an asymmetrical network arch and also the second-longest of its type anywhere in the world. A unique structure!



Mobile and crawler cranes







The curtain has fallen...



Virtual unveiling of a new masterpiece

At the start of 2020, the Sales, Marketing and Product Management Departments in Ehingen were planning to unveil the new LTM 1150-5.3 mobile crane during the second half of the year at the autumn trade shows – as normal, in other words. Afterwards it was due to move on to the Intermat in Paris. But it all came to nothing. Like so much else in 2020, the unveiling of the new 150 tonne crane simply did not go to plan.



Whilst the design work for the LTM 1150-5.3 continued during summer 2020 and the first prototypes were built, Tobias Ilg, Head of Marketing in Ehingen, and Jan Keppler, Head of the Product Management Team, had to ask themselves a question: How do we unveil our new masterpiece if the autumn trade shows are going to be cancelled because of coronavirus? During a brainstorming session together, maintaining social distancing, of course, one thing quickly became clear – the unveiling process would have to be virtual. “What has long been standard for major manufacturers of consumer goods, was something completely new for us at the time”, explains Tobias Ilg.

Strengths can be shown in virtual form

A mobile crane is an impressive site solely due to its size. The new LTM 1150-5.3 has other features, however: A lifting capacity of 150 tonnes. At 66 metres, the longest boom in this lifting capacity class. And the ability to carry nine tonnes of ballast at an axle load of 12 tonnes. The new crane has been designed to be as economical as possible – it can tackle many of its jobs without requiring additional ballast to be transported. The LTM 1150-5.3 also ventures into the 200 tonne class with its lifting capacities. In short – it is a real jewel for any crane contractor.

But could these features be demonstrated equally impressively at a virtual launch as a live event at a trade show stand?



Martin Kloss providing live insights into the technology featured on the new LTM 1150-5.3.

of all, Tobias Ilg and Jan Keppler had to prepare a script and produce all the technical requirements using the script as a basis. Long term film and media partners were brought on board to implement the ideas created by the pair. The closer the first virtual unveiling of a mobile crane came, the more exciting things became. However, it was not until the 5-axle crane had been painted in full and stood there in all its glory, that the concept was reviewed to ensure that it was actually possible. "That's when things got really exciting. We had to recheck that everything was possible. Would we really be able to put across the positive aspects of the crane in just ten minutes? Would that be enough? Or are we actually giving people too much information?", is how Jan Keppler sums up the final plans for the live stream.

A new smartphone can be shown off in a virtual event with great ease. But a new crane? How long will a viewer watch a virtual presentation? How much action must it contain? How many facts will the viewer be able to absorb? What does virtual actually mean – what technical challenges will have to be overcome?

From finding the answers and new benefits

It was a long haul to get from the idea to finding the answers to these questions and finally organise the event. First

Ultimately, although the virtual launch posed lots of new questions, it also delivered a major benefit. In addition to customers from all over the world who had been invited by the Sales Department and would also have been present at the autumn trade shows, it made it possible to access an even broader audience. "We made a conscious decision to tell the operators, engineers and crane fans about the event. And since we were live, we also decided to provide an opportunity to ask questions on a chat facility – which we answered



Tobias Ilg and Jan Keppler working on designing the live event.

during the actual live stream”, adds Ilg. This was done by means of an extensive communication campaign on social networks. The new jewel for every fleet and its launch were published on Facebook, LinkedIn, Instagram and YouTube.

Factory building becomes film studio

One day before the broadcast of the live stream, the hand-over building at the Liebherr Plant in Ehingen was turned into

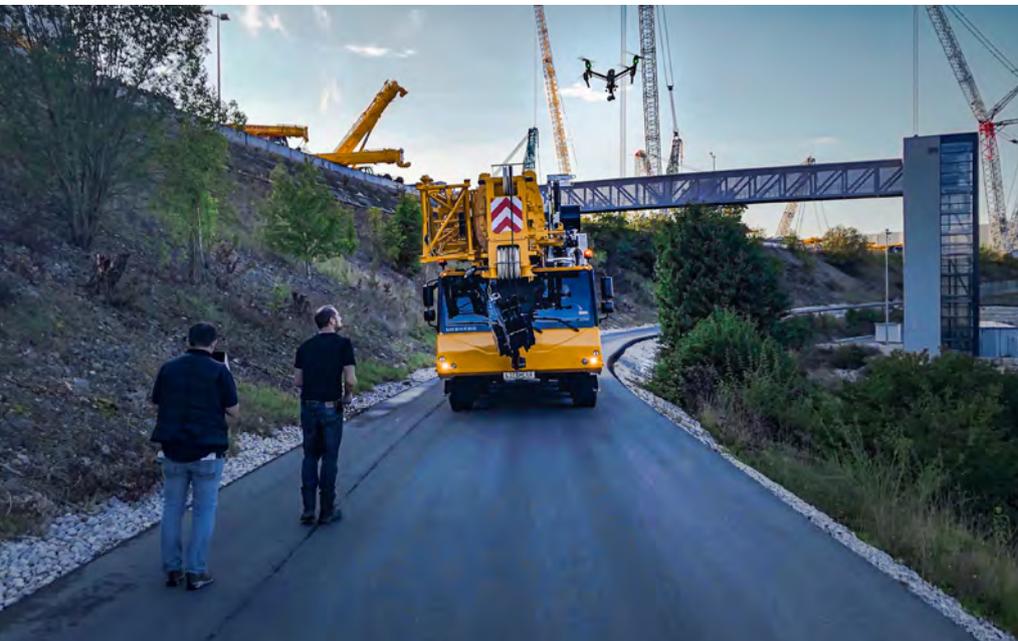
a film studio. Extensive rehearsals were staged. It was clear that this new 5-axle masterpiece was not going to be unveiled with simple mobile phone images as every movement had to be coordinated. That is why moderator Martin Kloss, who you may know from our video magazine, went through everything several times in advance with the director, lighting engineers and cameramen.

And then on 20 October, the time had come – the new LTM 1150-5.3 was first launched in English and then in German. Martin Kloss welcomed several thousand viewers at home, at work or out and about. “It was a magic moment for us – nobody knew how many viewers would actually want or be able to watch the unveiling of the new 150 tonne crane live. And whether the broadcast equipment would work as planned”, adds Ilg. The facts about the crane were presented in short and snappy form: Long. Powerful. Strong. Mobile. Kloss’ presentation was interspersed with impressive driving scenes which had been produced earlier. It would have been too technically complex to film those scenes live. Martin Kloss then said goodbye to the viewers around 12 minutes after he started.

A look back

“Our digital world première attracted over 750,000 viewers on various platforms – with really positive feedback about this type of presentation”, says Ilg. Crane fans from Australia to Canada, from South Africa to Norway all watched as the first images of the new LTM 1150-5.3 were shown. “This crane we launched and presented digitally has been designed to be extremely economical to use. That’s a double highlight for me”, is Keppeler’s summary.

At the end of the first live stream, the LTM 1150-5.3 stood gleaming in the footlights and Martin Kloss ended with a few words which we would like to share with our readers: “So we would be delighted to see this masterpiece in your fleet and in your livery soon.”



Preparing for the live event – the action shots.



In the footlights – the new 5-axle crane on the set ready for filming.

Easy planning – plan crane jobs at your leisure using digital tools

Totally **digital**

Heavy load to bear? Our mobile and crawler cranes can help you take the strain. And a range of tools can provide support for planning jobs – the new Crane Finder makes it very easy to find the right crane for any job. The job can then be planned using the new Crane Planner 2.0. Less time required, greater economy and better job planning – try our MyLiebherr portal, Crane Finder and Crane Planner 2.0 for yourself.

www.myliebherr.com – Enter – and you will be in the Liebherr customer portal before you know it. You can then login with a user name and password, update your company details, invite colleagues and enter your fleet details.



Crane Finder

Why? For example, because you can then order the latest spare parts for your machine quickly and easily. We are also planning to expand MyLiebherr by adding functions for fleet management and for preventative maintenance. MyLiebherr will become the place to go for helpful services for your fleet. In fact, you can also access Crane Finder from MyLiebherr.

Crane Finder – Know your load, find your crane

Height – load – radius: you can simply enter these parameters on a PC or smartphone using slider controls or by hand. Crane Finder will then suggest suitable cranes and the appropriate configurations. The system is based on economical considerations so that the smallest possible crane with the lowest possible configuration is displayed first. This makes the online tool extremely easy to use – and very helpful in practice.

Profile

Name:	Crane Finder
What it can do:	Find suitable cranes including configurations after you have entered at least two load case parameters
Access:	Web application available at all times online after you have logged into MyLiebherr
Link:	cranefinder.liebherr.com
Hardware:	Standard PC, smartphone, etc.
Expertise required:	Intuitive operation means that no expertise is necessary
Benefits:	Greater economy as the system quickly and easily suggests the smallest possible crane with the lowest configuration
Development status:	All Liebherr cranes are included in the system and functions are still being added
Availability:	Globally in German and English, metric and imperial
Cost:	Free of charge

“The tools are easy to use and extremely helpful for planning jobs.”

Wolfgang Boos, Product Management



And it also incorporates a great deal of common sense – Crane Finder searches through all the lifting capacity tables for all of our cranes. That means a current total of 413,722 lifting capacity tables, consisting of over 5 million data records. These data are compressed to 15.7 Gigabytes in the database and are formatted in such a smart way that a search query by Crane Finder can be answered within 0.1 seconds. That’s quite incredible, isn’t it?

Crane Finder is also being developed all the time. In the future, the first suggestions will be your own crane models that you have registered in MyLiebherr. Do you have any other ideas for Crane Finder or for telemetry applications? If so, please get in touch.

Crane Planner 2.0

Crane Planner 2.0 – Plan your work, work your plan.

Crane Planner 2.0 is a powerful tool for planning and simulating complex crane jobs. The “free version” contains all the main planning parameters, simple dimensions and a 2-D visualisation system and in the future will be a ready-made

Profile

Name:	Crane Planner 2.0
What it can do:	Plan challenging crane jobs simply
Access:	Download and local installation without registration
Link:	www.liebherr.com/craneplanner
Hardware:	Standard PC
Expertise required:	Intuitive operation means that no expertise is necessary
Benefits:	Economy and safety as hoists in complex conditions can be simulated easily
Development status:	The first crane (LTM 1750-9.1) has been added to the system, more types will follow at the beginning of 2021 and the range of functions will continue to be expanded
Availability:	Globally in German and English, metric and imperial
Cost:	The free version includes planning in 2-D 1780 euros per annum and user with the engineering licence for 3-D visualisation, planning individual phases, importing Google Maps environments and Report Designer

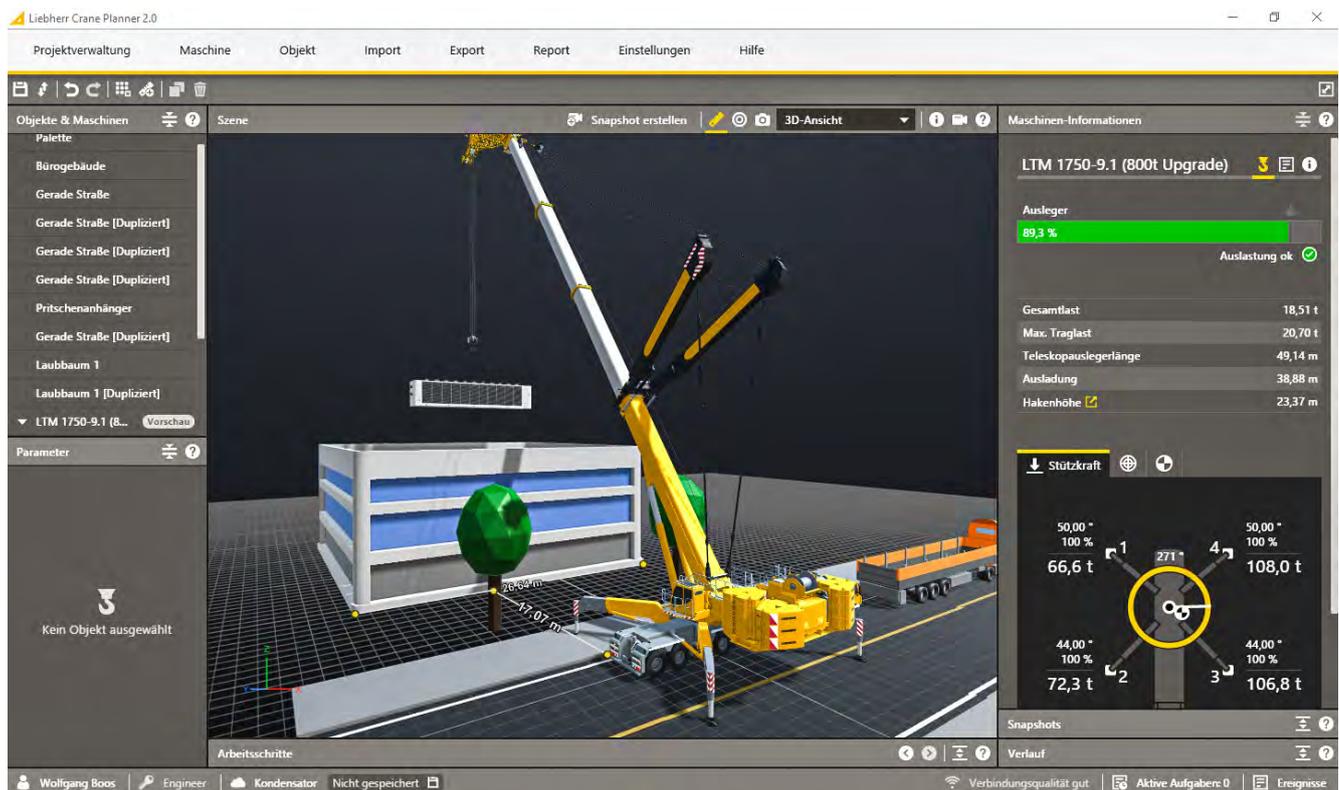
alternative to the current LICCON job planner. The full version, on the other hand, provides you with extremely detailed interactive 3-D models of our cranes and the environment around the site. Map views from Google Maps and other 3-D data can be included in the illustration in the correct scale. You can define specific steps and use the results to create a professional report with a single click.

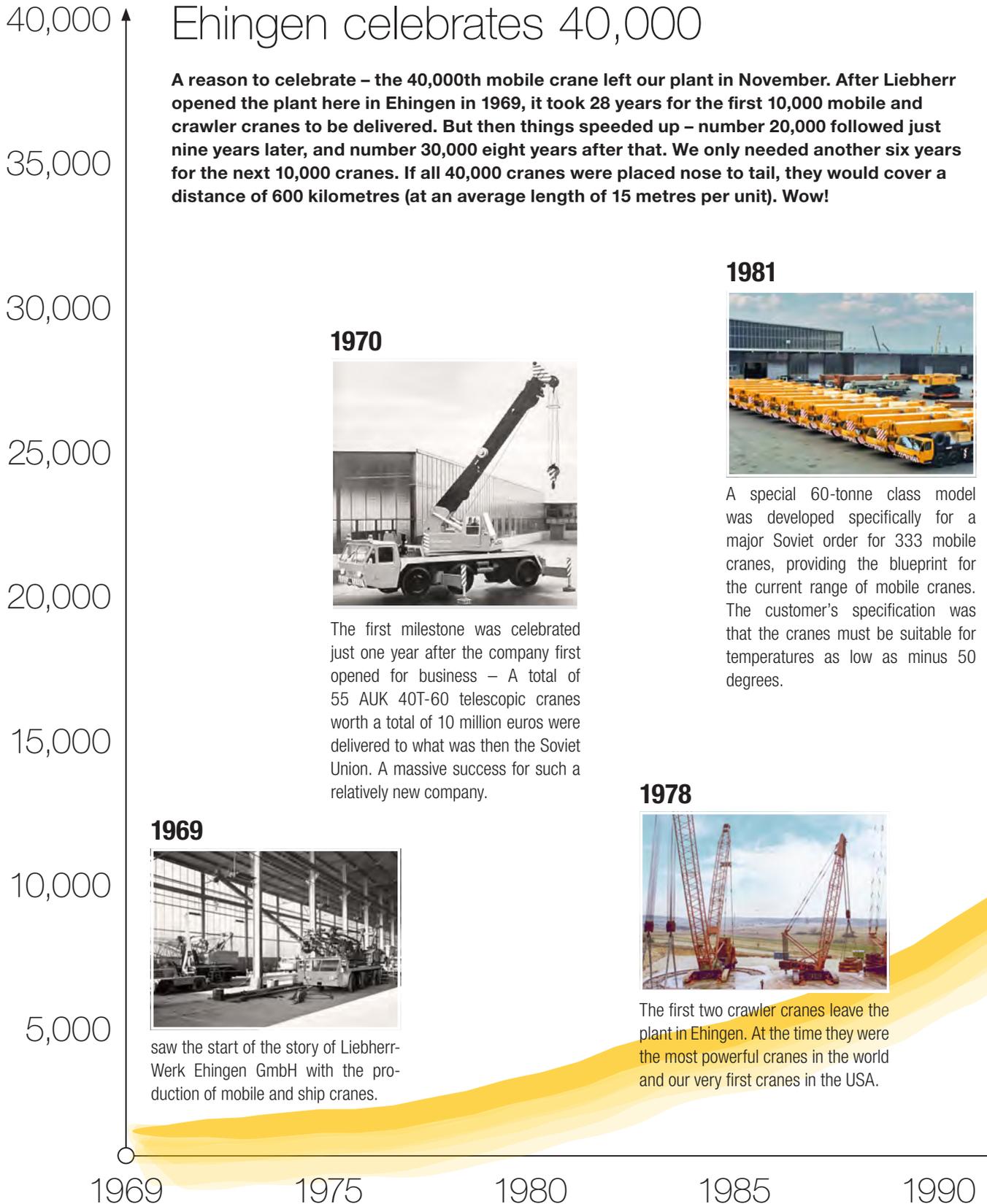
Crane Planner 2.0 delivers genuine added value for you. In addition to saving you time, you no longer need a CAD program for most planning procedures, which means you save money as well. In developing the tool, it was particularly important to us to ensure that anybody can use it. No previous experience is required and a standard PC which does not require any special performance will enable any crane contractor to provide a customer with impressive plans visualised in 3-D form. As you know, everything in everyday practice depends on planning.

“All the relevant data and details such as support pressures, capacity and the crane’s centre of gravity can be seen at a glance”, explains Wolfgang Boos, Product Manager at

Liebherr in Ehingen. “In addition, all the data and details are recalculated every time a change is made, for example to the telescoping length or boom angle. Individual dimensions can also be inserted.” A very wide range of objects from simple rectangular blocks to complex buildings, roads and wind turbines are available to illustrate the area around the site realistically. The large volumes of data from a CAD crane model design must be reduced to make these complex simulations possible. A colleague works on this for around a month before a new crane can then be included in Crane Planner 2.0. Currently the LTM 1750-9.1 and the LTM 1750-9.1 with the 800 tonne upgrade are available in Crane Planner 2.0. We are working hard to include additional LTM cranes in Crane Planner 2.0 during 2021. And once again, we are always grateful for ideas and suggestions of how we can make this fantastic tool even better.

So send us your ideas and suggestions.
upload@liebherr.com





2020



After several turbulent months, the delivery of the 40,000th crane from the Liebherr plant in Eningen in November is a special occasion. The LRT 1090-2.1 rough terrain crane is delivered to Polish energy company PGE GIEK.

2009



“40 years of mobile cranes from Eningen – you and us together”

The customer Days were held using this slogan on 17 and 18 June, incorporating a major celebration of the 40th anniversary of the company.

2014



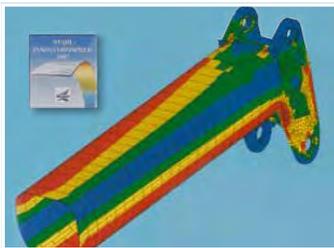
The Liebherr plant in Eningen marks the delivery of 30,000 new cranes. The LTM 1500-8.1 goes to Mexico.

2006



37 years after the Liebherr plant in Eningen first opened, the time had come – the delivery of the 20,000th mobile crane to a customer in the Netherlands marks another milestone.

1997



Into five figures for the first time

Decades of hard work pays dividends – the 10,000th new crane from the Liebherr plant in Eningen is delivered successfully.

Another highlight – we receive the Steel Innovation Award for the development of a completely new boom technology with an extremely rigid, oval boom cross-section and the TELEMATIK high speed telescoping system.

1990



A major order from the Bundeswehr comprising a total of 459 FKL and FKM mobile cranes with lifting capacities 10 t and 20 t was a particularly celebrated success.

1995

2000

2005

2010

2015

2020

Skywalk into the rainforest





Building bridges at a world cultural heritage site

The largest model railway layout in the world is bursting at the seams. The extremely popular “Miniatur Wunderland” in Hamburg occupies an area of 1500 square metres holding almost 16 kilometres of railway track, impressively reflecting painstakingly reproduced landscapes from the northern hemisphere. Because its existing location in the former warehouse building in historic Speicherstadt has no spare room for future expansion, the people behind the railway have been looking for ways to expand for some considerable time. Paderborn-based crane rental contractor Hofmann recently carried out a spectacular operation using its Liebherr LTM 1750-9.1 mobile crane to install a 25 metre skywalk over the neighbouring canal. The walkway over the dyke will act as the link to the neighbouring quay warehouse in the future. As from 2022, visitors will be able to get to the neighbouring building over the bridge to view even more newly created railway layouts.

“Just think, you go over the bridge and all of a sudden you’re in Rio or the rainforest,” says Gerrit Braun enthusiastically to one of the many cameras which had found their way on this dull July morning to Hamburg’s Speicherstadt before dawn had broken to gather images for their stories. Braun, wearing an aged fireman’s helmet, was standing in front of the

“Miniatur Wunderland” building. And he was pretty excited, which you have to allow him because together with his twin brother Frederik, he had been waiting for this moment for half an eternity – an enormous crane hoisted a pedestrian bridge over the canal which separates the building from the neighbouring quay warehouse.



It has been fifteen long years since they had the idea of building a bridge over the dyke and it becoming reality in July 2020. An incredible number of plans and negotiations with conservationists and Hamburg’s authorities were required to enable the project to go ahead. These laborious obstacles were down to the fact that the historic warehouse buildings, with the decorative crenellations, towers and stepped gables have been a World Heritage Site for several years now.

The twins are the founders of what is now the largest model railway layout in the world. Together with a friend, in 2001 they started to turn their vision into reality in the old warehouse building. Today, 19 years and 19 million visitors later, at last they have the bridge to the neighbouring block which they have wanted for years, which will mean that in the future the relentless model makers will have a further 3,000 square metres in which to build their layouts. Rio de Janeiro is only the start. The Brazilian metropolis near Sugarloaf Mountain will be followed by the rainforests of Patagonia, Central America and the Caribbean. “Then we’ll see”, says Gerrit Braun.

Take-off – the future connection bridge swings slowly in the dawn, held securely by long retaining ropes.



“The job was perfectly planned by Seeland. We just had to set up the crane and get on with it.”

Elton Toska (right) and his colleague Alexander Lorenz on their Liebherr LTM 1750-9.1 crane.

Speicherstadt is supported on thousands of oak piles

Hamburg-based heavy haulage contractor Gustav Seeland won the order to install the bridge. “We started planning this unusual job two and a half years ago,” says Arne Scharnweber, who took charge of the task for Seeland and has now completed it. Much of the work on the actual morning had already been done by the 27-year old Hamburger. It was not just the hoist itself that had to be planned carefully, one of the main aspects was to check the conditions of the foundation for the crane’s set-up area meticulously. When Speicherstadt was built around 130 years ago, the weight of the massive warehouses towering around 30 metres into the air had to be supported on thousands of oak piles. “The pile structures meant that we had several challenges to face with the ground loads,” explains the engineer. Geostatic reports were just as much part of the preparation for Scharnweber as a study of the canal cadastre to find a suitable set-up area for the massive mobile crane.

The crane itself, a Liebherr LTM 1750-9.1, had been hired from crane contractor Hofmann, a Paderborn-based offshoot of the Bracht Group. It had been erected two days previously with the assistance of an LTM 1100-5.2 from Seeland. Massive crane mats and large support slabs were laid out on a thick layer of sand to reduce the support pressure under the enormous machine. They distributed the gross weight of the crane and load over a total area of 100 square metres to reduce the soil load as much as possible.

The blue mobile crane was equipped with 204 tonnes of ballast and a 49 metre luffing lattice jib. Finally, a load of 40 tonnes of steel and glass had to be moved over the copper roof to the other side of the six-storey structure.



The retaining ropes are held on a small barge as the bridge is swung over the canal.

Mobile and crawler cranes

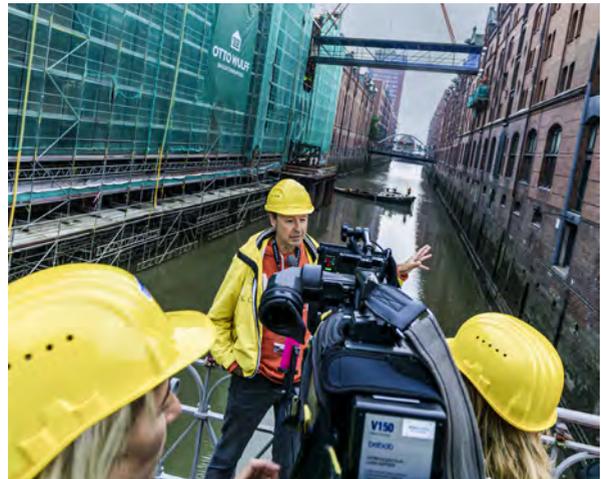
The mobile crane had to use a radius of 48.5 metres for the hoist. Alexander Lorenz in the crane cab and his colleague Elton Toska controlled the elegantly designed connection bridge initially over the building and then lowered the component between the Neo-Gothic brick façades. The engineers were waiting on the third level of the warehouse to secure the bridge structure to its mountings.

Miniature skywalk installation

The incredibly realistic simulation of this ambitious bridge installation inside the building proved to be significantly easier than the installation of the bridge outside. Because monumental exhibition contains a model of the historic Speicherstadt itself, we at Ehingen had the idea of sending a special gift to Hamburg for the enterprising model makers as our contribution to the fantastic Wunderland show. So we made a model of the Liebherr LTM 1750-9.1, including the luffing jib, of course.

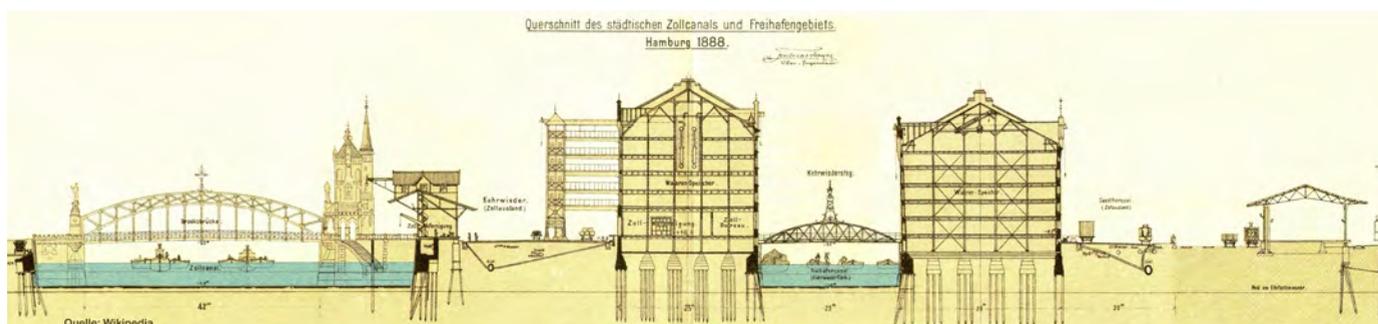
Nikolaus Kraft, one of the twenty model makers employed at Wunderland, made a miniature filigree connection bridge and acted as both crane operator and engineer to adjust the scene. He completed the installation of the miniature bridge on the hook of our crane in the model layout with great skill and care. The next time you visit the Hanseatic city, you will be able to see the spectacular operation involving the crane and the skywalk in a scale of 1:87 for yourself in the Hamburg section of the exhibition, next to the Rocky Mountains and the space shuttle blasting off from Cape Canaveral. It really it is worth checking out.

In fact, Hamburg's Speicherstadt with its characteristic architecture, unique dykes and numerous bridges is worth a visit any time. The fantastic backdrop from the German Empire era is actually the largest historic warehouse complex in the world. As from 1885 the quay warehouses were built over a period of around thirty years so that the area could act as a free port and not have to charge duty on trade with the Hanseatic



Happy: "This is where the future starts for Wunderland." 15 years ago, co-founder Frederik Braun envisaged creating a bridge over the dyke to extend "Miniatur Wunderland". In two years time, model trains will also be able to cross the bridge.

business community after Hamburg had joined the customs union of the German Empire. A whole residential area occupied by workers, seafarers and craftsmen, but also including some impressive houses owned by businessman and civic dignitaries had to be razed to the ground to make room for it. A total of 20,000 people had to be rehoused within the city limits at the time. Since 1888, the buildings have mainly been used to store and process coffee, tea and spices. With the increase in container traffic in the 1970s, the old warehouses increasingly became less important until the area was finally removed from the free trade zone in 2003. Only a small part of the area is now used to store goods. Behind the listed walls there are now advertising agencies, hotels and restaurants as well as several museums. And, of course, the largest model railway layout in the world, built by two exuberant brothers whose desire to expand simply would not go away.



A diagram of Hamburg's Speicherstadt dating from 1888









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Bridge building on a 1:87 scale. Our crane is carefully included in the Wunderland exhibition, simulating the hoist for the new connection bridge.

The ultimate crane on eight axles is off and running.





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NACH OBEN? GIBT ES BEI UNS KEINE GRENZEN

AUTOKRANE SÄUBERUNG UND BEREITUNG

-40

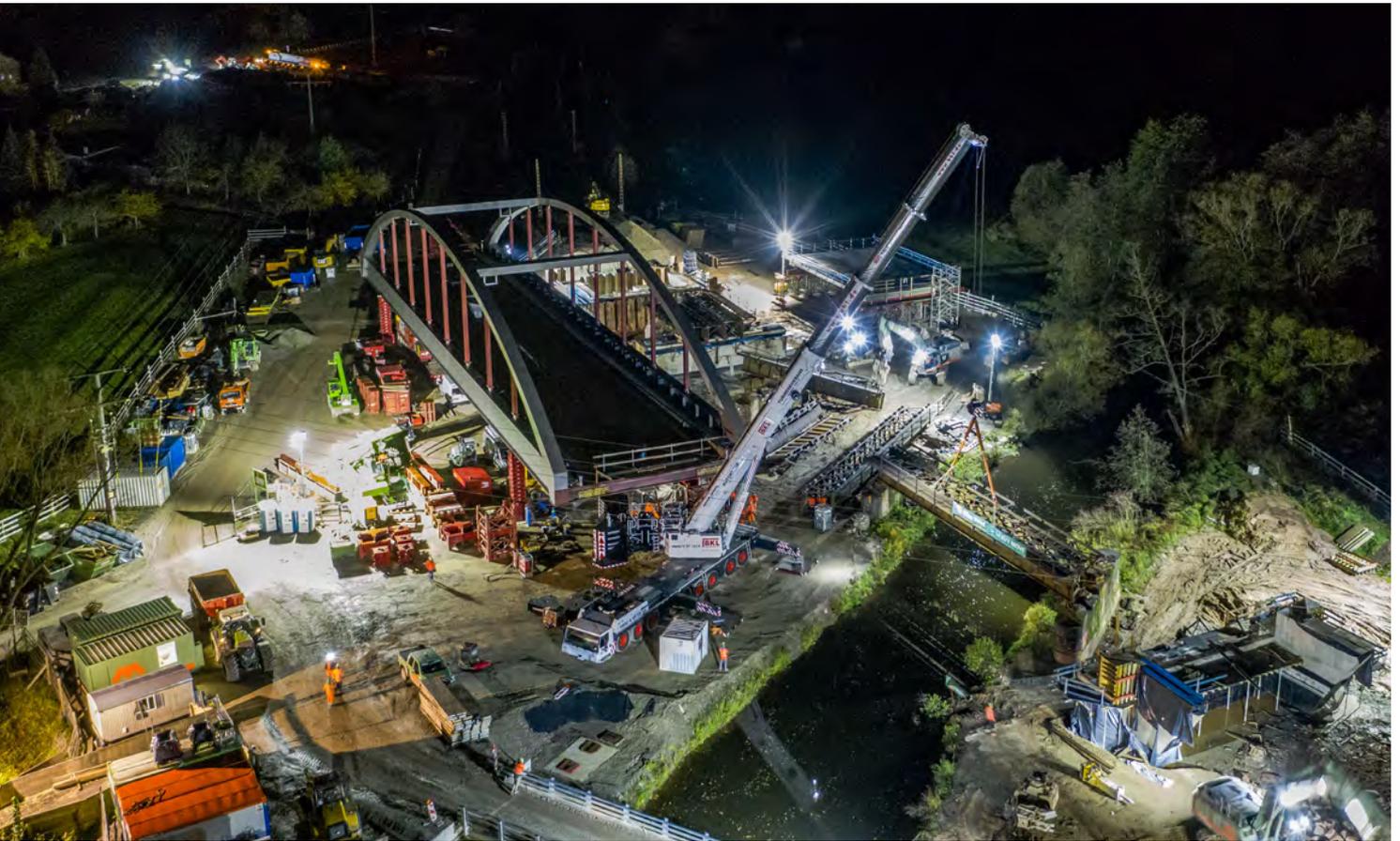
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VarioBallast® the problem-solver

Our new LTM 1650-8.1 is off and running. The successor to the legendary Liebherr LTM 1500-8.1 has been working on construction sites around the world for several weeks. The first mobile crane of this type in southern Germany was faced with its initial challenge at the beginning of November. The powerful 8-axle crane was driven out of the factory at Ehingen to tackle its first job in northern Bavaria, where the brand new mobile crane in the livery of BKL Baukran Logistik GmbH had to dismantle sections of an old railway bridge. A difficult site in logistical terms, with a lack of space, time pressure and changing site conditions challenged the skill and experience of the crane team from BKL at this night job. Flexibility was required from both man and machine.



Extremely constricted setting – the LTM 1650-8.1 had very little space for the night job at its very first site. The slewing platform ballast had to be slewed under the new bridge structure, which was jacked up on stilts.

“Without VarioBallast® we would have had no chance here,” agreed the two crane operators Steve and Steffen straight away when they arrived at the site with their mobile crane as darkness fell. A short-term change of plan on the extremely constricted site meant that the set-up area originally planned for the vehicle was not available. The dilemma was that the new bridge was waiting to be installed on an area closer to the river on high stilts and would be an obstacle to the top ballast slabs when the crane was slewed. The initial

ballasting plan meant that the ballast slabs were a little too high and therefore had to be amended.

The BKL team found a solution – the ballast radius on the LTM 1650-8.1 can be infinitely adjusted using a hydraulic slewing mechanism and set between distances of 6.4 and 8.4 metres. The slewing platform ballast, which can be modified in this way, was originally planned as a reserve for this job if parts of the 150 year old railway bridge proved to be

heavier than calculated. Instead, VarioBallast® enabled the BKL team to complete the hoists safely even with reduced counterweight. The team placed less weight on the massive ballast frame at 115 rather than the planned 135 tonnes. The resulting lower height allowed the crane to be slewed under the steel arched bridge. At maximum ballast radius, the team was able to hoist the bridge sections weighing around 55 tonnes off the stone abutments at a radius of 23 metres.

“The crane was on all four outriggers after just thirty minutes”

BKL Baukran Logistik GmbH is a major construction and mobile crane logistics contractor operating from six sites with one of the largest, most modern crane fleets in Europe. The company was one of the first customers to order the new 700 tonne crane and the first in Germany to receive one. The lifting capacity values of the new crane in some areas almost reach those achieved by its big brother, the LTM 1750-9.1.



Precise commands – Steve, who interchanges with Steffen in the crane cab, is shown here supporting his colleague on the radio.



“The crane was on all four supports in just thirty minutes.” BKL employee and operator Steffen retracts the crane outriggers into the outrigger box by remote control after the job has been finished. The fifth support cylinder can be seen clearly under the rear. The LTM 1650-8.1 installs the outrigger box itself and does not require an auxiliary crane for this purpose.

The new mobile crane is available with telescopic boom lengths of either 54 or 80 metres. Jörg Hegestweiler, Managing Director at BKL, says: “The crane with its telescope options and the variable ballasting system is a perfect addition to our fleet. For a complete supplier of crane solutions like BKL, the LTM 1650-8.1 is extremely attractive as we also have a number of large construction cranes in our fleet which extend up to 1050 metre-tonnes, and their erection always requires heavy components to be hoisted.”

After his initial experience in real-world conditions, operator Steffen is impressed with the new 8-axle crane. “What I’m totally in awe of is the steering programs,” he declares. “They’re a great support which enable us to manoeuvre the

crane safely in constricted site conditions like here. That’s really great. The benefits of the infinitely adjustable slewing platform ballast enabled us to react quickly to different requirements. The whole system is designed to be very easy on the crane operator.”

The experienced operator includes the separate outrigger box on the LTM 1650-8.1 in his list of positive features. To comply with the maximum axle loads allowed on public roads, the complete rear support system for the crane is not installed until it reaches the site. An auxiliary crane is not required for this purpose. There is a fifth support cylinder on the underside of the large crane, which can be extended



behind the last axle. A mobile crane then hoists the outrigger box, weighing around nine tonnes, off the low loader and can install it on itself. "It's really fast," says Steffen in awe. The box is simply docked into place and connected using quick-release couplings. The crane was on all four outriggers within just thirty minutes."

The LTM 1650-8.1 – a new legend?

We have once again redefined the standards of progressive mobile crane technology with the new LTM 1650-8.1. The new crane has everything that you could possibly want. We are therefore absolutely convinced that we have created a tool for our partners which more than satisfies the high requirements for a modern mobile crane. You, our business partners, will decide whether we have once again managed to create a legend of the future with the LTM 1650-8.1. We have done our very best.



TELEMATIK

Simply explained

When they hear the word telematics, most people do not immediately think of a mobile crane, but more about the link between the terms telecommunications and informatics (IT). Although the specialist areas of vehicle telematics and fleet management are absolutely related to our industry, when we talk about TELEMATIK in this article, we are talking about a technology which revolutionised the world of telescopic cranes almost a quarter of a century ago. Florian Trauner, Designer in the Crane Booms Department at Liebherr in Ehingen, explains the terminology and the technology behind it.

The Liebherr TELEMATIK system is also made up of two words, but in this case they are telescoping boom and automatic. The technology is the answer to the question of how to extend long telescopic booms quickly and automatically to a required length whilst enabling them to achieve the highest possible lifting capacities. The rope pull technology which was standard at the time, featuring a hydraulic cylinder and pulley block, had reached the limits of its capacity because it would only work efficiently with telescopic

a single cylinder extending and retracting all the telescoping sections – with no ropes at all. The ingenious thing was that this made the almost “empty” boom particularly lightweight.

How exactly does it work? At the bottom end of the telescoping cylinder there are pins at both sides (see graphic – “pusher dog interlog”), which engage in the innermost telescoping section to enable it to be extended. After an extension distance of 46, 92 and 100 percent, the telescoping section will

find an opening in the upper chord of its direct neighbour into which a powerful pin (graphic – “telescopic boom pin”) is inserted to lock the two telescoping sections to each other. Only when this interlock has been completed successfully can the pins used to connect the cylinder and the innermost telescoping section be released. This ensures a high level of safety.



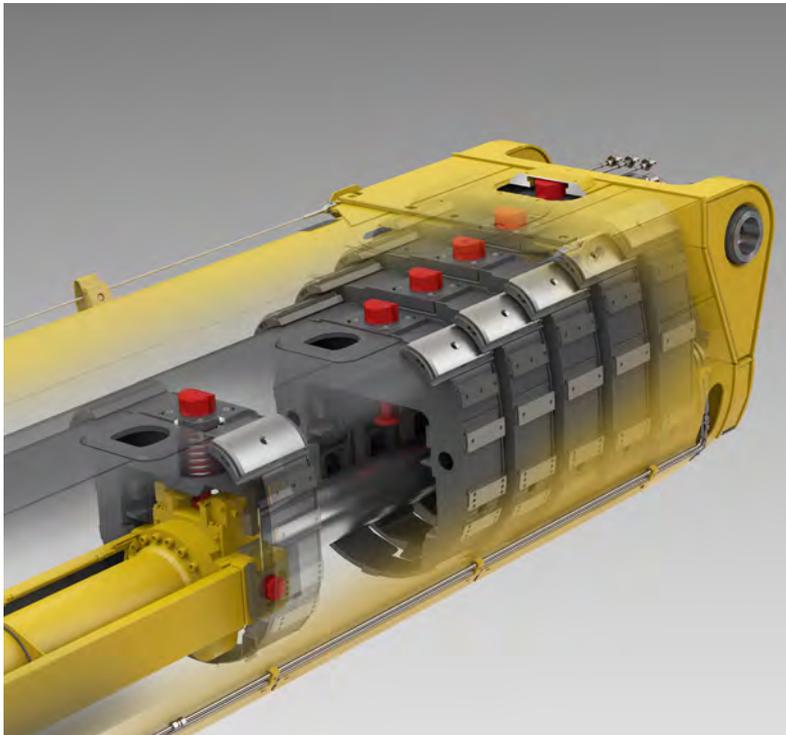
“The great thing about TELEMATICS is the simplicity of the system.”

Florian Trauner, Designer in the Crane Booms Department

booms comprising four or five sections with a maximum length of around 50 metres.

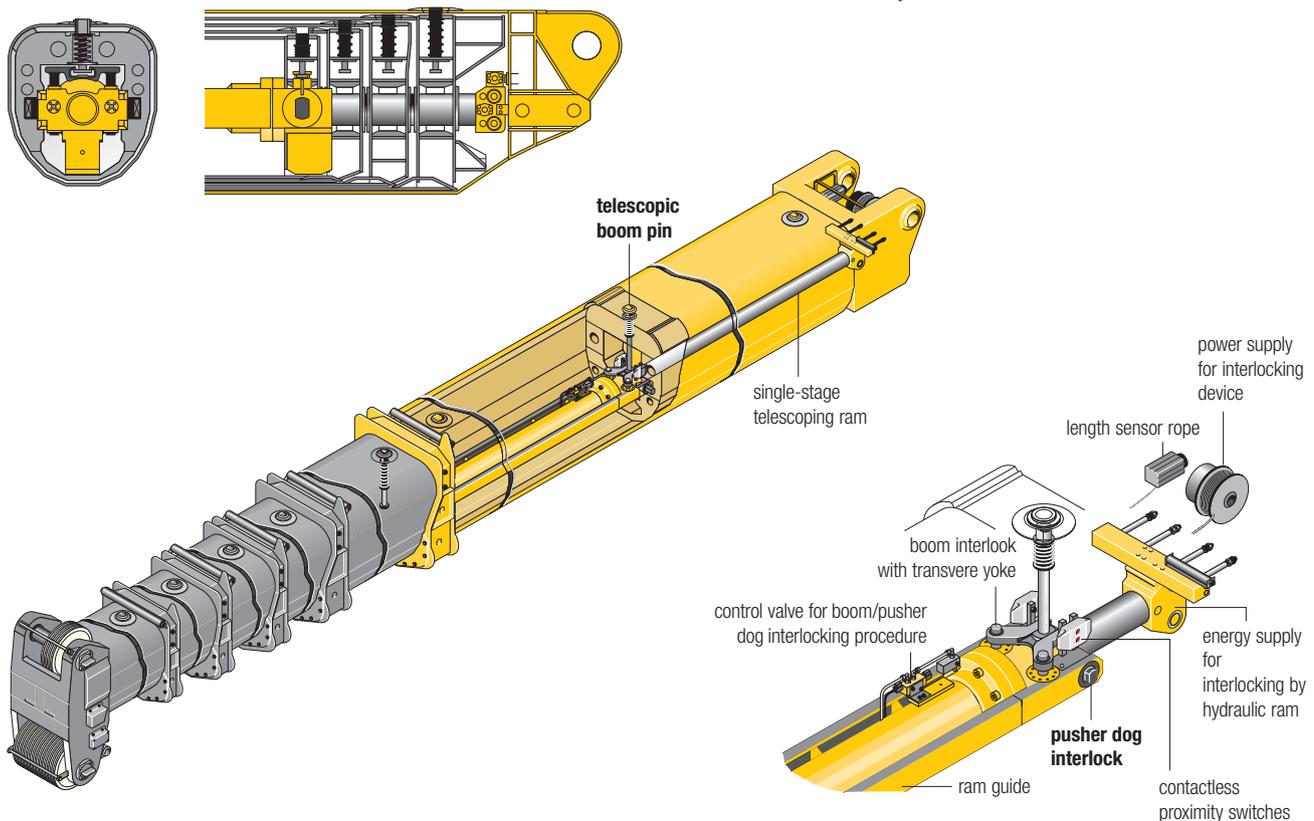
Our first crane with a TELEMATIK boom, the LTM 1160/2, had a 6-section, 60 metre boom as long ago as 1995. Three years later, the LTM 1500 had an 84 metre boom comprising seven telescoping sections – a world record at the time. The open secret of the new technology was that it involved

The telescopic cylinder then travels back “empty” and is pinned to the second innermost telescope. The cylinder then pushes this and the innermost telescope to which it is locked outwards. At 46, 92 or 100 percent, this “package” is then pinned to the third telescoping section. The cylinder can once again travel back empty and the same process is repeated. This is why this process is also known as a cycle system. In theory, this process can be continued infinitely. This is why TELEMATIK does not impose any limit on the length of telescopic booms.



In addition to high lifting capacities with large radii due to the lightweight telescoping system TELEMATIK makes very high values possible with small radii as the telescoping length of the various sections can be selected as required. In other words, the crane operator extends the large outer sections in this case and either does not extend the thinner sections or only does so to a short length. The convenient aspect of this is that after the individual lengths have been entered in the crane control system, the process takes place automatically, including all pinning procedures. The whole thing is monitored by a large number of proximity switches. The complete process is also monitored by the crane operator on the screen.

One of the keys to the success of this system is its simplicity. This is because only mechanical components are required on the moving telescoping sections, with no hydraulic, electrical or pneumatic components necessary. The proof of the success of TELEMATIK booms is provided by thousands of Liebherr mobile cranes featuring this system, which operate reliably all over the world.





Codename: Thunderstrike



Connecting the elements

Sun. Heat. 35° Celsius. Oppressive air. Suddenly – dark clouds. An ear-splitting clap of thunder. A flash of lightning in the sky. Frightened children dive under their beds. There's a loud noise. Power. Energy. A battle of the elements. A play between heaven and earth. A miracle?

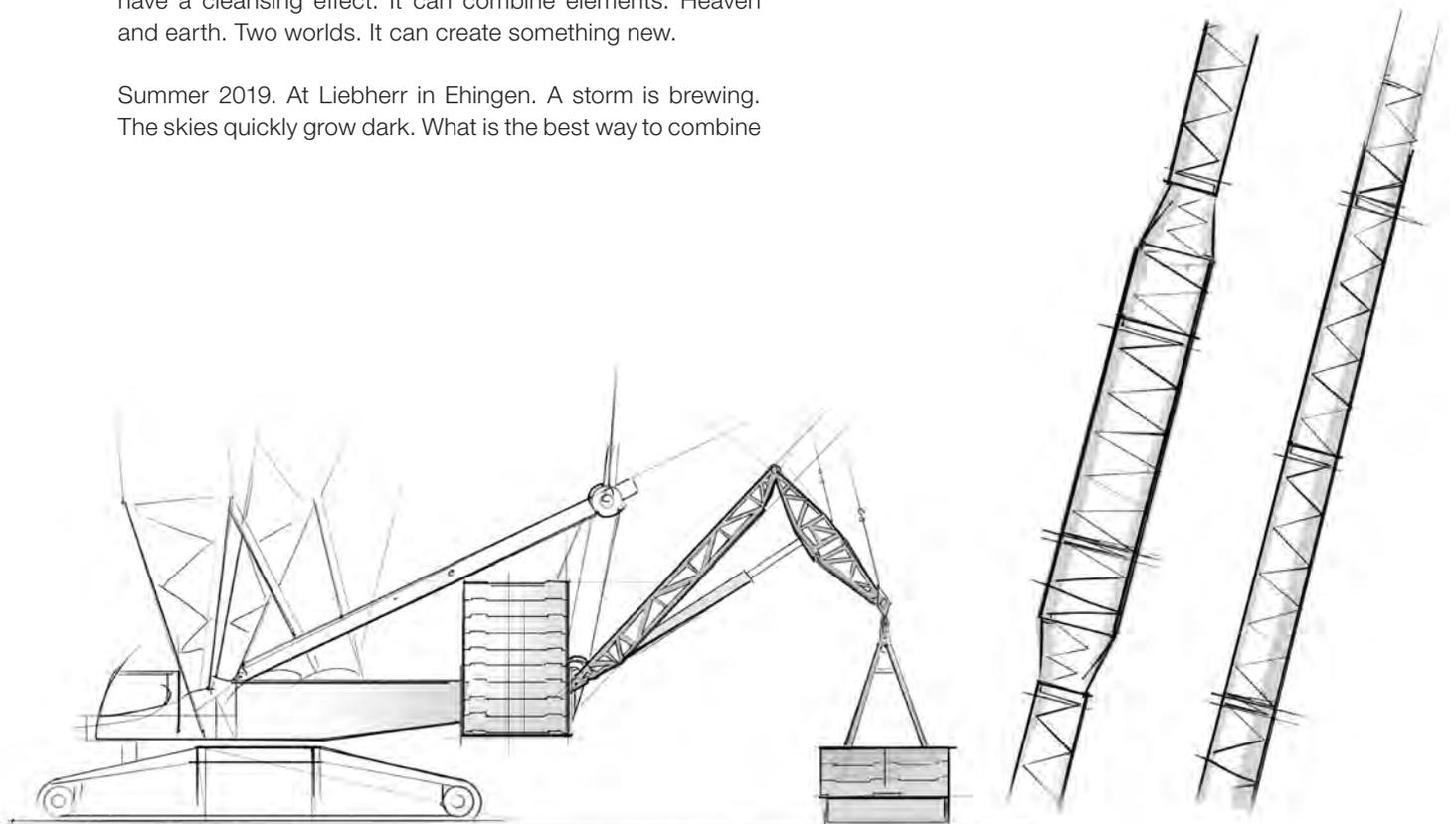
No. Storms can be easily explained by physics. The sun heats the earth. As it does so, moisture evaporates from the ground or bodies of water and mixes with the air above the earth. This warms the air up. The humid, warm air becomes lighter, rises upwards and as it does so gets cooler. This creates a cloud which quickly develops into a storm cloud. In much the same way as an electric shock, and electrical voltage is created which discharges in the form of lightning. The air in the so-called lightning channel heats up explosively and emits a pressure wave. This moves at the speed of sound of around 333 metres per second and forms the thunder noise. Lightning may be several thousand degrees in temperature. So we can all agree – a storm is an impressive event. But it is not a physical miracle.

However, a storm can change things. Very suddenly. It can have a cleansing effect. It can combine elements. Heaven and earth. Two worlds. It can create something new.

Summer 2019. At Liebherr in Ehingen. A storm is brewing. The skies quickly grow dark. What is the best way to combine

a high increase in lifting capacity with easy transport? Suddenly a clap of thunder. One flash of lightning chases the next. They create a powerful light show. Near and far. We can see how heaven and earth are connected by beams of light. And then – a light bulb moment in the crawler crane development team. A crane which is a miracle in terms of transport and lifting capacity. Which joins worlds. Which makes a difference that will change the market for ever. That can be transported quickly to a site. And impressively powerful. As impressive as a storm.

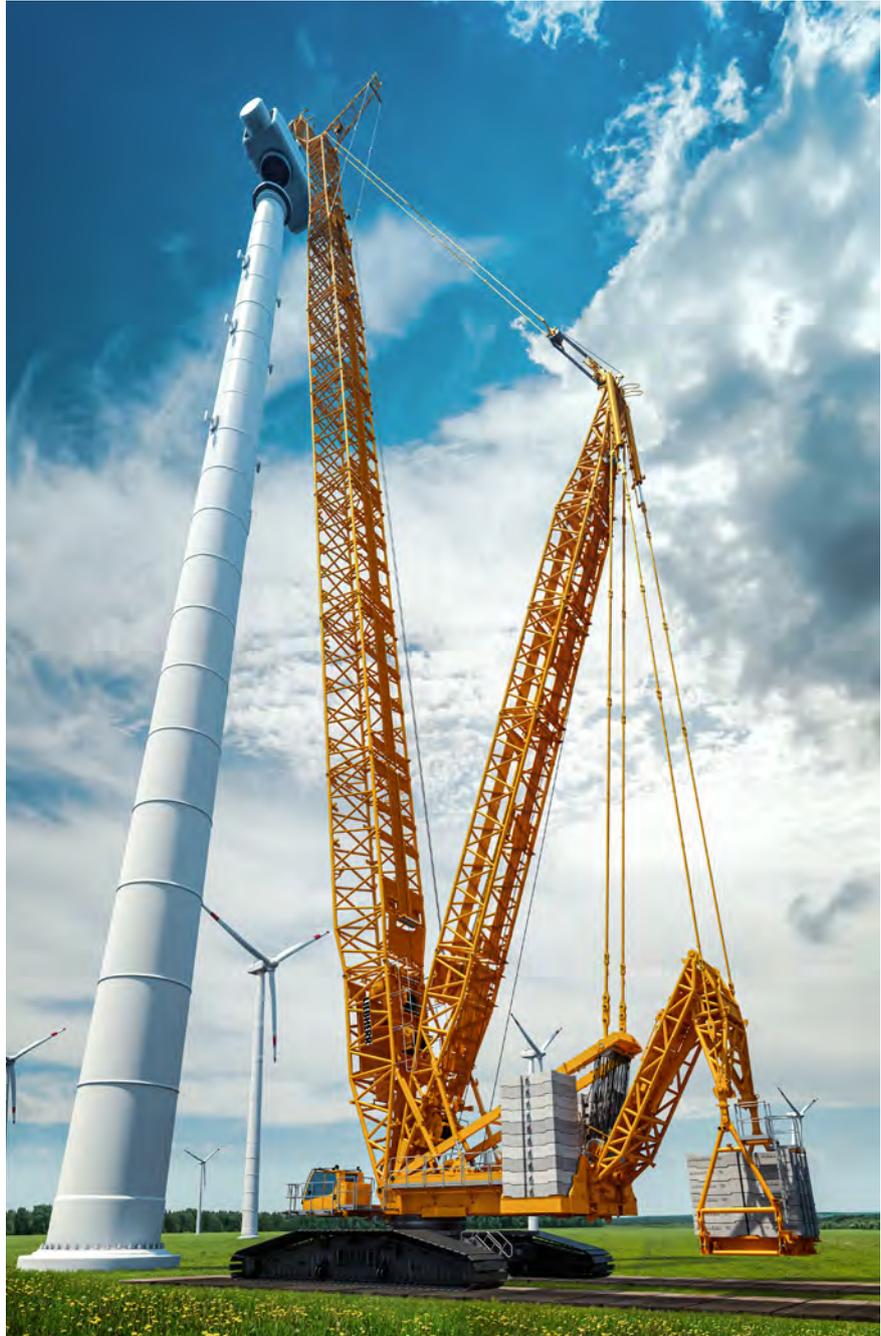
A great idea – made reality. What started as an idea on this oppressive stormy day, is now a machine. A crawler crane setting new standards. Just 3 metres wide to revolutionise transportation because it can be carried to the next site



quickly, easily and with very few transport units. And with a 3.5 metre equipment width, it is also a lifting capacity miracle. Because it can do significantly more than its predecessor – up to 15 percent depending on configuration. This is what the new LR 1700-1.0 can do. With these features it joins two worlds. And also two elements – wind and earth. With a wind power boom it sets new standards in the 600-700 tonne class for wind power. And as an industrial crane it impresses by being the most powerful crane on the market.

And what's more, the LR 1700-1.0 will also change the world. The crawler crane world. It is replacing the LR 1600/2, a successful, popular crane which proved itself time and again over a period of many years. This will mean a palpable change in the crawler crane world. The LR 1700-1.0 joins two worlds, whilst changing and creating a whole new world at the same time. A bombshell.

On average, 1700 storms take place simultaneously around the Earth. We won't be able to build as many "thunderstrikes" as that – that's one thing nobody need be afraid of!



Find out more:
[www.liebherr.com/
lr-1700-1-0](http://www.liebherr.com/lr-1700-1-0)



A tip: When you see a lightning strike and then hear thunder three seconds later, the lightning is 999 metres, in other words around one kilometre, away. This simple rule of thumb can be used to calculate how far a storm is from you. Simply divide the number of seconds between the lightning strike and the thunder by three, to get the distance in kilometres.

The Bernabéu in Madrid





World class – Team Liebherr plays for Real Madrid

The professionals at Spanish championship record holders Real Madrid CF have had to leave the pitch. A whole team of cranes and construction machinery is currently engaged in a fascinating encounter at the iconic Estadio Santiago Bernabéu in Madrid.



The Bernabéu Stadium, one of the real landmarks of Madrid, has a long history. For Santiago Bernabéu, who was initially a player before he became coach and then President of Real Madrid, the stadium represented the achievement of a life-long dream. He collected donations and was able to start the construction work in 1944, during the Second World War. The stadium was then opened in 1947. Even today, it is still unclear how the club managed to build the stadium as cement was in

very short supply at the time. After several modifications and extensions over the past few decades, the stadium, which has hosted a whole series of international finals, is currently once again filled with construction machines.

The new star among stadiums

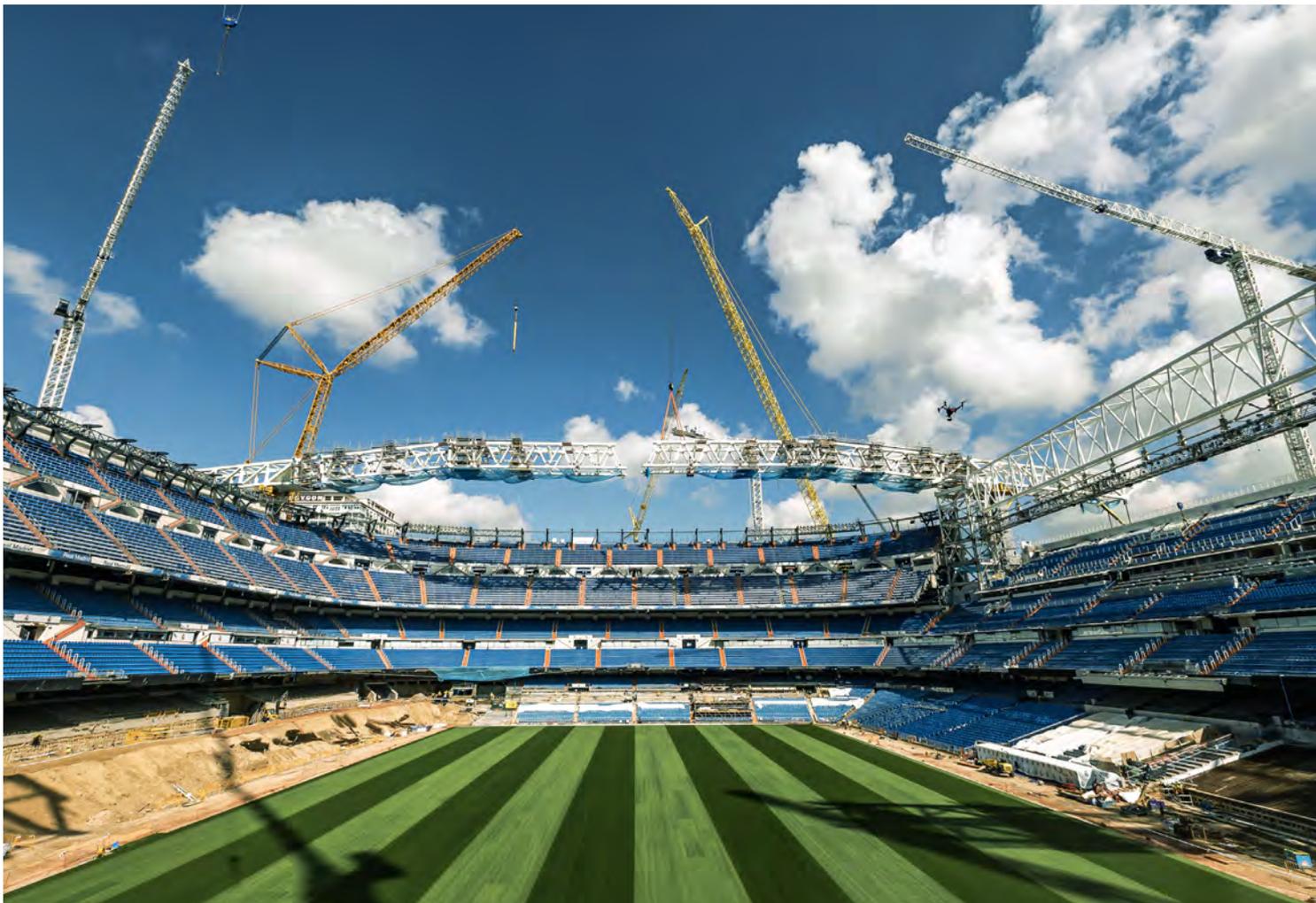
By 2022, the Bernabéu will be an ultramodern stadium with a hydraulically adjustable roof structure, lowering hybrid turf

and new shopping, business and leisure facilities. The façade can be illuminated during the hours of darkness using LEDs in a wide range of scenarios. There is a promenade around the entire structure at the top of the façade which provides a panoramic view of life in the neighbouring streets and the sporting excellence or events taking place in the stadium itself.

**The champions –
LR 1800-1.0, LR 1600/2 and LR 1600/2-W**

The home side started with a three-man defence formation consisting of an LR 1800-1.0 from Eurogruas 2000 together with an LR 1600/2 and an LR 1600/2-W from Gruas Aguilar. They were on site permanently from June to December 2020 carrying out a wide variety of hoisting work. These three

heavyweights were joined by over twenty Liebherr mobile and crawler cranes with lifting capacities ranging from 40 to 1,200 tonnes. “Winning the order for the crane work at the Bernabéu was not only a routine job for us, but also a great challenge”, says Luis Aguilar, owner of Gruas Aguilar. Not only did the use of the two LR 1600/2 cranes have to be planned in detail, but an enormous amount of logistics work was also required for transporting the cranes, which varied massively in size. “The high loads and large radii as well as the constricted conditions in the city centre immediately next to the main arterial Paseo de la Castellana road, meant that we had a very complex situation to contend with”, says Aguilar.



Mobile and crawler cranes

One of the main stars, the LR 1800-1.0, also displayed particularly impressive manoeuvrability and flexibility with the V-frame. “The V-frame enabled us to position loads weighing between 40 and 213 tonnes safely and precisely without having to move the crane on the site”, explain Jose Garcia and Juan Ayora, the Project Managers at Eurogruas 2000. “Every hoist was first simulated in digital form on the computer in detail with the team before being completed. The teams from Liebherr-Iberica and Liebherr in Ehingen meant we had excellent, successful teamwork, particularly configuring the booms and planning the hoists.”



Briefing with the Eurogruas team



Playmaker – the LR 1800-1.0 from Eurogruas with some of the first segments for the roof supports on its hook.



More power – LTM 1750-9.1 with 800 t upgrade

Almost exactly one year ago, we announced that we would be upgrading our LTM 1750-9.1. We completely recalculated the 9-axle model, which was first launched in 2012, and actually made it into an 800 tonne crane.

The use of refined static calculation methods meant that lifting capacity values could be increased across almost its entire working range. We created a new luffing jib configuration to achieve additional performance increases for wind power applications, enabling the LTM 1750-9.1 to break into a higher lifting capacity class.

We tested the new lifting capacity values extremely carefully at our acceptance test site before the first cranes left the plant to prove themselves in the rugged everyday life of a crane. That makes us all the more delighted now to receive positive feedback from our customers and interesting photographs of jobs using the upgraded crane.



Dismantling a wind turbine in the Netherlands.

Performance offensive in the Netherlands

Our Dutch customer Kraanverhuur D. Boekestijn B.V. has been using its LTM 1750-9.1 with the 800 t upgrade, for example, to dismantle a 2.75 MW wind turbine at the port of Vlissingen. It removed a generator with a gross load of 87.8 tonnes and using a hook height of 90 metres from a

78 metre tower. In the past, these jobs would have required an LTM 11200-9.1 or even two LTM 1500-8.1 cranes operating in tandem. But this is now possible for the new 800 tonne crane and it even had a little over four tonnes of lifting capacity to spare. Perfect evidence that the LTM 1750-9.1 now really has advanced into a higher lifting capacity class.

Wind turbine erection in California

Our customer Mountain Crane, who were one of the first to receive the upgrade for its LTM 1750-9.1 in the USA, is also delighted: “The beginning of something great,” it posted on Facebook with photographs of the crane erecting a generator on a 90 metre tower at a wind farm in California.

“Without the 800 t upgrade, our latest wind project would have been impossible. A constricted site and steep hills meant that a crawler crane could not be used. The LTM 1750-9.1 not only enabled us to move quickly and easily from one turbine to the next, but also saved a significant amount of money as we avoided road restrictions and we had no need for any civil engineering work,” explains Wind Director Travis Horton.

Reducing costs in Utah

Power to spare was the order of the day for installing a pedestrian bridge at the Huntsman Cancer Institute at the University of Utah. The 50 metre steel bridge is part of a wide-ranging extension of the clinic complex. However, the site posed several challenges – it was in a busy traffic area, the space for the crane was limited, close to power lines and the clinic could not be closed. The clinic authorities therefore requested a crane with plenty of power to spare.

Ronnie Wagstaff, Project Manager at Wagstaff Crane Service, explains: “We planned this hoist a year ago with a range of different crane configurations. The fact that the LTM 1750-9.1 would have required 93 percent of its total capacity made several people a little nervous. We then even considered using a large crawler crane. But of course that would have been

significantly more expensive. Then, fortunately, came the power upgrade. The new lifting capacity tables showed that the crane capacity utilisation was reduced to a maximum of 85 per cent. That immediately gave the green light for completing the hoist with the LTM 1750-9.1!"

Wagstaff regards the 800 t upgrade as very positive for all the jobs tackled by the LTM 1750-9.1 and has particularly enormous improvements for jobs in the wind power industry. "The option to select additional maximum wind speeds in the crane control system is another helpful function. It can be used for every type of job. I love the fact that Liebherr continuously invests in improving its existing crane models", says Wagstaff.

The best solution for our customers

As a crane manufacturer, we naturally have nothing against using larger cranes or even two cranes in tandem for certain jobs. We are quite happy to build them and sell them. But we also feel an obligation to find the best, most economical solution for our customers. When we manage to accomplish this, as with the jobs described in this article, not only are we pleased by the fact but it also encourages us to continue along this route.



The 800 t upgrade made it possible to use the LTM 1750-9.1 at a wind farm in California.



The upgraded LTM 1750-9.1 delivers sufficient power in reserve for the job in Utah.

We are also interested in your experience of how innovations or special technical solutions have improved crane use. Please write to us at upload@liebherr.com. And, of course, we are always delighted to receive suggestions for improvements.

Joyride – a crane trip with a sea crossing





Swabian power for Heligoland

For crane operator Jens Bodschwinn, this story starts with a bit of nostalgia. His Liebherr LTL 1050 crane, which started work at the Tönning site of the Waterways and Shipping Office (WSA) on the German North Sea island of Heligoland in 1992, is due to be decommissioned in the near future. After 28 years in the service of the state, the metallic veteran has earned its retirement. The long-winded process of procuring a successor with a tendering process was finally completed when a contract was signed with us in Ehingen. The authority's choice was the Liebherr LRT 1090-2.1, the rough terrain version of the mobile cranes from our Swabian crane plant. We delivered the new crane to the island in September – on the actual birthday of its future operator, Jens Bodschwinn.

“I’ve never had a birthday present like it”, beams the bearded Heligolander under his baseball cap. However, his joy is mixed with a degree of sorrow, when he looks at the predecessor of his brand new crane. The old Liebherr crane,

suppliers which was proving increasingly difficult for the old machine. “To date we have never had problems with Liebherr’s service” says Mark Redecker, the WSA’s engineer on the North Sea island.



A whole new dimension – the telescopic boom is around 50 percent longer and will enable the crane to be used for work on the island’s lighthouse. The new LRT 1090-2.1 is shown here parked next to its predecessor, the yellow LTL 1050, which has clocked almost thirty years of service.

whose abbreviation LTL stands for what today sounds like a rather antiquated name, the “Liebherr Telescopic Low-speed” crane was there when Bodschwinn first started work as a crane operator for the WSA 25 years ago. Today he also acts as foreman and fitter. But let’s get one thing straight from the start – it was not that the old crane was getting old or breaking down more that made the authority buy the new one. In fact, it was obtaining spare parts from

Three years after the procedure for purchasing a new mobile crane started, the LRT 1090-2.1 was finally delivered in the autumn. The rough terrain crane was given a piggyback from Ehingen across Germany to Cuxhaven on a heavy haulage vehicle, where supply vessel “HC Hagemann I” was already waiting for its cargo in the harbour. However, the wind and weather were not so keen on the crane making the crossing on the scheduled day. Winds between five and six on the Beaufort scale were forecast. When the wind gets above four on the Beaufort scale, the boat, which is authorised for sea crossings, stays in the harbour. The waves generated by the wind would simply be too dangerous for the flat-bottomed supply vessel. The next morning, however, it was time to cast off and the HC Hagemann I went to sea before sunrise. Finally, our crane was able to start its 60 kilometre voyage on the North Sea to its new home.

Search for aerial bombs interrupted

Florian Hagen, the broad-shouldered service engineer from Liebherr in Hamburg, also checked in on the service vessel in Cuxhaven very early. He was there for the handover and induction training on the brand new crane. After a voyage lasting around four hours, the supply vessel and its cargo

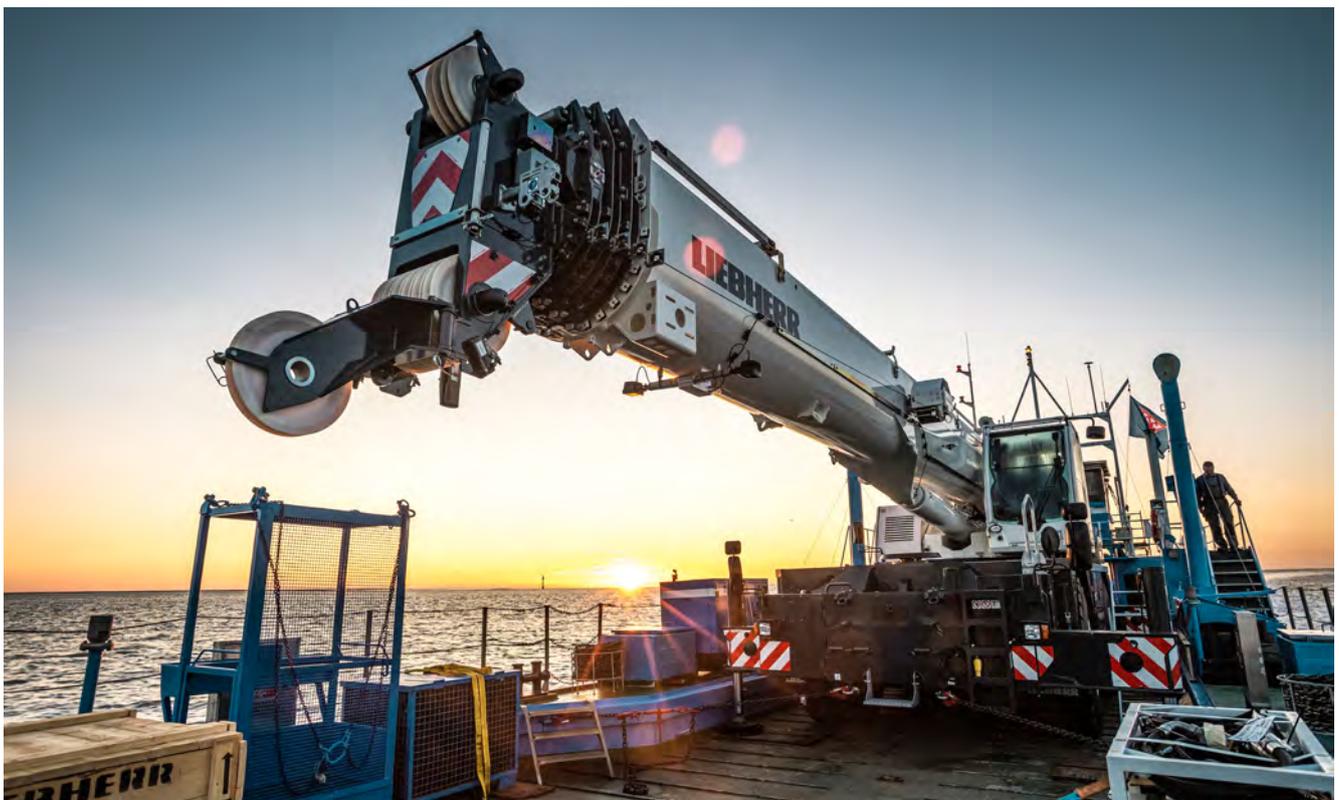
“I can now carry out precise planning for projects which I would previously not been confident with.”

Jens Bodschwinn is familiarised with the features of the control system on his new Liebherr crane by Service Engineer Florian Hagen.



reached Germany's only deep sea island where Hagen's first job was to drive the rough terrain crane off the ship. He used the ramp at the bow to drive the vehicle onto a small sandy beach in the island's southern harbour. The crane and operator had once again reached dry land.

The LRT 1090-2.1 was then immediately able to demonstrate its off-road capability. The first section of the route to the WSA actually passed through the broken surface of the wave-breaking basin where a bomb disposal team had been conducting a search for aerial bombs dating from the Second World War buried several metres deep for months.





Rolling home – the new rough terrain crane at the Heligoland site of the Waterways and Shipping Office makes its way through the wave-breaking basin. The search for aerial bombs had to be stopped whilst the crane passed through. The “HC Hagemann I” supply vessel can be seen in the background having already cast off on its return journey. The vessel had just transported the LRT 1090-2.1 to Heligoland from Cuxhaven.

The bomb disposal team had to stop all its work on the site temporarily whilst the crane made its way through the basin. Half an hour later, the sparkling white crane was then finally parked next to its somewhat smaller predecessor at the Waterways and Shipping Office depot.

“In addition to the normal induction training for the crane functions, because of its location here on Heligoland, we gave special attention to troubleshooting and the remote diagnostic functions”, explains Florian Hagen. Travelling to the island is always a very expensive trip for a service engineer. So it is a good idea if the crane operator can rectify any problems on his own or using remote diagnostics with the support of the headquarters in Ehingen.

Longer boom will enable the crane to work on the lighthouse in the future

Jobs waiting for the new rough terrain crane on Heligoland are, of course, mainly of a maritime nature, although that is not exclusively the case. For example, the 47 metre telescopic boom, which is more than 50 percent longer than its predecessor’s, will also be able to tackle antenna and maintenance work on the island’s 35 metre lighthouse. The crane will also have to hoist a number of boats out of the water before the onset of winter and place them back in the water in spring.

However, its main work will be transporting floating sea marks. “Even our heaviest sea mark, which weighs over eleven tonnes, can be transported on the crane hook. That’s why we need a crane in this lifting capacity class”, explains Bodschwinna. “We’re responsible for the safety of shipping around Heligoland.” The WSA site owns a total of 56 of these navigation marks. In the future, he and his crane will have to



Expert chat – WSA crane operator Jens Bodschwinna (right) and Florian Hagen, the service engineer from Liebherr, talk shop in the depot workshop.

transport these maritime signposts, known as “buoys” in the jargon, between the depot and the jetty.

Buoys also warn shipping about wrecks

After they have been in use in the salty water of the North Sea for around three years, the swimming sea marks must be replaced and brought to Heligoland for refurbishment. They are brought to the buoys depot and the WSA workshop, where the heavy floating structures are then cleaned, coated with new preservative and fitted with the appropriate lights. The crane then transports the refurbished buoys to the supply vessels’ pier around 500 metres away where they are placed ready for the vessels to put them back in the water. The freshly painted maritime traffic signs are generally hoisted on board by the vessels themselves so that they can then take them out to sea, up to five kilometres from the island in some cases. They are used to mark shipping routes and warn vessels about wrecks and shallows.

After the first few months using his new machine, experienced crane operator Jens is very positive: “The modern technology on the crane has catapulted us into a whole new era on a technological level. The wide range of data and parameters supplied by the LICCON control system are very helpful and make working with the machine so much easier. I can now carry out precise planning for projects which I would previously not been confident with. That also makes crane operations much safer, of course”, adds Bodschwinn. “Great technology” is his brief, final summary. Then he climbed aboard his brand new Liebherr crane, drove it slowly out of the garage and into the island where their first working day on Heligoland awaited the two of them.



Heavy haulage – floating sea marks like this, known as “buoys” will be transported by the new crane between the jetty and the depot. The WSA site on Heligoland owns more than fifty of them, the heaviest of them weighs eleven and a half tonnes and measures around twelve metres in length.

In focus





“Finally a bit of me time.”

A watershed for the company – two long serving directors have left Liebherr-Werk Ehingen (LWE) within just five months. The retirement of Dr Hubert Hummel and Mario Trunzer marks the end of an era. However, they left their staff in good hands – Ulrich Heusel has been responsible for production since 1 May whilst Daniel Pitzer has been in charge of the commercial department since 1 October. And whilst you are reading this article, Mario Trunzer is very probably skiing through fresh powder snow with Dr Hubert Hummel looking down on him from his light aircraft. They’ve earned it. We made sure that we got all four of them around the table whilst we still could. And what can we say – as you will see, we had a very intense conversation full of power, plans and cranes. Read it for yourself.

Dr Hummel, you joined Liebherr in Ehingen in 1999 and were appointed Director in 2003. Over these last two decades, we have undergone incredible growth and the factory site has doubled in size.

Which milestones do you think were particularly important?

The construction and site expansion work were certainly major milestones. These proved to be the right moves and very sensible in hindsight.

But they are the things you can see. Those that we can’t see are just as important, such as the continued development of the organisation to create the powerful, flexible unit we see today.

Of course, a company develops all the time and it is the accumulation of all those little everyday improvements that drives a company forward.

What do you think of the reasons behind Liebherr’s success in Ehingen?

It’s the total package, the product, the organisation, the commitment and the loyalty of the workforce, the solidarity of the management team but also having confidence in that team. There is also the fact that it is embedded in the family structure of the group – all the things that about us that customers and business partners value.



What times were difficult for you despite this?

I was always deeply upset by accidents, which thankfully were very rare. But also the things that happened to the employees, which we were confronted with in one way or another.

And there were also the plans which simply did not work out as we had hoped and the things that people, but also organisations, did, which at times were very difficult to understand. None of that was easy, but I suppose it's part of life.

Have you got used to your new life? What you enjoy doing in your new-found extensive leisure time?

Actually, I think I'm still in holiday mode, and I suppose you could say I'm still training to be a pensioner. When I received my pension ID in September, that certainly helped.

The extra leisure time is a real privilege, and I'm really enjoying filling my days with sport, reading and flying. And, of course, I can also enjoy more time with the family. In any case, I'm certainly not bored. But I do not just plan my whole day ahead and I'm content to let the future bring what it will.

Has your wife had you in training? How is she getting on with you being at home so much?

After I've finished one career, I'm certainly not taking up a new one. But seriously, my wife is delighted that I have more time. Of course we have to get used to our new personal situation and plan our activities together and how we share the jobs.

But in contrast to Lorient in "Pappa ante portas", I have no intention of making the whole house a mess – although establishing lean management in the kitchen might be taking things a little too far.

What's the first thing you think of when you look back at LWE?

I look back fondly at working together and communicating with different people in a range of functions. The experience you gather, and the opportunity to mature using that experience. All that whilst working at a great company with a great team, which was not exactly unsuccessful – I will miss it.



A full working day provides structure. What I now need is to find a new rhythm and framework to fill my time. But time and peace will certainly play a major role in that.

Mr Trunzer, you came to Liebherr in 1990 where you were initially HR Manager in Kempten. Six years later you were appointed Commercial Director there. In 2002 you took on the same position in Ehingen. How did you find your time here?

Unique, fulfilling and enriching, I learned so much. I'm still impressed by LWE almost every day – and I have been a Director here for 18 years. What still impresses me is that everything works, despite the fact that I've been here so long – and I have yet to find a company that comes close. The spirit is very special.

Where is Liebherr-Werk Ehingen today and what advice would you give your successor?

LWE is in a good place, there is no doubt about that – with

they do. That's the only way to create trust and reliability. And that's what the management team as a whole needs, it is never just about an individual. I'm absolutely convinced of that, and so are our successors.

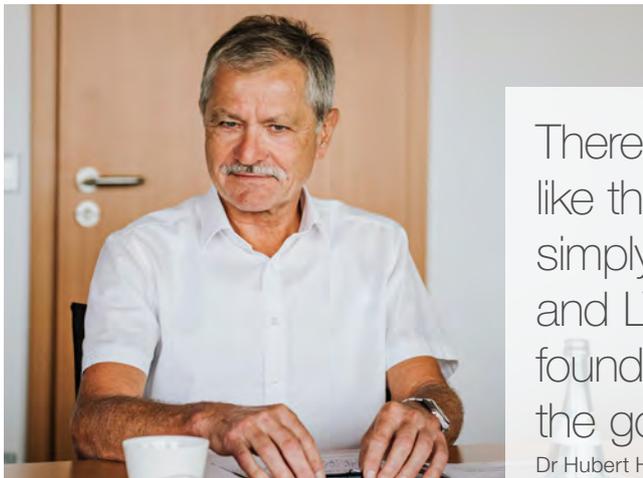
What should we keep doing – and what should we stop doing?

That's an easy one – simply develop and supply good products. But what's becoming more important is the development of our customer service and product management. Our customer service is doing absolutely the right thing. And we should continue to do it.

One thing we should never do is become arrogant or self-satisfied. Otherwise somebody will turn up out of the blue and make our lives hell. The fact that we've been successful for so long may be a risk – we might start believing that it's a given. But success is part of a journey – and you have to restart that journey every day.

How are you planning to spend your time now?

I'll be doing all sorts of things, with lots of free time that I'll fill



There are things we simply cannot control, like the current corona pandemic. They're simply part of life. Setbacks happen and LWE will get over it. We have strong foundations. The things we worked for in the good times will help us now.

Dr Hubert Hummel

good people and great structures. The plant in Ehingen has always continued to develop, and that should continue in the future. Some people believe that this will take care of itself because we are the market leaders. That's just wrong. We have to continue to make it happen every day. At the beginning we were the challengers, and there were lots of competitors who were better placed. But some of them no longer even exist today. We have never needed the services of a consultant. We did it all on our own.

If he does his work properly, a director always has an eye on the whole picture and the people and teams within the company. People must be able to trust you, otherwise they cannot do their work properly. That means directors have to be authentic, they have to do what they say and say what

with my family, friends and hobbies, such as sport and culture. And I'll be tackling those projects that I've been putting off for ages. I'm looking forward finally to being the first one on the piste in the powder snow and not just having to go on worn slopes on Saturdays.

Are you fearful that you might just be a little bored?

I hope I'll be bored sometimes – I've never been bored before. And time just to sit there and be quiet – I'm really looking forward to that! But I've got lots of ideas to put an end to any boredom. And what's more, boredom often results in creativity.

Now we'd like to hear from our new directors about what they're thinking and planning. Mr Heusel, you came to Liebherr in 1994 since when you have worked for quite a few Liebherr companies. You transferred to Ehingen in 2005 where you headed up the work preparation team and the production order centre. Do you have any special memories from when you started out at LWE?

I certainly do – Liebherr's absolute commitment in Ehingen and the prospect of managing a department doing such exciting work. At the outset, it was the impressive products but also the size of the factory, the incredible amount of material and the organisation and preparation it all required. Nevertheless, the processes have remained simple and robust – they really are an art form.

I would currently advise people to try to live as normally as possible whilst observing the guidelines. Fear and hysteresis are poor advisers.

Mario Trunzer

And my working relationships were friendly, helpful and based on trust – a good team, but we always had fun as well. And we have always had a good, productive approach within the department. One of the main factors behind the company's success is the mixture of experience and youth. Everybody has always been focused on customers and finding solutions for them. And that is still the case today.

Can you give us a few of the highlights from your last few years?

Almost every day is a highlight for me – the smell of steel and drilling fluid simply feels like home. But the regular customer days are really unique.

I can sum up my highlights in general – we've completed lots of projects which were all essentially focused on the processes. It was less about how we could change things through investments, and more about how we could use the fantastic expertise of our staff to make our business processes more productive, and sometimes also more transparent – whilst still enjoying our work. I'm rather proud of the results – we know our processes and have redesigned some of them. That's a good thing, but it's certainly not par for the course.

I would also like to express my thanks to Dr Hummel. His choice of people and management staff enabled him to form a good, powerful team with plenty of freedom to try new things, gather experience and continuously develop. Learn from their mistakes. That's one of the main pillars on which success is based – a good team.

What are the current challenges for your department?

The basis for a productive factory is good, stable planning. Nevertheless, meeting as many customer requests as possible is a real challenge. The world is getting ever more hectic. Everybody wants things to be done more quickly, but want the suppliers to be reliable – in other words making promises and then keeping them.



On the other hand, continuity and stability form the basis for successful supply chain management. Balancing these two opposites is the real challenge for the modern world – but it's quite exciting as well.

The constantly rising space requirement due to the wide production range would be challenge enough on its own, but we also have to contend with all the building work and the areas consumed by it, albeit temporarily – that's enough to keep us busy! On top of that we have a few mammoth projects such as the complete reconstruction of our plant logistics and the introduction of a new ERP system. But we must make our company ready for the future.

What do you enjoy doing when you're not at work?

I'm a very keen DIYer and tinkerer. I also love sport – skiing, diving and sometimes jogging or cycling. But diving is my real passion. And a good book is always welcome. Oh, and redesigning the garden, hopefully with a mini excavator.

Showing flexibility is even more important in extraordinary times.

The stable processes that we have established in the past will help us enormously.

Ulrich Heusel



Over to you, Mr Pitzer. After completing your degree in International Business, you started working for LWE in 2006 where you held the position of Regional Sales Manager for several years. In 2015 you were appointed Managing Director of Liebherr USA and also division manager for our products. Now you're back at headquarters and we must ask you whether things have changed at LWE during the five years you were away?

Not just in the last five years, since 2006 it seems as though something has changed at the site every year. Somewhere there is always an excavator or you can hear the sounds of building work. But of course from a distance you also get a better view of home. LWE has become even larger and more successful without losing its unique feeling of everybody belonging.

Regardless of where we are, everybody at the plant is a salesman and a brand ambassador. And that's a sensational attitude. That's precisely the secret behind our success

that we want to maintain and strengthen in the future. That's extremely important to me.

To date your work has been focused on sales. Will you miss having contact with customers and all the travelling?

I've always had very good relationships with our customers. I managed and strategically expanded our American service team with a great deal of passion and energy. All the travelling was part of that job, but it was always only a means to an end so that I could discuss projects with customers on site or at their own offices and move things forward.

In my new job in the commercial department I'm still going to have a great deal of contact with customers, but now they will be internal customers. Overall, you could say that the jobs I've held over the last 15 years or so at Liebherr have taught me everything that I now need for my new job. I've



We've learned to adapt and swim with the tide. Thanks to our unique feeling of everybody belonging, which always links us to our staff and customers, we continue to be a reliable partner, even in these unsettling times.

Daniel Pitzer

been in training and I'm now returning to the management team to include my own experience in our processes. I know the plant, the staff, the region, the customers, the markets and our partners. What's more, I'm taking over a fantastic team and LWE is on a more than firm footing.

What attractions and challenges do you believe the new job will offer you?

What particularly attracts me is working with my team and other departments to actively forge the future of our division. The challenges include our major investments in the new logistics concept for spare and standard parts over the next few years and the impending switch to a new ERP system. In addition, we need to develop the commercial department so we can continue to meet future requirements and keep the whole company going.

A lot has been said and written about the USA recently because of the presidential election. In your experience, what's different here compared to the "land of unlimited opportunity"?

There's actually just one sentence that says it all – "Everything's bigger in the US!" That really does cover it all. It's not just the size of the vehicles or other everyday items, but also the opportunities and possibilities.

Did you and your wife and children enjoy living there?

Our children found it very difficult at first but after about a year things started to improve. Overall, our time there was a fantastic adventure. Our horizons have definitely expanded and, of course, one of the by-products is that our sons now also speak perfect English. We still talk about our time in the USA within the family every day.



Our current management team (from left to right): Daniel Pitzer (Commercial management), Dr. Ulrich Hamme (Design and Development), Ulrich Heusel (Production), Christoph Kleiner (Sales)

Dear Readers,

If you regret that you have not been able to say goodbye to your long-serving business partners, Messrs Hummel and Trunzer, we can now do it for you. Simply send what you would like to say to them to upload@lwe.de. We will pass on your messages in confidence. As you know, both of them now have plenty of time to read letters and messages in peace!

How did the ballast trailer come to be and where are we going with it?

Back ground

Crawler cranes are a common sight on large building sites. As they are typically used for heavy hoists, large quantities of ballast are required to act as counterweights. A wide range of ballast types is available, depending on the specific job – slewing platform ballast, derrick ballast, suspended ballast, V-frame – or a ballast trailer. Jens Könneker, Product Manager Lattice Boom Cranes, explains the origin of the ballast trailer and takes a look at its future.

How did one come up with the idea of designing a ballast trailer in the first place? When we use crawler cranes we are often faced with the problem of requiring a great deal of ballast for a hoist. If we look at a shipyard, for example, where a crane often has to perform heavy hoists at several locations, and it requires lots of ballast for each one. It travels between the hoists without a load on its hook to the next location. It would then have to stack and unstack the ballast, which would require a great deal of time. This is where the ballast trailer is the perfect tool. The concept behind the trailer is to enable a crawler crane to move with ballast, regardless of whether it has a load on the hook or not. The crane always takes as much ballast as it requires for the current job. This makes working with the crane faster and more efficient. It also means that there is no need for an auxiliary crane for the reballasting work. A second point behind the concept is that space is often extremely limited, for example at refineries. Generally, there is simply not enough space for the ballasting

process. Once again, in this situation, the ballast trailer can be beneficial as it can simply be attached to the crane. This also has a technical benefit as the ballast trailer relieves the strain on the slewing platform and undercarriage since no force is placed on them.

When did the first ballast trailer appear? It was built on rails back in the 70s. At first, it was only able to circle, which meant that the crane could only operate in stationary form and slew. The first ballast trailer on tyres was designed and commissioned in the 80s. Initially, particularly, they were often overloaded to provide additional safety. Nevertheless, they presented a simple way of increasing the lifting capacity of existing cranes. Ballast trailers were designed specifically for LR 1400, LR 1550 and LR 1650 crane models, with the work at the time being carried out by partner companies.



Jens Könneker

The next phase of development was the first ballast trailer featuring the LICCON1 control system. However, it did not have a drive unit. That meant that an additional slewing gear had to be installed on the crane. It was not until later that the trailer was fitted with its own drive unit, with the first one being designed for the LR 1750. If necessary, the drive unit could be activated to provide assistance as a start-up drive. But at the time, that was the limit of its performance. The LICCON2 ballast



Ballast trailer development at a glance – first on rails, then on tyres.

trailer, designed for the LR 11000, then revolutionised this situation. It was the first ballast trailer with a high-end control system which tracked the movements of the crane – based on the proportional hydraulic control system used on the travel drive system. This meant that circling, driving in parallel and towing was easily possible, with it being controlled from the crane cab or using a control desk.

Again and again we received requests from our customers to enable the ballast trailer to be used for multiple crane models. As the trailers are used pretty rarely, this would produce significant cost savings. The first time we made it possible to switch a ballast trailer between two crane models involved the LR 1600/2 and the LR 1750/2.

During the last year, we have managed to design a new ballast trailer for three crane models – the M-Wagon, which features lots of standard parts. It can be used with the new LR 1700-1.0, the LR 1800-1.0 and the LR 11000. Naturally, it features the sensitive LICCON2 control system.

However, this is not the end of the development of the ballast trailer system and it is very worthwhile taking a look at the future. We are currently working on a system which will enable us to connect conventional SPMTs to a crane. As SPMTs are available all over the world, this will make it easy to build a ballast trailer. The SPMTs will be integrated into the crane's mechanical and control systems. At the moment, this development work is still

in its infancy, but already it is looking extremely promising.

Perhaps we should provide one final detail as we are asked the question all the time – the tyres on a ballast trailer are not inflated only with air any longer, but instead are filled with polyurethane foam. This reduces flattening and significantly enhances safety. A tyre filled with air can burst which, in an extreme case, can result in the entire ballast trailer collapsing. The explosion of a tyre with such a large volume and pressure would be extremely dangerous. However, this cannot happen on a tyre filled with polyurethane foam.



Modern ballast trailers for circling, towing and parallel operation.

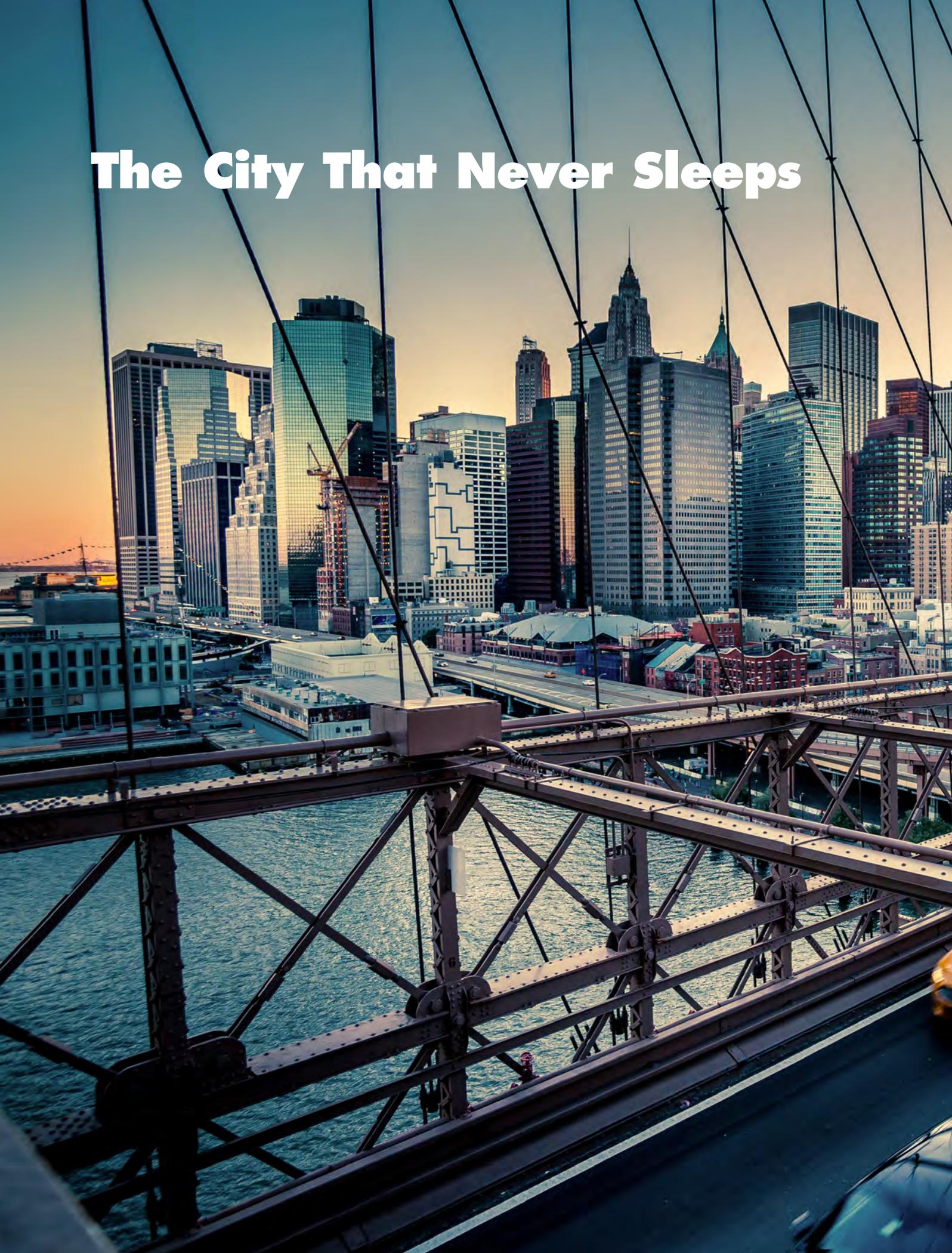


The M-Wagon can be used for three LR crane models.



The future – a ballast trailer with an SPMT acting as the undercarriage.

The City That Never Sleeps





New York – new work. Everyday.

Picking New York up one lift at a time, Liebherr mobile cranes are helping the city bounce back from adversity once again. Our mobile cranes are everywhere in the city that never sleeps - right through the very heart of it. About time for us to dive into the mobile crane world in New York with some of our customers there - we would have loved to speak with them all, but the sheer number of companies unfortunately made that an impossible task.



“You’d think it’d be tower cranes that get people talking, but it’s the mobiles that draw the attention of the average person walking down a street,” says **Richard Petrosa**, chief operating officer at U.S. Crane and Rigging. “Sometimes we have to ask them to keep moving because they want to stop and watch the Liebherrs.”

There is a lot to distract them, though. Mobile crane experts estimate that on any given day across the world-famous five boroughs, there are 150 to 200 mobile crane hooks in the air, outnumbering what they presume would be in the region of 50 or 60 tower crane hooks.

Impact of Coronavirus

Petrosa continues, “We’ve been riding high. About two years ago we thought we had peaked, but business continued to improve up until we were stopped in our tracks by the Coronavirus. We were at 100% utilisation on our

Liebherr fleet on a daily basis, running from 10 to 12 cranes day and night. If a crane isn’t lifting, it’s on its way to another job to start work as soon as site logistics allow. Seventy percent of our work is for long-term clients that require a crane for months and 30 percent is pick and runs; we do a lot of work for a pre-cast company that runs six or seven jobs every day.”

And **Robert Weiss**, president at crane rental company Cranes Inc., says, “While most construction sites shut down from March through June, our larger all-terrain cranes found homes during this period working on essential infrastructure projects such as bridges, roadways, and airports. I was amazed at how many times our 300 t (360 US-t) LTM 1300-6.2s and 450 t (550 US-t) LTM 1450-8.1s were mobilised while most of the city was in the lockdown. As summer has rolled into fall, we’ve



found that more and more work has developed for our crawler cranes - all of our large crawlers are out or scheduled to go out.” Most of this work is on infrastructure projects, as commercial and residential construction has slowed a bit because of Covid-19, and this is expected to continue in the upcoming months. “2020 was a strange year for us all, between the pandemic and a presidential election year. In the New York City area, we saw a combination of unexpected project delays combined with an expected tentativeness as November approached. In my experience post-9/11 and then following



the recession, one thing’s for sure: New York always bounces back,” adds **Jennifer Gabel**, owner of JK Cranes across the Hudson River in New Jersey.

The star in the fleet

Asked for the most popular crane in the famous city, the president of Cranes Inc. is quite sure: the LTM 1450-8.1. The combination of large capacity, long reach, and easy transportability have made this model an “instant classic”. On any given day, these 8-axle machines are installing or removing tower cranes or placing HVAC units high up on skyscrapers. At the time of writing, one LTM 1450-8.1 is completing the rebirth of LaGuardia Airport while another one is operating at the future home of the New York Islanders hockey team – just to name two examples. “It’s really quite incredible how versatile this machine is,” Weiss explains. “Our LTM 1230-5.1s and LTM 1250-5.1s are also perfect complements to each other and help us better serve varying aspects of the New York market. While both machines have the same overall dimensions, the LTM 1230-5.1’s long boom makes it ideal for rigging work at height, while the other crane’s shorter but stronger boom makes that the perfect choice for heavy highway and civil construction. And with multiple outrigger and counterweight positions, both cranes can fit easily into constricted job sites.”

Fleet file

Demand led to U.S. Crane and Rigging confirming orders for seven additional all-terrain, rough-terrain and crawler cranes at March’s ConExpo in Las Vegas. “Our footprint is expanding rapidly,” says Petrosa. “We have three depots for cranes in the Bronx and Kingston,

New York and Fort Lauderdale, Florida. We’re working in a 300-mile circle from the centre of the city.” As space is at a premium in the narrow confines of New York City and its surroundings, the compactness of the cranes is one of the most important buying criteria for our customers working in the city.



The popular LTM 1450-8.1 was recently centre stage at the Belmont Park Arena project.

Therefore Cranes Inc.’s most recently acquired cranes are 110 t (125 US-t) LTM 1110-5.1 and a 500 t (550 US-t) LR 1500. The LTM 1110-5.1s are actually part of a four-crane order of this model, all of which will arrive by next summer. Weiss admits, “I’ve long admired Liebherr’s single engine concept and how Ehingen’s engineers utilise the weight saved by eliminating the upper engine to reinforce key load bearing

elements, thus, generating models that offer superior lifting capacities within their class.”

Looking back in time

Weiss remembers earlier visits to ConExpo – and his first Liebherr. He narrates, “We are a third-generation family business, and my father and I attended ConExpo together regularly over the years. In 1996, we saw something at the Liebherr stand that, quite frankly, knocked our socks off. It was the all-new LTM 1160/2, which offered a then unheard 60 m (197 ft) of telescopic boom plus swing away jib. As we stood there admiring the crane in the Las Vegas desert, all we could think about was how such a machine would revolutionise the crane business in the vertical world of New York, where reaching great heights is a must. We signed on the dotted line right then and there, and soon took delivery.”

Today, all of Cranes Inc.’s ATs and crawlers are 100% Liebherr, and it has ventured into the RT segment with 90 t (100 US-t) LRT 1090-2.1s. Weiss says, “It is both the people and the product that make

Liebherr special. In all my years in the industry, I’ve never met a more dedicated group of professionals. They truly care about their customers’ needs, and they always look to put the most reliable and technologically advanced cranes into the marketplace. I couldn’t think of a better partner.”

The concrete and paper jungle

One of the reasons why New York is such a unique crane hotbed is that The Department of Buildings' Cranes & Derricks Unit (known better as C&D) closely oversees the design, installation, and safe operation of equipment used for hoisting or lifting purposes. The department more widely promotes the safety of all people that build, work, and live in New York City by regulating the lawful use of over one million buildings and construction sites. It requires that all cranes used for construction be engineered by a third-party professional engineering firm and that operating

permits be obtained for use. In addition, the agency performs annual and onsite inspections of cranes and even prototypes all new models entering the city. The C&D also mandates that cranes used for rigging work on the outside of existing buildings be supervised by a NYC-licensed Master Rigger.

The Department of Environmental Protection, meanwhile, has specific noise and emissions regulations that must be adhered to. Further, anything larger than the LTM 1110-5.1 requires a daily travel permit from the Department of Transportation, which must be ordered 48 hours in advance and includes specific route information and surveys. This list goes on and on. Navigating this complex web requires extensive local expertise and knowledge of the system and that is something that our customers, the crane rental companies in New York, are very specialised in. And this is necessary to stay on top of this uneasy game of operating in this non-stop city.

A special market development

"It's not easy to break into this market; we've been here since 1983 and the regulations are immense," says U.S. Crane and Rigging's Petrosa. "Our founder Thomas Auringer started the company nearly

four decades ago. For Tom to get a non-union crane working in the city almost took fisticuffs — he fought for it."

He continues, "What we've done in the last couple of years is streamline that process and taken us from a 'man and a machine' to 'machines and a company'. Last year was our best year yet in New York City."

And the market is expected to grow in the coming years. The opportunities in and around New York are endless. This city is a city that does not have a large footprint, so the only available space is to build up. The government is ever changing the land use laws to allow for higher construction. "The projects coming down the pipeline are emphasizing both infrastructure as well as air filtration and temperature improvements. The focus is on making what exists better and safer," states JK cranes' Jennifer Gabel. So growing is possible, even in such a complicated surrounding.

The customers

"We love the action and the streets of New York," beams Petrosa. "We operate cranes, rig cranes, erect cranes... I perform license tests for operators, and we employ our own safety director who leads our training content and gives toolbox talks. That person visits every site at least twice a week. It's a city that never sleeps - and neither do we." Nor does any other New York crane rental company. The customer based in and around the city is as varied as the city itself.



While riggers form a large core of the business, so do also major civil contractors. In fact, the last few years saw the construction of many new bridges in the New York area, and numerous crawler and hydraulic cranes have been supplied for these huge and important projects. "On the complete opposite end of the spectrum, we are currently renting an LTM 1230-5.1 to a landscaping firm that is using the crane to set trees along the West Side Highway in Manhattan - and we have annually provided some LTC 1050-3.1 to help assemble floats for the Macy's Thanksgiving Day Parade. You never know who is going to call - and that is what makes working in New York so exciting," Weiss adds.

Making history in Manhattan

Exciting work can also make history. A couple of weeks ago, Bay Crane was called for an untypical task in Manhattan. As part of the construction process to continue the transformation

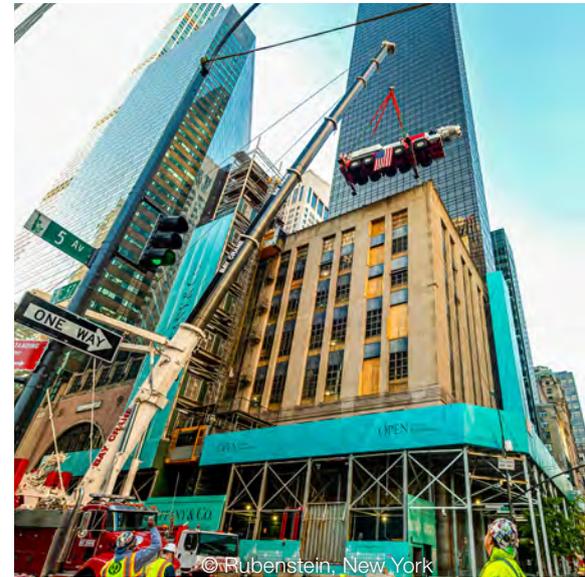
of the Tiffany & Co. New York flagship on Fifth Avenue, a mobile crane had to leave the ground to reach the necessary height. This is only the fourth time in the construction history of New York City that a crane has lifted a crane onto the roof of a building.

The LTM 1130-5.1 mobile crane is in use to continue transformation of the Tiffany & Co. flagship store. It will help to build the reimagined upper addition (floors 8, 9, and 10) of the 10-story building from office space into an exhibition and event location.

A giant LTM 1500-8.1 from Bay Crane, assembled with Y-guying system, lifted the small 5-axle mobile crane with its weight of 60 t (66 US-t) seven storeys over 57th Street and Fifth Avenue.

Deep in the heart of Brooklyn

U.S. Crane and Rigging sent a LTM 1300-6.2 to Erik Ekstein's latest development in Bushwick, Brooklyn.



The property is located on the corner of Broadway and Palmetto Street. Dan Mooney, sales manager at U.S. Crane and Rigging, explained that the crane has both the capacity and the reach to maximise productivity during plank installation, an important





U.S. Crane and Rigging...

phase of the construction process. The development will comprise 31,510 m² (103,378 sq. ft.) of residential, commercial area and community buildings.

The anticipated date of completion is spring 2021.

Artisan touch

Meanwhile Cranes Inc. is playing a central role in creating a future home for the New York Islanders hockey team at the new Belmont Park Arena. The customer is A.J. McNulty & Co. Inc., a local structural steel and precast concrete erector.

It has supplied numerous cranes to the contractor erecting the precast concrete façade, from a LTM 1250-5.1 up to the company's brand new LR 1500. Assembled in mid-September, it is operating from a 3.6 m (12 ft.) thick hardstand of gravel, on top of which are two layers of hardwood mats. All of this is required in order to reduce ground-bearing pressures. Cranes Inc. is handling large and very ornate architectural panels, all of which must be set with the utmost care. In a sense, this is the work of artisans, as the crews must have a smooth touch.

Man's best friend

Call, "Liebherr!" in Rhode Island, to the northeast of New York, and it will not only be a mobile crane that appears on the horizon. Liebherr the dog, owned by Bay Crane branch manager Josh Wilbur, will come running. Liebherr has been owned by Wilbur almost exactly two years at the time of writing, after a chance encounter at a rescue centre.

"I was in search of a new dog," Wilbur recalls. "My family had a dog but I wanted a more active companion that I could take with me every day. On a chance, I visited a local animal shelter and two dreams come true. When I saw her, I felt the bond instantly. Liebherr had not been there long. The caretakers of the shelter said she was a sweet dog and they were right. When she arrived home, Liebherr was reluctant to leave the car, but after some training and much love, she realised she was in a good home."



...sent the LTM 1300 to Erik Ekstein's latest development in Bushwick, Brooklyn.



The LTM 1250-5.1 started in late June and just returned to the yard at the time of going to press.



The LR 1500. Because the site is on the approach path to JFK International Airport, the maximum tip height is restricted to 73 m (240 ft.).

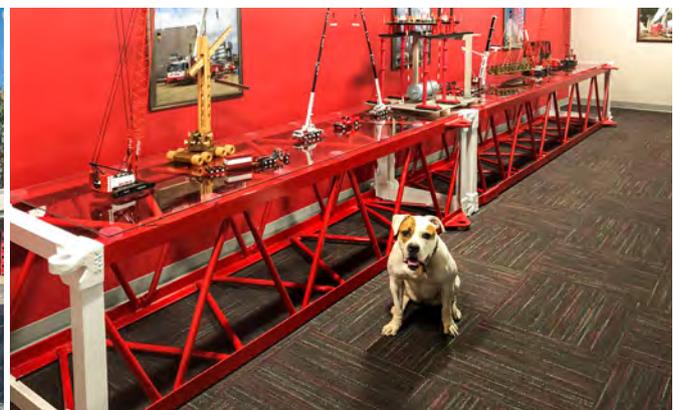
He continues, “I chose the name Liebherr because I had hopes that she would be a dependable, reliable and hardworking dog—just like a Liebherr crane. I can always count on these cranes to perform consistently and well and, so far, my dog hasn’t let me down either.”

Liebherr’s (the dog) second home is Bay Crane Northeast, based in Smithfield. She goes to work every day with Wilbur and enjoys her time in the office and in the yard. She is often seen running around, hopping in various vehicles, and has even been caught pulling some of the rigging gear.

“Her favourite place is the lunchroom, where she gets lots of treats,” says Wilbur. “Liebherr and I are very lucky to have met each other.”



Liebherr has been owned by Josh Wilbur almost exactly two years.



A lance for grease

When it comes to Liebherr mobile and crawler cranes, good grease distribution is essential for ensuring that a telescopic boom can be extended and retracted smoothly and easily. To ensure that the boom is lubricated properly, designer Jochen Werner, working with Peter Munding, a production foreman in the telescopic boom assembly section, has designed a grease spray system. Jochen Werner has been working at Liebherr for 20 years. After spending several years in the superstructure crane acceptance section, he now designs telescopic booms and related equipment. In this article he reports on the new grease spraying system.

Good lubrication is half the battle. To enable a telescopic boom to be extended and retracted smoothly, it must be well lubricated. In addition to using the correct grease, which is actually specified in the list of lubricants for the various crane models, applying the grease uniformly is also very important. The grease spray system makes this very straightforward. It comprises a spray unit and a 4-piece lance set. The three straight lances, which are different lengths, and a curved lance with an angle of 90 degrees, can be used to lubricate any telescopic boom perfectly

and ergonomically. And the grease is applied both internally and externally.

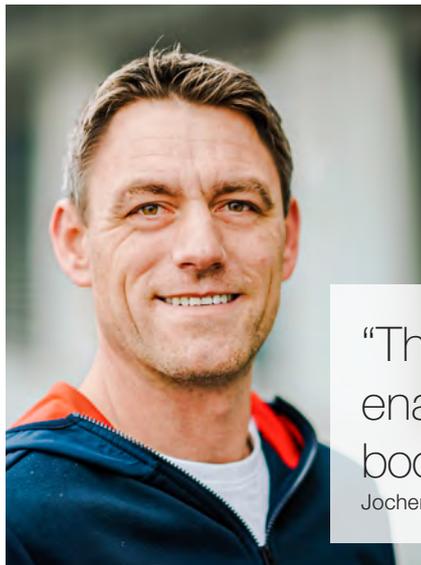
We worked on the spray unit for a very long time. It comprises the spray gun head and the cartridge holder. It was important to us to use standard grease and conventional 400 g cartridges from Lube-Shuttle. Firstly, this means significantly lower costs, and secondly, the grease contains no solvents and therefore protects both the environment and human health. Its high viscosity meant that developing the spray head was far from easy. We had to adopt a trial and

error approach, but we got there in the end. Now you can achieve a perfect lubrication result using the Liebherr grease spray system – not too much and not too little.

The grease spray system is powered by compressed air using a conventional Euro coupling. And there is one special thing to bear in mind for crane models from engine level 5 – they have a quick-release coupling in the undercarriage which enables you to tap into the compressed air supply. This means that where necessary, you can lubricate



The grease spraying rod can be used to grease the telescopic boom both internally and externally.



the boom efficiently on site without requiring an additional compressor.

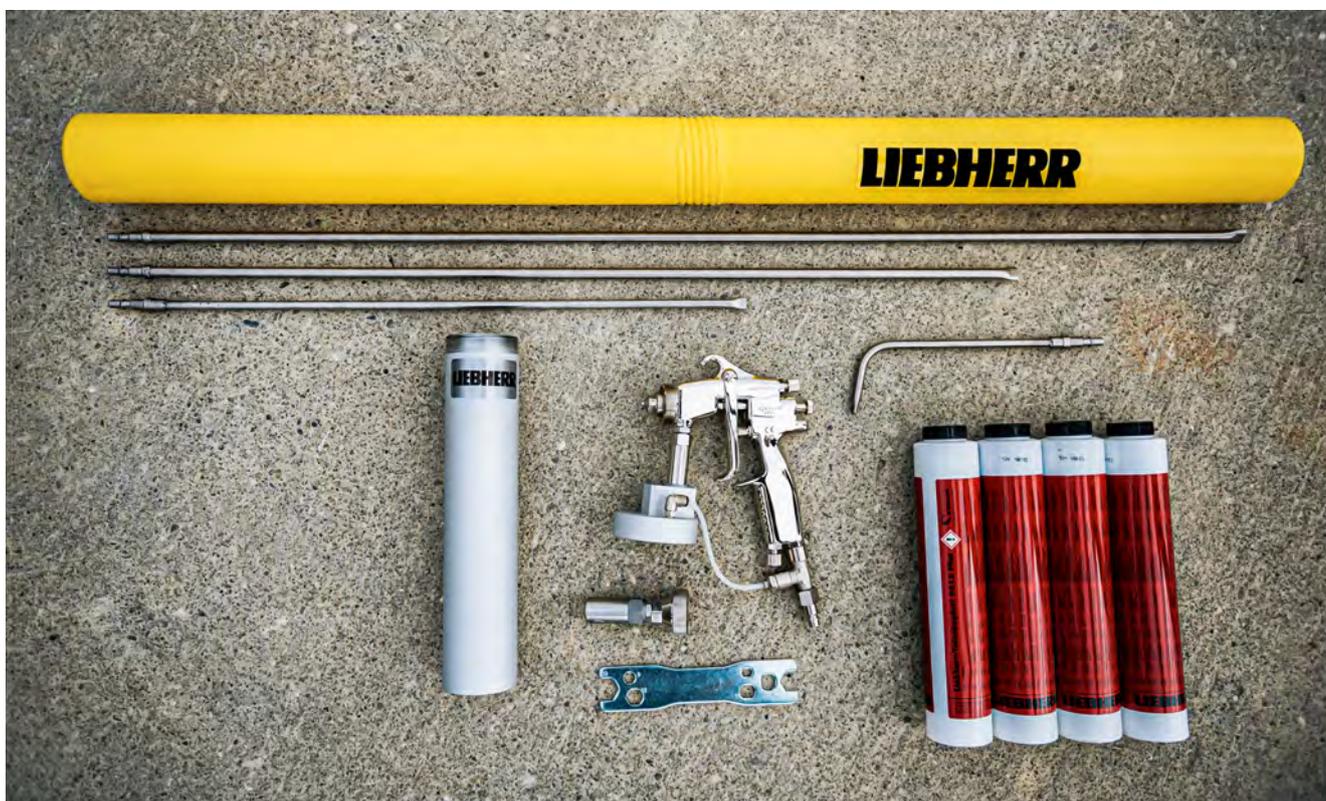
In addition to a perfectly lubricated boom, the system also delivers other benefits as it puts an end to problems with blocked lubrication nipples and bushings in the

“The grease spray system enables you to lubricate the boom better and more efficiently.”

Jochen Werner, Telescopic Boom and Equipment Designer

bearing plates. Furthermore, the positioning holes burned into the boom can be moved to an area of the boom section which has a lower static load.

The complete grease spray system has been included as standard on all crane models launched since December 2017. Other crane models have already been retrofitted with the system. It can of course be used on all models. The new system has been well received on the market. Around 500 systems have already been ordered separately“.



Are you interested in a grease spray system? You can order one in MyLiebherr or through your local Liebherr service partner. The part number is 96010020.

www.myliebherr.com



More than just tulips...



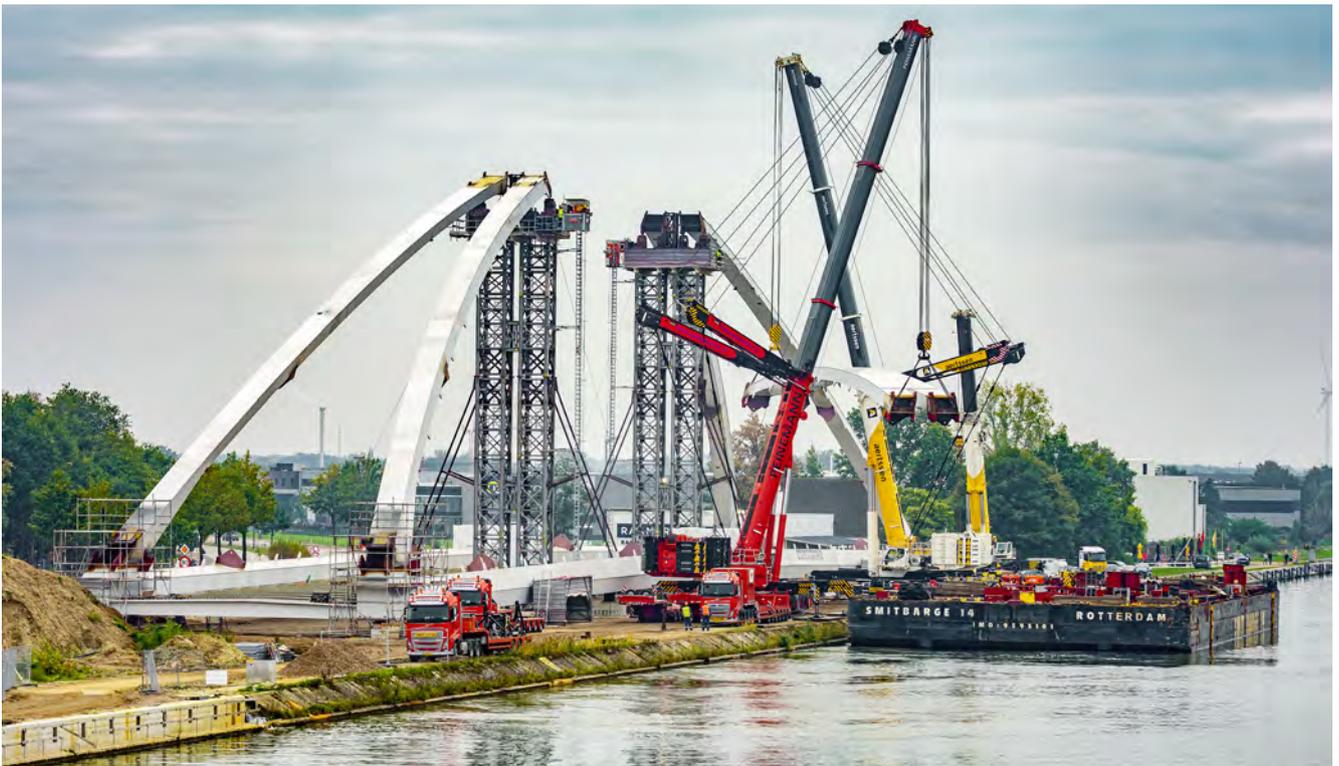


The Netherlands – an El Dorado for crane fans in Europe

On average and relative to the population, there are more than twice the number of our mobile cranes on the roads and sites of the Netherlands than anywhere else on the continent. The same is likely to be true for machines built by our competitors. If you travel through what, in terms of area, is a fairly small country, moving westwards towards the North Sea, there is no way of missing the steady increase in large construction machines and cranes of all types. However, the undisputed Mecca for crane spotters is the port metropolis of Rotterdam. Moving around the site and hinterland of what is by far the busiest seaport in Europe, occupying an area of around one hundred square kilometres, you will find it difficult to travel far without seeing a crane.

There are around 900 mobile cranes bearing the Liebherr logo currently in action in the Netherlands. If we add the mobile construction cranes built at the Liebherr plant in Biberach to this total, there are well over one thousand of our machines travelling through the bustling kingdom in Western Europe. Over the past 50 years, in addition to a significant number of mobile cranes, we have also supplied a very large number of large and small crawler cranes to what is a very important market for us. On the basis of the country's historical background of a large maritime and colonial power, the Netherlands has now become established as one of the most competitive exporting economies in the world as well

as having a significant, global transport and heavy haulage industry. In 2019, the country occupied position four in the list of major exporting countries in the world behind China, the USA and Germany, but in front of Japan. Furthermore, some major companies in the Rotterdam area, so-called bare rental companies, have specialised in renting significant numbers of mobile and crawler cranes to customers around the world. It hardly comes as a surprise, therefore, that an above average number of new machines leave our crane factory to travel to the Netherlands.



Guest appearance – many of the Dutch crane contractors are active throughout Europe or at least well beyond their own borders. Here you can see an LTM 1750-9.1 from Dutch contractor Peinemann giving a helping hand with the installation work for an arched bridge in Beringen, Belgium. The white and yellow Liebherr mobile crane of the same type is owned by Belgian group Aertssen.



At the end of the 1950s, our founder Hans Liebherr realised that a crane system which was as mobile as possible would deliver major benefits and as a result built a small tower crane on a truck chassis in the form of the KA series. The KA vehicles had an empty tank which could simply be filled with water, gravel or sand at the site for ballasting the crane. These early mobile construction cranes show that we have always been focused on building cranes which are uncompromisingly practical.

“We have around one hundred crane rental and heavy haulage contractors among our clientele”, says Han Rekers, who, together with around 40 colleagues, looks after the market for Liebherr Nederland B.V. from the outlet in Amersfoort. “Our partners include global players with massive crane fleets and medium-sized companies as well as lots of large and small family-run firms, some of which only have a few cranes”, explains Rekers. “They’re all very important to us, of course”.

High tech crane-based engineering

One of these partners, which also develops some enormous lifting gear, is global heavy haulage contractor Mammoet, based in Utrecht with a workforce numbering over 6,000 all over the world. The group, whose machines have a striking red livery, was also responsible for commissioning the first model of our Liebherr LR 13000 around eight years ago. This crane is the most powerful conventional crawler crane in the world, and we are currently manufacturing the sixth version of it, was used in the construction of the largest big wheel



An MK 88 Plus mobile construction crane owned by our customer Heros.



in the world in Dubai and handled gross loads of over one thousand tonnes for the assembly of massive jack-up legs for an offshore installation vessel in Bremerhaven.

“Large and small family-run firms are just as welcome to us as medium-sized companies or global players with hundreds of cranes”.

Han Rekers, Managing Director of Liebherr Nederland B. V.

The fact that Netherlands is home to some impressive crane and technology-based engineering and that the country does not just rely on picturesque or cute clichés such as



Often on the move in Europe's busiest port: the new LTM 1230-5.1 of crane operator Boekestijn Kraanverhuur B.V. here on the coastal strip near Rotterdam.

tulips, cheese or windmills is also shown by the history of mobile and folding construction cranes. The development of these mobile construction cranes as we know them today originated in the Netherlands where they received a massive boost from a well-known manufacturer. We now also have some very successful representatives in that market in the form of the Liebherr mobile construction cranes in the MK series whose undercarriages are made here in Egingen. Over one thousand MK cranes have now left the assembly belts at our sister plant in Biberach, with almost one in five of them being delivered to our Dutch customers.

One-quarter of the Netherlands is below sea level

One of the main reasons for the high density of construction sites and the resultant high number of cranes in our neighbouring country is without doubt the massive infrastructure that has to be maintained and permanently expanded there as a result of the country's geographical peculiarities. The Dutch have reclaimed large parts of the country from the North Sea using an incredible amount of technology. In fact, around one-quarter of the country is actually below sea level.

That means that regions along the coast, in particular, must be kept dry permanently. The Dutch Directorate-General for Public Works and Water Management, known as the "Rijkswaterstaat", currently manages a total of 1,500 kilometres of dams, dykes and weirs, which are equipped with countless pumping stations to protect large swathes of the country from flooding and storm surges. Throughout the country, there are thousands of bridges, viaducts and sluice systems, which have to be modernised and maintained. Mobile and crawler cranes are essential for all this type of work, of course.

Some of the photographs on these pages have been taken by Jelco Stouthandel, a crane operator employed by Peinemann, who has kindly made them available to us. He is a passionate photographer and a genuine crane fanatic who spends much of his free time looking for unusual jobs involving mobile and crawler cranes.

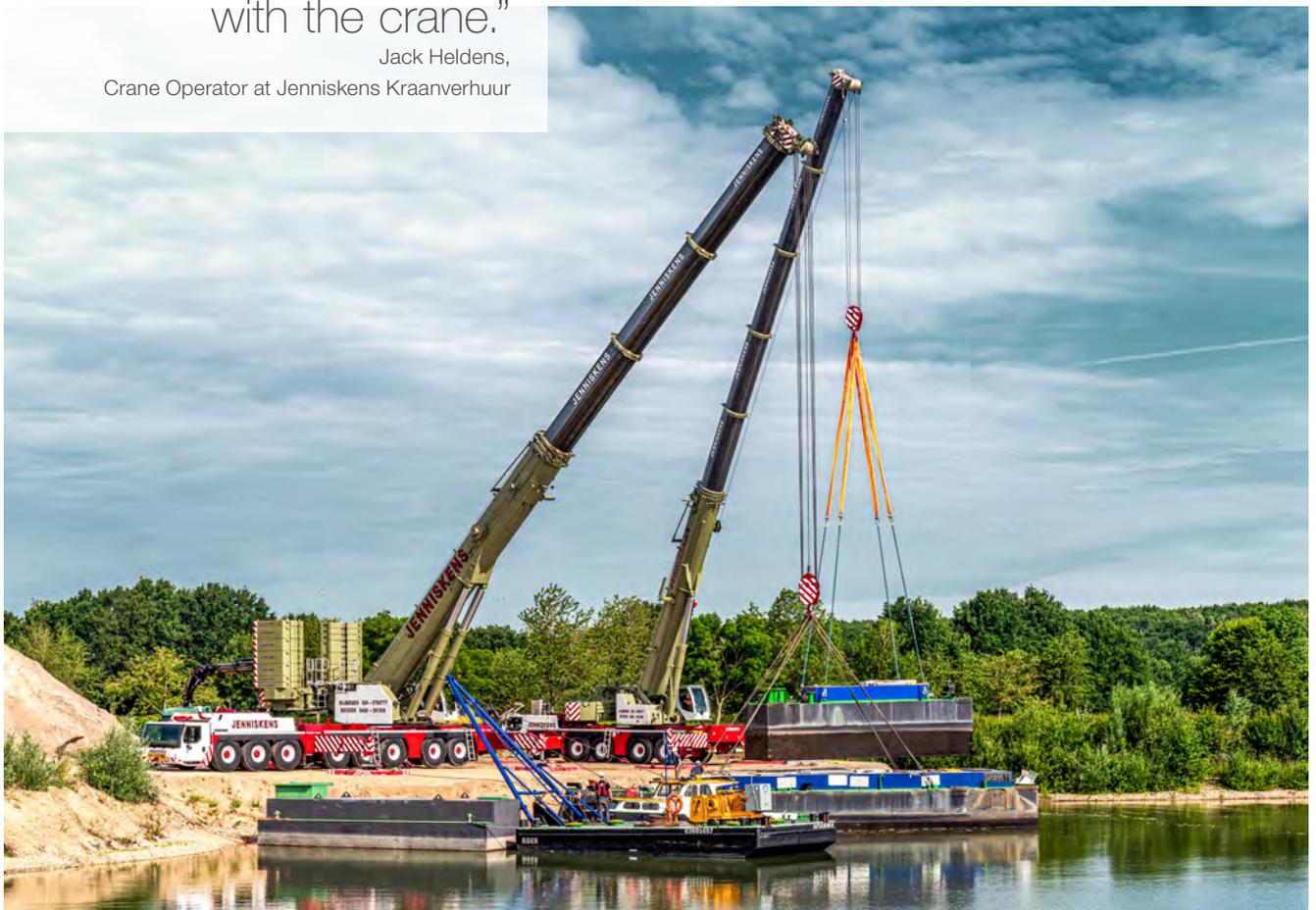


Jack Heldens, on the right in the photograph, next to his colleague, Eric Claassen, controlling the LTM 1230-5.1.



“The crane is absolutely fantastic. Without the VarioBallast® system on the LTM 1450-8.1, we would have been unable to complete some of the work on constricted sites with the crane.”

Jack Heldens,
Crane Operator at Jenniskens Kraanverhuur



Teamwork – Jenniskens Kraanverhuur, based in Nimwegen, is shown here dismantling a floating sand dredger on a lake in the south-west of the country. An LTM 1230-5.1 is currently hoisting a massive floating section of the vessel out of the quarry lake. The LTM 1450-8.1, shown on the left, has become an extremely popular mobile crane, even outside the kingdom’s borders. Over a dozen models of this modern 8-axle Liebherr mobile crane can now be found on roads in the various Dutch provinces.



Futuristic – Mammoet's Liebherr LR 1500 crawler crane in action building a modern art depot for a museum in the centre of Rotterdam.

A catalyst for positive change!

A Leica in her hand, safety belt around her chest and long blond hair under her helmet – Ashleigh Kaliszuk travels the length and breadth of Canada for crane jobs. Sometimes as a crane operator, other times as a photographer. We found out about the young Canadian through her blog in which she makes no secret of her love of the machines, her passion for the cranes of the future and all her power and conviction. Fortunately, we found her and invited her for a chat.



What we did not know at the time was that her favourite job ever was to photograph the launch of the new LTM 1250-5.1 for Liebherr Canada. But of course we were delighted when we found out. And it is really impressive to see that Ashleigh Kaliszuk's expertise and enthusiasm as a crane operator are combined with her determination to help forge the crane world of tomorrow – in a truly positive manner. "Our

industry has such a strong work ethos. Long days, extreme weather conditions and challenging teams demand that we demonstrate stamina combined with obvious management strength. At the same time, we are unfortunately still miles away from diversity and inclusion", says Kaliszuk.

Ashleigh Kaliszuk, who grew up in British Columbia and now lives back in Vancouver after years in Alberta, has had this experience herself during her professional career. Not only in the male-dominated construction industry, but also when she transported millions of dollars across the country as a security guard. "But I never really accepted the ideology that I can't work in male-dominated industries because of my sex," she clarifies. "

Ashleigh became a crane operator twelve years ago when she was working as a scaffolder in Alberta. "After I'd been there a year I started to operate the equipment myself and started training on a mobile crane." Today she operates a whole host of models, including rough terrain and all ter-

I never really accepted the ideology that I can't work in male-dominated industries because of my sex."

Ashleigh Kaliszuk

rain hydraulic cranes. "The biggest crane I've ever operated was the Liebherr LR 1200 crawler crane. I installed a pumping plant for a tank farm with it."

And when Ashleigh Kaliszuk is not behind the controls of a crane, you can generally find her behind a lens. She taught herself the techniques for this "by reading photography books whilst I waited in the crane for the next job." Like everything in her life, she regards photography as an ongoing process in which she continues to hone her skills. "I now create wildly diverse content, I also write articles, prepare seminars and campaign for women's rights."

Her great, honest and natural pride in her job in the crane is closely related to this sense of commitment. "I was really



inspired when I joined the Alberta Division of the ‘International Union of Operating Engineers’ six years ago. The recently formed women’s committee, which I am a member of, is an excellent opportunity to drive forward the objectives of our female members.” Ashleigh’s main concerns for all female crane operators are quite simply having reasonable working conditions – from having a voice and career opportunities to functional clothing and an end to all discrimination.

“I could talk forever about this which is why I blog so much”, she laughs and puts forward her very own personal mission: “I want my message to reach the masses. I want to challenge anybody who refuses to accept change. I want to inspire women, not just to persevere as a crane operator, but to be passionate about the job. I’m incredibly passionate about helping my colleagues. And it would be negligent not to be a catalyst for positive change. Do you know what? If that means telling everybody about my good and bad experiences, then I can definitely say: Bring it on!”



Find out more about Ashleigh Kaliszuk



Blog: www.ashkaleigh.com
Instagram: www.instagram.com/ashkaleigh
Facebook: www.facebook.com/ashkaleighphoto
LinkedIn: www.linkedin.com/in/ashleigh-kaliszuk-24a12789



And the Winner is ...

We were delighted to receive so many answers from all over the world. And the vast majority of them were correct: Yes, it was the LTM 1080/1 L!

We asked which 4-axle LTM crane from many years ago had its front outriggers between the first and second axle (UpLoad 01/2020, page 27).

We built the LTM 1080/1 L around 20 years ago specifically for customers in the USA. The extended crane had a long axle spacing, which delivered benefits for

licensing in many US states. But we must admit that its appearance took a bit of getting used to.

So many entered our competition, we decided to award five rather than three models of the LTM 1090-4.2 as prizes. Congratulations to the winners:

Nadine Sailer, Germany
Torsten Lange, Germany
Tavis Sayers, USA
Clint Debner, Australia
Martijn Jacobs, Netherlands



The LTM 1080/1 L was delivered between 2001 and 2005, mainly to customers in the USA.



Twinkling like One Thousand and One Nights



Crane history in the Persian Gulf

Much more than a geographic description – the land of the morning sun. It is where the sun comes up, looking from Germany at least, and twinkles – in the classic One Thousand and One Nights and at the end of the last millennium when Burj Al Arab, which cost 1.5 billion US dollars, drew international attention to itself in 1999. The 321 m hotel built on an artificial island marked the start of Dubai’s dazzling rise as one of the most popular cities in the world – and was also a spectacular job for the first Liebherr cranes delivered to the United Arab Emirates.

Delivery started in 1997, the year in which Hong Kong’s sovereignty was transferred to China. The Labour Party under Tony Blair forced a change of government after 18 years. And Madeleine Albright became Secretary of State in the USA. So it was a long time ago. It is also a long time ago that the seven emirates on the Persian Gulf between Saudi Arabia and Oman were not among the most popular tourist destinations in the world. This has changed drastically, above all for Dubai, which today is also at the top of the international league in terms of financial transactions, real estate, infrastructure and trade and passenger numbers. Nothing appears to be impossible here.

At the time, when the developers decided to set new standards in architecture and luxury by building the Burj Al Arab Hotel and winning over the hearts of globetrotters, the Liebherr plant in Ebingen did not have an outlet of its own in the Emirates. “Nevertheless, we used four Liebherr mobile cranes with lifting capacities between 70 and 300 tonnes

when we had to position a 65 tonne cross beam on the sail-shaped building”, says Hilary Pinto, thinking back. He is the founder of the Al Faris Group and is now one of our largest global customers with 380 Liebherr cranes.

The first of many mobile cranes had been refurbished as a used crane during summer 1997 in Ebingen before it crossed the sea to the Persian Gulf. It has been followed by around 670 more vehicles to date. Whilst the cranes arrive at the ports of Dubai or Abu Dhabi fully assembled, the sales and service team are located in the branch office opened in 2005 in Dubai’s free trade zone, Jebel Ali Free Zone. A total of 14 staff at Liebherr Middle East FZE are responsible for the cranes shipped from Ebingen and provide support for more than 50 customers in the seven Arab Emirates.

“30,000 hours of service and a service life of over 15 years are absolutely normal in this region”, says Holger Amann, who has been in charge of business for Liebherr in Dubai since 2007. “But the environmental conditions are extremely harsh here – during the summer the vehicles are exposed to temperatures of up to 50 degrees in the shade. Then there is the salt and sand in the air – and nevertheless the cranes are not simply replaced after four or five years as is normally the case in Europe, for example. Our engineers therefore have a full-time job here!”

Amann grins as he talks. Full-time in these latitudes really does mean 24/7. Non-stop. Around the clock. “End of the working day, weekend, public holidays? Not here. You can phone service providers day and night and be sure that they will come out straight away”, says Amann.

In keeping with these unusual times, the locations are also often pretty extraordinary – lots of cranes are involved in bridge construction in the middle of the desert or on islands extracting oil or hoisting large yachts into the sea.



Handover at the Liebherr outlet in Dubai – Sveakran takes delivery of two new mobile cranes (LTM 1160-5.2 and LTM 1300-6.2).

“Our customers expect competent service around the clock – and we provide it.”

Holger Amann, Managing Director Liebherr Middle East FZE



The Al Faris Group, a family-run business founded in 1992 with a 3,300-strong workforce at ten sites in and outside the UAE has also been involved in the special projects, and continues to be involved in them. Several cranes, including the largest Liebherr cranes in Dubai, were recently in action at the site of the EXPO 2020, which has been postponed until 2021 – the LTM 11200-9.1, for example, the most powerful mobile telescopic crane in the world.

There is now also a Liebherr customer just one kilometer away – crane rental contractor Sveakran is also based in the free trade zone and recently expanded its fleet with two new mobile cranes. The third is already on its way, the fourth has been ordered. Omran, Sveakran’s parent company, which has been successfully renting Liebherr tower cranes for years, has had good experience with “Made in Germany” machines and people. Salah Mohamed, Managing Partner of the company, explains: “The staff are very committed, the technology is state of the art and spare parts are delivered quickly. Here in Dubai we particularly appreciate the German virtues of punctuality, quality and reliability.”

Personal relationships with customers in the UAE, which is a former British and Portuguese colony and did not win its independence until 1971, are just as important as everywhere else in the world: “Working with customers is based on a relationship of deep trust”, says Holger Amann. The cultural and ethnic diversity in the country certainly makes the job an interesting challenge. The country has a population of around 10 million and some of them earned a great deal of money at the start of this millennium. “Between 2008 and 2011, the international financial and debt crisis meant that much of the activity in the UAE came to a halt. Then we had another major upturn until lots of things were made more difficult again due to the Corona virus. Fewer tourists, a falling oil price and less international freight traffic are typical for the year 2020, and of course this has directly affected the UAE.”



Al Faris erects 42 steel elements for the EXPO 2021 using the Liebherr LR 11000 crawler crane.

However, the cities within the UAE are still places that never sleep. And if somebody does fall asleep? They might miss a Liebherr crane hoisting a whale shark out of the aquarium into the open sea. This is what happened a few years ago at Atlantis The Palm, the well-known luxury hotel on the largest artificial island in the world, the Palm Jumeirah. That did not even feature in the collections of One Thousand and One Nights, which date from 250 years AD. But it would have fitted perfectly in the Orient, or as Holger Amann calls it: “Disney Land for adults”.

The world with Liebherr





Coordinating digital efforts

Digitalisation disrupts and transforms how companies will operate in the future. How does a diversified Group like Liebherr deal with this shift? Five questions for Kjeld Jespersen from Liebherr-International AG.

Mr. Jespersen, how does digitalisation affect the Liebherr Group?

Digitalisation affects all of our divisions. Ultimately, we have to answer the following question: How can we deliver on our promise of providing the highest quality products and services and go one step further to drive innovation and efficiency through digital means?



We see digitalisation as an opportunity to enhance existing services and to develop completely new business models. The Remote Service App makes it possible to identify problems remotely while servicing a machine thus speeding up condition monitoring. The Crane Planner 2.0 is a new digital service that bundles our expertise in jobsite installations into a format that will allow our customers to select the ideal equipment for their jobsite.

What is the greatest challenge the Liebherr Group will face in coordinating this digital transformation?

The greatest challenge will be to effectively manage and prioritise our digital efforts as a diversified company. While

digitalisation offers a whole array of new technologies, it is vital not to lose sight among these possibilities, but to ensure that new technologies ultimately serve our customers. This is in fact one of the considerable strengths of our divisional structure: every division is in very close contact with its customers, understands the challenges they are facing, and can come up with individually tailored solutions.

However, at the same time it is equally important to continue to work on identifying overlaps between the divisions. Rather than exploring one technology separately in various divisions, we need to bring the right people together across divisions to achieve this. Sharing experiences transparently and collaborating on common issues enables us to use synergies and drives efficiency.

What measures are you taking to promote transparency and collaboration between divisions?

We have established a digital governance structure to manage the digital project portfolio, facilitate cross-divisional collaboration, and oversee a network of internal experts. At the top level of this structure, we have initiated a digital board that consists of the divisions' managing directors and acts as a decision-making body. It agrees on cross-divisional approaches and the best practices to be adopted by all divisions.

Below this level, we have established a strategic advisory board as well as technology groups. The technology groups explore external technology trends and share experiences across divisions, while the strategic advisory board examines the strategic side of things and possible new business models.

Defined project teams then work together on cross-divisional projects. We have also established task forces that look specifically into the necessary infrastructure for new digital solutions across the board.

What digital trends are you currently exploring in these technology groups?

We have to differentiate between temporary and long-term technology groups.

The goal of temporary technology groups is to gain concentrated knowledge about one very specific topic in a short space of time and share this information across divisions. We recently had a group explore building information modelling (BIM), for instance.

Long-term technology groups, on the other hand, periodically bring together experts from all divisions to exchange experiences and best practices on broader topics. This includes a technology group on Analytics & Predictions, where machine data and advanced data analytics are used to predict scenarios and one on Industrial IoT, where the infrastructure and architecture that we'll need for industrial IoT solutions is explored. While the specific application of a technology and the final product may differ between divisions, there will always be overlaps and the possibility to gain insight from other experiences.

Ultimately, we have to answer the following question: How can we deliver on our promise of providing the highest quality products and services and go one step further to drive innovation and efficiency through digital means?

What are some of the most pressing matters across divisions and industries that could be solved by using digital means?

Two closely-related topics that impact most of our divisions are condition monitoring and remote services. Regardless of whether the Liebherr product is a mobile crane, an aircraft landing gear or a refrigerator – each customer wants their product maintained correctly and relies on our quick customer service to have

as little downtime as possible. Different gateways, IoT infrastructure and analytic capabilities provide us with a clearer view of a machine's current condition, identify problems faster and even use data to predict when maintenance will be necessary in the future.

Another important matter is the use of digital tools to enhance our customers' experience in communicating with us. In our private lives, we purchase effortlessly through big online retailers, view and manage all our past transactions and can use various media to engage and communicate with the retailer – both online and offline. We believe our customers will expect this kind of digital experience from us as well, while still valuing the close, personal relationships with sales representatives. We will therefore need to answer the question of how we can best use digital tools that will not replace but augment this personal relationship and improve our overall customer experience.

Condition monitoring:

The concept of condition monitoring is based on regular or permanent recording of the machine condition by measuring and analysing physical variables.

Making cold from the sun

Lots of objects have a story behind them, but the one about a refrigerator dating from 1994, which stood forgotten in a warehouse, is a very special one. It features about historians and developers, the sun, Africa and the birth of modern energy-saving household appliances from Liebherr.

An unexpected discovery

Sometimes chance is the key to life. And it was chance that led Hansjörg Steinhorst from the Liebherr Archive to track down an invention that had been almost completely forgotten. It all began in autumn 2019 when he met local historian Johannes Angele, who told him about his historic collectors' item – a Liebherr solar refrigerator. Hansjörg Steinhorst could hardly believe his ears. Although he had heard about this refrigerator, it had been lost to the world for almost three decades. A few

but also a very difficult time. CFCs were the talk of the town as they were blamed for the greenhouse effect and the fact that the ozone hole was growing steadily. We thought at the time that we were in the middle of a generational change, and we were right." The media were reporting almost daily about the environmental damage caused by greenhouse gases such as CFCs and FCs (fluorocarbons). Greenpeace was drawing attention to the situation by staging some sensational stunts. And people took to the streets to show their support for the environment. Then in 1993, the three developers made a long-awaited breakthrough – Liebherr expanded its product portfolio with its model KT 1580, the first ever CFC and FC-free refrigerator with the same insulation as a freezer. This marked the point at which Liebherr switched its focus to exclusively energy-saving appliances.



Hansjörg Steinhorst

Johannes Angele

days later, Johannes Angele sent two photos showing that it really was a KT 1580-Solar in its original packaging – a faded cardboard box on a wooden pallet. "When I saw the pictures, I was absolutely blown away", says the archivist, "I wanted to find out more straight away and I immediately started re-searching." He discovered an incredible story.

Innovation at the time of the ozone hole

The early 90s were a time of change for the team of developers led by Wilfried King, Herbert Gerner and Matthias Wiest at Liebherr-Hausgeräte GmbH in Ochsenhausen. In 1989, the United Nations had agreed a ban on chlorofluorocarbons (CFCs) in the Montreal Protocol, which was due to come into force in 1995. The entire cooling industry was frantically trying to develop refrigerators and freezers without CFC refrigerants", says Matthias Wiest, a member of the current management team in the Cooling Division, looking back. Liebherr developers were also working hard on the future of refrigeration in their laboratory at the Liebherr Plant in Ochsenhausen surrounded by wooden walls, cables and measuring instruments. Wilfried King, the then Manager of Technical First Principles Development, looks back: "That was an exciting,

of Appliance Electronics. But the electricity for the appliance still came from a socket, and so it still indirectly assisted the greenhouse effect. So the developers starting to upgrade their CFC and FC-free refrigerator with a photovoltaic power source. "The KT 1580 was ideal for converting to solar. It was our technology project. We hoped that it would propel Liebherr to being the real innovation driver in the industry", says Wilfried King. The conversion was a success. In fact, the refrigerator was available to buy in a modular system, on its own or with a solar panel and battery, which enabled the appliance to operate for a whole week without sunshine. "And we even looked further into the future", continues Wilfried King. "Our idea was to take solar refrigerators to small villages in Africa which were not connected to the power grid, to provide refrigeration for medication at rural health centres, for example."

When ideas grow into something bigger

1995 became the year of the KT 1580-Solar. Awarded "A" from what was then the brand-new European energy label, making it a "top saver", Liebherr dedicated an entire stand to it in April at the first ever Climate Protection Trade Show

in Berlin. In August it received a mention in the Frankfurt-er Allgemeine Zeitung: “At 144 litres, the washing machine-sized refrigerator has a larger capacity than previous 12 V appliances, is suitable for use in tropical climates and can be used where there is no mains electricity supply”, the newspaper proclaimed. Ultimately, however only around 50 units were ever made. “We were very proud of our invention. But as is the way with lots of technology, sometimes you are simply ahead of your time”, says Matthias Wiest. Wilfried King agrees: “Nothing catches on straight away. You can never be sure that a development will actually last. A new idea is like a tiny plant. It can grow and then quickly wither. Or it can grow slowly, leaf by leaf, until it becomes a tree.”

At the end of the day, the idea behind the KT 1580 really did grow into a tree – even without a solar power supply. The refrigerator is still regarded as the prototype for Liebherr’s energy-saving household appliances today.

It reached Africa after all

But how did the solar refrigerator suddenly appear almost three decades later in local historian Johannes Angele’s warehouse? In 1998, after the KT 1580-Solar had almost disappeared from the Liebherr product range, Johannes Angele was looking for solar-powered refrigerators for Ochsenhausen-based overseas aid organisation Piela Bilanga e.V, which supported charitable projects and schools in Burkina Faso in Africa. The organisation had equipped the village school at Piela with photovoltaic modules in 1991 and wanted to provide the local population with greater support in the form of solar technology. Liebherr still had a few models of the solar refrigerator in stock. The organisation bought two of them. One was sent on a long journey. “At the time, our organisation was supporting Souleymane Sow, a young man from Burkina Faso, who had made a great impression on us with his technical expertise during the installation of the



Herbert Gerner and Wilfried King



Souleymane Sow

photovoltaic modules in Piela village. We decided to make a collection for him to enable him to train as an engineer in Germany”, recalls Johannes Angele. “When I graduated, I went back to my homeland and started a solar and computer technology company”, says Souleymane Sow. The organisation sent him one of the two solar refrigerators. And that appliance is actually still working today – as a training example of how to refrigerate using the sun’s energy.

Back to where it all started

Hansjörg Steinhorst from the Liebherr Archive personally took charge of the last remaining KT 1580-Solar. After making a donation to Piela Bilanga e.V, he took this important piece of Liebherr history back to Ochsenhausen. Once it arrived there, the refrigerator was reconnected with its solar panel in exactly the same development laboratory in which it was first created under the watchful eye of its inventors, Wilfried King and Herbert Gerner. The KT 1580-Solar is now part of the historic collection and reminds visitors of the time when Liebherr household appliances became energy-saving heroes.



Find out more:
www.liebherr.com/solarfridge



CFCs, FCs and the greenhouse effect

Greenhouse gases CFC (chlorofluorocarbons) and FC (fluorocarbons) were used as foam blowing agents and refrigerants in refrigerators and freezers. They were known to cause global warming. CFC, in particular, played a major role in the destruction of the ozone layer and the creation of the ozone hole. Starting with the KT 1580, in 1993 Liebherr started producing refrigerators which did not contain any CFCs or FCs.

Whatever you want.



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