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# Conexpo Magazine

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2023

## LIEBHERR



In the spotlight across North America **p. 10**

Intelligent, connected, automated: our future-oriented technologies **p. 29**

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On your  
**side**  
**site**

# Conexpo 2023 On your site



**The active shareholders of the Liebherr Group (f. l. t. r.):**  
Jan Liebherr, Stéfanie Wohlfarth, Sophie Albrecht, Philipp Liebherr, Patricia Rűf, Johanna Platt, Isolde Liebherr, Willi Liebherr

## Dear guests,

Welcome to Liebherr at Conexpo 2023. We are pleased that we can once again present our innovative products and solutions to the global public during these five days here in Las Vegas.

Our exhibition motto this year is “On your site,” representing over 30 exhibits from the areas of construction machines, cranes, material handling and components. “On your site”, however, means to us that we are not only at your side during the exhibition, but always and everywhere fulfilling customer needs: Whether on the construction site with our efficient machines or with our individual advice, services and comprehensive solutions. This is reflected by exciting stories about our products in operation on various construction sites across North America which are presented in our second chapter. Read for example, how infrastructure meets renewable energy with the help of our drilling rigs or how our high-top cranes handle high load capacities on a Miami jobsite with its hot and humid conditions as well as seasonal hurricanes.

In our third chapter, we show how we are always “On your site” with new technologies. With our concepts for the construction site of the future, we are not focusing on just one technology to reduce emissions. At the Liebherr Group, we are instead pursuing an approach that is open to different technologies. You can experience what this looks like in our stories about our products in use in different fields of application. Also read how we devote ourselves to the digitalization of our industries. Find out, for example, how our products help to create a safe and future-oriented working environment or how our digital solutions are preparing the intelligent construction sites of tomorrow.

Our declared goal as a technology company remains to support our customers and partners to the best of our ability, all true to the motto: On your site. We hope you enjoy reading our Conexpo magazine 2023.

**Dr. h. c. Dipl.-Kfm. Isolde Liebherr**      **Dr. h. c. Dipl.-Ing. (ETH) Willi Liebherr**  
Presidential Committee of the Liebherr-International AG Administrative Board



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# Liebherr on your site – then and now

In 1949, Hans Liebherr presented his first mobile tower crane at the Frankfurt Autumn Fair in Germany – but the presentation was quite a disappointment for the company founder. “After the fair, I could have actually stopped my crane production,” he commented. Instead of giving up, Hans Liebherr fought his way through, and thanks to his determination and entrepreneurship, turned what was then still a small construction company into a leading global manufacturer that helped shape technological progress in many industries. All his perseverance has paid off. At the first Bauma in 1954 in Munich (Germany), Liebherr was able to exhibit numerous

## A journey through the years at Conexpo

### Before Conexpo: Liebherr coming to America

After twenty successful years in Europe, Liebherr expanded to the North American continent. In 1970, Liebherr-America Inc. was founded to be closer to customers and provide the level of service consistent with Liebherr’s core values. Liebherr-America started supplying the North American market with crawler excavators, material handlers and tower cranes, with more products to follow as it started to grow to the size we know today.

Conexpo got its start in the early 20th century. Originally called the Road Show, it was held in a variety of large cities across the country, including Columbus, Detroit, and Chicago before finding its home in Las Vegas in 1996. There it officially became the largest exposition held in the Western Hemisphere. Various organizations sponsored and hosted the show throughout the years, eventually forming the Association of Equipment Manufacturers (AEM) with Liebherr becoming a member in 1992.

### Conexpo 1981: Standardizing worldwide

1981 was one of Liebherr’s earliest Conexpo shows, unveiling the second-generation of hydraulic excavators, including the R942, that featured their new “Hydra-Force” system. This was a complete redesign that allowed operators to always use 100 percent of the engine’s horsepower. The second-

other machines, including one of Europe’s first hydraulic excavators as well as a wide range of construction and truck-mounted cranes. With his down-to-earth manner, Hans Liebherr always took great interest in the needs of his customers. We have upheld this principle to this day, and will continue to embody it in the future, in line with the motto of our company founder:

**“We can only be satisfied when our customers are satisfied too.”**

**Dr.-Ing. h. c. Hans Liebherr**  
Founder of the Liebherr Group

generation lineup consisted of seven new excavators, which were introduced slowly leading up to the show, with the R942 being one of the first released to the public.

This was Liebherr’s first step towards standardization of its product lines worldwide, featuring not just an improved hydraulic system, but also a high lift circuit and mono-block gooseneck boom that allowed for an increased lift capacity of 25 to 30%. Other features included a reinforced, all-welded undercarriage and several new safety features in the redesigned cab. Details and features like these come standard today and were some of the earliest in their time, illustrating that Liebherr has always put safety and quality first.

### Conexpo 2002: Telescoping to new heights

By 2002, Conexpo had become very similar to what we see today: taking place in Las Vegas, Nevada, as the second largest tradeshow worldwide. With this larger scale came more impressive machines, and Liebherr’s newest line of tower cranes were no different. The TT crane model introduced a novel functional principle to the fast-erecting cranes sector – the telescopic jib. This allowed the crane to vary the horizontal outreach of the machine while under load. The line consisted of three different models, including the 32 TT, all offering maximum operating flexibility. Various jib lengths, hook heights, and jib angles gave an ideal crane

configuration for any task. It was the only telescopic tower crane that could continue operation immediately, as soon as the desired hook height was reached, distinguishing Liebherr from competitors and making it a spectacle at Conexpo.

### Conexpo '23: Liebherr on your site

Today, Liebherr comes with a whole arsenal of new products and technologies across various product segments to highlight at Conexpo, including energy efficient options like the LR 1700-1.0 crawler crane, the zero-emission battery powered drilling rig LB 30 unplugged, and a range of digital solutions and assistance systems to enable customer success in the construction and earthmoving sector as well as in the material handling industry.

The LR 1700 1.0 crawler crane incorporates many of Liebherr’s crawler crane developments and technical innovations. This crawler crane is specifically designed to work in the often-remote locations of wind turbine sites. It is one of the many machines Liebherr has designed to put sustainability in the forefront and usher in the energy revolution. With the LR 1700 1.0, operators get a 10 to 15% higher lifting capacity, making it the best in its class. It also features increased safety standards, accommodating new methods in wind turbine assembly, like installing rotor blades individually.



Not only can Liebherr machines help assemble clean energy systems like wind turbines, they can also contain clean energy systems by replacing their diesel engines with zero-emission battery power. Liebherr-Werk Nenzing GmbH offers nine different battery powered models, one of which is the LB 30 unplugged drilling rig. Operators can experience identical performance when compared to the diesel-powered rigs. The LB 30 also offers the flexibility of either being plugged in or battery powered, depending on the job requirements.

The optimum powertrain has a decisive influence on the efficiency of machine operation. With this in mind, Liebherr pursues a technology-open approach in developing hydrogen engines with high efficiency and very low NOx emissions with the same service life and maintenance intervals as diesel engines. In response to the trend of decarbonization, Liebherr also develops various hydrogen injection solutions for medium and heavy-duty engines, as well as large engines in the 427 to 610 in<sup>3</sup> (7 – 100 l) displacement range.

Conexpo attendees can also view the latest machines and technologies offered in Liebherr’s earthmoving and concrete technology segments. The TA 230 articulated dump truck is one of the newest members of the earthmoving family. Designed for rugged off-road use, its efficient drivetrain, permanent 6 x 6 all-wheel drive, reliable traction control and solid axle mounts enable the Liebherr dump truck to tackle any terrain. The new machine design of the new TA 230 is service-based and access to the entire engine bay facilitates daily maintenance work. Moreover, the new Liebherr mid-sized wheel loaders celebrate their premiere in North America at Conexpo 2023.



Liebherr's concrete technology segment will be rolling out their latest innovation, XXA 3 stability assistance, now offered in the 36 XXT truck mounted concrete pump. The XXA 3 stability assistance system guarantees stable working in any situation utilizing the XXT outrigger supports. This will allow for more support in tight spaces and on narrow jobsites.

Liebherr is constantly developing innovative technologies to ensure its machines are state-of-the-art and adapt to the inevitable digitalization of the industry. All digital solutions and assistance systems – be it condition monitoring for combustion engines or wear measurement for the monitoring of slewing bearings – improve safety, performance and machine service life.

Assistance systems like active personnel detection with brake assistant for wheel loaders help to increase safety and comfort on the jobsite. Vertical line finder, an assistance system in the LR crawler cranes, ensures the rope is in vertical position to prevent front and side pulls. No matter the technology, you can always find Liebherr on your site through the modern systems and solutions built into all of its machines.

Check out each of these and many other state-of-the-art machines as well as technical innovations at the Liebherr outdoor booth and connect with our product experts to learn how Liebherr can assist you on your site.



# 7 things you don't want to miss from Liebherr at Conexpo 2023

Liebherr is proud to be one of the largest exhibitors at Conexpo 2023! To make sure you don't miss anything, check out this list of the top seven highlights you should visit at the Liebherr booth this year:

## 1 Get hands-on in our demo area:

Watch our Liebherr construction machines operate in real time as they perform live demonstrations throughout the week. The demo area shows how to utilize Liebherr earthmoving machines in various applications featuring our brand-new TA 230 articulated dump truck, PR 766 crawler tractor, L 538 wheel loader and the 36 XXT truck mounted concrete pump. Watch each of these machines maneuver live and learn about the latest technologies and innovations Liebherr has to offer.

## 2 Shop our latest merch at the Liebherr store:

Looking to rep Liebherr? Stop by the Liebherr store at our Conexpo outdoor booth and find your favorite Liebherr items including scale models, T-shirts, jackets, hats and more. You can also shop for Liebherr 24/7 from our online store: [Liebherrshopusa.com](http://Liebherrshopusa.com) and ship anywhere across the USA. Don't miss out – grab your gear today!

## 3 Get up close with Liebherr machines:

From wheel loaders to concrete pumps, tower cranes, and more. Liebherr will be displaying more than 30 machines and exhibits covering 60,400 ft<sup>2</sup> (5,600 m<sup>2</sup>) of exhibition area. We are excited to highlight seven of our product segments including earthmoving and material handling technology, concrete technology, mobile and crawler cranes, tower cranes and deep foundation machines as well as components.

## 4 Take on the Technology Pavillion:

Learn about Liebherr's latest technology platforms at our technology pavillion located in the center of our outdoor booth. This pavillion will allow you to utilize multiple Liebherr programs such as Crane Planner, MyJobsite, MyNotifier, LiDAT and more! These digital solutions are designed to assist customers and industry partners on their site, as well as providing support for each individual project's daily operations and fleet maintenance.

## 5 Learn about Liebherr Components:

Dive into the vast world of components – from alternative powertrain solutions, digital products and services up to innovative technologies like the new members of our hydraulics portfolio, just to name a few. Drop in by the south hall, booth S80821 – there is more than meets the eye.

## 6 Discover the latest technologies offered in MyLiebherr:

Have you signed up for MyLiebherr? This online portal continues to push past the imagination of our digital services world and provides a central location for all Liebherr customers and service partners to access fleet management, parts orders, product documentation, and more. With these features, MyLiebherr is much more than a parts shop – it is the digital world around Liebherr's machines.

## 7 Find out how you can join the Liebherr team in our Career Center:

Meet with our Liebherr Human Resources uncapitalized Representatives to learn about Liebherr as an employer! With more than 1500 employees in the US, Liebherr has a rapidly growing footprint nationwide. Check out our latest opportunities, open job requisitions, and benefits of working at Liebherr and of course on our YouTube and social media channels.

# 7 Highlights



# In the spotlight

On your site across North America

## Commitment to North America

Liebherr's commitment to the United States and the North American market began in 1970 with the construction of two manufacturing facilities and the North American headquarters in Newport News, Virginia. Over the years, new companies formed to fulfill customer needs in various industries. In 2016, Liebherr USA, Co. was founded to bring ten of the Group's product segments under one company in the US, providing a simpler structure and broader reach to deliver an exceptional and consistent experience.

In 2020 Liebherr invests \$60 million into expanding the Newport News campus adding over 251,000 ft<sup>2</sup> (23,319 m<sup>2</sup>), further establishing Liebherr's footprint in the North American market. The expansion of the new campus and its facilities and services is helping Liebherr to better serve its customers and partners with excellence now and in the future.

With this continued growth comes key leadership provided by Managing Directors Kai Friedrich and Tim Gerhardt. Kai Friedrich joined Liebherr USA, Co. in August 2021 and serves as both Managing Director and Divisional Director of Earthmoving and Material Handling Technology. He was later joined by Tim Gerhardt who has been with Liebherr USA, Co. since January 2022. In the interview both Kai and Tim talk about Liebherr's expansion and commitment to the US market.

**Tim, Liebherr USA, Co. recently unveiled a newly expanded campus in May of 2022, what does this \$60 million campus investment mean for Liebherr?**

**Tim:** This is an investment for our future here in the United States. We have been slowly growing since 2016 and this expansion has established a solid footprint for each of our ten product segments in the US under the Liebherr USA, Co. umbrella. This new facility will also allow Liebherr to grow its market presence and better serve our customers spread across the nation through fulfilling product needs, creating a better distribution network, and providing the customization our US stakeholders are looking for.

**And what capabilities did this investment create for the future?**

**Tim:** This investment created a lot of physical space for our Newport News operations to grow into. We built a brand-new warehouse, workshop, training facility, and admin building, adding over 251,000 ft<sup>2</sup> (23,319 m<sup>2</sup>) of state-of-the-art facilities that benefit not only our internal staff, but also our distribution network providing a central location for both internal and external training operations. This expansion further enables and supports our entire core business across the USA through our shared services based in Newport News.



Kai Friedrich (left) and Tim Gerhardt (right): Managing Directors Liebherr USA, Co.





**“As reflected by our investment in Newport News, we will continue to support a growing infrastructure for Liebherr employees, our partners and our dealer network.”**

**Tim Gerhardt**  
Managing Director Liebherr USA, Co.

**With rapid growth comes job creation, how is Liebherr providing local workforce development in the United States?**

**Tim:** We know the job market is highly competitive, and it is critical we continue our efforts both on a regional and national scale. On a local level, Liebherr USA, Co. currently partners with Advanced Technology Institute (ATI) developing a pipeline of future talent and trade workers who develop experience with Liebherr machines. And with our new expansion, we now have a center for development where we can train Liebherr employees, partners, and dealers in real life applications at our Newport News facility. Going forward, it is critical that we continue to consistently find new ways of staffing for the future and evolving to meet our current employees’ needs.

**Can potential candidates connect with our hiring team at Conexpo 2023?**

**Tim:** Yes! We have a Career Center on site at our outdoor booth where anyone can speak with our HR representatives regarding job opportunities and the Liebherr Group. We can also make sure any potential candidates are guided to the correct contacts, making worthwhile connections at Conexpo.

**What is Liebherr USA, Co.’s plan for continued growth?**

**Tim:** As reflected by our investment in Newport News, we will continue to support a growing infrastructure for Liebherr employees, our partners and our dealer network. It is important all our product segments, shared services and distribution network are supported and heard to provide the best service possible to our customers.

**Kai, as Tim mentioned, Liebherr USA is working on rapid growth and development for the US market, can you share what sets the US market apart for Liebherr?**

**Kai:** The North American market is very important for Liebherr. In the US, customers are very diverse in size and needs, and this presents a huge potential for our company

and our unique product portfolio. We continually invest in cutting-edge technology and solutions. Our products are built from the ground up with key components we manufacture in-house to the highest standards based on our customer’s individual requirements and local applications. This allows us to stay competitive in the market and provide solutions to the challenges they face at their operation sites every day.

**And which product segments are featured at Conexpo 2023?**

**Kai:** Liebherr USA, Co. currently offers ten product segments under one mixed sales umbrella. We are showcasing the latest generation of equipment manufactured by Liebherr from various segments including earthmoving, material handling technology, mobile and crawler cranes, tower cranes, components, and deep foundation machines. We are also showing live applications of our earthmoving machines in our new demo area.

**With technology constantly evolving, what innovative technologies does Liebherr display at Conexpo?**

**Kai:** Liebherr has chosen a technology-open approach to reduce emissions as efficiently as possible, depending on the machine and application, in a tailored and functional way. At Conexpo, visitors can, for example, view some of our latest technology including the LB 30 unplugged drilling rig, an electric machine that can be powered wirelessly with a battery. Visitors can also check out a few other innovative technologies including our LICCON3 system within our mobile and crawler cranes, our XXA 3 stability assistance within concrete technology, and the latest updates of our Generation 8 earthmoving machines.



**“Liebherr’s task is to modernize the drives of its construction machines in such a way that they produce significantly less CO<sub>2</sub> – across the entire product life cycle.”**

**Kai Friedrich**  
Managing Director Liebherr USA, Co.

**Sustainability and reducing carbon emissions have become increasingly important in our industry, how is Liebherr supporting these initiatives?**

**Kai:** Liebherr is actively working on finding the best drive concepts for our product segments. We recently collaborated with the economic advisor Frontier Economics, where we conducted a comprehensive life cycle analysis of the greenhouse gas emissions generated by typical construction machines. Similar machines were equipped with different drive solutions and examined. These results showed that there is no one standard solution for selecting the right climate-neutral drives to be installed in construction machines. Liebherr’s task is to modernize the drives of its construction machines in such a way that they produce significantly less CO<sub>2</sub> – across the entire product life cycle. Looking at sustainable CO<sub>2</sub>-free or at least CO<sub>2</sub>-neutral drives, there will not be a single, one-size-fits-all concept for every application covered by construction machines. A compact wheel loader simply has different requirements than a crawler excavator for mining that are used in different climates and for different applications. In other words, a whole host of very different competences are required to develop drive concepts.

**What can our US stakeholders expect going forward?**

**Kai:** Liebherr will evolve to meet growing market demands. We will continue to provide developments in sustainable technology, cost-effective products, data optimization, and autonomous operations. It is of the most importance that we continue to manufacture and sell products that are efficient, safe, and benefit our customers.



# Repowering wind across the nation

Across the mountains of West Virginia, stretching through the plains of Indiana, all the way down to the desert of Arizona, Northwest Crane Service, LLC uses their fleet of exclusively Liebherr mobile and crawler cranes to build and maintain wind farms throughout the United States.



As a leader in crane, rigging and transportation, Northwest provides specialized crane services for the renewable energy industry. Since 2001, Northwest has been committed to executing each job safely and efficiently, providing full life cycle services for erecting, maintaining and repowering wind turbines throughout the nation.

At any one time, Northwest has several Liebherr cranes on wind farm projects throughout the country. Currently, they are utilizing Liebherr's LR 1600/2, LTM 1650-8.1, and LTM 1750-9.1 as each of these cranes are ideal for wind farm sites due to their specialized wind components and built-in safety features.

With traditional 260 ft (80 m) hub height wind turbines becoming less common, Northwest was faced with the challenge of constructing new wind farms with more complex 345 ft (105 m) turbines and looked to Liebherr to upgrade their fleet. After working with the Liebherr team, they added a narrow track LR 1600/2W to complement their existing LR 1600/2 machines. Northwest is the only company in the US with this configuration, and it allows the cranes to navigate the difficult terrain and minimize the civil work often associated with repower projects like these. "Northwest is a forward-thinking leader in the industry

and looks forward to utilizing this configuration for a variety of projects moving forward," noted Andy Hodges, Owner of Northwest Crane Service, LLC.

This mindset can also be seen in other projects such as the blade bearing replacements on turbines in West Texas. This job utilizes their new LTM 1650-8.1 to remove the old bearings and their LRT 1100-2.1 rough terrain crane as an assist crane to hoist the new components for installation on the jobsite. The LTM 1650-8.1 meets job requirements specific to the wind industry. Its wind speed allowances make bearing replacements safe as wind conditions change. This crane also adds a new tonnage class for their fleet and provides Northwest's customers with a more cost-effective machine for their projects. Due to the complexity of the lifts for this project, Northwest's in-house engineering team utilizes Liebherr's CranePlanner 2.0 to plan lifts and send them to customers in real time.

Liebherr assistance systems like VarioBase® help Northwest operate safely and more efficiently on many of their jobs including their repower project in the mountains of West Virginia. For this project Northwest utilizes three LTM 1750-9.1 mobile cranes equipped with Liebherr's 800-t upgrade (900 USt) and VarioBase® system to ensure operators can safely adapt the crane's supports to fit the environment.

Due to the mountainous terrain and narrow roads, this job requires several full and partial re-assemblies of the crane to get to each new tower. The LTM's ability to move with equipment in place, and its ease of erection and takedown allow for more flexibility when moving the crane in challenging conditions.

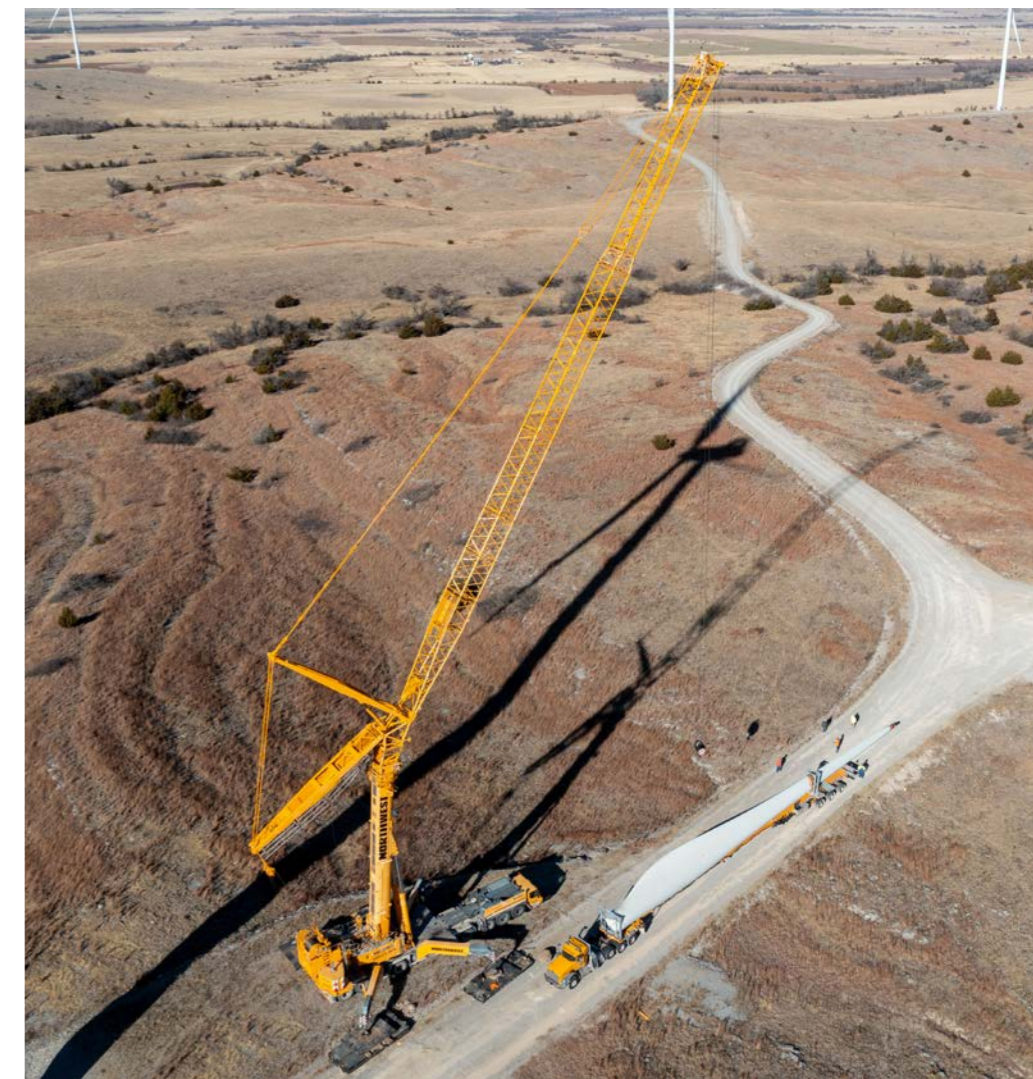
Hodges stated: "The collaboration with Liebherr was an essential component to both the initial award as well as the final execution of the project." Northwest always works closely with Liebherr to ensure every machine meets the necessary requirements of each individual project. "Liebherr's open lines of communication, advanced technology, and design play a big role in decision-making when purchasing new machines", noted Hodges.

Northwest Crane Service was founded in the northwest corner of Oklahoma, hence the name "Northwest." Over the last 20 years, Northwest Crane Service has seen continued growth and expanded their footprint across the nation.

"The cornerstone of the Northwest culture is a focus on safety, and we pride ourselves on our outstanding record and unwavering dedication to ensuring safe working conditions for our people, our customers and the environment," noted Hodges. Additionally, Northwest strives to provide their customers with the best and brightest personnel and most advanced equipment in the industry. "With a fleet of exclusively Liebherr equipment, Northwest is committed to excellence, and our cranes are no exception," said Hodges.

***"The collaboration with Liebherr was an essential component to both the initial award as well as the final execution of the project."***

**Andy Hodges**  
Owner of Northwest Crane Service, LLC





# High performance over multiple years

It doesn't matter what kind of heavy lift project is being completed in Mexico – as long as it is heavy, large or something that has to be placed high or wide out, that's where the LR 13000 owned by ESEASA comes into play. Handed over in Ehingen, Germany as the third LR 13000 worldwide in the market during summer 2016, the largest conventional crawler crane has been used in many projects over the past six years across Mexico.

Back in 2017, as part of the energy reforms in Mexico, the "Miguel Hidalgo" oil refinery in Tula started its modernization. Mexican crane contractor ESEASA carried out the hoisting work on behalf of construction contractor ICA Flour, using three Liebherr crawler cranes. They included the largest conventional crawler crane in the world,

the LR 13000. The crane job at the refinery comprised hoisting six tanks into position. Each of the tanks had a net weight of 685 USt (620 t). In a configuration with a 432 ft (132 m) main boom, including PowerBoom and the derrick boom together with 1,900 USt (1.725 t) of ballast, the crawler crane managed to complete the work with plenty in reserve. Today the tanks are used to store the carbon produced during the production process at the refinery. After the job was finished in 2018, the massive crane has shown up in Tampico.

## Steel colossus on the hook

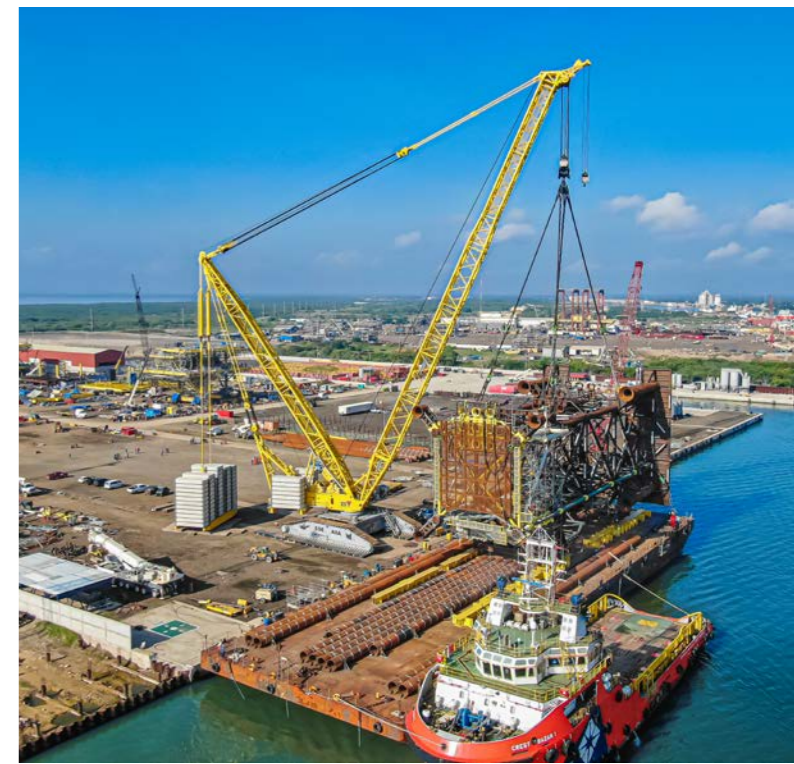
Tampico is on the Gulf of Mexico and is a major industrial center with its own port. A large number of industrial companies have made their homes on the banks of the Rio Pánuco, to enable them to ship their freight down the river to the sea. ESEASA also has a company site directly on the banks of the waterway. The company manufactured twelve oil platforms there for state oil group PEMEX. These were hoisted onto barges by the LR 13000 before being transported to the south of the Gulf of Mexico. The loads for hoisting were gigantic. Up to 1,350 USt (1.200 t) had to be positioned on the barges using a radius of up to 125 ft (38 m). The 3,300 USt (3,000 t) crawler crane is ideal for

this work and delivers significant benefits compared to the previous method for loading oil platforms. Normally the heavy components are loaded onto SPMTs (self-propelled modular transporters) using jackup systems and then driven onto the barge on them. This takes around 18 hours.

Loading the enormous steel structures using the LR 13000 took just three hours as the barge could be secured alongside the quay instead of right-angled position that would have closed the canal. Tugs were required in order to significantly save time and money, and the canal could be left open for shipping. Since no heavy SPMTs had to drive onto the barge with the steel components, smaller barges could be used, therefore also reducing costs. Aldo Santos, Owner of ESEASA along with his four brothers, was delighted: "Loading the massive components using the Liebherr LR 13000 worked perfectly and is significantly more economical than our previous procedure. The extremely short time required is extraordinary."

## Direct line and excellent service

Santos always appreciates having a direct line to Liebherr and its reliable service around the clock. "We require competent service and fast solutions for our projects. We cannot accept delays, we need solutions on the day," explains Santos. "Liebherr provides us with excellent support and also ensures that well trained technicians are normally available. We also appreciate the high quality of Liebherr cranes." The main areas of work for ESEASA include the energy sector, such as petrochemicals and wind power. Just recently the LR 13000 was assembled for another heavy load job at the Refinería Dos Bocas, close to Villahermosa in the South of Mexico – again a successful display by this massive crane.



## Fleet enlargement

After the purchase of SEVEN Rough Terrain Cranes in 2021, having achieved many successful projects and being satisfied with Liebherr as a manufacturer, ESEASA ordered five more rough terrain cranes and two all-terrain cranes from Liebherr at the 2022 Bauma in Munich, Germany. The new LRT 1130-2.1 rough terrain crane, also exhibited at the 2023 Conexpo, is included with three units in the order. Shortly before Bauma, in spring 2022, Santos and his company already enlarged the fleet in the rough terrain crane segment with five LRT 1090-2.1 and two LRT 1100-2.1 models. The order at Bauma also included two all-terrain cranes, an LTM 1120-4.1 and an LTM 1250-5.1.

"We chose the LRT 1130-2.1 because it has enormously strong load-bearing capacities and can still be easily transported on public roads. ESEASA plans to use the new cranes primarily in the construction of new refineries. We have been buying Liebherr cranes for a long time and have hardly had any problems. The units are sophisticated and retain their value very well. We appreciate the similar operating principle across all crane types. Liebherr's after-sales service is outstanding. That's why we decided to buy from Liebherr again," explains Santos. ESEASA's head office is located in Mexico City. Over the years, ESEASA has specialized in engineering, logistics and crane assembly for large projects in Central America and the USA. The company has an 800-strong workforce and a total of over 400 cranes of every conceivable type.



In front of the new Liebherr LRT 1130-2.1 rough terrain crane at Bauma: (from left to right) Christian Tableros (Liebherr México S. de R.L. de C.V.), Aldo Santos (ESEASA), Georg Reinbold (Liebherr-Werk Ehingen GmbH)



# A mass grade fleet

Liebherr earthmoving customer, Sullivan Eastern, Inc. uses Liebherr's earthmoving product line to continually work on mass grading and material removal at a North Carolina job site.



Tackling a 160-acre (64.75 hectare) mass grading site, Sullivan Eastern, Inc. is using approximately 20 Liebherr earthmoving machines to perform site and utility work at Triangle 55 industrial park in Durham, North Carolina for Scannell Properties. As part of the project scope, Sullivan is completing mass grading including dewatering and refilling a quarry and the installation of storm and sanitary sewers, as well as DIP water lines with the goal of safely completing the project in a timely manner.

Sullivan Eastern is pumping out the previous quarry and will take eleven months to refill it with 2.4 million y<sup>3</sup> (1,85 km<sup>3</sup>) of blasted material. The dewatering of the existing quarry requires pumping out over 50 million gal (189,27 million l) of water while complying with all local, state, and federal requirements. Backfilling has its own challenges as it is difficult to keep rainwater out of the quarry while it is being refilled.

The onsite team currently operates multiple Liebherr crawler tractors, wheel loaders, and crawler excavators. The loaders are used to load and place materials as well as move the large rock to the rock breaker, keeping it out of the production area. The excavators are also assisting in the installation of the utilities both on site and in the newly built roadway.

Sullivan Eastern also own multiple TA 230 articulated dump trucks used at Triangle 55 industrial park. Liebherr unveiled the new articulated dump trucks in the US in 2022. The TA 230 Litronic is made for rugged off-road use, thus making it the ideal choice for Sullivan Eastern's site. Its efficient drivetrain, permanent 6 x 6 all-wheel drive, reliable traction control and solid axle mounts enable all customers to utilize this dump truck on any terrain.

"The machines we have hold up well and our operators like the way the machines function. They are powerful, robust and efficient. It makes our maintenance much easier having multiple pieces of equipment from the same brand and model," notes Scott Sullivan VP of Sullivan Eastern, Inc.

Liebherr offers an extensive earthmoving product line including hydraulic excavators and duty cycle crawler cranes, crawler tractors and crawler loaders, telescopic handlers, wheel loaders and articulated dump trucks. These machines achieve high quality standards through in-house development, manufacture, and production of main components. This includes drive and control technology, diesel engines, and a variety of components for hydraulics, gearboxes, and electronic systems.

The bulk of Sullivan Eastern's fleet consists of Liebherr earthmoving machines. Each machine equips state-of-the-art technology and offers easy handling, while being optimally configured to suit Sullivan Eastern's individual needs. "As a highly respected and top contractor in North Carolina, Sullivan Eastern is a strong advocate and reference for Liebherr. Having a large and growing fleet of more than 70 Liebherr machines encompassing our entire Earthmoving portfolio showcases our brand and brings awareness within the market," said Travis Egan, Liebherr Equipment Source Raleigh Branch Manager.



Established in 1933, Sullivan Eastern, Inc. is a leading construction firm based in North Carolina that serves as both a prime contractor and subcontractor in various capacities. Sullivan Eastern specializes in turn-key site development, roadways, and utilities. Their skilled laborers, operators, competent supervisors as well as an innovative, up-to-date equipment fleet are major reasons for Sullivan Eastern's success.

"We have a two-way relationship meaning it is a give and take, and we work together to help each other solve problems," notes Sullivan. "The main criteria in choosing Liebherr products boils down to great engineering, along with superior products, parts and service. Liebherr treats us like friends and not just a customer."



## i

**When the project is complete Sullivan Eastern will have accomplished the following:**

- Pumped 50 million gal (189,27 million l) of water out of quarry
- Drilled and blasted 2.4 million y<sup>3</sup> (1,85 km<sup>3</sup>) of dirt and rock to haul and place onsite
- Installed approximately 14,300 linear ft (4,358 m) of 4-16 in ductile iron pipe
- Installed approximately 10,000 linear ft (3,048 m) of 15-72 in RCP storm drain pipe
- Installed a pumpstation with force main
- Installed approximately 8,700 linear ft (2,651 m) of asphalt roadways

Sullivan continues to work on the large-scale project at Triangle 55 industrial park. They look forward to continuing to grow their fleet with more Liebherr earthmoving machines.

Egan notes: "We are sincerely grateful for the trust and loyalty that Sullivan Eastern places in Liebherr, and we are excited about the future as we continue to support them in all their ventures."



# Where infrastructure meets renewable energy

With the transition to renewable energy growing around the world, Michels Construction, Inc. uses multiple Liebherr drilling rigs to set the foundation for one of the largest lithium-ion manufacturing facilities in the United States.



requires attention to detail and quality assurance monitoring to ensure compliance in tight tolerances. Due to a high-water table and flowing marine sand in the area, the shafts were poured under slurry using polymer slurry.

During peak production, eight drilling rigs were being used simultaneously. Each rig produces an average of three shafts per day and 15 shafts per week. The Liebherr rigs provided the power, torque, and strength required to meet the project's demands. Michels will continue to utilize Liebherr machines to support projects that advance energy transition and renewable initiatives.

"Each project success is the result of the experience and expertise of our people and of the tools we use," said Josh Senk, VP of Foundation Operations at Michels Construction, Inc. Michels purchased two LB 35 and one LB 25 drilling rigs for this project. The LB series of Liebherr drilling rigs were built to last in all climates and offer high torques, a wide range of applications, and useful assistance systems for improved operator comfort and increased safety in one elegant design.

The LB 35 is the successor of the proven drilling rig LB 28-320. Among its main characteristics is the simple transport including folded leader as well as the wide working area due to the parallel kinematics. Additionally, the LB 35 has a robust leader which can easily handle high torques and great tractive forces of the rope crowd system.

"The LB 35 is an ideal drilling rig as it ensures fast operating cycles aiding in Michels' tight schedule," says Tobias Haemmerle, Divisional Director of Crawler Cranes and Deep Foundation Machines.

The focus of the LB 25 is providing optimal mobility. The rig can be transported fully mounted, ensuring the fast



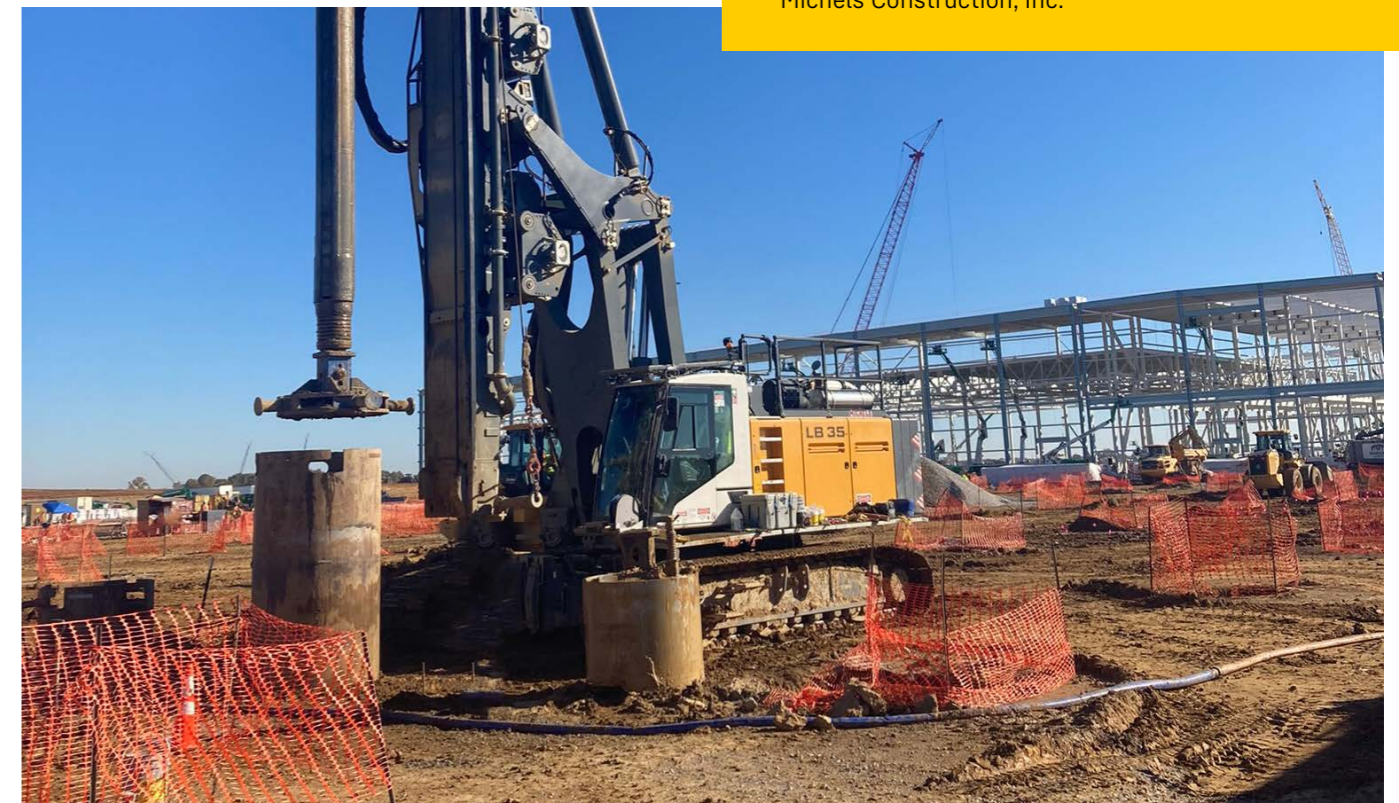
movement of the machine between different jobsites, thus positively affecting the cost-effective operation of the rig. Both the LB 25 and 35 also offer various drilling axles suitable for all types of applications.

The LB drilling rigs high performance in difficult conditions, modular design for flexible applications, easy transport and set up, as well as innovative comforts providing optimized field of vision and data displays were all factors in Michels' deep foundation purchase. Founded in 1959 as a regional gas distribution contractor, Michels Construction, Inc. has evolved into an energy

and infrastructure contractor, supporting the energy, foundations, marine, transportation, trenchless, water, wastewater, as well as energy transition and renewables industries. Michels has been performing deep foundation work for more than 20 years. In 2022, Michels Construction, Inc. was officially established as a member of the Michels Family of Companies to focus on deep foundation and marine construction needs. With a focus on deep foundations, Michels Construction, Inc. currently owns 50 vertical drill rigs from various manufacturers including Liebherr.

***"When we are building, we need machines with the reliability and strength to meet tight deadlines."***

**Josh Senk**  
Vice President of Foundation Operations,  
Michels Construction, Inc.







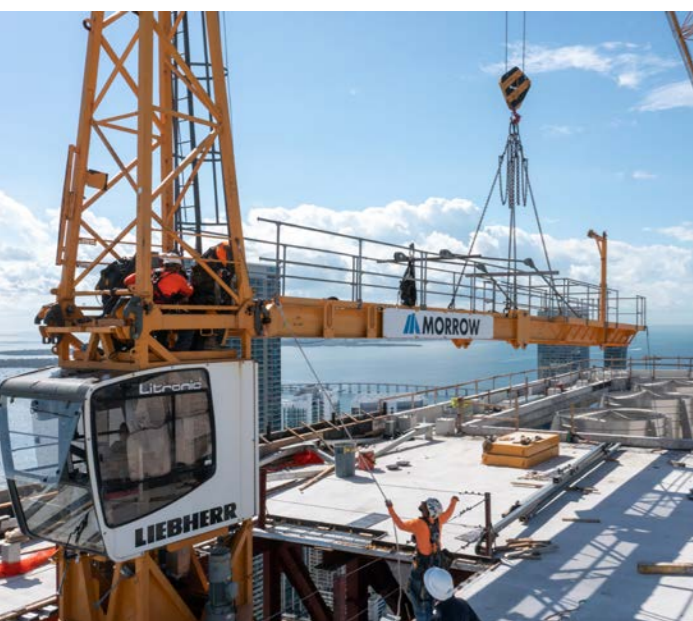
# Towering over Miami

## G&E Florida Contractors take Liebherr tower cranes to new heights at major Miami high rise with the help of Morrow Equipment Co.

Constructing a high-rise at 750 ft (229 m), G&E Florida Contractors know they need tough and reliable tower cranes while constructing 830 Brickell, one of their latest Miami job sites. Taking in factors such as weather conditions and product quality, G&E chooses Morrow Equipment Company, LLC. to rent Liebherr tower cranes for moving materials and dismantling major construction equipment.

“The complexities and challenges of constructing a high-rise concrete structure, like 830 Brickell, cannot be understated. At G&E Florida Contractors, we pride ourselves in our ability to successfully take on the challenges of a nearly 750 ft (229 m) tall structure and complete it safely and efficiently for our clients,” says Albert Barthelemy, G&E Florida project executive. Barthelemy is very involved in the planning and decision to go with Liebherr tower cranes. He brings over 25 years of experience in development, value engineering, cost analysis and project management with a specialization in structural construction of high-rise buildings.

G&E Florida Contractors rents three Liebherr tower cranes from Morrow to hoist materials as needed, including two 316 EC-H Litronic cranes and one DR200 Derrick crane. The two 316 EC-H Litronic cranes reach heights of 753' HUH (230 m) and 791' HUH (241 m). Not only will these cranes be used to move materials, but the higher 316 EC-H is used to dismantle the lower 316 EC-H, and also used to build the 200 DR Derrick crane. The 316 EC-H then lowers to allow the 200 DR Derrick to disassemble it from the structure. The Derrick is also being used for several weeks to hoist construction materials and can later dismantle itself.



Raising a tower crane to almost 750 ft (229 m) on the Miami Coastline, Morrow and G&E take into consideration the hot, humid conditions as well as seasonal hurricanes. Liebherr's product quality, technology, and service provide for optimal efficiency and optimized handling in any conditions including southeast storms.

Barthelemy notes: “We turn to Morrow Equipment and their Liebherr tower cranes as our turnkey partner because we know they have the equipment and experience to ensure a successful project.”

Known for its top-of-the-line power capabilities, Liebherr high-top EC-H cranes handle high load capacities and have an unmistakable silhouette. The various size classes prove their worth for medium and large construction projects, making them ideal for any high-rise applications. All EC-H cranes also have the Litronic control system that can adapt to the individual requirements of the crane operator and site. These intelligent assistance systems allow the tower cranes to operate more efficiently and safely on all of Morrow's various customer sites.

The Derrick crane is designed to act as a special crane for dismantling other cranes on high-rise buildings, bridge pylons, and telecommunication towers making this crane ideal for the 830 Brickell location. This compact and flexible crane can also maneuver easily in tight spaces, such as urban cities like Miami.

As the largest tower crane fleet in North America, Morrow is an exclusive Liebherr tower crane dealer with 563 cranes and more on the way. This established Liebherr partner currently serves the US, Canada, and Mexico.

Peter Juhren, President and CEO of Morrow noted: “Partnership and trust is key in the Morrow – Liebherr relationship. After 44 years, our relationship provides a consistent win-win for Morrow, Liebherr, and the customers we serve in North America.”

Morrow Equipment company, LLC. was established in 1968 and has focused exclusively on the tower crane and construction hoist industry. Morrow continues to develop unique expertise and knowledge of Liebherr's product line. Their technical knowledge and foundational support, combined with the high quality of the Liebherr tower cranes, makes Morrow one of the most successful in the lift equipment industry.

“Liebherr tower cranes offer the highest quality and most versatile tower cranes in the industry. The product is backed by phenomenal engineering and service departments which support Morrow's engineering and service teams flawlessly”, said Juhren.







The 41 XXT truck mounted concrete pump has a 5-section boom that reaches up to 132 ft (40,5 m) and has a low unfolding height of 27.5 ft (8.4 m), making it ideal for projects of varying sizes. The concrete pipe also mounts close to the boom's side for balanced weight distribution. During transport, the pump folds into a compact position making it safer and easier for operators to get to and around job sites. On the job, the large radius pipe bends to minimize pressure loss over the length of the distributor boom, thus allowing for minimal disruption on a job site.

The XXT design allows for work in both open and narrow spaces while maintaining maximum flow rates. The XXT-narrow supports also secure in the front and rear outriggers directly to the boom providing added stability.

"The 41 XXT pump has now evolved to the 42 XXT, which is the very first Liebherr fully designed pump with the Power-bloc hydraulic system. This outstanding pumping unit is proven and approved by the industry and admired for its functionality, smoothness, and maintenance-friendly design," says Divisional Director of Concrete Technology Guilherme Zurita. "The new 36 XXT and 38 XXT pumps are continuing the evolution of Liebherr's machines, bringing in the new XXA 3 stability assistance system. This system puts Liebherr pumps on another level, allowing for more safe work on a wider range of operations,"

Donco 3 is a repeat customer of Liebherr concrete technology products as they ordered a 42 XXT truck mounted concrete pump to expand their fleet at the end of 2022. Donco 3 continues to use both pumps and expand their reach throughout the Midwest fulfilling their mission of

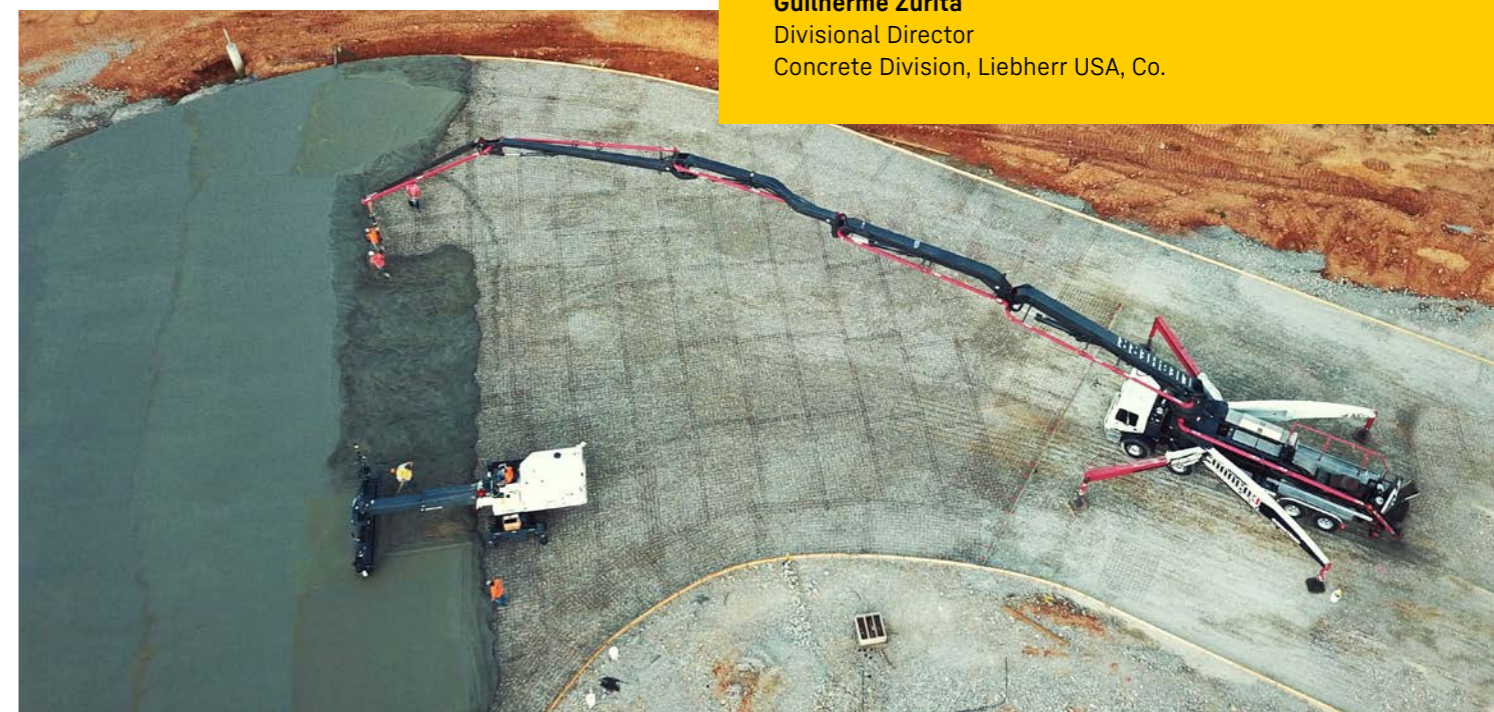
delivering projects in a timely and safe manner. "Our choice to buy another Liebherr machine is due to Liebherr's high-quality products and providing essential customer service support," stated Rachel York, Owner of Donco 3.

Zurita noted: "Our customer trusted Liebherr's philosophy back when they first bought the 41 XXT pump many years ago. Now, they can see the evolution of our pumps and have chosen the 42 XXT to join their fleet. At the end of the day, with Donco 3 as a customer, we can achieve what we strive for in each of our customers: a long-lasting relationship with strong support."

Founded in the 1990s, Donco 3 Construction, LLC, is a family owned and operated full-service concrete subcontractor that specializes in commercial and residential concrete projects throughout the Midwest. It utilizes Liebherr's concrete products and technology for all their concrete pumping needs. The 2nd generation of the York family took over the business in 2010 and has since become a state-certified Women's Business Enterprise in Missouri. Both Donco 3 and Liebherr take pride in being family owned, passed down from generation to generation.

***"This system puts Liebherr pumps on another level, allowing for more safe work on a wider range of operations."***

**Guilherme Zurita**  
Divisional Director  
Concrete Division, Liebherr USA, Co.



## A structural finish

Marshfield, Missouri based company, Donco 3 Construction, LLC utilizes Liebherr concrete pumps to support their mission of delivering quality projects in a safe and timely manner.

Donco 3 currently uses their Liebherr 41 XXT truck mounted concrete pump for various projects throughout the Midwest including their home state of Missouri where they are working on a large-scale warehouse site. This project requires high strength concrete throughout the site to serve as the warehouse floor once completed. They also provide additional services including excavating, forming, pouring, placing, and finishing structural concrete as well as pavement, sidewalks, curbs, walls, and pervious concrete.

"In total, Donco 3 will pump an area of over 2200 ft<sup>2</sup> (204 m<sup>2</sup>) of concrete with their Liebherr machine." The 41 XXT pump is ideal for the job as a longer boom is necessary to access the large pouring area and facilitates easier access for the mixer truck. The long boom also allows the pump to reach the pouring area from one spot and the team does not have to constantly adjust the location of the truck. However, the key factor is the XXT outrigger system which allows safe pumping over the cab, also taking advantage of the truck's positioning.



# Dream team on a solid foundation

**Faster, safer, more effective:** This is how the digitally orchestrated deep foundation engineering construction site presents itself. Liebherr is bringing its technologies even closer together by networking a drilling rig with a tracked concrete pump. This means that both construction machines can build demanding, deep pile foundations in perfect coordination with each other – and with considerable time and efficiency gains.

They lead a hidden existence and yet are beacons of the high art of deep foundation engineering: the concrete piles that distribute the loads of load-bearing structures in deeper, load-bearing soil layers in deep foundations and thus provide secure support for the foundations of buildings and other facilities. For this purpose, pile drivers and drilling equipment are often used to go many feet (meters) deep into the building ground until suitable soil or rock layers are reached and the boreholes are filled with concrete and reinforcement. The dimension of these pile foundations can be estimated at when the huge pile-driving and drilling rigs and the concrete pumps approach on their crawler tracks – visible from afar and not at all hidden as the result of their collaboration.

Liebherr is the only supplier in the industry that manufactures both machines and digitally networks the duo as a “dream team”. This sets completely new standards for pile foundations in terms of safety, reliability and efficiency of the entire process. Classically, the division of labor for such pile foundations is regulated in this way: A surveyor determines the position of each individual pile on site, the drilling or pile-driving rig moves in, works its way down according to the survey specifications until the concrete pump then gets the signal to fill the borehole with concrete as it is pulled up. This process can take weeks for hundreds of piles, as is the norm for large commercial buildings. When tracked machines, excavators and construction machines have driven over the pile field several times, it is often no longer possible to determine the exact position of the piles.

To optimize this fundamental process in deep foundation engineering and to use the equipment and material as efficiently and cost-effectively as possible, Liebherr has networked its machines. For this purpose, the individual work steps of a pile-driving and drilling rig as well as a tracked concrete pump are orchestrated in a unique way via digital control and linked with extensive data analysis. The units also communicate with each other during the recurring pro-

cesses of drilling, extracting and concrete pumping. The operator of the drilling rig can start and stop the pumping process from their cabin, accurate to the second. The result: significantly simplified work processes, fewer people on the construction site and considerable time savings.

PST Spezialtiefbau Süd, for example, recently benefited from this. The company was contracted to anchor 800 piles with diameters of 2.5 ft to 2.9 ft (750 to 880 mm) and depths of up to 59.1 ft (18 m) in the subsoil at a construction site. The Liebherr LRB 355 pile-driving and drilling rig was deployed for this purpose, using in the double-head drilling method. “The challenge was both the large number of piles that had to be installed in the specified time with only one drilling rig and the exact compliance with the positioning and quality requirements,” reports Philipp Müller, Project Manager at PST Spezialtiefbau Süd GmbH. “Thanks to the networking of the drilling rig and the tracked concrete pump, it only took 14 minutes to complete a pile, including concreting, under optimal conditions.”

The LIPOS satellite-based positioning system developed by Liebherr plays a key role in this optimized process. It integrates existing machine control systems into the process data acquisition PDE and reporting of Liebherr deep foundation machines. The digital drilling plan is transferred to the corresponding drilling and concreting machines for the precise execution of the drilling and pile driving work as well as the concreting. “The construction site personnel thus always have reassurance that there are no gross surveying errors and also have visual control of which piles have already been produced,” says Philipp Müller, summing up the advantages of LIPOS in everyday work. In addition, all the data would be transferred to Liebherr’s MyJobsite application for further visualization and analysis. This automatically records all relevant processes, machines, construction site, weather and position data. In addition, important information can also be added manually by entering construction site events.



All this collected data is processed, analyzed and stored by the system according to the highest security standards. For Müller, this results in tangible advantages on the construction site: “Personally, I have the expectation that the LIPOS system will relieve the foreman on site, as the system gives the equipment operator more security and clarity about pile numbers and drilling depth.”

Robl Spezialtiefbau GmbH also had a similar experience when it recently had to install over 900 full displacement piles for a new production facility in just three weeks with a diameter of one foot (320 mm) and a length of between 16.4 and 26.2 ft (5 and 8 m) – a job that had to be completed in just three weeks. For this purpose, the company was assisted by two Liebherr LRB 16 and LRB 18 piling and drilling rigs and a Liebherr THS 80 D-K concrete pump.

For Martin Robl, Chief Executive Officer of Robl Spezialtiefbau GmbH, the use of LIPOS and MyJobsite proved its worth in this extremely demanding project: “Because the interaction of the two Liebherr pile-driving and drilling rigs, including accessories, worked perfectly, the planned execution time was undercut by about a week.” The reason: Thanks to the unique networking, the machines would always have worked “hand in hand”, without delay and always exactly according to plan. “Thanks to LIPOS, we didn’t have to make any additional appointments with the surveyor and were able to make full use of every working day,” says Robl. He always had an overview of all the site data via the MyJobsite software solution.

“All the key parameters can be viewed in real time on a laptop, tablet or mobile phone. This way, you always have an overview of which piles have al-

ready been completed and which still need to be done,” says the Robl CEO happily. The approach to each individual pile becomes child’s play, without having to pay attention to colour markings or pegs. This boosts the quality of the entire process for all involved. “We are thus experiencing deep foundation engineering in completely new dimensions right now thanks to digital networking.”





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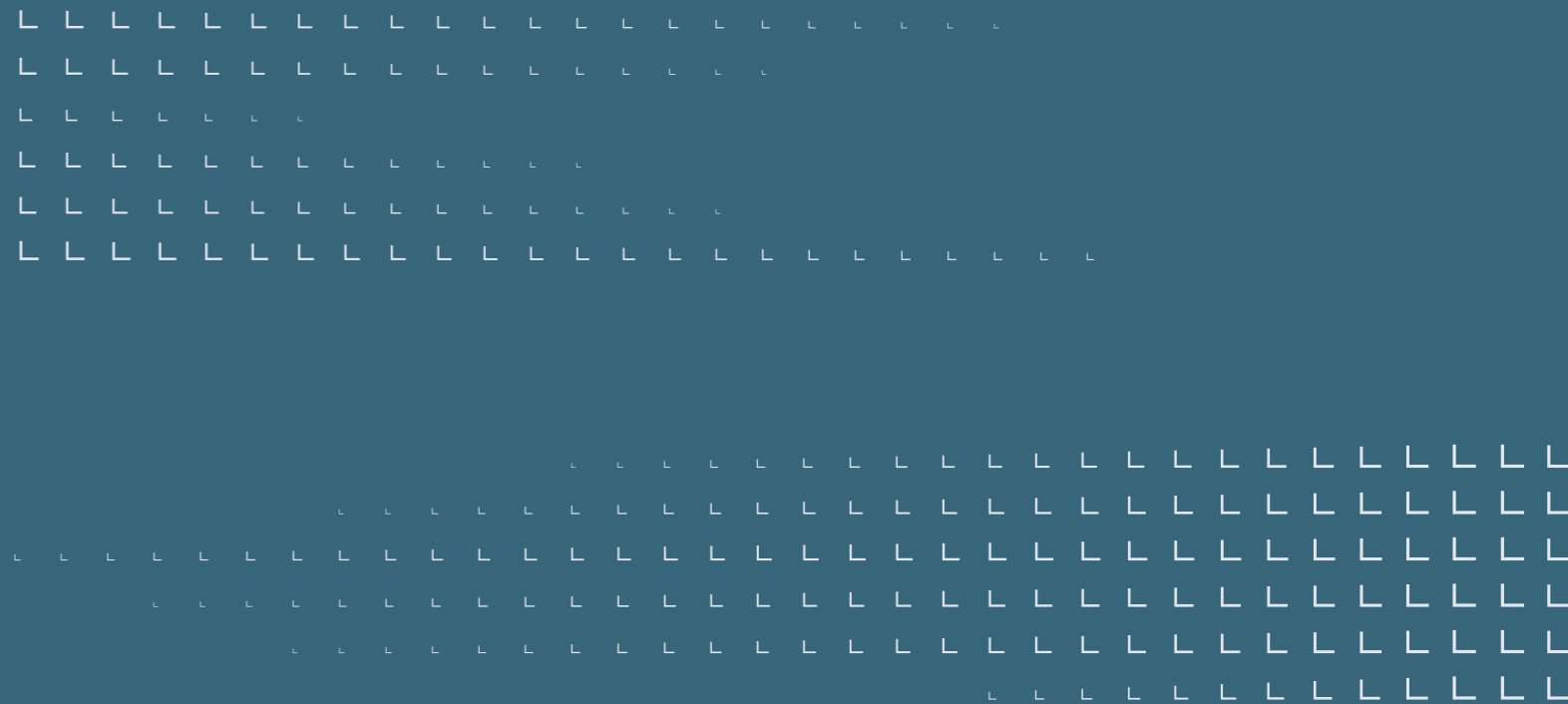


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# Digitalization and alternative technologies

On your site with new technologies





# The (r)evolution of the LICCON crane control system

The LTM 1100-5.3 will be featured at Conexpo 2023. This crane and the LTM 1110-5.2, presented at the North American Customer Day in May 2022 in Newport News, are the first Liebherr mobile cranes with LICCON3, continuing the unique success story of LICCON crane control.



## In the beginning there was card chaos

Order and clarity are basic requirements on a construction site. But about 45 years ago, the control of a crane was anything but simple, because at that time there was a wide range of hydraulic, electric and electronic controls.



However, when electronics became more and more common in the operator's cab in the mid-80s, the consequences were thoroughly analogue. Plug-in cards were used to define the most important work steps – and new ones had to be developed for each new crane. Over time, there were around 100 plug-in cards for different functions. One crawler crane alone came up with up to 24 plug-in cards. Staying on top of things was an art in itself. For this reason, from 1985, Liebherr began to develop its own crane control system: the "Liebherr Computed Control", or LICCON for short. Everything should be centralized, simple and practical, without card chaos. The solution: a flexible control system with programmable digital plug-in cards that could easily be further developed in-house. Soon, only 20 plug-in cards controlled the entire range of cranes and with that, digital development took its course.

## Think simple – the LICCON principle

When developing a programmable controller for complex tasks, Liebherr applies the principle: "Think simple!" In terms of hardware, the LICCON control system should only have three main components: a central unit with an exchangeable memory, a power supply unit with a memory and a monitor with operating unit. In the mid-80s, this idea



was almost revolutionary considering the fact that the first PCs were only just coming onto the market at the time. At the same time, digital pioneers at Liebherr were already developing their own

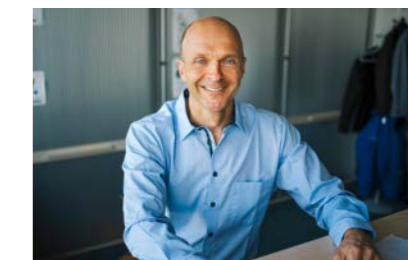
programming system with a simple PLC conversational language. Construction and administration now functioned using a generated parts list and a database. Connected to a commercial IT system, a straightforward exchange of data was now possible. What remained were two programmable plug-in cards and a display. There was no comparable system on the market. "We integrated hardware components into a control system whose logic we had designed and programmed ourselves," explains Erwin Morath, Head of the Control Department at the time. "LICCON was thus unique and could not be copied by the competition." Series production began with the LTM 1120, which introduced the new LICCON control system in 1989.

## Even more convenient operation

The development of new universal control units at the end of the 90s meant that all cranes could be standardized with shared components. They also formed the basis for the new LICCON2 control generation, which was introduced in 2007. This made cranes even more convenient to operate. Since then, the new BTT operating and display unit has made it possible to operate many work processes from the outside. With BTT, the crane is easily and safely rigged: supporting, unhooking the hook block and mounting additional equipment – all this is now no problem with LICCON radio remote control. The only limiting factors: after some time, LICCON2 reached its first limits in terms of computer performance and memory.

## Innovation as a permanent state

That is why Liebherr has continued developing and testing. The result: LICCON3 – the next (r)evolution of Liebherr crane control. It is based on completely new software, a fast data bus, significantly more memory capacity and high computing power as well as improved security tools. These are all factors that run in the background but will revolutionize everyday work in practice in the long term. "The advances in microelectronics are immense. We'll stay on the ball and continue to develop our crane technology," explains Nikolaus Münch, Head of the Control Department at Liebherr in Ehingen, Germany. "With LICCON3, we now have a solid and expandable technical platform on the basis of which innovation can become a permanent state. This is the foundation for a new generation of mobile cranes – which we are heralding with the LTM 1100-5.3 and the LTM 1110-5.2."



Nikolaus Münch



Erwin Morath



# 360° in one view

Automation, artificial intelligence, and autonomization: The digital construction site of tomorrow has many facets and does not leave even the smallest components of mobile machines - the electronics - unscathed. Assistance systems like Liebherr's LiXplore® Bird's Eye surround view system ensure more efficiency and comfort on the construction site.



**Alexander Bertsch**  
Head of Product Line Sensor Technology  
at Liebherr-Electronics and Drives GmbH

The Components team at Liebherr-Electronics and Drives GmbH in Lindau (Germany) has been producing digital Ethernet cameras for mobile machines for more than ten years and is currently in its third product generation. Therefore, Liebherr's in-depth expertise in this field is no coincidence. The product development process integrates feedback from long-standing customers to continuously refine product features based on these insights.

"For our customers, maintaining safe operations and preventing accidents at jobsites are a top priority", says Alexander Bertsch, responsible for sensor technology at Liebherr-Electronics and Drives GmbH. "They are aware of the impact of operating equipment under challenging conditions and place significant importance, when choosing the right equipment with assistance systems specifically designed to keep operators and operations safe." That is why product development and innovation are an integral part of Liebherr's culture, and the engineers think creatively to solve different challenges in their best interest.

A major plus for customers is that Liebherr understands the strict requirements under which their machines are used, including strong temperature differences, vibrations and changing light conditions. "We use this knowledge to develop our products according to the demands placed on them in terms of robustness", explains Bertsch. "This experience has helped us to develop the LiXplore® Bird's Eye surround view system." At its core, a digital camera-monitor system provides operators with a reliable all-around view of the working environment of their machine. The intelligent algorithm behind the display controller creates the 360° view by combining the individual images from four digital cameras into a complete picture.

The sharper the image, the better, making it easier and more pleasant for the operators to view. On top of that, operators deal with the complexities of operating the machine, so using a system that makes work easier for humans is the clear choice. Fewer errors equal lower costs and more efficiency, making it a win-win situation for both operators and machine manufacturers.

It has also been shown that the calibration process in particular poses major challenges for customers. If a machine manufacturer equips five machines with a surround view system, the calibration effort is still limited. However, when talking about several hundred machines, things look very different. "Therefore, we wanted to develop a time-saving system that can be calibrated within a few minutes," explains Bertsch. "This means that neither the calibration mats do not have to be placed exactly, nor do the distances to other objects have to be measured. Furthermore, LiXplore® Bird's Eye offers detailed views and customizable overlays for greater convenience."

The features of the assistance system are the result of the extensive experience gained over the years with mobile ma-

chines in a wide range of industries – an off the shelf product, excellently suited for use in demanding environments. Due to Liebherr's proximity to customers, design engineers know the requirements for the components very well, use this expertise to further develop products and continue offering the greatest possible benefits.

As in most other areas of life, digitalization will play a major role in the future. Digital image processing will soon find its way into even more simple camera-monitor systems. Instead of several individual components that have to be linked, customers receive an integral solution with an additional assistance function that is already state-of-the-art. "In the course of developing Bird's Eye, we kept asking ourselves the following questions: How can we achieve the greatest possible benefit for our customers? Which technologies, that have proven successful in other industries, offer enough potential for mobile machines?", says Bertsch. "One example is collision warning, which is already being used in the automotive industry."

Today's systems still cover these extended assistance functions via additional sensors. With digital technology, intelligent algorithms take over this task. It is a leaner system overall that reduces sources of error and takes comprehensive account of processes on the construction site. Moreover, there is the additional convenience for the operators. An interface that displays all essential functions in one is far easier and more intuitive to operate.

***"What is my personal conclusion from the past years of product development? Even if something doesn't run optimally, there are still upsides, as we learn from our mistakes."***

**Alexander Bertsch**  
Head of Product Line Sensor Technology  
at Liebherr-Electronics and Drives GmbH



MyLiebherr

# Up to date: New look and new features for MyLiebherr

The MyLiebherr online portal is the central contact and access point for customers and service partners of the Liebherr Group. The platform is being continually developed and has been given a more user-friendly design update as well as additional functions.



The MyLiebherr portal gives great importance to user-friendliness and offers its users a clearly structured, intuitive user interface, that enables them to work effectively. In the “Apps” section, for example, the user can immediately find the most important portal applications such as the spare parts shop and corresponding catalogue or product documents – a click on the corresponding tile is enough. Another advantage is the extended information, for example on the status of sent requests, which provides users with direct information when interacting with the portal.

## Everything stays the same – just a little different

A wide range of information and services becomes available as soon as users log in on [www.myliebherr.com](http://www.myliebherr.com) with their login data. The clearly structured start page allows them to jump directly to the “Personal Data” and “Business Relationships” sections. In addition, users are prominently shown the licence managers and administrators assigned to them in their company as well as their contact details.

Company administrators and product managers now have the option of storing keywords for each product, allowing more effective management of the machine park. In this

way, products can be assigned to corresponding topic clusters and found again more quickly when needed. Profile management has also been improved. In the “address book”, company administrators can now create and manage addresses that are available either to themselves or to all users in their company. This means, for example, that order forms can be completed in a matter of seconds with the appropriate (delivery) address.

## Added value at the click of a mouse

Naturally, all important functions can also be quickly and reliably accessed at the click of a mouse in the revised version of the MyLiebherr portal. Machine and spare parts documentation, manuals or operating instructions can be viewed and conveniently downloaded at any time – allowing users to find everything concentrated in one place. In the “Licences” section, users can purchase different types of licences, which can be used, for example, to simply and directly increase the range of functions of Liebherr applications or machines.

## New functions in the pipeline

While users discover the new advantages of the platform, Liebherr is already working on further new ideas and functions for MyLiebherr. A new online shop for spare parts is currently being developed. The online shop has been fundamentally revamped and should be launched by mid-2023. It will unite the range of all product segments under one roof. At the same time, the new spare parts shop will once again redefine standards in terms of operation and user-friendli-

ness. Until then, spare parts, operating materials and accessories can be ordered as usual in the online shop on the MyLiebherr platform – reliably and at any time.



[myliebherr.com](http://myliebherr.com)



## In a nutshell – the advantages of MyLiebherr:

- Central access to numerous digital applications and offers such as spare parts shop and catalogue, product documents or licences
- Maximum transparency thanks to up-to-date information available at all times
- Clearly structured, neat and intuitive user interface
- Fast and effective work thanks to simple processes
- Direct contact with Liebherr and its service partners



# Striking the right tone

No exhaust fumes and less noise on the construction site: more and more crawler cranes and deep foundation machines from Liebherr's Nenzing factory are being made available as unplugged versions. That means they can be used wirelessly with a battery – and have the same power as with a conventional drive. Michael Flecker and Sascha Bechter from Liebherr-Werk Nenzing GmbH know why both types of drive compliment each other perfectly and why each has its own justification.

It might be said that Michael Flecker grew up with Liebherr crawler cranes. At the very least, they have had a massive influence on his professional life. He first came in contact with crawler cranes in 2005 when he started his career at Liebherr as an international fitter – and has remained loyal to them ever since. Since April 2022, the Vorarlberg native has been Head of Sales Crawler Cranes in Nenzing. Flecker has previously seen a lot of the world and was, among other things, customer service manager at Liebherr USA in Houston for several years. There he helped to build up the crawler crane segment and continuously developed it with feedback from customers.

Electric and battery powered machines may have started as a trend however, they are now becoming more prominent in the construction industry. Of all the construction equipment products



Sascha Bechter (left) and Michael Flecker (right)

released in 2022, almost half were electric machines. The electric equipment market is also predicted to almost triple in size by 2027, with much of its growth being attributed to steps that governments around the world are taking to reduce carbon emissions to net zero. In the US alone, goals are being set to use 100% zero emissions energy by as early as 2035. The clear advantage of the unplugged series is that the battery-powered units do not cause CO<sub>2</sub> emissions on the construction site.

Electric machines are also very quiet and therefore ideal for urban areas – an advantage for both residents and construction site workers. Many cities have noise regulations forcing work to end at a specified time, so quieter electric machines allow work to go one past regular working hours, increasing efficiency and giving more flexibility to contractors. “Five unplugged machines are as loud as one diesel-powered machine,” Flecker explains.

The first unplugged crawler cranes came onto the market at the end of 2020. The Liebherr unplugged machines were launched in 2019 with the LB 16

unplugged drilling rig – the world's first battery-powered drilling rig. Within a short period of time, there are now a total of nine models coming from Liebherr's Nenzing plant in Austria that are also available as unplugged versions.

What sets the unplugged machines apart from other electric machines on the market is the type of equipment Liebherr is producing. With the largest segment of electric machines across the industry today being excavators and wheel loaders, Liebherr saw an opportunity to break into a product category that had not yet seen significant development for electric machines. Offering battery-powered crawler cranes and drilling rigs not often seen in the electric equipment market sets Liebherr apart from competitors. The battery-powered machines achieve the same performance as the diesel versions and are identical in their operation. Another advantage of Liebherr products is the complete package of drive concept and machine, because unlike its competitors, Liebherr offers both from a single source.

The unplugged series also strike the right tone with new customers. “Many customers choose our battery-powered



**“Five unplugged machines are as loud as one diesel-powered machine.”**

**Michael Flecker**  
Head of Sales Crawler Cranes

machines because they believe in the technology and want to be the first to use it in their market,” explains Flecker. In some countries these electric machines are actually a distinct competitive advantage, and of course in the United States as well.”

However, even though unplugged construction machines have many advantages, they are not best suited for every use or application. That's why all unplugged units from Nenzing remain available with conventional drives. Together with the customer, it is important to individually decide which drive technology is right for the construction site and the application,” adds Sascha Bechter, Head of Sales Deep Founda-

tion Machines and Material Handling Equipment at Liebherr-Werk Nenzing GmbH. The 48-year-old is a true Liebherr veteran. He started his career at Liebherr more than 30 years ago as an operational electrician in Nenzing, before being drawn to Liebherr's international companies for many years. Whether in the USA, Great Britain, Italy or Singapore: “I have never worked for any company other than Liebherr,” says Bechter.

That's why he knows Liebherr construction machines and their applications in the field particularly well – and can judge which drive type suits which customer. Construction sites in rural or remote areas, for example, are typical

applications where conventional drives are more suitable. This is because these places do not usually have the infrastructure needed for electric machines. Diesel-powered machines are sometimes also more suitable in the early stages of a construction project or for short-term assignments because the necessary charging infrastructure for the electric motors is often not available when a construction site is first set up. Flecker and Bechter agree that all types of drive have their justification. That's why Liebherr takes an approach that is open to technology, where every customer gets what is best suited to them and their construction site.

## 2019

With the LB 16 unplugged, Liebherr introduces the world's first large drilling rig with battery-electric drive.

## 2020

World première: Liebherr launches the first battery-powered crawler cranes, the LR 1200.1 unplugged and LR 1250.1 unplugged.

## 2022

Another electric product line is released with LRH 200 unplugged and LRH 100.1 unplugged piling rigs. The first electric machine debuted in the US with the LR 1250.1 unplugged during Customer Day.

## 2023

Liebherr's unplugged drilling rigs are presented at Conexpo.



# Giants under power

When it comes to reducing CO<sub>2</sub> emissions, the mining giants are also joining in. With their own power supply concept, Liebherr's heaviest mining trucks are now driving ahead with full electric power to reduce fuel consumption and lower emissions.



Standing in front of Liebherr's gigantic T 284 dump truck makes you feel tiny. This giant is 26 ft (8 m) high and can transport an impressive up to 413 US t (375 t) of material. In Panama, the mining company First Quantum Minerals has as many as 38 of them in use. Here's the twist: these ultra-class giants are literally connected to the electrical network. With the help of Liebherr's innovative Trolley Assist System, they can drive without using diesel under certain conditions. The Trolley Assist System uses onboard pantographs to connect the trucks' drive system to overhead power lines on uphill haulage segments. These overhead lines stretch across the ramps between the digging and dumping zones. This not only saves fuel and reduces CO<sub>2</sub> emissions – the electric drive also increases productivity and thus the operating result.

The Liebherr Trolley Assist System is already in use in several mines around the world and the results are impressive. The example of the T 284 mining trucks shows that the loaded trucks go uphill at 15 miles (25 km) per hour thanks to electrification which is almost two times faster than the standard version. Above all, the main goal of the Trolley Assist System is achieved: fuel consumption on the trolley segment can be decreased by up to 90 per cent. "Currently direct electrification offers the greatest potential for reducing greenhouse gas emissions. It can also be achieved the fastest. For this reason, we have focused on the grid electrification of our entire range of dump trucks and excavators," explains Oliver Weiss, Executive Vice President R&D of Liebherr-Mining Equipment SAS.

That is why Liebherr Mining now offers a complete portfolio of low-CO<sub>2</sub> solutions for its fleet as part of its Zero Emission Program. In addition to the Trolley Assist System for mining trucks, all mining truck and excavator types are available with electric drive, with Liebherr also having developed its own cable reeler system for excavators. The electrification of Liebherr's entire mining range has been tested in practice and the results show a significant reduction in greenhouse gas emissions.

Fortescue Metals Group, a globally active mining company, recently announced a partnership with Liebherr. This partnership will see Liebherr integrate the zero emission drive systems developed by Fortescue Future Industries and Williams Advanced

Engineering into the T 264 mining truck. After a two-year joint development period, the climate-friendly giants will be ready for series production and delivery. Fortescue also sees the partnership as an important basis for achieving net zero emissions in its own company by 2030. Oliver Weiss explains: "This project provides us with an excellent opportunity to accelerate the integration of alternative drive systems into our mining machines powered by clean energy. This supports our vision and strategy to offer zero emission machines with the most suitable drive technologies in the future. Along the way, we will support our customers in choosing the technology options from our wide range of products that are most suitable to them."



**Oliver Weiss**  
Executive Vice President R&D  
Liebherr-Mining Equipment SAS

One of these technology options includes reducing greenhouse gas emissions by running combustion engines on renewable fuels. Thus, the drive with Hydrotreated Vegetable Oil (HVO) is now also available for most of Liebherr Mining's machines. Liebherr is working on the modularity of its large combustion engines for alternative fuels. Hydrogen, ammonia and methanol combustion processes are under development and will only be offered in series production depending on market demand.

Liebherr is also working on further climate-friendly developments for the mining industry with strategic partnerships. The cooperation with ENGIE is intended to improve the understanding of the entire energy value chain (well to wheel) of green hydrogen and the derivative fuels based on it in order to propose customers the best suited solution for their application to be able to advise customers about infrastructure requirements to set up Trolley systems, Liebherr is also

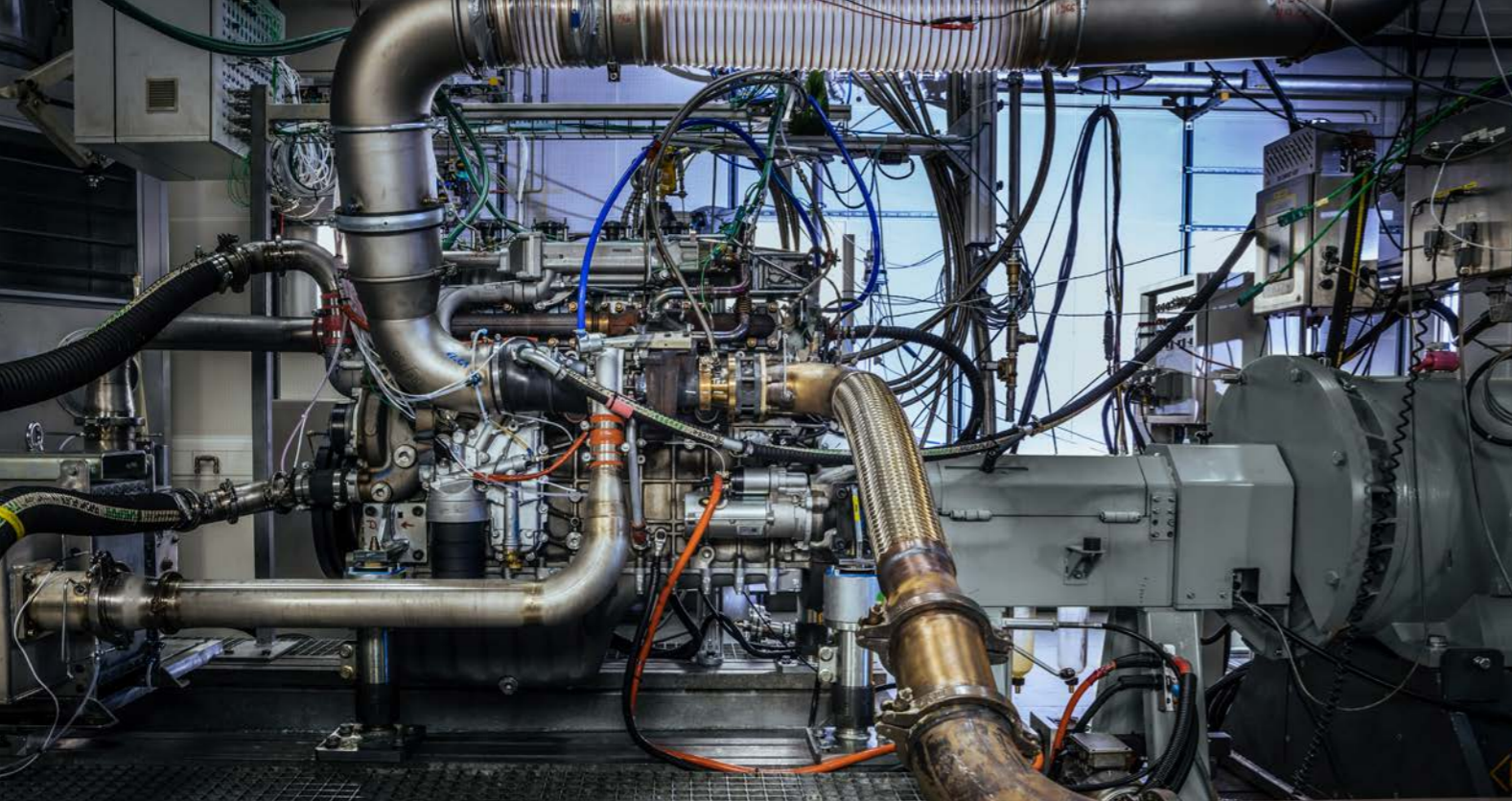
working together with different Trolley infrastructure providers.

These partnerships are crucial to achieve zero emissions in the future. "We will offer proven solutions for all our mining machines that work completely without fossil fuels by 2030 at the latest," Weiss announces. "We are looking into ways of equipping our mining excavators, trucks, and dozers with various drive technologies. Depending on the type of machine and the application, this could include battery drive modules, H<sub>2</sub> fuel cell drive modules, or combustion engines with several other renewable fuel solutions."

Liebherr Mining aims to be able to make some of these innovations available to the wider industry as early as 2026. The heavyweights in the demanding mining industry will remain an exciting and spectacular topic, with further important milestones paving the way towards a sustainable future.







## CO<sub>2</sub>-free drive in off-road use

Construction sites at high altitudes, dusty air, strong shocks and vibrations push electric construction machines and cranes to their limits. This is where hydrogen internal combustion engines (ICE) make it possible to work without CO<sub>2</sub> and achieve goals in line with the collective commitment from different countries to global climate action under the Paris Agreement – even for heavy-duty applications.

Hydrogen is a very special type of fuel. It is the most abundant chemical element in the universe, with a high energy density and is therefore a great hope on the road to reducing global carbon emissions.

It is definitely worth a closer look, and that's exactly what the engine development team at Liebherr-Components is doing in the Swiss town of Bulle. At test bench 54 for diesel and H<sub>2</sub> engines, the team led by Dr Bouzid Seba, Head of Combustion Engine Pre-Development, carried out their latest project: a hydrogen ICE with direct H<sub>2</sub> injection, installed onto the test platform and connected to a tangle of cables, strings and hoses, which continuously sends data on operating conditions, emissions, and performance to the control station.

Hydrogen from renewable energy sources has long been seen as a beacon of hope for a climate-friendly, CO<sub>2</sub>-neutral energy supply. "Again and again, hydrogen seemed to be on the verge of a breakthrough as an infinite source of energy, only to disappear again into oblivion," explains Dr Seba. However, the tables have turned, which has led to a reassessment in politics and especially in the construction machinery market. "Wherever batteries or fuel cells reach their limits, hydrogen ICEs can be the solution. This is primarily the case in applications where the engine is exposed to strong vibrations or where there is a lot of dust and dirt. This mainly concerns mobile construction machinery like crawler excavators, but also heavy-duty vehicles." The engineering team in Bulle is currently examining different injection and combustion technologies for hydrogen ICEs.

Liebherr's decades of experience with diesel and gas engines boost the development. The mechanics, crankshafts, bearings and turbochargers do not have to be developed from scratch, a fact that greatly shortens the time prior to intensive field testing.

This becomes particularly obvious in the latest cooperation between Liebherr Machines Bulle SA and Liebherr-France SAS in Colmar for the development of the R 9XX H<sub>2</sub>, a 110,230 lb (50,000 kg) crawler excavator equipped with the hydrogen ICE. Henrik Weitze, Project Manager at Liebherr-France SAS, has worked closely with Dr Seba's team for many years. Weitze sees the newly designed hydrogen ICE for the R 9XX H<sub>2</sub> predestined for use on construction sites at extremely high temperatures or under shocks and in particularly dust-intensive environments typical of earthmoving or quarries. The R 9XX H<sub>2</sub>, with its alternative drive, meets the highest quality standards under extreme conditions. Keeping this in mind, the engineering team designed the machine, utilizing the latest, future-oriented crawler excavator Generation 8 as the basis. "The overall performance is in no way inferior to the diesel version, be it power output, engine dynamics or response during dynamic load changes," explains Weitze. The only difference is the refueling process, special infrared communication between the excavator, and the filling station makes it both fast and safe.

"The hydrogen ICE developed for the R 9XX H<sub>2</sub> in Bulle is based on port fuel injection (PFI). The accuracy and quantity of hydrogen injection is an essential requirement for heavy-duty ICEs," explains Dr Seba. "To align the performance of a H<sub>2</sub>-engine to that of a diesel engine, the system

has to be able to guarantee the different requirements in terms of flow and injection accuracy. Hydrogen gas has a low density, which requires large valve cross-sections in the injector. We were able to combine different components to control pressure and flow rates."

Following PFI, direct H<sub>2</sub> injection developed by Liebherr will be tested in terms of performance in particularly dynamic heavy-duty applications. "During our tests, we aim to gather large quantities of input data from the operating conditions of the H<sub>2</sub> engine," explains Dr Seba. On four monitors, the developers can follow the engine performance in real time and make optimal adjustments simultaneously. Thanks to digitalization, the speed of development is significantly higher today than even a few years ago. "Before the engine even gets to the test bench, we can use simulations to evaluate it under different operating conditions and incorporate their effects into the engine architecture right away", adds Dr Seba.

Henrik Weitze thinks that Liebherr is on the right track towards making a relevant contribution to the climate goals. The "Green Deal", with which the EU wishes to become climate-neutral by 2050, is also setting the course for the development team. As early as 2030, CO<sub>2</sub> emissions are to be reduced by at least 55 per cent as compared to 1990. Weitze is convinced: "That's a tight deadline, but we will make it. Until then, it is important to never lose sight of the goal, even when things get tough along the way." The engineering team in Bulle intends to start with the serial production of the H<sub>2</sub> engine by 2025.

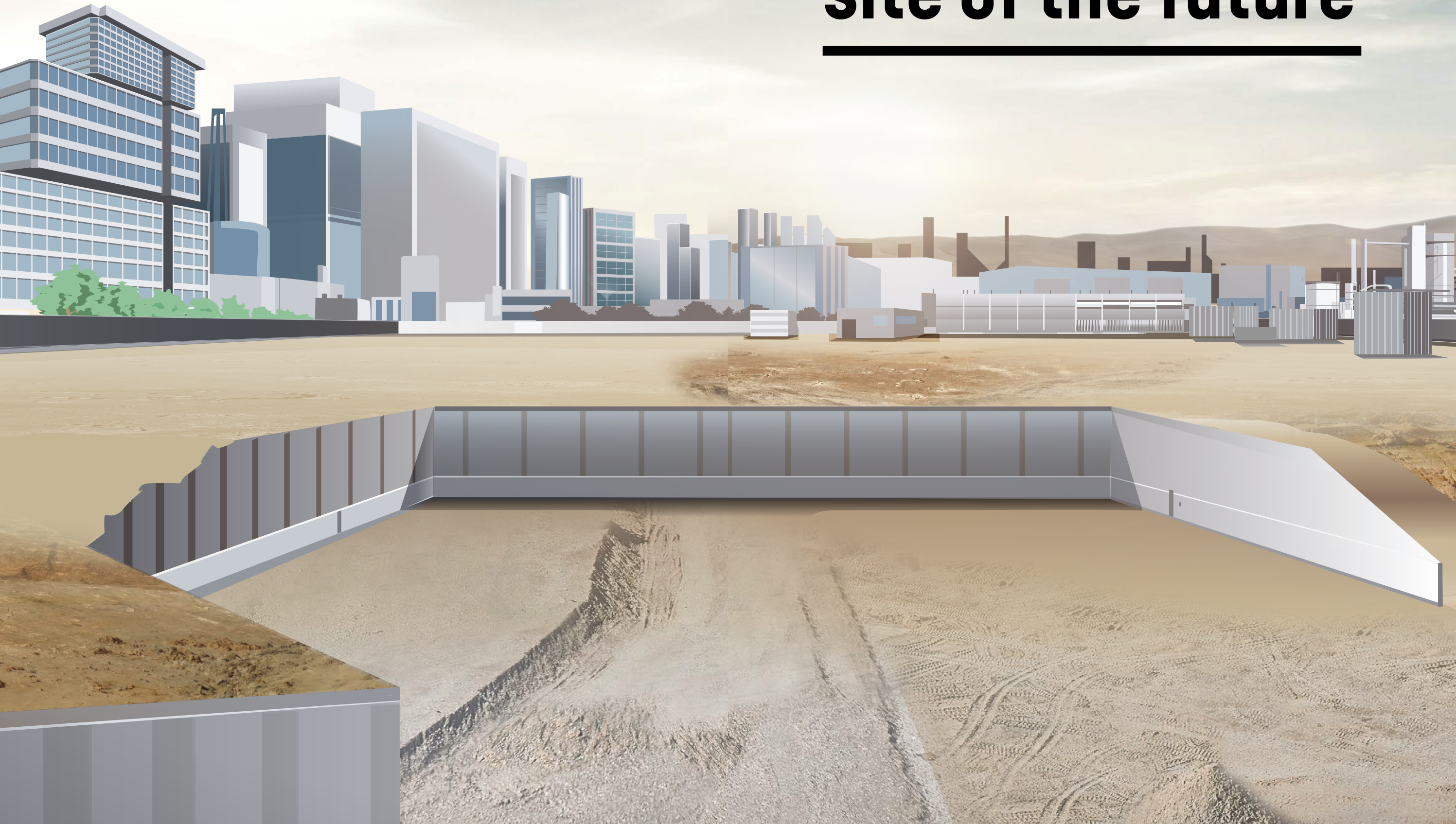




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# The construction site of the future

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#### First hydrogen engine

The crawler excavator R 9XX H<sub>2</sub> is equipped with the first Liebherr hydrogen engine H966. It releases very low NO<sub>x</sub> emissions and offers performance, engine dynamics and responsiveness similar to machines with diesel engine. In the future, the combustion process will be controlled by Liebherr's own port fuel injection system.

#### Higher productivity and more comfort

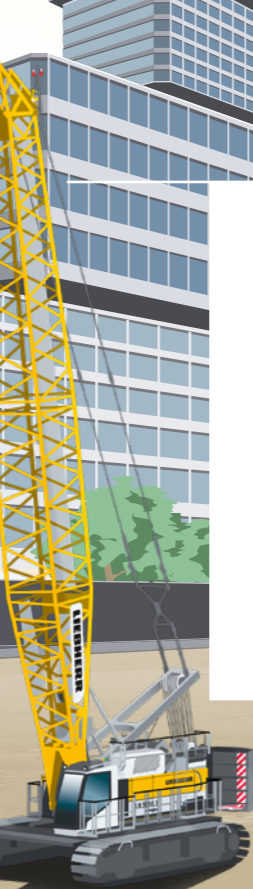
The new excavator model range with the Bucket Fill Assist function has an "anti-stalling" mode that prevents the bucket jamming when penetrating soil. This option provides the operator with additional support when using the machine and ensures higher productivity and more comfort. The assist function also enables semi-automatic bucket filling, providing an automated and faster cycle through easier bucket filling, higher bucket filling level and better penetration into the soil. In addition to reducing fuel consumption by 10%, the Liebherr Bucket Fill Assist system also reduces vibrations.

#### New control concept

The EC-B crane can be operated from a distance via teleoperation. In combination with new assistance systems, the crane operator works safer, faster, and easier.

#### Quiet and low in emissions

The unplugged versions of the LB 30 drilling rig, the LRH 200 piling and drilling rig as well as the LR 1130.1 crawler crane can be operated with battery or construction site power. They not only pave the way towards emission-free construction sites, but also contribute to a significant reduction in noise.



#### Generation 8 dozers

The three levels of Liebherr Operator Assistance Systems increase both the speed and the quality of the grading performance for any dozer driver. "3D Grade" or "Ready Kit" options are the most common 3D machine controls, allowing customers to easily integrate a new Liebherr dozer into their digital construction site.



#### All-round talent

Encased in an appealing design, the 36 XXT truck mounted concrete pump combines the benefits of the 5-part multi-fold distribution boom with the unique Powerbloc pump drive unit with the patented semi-closed oil circuit HCC. Its compact assembly with no boom overhang at the rear ensures high manoeuvrability in confined spaces. The XXT support system ensures perfect stability. The pivoting XXT support is particularly versatile when supporting in tight spaces.



#### New LICCON control system

The new generation of crane controls comes with faster data bus, larger memory and is prepared for fleet management and telemetry as standard. LICCON3 remains familiar but is made for the future.

#### Safe and comfortable

Liebherr offers a comprehensive range of intelligent assistance systems for its wheel loaders. They support machine operators in their daily work. Assistance systems, such as the active personnel detection or the Liebherr weighing system, are designed to increase comfort, productivity and safety during operation.



#### Emission-free crane operation

In addition to a combustion engine, the compact all-terrain crane LTC 1050- 3.1E comes with an optional electric motor and can thus operate CO<sub>2</sub>-emission-free in crane operation.



#### Faster change of attachments

Attachment Assist supports the operator with automatic attachment recognition. If an attachment is changed, the machine settings are automatically adjusted to the newly coupled attachment. The data between the machine and the attachment is transmitted by radio using a tracker. This means that any attachment can be supported. All relevant operating data such as operating hours and coupling times are recorded and made available online.



#### Reducing CO<sub>2</sub> emissions

The LR 11000 crawler crane can fully run on HVO saving up to 90% of CO<sub>2</sub> emissions in operation.

From planning, to operation, analysis, and finalization – from the start, we are always at our customers' sides with our digital solutions.



#### Planning

With our operative planning tools, we support our customers with site management. This begins even before the purchase with the selection of the right machine. It's also possible to plan the operation on site with the help of a planning software.



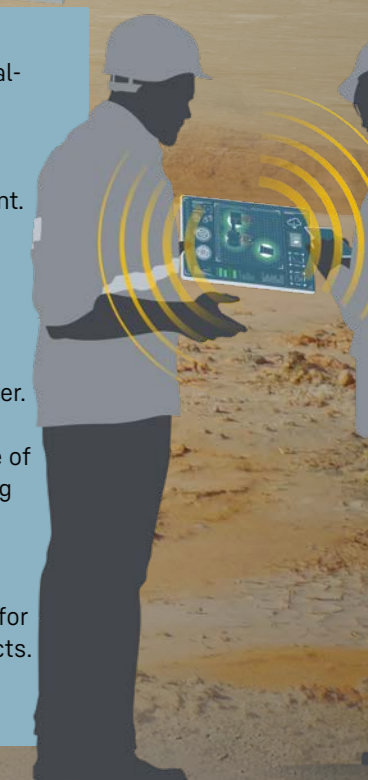
#### Operation

Our assistance systems make operations on the construction site easier and safer. Condition monitoring gives detailed information on the status of our machines from a distance, reducing downtime. And with the help of teleoperations, some of our machines can even be operated from a distance – for an even safer working environment.



#### Analysis

Following on-site operations, we use the obtained machine- and process data for analysis and documentation of the operation and optimization for future projects.





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# Tower cranes



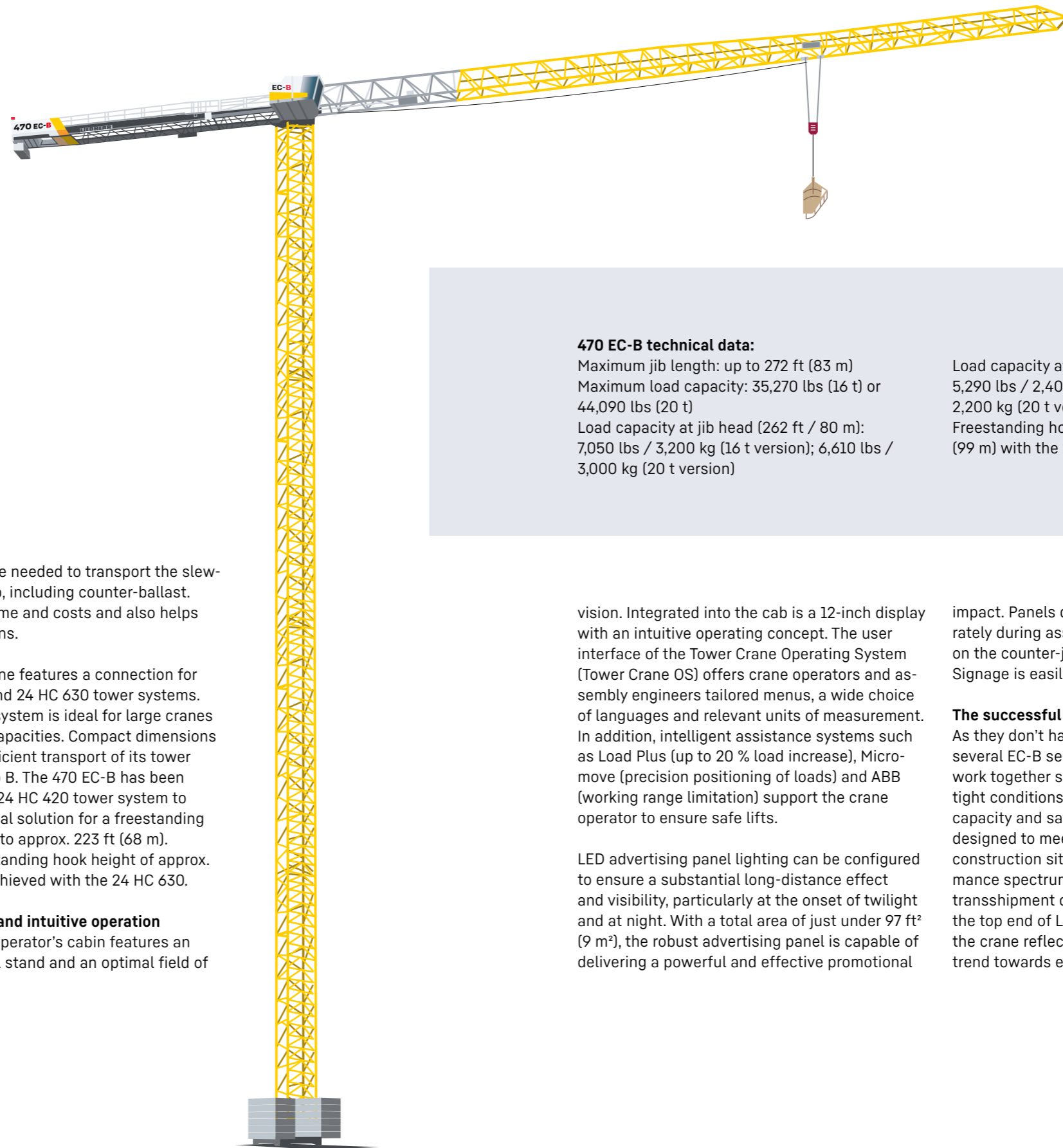
## Reaching greater heights

Morrow Equipment, LLC. rents out three Liebherr tower cranes to lift and place construction materials at a Miami, Florida condominium site. These include two 316 EC-H Litronic at heights of 753' HUH (230 m) and 791' HUH (241 m), as well as one DR 200 Derrick crane to assist in disassembly. Morrow is an exclusive dealer for Liebherr tower cranes and currently has the largest tower crane fleet in North America, with 563 cranes.



## Tower cranes

# Strong performance and long reach: the 470 EC-B flat-top crane from Liebherr



Liebherr is presenting the 470 EC-B, its largest flat-top crane in steel rope design, at Conexpo in Las Vegas. The top-slewing crane excels with a maximum lifting capacity of 35,270 lbs (16 t) or 44,090 lbs (20 t). From transport and assembly to operation on site, Liebherr's machine meets all the key requirements of a modern crane fleet.

The EC-B series flagship crane offers a jib length of 262 ft (80 m). With an optional jib extension, this reach can be increased to 272 ft (83 m), setting new standards in the market. With a jib length of 262 ft (80 m), the 35,270 lbs (16 t) version of the 470 EC-B achieves a lifting capacity of up to 7,050 lbs (3,200 kg) at its head; the 44,090 lbs (20 t) version impresses with a top lifting capacity of up to 6,610 lbs (3,000 kg). The jib can be divided in two-and-a-half meter sections for precise site planning.

### Optimized for transport and assembly

During development, the focus was just as much on assembly and transport as it was on performance. All cranes in the EC-B series allow the jib and counter-jib to be attached to the slewing platform easily, conveniently and safely. This is made possible by Liebherr's proven quick assembly connections. In the case of the 470 EC-B,

only five trucks are needed to transport the slewing section and jib, including counter-ballast. This saves both time and costs and also helps to reduce emissions.

The climbable crane features a connection for both 24 HC 420 and 24 HC 630 tower systems. The 24 HC tower system is ideal for large cranes with high lifting capacities. Compact dimensions allow the cost-efficient transport of its tower sections from A to B. The 470 EC-B has been optimized for the 24 HC 420 tower system to offer an economical solution for a freestanding hook height of up to approx. 223 ft (68 m). A maximum freestanding hook height of approx. 325 ft (99 m) is achieved with the 24 HC 630.

### Ergonomic cabin and intuitive operation

The LiCAB crane operator's cabin features an ergonomic control stand and an optimal field of

### 470 EC-B technical data:

Maximum jib length: up to 272 ft (83 m)  
Maximum load capacity: 35,270 lbs (16 t) or 44,090 lbs (20 t)  
Load capacity at jib head (262 ft / 80 m): 7,050 lbs / 3,200 kg (16 t version); 6,610 lbs / 3,000 kg (20 t version)

Load capacity at jib head (272 ft / 83 m): 5,290 lbs / 2,400 kg (16 t version); 4,850 lbs / 2,200 kg (20 t version)  
Freestanding hook height: up to approx. 325 ft (99 m) with the 24 HC 630 tower system

vision. Integrated into the cab is a 12-inch display with an intuitive operating concept. The user interface of the Tower Crane Operating System (Tower Crane OS) offers crane operators and assembly engineers tailored menus, a wide choice of languages and relevant units of measurement. In addition, intelligent assistance systems such as Load Plus (up to 20 % load increase), Micro-move (precision positioning of loads) and ABB (working range limitation) support the crane operator to ensure safe lifts.

LED advertising panel lighting can be configured to ensure a substantial long-distance effect and visibility, particularly at the onset of twilight and at night. With a total area of just under 97 ft<sup>2</sup> (9 m<sup>2</sup>), the robust advertising panel is capable of delivering a powerful and effective promotional

impact. Panels don't have to be mounted separately during assembly and can remain in place on the counter-jib end section during transport. Signage is easily applied.

### The successful EC-B series

As they don't have a tower head structure, several EC-B series flat-top cranes are able to work together safely on the same site, even in tight conditions. Transport, assembly, handling capacity and safety: EC-B cranes are specifically designed to meet the requirements of modern construction sites. They cover a wide performance spectrum, ranging from small city to large transshipment cranes. The 470 EC-B completes the top end of Liebherr's successful series, with the crane reflecting the construction industry's trend towards ever heavier components.



# Liebherr's 125 K: The largest in a successful family

With a radius of 180 ft (55 m) and a hook height of up to approx. 217 ft (66 m), the Liebherr 125 K is currently the largest fast-erecting crane on the market. High load capacities and large radii for projects with limited lead times: the 125 K is a perfect match for exactly these operational requirements. The crane is therefore ideal for work on construction projects such as multi-story residential buildings, bridges and industrial facilities.

North American-based Extreme Construction Inc. is a Liebherr customer who has opted for the 125 K, in this case with an external cab and special paint finish. For its first job, the crane assisted in the construction of an eight-story residential building in the New York metropolitan area. Its multiple tasks included lifting concrete components and placing steel structures.

In contrast to other lifting solutions, such as loading or telescopic cranes, there was also no need to plan in extra tracks and positioning sites. Given the limited space on the construction site, this was a decisive argument in favour of the fast-erecting crane. The 125 K also shows off its reach, usability, intelligent assistance systems and flexibility.

## A hook height of up to approx. 217 ft (66 m)

The 125 K offers an initial hook height of approx. 98 ft (30 m) as standard. Five tower sections can be additionally inserted to reach a total hook height of approx. 136 ft (42 m). This means that even major construction projects can be mastered. If the hook height still isn't sufficient, a 30° luffed jib position enables the crane to reach a hook height of 217 ft (66 m).

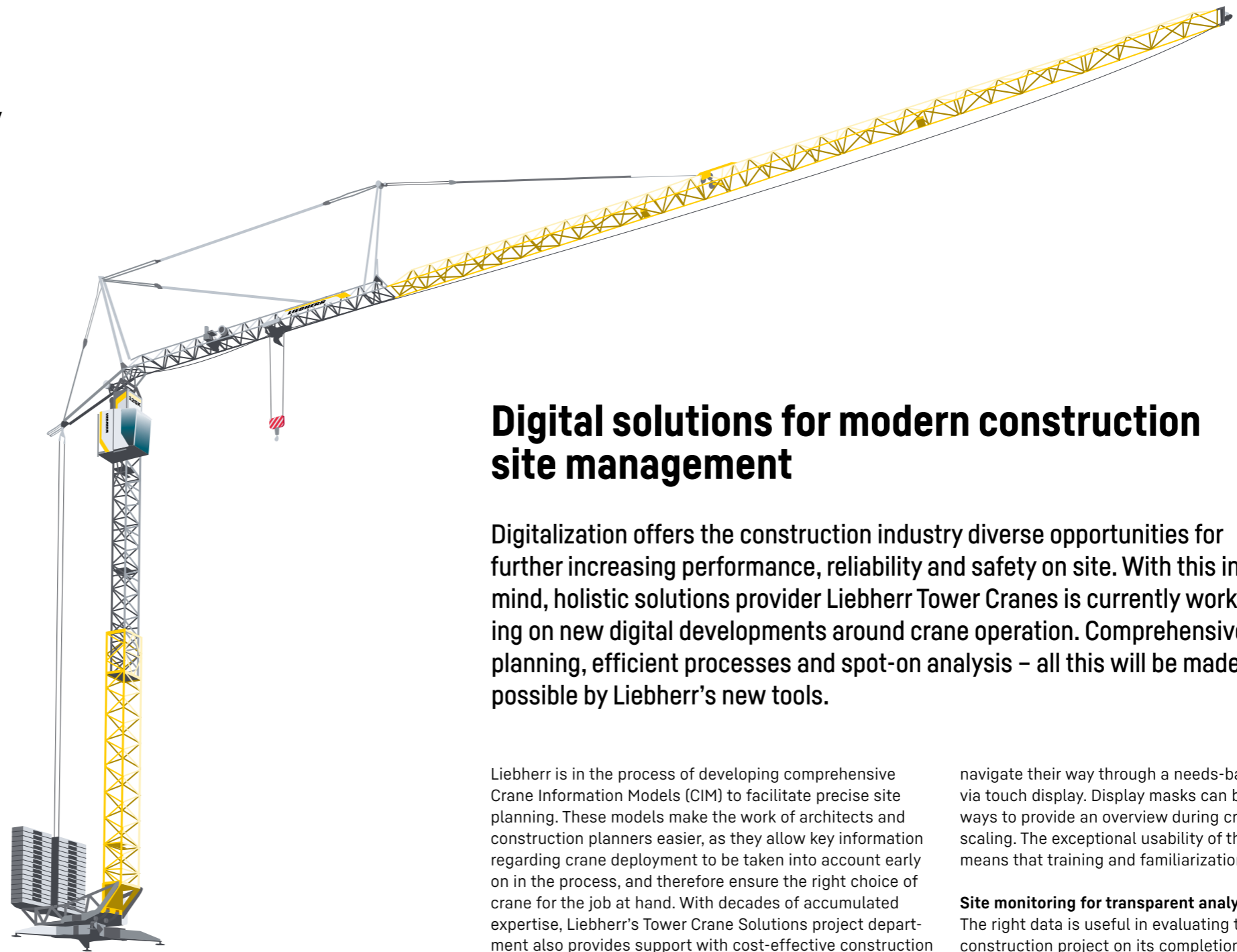
The Liebherr crane has a maximum load capacity of 17,630 lbs (8,000 kg) and is capable of lifting up to 2,866 lbs (1,300 kg) at the jib head, at a radius of 180 ft (55 m). Its exceptional flexibility is also demonstrated by its five radius options, ranging from 115 ft (35 m) to 180 ft (55 m).

## Flexible deployment even in tight spaces

Construction site conditions are becoming increasingly tight and therefore require tower cranes to have compact dimensions to match. With its 11 ft (3.2 m) slewing radius, the Liebherr 125 K fast-erecting crane is consequently able

to fit into very small spaces. Thanks to its variable slewing radius, which can be extended to 13 ft (4 m), the amount of transportable ballast can be reduced – which in turn reduces costs.

In addition to familiar features such as the Micromove fine positioning mode, Load Plus (short-term load increase of 20%) and Liebherr's Speed2Lift pure two-line operation, further improvements have also been thought out in detail. This includes site lighting with LED floodlights to ensure even better site illumination.



## Digital solutions for modern construction site management

Digitalization offers the construction industry diverse opportunities for further increasing performance, reliability and safety on site. With this in mind, holistic solutions provider Liebherr Tower Cranes is currently working on new digital developments around crane operation. Comprehensive planning, efficient processes and spot-on analysis – all this will be made possible by Liebherr's new tools.

Liebherr is in the process of developing comprehensive Crane Information Models (CIM) to facilitate precise site planning. These models make the work of architects and construction planners easier, as they allow key information regarding crane deployment to be taken into account early on in the process, and therefore ensure the right choice of crane for the job at hand. With decades of accumulated expertise, Liebherr's Tower Crane Solutions project department also provides support with cost-effective construction site planning.

## Quick communication, intuitive operation

Further improvements for more efficient load handling are also in the spotlight. Thanks to the interface of the Tower Crane Operating System, which a number of cranes already feature, crane operators and service technicians are able to

navigate their way through a needs-based menu structure via touch display. Display masks can be combined in various ways to provide an overview during crane operation and scaling. The exceptional usability of the Tower Crane OS means that training and familiarization times are reduced.

## Site monitoring for transparent analysis

The right data is useful in evaluating the success of a construction project on its completion. Although every construction site is different, it is nevertheless possible to learn from processes for subsequent projects. This is where Liebherr's digital "Site Monitoring" solution comes into play. Relevant crane data can be easily recorded, displayed and analyzed. Such information also provides site supervisors and construction planners with a reliable overview of efficiency and construction progress.



# Earthmoving

## Earthmoving experts

At the 148-acre Triangle Brick industrial park in Durham, North Carolina, Sullivan Eastern, Inc. is using approximately 20 Liebherr earthmoving machines for mass site grading as well as installing storm and sanitary sewers along with the installation of DIP water lines. This large-scale project requires the dewatering of the existing quarry of 50 million gal (189,27 million l) of water while also complying with all local, state, and federal requirements and regulations. Sullivan Eastern relies on Liebherr earthmoving for complex projects due to easy maintenance of machines, parts, as well as superior quality of Liebherr products, parts, and service.





## Earthmoving

# Liebherr A 918 Litronic wheeled excavator performs wide range of earthmoving applications

Liebherr will be presenting the A 918 Litronic wheeled excavator at Conexpo. The machine is designed for applications both in the field of classic earthmoving and in traffic route, sewer and pipeline construction. It has an operating weight of 38,800 – 44,313 lbs (17,600 to 20,100 kg), with an engine output of 163 hp (120 kW).

### Power, speed and precision

The A 918 Litronic contributes to success on every construction site with lasting power, speed and precision. Thanks to the intelligent design of the superstructure and the separate bearing of the lifting cylinders, the machine offers an excellent load-bearing capacity combined with high breakout and breakaway forces. Using the MODE switch, the speed of the machine can be easily adjusted to the different application variants. The standard joysticks with proportional control and the exceptional sensitivity of the hydraulic system enable precise work at high speeds and parallel movements. This enables the machine operator to perform the most demanding tasks in a short time, not only at reduced speed, but also at maximum machine output. The new automatic working brake is fitted as standard on the A 918. This means that the service brake opens automatically when the machine starts up and closes again automatically when it stops. This ensures maximum safety and high productivity as a result of shorter reaction times.

### Optimum economic efficiency

The Liebherr A 918 wheeled excavator is equipped with a robust D 924 diesel engine that complies with Tier 4f emission regulations. To fulfil these regulations, Liebherr uses SCR technology which consists of an SCR catalyst system and other components such as an injector and AdBlue® supply. A particulate filter is not necessary, but can be additionally installed for special site requirements. The overall system effectively reduces exhaust emissions and does not result in any loss of performance. Fuel consumption is also significantly reduced with the innovative Liebherr Power Efficiency (LPE) system, which optimally regulates all power management processes of the wheeled excavator. Proactive intervention in the engine control system, changing the swivel angle of the hydraulic pump and adjusting the engine speed result in optimum efficiency of the drive components in every work situation.

### Comfort in everyday work and easy maintenance

Another highlight of the A 918 is the modern operator's cab, which ensures safety and comfort. The large windows offer the operator the best possible view. Other features such as the windshield wiper for the lower front windshield, generous storage options, an easy-to-clean floor mat and four-dimensionally adjustable armrests optimally round off the equipment of the operator's cab. The service-oriented machine design also guarantees short maintenance times and minimizes the maintenance costs incurred. All components of the A 918 that require maintenance are clearly arranged on the right side of the machine, conveniently accessible from ground level and easy to reach thanks to the large and wide-opening service doors.



## Railroad excavator A 924 Rail Litronic with new fully automatic hydraulic quick coupling system Solidlink 33-9

In the railroad excavator sector Liebherr is able to look back on a decade-long experience in development and production. The first Liebherr railroad excavator was already manufactured in 1967 at the factory in Kirchdorf/Iller, Germany. This knowledge as well as continuous progress are the base of excellent quality and reliability for the current generation. As an OEM manufacturer, Liebherr is leading on the global market in this field.

At Conexpo, Liebherr is presenting the A 924 Rail Litronic, a representative of the new generation of successful railroad excavators. The machine has an operating weight of 48,100 – 55,100 lbs (21,800 to 25,000 kg) and meets the requirements of emission stage Tier 4f. The track undercarriage is mounted on both sides of the undercarriage. During rerailling, the rail guide is lowered axle by axle until the inner wheels of the twin tires are in contact with the rail wheel and ensure frictional engagement of the traction drive. The machine is equipped with a 163 hp (120 kW) strong and robust engine. In combination with the optimally tuned hydraulic system, the machine achieves a consistently high working speed with fluent working movements. The innovative hydraulic concept includes a Liebherr variable displacement double pump with independent control circuits. Powerful hydraulic attachments can then be operated independently of the working and travel movements of the machine.

### Service-oriented machine design and safety systems

The service-oriented machine design of the A 924 Rail Litronic guarantees short maintenance times and minimizes maintenance costs thanks to time savings. All maintenance points are easily accessible from ground level.

The spacious, sound-insulated double cab with rollover protection (ROPS) offers the best conditions for comfortable, concentrated and productive work with its modern interior design. The usual generous glazing in combination with standard rear and side cameras ensures optimum visibility of the working and slewing area.

As work safety plays an important role in track construction, Liebherr offers its own safety systems specifically developed for rail applications. Numerous features such as pipe break-



age protection on lift and stick cylinders, electronic height and slewing limitation, load moment limitation in accordance with EN 15746-2, impact-resistant roof panel made of laminated safety glass, rollover protection (ROPS) and the emergency exit through the rear window ensure the greatest possible safety during every operation.

### Numerous attachments and new quick coupling system

To boost the productivity of the machine, Liebherr offers a broad range of attachments for different fields of application. At Conexpo, several attachments will be shown on the A 924 Rail exhibit: For example a tiltrotator, backhoe bucket and ditch cleaning bucket as well as sorting grapple and clamshells can be seen. Furthermore, the machine can be equipped with the Liebherr fully automatic hydraulic quick coupling system Solidlink, previously known as "LIKUFIX". Solidlink is a hydraulic quick coupler combined with an automatic hydraulic coupling system specifically developed by Liebherr. It allows mechanical and hydraulic attachments to be quickly and safely changed from inside the cab. This boosts productivity on average by 30%. The construction process is accelerated, and orders are completed faster. At Conexpo, Liebherr shows on the A 924 Rail the new Solidlink 33-9 quick coupling system. With the integrated second high-pressure circuit and leakage oil and lubrication line, machine operators can now also change attachments such as tamping units, mulchers with flaps or Liebherr stick extensions quickly and easily from the operator's cab. Solidlink 33-9 is backwards compatible, meaning attachments equipped with the current quick coupling system Solidlink 33 can also be changed.



## XPower® wheel loaders: At the forefront of fuel efficiency and robustness

In the years since their debut, Liebherr's XPower® large wheel loaders have established themselves at the forefront of fuel efficiency and stability. One main reason for that is their power-split travel drive, installed as standard in all Liebherr XPower® wheel loaders. However, XPower® includes more than its unique power-split driveline: It is an integrated, innovative machine concept that sets benchmarks in terms of fuel efficiency, performance, robustness and comfort.

The XPower® driveline combines hydrostatic drive, which is ideal for material uptake and travelling over short distances, with mechanical drive, the advantages of which are seen over long distances and when driving on gradients. The combination of these two drive types, mounted as standard in the XPower® wheel loaders, ensures maximum efficiency and outstanding fuel savings in every situation, enabling operators of the Liebherr XPower® wheel loader to reduce their fuel consumption significantly.

### Lift arm variants for different applications

Before purchasing a XPower® wheel loader, customers can choose between different lift arm versions based on their requirements. The standard lift arm includes z-bar kinematics, offering high breakout forces and maximum force when the attachment is close to the ground. This is an important feature when picking up and loading rocks, gravel or construction debris or when breaking material out of a pile, for example in a quarry.

However, Liebherr XPower® wheel loaders are also used in tough industrial applications, where they handle scrap,



waste, slag or timber. For these purposes, Liebherr offers industrial kinematics. This lift arm version is tailored to industrial operations that frequently require the operation of heavy working tools such as light material buckets, high dump buckets and log grapples. In addition, the industrial kinematics offers parallel guidance, which is ideal for operating forklifts.

Moreover, for increased reach and more productive loading at a great height, Liebherr offers a High Lift arm as an option.

### Assistance systems and joystick steering

Liebherr offers a comprehensive range of intelligent assistance systems for its XPower® wheel loaders. These include active personnel detection with brake assistant, the Sky-view 360° camera system, the Liebherr weighing system or several systems that facilitate the use of the lift arm and the attachment for less experienced machine operators. These solutions increase comfort and safety in the daily work of a wheel loader.

For applications that require numerous steering maneuvers, Liebherr offers its comfortable joystick steering system. It allows the machine operator to comfortably steer using short movements of the ergonomic joystick. The position of the joystick always corresponds to the respective articulation angle of the wheel loader. The force feedback of the joystick ensures the best possible driving and operating experience.



## New wheel loader trio: Robust and versatile machines

Liebherr has redeveloped and fundamentally revised its range of medium-sized wheel loaders. The newly designed lift arms ensures maximum breakout, holding and return forces. It has optimized z-bar linkage and improved working hydraulics. Increases in engine power and tipping loads prepare the wheel loaders for demanding operations in various industries, such as extraction, recycling or the timber industry.

The three models of the latest Generation 8 have bucket sizes between 2.9 and 3.9 yd<sup>3</sup> (2.2 and 3.0 m<sup>3</sup>) in the standard version and are characterized by a significant performance boost compared to the previous generation. The new L 526, for example, has around 20% more engine power and over 20% higher breakout forces than its predecessor. The L 538 and L 546 models also feature performance improvements in all areas.

### Powerful and intelligent

In addition to the new lift arms, the optimization of the hydrostatic travel drive contributes to the increased productivity of the wheel loaders. The new, more powerful engines feature higher maximum torque at a lower nominal speed. This allows performance and efficiency to be increased while maintaining low fuel consumption. More powerful hydraulic components, such as enlarged travel motors and travel pumps, ensure greater traction in all three models and thus powerful bucket filling.

Intelligent equipment is also part of the overall package of the new wheel loaders. Examples here include the new automatic functions for the lift arm or the active personnel detection

with brake assistant. This optional assistance system warns the machine operator of hazards in the rear area of the wheel loader. For a targeted warning of imminent personal injury, the system uses sensors and artificial intelligence to automatically distinguish between people and objects.

This intelligent classification reduces the number of unnecessary warning signals and thus the burden on the machine operator. In addition, the brake assistant automatically decelerates the wheel loader's speed as soon as the sensors detect a source of danger. This shortens the stopping distance by important meters, further reducing the frequency and intensity of potential accidents.



## New crawler excavators: More power, less consumption

The crawler excavators of the Generations 5.2 and 6.2 with a weight of 154,320 to 220,460 lb (70 to 100 t) have numerous improvements. In addition to productive and comfortable working, the main focus of the new development was on reducing fuel consumption.

The Liebherr Power Efficiency (LPE) system, which regulates all power management processes, ensures that the new crawler excavators consume less fuel: Proactive intervention in the engine control, changing the swivel angle of the hydraulic pump and adjusting the engine speed lead to optimum efficiency of the drive components in every working situation. This allows you to get the maximum performance out of every drop of fuel – the new machines consume up to 15% less compared to the previous models.

### Greater perception in every respect

A step towards excavator automation is provided by the integrated Bucket Fill Assistant: The adaptive digging aid ensures faster filling of the bucket even in the most difficult conditions with a constant filling factor. The anti-stalling mode prevents the bucket from blocking during penetration into the excavated material. In this way, the system enables higher overall productivity while reducing vibrations, resulting in less fatigue for people and materials.

For the perfect adaptation of the machine to its application, the Modetronic function allows the hydraulic characteristics to be adjusted to the respective application or the preferences of the operator. The operator can choose between four working modes via touchscreen and control each movement individually.

The design and technically innovative equipment of the new crawler excavators emphasize the relationship to the Generation 8 models. These include numerous further developments in the cab area that increase safety and comfort.



## Efficiency advantage in extraction: New PR 766 G8 crawler tractor

Liebherr's fleet of Generation 8 earthmovers has a new addition: the PR 766 G8. With an operating weight of up to 121,250 lbs (55 t), it is also conquering the mining sector due to its "high drive".

Whether in material handling or mining: The multifunctional PR 766 G8 crawler tractor has enormous potential. Powered by an 8-cylinder diesel engine with a maximum output of 483 hp (360 kW), it meets Stage V and Tier 4f emissions standards. A resource-saving powerhouse, because the drive components and the intelligent Liebherr engine management system are so perfectly matched that the diesel engine speed is constantly kept in the economically optimal range by the hydrostatic drive. In addition, the standard ECO function allows the operator to choose between high performance – including automatic Power Boost – and maximum economy, saving further fuel in light to medium-duty applications.

### Optimized drive concept for heavy extraction operations

To make the PR 766 G8 fit for rocky terrain, Liebherr engineers have adopted the undercarriage concept of the larger 154,323 lbs (70 t) crawler tractor. The oscillating idlers and rollers absorb shocks and provide very good traction for the track chains. Another plus: The raised position of the final drive. This "high drive" reduces wear on sprocket segments (Turas) and bearing bushes, and also protects the drive and seals from damage and contamination.

### Intuitive operation with the best visibility

Operators find their way intuitively in the specifically designed operator's cab: Driving and steering movements can be controlled using the joystick; the 9-inch touch display can be used to read all important machine parameters, conveniently set operating modes and operate safety functions such as the reversing camera.

Edges sloping to all sides, the panoramic glazing as well as the rockfall and cab protection (ROPS/FOPS) integrated directly into the cab structure provide an optimal view of the terrain, the two available blades and the rear ripper. The modular lighting concept also ensures the best possible visibility with auxiliary headlights and 4,200-lumen high-performance LEDs.





## Powerful performer for off-road applications – the TA 230 Litronic

At Conexpo, Liebherr presents the TA 230 Litronic, a representative of the new generation of articulated dump trucks. The machine has been redesigned from scratch based on comprehensive market and customer analyses, designed with state-of-the-art technical components and tested to the limit according to the highest quality standards. The result is an excellent product with a new design, representing maximum quality and reliability, is impressive in terms of performance and efficiency and provides the utmost comfort.

Transporting excavated materials, larger infrastructure projects and special applications such as tunnel construction are its specialty: The TA 230 Litronic articulated dump truck performs robustly and reliably on all terrains. This is made possible, among other things, by the power-efficient drive train, the permanent 6 x 6 all-wheel drive, the automatic traction control and massive axle suspensions. The machine has an operating weight of 54,200 lbs (24,600 kg) and is equipped with a 265 kW (355 hp) 6-cylinder construction machine engine with a displacement of 732.3 in<sup>3</sup> (12 l) which in combination with the exhaust gas aftertreatment system fulfils the specifications of exhaust emissions stage Tier 4f. With its large and robustly designed body, the dump truck transports up to 61,700 lbs (28,000 kg) of material. The body volume can be additionally increased with the aid of the tailgate.

### Best visibility at any time of day or night

In addition to its working power, the Liebherr dump truck is also distinguished by its innovative visibility and lighting concept. The generously designed operator's cab offers an unobstructed view of the machine's driving, working and articulation areas thanks to all around glazing with no obstructing struts and the short, sloping engine hood. Optimal visibility is ensured, even in twilight and darkness: The LED low beam headlights with integrated high beam optimally illuminate travel paths – and in combination with the optionally available extra-strong LED headlight on the front of the cab, also the entire working area. The lighting at the rear of the dump body and on the mudguards ensures that the maneuvering areas are illuminated.



## Tailor-made for diverse markets

Liebherr has been offering a customized wheel loader series for markets outside Europe and North America since 2010. The L 550, L 566 and L 580, the three largest models in the range, have now been overhauled – they feature larger tipping loads and buckets, stronger engine power and a new electro-hydraulic pilot control. Together with the Liebherr crawler excavators, which are also available in these markets, they perform reliably for customers worldwide.

The three new wheel loaders are equipped with the efficient Liebherr hydrostatic travel drive. On the L 550, for example, the engineers have increased the engine output by 17%. This makes the machine even more powerful while maintaining low consumption. Liebherr installs the diesel engine in the rear, where it acts as a counterweight to help increase the wheel loader's tipping load.

Three lift arm variants are available for the new models: The z-bar linkage for high breakout forces, the industrial kinematics for working with heavy attachments such as high-tipping buckets or timber grabs, and the High Lift arm for loading operations that require high lift heights or more reach. Thanks to the new electro-hydraulic pilot control, all lift arm variants can be moved responsively, regardless of size and weight.

### Clearly designed interior and exterior

The modern design language of the L 550, L 566 and L 580 has many functional advantages: The clean lines at the rear and large glass areas at the cab provide good visibility; the new reversing camera allows an overview of the rear area. The height-adjustable high-resolution 9-inch touch display, which shows all information about the operation, is also clearly arranged. The Liebherr operating lever, in turn, enables delicate work movements. Hydraulic attachments can also be controlled precisely with the optional mini joystick.



### Crawler excavators for all applications

Liebherr also offers a wide range of crawler excavators with 30 different models to meet the specific requirements of the less and non-regulated markets. Either for demolition work, tunnel operations, earthmoving or quarrying, Liebherr crawler excavators are broadly adapted to all markets. These machines are based on the new generations of excavators, which have been completely redesigned with comfort, safety, ergonomics and productivity in mind.

One example of this is the new R 945 from Generation 8 Stage V. The machine has a completely updated design, which is characteristic of the new range of 'Generation 8' machines. It also has an operating weight of a little more than 88,200 lbs (40 t) and a large backhoe bucket capacity. The architecture of the R 945 has been completely revamped to provide even greater comfort, better ergonomics and higher performance. The R 945 is suitable to diverse markets and is available worldwide, no matter what the standards of the countries are.







# Material handling technology

## Sustainable solutions

CASS, Inc. works in collaboration with strategic partners, including Liebherr and Liebherr earth-moving dealer BEJAC, to accelerate the world's transition to sustainable energy. CASS utilizes Liebherr material handling equipment, including the LH 40 M Industry Litronic, in daily operations to convert over 140 million lbs (63,5029 million l) of society's end of life metal products into 100% recycled, chlorine-free aluminum, annually. With over 50 years of experience, CASS promotes an eco-responsible mission inspired by the belief that as recyclers, we all have a responsibility to protect our environment through responsible manufacturing.



# Powerful and efficient: Liebherr material handlers for scrap handling

At Conexpo, Liebherr showcases two material handlers designed for scrap handling: the LH 30 M Industry Litronic and the LH 60 M Industry Litronic.



The handling of scrap steel and other metals is one of the toughest applications in industrial material handling. Especially when loading and unloading trucks and ships, loading shredder conveyors or sorting out different kinds of metals, robust, reliable, high-performing and economical material handlers are required. Liebherr addresses the challenge to produce extremely robust machines designed for the toughest requirements, and are also extremely efficient and economical through the in-house manufacture of many components, among other things. Requirements necessary in later applications are already integrated in the development of these components, whereby Liebherr material handlers are optimally prepared for every work situation.

Parts and components such as injection system, hydraulic cylinders and electronics are adapted to each other and thereby contribute towards the capability and efficiency.

The powerful LH 30 M Industry Litronic with an operating weight between 58,400 – 64,200 lbs (26.500 – 29.100 kg) showcases its versatility and demonstrates maximum handling capacity in all applications. Thanks to the optimally designed engine power of 190 hp (140 kW), a high torque is available to the system for powerful and fast movements. The separate hydraulic pump in the closed slewing circuit only supplies hydraulic fluid to the swing mechanism. The maximum delivery volume is therefore always available for swivelling the uppercarriage, making fast and overlapping movements possible. The spacious cooler with large meshes also guarantees excellent cooling of the machine at full power, thus ensuring high machine availability.



With an operating weight between 121,300 – 134,500 lbs (55.000 – 61.000 kg), the LH 60 M Industry Litronic is designed for heavy-duty scrap handling. The hydraulic cab elevation, as well as rear and side area monitoring systems give the operator an optimal view of his working area and the surrounding area of the machine. The perfect overview gives the operator a feeling of security and ensures safe handling of the machine at all times. The foldable left arm console, as well as wide, non-slip steps, walkways and platforms, ensure easy, comfortable and safe entry and at the same time guarantee access to all maintenance points. Equipment such as a cab protective grid, impact-resistant laminated safety glass and piston rod protection for cylinders are specifically developed for the use in scrap handling and also guarantee maximum reliability in these conditions. The material handling machine is equipped with the patented Liebherr ERC System (energy recovery system) that gives the machine a boost in terms of performance and also saves fuel. This results in significantly greater material handling performance as well as improved machine economy.

The equipment of the two material handlers is available in several variations and therefore always coordinated specifically to the individual application. In order to also increase the productivity of the machines, Liebherr offers a broad selection of attachments. Especially for the area of heavy-duty material handling technology, special multi-tine grapples are available for the diverse applications. Machines can also be equipped with a fully automatic quick coupling system, which increases the utilization of the machines by up to 30%.



# Deep foundation machines

## Mass expansion

What was once a barren industrial area is now vigorously expanding as the LB 45 drilling rig takes action for Iron Shoring. With full power, the Kelly auger penetrates the loamy soil and shakes off any excess. The LB 45 is the successor to the proven drilling rig LB 36-410. Its torque is 450 kNm – a 10 % increase in comparison to its predecessor.





## Deep foundation machines

# A dexterous powerhouse

High torque, wide range of applications, helpful assistance systems: The LRB 23 piling and drilling rig proves to be a new multi-talent in deep foundation engineering. Its compact design allows it to be transported in one piece, making it easy to move between construction sites.

With an impressive engine power of 804 hp (600 kW), the LRB 23 delivers the capacity for all common deep foundation engineering applications, such as drilling with double rotary head, full displacement and continuous flight auger drilling, soil mixing or tasks with vibrators and hydraulic hammers. Since the machine can withstand high torques of up to 221,269 lbf-ft (300 kNm), even Kelly drilling is possible – a process that is quite unique for a device in this size class.

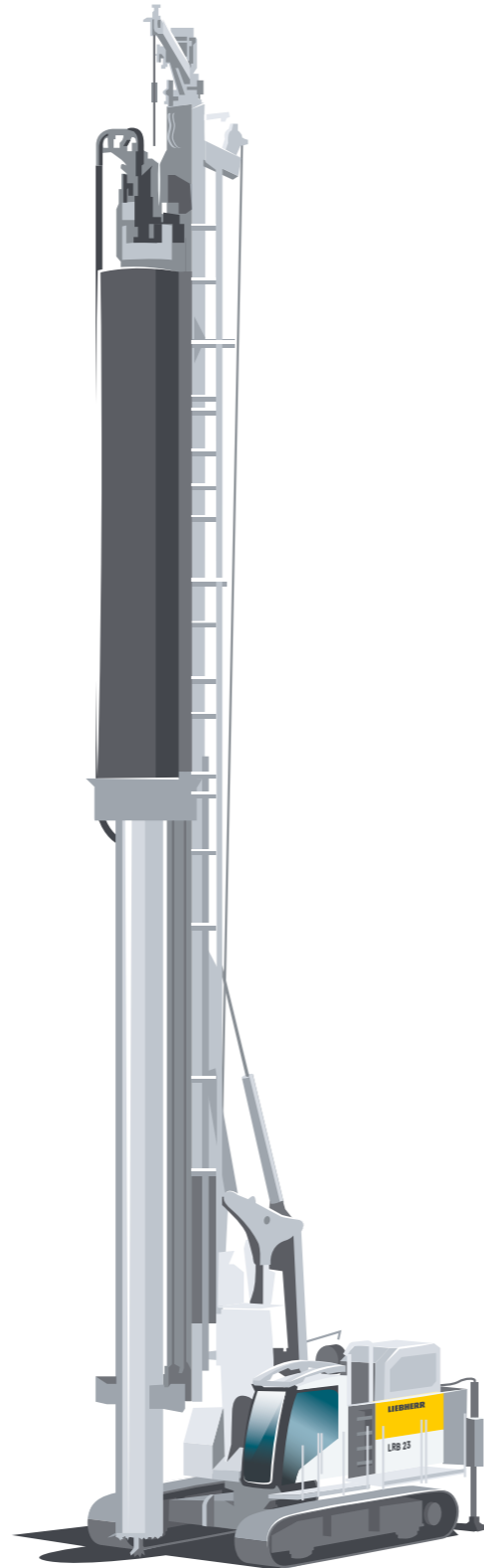
### More efficiency and safety

One challenge in Kelly drilling is the correct locking of the drill rod, the so-called Kelly bar. On the LRB 23, a real-time display on the cab monitor ensures that machine operators know the actual distance from the next locking pocket. A colour change signals when they can lock the bar and the numbering shows which locking pocket is next. If the Kelly bar is in the wrong position during the shaking off process, a warning signal appears. The Kelly visualization also works for telescopic Kelly bars with multiple segments. With the help of the automatic shake-off system, the emptying process is triggered at the push of a button. The number and intensity of the left-right movements can be preset. This protects both people and the machine.

When loading the LRB 23, a remote control offers more safety: Because the operator can move around outside the cab, they have a better overview when maneuvering. The view of possible collision points also makes it easier to raise and lower the leader.

The integrated drilling assistant regulates the thrust and speed of the feed system during drilling and matches them to the speed and torque of the drill drive. When pulling and concreting at the same time, the automatic control ensures that the optimum amount of material flows in.

The ground pressure display of the LRB 23 calculates the current ground pressure in real time and compares it with predefined safety limits of the respective construction site. The ground pressure is displayed in the operator's cab. This way the equipment operator knows at all times whether they are in or are approaching a critical range. With its high performance and tailor-made assistance systems, the LRB 23 stands for maximum precision, availability and safety in use.



## Emission-free deep foundation engineering with four new unplugged models

Liebherr is expanding its range of electrified unplugged models with two new models each in the pile driving and drilling areas.

Since the alternative drive of the LB 16 unplugged quickly established itself as a game-changer in the market, the concept was transferred to other product areas. Today, crawler cranes, piling and drilling rigs make up the electrified unplugged range.

All new unplugged models are available in both conventional and battery-powered versions and have identical performance data. The batteries are charged using conventional site power. During the charging process, operation can continue as usual. To enter battery mode, only the plug has to be pulled out, hence: "unplugged". Whether plugged in or unplugged, the performance and range of applications remain unchanged.

### Pile driving: LRH 100.1 unplugged and LRH 200 unplugged

In the two new additions, the LRH 100.1 unplugged and LRH 200 unplugged, a battery pack with 200 kWh enables an average pile-driving operation of four to five hours. It can be optionally upgraded to eight to ten hours of battery operation. In addition to pile driving, the new concept of the LRH 200 also extends its range of applications to drilling operations with continuous flight auger, full displacement equipment or down-the-hole hammer as well as wet mixing. A torque of 184,391 lbf-ft (250 kNm) provides the necessary power.

### Drilling: LB 25 unplugged and LB 30 unplugged

The proven LB 25 and LB 30 drilling rigs are now also available as unplugged versions – with the identical performance data and application possibilities in deep foundation engineering, whether in battery or cable operation. The battery is designed for a working time of four hours in Kelly use.

The optional extension of the drilling axis allows the machines to be used for drilling diameters of up to 11.2 ft (3.4 m). The optional rear support and the new design of the modular rear ballast provide more stability and a longer service life. Both units are available with a total height of 46.3 ft (14.1 m) as Low Head or only 25.3 ft (7.7 m) as Ultra Low Head, in addition to the standard configuration.

### Zero emission – powerful and quiet

The battery-powered Unplugged machines do not produce any exhaust gases and are very quiet. This makes them particularly appealing to construction site personnel and residents in noise-sensitive regions. The concept is already being successfully implemented in large cities such as London, Paris and Oslo.





# Mobile and crawler cranes

## Turbines in Texas

The Prairie Hill wind project is situated in a rural area of central Texas near Waco. The wind farm consists of one hundred 3.0 MW wind turbines and the Myshak Group was responsible for erecting and assembling 13 of the stand-alone towers with their LG 1750. Myshak, a family and employee-owned business from Acheson, Alberta, Canada has erected and installed roughly 300 wind turbines across North America. In the wind industry, both of their LG 1750 play a key role, due to the fast mobilization and demobilization times from one tower to another.





## Mobile and crawler cranes

# The crane of the future is already here: the LTM 1110-5.2 with LICCON3 control system

In the LTM 1110-5.2, Liebherr combines numerous innovations into a completely redesigned mobile crane concept. In addition to a simple, intuitively operated new control system, this includes numerous innovations for more safety and comfort. Smart technology in the undercarriage rounds off the overall concept and makes it what it is: the crane of the future.

The LTM 1110-5.2 represents the future of the all-terrain series – with a new crane control, new cab and new transmission. The LTM 1110-5.1 was presented at Bauma 2019. Now this crane is available as a LICCON3 crane named LTM 1110-5.2 and is the first model to feature the new LICCON3 crane control, a design award-winning cab and the innovative TraXon DynamicPerform transmission. The second crane with LICCON3 is the LTM 1100-5.3, exhibited at the 2023 Conexpo.

### LICCON3 control system – still familiar but made for the future

At first, crane operators will not notice any great difference in the functions of the crane control, because in the development of the third generation of the LICCON control (Liebherr Computed Control), the developers also relied on the proven operation and a high recognition value. At the same time, it scores with a faster data bus, significantly more memory and higher computer performance. This means it meets the requirements of the future. LICCON3 cranes are prepared for telematics and fleet management as standard. In future, all relevant data can be viewed and evaluated via MyLiebherr.

### Feel-good cabin for everyone

The most obvious element of the new control system in the upper cabin is the new large display with touch function. This offers the possibility of even easier and more comfortable crane operations without having to change the seat position. In addition, more information is available in the operating and display units on self-explanatory symbols. The holders and USB charging options for tablets and smartphones are also practical. The design of the cab is characterized by a combination of functionality and comfort – including a drink cooler – and was already rewarded with the renowned American GOOD DESIGN® Award in 2020. In the process, after the presentation of the cab prototype

at Bauma 2019, numerous suggestions for improvement from visitors and customers were incorporated into the series model. A new automatic heating and air-conditioning system provides adjustable temperature at the touch of a button – in summer and winter – and the radio-controlled central locking system and integrated access lighting on the ascent to the upper carriage ensure safety. Another plus for work safety is the optional LED lighting, which illuminates the crane and its surroundings very well in the dark.

### VarioBase® Plus, ECOmode, Hillstart-Aid and the new TraXon gearbox

Pioneering technology was also used in the chassis: VarioBase® Plus – a combination of VarioBase® technology and the crane's steel construction – ensures even higher load capacities, especially over the rear outriggers. ECOmode and ECOdrive minimize fuel consumption and noise emissions when operating the crane superstructure and on the move. And Hillstart-Aid makes hill starts easier.

The main innovation in the LTM 1110-5.2's driveline, however, is the use of the TraXon gearbox with the new DynamicPerform clutch module. A new feature of this gearbox is the oil-cooled multi-plate clutch, which has now been intensively tested and is ready for series production. With it, several starting processes are possible, even on inclines, and permanent manoeuvring is possible without overheating and wear of the clutch. Another plus for more economic efficiency: The hydraulic circuitry of the active rear axle steering has been optimized so that less fuel is consumed. With the single-engine concept for the drive of the superstructure and undercarriage, the crane also saves weight, which benefits the increase in the crane's load capacity. In addition, the diesel engine's exhaust aftertreatment system with SCR catalyst and particulate filter is now certified for both Europe and the USA.



### New: Liebherr fleet management for mobile and crawler cranes

At Bauma 2022, Liebherr presented its fleet management solution for mobile and crawler cranes – with live data and reports on location, diesel consumption, CO<sub>2</sub> emissions or even the current load on the hook and the wind speed on site. Many new cranes will receive this equipment as standard with immediate effect, while Liebherr is also working on retrofit solutions for cranes in the field. And best of all: Liebherr covers the telecommunications costs. It could hardly be easier to enter the world of telematics.

The Liebherr fleet management solution allows customers retrieve data on their machines at any time. This makes it possible to quickly determine where they are at the moment, whether the wind conditions there allow safe working and how high the fill level and the consumption of fuel and AdBlue are. If the level falls below certain limits, the system informs the user.

### Fast construction site reports – thanks to geofencing and MyLiebherr

It was important to the developers to offer exactly the data with which customers can manage their machine fleet sensibly and operate it economically. So-called geofencing allows certain areas to be defined on a map, for example a construction site. As soon as a crane is located there,

all data is assigned to this area. The subsequent analysis of operating hours, diesel consumption or CO<sub>2</sub> emissions serve to considerably simplify the billing of operations and the creation of certain reports.

The whole system is based on the proven customer portal “MyLiebherr”. It has been fundamentally modernized and will be successively made available to all customers with the new functions from 2023. All the machines in the fleet will then be clearly listed on the start page. All in all, the “Performance” area now forms a comprehensive fleet management system.

### The right solution for every crane

Liebherr cranes will in future have the mobile modem required for telematics as standard. For models built up to ten years ago, Liebherr will in future offer retrofit solutions so that they can also be integrated into the fleet management system.

### An easy start – without telecommunication costs

With the new Performance World, Liebherr offers an all around optimal package from the modem to data transmission and display. To make it easy to get started, Liebherr equips all of its modems with a data SIM card – and covers the costs, regardless of the country in which the crane is operated. Expensive surprises due to roaming are thus ruled out for Liebherr customers.



## New champion in its weight class

The latest member of the Liebherr crawler crane series is the LR 1400 SX, specially designed as a multipurpose crawler crane with a lifting capacity of 441 USt (400 t). The diversity of its range of applications and its flexibility are as great as its stature.

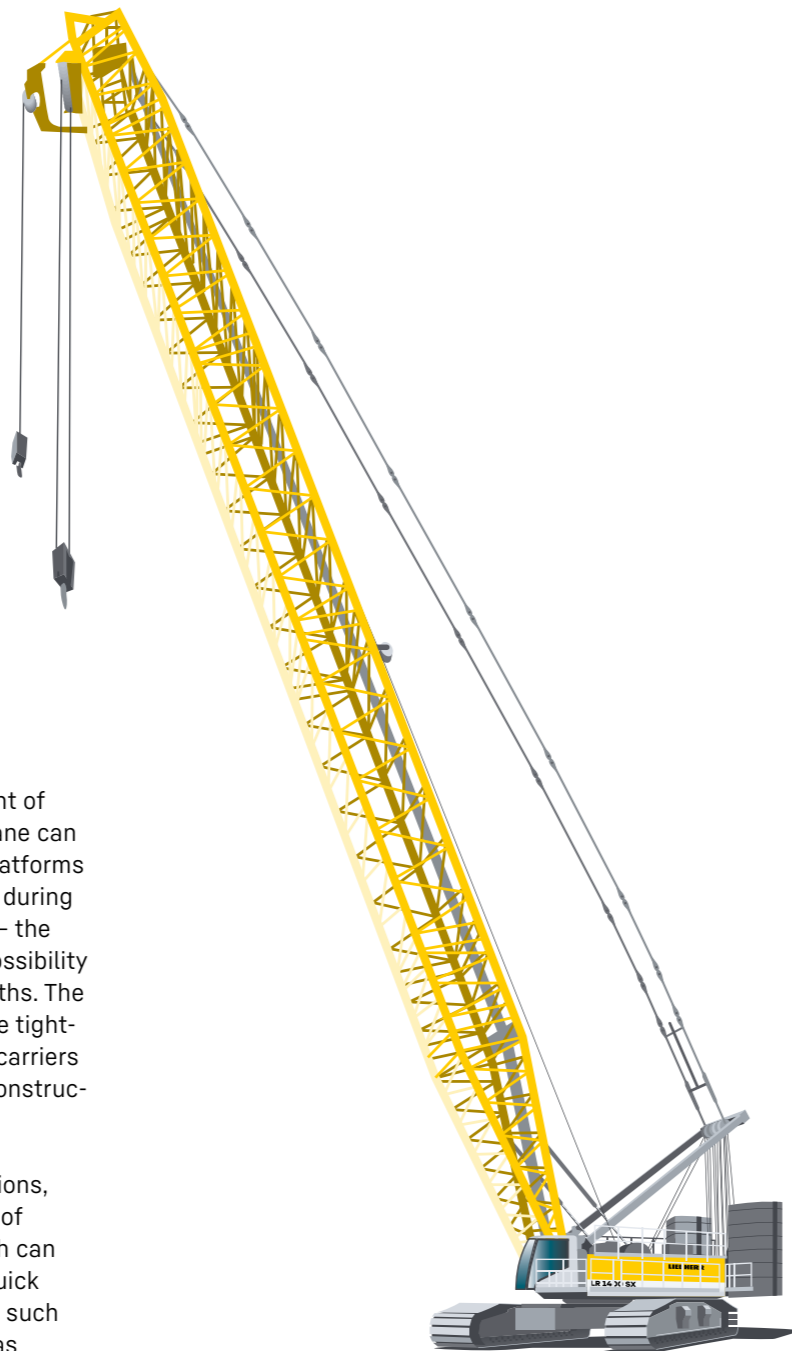
Thanks to its compact design and a transport weight of the superstructure of around 50.7 USt (46 t), the crane can be easily moved between construction sites. The platforms and railings remain mounted on the superstructure during road transport and only need to be folded in or out – the maximum transport width is just 9.8 ft (3 m). The possibility of track adjustment simplifies access on narrow paths. The crane also shows how flexible and mobile it is in the tightest of spaces: The four drive motors of the crawler carriers make it easier for the LR 1400 SX to maneuver on construction sites with little space.

With a wide range of boom systems and configurations, the crawler crane is ready for use on a wide variety of construction sites. The self-assembly system, which can be operated via remote control, enables safe and quick assembly and disassembly of all main components, such as the crawler, the central and rear counterweight as well as the two hoisting winches and the boom elements.

### Safe in all circumstances

The crane's developers paid special attention to the safety concept. The "Gradient Travel Aid" assistance system helps to navigate slopes and inclines. It automatically calculates the machine's center of gravity and warns the operator before they leave the safe area.

For changing wind speeds, the appropriate and approved load curve can be selected at the touch of a button on the monitor. The control system also automatically assigns an appropriate load curve for different driving speeds, operating modes or bar inclinations.



The ground pressure display of the LR 1400 SX calculates the current ground pressure in real time depending on the position and configuration of the crane and compares it with predefined safety limits of the respective construction site. This makes it clear at all times whether the crane is in a critical area or approaching one. With the help of the new, hydraulically activated ground pressure reduction plates, the ground pressure can be reduced by up to 56%.

For the staff, safe and non-slip access to the cab is provided by a comfortable folding staircase and illuminated platforms. Because this avoids the need to enter via the floor panels, the LR 1400 SX meets the highest possible safety standard in this respect.

## Blending worlds, merging types

The LR 1700-1.0 combines the advantages of the economical transport of crawler cranes in the 660 USt (600 t) class with the performance of 825 USt (750 t) lattice boom cranes – and is ideally suited to the height and weight of current wind turbines.

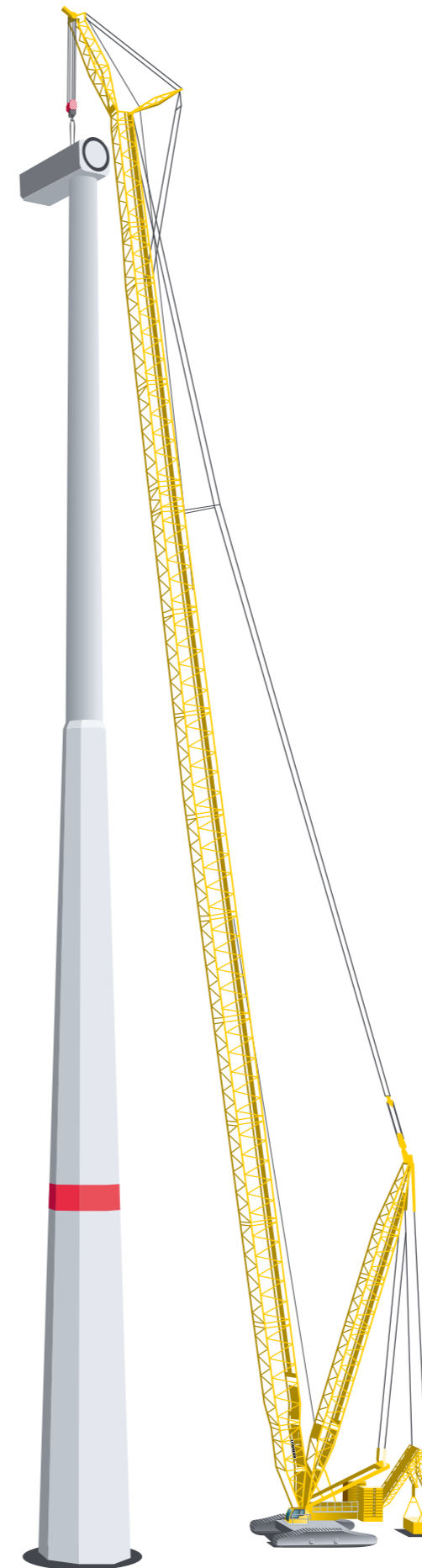
The key to the high performance of Liebherr's new 770 USt (700 t) crane is the completely redesigned base machine, which offers up to 20% more lifting capacity. In addition, 11.48 ft (3.5 m) wide H-lattice sections in the lower section of the main boom significantly improve the lateral stability of the entire system. The dimensions of the new crawler crane are based on those of its predecessor, the LR 1600/2, thus ensuring efficient transport of the individual components. To minimize wear when moving the crawler undercarriage, the steel construction of the crawler girders has also been made particularly robust and the travel gear has been enlarged.

### Powerful and user-friendly

The LR 1700-1.0 has all the innovations of the Liebherr crawler crane developments of recent years and thus has some time-saving features on board. The modern derrick system with V-frame and separable VarioTray® enables flexible operations without time-consuming ballasting. With a main boom length of 541 ft (165 m) and a 39 ft (12 m) fixed jib, it is well equipped for load cases of around 220.5 kip (100 t) at 525 ft (160 m) height. A large number of components from the LR 1600/2 can be used for the LR 1700-1.0.

### Top performance with fixed jib

With the growing demands in wind power – ever higher, ever heavier – the importance of fixed jibs is also increasing. They are used when an interfering edge requires an angled lattice jib and higher lifting loads and heights are needed. Liebherr has therefore consistently further optimized this component. The fixed jib of the LR 1700-1.0 has a capacity of 374.8 kip (170 t), is available in three-meter increments of lengths from 39 ft (12 m) to 128 ft (39 m) and can be mounted at three operating angles. Even the smallest angle creates sufficient clearance for the assembly of wind turbines. The larger angles are used for industrial applications with longer jibs.





# Concrete technology

## Flexible and versatile

Whether concrete work is needed in the tightest of spaces or on narrow, winding roads: The 36 XXT truck-mounted concrete pump combines maximum flexibility with maximum usability – compact on the road and versatile on the construction site. Here, against the backdrop of a sunset, the multi-faceted machine makes its way to its next assignment – whatever challenges may await, the 36 XXT is a machine for all situations.





# The 36 XXT truck-mounted concrete pump – a versatile machine

The 36 XXT truck-mounted concrete pump combines proven technologies with innovative new developments, making it a versatile machine. The multifoldable 5-part boom ends with the feed hopper without overhang, shortening the machine enormously, thus ensuring maneuverability and agility in road traffic, on construction sites and in buildings. Especially in buildings, the low unfolding height of only 24 ft (7.2 m) is a great advantage. In combination with the further developed Powerbloc concrete pump drive including the patented semi-closed oil circuit HCC, the placing boom

allows efficient, reliable, low-vibration and uniform concrete placement. The swivelling XXT support ensures stability – even in confined spaces. Thanks to the new XXA 3 stability assistance, many additional outrigger variants are possible, including partial outrigger areas for the first time. The 36 XXT can be operated safely and intuitively. The modern radio remote control, for example, not only enables delicate mast movements, but also shows the authorized slewing range of the placing boom on the color display.



# Components

**For all purposes**  
Liebherr offers a comprehensive range of high-performance components in the field of mechanical, hydraulic and electrical drive control technology. Whether cranes, earthmoving machines, vehicle technology, mining or maritime industry, wind turbines, aerospace or transportation systems: The high-quality components are used in numerous industries and application areas – by the Liebherr Group and by external OEMs around the globe.

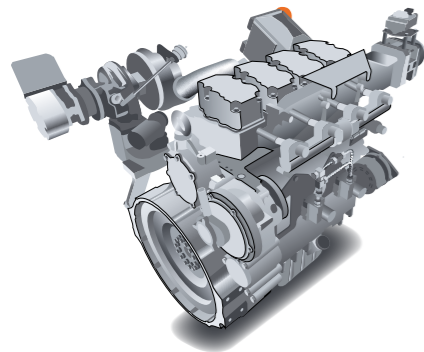




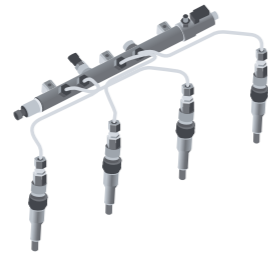
## Components

# Technology-open approach with alternative powertrain concepts

The optimum powertrain has a decisive influence on the efficiency of the work. The heterogeneous fields of application typical of construction machines require the most suitable type of powertrain for the specific application and location, in order to ensure the greatest possible machine performance.



With this in mind, Liebherr is developing engines with a high efficiency and very low pollutant emissions.

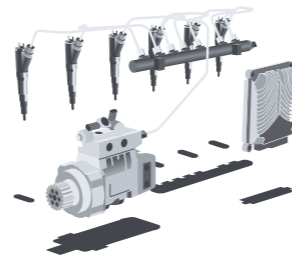


The first hydrogen engine prototypes by Liebherr, the H964 and H966, are in development with the aim to offer reduced CO<sub>2</sub> and NO<sub>x</sub> emissions, while delivering an equivalent overall performance as a diesel engine, both in terms of power output, as well as engine dynamics and responsiveness.

Liebherr also addresses the issue of decarbonization in the further development of the combustion engine and offers various injection solutions for hydrogen. The system approaches to port fuel injection (PFI) and low-pressure direct injection (LPDI) are based on a common, scalable injector platform. A wide range of applications is possible for medium and heavy-duty

engines, as well as large engines in the 427 to 6,102 in<sup>3</sup> (7 to 100 l) displacement range.

To match the engines, Liebherr manufactures robust common rail diesel systems for on- and off-highway, as well as maritime medium and high-speed engines. The injectors offer a unique, high nozzle flow in a compact design, enabling particularly high performance per cylinder. They are combined with high pressure, oil lubricated pumps, which can deliver up to 49,429 in<sup>3</sup> (810 l) of fuel per hour. Their innovative design enables an easy integration of the injection systems into a wide variety of engines.



## Foresight through digitalization

At Liebherr, digitalization is making great strides in all areas.

Digital condition monitoring for combustion engines along with the integrated, digital wear measurement contribute to greater safety, higher performance and a longer service life for machines.

The BCM system can be used to measure bearing wear in axial and radial direction, as well as tilting clearance. Such a digital diagnostics does not only ensure flexibility in measurement, but also reduced downtime, lower costs in maintenance and, above all, higher personnel protection.

## Innovative, efficient and open to technology into the future



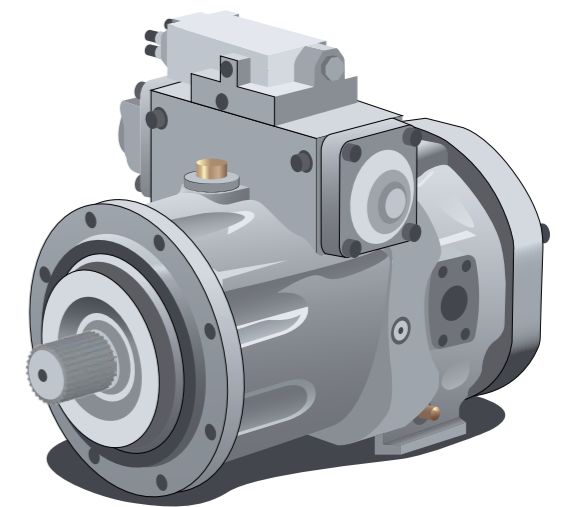
Liebherr takes its product responsibility very seriously. The aim of the Liebherr Group is to offer its customers safe, efficient and environmentally compatible products in the long term. To this end, Liebherr works on solutions that meet both work and environmental requirements at all times.

Liebherr axial piston hydraulics also offers flexibility in the application. For instance, the LH30VO line with nominal sizes 28, 45 and 85 is extended by the nominal size 100. It is characterized in particular by a modular option for the controller axes and a high degree of flexibility for the through-drive concept. In addition, the nominal size 550 (also as double pump 1,100 cc [1,000 cm<sup>3</sup>]) supplements the selection of open circuit pumps. During the development of this nominal size, the focus was on robustness. This leads to high availability and durability in various applications.

The DMVA axial piston double motor shows off the unique separate adjustability of up to 22° per driving gear in open and closed circuit for optimized efficiency and high power density. The tandem design with two small driving gears instead of a large one allows for higher speeds in little installation spaces.

The newly developed combustion engine for off-road applications, the D976, also stands for individual customization possibilities. Thanks to its high power density, robust design and a wide range of options, it is perfectly suited to the toughest environmental conditions and offers an ideal solution for a wide range of industries and applications. As the engine is compatible with hydrotreated vegetable oil (HVO), operators can reduce their emissions by up to 90% when using the alternative fuel instead of diesel. Thanks to the Liebherr Reman program, customers benefit from cost-efficient purchase prices, fast and long-term spare parts availability and original quality. The reconditioning of used components into as-new parts also has an ecological effect: Up to 78% of raw material can be saved and the CO<sub>2</sub> footprint can be reduced by over 50%.

Always on your site: Components made by Liebherr thus create an all around optimal package for the entire life cycle of your machines.





# The Liebherr Group

Founded in 1949 by Hans Liebherr, the family-run company has developed into a globally operating Group that today comprises over 140 companies on all continents and employs more than 51,000 people.

Not only is the company one of the largest manufacturers of construction equipment in the world, it also provides high-quality and user-oriented products and services in a wide range of areas. With a broadly diversified product range comprising a total of 13 product segments, Liebherr plays a key role in shaping technological progress in numerous industries. The holding company of the Liebherr Group is Liebherr-International AG, based in Bulle, Switzerland, whose shareholders are exclusively members of the Liebherr family. For the company, long-term success, sustainable development, stability and reliability are what count.

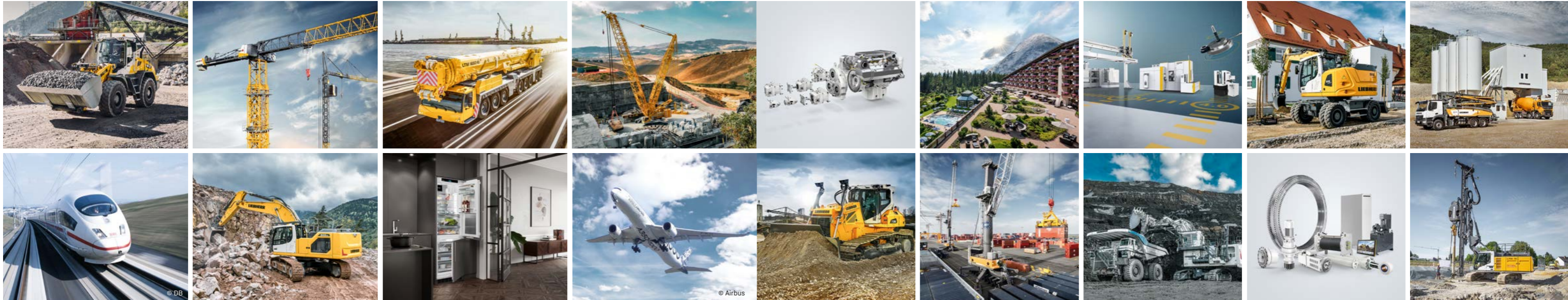
Liebherr develops and manufactures an enormous variety of fascinating products that have made a name for themselves on world markets with their high precision, excellent implementation and remarkable durability. With its innovations and visionary technologies, the company strives to inspire its customers and continually redefine the limits of what is possible. The strictest quality standards apply here, and customer satisfaction is the focus of all solutions. To this day, employees around the world share the courage of the company's founder to tread previously unknown paths, and to achieve goals that at first seem

almost unimaginable. They all share a passion for technology and exciting products, as well as a determination to excel for their customers. Working together to achieve ambitious goals creates a strong bond that employees can rely on – across national boundaries and continents.



***“My life has strengthened my belief that with a strong will to do a good job and meet the varying needs of customers to the best of your ability, you can achieve goals that at first seem almost unimaginable.”***

**Dr.-Ing. h. c. Hans Liebherr**  
 Founder of the Liebherr Group







# Take pride in Liebherr

Sales support coordinator and NCCO certified crane operator, Chad Stiles, joined Liebherr USA, Co. in June of 2019. Based out of Frenchtown, NJ, Stiles travels across the country to support the arrival and loadout of mobile and crawler cranes at various ports throughout the USA. His passion for the product and love for the company is evident in everything he accomplishes with Liebherr.

As a former drill rigger, Stiles was immediately impressed with the Liebherr machines he operated. “When I was running Liebherr equipment, I fell in love with the machine itself and how well built it was,” noted Stiles. “I knew the company would be well run too.”

Working as a Sales Support Coordinator, Stiles serves as a Liebherr liaison when mobile and crawler cranes arrive to US ports from Liebherr-Werk Ehingen GmbH. He initially surveys the machine and devises individual loadout plans as each crane and customer have different requirements. Stiles must also remain in constant communication with both the longshoreman as well as each customer throughout the arrival process. He said: “The best part of the job is seeing the excitement on our customer’s faces once they receive their crane. It feels like they are a part of an extended family now.”

#### A team effort

Dealing with multiple crane arrivals each month requires immense organization. Stiles finds himself traveling every two to three weeks to various ports, allowing him to be onsite and ready for each machine acquisition. He also utilizes his Liebherr colleagues for assistance and mentorship as needed. Stiles’ initial training included time spent in Texas to learn about Liebherr’s various processes and operating systems allowing him to get a full understanding of the team and how Liebherr operates.

Described as dedicated and hardworking by his coworkers, Stiles emphasized the importance of teamwork at Liebherr. “The pride that all Liebherr employees carry is unmatched,” noted Stiles. “Help is always provided across the country, and each job is truly a team effort.”

#### Conexpo cranes

Conexpo 2023 will be Stiles’ first major tradeshow. He noted, “I have heard how big the display booth is. I can’t wait to see it in person.” Although this is his first Conexpo, Stiles

has managed and worked with many of the featured cranes at Conexpo including the LR 1700-1.0 and the 1300-6.3, but the LTM 1450-8.1 is his favorite. “The versatility of the 1450 is incredible. It runs with and without the luffing jib, yet still has a lot of reach, good capacity, and is easy to transport,” deemed Stiles.

Our mobile and crawler cranes also feature VarioBase® allowing Liebherr cranes to operate easily in tight spaces. This is Stiles favorite technology offered by Liebherr as it allows our customers to utilize cranes in all types of real-world applications, while still providing excellent lifting capacity.

#### Why Liebherr

When asked what he would tell perspective candidates Stiles expressed “It is a great place to work where you can continue your education by learning something new every day. What sets Liebherr apart is that we have the best technology and top service teams around the world. There is so much pride throughout every Liebherr organization, and it all works so well because we are one team.”



#### One Passion. Many Opportunities.

For more than 70 years, the name Liebherr has stood for innovative products and services, and we all have one thing in common: a passion for technology.

We are always on the lookout for talented people who can contribute their expertise and enthusiasm to the Liebherr Group in very different areas.



Apply now!

[www.liebherr.com/careers](http://www.liebherr.com/careers)



# Highlights from the other product segments

Maritime cranes

## New mobile harbour crane product line

The Liebherr mobile harbour crane series is gearing up for the future: The new LHM is equipped with additional digital features, even greater efficiency and a modern design. A new crane control system, extended sensor integration and digital information transmission enable future assistance and semi-automatic systems. In addition, the Liebherr Pactronic hybrid system and the cab were improved according to customer needs.



Gear technology and automation systems

## Liebherr Academy “Gear Technology” goes digital

Everyone is talking about digital learning – Liebherr is demonstrating it: Training courses on topics related to gear cutting technology now also take place as interactive live online training courses. Participants can connect from anywhere and, if required, also receive virtual training on the modern, fully equipped machines in Liebherr-Verzahntechnik’s Machine Training Centre (MTC). During the training session, the trainer can display the controls and the workspace of the machines accordingly via several cameras. Smaller learning groups also enable an interactive learning dialogue with the trainer.



Transportation systems

## New air-free Brake System for Siemens

In close cooperation with Siemens Mobility, Liebherr has developed a compact, closed, electro-hydraulic brake actuator – it contains all the components necessary to build up and release the brake force as well as those required for local control and meets the highest safety requirements. Siemens Mobility is implementing the new brake technology for the first time in the “X-Wagen” metro project in Vienna (Austria). This means that the company Wiener Linien is the first transit authority in the world to benefit from this brake system – both in conventional operation with drivers, as well as in the future on the new, fully automated U5 line.



Hotels

## Expansion of the Löwen Hotel Montafon

New architecture, stylish interior design, gastronomic delights and the return of a legend: Since March 2022, extensive construction work has been underway at the Löwen Hotel Montafon in Schruns (Austria), where an extension is being built. “Haus Montafon” offers 23 additional rooms, an expanded gastronomy area and four conference rooms with a breathtaking backdrop and will be gradually put into operation by the beginning of 2023. But the highlight awaits in the basement: The “Löwengrube” will be reopening its doors in a cozy setting with a dapper, snug atmosphere. From 1974 to 2003, the legendary dance hall was known far beyond the country’s borders: Famous Austrian singer Udo Jürgens opened the club then with one of his best known songs “Griechischer Wein” (Greek wine).



Aerospace

## First complex 3D printing for Airbus

After Liebherr-Aerospace had begun serial production of 3D-printed parts in 2019 and the printed proximity sensor bracket for the nose landing gear of the A350 was successfully certified and delivered, Airbus and Liebherr launched a more complex component for the same aircraft: Liebherr supplies the lower cargo door actuator and valve for the A350 fleet. The complex valve is manufactured using the 3D printing process (Additive Layer Manufacturing) – yet another milestone and further evidence of the joint commitment of both companies to introducing pioneering innovations.



Mining

## Partnership for zero emission mining equipment

Fortescue and Liebherr have signed an agreement for the development and supply of mining haul trucks integrating zero emission power system technologies. This partnership tackles the challenge of decarbonizing heavy mobile equipment in the mining industry. The phased supply of haul trucks will commence following a two-year joint development period which will see the development and integration of Fortescue’s battery electric and fuel cell electric power systems into Liebherr’s T 264 mining truck.



Refrigerators and freezers

## The BluRoX revolution

In 2022, Liebherr-Hausgeräte introduced its new and unique vacuum perlite technology BluRoX. This makes it possible to manufacture freezers in the top energy efficiency classes for the first time. Perlite is a volcanic rock that is used to stabilise the vacuum body. It is also recyclable and can be reused without major processing. From January 2023, the FNb 5056 hybrid device, the door of which is equipped with the patented BluRoX technology, will mark the start of this revolution. It will be the first device of its kind in the world to bear the “B” efficiency class rating according to the EU energy labelling legislation.





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