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# Groundbreaking

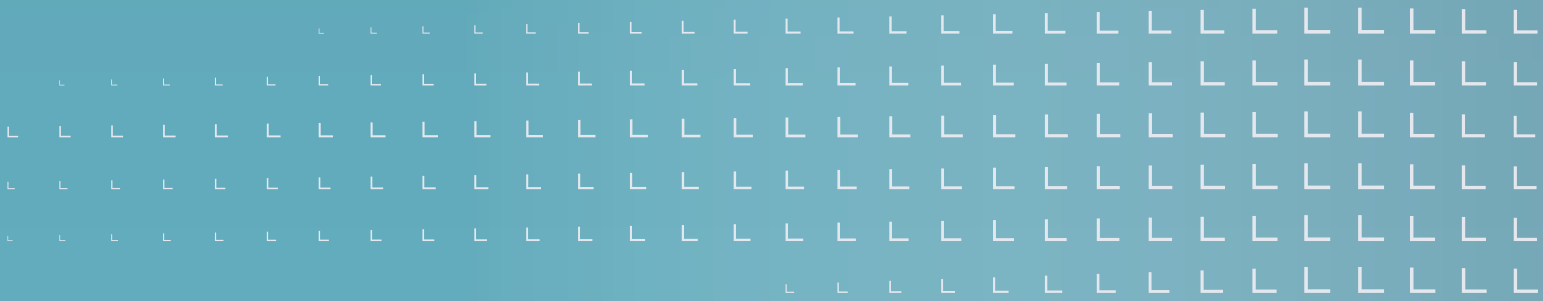
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The latest from Liebherr Mining

1 | 2026

**LIEBHERR**







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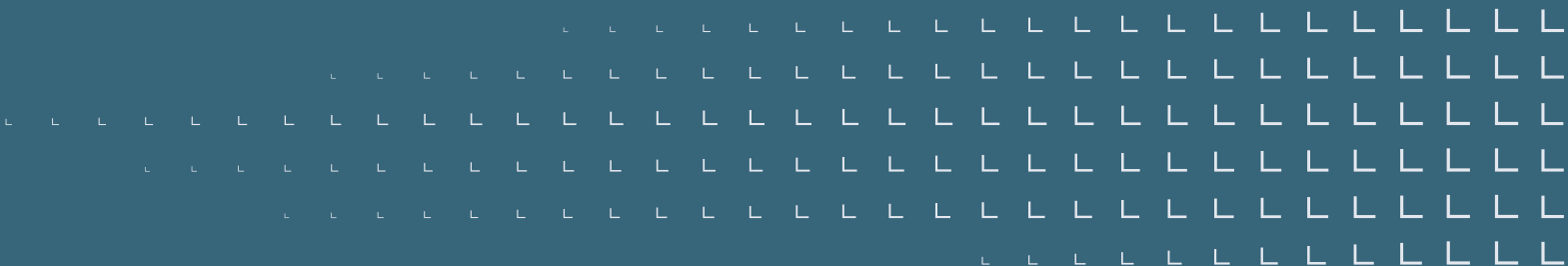
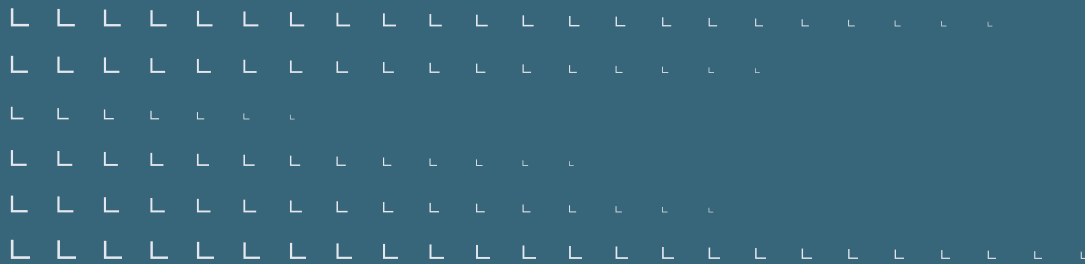
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# The latest scoop

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Key updates from Liebherr Mining



# Work smarter with the R 9100 G8

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In March, Liebherr Mining launched the R 9100 G8, the latest generation of our 100-tonne excavator. This machine builds on the success of its predecessor, the R 9100 G6, which has over 6.6 million operating hours across 30 countries. So what sets the R 9100 G8 apart from the G6? Let us show you!

## **It's more efficient**

Liebherr Power Efficiency – our patented engine and hydraulic control system – comes as standard on the R 9100 G8, making this 100-tonne excavator up to 30% more fuel efficient than the previous model. The backhoe attachment has also been optimised by limiting pressure losses in its hydraulic circuit and reducing the number of components to make it lighter. Plus, the joystick controls were changed from hydraulic to electrohydraulic to increase how quickly they respond to operator input, which in turn improves working precision.

## **It's more reliable**

To increase durability, regardless of application, double lifetime sealing travel drives are standard on the R 9100 G8. Repositioning the tank and pumps within the lubrication system has extended grease-filling intervals to a minimum of 250 hours. And to improve cylinder reliability, IMUs (inertial measurement units) have been integrated throughout the machine to ensure cylinder dampening without any tuning requirements.

## **It's easier to maintain**

With diagnostic signal panels installed onto the R 9100 G8's uppercarriage, technicians can see any active error codes at a glance and determine their best course of action immediately – speeding up the maintenance process. And with information about the machine's lubrication levels sent from the grease control box directly to the main screen in the cab, operators can quickly be alerted to any issues and identify the error code in just a few clicks.



## **It's optimised for operators**

Comfort and safety are assured in the R 9100 G8's redesigned cab. Operators have machine monitoring information and permanent rear and side views of the excavator right at their fingertips on the cab's intuitive touchscreen, meaning fewer distractions on shift. Combine that with a truly ergonomic seat and operators can expect a comfortable drive every time.

## **It's a wealth of machine data**

Thanks to the proven Generation 8 technology on the R 9100 G8, all of the excavator's operational data is easily accessible by relevant mine personnel, whether they're in the cab or accessing the data through the cloud. This helps everyone to best understand the machine itself as well as its performance and its working environment.

## **It's a long-term loading partner**

The R 9100 G8 shares the same undercarriage components as its predecessor, which minimises the number of new parts needed on hand for this machine. Plus, this latest excavator has the same electronic architecture as Liebherr Mining's other Generation 8 excavators: the R 9300 and the R 9600.

The R 9100 G8 is also compatible with products from our cutting-edge technology portfolio, IoMine. So when site requirements change, the R 9100 G8 can be upgraded to meet these new requirements with IoMine products like our range of excavator Assistance Systems or Skyview, our 360° vision system.

**Click below to learn more about the R 9100 G8.**

# The new R 9100 G8: born to outperform

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Before series production had even started, our latest Generation 8 excavator, the R 9100 G8, was shattering expectations.

We partnered with our customer PT Madhani Talatah Nusantara to conduct the R 9100 G8's pre-series validation at Tanjung Enim mine in South Sumatra (Indonesia). During validation, the new 100-tonne excavator not only moved vastly more material than competitor 100-tonne excavators on site, but it also burned far less fuel than these competitor machines as well as our previous 100-tonne excavator, the R 9100 G6.

These achievements, combined with an average availability of 92%, not only met Madhani's performance targets, but exceeded them.

**Click below to find out more about the stellar performance of our latest machine.**







# A new way of working in Chile

What do you do when valuable ore deposits are in difficult to reach – if not potentially hazardous – locations on site? Do you leave them undisturbed? Or do you, like SQM in Chile, invest in two of Liebherr’s powerful PR 776 G8 dozers equipped with the LiReCon teleoperations system to access that ore without risking the safety of your operators?

Liebherr Chile SpA delivered these dozers and the complete LiReCon solution to SQM, an international mining company based in northern Chile, at the Nueva Victoria iodine mine in December 2025. This was an important delivery for us for two reasons: it marked the first time that our LiReCon system had been supplied to one of our mining customers and was also the first time that SQM had worked with PR 776 G8s. The introduction of these dozers, along with the two L 586 XPower wheel

loaders also delivered in December, brings the number of Liebherr machines in SQM’s mining fleet to eight – one of which was the first R 9300 excavator on South American soil.

For SQM, incorporating LiReCon technology into its Nueva Victoria fleet has kept the company ahead of the game in terms of innovation and technological advancements while also improving operator safety and comfort on shift.

‘We are pioneers. We will carry out a strong training program to offer this technology to our operators so they can command the dozers from the comfort of the LiReCon teleoperation stand – making their experience on shift quieter and more pleasant while also reducing their risk exposure,’ says Nelson Torres, operation vice president, SQM. ‘All while using a new technology that improves productivity and continues with the vision of making Nueva Victoria mine a better place to work.’

### What is LiReCon?

LiReCon is short for 'Liebherr Remote Control', which is what we call our teleoperations system. It's made up of a teleoperation control stand as well as machine-side equipment such as multiple cameras, microphones and sensors. The machine-side equipment creates a digital version of the mining environment, with multi-angle visual coverage and real-time audio feedback, that allows operators to manoeuvre the physical machine in the pit from the comfort of the teleoperations stand.

'Developed at Liebherr-Werk Telfs, the LiReCon teleoperation system represents the next generation of safe and efficient mining operations,' says Markus Wittwer, head of sales, PR 776 and mining, Liebherr-Werk Telfs GmbH. 'By combining this innovative technology with the PR 776 G8 dozers, operators can control the machines remotely from

a secure environment, maintaining full precision and performance even in high-risk areas.'

### Powerful performance now and in the future

The PR 776 G8s delivered to SQM in December were the first Liebherr dozers to be deployed at Nueva Victoria since our two companies began working together back in 2019. So, to give operators the opportunity to familiarise themselves with the 70-tonne hydrostatic machines, they initially went to work with operators in the cab. Since their delivery, operators have been able to see the exceptional pushing power and fuel efficiency of these dozers for themselves.

'During its first months of operation, we witnessed the PR 776 G8's strong pushing power, smooth operation, good stability and low diesel consumption,' say Torres.

The PR 776 G8's LiReCon capabilities will be activated in the near future, allowing SQM to reap the full benefits of better machine utilisation while also facilitating safe operations in the more perilous parts of the mine, which include areas close to high walls as well as zones of geotechnical instability, higher temperatures and increased dust levels.

Liebherr Chile will work alongside our production facilities Liebherr-Mining Equipment Colmar SAS and Liebherr-Werk Telfs GmbH to provide SQM with ongoing training, service and technical support so the company can enjoy safe and efficient mining operations for the dozers' entire service lives.



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# Mining rock stars

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Our amazing people and achievements



# Staying power

One of the things we're most proud of as a business is that our employees often stay with us for decades, bringing their enthusiasm and dedication to their work year after year. We chatted with some of our longest serving employees to understand what it is about Liebherr Mining that encouraged them to stick around for as long as they have.

Our highly motivated team around the world is not something we take for granted. Their hard work and innovative thinking are key factors in our success. So we make it a priority to give them room to grow professionally in a stable environment that encourages everyone's ideas and perspectives.

## Keeping things interesting

We offer our customers some of the best mining machines and technology products in the world. But coming up with the innovative ideas that keep us ahead of the curve, and bringing them to life, requires an enthusiastic interest from our employees. So it is vital that the people working on our products love them as much as we do. Many of our longest serving employees have been involved in introducing new Liebherr machines around the world. Jim Wood, site manager for our Mining Technology Development Center – which is connected to our truck production facility in Newport News (USA) – is one such person. He's worked with Liebherr trucks since before there were Liebherr trucks.

'Before it was bought out by Liebherr in 1995, I had been working for Wiseda for about five years. In that time, I was involved in fabrication and assembly as well as mechanical and electrical testing. When Liebherr took Wiseda over, I moved to the field service team in Wyoming, where I supported our early haul trucks, including three different prototypes! Working on large off-highway trucks is a satisfying challenge,' Jim explains. 'After my time in Wyoming, I worked in various customer support roles for many years. The best thing about my work was travelling around the world and meeting new people – customers and colleagues, janitors and directors – in the process. Helping customers get the most out of their Liebherr mining trucks while experiencing new cultures was a unique experience that I still carry with me.'

Working with our mining trucks, specifically our mid-size mining trucks, was also a career highlight for Alain Tritschler,

who has been part of the Liebherr Mining team for more than 40 years. While today he works as an engineer in the production planning and management department of our production facility in Colmar (France), he spent 10 years working as part of our mid-size truck department. At the beginning, it was a small team of about 12 people and, because of the nature of the department, all team members wore a number of different hats. This is what gave Alain the opportunity to spend three weeks in southern Spain in 2016 as part of the team assembling a Liebherr truck prototype. Working to bring brand-new ideas to fruition for the benefit of our customers? It's a source of great interest, and pride, for our employees and one that Alain shares.

'During that time, there was a sense of pride that was heightened by the fact that we were creating a new product in a new environment,' recalls Alain. 'The time I spent in that department remains the best period of my career.'



Jim



Alain

As our truck portfolio began to evolve, so too did the projects our people had the opportunity to be involved in. Jeffery Appiah Johnson – general manager, operations, Liebherr Zambia Ltd – saw this first-hand when he took part in the project that first saw two of our ultra-class T 284 trucks successfully operating under a trolley line using Liebherr Mining’s Trolley Assist System. It’s one of his favourite memories from his more than 20 years with Liebherr.

‘The T 284 trolley trial in Zambia was a challenging project that required close collaboration across teams and regions, and it was rewarding to see the technology perform as intended. Being involved in a project that pushed boundaries and set new benchmarks for mining operations stands out as a defining moment in my career with Liebherr. This project also paved the way to expand the Zambia fleet and a larger T 284 trolley project in Panama,’ Jeffery recalls.

### **A stable foundation for personal growth**

Having a stable working environment is not the most glamorous thing in the world. But without it, it’s difficult for people to realise their full potential. That’s why we work incredibly hard to be a place where our team can see themselves for years – and if we’re lucky, decades – into the future.

Brigitte Wetterer has been serving delicious food for Liebherr personnel in Colmar (France) for more than 35 years – first with Liebherr-France SAS and then with Liebherr-Mining

Equipment Colmar SAS. A big part of why she has stayed with us for so long is because of the advantages that working with Liebherr offers.

‘The main reason I’ve stayed with Liebherr is because it is a solid family business that provides many benefits,’ Brigitte explains.

With the stability that these benefits give, Brigitte has been able to do the work she enjoys since the mid-90s.

‘I enjoy my daily work as a whole, but it is above all the contact with customers – Liebherr employees, business partners and the Liebherr family alike – that I appreciate most,’ she adds.

Providing a stable working environment also means providing clear pathways for career progression so employees feel confident that their careers can grow and change as they do – all with Liebherr’s support.

Jair Machado, divisional commercial manager for mining equipment for Liebherr Brasil Ltda., has held a number of different roles across several of the Group’s product segments before joining Liebherr Mining in 1992.

‘Between my first and last positions with Liebherr, I have worked in the training, aftersales and sales teams of the earthmoving, maritime cranes and mining product segments.



Being provided so many professional opportunities over the years, in an organisational climate that provides a sense of belonging, professional appreciation and a strong team spirit, made it easy to stay with Liebherr for the past 34 years,' Jair explains.

**There's no 'I' in team**

Diversity of thought is an integral part of how Liebherr succeeds as a business. Each and every one of our employees around the world has a wealth of expertise and experiences that gives them a unique perspective. Bringing all of these perspectives together is the bedrock of creativity and innovation.

Jaco Myburgh, one of Liebherr-Africa (Pty) Ltd's branch managers for mining in South Africa, has worked with the business for almost 25 years. For Jaco, the best part about working for Liebherr is our culture of respect and inclusion.

'At Liebherr, employees are treated as valued members of the organisation. Liebherr's steadfast values foster a sense of pride in being part of the company,' says Jaco. 'This, coupled with the company's strong focus on innovation, has resulted in its continued advancement of state-of-the-art technology.'

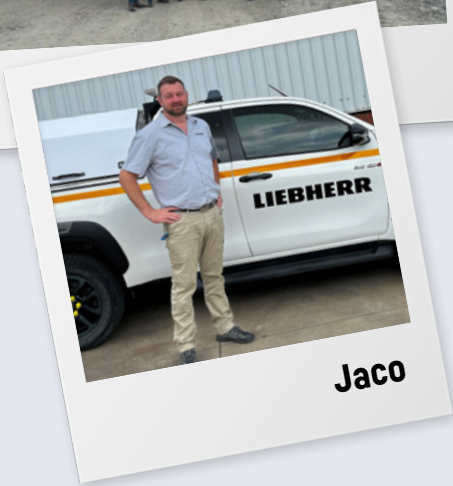
Rodrigo Sodario, product engineering coordinator for Liebherr Brasil LTDA, saw our team spirit on full display during his first three months with the company. In 2006,

Rodrigo joined Liebherr as a design engineer. In order to become familiar with the range of mining excavators we had available at the time, he was sent to Liebherr-France in Colmar, which was responsible for manufacturing our mining excavators back then. Specifically, he was to learn all he could about the R 9350 excavator before production of this model began.

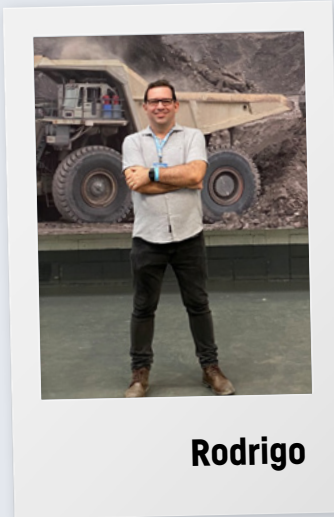
'On my first day, I brought a typically Brazilian gift for the project leader: a wall clock that plays Brazilian bird songs every hour. As soon as he received the gift, he hung it in the engineering office. It is still there today and has become the traditional engineering clock. I hear it every time I call a colleague at our production facility in Colmar on the hour, and it always reminds me of the day I gifted that clock to my old project leader,' Rodrigo reminisces.

In 2019, after working with our range of mining excavators for 13 years, Rodrigo accepted an opportunity to work with our off-highway trucks – a role he still holds today.

Tim Broderick, a customer support representative from Liebherr-Australia Pty. Ltd. who has been with the company for over 35 years, can also attest to the strength of Liebherr's team spirit in the workplace.



**Jaco**



**Rodrigo**



**Tim**

'The camaraderie within the team as we work together to solve difficult tasks helps to make everyone feel as though they're a part of something,' says Tim. 'During my time with Liebherr, I have built working relationships with team members who have gone on to become some of my oldest friends.'

### The importance of trust

It's important to us that our employees feel as though the company trusts them enough to find solutions and implement them without needing to seek constant approval from managers. So we work hard to give our people the freedom to act based on their own expertise. And what better way to practise what we preach than to trust our employees to set up our sales and service companies around the world?

In 2011, a pivotal chapter began for Liebherr in Latin America. That year, Oliver Hoelzer and Julio Coelho joined forces to establish Liebherr Colombia SAS, marking the start of a journey that, in 2026, sees the company proudly celebrating 15 years of its presence in, and dedication to, the Colombian market.

Building on that success, Oliver and Julio came together once again in 2017 to collaborate on a strategic milestone. With each of their more than two decades of experience with the Liebherr Group, they co-led the project that established Liebherr Panama S.A., Liebherr's dedicated sales and service company in Panama.

'From selecting the location to assembling the team and setting up operations, we had the trust and independence to make critical decisions. That level of confidence from the organisation not only accelerated the process but also reinforced our commitment to deliver results,' Oliver says. 'It's this culture of trust and initiative that makes Liebherr such a unique place to work.'

Today, Oliver is the operations director for both Liebherr Panama and Liebherr Colombia and continues to work closely with Julio, who works as the financial administrative director for the same two sales and service companies. Both have worked in different countries, across various roles, and it was their vast experience within the company that made them the perfect pair to head up Liebherr Panama. Oliver worked in Spain and France for a number of years – starting as a student intern and eventually moving onto roles in parts management and sales support in both the earthmoving and mining product segments.

Julio, on the other hand, began as an accountant assistant for Liebherr-Australia Pty. Ltd. and took on roles of increasing responsibility – such as financial controller at PT Liebherr Indonesia Perkasa – before accepting his current role.

'Each step along the way has contributed to my growth, both professionally and personally,' Julio says. 'Having the opportunity to work in several countries has contributed greatly to my development as a person – helping me understand different cultures, embrace diversity and learn how to treat people with respect.'

But throughout it all, the fact that they have had the freedom to act within each role – not just during the Panama project – has kept them around for all of these years.

'The balance of autonomy and teamwork creates an environment where you can truly grow and make an impact,' Oliver says.

'Most importantly, at Liebherr, we know for whom we work,' adds Julio. 'Not just for the company but with and for each other. This sense of belonging and shared purpose is what has kept me committed to Liebherr over the years.'



**Oliver**



**Julio**

# Safety is everyone's responsibility

Our people all over the world work with enormous mining equipment every day. In our Liebherr facilities and on our customer's mine sites. Work like this comes with inherent risks, so it is vital that Liebherr Mining does everything in our power to make sure anyone working on or around our machines is as safe as they can be.

Because safety is so important to us, we wanted to share with you a snapshot of the incredible efforts the Liebherr Mining team has made in the past 12 months to keep themselves, their colleagues and our customers safe every single day.

## Standardising health, safety and environment processes

In 2025, Liebherr Mining finalised the rollout of our HSE (health, safety and environment) IT platform across the entire product segment, allowing us to standardise our HSE processes and reporting throughout the business. This IT platform utilises a digital tool that allows businesses like ours to consolidate HSE data like incident reporting, investigations, compliance and issue resolutions all in one place. Prior to implementing this platform, HSE incidents were independently managed by our factories and sales and service companies around the world. Information was siloed and the processes used to record HSE information differed between locations. With the implementation of this tool, we as the mining product segment have more visibility on HSE information from our teams, helping us to standardise our processes and optimise safety on the ground.

## Exoskeletons in Colmar

For the past few years, the HSE team at Liebherr-Mining Equipment Colmar SAS – our production facility in France – has spearheaded a program dedicated to reducing the risk of musculoskeletal disorders in employees working in physically demanding positions. While primarily looking at hazard elimination and engineering controls, the HSE team – in collaboration with the production team – began working with a company that has developed exoskeletons for use as physical therapy aids for people who have sustained severe injuries. The company has since identified the potential of these aids for industrial applications. Exoskeletons are wearable devices that use mechanical means to help people with their posture and movement. Seeing how these devices could help people during physical rehabilitation, the company –

along with Colmar's HSE team and factory employees – began developing a range of exoskeletons to prevent musculoskeletal disorders in the work environment. In 2025, Liebherr-Mining Equipment Colmar validated the use of one of these exoskeleton models for our employees working in Colmar's warehouse.

This particular exoskeleton actively supports the spine by maintaining proper posture, which ensures the correct distance between vertebrae, while our employees go about their tasks. The device is motorised so it can adapt itself while the person moves around during the day. During validation, the team discovered that people who had been using the exoskeleton for two to three weeks, for more than five hours a day, reported less back pain and less fatigue at the end of their shifts.

The team has developed three exoskeleton models in total, including the motorised spinal support. One of the other models is designed to support the necks of workers who spend extended periods driving forklifts. The third targets shoulder strain and pain for workers who frequently need to raise their arms above their hearts. Most commonly, these are factory personnel involved in assembling excavator cabs. Building on the success of the spinal support exoskeleton, the HSE team plans to begin validating the shoulder support with production department employees in mid-2026.





Liebherr Indonesia also implemented the 5S model of organisation within its Balikpapan remanufacturing workshop in 2025. The five S's of the model – sort, set in order, shine, standardise and sustain – represent the different steps of an organisational process designed to improve productivity, efficiency and safety within industrial spaces. The entire process, from planning to rollout and initial review, took less than six months, thanks to the hard work and dedication of the Balikpapan team. Incorporating 5S into the Balikpapan team's daily work practices went so smoothly that, by December 2025, there were competitions to see which areas of the workshop had best put the ideas of 5S into practice.

In fact, the process was so successful, Liebherr Indonesia started implementing the 5S model at the Balikpapan warehouse in early 2026, with the goal of incorporating this model into the daily practices of all Liebherr Indonesia premises.

**Seven incident-free years in Colombia**

In 2025, Liebherr Colombia SAS celebrated seven years without a workplace accident. A number of initiatives contributed to this incredible achievement. One of these was the 'Take Care of Yourself and Take Care of Me' program, which was first established in 2023. This program highlighted the importance of speaking up when something in the working environment could pose a risk to either one's own, or one's colleagues', safety. The '360° Balance' program complemented this by underlining that safety begins with individuals who are whole, aware and physically, mentally and emotionally prepared to perform their tasks.

2025 also saw Liebherr Colombia and Cerrejón, a longstanding Liebherr customer, work together to promote operational safety across all organisational levels.

**A holistic approach to safety in Indonesia**

2025 was a big year for HSE at PT Liebherr Indonesia Perkasa. Alongside a comprehensive program of training initiatives – covering areas such as defensive driving, refresher

forklift operation and PPE (personal protective equipment) awareness – the sales and service company also strengthened its focus on worker health and wellbeing. Throughout the year, employees at the Balikpapan facility in East Kalimantan were able to take part in weekly morning exercise sessions and access regular health check-ups with a company doctor. In addition, monthly webinars were organised for employees and their families, highlighting the important role families play in supporting wellbeing and maintaining a strong safety culture.





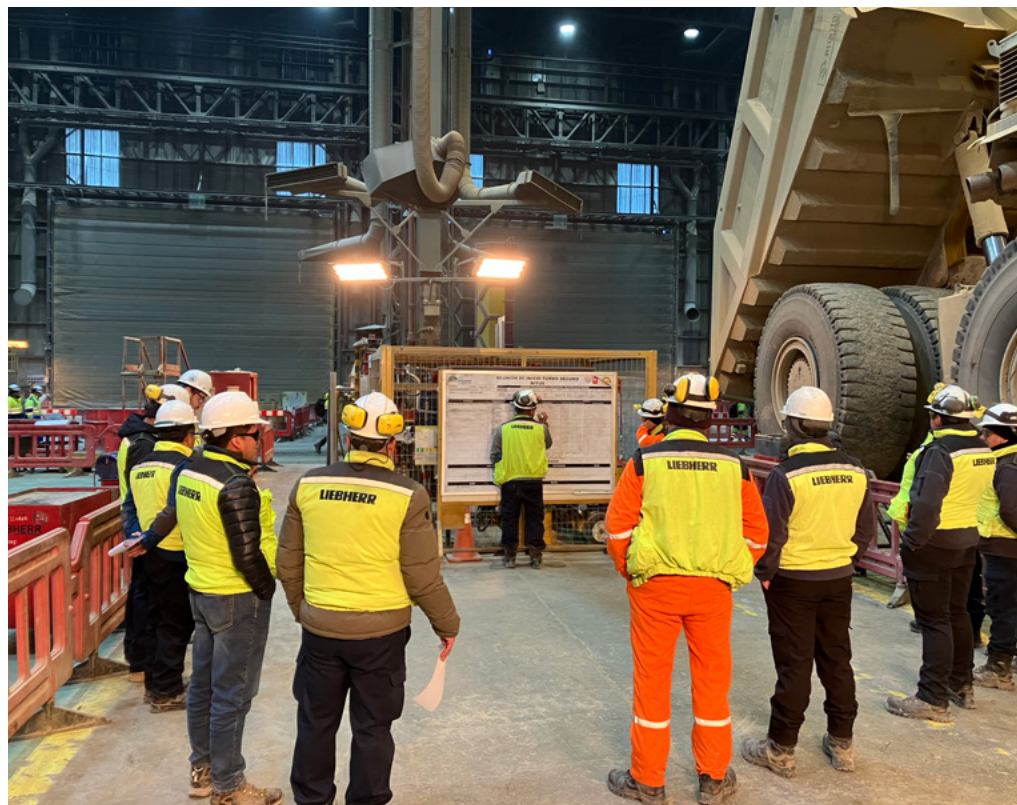
**Customer collaboration and campaigns for safety in Chile**

In 2025, Liebherr Chile SpA celebrated its 12-year partnership with Compañía Minera Doña Inés de Collahuasi, one of the largest copper mines in the world, by reaching an impressive milestone: 12 years without a recordable workplace incident! Recently, Liebherr Chile and Collahuasi have worked together to deliver Chile's first fully operational trolley line as well as the trolley-capable T 284 ultra-class haul trucks that operate under it every day. Completing such massive projects without workplace incident is a testament to the companies' shared focus on personnel safety.

To highlight the ways that Liebherr Chile staff could keep themselves safe during the 2025/2026 festive season, the sales and service company launched its 'Let's Celebrate Safety' campaign. Using a combination of onsite seminars lead

by management and informational brochures and posters throughout Liebherr Chile's facilities, the team reinforced the importance of critical controls and keeping oneself out of the line of fire. 'Let's Celebrate Safety' also encouraged the team to

consider the risks that can surround end-of-year celebrations and offered strategies for how everyone could look after themselves during this time. The team's kids even got involved by sending in drawings of what safety meant to them.



# Big performance, delivered

At Yancoal's Mount Thorley Warkworth site in New South Wales (Australia) two R 9800 excavators are delivering incredible results, including moving a record-breaking 1.752 mbcu (million bank cubic metres) in January 2025!

The dedication of Yancoal's and Liebherr-Australia Pty. Ltd.'s onsite teams keep these R 9800s performing at such a high level by working together to maintain optimal machine uptime and performance.

**To learn more about how these machines achieve such impressive results, click below!**





# Friends in faraway places: getting to know Liebherr-Ghana

Historically, Ghana has been known for its incredible gold resources. For centuries, the country was known around the world as the Gold Coast. But did you know that the West African country also has rich reserves of bauxite, manganese, iron ore and diamonds? Not to mention critical commodities like lithium and rare earth minerals?

The mining sector plays an incredibly important role in Ghana's economy as a major contributor to both the country's GDP (gross domestic product) and the job market. To provide quality support to the growing number of Liebherr mining machines working in these mines, Liebherr-Ghana Ltd. was founded in 2008. As managing director of finance and administration for this sales and service company, Etienne Dupuy knows just how important it is to provide high-quality mining equipment as well as timely customer support for that equipment. We sat down with Etienne to better understand the unique needs of Ghanaian miners and their Liebherr machines.

## **What makes the Ghanaian mining industry different from other industries?**

Mining in Ghana has long been associated with progress, territorial development and social mobility. It is an industry that dates back several centuries and has produced many highly skilled professionals. Ghanaian mining engineers in particular are recognised internationally and contribute significantly to the global mining industry.

Public perception of mining in Ghana also remains very positive. For many people, the sector represents opportunity and a promising future for younger generations.

***'With our headquarters strategically located close to mining companies' corporate offices in Accra, and our permanent warehousing and remanufacturing workshop in Tarkwa, Liebherr-Ghana has positioned itself for ultimate customer convenience.'***

**Etienne Dupuy**  
Managing director, finance and administration  
Liebherr-Ghana Ltd.



Another defining feature is Ghana's strong institutional framework, supported by the country's dynamic Minerals Commission and Chamber of Mines. Over the years, Ghana has positioned itself as a reliable and attractive investment destination for mining companies. Government policies have introduced local content regulations, reduced mining lease durations and supported exploration – all of which have helped create new opportunities for investment.

The recent reduction of mining lease durations in Ghana from 30 years to 10 or 15 years has meant that speed is now a defining characteristic of the industry and a strategic priority for mining companies in Ghana and across West Africa. The pace at which companies identify resources, secure permits and develop and operate mines is now critical. This has increased the need to maximise equipment uptime and solutions for cost-efficient and sustainable machine life cycles – which all reinforces customer loyalty.

Mining in Ghana is also a mature and highly regulated industry, with strong labour unions and oversight. The state positions itself as a strategic enabler, recognising that the real value of mining lies in industrialisation rather than simply exporting raw materials.

#### **How does Liebherr-Ghana support its customers throughout the country?**

With our headquarters strategically located close to mining companies' corporate offices in Accra, and our permanent warehousing and remanufacturing workshop in Tarkwa, Liebherr-Ghana has positioned itself for ultimate customer convenience. We maintain service technicians across seven major mining operations and additionally provide ad-hoc parts supply and technical services to mining contractors throughout Ghana.

#### **How has the Ghanaian mining landscape changed since you first started at Liebherr-Ghana? What are the main drivers for industry and how is Liebherr-Ghana responding to these?**

One of the most significant changes I've seen since joining the business seven years ago has been the shift from owner mining to contractor mining. This transition forms part of a broader government strategy aimed at strengthening local content development, not only within mining but also in the oil and gas sector.

In January 2025, Ghana's Minerals Commission formally restricted surface mining operations to Ghanaian-owned companies. This policy effectively promotes contractor mining by requiring contractors to be incorporated in Ghana and fully owned and managed by Ghanaian shareholders and directors.

***'Clean mining technology is the future of the Ghanaian mining industry. Liebherr-Ghana is at the forefront of this transition and will be delivering the very first electric excavators in the country, an R 9300 E and an R 9400 E, to one of our clients later this year.'***

#### **Etienne Dupuy**

Managing director, finance and administration  
Liebherr-Ghana Ltd.

This transition to contractor mining has obviously impacted the financial structure of our clients' balance sheets in a big way. Our ability to source competitive financing locally has become an essential part of our commercial strategy.

Ultimately, however, one factor continues to drive the mining economy: the price of gold. While political decisions and global events also influence the industry, gold prices remain the most significant driver of demand.

#### **Speaking specifically about machines, how has the Liebherr fleet in Ghana changed in recent years?**

Prior to 2012, the Liebherr fleet in Ghana mostly consisted of small to mid-sized excavators, including the R 984, R 994 and R 9250 models that were precursors to some of the newer models in our current product portfolio. Customers today still typically prefer the small and mid-class excavators, like the R 9200, R 9400 and R 9300 – our new machine in the 250-tonne class. But in 2025, we saw customers begin to show interest in our PR 776 dozer, which resulted in us delivering five of these machines in 2025.

#### **Is there a particular growth market that you identify for Liebherr-Ghana in the near future? How is Liebherr-Ghana well positioned within this market?**

Today, environmental and social standards play a critical role in determining access to bank financing and capital markets. Clean mining technology is the future of the Ghanaian mining industry. Liebherr-Ghana is at the forefront of this transition and will be delivering the very first electric excavators in the country, an R 9300 E and an R 9400 E, to one of our clients later this year.



We're currently focused on providing equipment – specifically dozers, excavators and cranes – to new projects, specifically those in spodumene (lithium), bauxite, iron ore and gold. With three large gold mines set to open over the next two years, we're hoping this will give us the opportunity to grow our market share.

**Is there anything else you would like to highlight about Ghanaian mining or Liebherr-Ghana?**

The Ghanaian market is dynamic and extremely demanding, particularly when it comes to the availability of mining equipment, GET (ground engaging tools), timely service and spare parts. Liebherr-Ghana continues to adapt its strategies to keep pace with customer demands. We have been able to capture multiple opportunities by actively promoting machines that were readily available in stock. The days when we could ask our customers to wait a year for equipment delivery are over.

As the needs of our mining clients continue to evolve, success increasingly depends on the ability of Liebherr-Ghana to align closely with customer needs and deliver consistent, high-value support across the entire mining life cycle. End-to-end partnerships with clients supported by onsite personnel, readily available spare parts supported by our certified remanufacturing centre, continuous joint training programs and simplified maintenance processes – all these help us to sustain our growth and capture greater market share.

**Liebherr-Ghana in a nutshell**

- Founded in 2008 in Ghana's capital, Accra
- Provides support for Liebherr's mining, marine cranes, refrigeration and mobile and crawler cranes product segments
- 131 employees in 2025



**Did you know...?**

- The country's name, Ghana, means 'warrior king' in the Soninke language, which was spoken by the peoples of the ancient Empire of Ghana.
- Ghana is the second largest cocoa producer in the world.
- The world's largest artificial lake, Lake Volta, is in Ghana. It spans over 8,500 square kilometres, taking up more than 3.6% of Ghana's total landmass.
- In the 1990s, a Ghanaian man set the world record for running 100 metres backwards. It only took him 13.6 seconds.
- The cedi, Ghana's currency, is named for the cowry shell to reflect its importance for trade in many parts of Africa.
- Because of Ghana's geographical coordinates, many people consider it to be the country closest to the centre of the world.

# Better data, smarter logistics

## How do you find a mining machine in the middle of the ocean?

This isn't a riddle, but a genuine question. Once a haul truck, dozer or excavator leaves our hands, how do we continue tracking it across oceans and continents? When our machines and spare parts travel from one side of the world to the other, we typically rely on data from third-party logistics providers, which can sometimes be delayed, inconsistent or incomplete. Additionally, international shipping is always dynamic. Routes shift, vessels change and timelines evolve. So, to improve transparency and customer service, our colleagues at Liebherr Mining Equipment Newport News Co., our production facility in the USA, have begun outfitting shipments with state-of-the-art Decklar (formerly Roambee) BeeSense Max sensors. These devices allow the Newport News team to follow every shipment for themselves in real time.

We sat down with two of our experienced external logistics team members from Liebherr Mining Equipment Newport News Co. – Alain May, divisional general manager, external logistics services, and Holcombe Hughes, external logistics project engineer – to tell us more.

***'The result is not just knowing where parts are, but unlocking actionable intelligence that elevates transparency, reliability and the customer experience.'***

### **Alain May**

Divisional general manager, external logistics services  
Liebherr Mining Equipment Newport News Co.



### **Alain, where did the idea to start using trackers on our shipments out of Newport News first originate?**

**Alain:** During the height of the COVID-19 pandemic, it became clear to me in my role as general manager that adding trackers to our shipments could create significant value, both for our customers and for our organisation. During that time, we began experimenting with simple e-commerce tracking devices and soon these early trials showed us how real-time visibility could transform the way we monitor shipping progress across our global supply chain.

This initial insight laid the foundation for exploring advanced solutions such as Decklar, where smart trackers merge with powerful data management capabilities. The result is not just knowing where parts are, but unlocking actionable intelligence that elevates transparency, reliability and the customer experience.

### **Can you help us understand some of the biggest challenges of shipping mining equipment and its spare parts?**

**Alain:** Certainly. There are many challenges when we ship our cargoes, which include SKD (semi knocked down) machines and spare parts, to our customers.



***‘Thanks to the data we collect, we’re better able to forecast possible delays, provide more accurate ETAs and offer better service to our customers.’***

**Holcombe Hughes**  
External logistics project engineer  
Liebherr Mining Equipment Newport News Co.

Procedurally, the biggest hurdles are visibility and transparency. Let’s look at a typical example: when we ship our products from the Port of Norfolk (Virginia, USA) to the Port of Fremantle for our customers in Western Australia, they’re on the water for about eight weeks, travelling thousands of kilometres and crossing several oceans. There are multiple carriers involved throughout the journey. In fact, there are even multiple vessels involved, requiring a trans-shipment in Southeast Asia before continuing onwards to Australia. Additionally, this main stage of ocean freight is just one of many in the intermodal transport chain. We also manage road transportation from the cargo’s point of origin to its port of departure.

In this example, our Australian sales and service company – Liebherr-Australia Pty. Ltd. – is responsible for the foreign land transport from the cargo’s port of arrival to its final destination. All of these different stakeholders may use their own datasets and methods of tracking cargo. Or there could be delays in transmitting information between the different parties. All of which makes it incredibly challenging to consolidate and validate the tracking details into one accurate and actionable format.

The incidental challenges we face are those you’d expect when sending cargo over vast distances by multiple modes of transport: any number of delays, operational disruptions, mishandling, damage and theft. According to the latest Sea-Intelligence Global Liner Performance report, global schedule reliability has dropped to 62.8%, and the average delay for late vessels has increased to five days. This means time-consuming delays for our customers, who are patiently waiting for their new machines to arrive, be commissioned and start moving material.

**Holcombe, drawing on your experience as a logistics project engineer, how do Decklar’s sensors help us to overcome these challenges when delivering our mining equipment and its spare parts to customers?**

**Holcombe:** The best way to overcome these challenges is to own the data about our cargo so we know where it is and what state it’s in at any given time. The Decklar BeeSense Max sensors allow exactly that. The devices layer GPS with cellular networks, Wi-Fi triangulation and satellite fallback, delivering uninterrupted visibility across the entire global journey.

The incoming data feeds into a central dashboard configured with logistics milestones, geofences, performance indicators and exception triggers. This enables us to monitor transit times, dwell times, delay patterns, route deviations and even environmental conditions.

### **So how else can the data from these sensors help us to improve our logistics processes?**

**Holcombe:** The granularity of the data allows us to isolate points of failure during the freight journey and propose solutions before these potentialities cause real-world issues. In fact, thanks to the data we collect, we're better able to forecast possible delays, provide more accurate ETAs and offer better service to our customers. Because all stakeholders can access the same data, we eliminate the need to compare numerous siloed datasets or reconcile conflicting reports. Everyone works from one neutral, reliable and accurate source of truth.

### **Are there additional benefits to using this technology?**

**Holcombe:** The devices also bring a range of added value through their embedded sensors and features. For example, if the sensors detect any excess shocks to our cargo, it triggers an immediate notification to let us know that our cargo has potentially been mishandled. Similarly, we are sent an immediate notification if our cargo is opened and the sensor detects the rush of light. This has the dual benefits of letting us know that our products have been opened too

early, and therefore may have been tampered with, or that our products have reached their destination and are safely with our customer. They even monitor temperature and humidity, which provide valuable insights about the environmental conditions that our products are subject to during transportation, allowing us to adapt our packaging and preservation processes to better protect our cargo.

We're also excited to collaborate with Decklar and leverage their expertise with AI to unlock even more value. With growing datasets and new predictive capabilities on the horizon, we'll be able to analyse performance patterns across trade lanes, implement optimal logistics strategies and react to bottlenecks and disruptions faster. With smarter data and smarter logistics, we're not just tracking machines: we're reinventing how we deliver them to our customers worldwide. This is truly just the tip of the iceberg.

### **How impressive! Have any other production facilities within Liebherr Mining implemented similar solutions?**

**Holcombe:** At the moment, this solution is still being piloted at our Newport News facility. But this is just the beginning! Functionality is still evolving, and the system is actively under development and testing, including new tools, KPI integration and reporting capabilities. Further communication will be shared with all stakeholders in due time as we continue the implementation at scale. There is potential to expand the use of this technology to our production facility in Colmar (France), once the rollout proves successful.



***'With smarter data and smarter logistics, we're not just tracking machines: we're reinventing how we deliver them to our customers worldwide.'***

**Holcombe Hughes**  
External logistics project engineer  
Liebherr Mining Equipment Newport News Co.



# Indonesia's monument to mining

When a haul truck comes to a complete standstill, it's usually cause for concern. Unless, of course, it's a T 282 B that's been transformed into a monument highlighting the importance of mining in Indonesia while also celebrating the decades' long relationship between Liebherr Indonesia and KPC in the Sangatta area.

Indonesia is a mining powerhouse. The country holds the world's largest nickel reserves and is also one of the top coal and tin producers. As such, mining plays a major role in Indonesia's economy and makes significant contributions to the country's GDP (gross domestic product), exports and employment rate. In areas like East Kalimantan, one of Indonesia's primary coal-producing regions, mining contributions to regional GDP can exceed 45 %.

So it's no wonder, then, that the region wanted to commemorate the importance of the sector with one of the biggest machines to ever haul material: Liebherr's T 282 B ultra-class haul truck. And where better to erect such a monument than in Sangatta – one of East Kalimantan's largest coal production centres, where a fleet of more than 30 T 282 Bs hauled thousands of tonnes of material for PT Kaltim Prima Coal (KPC), one of the biggest mining companies in Indonesia.

## **A bit of background**

KPC first came to Sangatta in the early 1980s for exploration, which revealed a wealth of coal reserves. Mining activities began in 1990 and KPC and Liebherr crossed paths for the first time the very next year. The first Liebherr machine in KPC's fleet was an R 994 excavator, delivered in 1991. This 250-tonne class machine must have made quite the impression as, when Liebherr's sales and service company – PT Liebherr Indonesia

Perkasa – was founded in 1997, KPC's Liebherr fleet started to expand. Four R 996 excavators joined that first R 994 in 1998. Since those early years, KPC has operated more than 60 Liebherr machines. These have predominantly been excavators, with the company favouring small and ultra-class excavators. But in the 2000s and 2010s, T 282 Bs were the most prevalent Liebherr machines in KPC's Sangatta operations.

'It's why the T 282 B was chosen for this monument. It was the most iconic, largest and most prestigious haul truck operated by KPC at that time,' says Wiwin Sujati, senior manager, KPC.

### **A monumental journey**

The journey to the February 2025 inauguration of this impressive monument began way back in 2018 with an idea from PERHAPI, the Association of Indonesian Mining Professionals. PERHAPI's vision was to create an educational facility where the public could learn about local mining operations and how they contributed to everyday life. All while getting up close and personal with an iconic 220-tonne mining machine. PERHAPI worked with KPC and the Sangatta Government to confirm the details of the project. Once confirmed, the collaborators had to seek presidential approval to go ahead with the project, as the T 282 B exceeded the value threshold for state-related assets. This was granted in 2019 and two years later, the site for the monument was determined.

'Initially, the monument was planned for the Polder Ilham Maulana recreational area, and a groundbreaking ceremony was held there. However, soil investigations revealed unstable ground conditions, leading to the relocation of the monument to Bukit Pelangi, a hilltop district in Sangatta, as approved by the Kutai Timur Government,' explains Sujati.

Once the site for the monument was locked in, it was time to move the machine into place, which was no small feat. The entire process took around two months, starting in January 2022. Two weeks for disassembly, two weeks for transportation and then a full month for assembly.

'Assembly took a bit longer as we needed to remove major components like the engine, alternator and wheel motors. Those components became exhibits in their own right, displayed in a separate room near the monument for educational purposes,' says Sujati.

### **Today and tomorrow**

Since its inauguration last year, the T 282 B has become something of a local tourist attraction, with dozens of visitors excited to snap a picture with the enormous truck every day.

The partnership between Liebherr Indonesia and KPC is as solid as the T 282 B in Bukit Pelangi. There are 15 Liebherr machines currently working across KPC's East Kalimantan operations. Much like the company's Liebherr fleets over the years, these machines are mostly small and ultra-class Liebherr excavators.

'It's exciting to see one of our trucks immortalised as a symbol of Indonesian mining. But what we are even more excited about is how our partnership with KPC, and our presence in the Indonesian market, will continue to evolve over the coming years,' says Yudha Mahendratta, project manager, Liebherr Indonesia.



# Different ways of making an impact

Allow us to introduce you to two incredible Liebherr team members from around the world, Mbali and Rachid. Both of them work incredibly hard to provide customers with the service and products that make their day-to-day lives on site easier and more productive – only in very different ways!

## Mbali Mahlangu

Mbali began working as a sales administrator for Liebherr-Africa (Pty) Ltd in Springs (South Africa) in 2018. In this role, she kept things running smoothly for the sales team in the field, which involved keeping customer records up to date, processing orders and handling technical documents. And she accomplished all of this with the highest level of efficiency and accuracy as, in the fast-paced and highly regulated world of mining, miscommunication can cost valuable time and resources.

'As a mining sales administrator I may not have always been front and centre, but my work was essential to keeping the sales process moving and ensuring customers got the service they expected,' says Mbali. 'By encouraging open communication, prioritising tasks effectively, verifying orders carefully and using shared tools, I streamlined the workflow and significantly reduced errors.'

### A long, impressive history with Liebherr

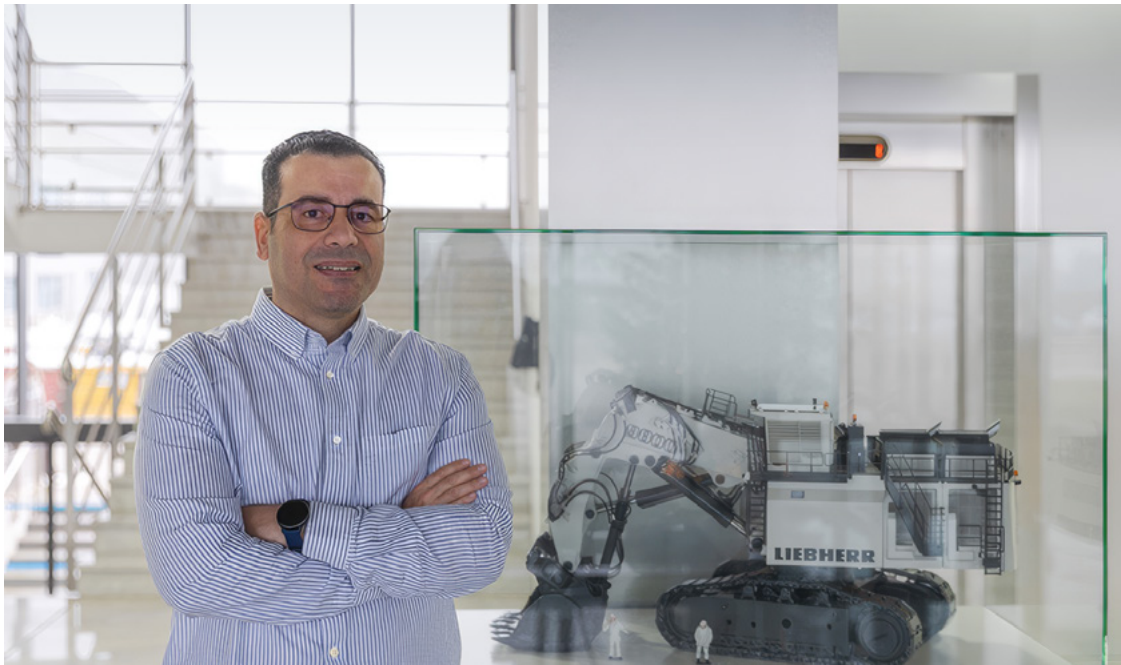
Liebherr has been part of Mbali's life since she was a child. 'When I was growing up, I often passed the Liebherr facility in Springs and was captivated by the enormous machines on display. I always hoped for the opportunity to learn more about the business and one day become part of it,' Mbali recalls.

Mbali became part of Liebherr in 2012, when she joined Liebherr-Africa as a central administrator for the earthmoving product segment at the same Springs facility she used to walk past in her youth. She spent the first four years of her Liebherr career in that role before moving across to Liebherr Mining in 2016 as a parts buyer – a position she held for two years, gaining invaluable product experience that helped her every day as a sales administrator.

During her more than 13 years with Liebherr, Mbali has had some truly memorable experiences. One of her favourites was in 2023, when she was part of the team that delivered the last R 996 excavator in South Africa to a customer in Northern Cape province. A few months later, she also helped to deliver South Africa's first R 9600 excavator to that same customer.

'Both of these deliveries marked major milestones for our region,' Mbali explains. 'The R 996 was the last of its kind, and the R 9600 was the first of the new generation, marking the end of one era and the start of another. Getting both machines to the same customer also helped strengthen our relationship and showed that we could handle complex, high-value projects smoothly.'





## Rachid Mahdi

Throughout his more than 10 years with Liebherr, Rachid has supported our customers in a number of different ways. Today, he works as a data scientist in Liebherr Mining's digitalisation department at Liebherr-Mining Equipment Colmar SAS in France. He and his team explore different ways that artificial intelligence can be integrated into mining equipment to optimise performance, anticipate failures, improve energy efficiency and facilitate remote diagnostics. But when he joined Liebherr in 2009, this was not where he thought his career would take him. His first role with Liebherr was as part of the aftersales team for the earthmoving product segment. In the 12 months he held that position, Rachid resolved customers' technical difficulties and provided maintenance solutions best suited to their needs.

'When my contract with the earthmoving product segment came to an end, I worked in a number of engineering roles across different industries before having the opportunity to return to the company as a systems engineer for Liebherr Mining in 2014,' says Rachid.

### **Making a change**

Rachid worked as a systems engineer for around seven years and was part of some impressive projects during that time. A standout for Rachid was developing the hydraulics system for a new truck, which involved designing, testing and validating the system that eventually became a core part of the truck's build.

'I will never forget that moment in 2017 when we transitioned from the virtual world of design and calculations to tangible reality. Turning the ignition key, seeing the engine start and watching the truck drive forward for the first time was incredibly moving,' he recalls.

A change in Liebherr Mining's product strategy in 2021 gave Rachid the chance to reflect on his professional career. He had always loved programming, analysis and modelling. So he read everything he could get his hands on about artificial intelligence, 'big data', data science and their growing role in industrial processes.

'It was around this time I saw a unique opportunity to leverage my years of experience and position myself at the forefront of technological innovation at Liebherr as a data scientist myself.'

Thanks to the support of his professional network, his manager and the HR department at Liebherr-Mining Equipment Colmar SAS, Rachid was able to undertake the intensive training necessary to become the data scientist he is today. That training, coupled with Rachid's extensive experience working with Liebherr's mining equipment, is what helps him in his current role to come up with ways of boosting customer productivity using information and technology.



# Training the next generation in Indonesia

Liebherr Indonesia is working alongside one of Indonesia's top universities to encourage its students to see jobs within the mining industry as viable options after graduation. Especially in the remanufacturing space.

Finding ways to attract younger workers to mining is imperative for the future of the industry. According to a recent Deloitte study, a significant percentage of workers in the mining sector are in their mid-to-late 40s, with almost half of skilled engineers set to reach retirement age within the next 10 years. As such, it is crucial that young people entering the workforce see mining as a feasible choice for their future careers. To accomplish this in the Indonesian market, PT Liebherr Indonesia Perkasa is cultivating a relationship with one of the top engineering universities in Indonesia, ITS (Institut Teknologi Sepuluh Nopember).

## The beginning of a beautiful friendship

In June 2025, a delegation from ITS's Department of Industrial and Systems Engineering travelled 1,000 kilometres to visit Liebherr Indonesia's remanufacturing centre in Balikpapan, East Kalimantan. The ITS professors, students and laboratory assistants got to experience the remanufacturing process up close, while chatting to Liebherr Indonesia's technical team about manufacturing technology and operational efficiency.

'Remanufacturing is an important part of what we do at Liebherr. When customers choose to remanufacture their used components, they not only ensure that vital raw materials find their way back into the production process, but they're also choosing an option with a significantly smaller carbon footprint,' explains Sony Setyawan, general manager, production, Liebherr Indonesia. 'I believe that sharing our remanufacturing process with ITS students highlights how engineering can be used to help businesses like ours become as sustainable as they can be.'

ITS is an important player in Indonesia's remanufacturing sector as it works closely with the Indonesian Government to develop clearer standards and sub-codes within the industry. Through its work with the government, ITS actually established Liebherr Indonesia's remanufacturing processes as one of the benchmarks in the sector – which was one of the primary reasons why ITS brought its students to the Balikpapan location.

### **Knowledge shared is knowledge squared**

Three months after ITS's June visit to Balikpapan, it was Liebherr Indonesia's turn to make the long journey to ITS's Sukolilo campus in Surabaya, East Java. Sony Setyawan, as well as Liebherr Indonesia's managing director of finance and administration, Firdaus Sjoekri, were invited to present a lecture entitled 'Turning engineering into reality: production cycle at Liebherr Indonesia'. Over the course of two hours, Setyawan and Sjoekri shared insights into the practical applications of engineering concepts as well as their knowledge of Liebherr Indonesia's production processes, with over 200 first-semester industrial and systems engineering students.

'We felt it was important to provide ITS students with examples of how what they're learning at university can be applied to real-world situations,' explains Sjoekri. 'The students really engaged with our content and asked a lot of insightful questions throughout the lecture. It was wonderful to see.'

### **A promising future**

At present, Liebherr Indonesia offers ITS students the opportunity to participate in internship or work experience programs within the fabrication and remanufacturing departments so they can discover first-hand what it takes to deliver operational excellence to customers.

'A collaborative combination of academic concepts and experiential knowledge will expose us to diverse perspectives that lead to a dynamic environment that stimulates continuous improvement and innovation,' says Kristin Natalia, human resources manager, Liebherr Indonesia. 'We hope to encourage talented individuals from ITS and other educational institutions in Indonesia to choose Liebherr as the place to begin their careers.'

To support this, Liebherr Indonesia will continue to offer these same opportunities, as well as tours of its facilities and other potential collaboration projects, to students from various disciplines, both from ITS and other universities in Indonesia.

***'Sharing our remanufacturing process with ITS students highlights how engineering can be used to help businesses like ours become as sustainable as they can be.'***

**Sony Setyawan**  
General manager, production  
PT Liebherr Indonesia Perkasa

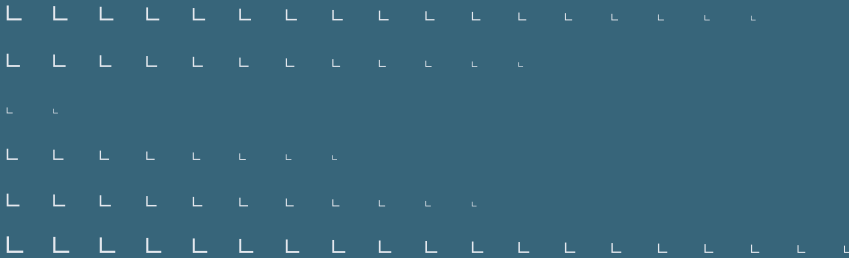


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# On the ground

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Our mining solutions in action all around the world



# Breaking records with the R 9600



**Imagine breaking a world record within your full first month of work. Well, our R 9600 did just that for Thies at Mount Pleasant Operation in New South Wales, Australia. The 600-tonne excavator went to work on 17 June 2025 and during the next month it moved an incredible 1.71 million bank cubic metres of material!**

This remarkable achievement broke the site's previous record of 1.64 mbc (million bank cubic metres), which was set in May 2023 by another R 9600 in the Mount Pleasant Operation fleet, and is a powerful demonstration of what's possible when people, processes and technology work together.

'The team's ability to move that kind of volume with this class of machine shows that everyone was really taking our motto, "manage the minutes, because minutes matter and seconds count", to heart,' says Ryan Fox, project manager, Mount Pleasant Operation. 'We all work to get the absolute maximum performance out of our machines and so this outcome showcases what both this machine and our people are capable of.'

According to Liebherr-Australia Pty. Ltd.'s application engineering team, this accomplishment far exceeds the amount of material 600-tonne excavators usually move in these kinds of operations.

'Achieving 1.71 mbc in a single month is a testament to what's possible when the R 9600 and onsite teams are operating at their best,' explains Harvey Konya, application engineer, Liebherr-Australia. 'For context, moving around 1 mbc in a month already exceeds what's considered an exceptional result for this excavator class. This performance sets a new target for the 600-tonne-class units in mining, demonstrating the R 9600's productivity potential and what can be achieved with correct work area setup, excellent truck match and complete alignment across operational teams.'

### Teamwork drives results

This remarkable figure was celebrated as a full team success across Mount Pleasant Operation. From operators and maintenance crews to drill and blast, planning and dispatch, every link in the chain contributed to the record-breaking month. Engineers from the planning and drill and blast teams designed consistent dig benches and dump areas to optimise cycle times, while supervisors and support crews ensured the operation ran smoothly.

'Every part of the operation affects the others. The systems we've built behind the scenes are what keep us consistent and productive,' continues Fox.

Liebherr-Australia's dedicated customer support teams have also played an important role in achieving these impressive results.

'Our talented customer support teams visit Mount Pleasant Operation regularly and make the most of every opportunity to get hands on with the machines, solving technical issues when required. Their commitment and proactive approach have been incredibly valuable to Thies for obtaining these milestones,' says Anthony Sharpe, customer support manager, Liebherr-Australia.

In the same month, Mount Pleasant Operation also marked 12 months without a lost-time injury – an achievement Fox says goes hand in hand with production success.

'Safety and performance aren't separate,' he explains. 'They're part of the same conversation. Our crews operate within our procedures and expectations every day. That's how we deliver safely, consistently and effectively.'

***'Our machines are designed to deliver a balance of safety, efficiency and performance and these standout productivity and safety figures at Mount Pleasant Operation are a true reflection of that.'***

**Anthony Sharpe**

Customer support manager, Liebherr-Australia Pty. Ltd.



The R 9600 itself, Liebherr's flagship 600-tonne mining excavator, also contributed to the incredible safety performance at Mount Pleasant Operation. Its advanced onboard assistance technology, camera visibility systems and safety and serviceability enhancements all help operators to work productively while maintaining safe practices.

'Our machines are designed to deliver a balance of safety, efficiency and performance and these standout productivity and safety figures at Mount Pleasant Operation are a true reflection of that,' says Sharpe.

### The machine behind the milestone

This R 9600 has quickly proven itself a powerhouse in Thiess' fleet. In total, it has moved 9 mbcm from the date it hit dirt in June 2025 to 1 January 2026; a remarkable result that puts the machine in a great position to achieve truly incredible productivity in its first 12 months on the job. But both Thiess and Liebherr-Australia know that it will take hard work and dedication to keep the momentum going.

Luke Crowther, an experienced R 9600 operator at Mount Pleasant Operation, isn't worried. He describes the R 9600 as balanced, powerful, beautiful and the best excavator he's used in 25 years.



'It's a beautiful cab, spacious and comfortable, with everything right at your fingertips,' Crowther says. 'When you're in a big production push, efficiency comes easy in the R 9600.'

Reliability also played a major role in moving the 1.71 mbcm, with availability maintained at an impressive 97% throughout June 2025. Maintenance team members on site, Hannah and Cody Legg, attribute that performance to preventative maintenance, open communication with operators and careful alignment between maintenance and production.

'Every site does maintenance, but we do it better,' says Hannah Legg. 'Our maintenance windows are short but efficient, and we're constantly monitoring data from the machine to prevent issues before they happen.'

'Plus, we have extensive experience with Liebherr's 600-tonne excavators,' adds Cody Legg. 'Before the R 9600s arrived, we had R 996s on site. Our previous experience, combined with the R 9600's easy-to-maintain design

and our team's attitude of treating each machine as their own, really helped to keep this machine running at its full potential.'

In addition to Liebherr-Australia's ongoing customer support, the sales and service company's ability to provide timely parts deliveries when required also contributed to the success of this R 9600.

'Back in 2023, our parts department transitioned to a 24/7 service model that has greatly contributed to our efficiency, allowing us to improve turnaround times on parts supply and better meet the needs of our customers,' says Sharpe. 'In fact, our DIFOT [delivered in full on time] rate achieved on average across all customers in 2025 was 93%, which ensured that downtime events last year were kept to a minimum.'

### Looking ahead

For the Mount Pleasant team, this 1.71 mbcm is both a celebration and a benchmark for what's next.

'We're proud of what the team and this particular R 9600 have accomplished, but we know there's still more potential to unlock,' says Fox. 'Today's record is tomorrow's target. We know 1.8 mbcm in a month is possible – and that's what we're aiming for next.'

Milestones like this reflect more than a single month of incredible productivity. They highlight a culture built on teamwork, innovation and passion for mining excellence, as well as the impact of a productive machine.

'At the end of the day, we just want to deliver for our client and have fun doing it,' says Fox.

'This was a remarkable result from Thiess and from our R 9600,' says Sharpe. 'We're excited to work alongside Thiess and support them in achieving more results like this with our machines in the future.'

***'Today's record is tomorrow's target. We know 1.8 mbcm in a month is possible – and that's what we're aiming for next.'***

**Ryan Fox**

Project manager, Mount Pleasant Operation

# A golden age in Western Australia

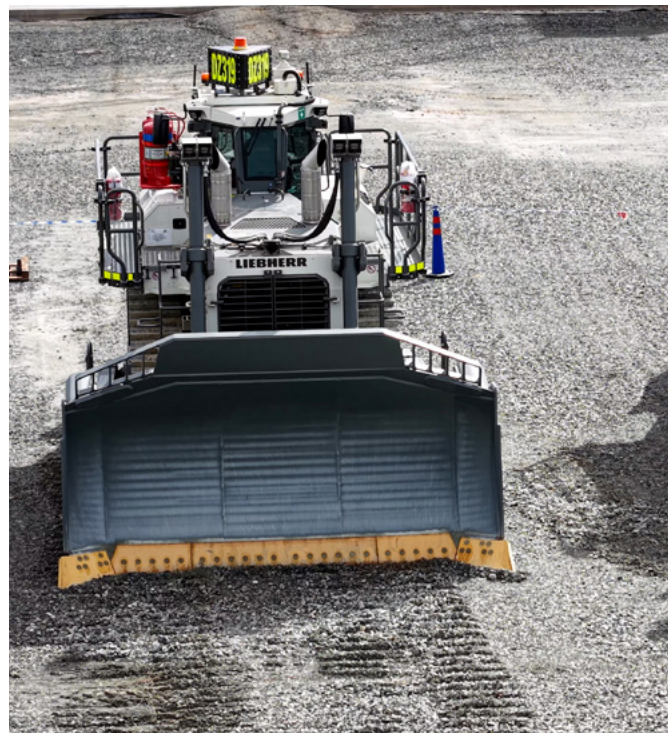
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When six brand-new Liebherr machines roll into one of Australia's largest gold operations, it's a sight to see. And that's exactly what happened in July 2025 – Liebherr-Australia Pty. Ltd. commissioned six machines for Northern Star Resources at the Kalgoorlie Super Pit in Western Australia, bringing the total number of Liebherr machines at that site to 11. These, along with the two additional machines delivered to Northern Star Resources' Bannockburn Operation a few months later, meant that Liebherr-Australia delivered a whopping 13 machines to this customer in 12 months. What an incredible effort!

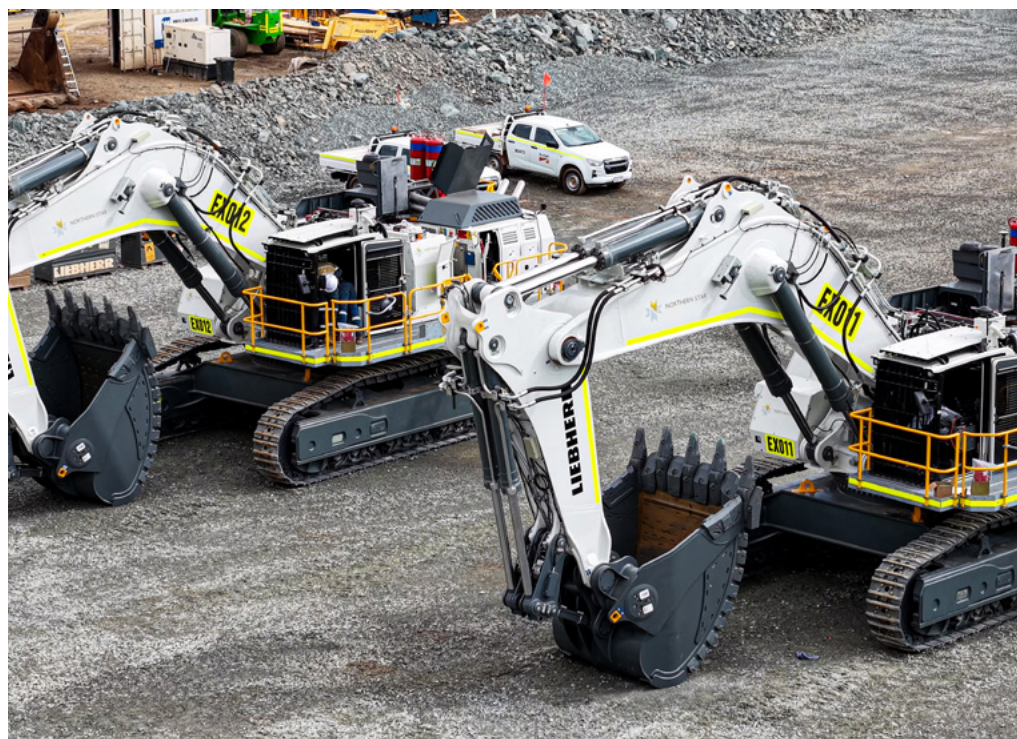
At the heart of this growing fleet is the PR 776 – the world's largest hydrostatic dozer – engineered to provide smooth control, class-leading fuel efficiency and a long service life. Multiple R 9150 and R 9400 excavators complement these 70-tonne dozing powerhouses on site with their own incredible loading capabilities.

The fleet is backed by local service and parts support from Liebherr-Australia's Kalgoorlie and Perth branches, which keeps operations strong and uptime high.

All up, Northern Star Resources now has a fleet of 18 Liebherr machines across its Western Australian operations.



**Click below to learn more about Liebherr's growing presence in the Western Australian Goldfields.**



# Application engineering: optimising productivity one mine at a time

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Productivity is paramount in mining. When a mine is running smoothly, it's more efficient, more financially stable and better placed to be successful in the future. But sometimes, despite a mine's best efforts, productivity isn't where it should be. This is where our global application engineering team can help.

Our application engineers work with customers to make sure that their mining equipment and operational processes are serving their mine's unique needs to the best of their ability. They're strategically located around the world to ensure that they are as close to our customers as they can be. When something isn't working as it should, our application engineers use a range of tools, combined with their technical expertise and practical problem-solving skills, to find the culprit, or culprits. Think of them as productivity detectives.

## Tools of the trade

The secret to optimised productivity can be lurking in a number of different places. Not just within the equipment on site but also within the wider context of the mine. Because of that, our application engineers have a bunch of tricks up their sleeves to investigate and provide solutions to customers' productivity dilemmas, chief among them simulations and application studies.

Simulations, as you might expect, help our application engineers answer 'what if' questions for our customers.

*What if we replaced our existing excavators with Liebherr machines?  
What if we were to replace our diesel trucks with battery-electric ones?  
What if there's a way to reduce operational costs on site?*

In order to answer these questions, the engineers need high-quality data specific to the hypothetical situation the customer wants investigated. To simulate how a Liebherr machine would perform on a specific site, engineers would need historical and target fleet output information. To see how running battery-electric trucks would impact operations, engineers would need haul profiles and electrical infrastructure capabilities. And to explore whether different ways of operating may result in a lower cost per tonne, our engineers would need current fleet operating costs. Once all the data has been collected, our engineers then have a comprehensive overview of the present situation on site and can see whether there's room for growth.

Our application engineers use application studies to assess what's already happening on site and if there might be a way – or multiple ways – to boost operations.

If cycle times are blowing out, if fuel efficiency is too low or if it's taking too many passes to fill a truck, these studies can help our application engineers to figure out why.

After meeting with the customer to fully understand their expectations, our engineers can formulate a plan to find the information they need. This can involve work area and broader site assessments, which include equipment efficiency studies. Usually, our engineers will also accompany operators in the cab of a machine being investigated and, if necessary, they'll record GPS data while the machine is on shift. Being in the cab allows our engineers to experience customers' everyday operations for themselves, while the GPS data allows them to compare actual and theoretical machine speeds to see if there are any places where our machines aren't running at full speed. Once all relevant site data has been collated, our engineers can conduct more in-depth evaluations in order to answer our customer's query as thoroughly, and with as much information, as possible.



### Providing exceptional advice around the world

Using these tools, our application engineers have helped countless customers improve the productivity of their mines. This article would be far too long if we included them all, so we thought we'd just share some of our all-time favourites.

In Australia, one of our customers reported that their T 264 trucks were less fuel efficient than expected. Through an application study, our engineers discovered that this reduction in fuel efficiency was because the T 264s were getting stuck behind slower non-Liebherr trucks on the haul roads. Due to the T 264s competitive rimpull performance, they accelerate faster on grade than the third-party trucks, meaning the T 264s were catching up to the other trucks on these sections of roads and having to slow themselves down. To solve this problem, our engineers suggested running these different truck models on independent circuits to realise the full production potential – and therefore the competitive fuel efficiency – of the T 264s.

In Indonesia, a customer was looking to increase their mine's production capacity by increasing the size of their mining fleet. They were specifically looking at 70-tonne dozers as well as excavators in the 200-tonne and 250-tonne classes. The local application engineer conducted production studies on site to help the customer to decide whether our machines or those of our competitors would be the better investment for their application. The results of these production studies, which were verified by the customer's own measurements, highlighted that our equipment would be the most beneficial choice. These machines performed so well in these studies, and then again when the first units began arriving to site, that the customer has invested in a total of 11 PR 776 dozers, nine R 9200 excavators and three R 9300 excavators – as well as 13 of our 100-tonne R 9100 excavators – for their operations throughout Indonesia.

In Chile, we had a customer who wanted to explore the potential benefits of installing a trolley line on site.

Using site data the customer provided, our application engineers ran a simulation that demonstrated that adding a trolley line to the mine would not only significantly reduce fuel consumption but would also considerably shorten cycle times. As a result, Liebherr worked closely with the customer to provide the site with a full trolley solution – from engineering and component supply to training and support – that, once commissioned, became the very first fully operational trolley line in all of Chile.

### Moving forward

Continuous innovation is one of our core values as part of the Liebherr Group and is something that our application engineers take to heart. They are constantly finding new ways to improve how they help mining companies make the best, evidence-based decisions for their operations, particularly when it comes to TCO (total cost of ownership) analysis between our machines and those of other OEMs and fleet estimation. In fact, the team has recently developed a new fleet sizing and cost estimation tool that helps our engineers better present the results of high-level fleet estimations and fleet TCO comparisons to customers. This facilitates more engaged discussions with our customers to ensure that they end up with the solution that works best for them.

Our application engineers' reputation for providing excellent advice to customers has recently resulted in the team starting to collaborate with one of our customers in Colombia. Based on the strength of our engineers' consultancy for other customers, the local team has been asked to conduct both a site study and a fleet estimation to determine what the customer's mine needs to succeed over the next decade of operations. This will be an exciting project to watch!

# Proven performance in the Pilbara

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Out in Western Australia's Pilbara region, T 264 mining trucks are delivering dependable performance for Thiess in some of the toughest mining conditions in the world. To keep these machines trucking along, they're supported by dedicated service teams from Liebherr-Australia Pty. Ltd. in Perth. Due to this support, the fleet continues to provide exceptional reliability day in, day out, while hauling the largest payloads in the 240-tonne class.

**Click below to learn more about how these machines achieve such impressive results.**





# Investing in the future of Australian mining



**Training is one of the most important services we offer. So, when Liebherr-Australia began expanding its training capabilities in Western Australia, we wanted to take a closer look into what this would mean for our customers Down Under.**

A lot of Liebherr Mining's business happens in Australia. In fact, Australia is our largest market for 400-tonne and ultra-class excavators as well as for our 240-tonne trucks. With a growing fleet of Liebherr machines expected by the end of the decade, it is critical to deliver the training needed for skilled operators and technicians to keep performing at their best. To accommodate this growing need, Liebherr-Australia Pty. Ltd. began setting up a new, state-of-the-art training facility in Western Australia.

'Our training capabilities have always been world-class,' says Trent Wehr, managing director, mining, Liebherr-Australia. 'But with the exceptional growth that Liebherr-Australia is experiencing, we needed to expand our training

programs and facilities so we can continue to provide our people and our customers with the high-quality experiences they have come to expect from us.'

#### **Training with Liebherr-Australia**

Using a well-balanced mixture of classroom, simulator and hands-on machine learning, Liebherr-Australia's training programs provide comprehensive product information about all Liebherr equipment in the Australian market – for customers' operator and technical teams as well as for its own customer support teams. For customers, there's technical training to handle everyday maintenance, operator training for every skill level and specialised training for sites working with Liebherr engines or autonomy solutions.



***‘Anyone certified to maintain or operate Liebherr equipment in Australia will have the same certification as someone who trains at our production facilities overseas.’***

**Pete Wilson**

National training manager, mining, Liebherr-Australia Pty. Ltd.

And all of it can be tailored to suit the specific needs of customers' operations – it just takes a little analysis of the site's training needs. These analyses typically start by identifying the skills and competencies required for each role, based on equipment specifications, safety standards and operational procedures. Liebherr-Australia's training team works closely with site personnel to determine skill gaps, operational challenges and opportunities to improve efficiency. Based on this information, the team then designs and delivers a course tailored to the site's specific needs.

For Liebherr-Australia's customer support personnel, training looks a little different. These are the people customers call for help when there are complex challenges

with proactive maintenance that require specialised equipment, technology or techniques to keep machines running reliably. Reaching that level of expertise requires intensive, advanced training in not just the machine itself but also their engines and drive systems.

‘The idea was always that anyone certified to maintain or operate Liebherr equipment in Australia will have the same certification as someone who trains at our production facilities overseas. The only way to do that is to ensure that the experience here is the same as it is over there,’ says Pete Wilson, national training manager, mining, Liebherr-Australia.



### Supporting growth

Training with Liebherr-Australia can happen online, at one of the sales and service company's seven mining support branches, at a customer's site or some combination of all three, depending on the type of training and the needs of that particular training cohort. However, due to the speed that Australia's Liebherr fleet is growing, it became apparent that a dedicated training facility was needed to supplement Liebherr-Australia's existing training resources. This is where the company's new training facility in Perth, Western Australia, comes in. Liebherr-Australia chose Perth for this new facility to support the incredible growth that this particular market has been experiencing in recent years.

'Western Australia is the biggest mining jurisdiction in Australia. However, most of the workers are fly-in, fly-out due to the remote locations of a lot of the mines in the state. The vast majority of these workers' journeys stop in Perth before continuing onto the smaller airports in or around the mines, making Perth an easy place for them to get to for training,' explains Wilson.

The facility itself was chosen for its spacious administrative building and workshop area. Within the administrative building there are three training rooms, where the majority of the theoretical training will take place. Each of these is equipped with interactive smartboards that can be

wheeled into the 1,250 square metre workshop next door for seamless transitions into practical training. To provide as much exposure to Liebherr equipment as possible, the workshop houses physical machines and engines as well as training simulators. At present, there are physical and simulated D9512 and D9812 Liebherr engines as well as a truck simulator for technical training within the warehouse, with more to come in the near future.



'Later this year, we'll be receiving a number of different simulators: an updated R 9400 E electric excavator, an R 9600 G8 excavator, a hydraulic simulator for specific training and testing courses and a T 264 simulator complete with our latest autonomy technology,' says Wilson. 'In the future, we're also planning to add simulators of our PR 776 G8 dozer and our R 9200 G7 excavator.'

These simulators are true replicas of a machine's operating system. They include real parts found in the physical equipment and are configured to simulate the actual events that technicians can face in the field.

### Things to come

With all of these incredible resources still to come, Liebherr-Australia is hoping to increase the number of people it can train each year – both its own team members and customers' onsite staff.

'In 2025, we provided more than 900 people around the country with our world-class operator and technical training. Around three-quarters were employed by our customers all over Australia,' says Wilson.

'Based on our schedule for 2026, we're set to increase the total number of people we train by at least 25%!

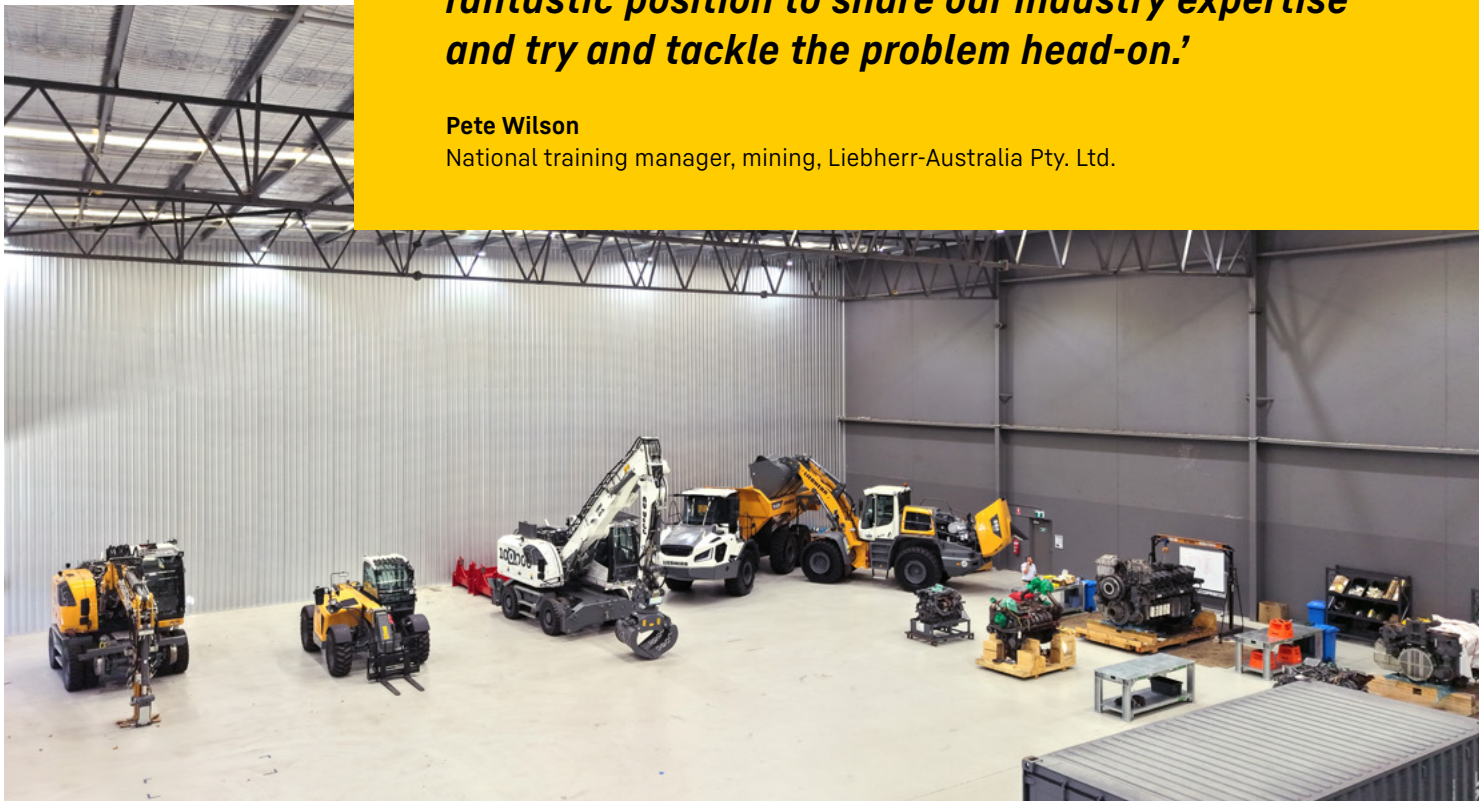
With the capabilities of this new training facility, Liebherr-Australia also sees opportunities to expand its training programs beyond the operation and maintenance of Liebherr equipment to include topics that could benefit the mining workforce within Australia more broadly. The sales and service company is working to introduce apprentice onboarding programs as well as courses that focus on electrical principles, programming and the fundamentals of hydraulics into the training schedule for 2026. This will mean that Liebherr-Australia can provide invaluable industry knowledge to people at any stage of their mining careers: apprentices just starting out, those looking to take their next step professionally and even seasoned tradespeople seeking refreshers.

'It's no secret that there is a skills shortage within the mining industry. As an OEM, we are in a fantastic position to share our industry expertise and try and tackle the problem head-on,' says Wilson.

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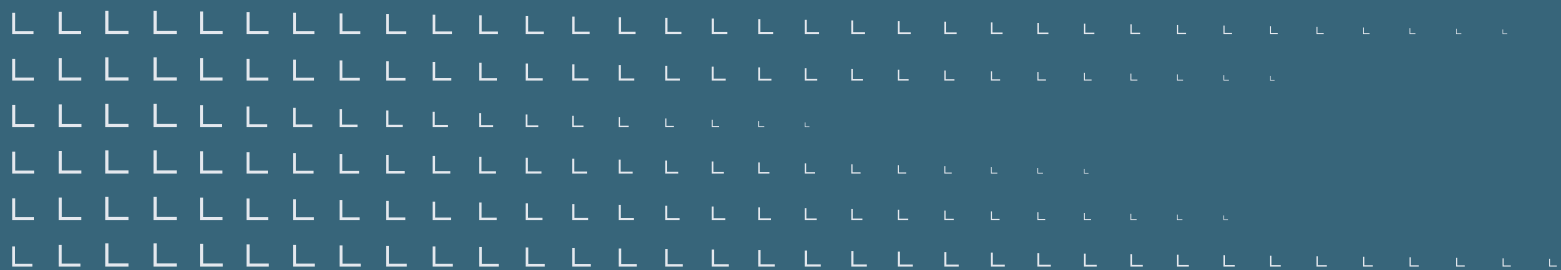
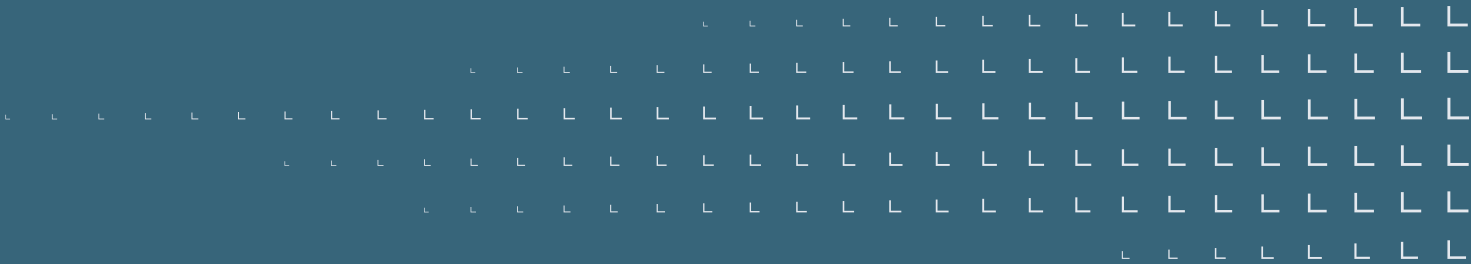


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# Product spotlight

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An in-depth exploration of Liebherr  
Mining solutions



# Digging deep for customised bucket solutions

There's no such thing as a one-size-fits-all approach to designing and manufacturing buckets for mining excavators. There's not even a one-size-fits-most approach. The countries, commodities and conditions our excavators work in are so varied that it's not possible to offer an 'off-the-shelf' bucket. The solution? Customisation.

Customisation is a collaborative process. Different teams from within Liebherr Mining – often spanning multiple countries – as well as the customer themselves are involved in designing and manufacturing our buckets. Each of the different teams brings with them their own valuable experience and expertise that, when combined, allow us to provide the perfect bucket solution to our customers every time.

## The foundations of customisation

We first start looking at ways to customise the buckets for our excavators during mining companies' tender processes. When a mining house comes to market with the desire to add a new excavator to its fleet, our proposal always details how our machine and its bucket will be the perfect solution, down to the bucket's capacity, GET (ground engaging tools) and wear package.

'We're one of just a few OEMs that manufactures both our excavators and our buckets in-house,' explains Martial Vicq, group leader, undercarriage, GET and buckets, Liebherr-Mining Equipment Colmar SAS. 'Because of this, we are acutely aware of how different bucket configurations can impact the performance of our excavators and so we only suggest combinations that provide the best possible productivity and reliability.'

To make absolutely sure we're offering mining companies the perfect bucket solution for their specific needs, we need data. Detailed, high-quality data about the application the bucket will be working in. Without this, it's impossible to build a bucket that will properly serve the customer.

'We need to have a comprehensive understanding of the material the bucket will be moving to design the right bucket. Not just what the excavator will actually be lifting, but what's the material's bank density, loose density, swell factor? How well is it fragmented? And which commodity is actually being extracted on site?' explains Vicq.

'We also need an understanding of how other excavator buckets have fared on site. What's the average lifespan of the other buckets? How long do the teeth last? Once we have all of this information, we can start designing an appropriate bucket.'

## Designing the perfect solution

The engineering team at our excavator production facility in France – Liebherr-Mining Equipment Colmar SAS – uses this data to further tweak the initial design proposition. The updated design is then passed along to the customer as well as the relevant manufacturing team for that region as a CAD (computer-aided design) file so that they can all provide their feedback.

Sometimes there can be several exchanges with the different teams to get the design just right. Manufacturing may have comments about how the bucket needs to be welded to accommodate certain design features. There can also be instances where the customer has specific ideas for the bucket that the design doesn't quite capture. While feedback from the customer is always taken on board, it isn't always possible to implement.

***'We're one of just a few OEMs that manufacture both our excavators and our buckets in-house.'***

### **Martial Vicq**

Group leader, undercarriage, GET and buckets  
Liebherr-Mining Equipment Colmar SAS

'While we value our customers' experience and expertise, our job is to provide a product that will thrive on site. If a customer's idea has the potential to jeopardise productivity or the integrity of the machine in any way, we let them know and suggest an alternative,' says Vicq. 'This is why clear communication, respect and true collaboration are vital parts of the bucket design process.'

### Building the buckets

Each bucket design needs to be signed off by engineering, the customer and manufacturing before the design can be finalised, a full set of CAD files can be created and the build process can begin. For most customers, the build process takes place at our production facility in France in conjunction with local suppliers, with the customer's local sales and service company providing the information necessary to customise the bucket. Our sales and service companies in regions with a large number of Liebherr mining excavators – Australia, Indonesia, South Africa and Brazil – build buckets in-country for their customers and sometimes to support neighbouring countries as well.

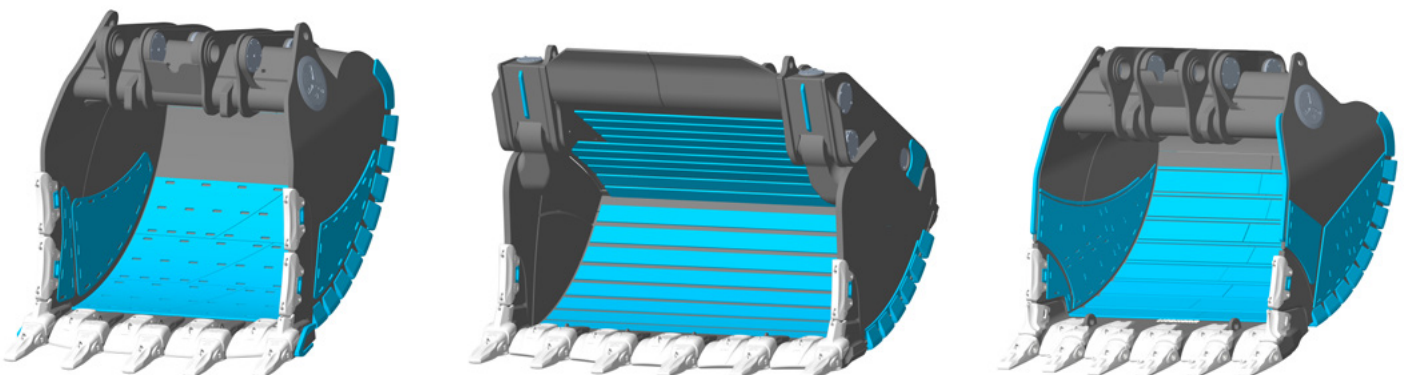
Our sales and service company in Australia – Liebherr-Australia Pty. Ltd. – was responsible for manufacturing 43.5% of Liebherr's mining excavator buckets in 2025. All of these buckets were fabricated at Liebherr-Australia's manufacturing facility in Adelaide, South Australia. With their extensive experience in manufacturing buckets for our mining excavators, the Australian team definitely knows a thing or two about the process! Starting with the fact that all of the steel plates needed to build each bucket are supplied specifically to fulfil the needs of each individual project. These come from trusted local suppliers and are inspected as soon as they arrive to the manufacturing facility to ensure they meet our strict quality standards. For Liebherr-Australia, parts that can be pressed into shape in-house as well as elements of a bucket's wear package arrive to Adelaide as 'flat plates', whereas anything that needs a large-capacity hydraulic press to be formed – like cases, elements of bucket rolls and side plates – arrive pre-rolled. For our other sales and service companies around the world, how parts arrive depends on the capacity of both their manufacturing facilities and the capacity of their local suppliers.

'All of our buckets are made from the same high-quality materials, regardless of where the bucket is built or the design we're following,' explains Steve Smith, fabrication manager, mining, Liebherr-Australia. 'It's the configuration of those materials that changes. For example, customers working in highly abrasive materials like gold will require larger wear packages on their buckets than those working in softer materials like coal.'

Fabrication begins with the two main sub-assemblies: the bucket roll and the bearing block. The bucket roll is the curved part of the bucket and is made up of individual, pre-rolled parts that are welded together to become the full component. The bearing block, on the other hand, is the part of the bucket that connects to the excavator attachment. Once the bearing block has been completed, it's heated to a controlled temperature and held at that temperature for a specified period. It's then cooled down slowly to relieve the stress in the welds, avoid cracks and extend the lifetime of the bearing block itself. Fabrication then continues with the rest of the steel plates. For Liebherr-Australia, 60–70% of these are supplied fully prepped and formed for welding and their fabrication team takes care of the rest.

'The fabrication process does differ slightly, depending on the size of the bucket being manufactured. Bigger buckets, like those for the ultra-class R 9600 and R 9800, have more complex welding, heat treatment and machining needs than our smaller buckets,' says Vicq.

After the welding finishes and the bucket starts to assume its final form, it's machined at its connection points to ensure it can properly align with the excavator during installation. Next comes the fitting of the bushes and then the whole bucket is compliance tested. To do this, the team installs a testing pin to make sure the bores within the bucket are correctly aligned. This prevents any issues with installing the bucket onto the machine. If the testing pin doesn't find any issues with the bores, it's then removed. From there, the GET is fitted and the bucket is painted.



Once the paint has dried, it's time for the finishing touches: installing the greasing system, painting the lifting points and adding the lifting point, tie-down point and the all-important 'built by Liebherr' stickers.

### Nothing but the best

Because we pride ourselves on providing the highest quality in everything we do, there are multiple hold points throughout the process for quality assurance checks. At each point, two dedicated quality assurance and quality control personnel – who are independent of the fabrication process – check the bucket's progress and that work completed at each stage meets our rigorous quality standards and norms. On top of that, these personnel also complete a final inspection report for every single bucket upon its completion.

'Whether our buckets are manufactured by one of our own sales and service companies or by one of our trusted suppliers, the result is always the same: a high-quality bucket, built to our stringent OEM standards,' says Vicq.

Part of what makes it possible for us to manufacture the highest quality buckets is the cutting-edge technology we incorporate into the manufacturing process. Liebherr-Australia, for example, has introduced automated welding technology in the form of a collaborative robot, or 'cobot', into its processes. This technology improves welding consistency while also completing welding tasks six times faster than if they were done by hand.

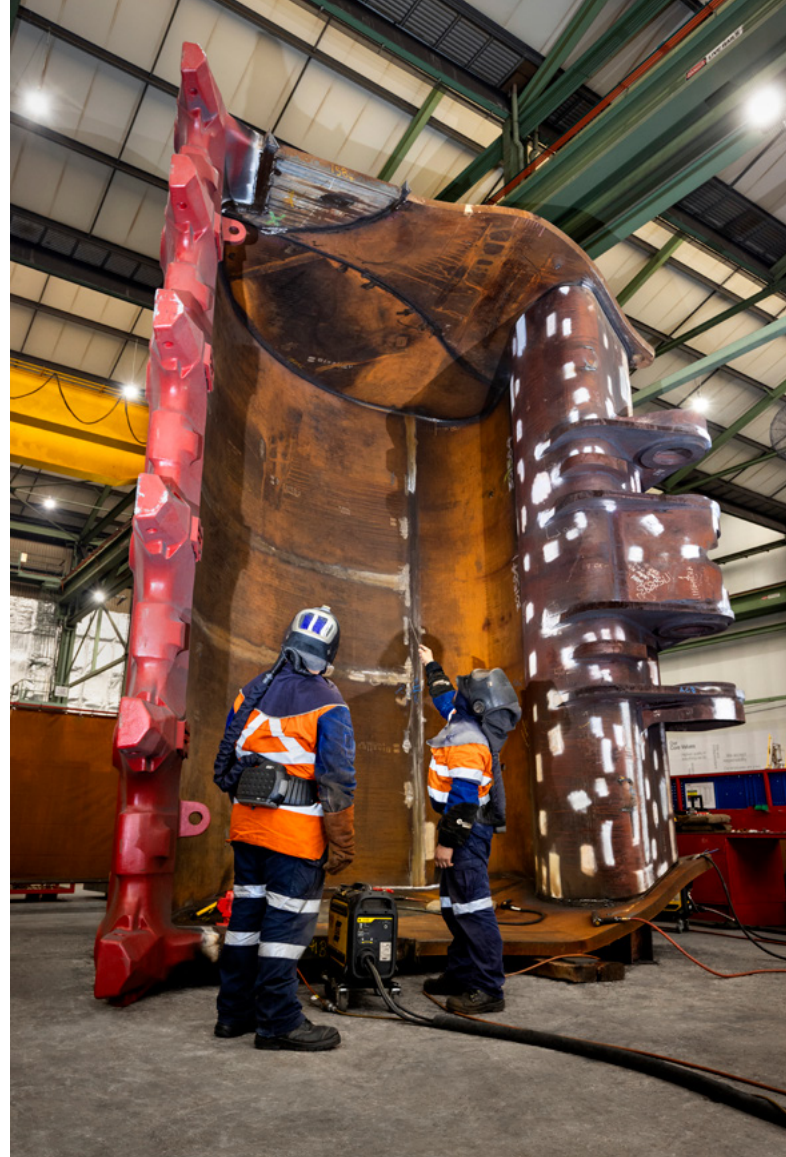
'In 2025 alone this cobot saved our team over 2,000 hours in manual labour – the same amount of time it takes to build an entire Liebherr bucket!' enthuses Smith.

After the bucket has been completed, it's shipped off to the customer's site – either to the build pad if the bucket is to be installed on a customer's new excavator or to the customer's parts storage if the bucket is to be changed out for an existing worn bucket on site.

### Never stop improving

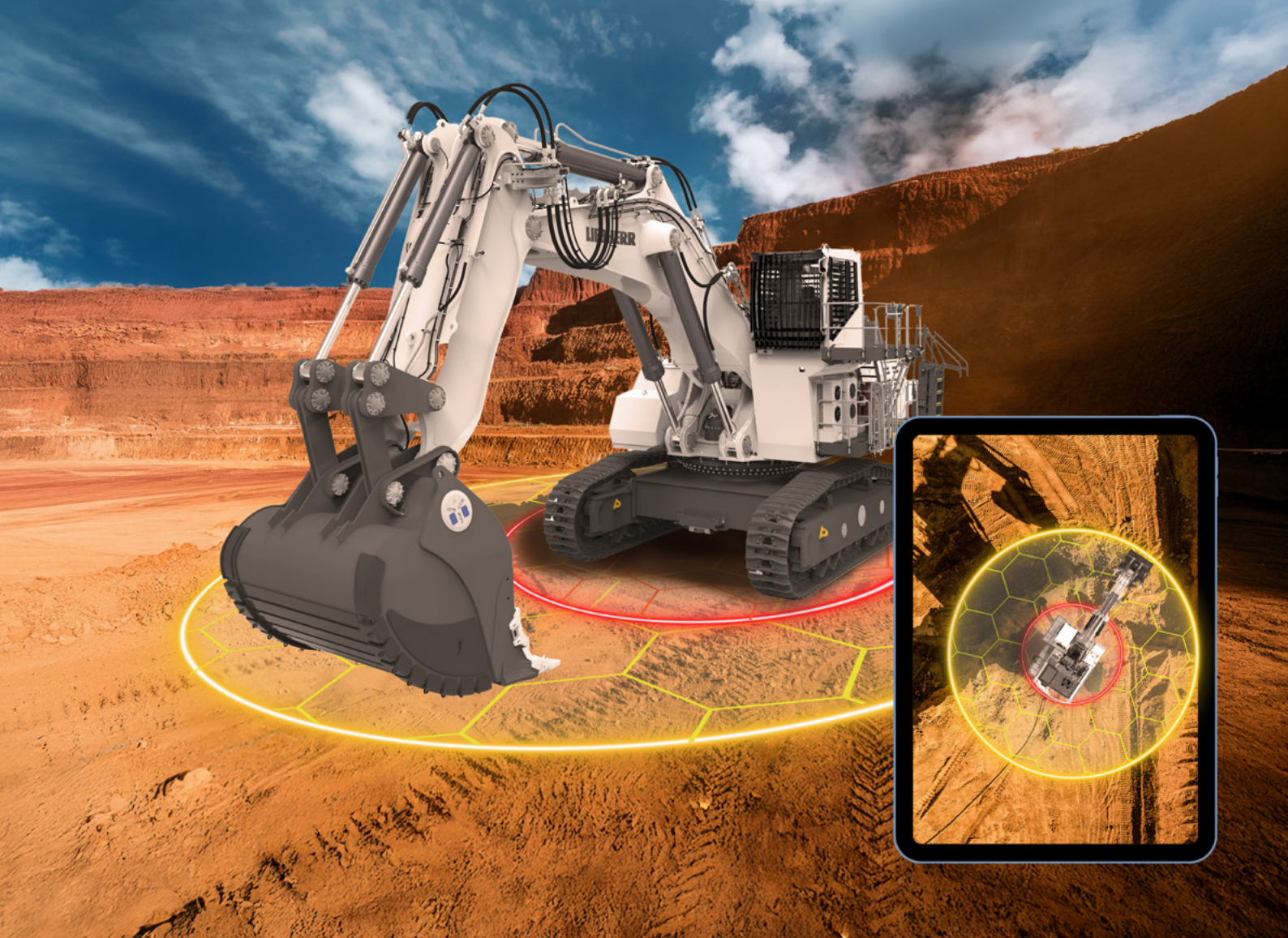
To make sure we always provide our customers with the best possible solutions, we are constantly on the lookout for ways to improve our buckets. One such way is the EVO bucket for backhoe excavators, which first launched in 2019.

'With the EVO design we were looking for a way to reduce the global weight of our buckets so customers could increase their productivity while also providing them with the opportunity to better armour their buckets,' explains Vicq. 'From what we've seen in the field, when customers use this bucket, they increase their productivity by up to 15%'



Of course, we didn't stop innovating in 2019. A number of our current projects focus on ways to optimise different aspects of bucket design. One such project is investigating how we can improve the protection of the central lubrication system as well as the profile of our buckets. Another involves the development of simulation models with DEM (discrete element method) to find the optimal bucket configuration – width, depth, number of teeth and type of GET – for each application.

'There are also instances where we find inspiration from the cutting-edge technologies, maintenance tendencies and materials we use,' Vicq says. 'Incorporating these innovations into our processes can extend maintenance intervals or even reduce the weight of our buckets. For example, we use laser cladding, which uses robots to deposit additional material to the target surface, to protect specific areas of the bucket. We also design a lot of linerless buckets for our customers, where the buckets' wear protection is arranged in a way that reduces maintenance requirements and increases payload capacity by 3%.'



# Technical spotlight: Skyview

When operating excavators that can be as much as 10 metres tall, 22 metres long and 8 metres wide, visibility is paramount as machines that big have inherent blind spots. So, to eliminate them, Liebherr developed Skyview – a 360° vision system for Liebherr's range of Generation 8 excavators.

Using four strategically placed cameras – each with 150° lenses – as well as cutting-edge software, Skyview provides uninterrupted 360° views from the comfort of the operator's seat. The high-definition video feeds from each camera are synthesised into a seamless bird's eye view of the excavator and its surroundings, processed by a dedicated ECU (electronic control unit) to give operators clear, real-time

situational awareness. By intelligently superimposing images to cover each camera's blind spots, the system allows operators to see what's happening around their machine from virtually any angle at any time – helping to reduce the risk of collisions, improve manoeuvring precision and support safer, more efficient operation.

### **Making Skyview mine-proof**

Dust and humidity are two of the most dangerous site conditions for camera components. They also happen to be two things that are ubiquitous on mine sites the world over. Skyview was designed specifically for continuous mining operations, using components engineered to perform reliably in these demanding conditions. Each of the four cameras has an IP66 rating, ensuring a solid seal against both moisture and dust, as well as specialised electronic cards made to avoid problems with condensation, shocks and the inherent vibrations of mining operations. For added durability, each camera also has a heavy-duty aluminium frame. These cameras are hardwired into the excavator to provide interruption-free, 30 FPS video back to the screen display in the cab, without the need for an internet connection.

### **Zooming in on Skyview cameras**

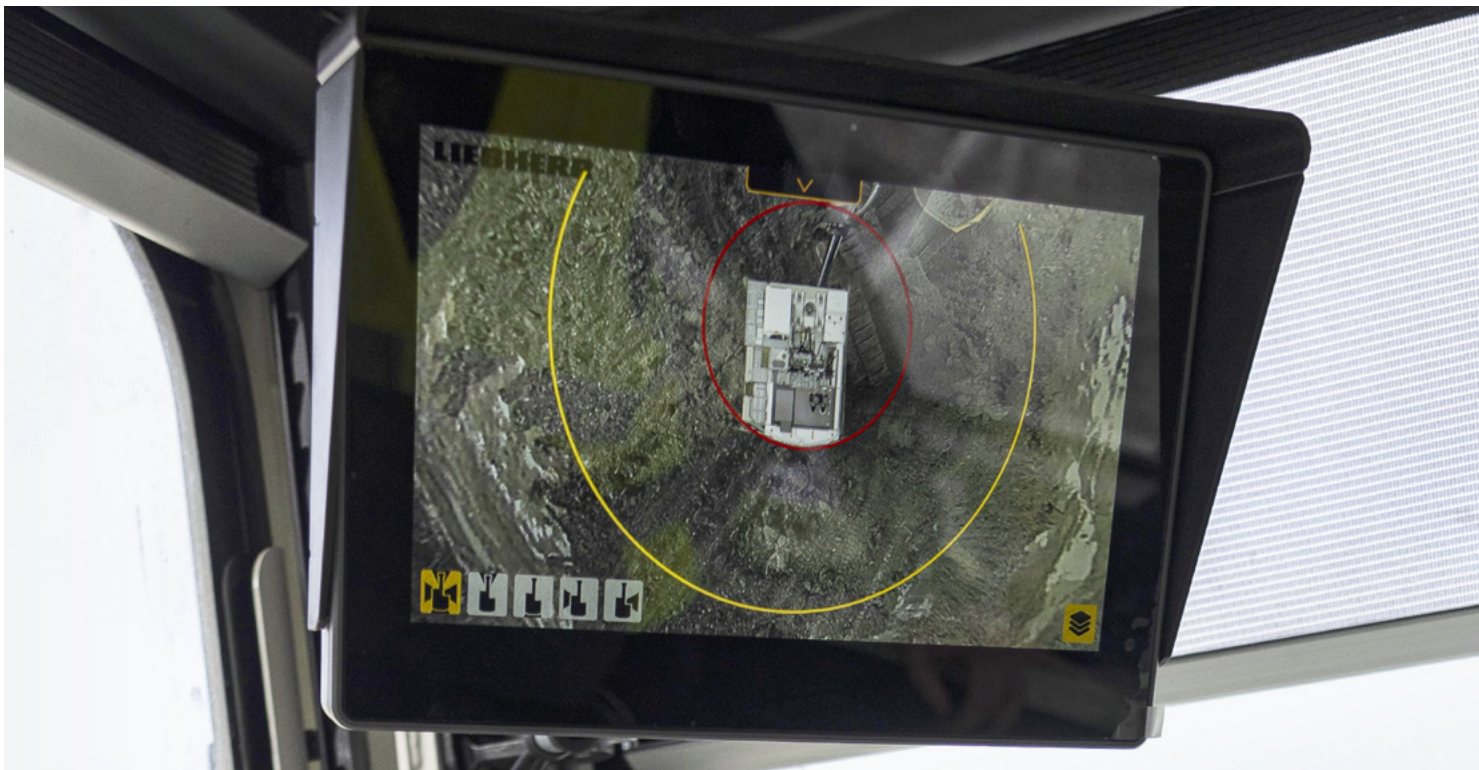
Once installed, Skyview's camera network requires just a single calibration during factory commissioning. No additional system maintenance is required beyond routine cleaning of the camera lenses.

Operators can easily switch between the bird's eye view of the excavator and its surroundings to individual camera views to better support their work on site.

The individual camera views support operators as they undertake tricky manoeuvres near the edge of the bench, close to a wall or while tramming between two benches. To help further reduce the chance of collision, the screen also displays two concentric circles, regardless of the camera angle chosen: a large yellow outer circle and a smaller red inner circle. The yellow circle highlights the safe distance around the excavator when the attachment is fully extended while the red circle shows the safe distance around the body of the machine, excluding the attachment. These circles act as visual guides for the operator so that they can better anticipate any hazards in the immediate vicinity of the machine.

At the moment, the focus of the Skyview system is real-time operational visibility rather than video recording. However, development is currently underway to enable recording functionality in the future, which would provide additional value for incident investigation and analysis.

Skyview is available for all of Liebherr's Generation 8 excavators – the R 9600, R 9300 and the latest iteration of the R 9100 – either as a factory-installed option or as a retrofittable upgrade, making advanced situational awareness accessible across multiple class sizes.



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# The world of Liebherr

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A taste of the wider world of the Liebherr Group

## Components

# Precision into space: Liebherr Components as the key to the latest generation of radio telescopes

German engineering meets astronomy: with pioneers in the development of high-precision radio telescopes, Liebherr-Components Biberach GmbH offers a groundbreaking new view into the infinity of space. This combines comprehensive mechanical engineering expertise and the highest manufacturing precision with family tradition and the latest research into the origins of the world and life.

There is just a small, inconspicuous plaque at the base of the enormous structure. This makes the story it tells all the more significant. It focuses on Dr Karl-Heinz Stenvers, the radio telescope and antenna pioneer who passed away in 2024. In the 1980s, the German engineer designed some of the first movable parabolic antennas for astronomical purposes. It was largely thanks to his developments that the first photo of a black hole was taken in 2019 – an image that amazed the world. Black holes and the still unexplored secrets of the universe are also the focus of the prototype of a completely new radio telescope dedicated to Dr Karl-Heinz Stenvers in the desert of New Mexico (USA).

The 18-metre parabolic antenna, with its 76 aluminium panels assembled into an octagonal shape, is pointed toward the sky. In super slow motion, barely visible to the human eye, it rotates in the opposite direction to the Earth's rotation. This millimetre-precise mobility is the result of the highest level of engineering expertise; 143 tonnes of steel, aluminium and CFK must be guided with such precision that the antenna remains precisely aligned with an object in space. A true mechanical masterpiece. This is made possible by a combination of play-free slewing bearings and drives from Liebherr-Components Biberach GmbH. This bearing has a diameter of over three metres, and the fits are machined to micrometre precision. This is the only way to achieve the necessary rigidity to move huge radio telescopes in wind and changing temperatures without significant play.

### From father to son – a family project with infinite dimensions

Dr Karl-Heinz Stenvers was not only a technical visionary, but also a family man. His son Lutz grew up surrounded by scaffolding, steel rings, technical sketches on pink graph paper and fascinating celestial atlases.

'I was literally born into this niche,' he explains. Even as a teenager, he helped his father build antennas and was drawn to astronomy and engineering. 'My father was a mechanical engineer. I studied electrical engineering. At home around the table, we would always discuss radio telescopes, new technologies or mechanics, and the latest discoveries in the universe. It must be in our genes.'

After completing his studies and gaining experience in the antenna construction business, Lutz Stenvers ultimately joined his parents' company and took over as managing director in 2019. From the small consulting firm founded by his father in 2014, it has grown into the highly specialised telescope manufacturer mtex antenna technology GmbH with locations in Wiesbaden and Schkeuditz in Germany and Albuquerque (New Mexico, USA). They call the combination of craftsmanship, modern engineering and family continuity 'German Family Engineering'.

### **An array of superlatives**

The name Stenvers is well known in the world of high-tech astronomy and opens doors for the start-up.

‘The fact that the director of the NRAO (USA’s National Radio Astronomy Observatory) approached us just six weeks after the company was founded was remarkable in itself. It came as a big surprise when, at a time when some of us were still sitting on camping chairs, he told us about his vision of a new generation of radio telescopes. It became even bigger when, shortly afterwards, the order for a revolutionary telescope development actually came in.’

It is important to note that the NRAO is recognised worldwide as the premier institution for radio astronomy. It designs, builds and operates radio telescopes on behalf of the USA Government to enable research into the universe at radio frequencies. In addition to cutting-edge research, the NRAO helps train future scientists and engineers, and stimulates public interest in science and astronomy. The NRAO telescopes are open to all astronomers, regardless of their institutional or national affiliation.

Today, mtex is implementing the prototype for the most ambitious radio telescope project of our time on behalf of the NRAO: the Next Generation Very Large Array, or ngVLA for short. The plan is to install an antenna array with 244 parabolic antennas – like the prototype on the San Agustin Plateau in New Mexico, each 18 metres in diameter – positioned in a clearly defined pattern across North America.

‘This allows us to create radio images that are hundreds of times sharper than the optical images from the Hubble Space Telescope and the infrared images from the James Webb Space Telescope,’ explains Lutz Stenvers.

### **On the trail of planet formation**

From a scientific point of view, the ngVLA is a quantum leap. Astrophysicist Tom Maccarone from Texas Tech University expects this to yield new insights into black holes and gravitational waves in particular.

‘With the ngVLA, we can observe structures near black holes that were previously invisible,’ he explains. ‘It will help us to understand how matter behaves under extreme conditions, and how stars and planets are formed.’ Science also hopes to gain new insights into the search for extraterrestrial life. ‘With the help of data provided by the new radio telescopes, we can analyse the chemical composition of gas clouds and therefore draw conclusions about biological processes,’ says the astrophysicist.

For Lutz Stenvers, this also fulfils a lifelong dream inspired by his father.

‘The ngVLA will be the most powerful radio telescope in the northern hemisphere and a kind of Swiss Army Knife for astrophysics. It can simultaneously investigate the environment of black holes, measure magnetic fields in galaxies and observe the formation of stars.’

It is precisely this diversity that makes the project so exciting for him and his team – and so complex.





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**Lutz Stenvers**

Managing director, mtex

#### **Perfect mechanics for the perfect image**

In order to move an 18-metre antenna with such precision over decades that objects the size of a golf ball on the moon, for example, can be reliably fixed and observed, every component must meet the highest standards. For the ngVLA, Liebherr manufactures both the large slewing bearings for azimuth adjustment and gear ring segments for elevation, as well as the azimuth and elevation drives that support the dish and mirror and continuously align them with the targeted fixed point in the universe. The dimensions are extraordinary: the bearing has an outer diameter of 3.3 metres. It is designed as a three-row roller-bearing slewing ring to absorb enormous forces while ensuring the required maximum rigidity.



'It must be possible to position the antennas precisely. We can only achieve this maximum level of precision if the bearings and drive are perfectly matched,' explains Oliver Friedrich, sales manager, Europe, Liebherr-Components Biberach GmbH.

The Biberach plant needs five to six months to produce such a high-end bearing and drive concept. Each component undergoes a comprehensive testing program upon completion, including rigidity tests, to ensure that the azimuth and elevation drives not only meet but exceed the highest industry standards. To ensure the precision of the azimuth bearing, selected positions are approached several times in the so-called 'wobble test' in order to measure and ensure the greatest possible accuracy during operation.

#### **Teamwork across borders**

The engineers at mtex work closely and trustingly with Liebherr to tailor the antenna design to the components. Lutz Stenvers sees this as a special opportunity for the project to succeed and progress further.

'The development of high-precision components for radio telescopes requires a great deal of interaction. Our engineers held numerous technical meetings with Liebherr's engineers in order to push the components to their physical limits. For us, as well as for Liebherr, this meant pushing ourselves to our limits,' he says.

Stenvers is particularly pleased that Liebherr brings a wealth of experience gained over decades across the entire Group to the project.

'Together, we have succeeded in optimising the slewing bearings and drives in such a short time that they now meet the unusually high requirements of the ngVLA and the NRAO. That makes my engineer's heart sing. Once again, it has become clear how important sharing knowledge between family-run companies can be in such extraordinary technology projects,' says Lutz Stenvers. 'Without the collaboration between mtex and Liebherr's various sites and areas of expertise, the ngVLA project would not be possible. I am certain of one thing: my father would have been delighted with this engineering achievement.'

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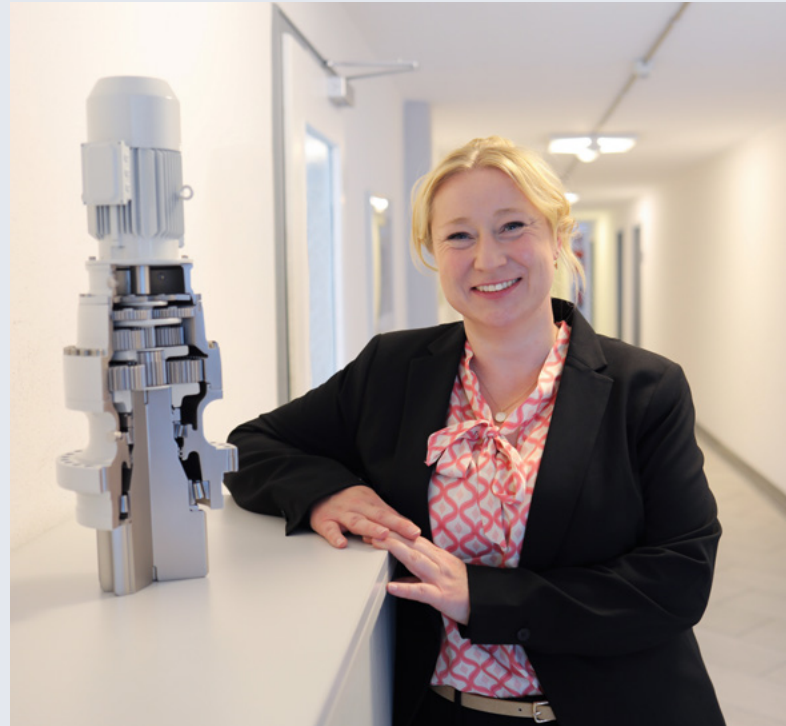


# Interdisciplinary collaboration is the key to success

The plant in Biberach (Germany) is continuing to expand its manufacturing horizons for the development of components for a new generation of radio telescopes.

'We can do pioneering work at Liebherr,' says Eva-Maria Steibel-Wahl, development engineer, application technology, Liebherr-Components Biberach GmbH.

She worked closely with mtex to meet the challenging requirements. We asked her about this.



Eva-Maria Steibel-Wahl, development engineer for application technology Liebherr-Components Biberach GmbH

## What makes the ngVLA project special for Liebherr?

We were able to contribute the full range of our expertise to the ngVLA project at Liebherr. We were able to draw on our expertise in the areas of calculation and design (calculation of torsional stiffness), testing (test setup and measurement of torsional stiffness) and production and assembly (ensuring the lowest possible backlash).

With mtex, we have a customer who has taken advantage of this opportunity and accessed the combined knowledge of several Liebherr business areas, large slewing bearings and drives. And all this has been achieved at a very demanding and high level. The aim of the collaboration was to design a solution that could guarantee the highest possible technical quality in antenna adjustment. To this end, we were given the freedom to recommend a gearing solution that was not necessarily in line with the customer's specifications, allowing us to fully exploit our potential.

## What technical challenges did you have to overcome?

It was important to thoroughly understand the application and the customer's requirements and to take these into account in the design and construction. Gear solutions with minimised backlash are nothing new to us and are in demand for many technical applications.

However, the decisive factor here was that we designed the gearbox for exceptionally high torsional rigidity and very low backlash. Furthermore, as Liebherr-Components Biberach GmbH, we had the opportunity to geometrically align the slewing bearing and the rotary drives, thereby optimising the interface. This was the only way we could ensure that the entire antenna could be adjusted smoothly and securely in the micrometre range.

## How will you best remember this project with mtex?

Personally, I was particularly impressed by the passion and expertise with which mtex operates. During the ngVLA project, I worked with various people at mtex, and everyone was clearly enthusiastic about the project, so that our technical comments were always quickly reviewed and implemented. A genuine partnership has developed over the course of the project. It was a special experience to be part of this team. I had a lot of fun working on a project in which both companies showed great enthusiasm and passion.

Mobile and crawler cranes

# The ‘cranosaurus’ from Hambach

The Hambach open-cast mine harbours a cranosaurus – a veteran crane nearly 30 years old that still outshines many of its younger peers. A relic of an earlier era, it remains astonishingly tireless; its powerful, agile frame showing little sign of age.



We’re sure you know what we’re talking about already – yes, it’s the LTL 1160. A rough-terrain crane that Liebherr built only once that has been the most powerful tyre-mounted rough-terrain crane in the world for 30 years.

‘The LTL 1160 is an incredible machine and we’re immensely proud of the tremendous service it has performed for us up to this day,’ says Matthias Wasel, managing director, Wasel GmbH.

Of course, this length of service would be impossible without good and attentive care – especially on the part of the owner – but also in cooperation with ourselves as the crane’s developer and manufacturer. In 2024, the LTL 1160 spent a few months at our plant branch in Oberhausen (Germany) having surpassed 26,000 hours of chassis operation and 40,000 hours of superstructure operation.

‘For the second time, we carried out a general overhaul of the LTL 1160 at our plant. It was a huge challenge, one that ensured great collaboration on this unusual project,’ reports Walter Rutenberg, head of workshop administration at the Liebherr plant branch in Oberhausen (Germany).

The rough-terrain crane's first general overhaul was carried out in 2011. Both times, the crane was completely dismantled. Components such as motors, cylinders and gears were refurbished and repaired, electrical cables and hoses were replaced and finally the giant crane was returned to Wasel with a brand-new coat of paint.

'The LTL 1160 carries out really important work for us in our open-cast mining operations and you can't compare it with a standard crane. We're grateful that the second general overhaul of this special crane was possible and that this unique creature can continue to deliver faithful service,' Wasel explains.

The LTL 1160 was developed as the largest model in the Liebherr LTL rough-terrain crane series at that time. Its development involved close cooperation between Rheinbraun, as the operator of the open-cast mining project; Wasel, as the crane owners; and Liebherr. The LTL 1160 was first sold to Rheinbraun in 1997. Wasel finally took over the second-hand crane in 2004.

Wasel recalls the development processes involved.

'The close cooperation produced a crane that was able to handle the specific requirements and loads of open-cast mining. The lifting capacity parameters in some cases match those of a crane from the 250-tonne class. It crosses terrain with its full balance and, despite the rough conditions, handles open-cast mining incredibly well. This really demonstrates the crane's superb quality.'

Gerd Spankowski, head of the Liebherr plant branch in Oberhausen (Germany), who has known the crane for many years, confirms this.

'In open-cast mining, the working environment is generally dirty and wet – so it's no easy place to work.'

The LTL 1160 moves around in this environment with a full ballast and a total weight of 121 tonnes. The machine regularly has to travel from the top to the very bottom layer, crossing countless metres of altitude in the process. This really demonstrates in particular the robustness of the motor and its gears. And it's precisely this robustness, powerful performance and most importantly reliability that make this crane unbeatable overall.'

***'The LTL 1160 carries out really important work for us in our open-cast mining operations and you can't compare it with a standard crane.'***

**Matthias Wasel**  
Managing director, Wasel GmbH



# Highlights from other product segments



The Group

## 'Hands on the future' at Conexpo 2026

Liebherr showcased its latest solutions at Conexpo 2026 in Las Vegas (USA). At the show, Liebherr displayed over 30 machines and technology exhibits across two major booths, including live demonstrations and a dedicated technology pavilion. Liebherr once again ranked among the show's largest exhibitors and delivered a 'hands-on' experience of the construction industry.



Components

## New hydraulic cylinder facility in Oberopfingen officially inaugurated

Following three years of construction and relocation, the new hydraulic cylinder facility of Liebherr-Components Kirchdorf GmbH has been officially inaugurated. The existing site has been expanded by three halls and two administration buildings, adding around 46,000 square metres to the facility. Following the completion of the project, the company has consolidated its mechanical manufacturing operations on this new site in Oberopfingen (Germany).

Material handling

## Liebherr introduces the T48-8s telescopic handler

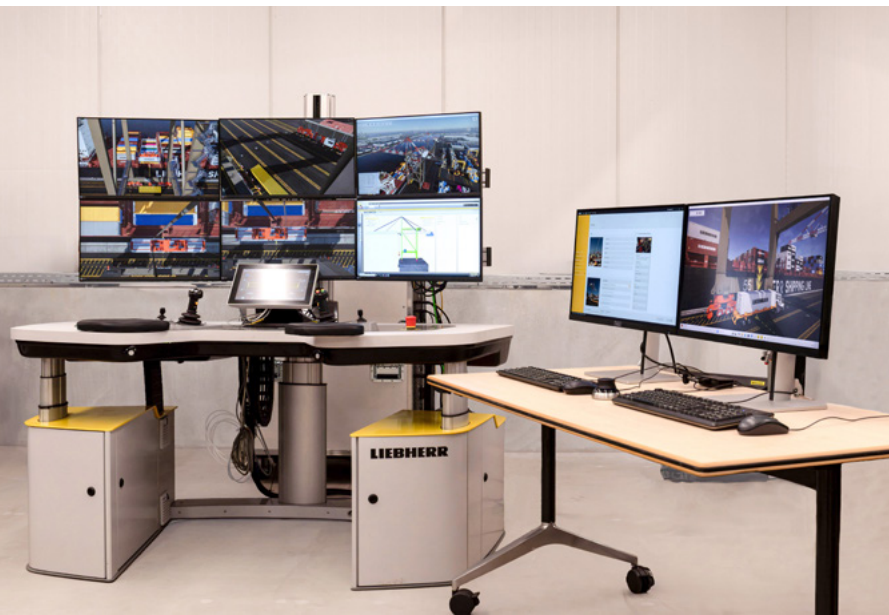
Liebherr has expanded its range of telescopic handlers with the launch of the new Liebherr T48-8s. This new model combines the proven performance and comfort of the T55-7s with an extended working range, offering a maximum lift height of 8 metres and a maximum load capacity of 4.8 tonnes. This extended range provides operators with an additional metre of lift height and forward reach, enabling more efficient material handling.



Mobile and crawler cranes

## Game of Cranes champion crowned

Throughout 2025, Liebherr hosted Game of Cranes – an international search for the world’s best mobile crane operator. Finalists gathered in Echingen (Germany) where practical and theoretical tasks requiring the utmost precision, technical understanding and strong nerves awaited the crane operators. After two days of excitement, Scott White from City Lifting in Great Britain was crowned ‘World Crane Champion’.



Maritime cranes

## Liebherr Container Cranes launches simulator for remote operator training

In 2025, Liebherr Container Cranes Ltd introduced the LiSIM ROS – a crane simulator designed for ROS (Remote Operator Station) controlled ship-to-shore container cranes. Built with Liebherr controls, hardware and PLCs – and developed by the same engineers behind the cranes themselves – LiSIM ROS accurately simulates load sway, load response and moment of inertia, ensuring operators are fully prepared when transitioning to real cranes.

The Group

## Liebherr opens new Saudia Arabian branch in Riyadh

Saudi Liebherr Company Ltd. has officially opened a new branch in Riyadh, strengthening its presence in the Kingdom. The fully equipped facility serves as a central hub for the region and will offer comprehensive services for Liebherr’s product segments represented in the country. Active in Saudi Arabia for more than 40 years, Liebherr continues to support projects across infrastructure, construction, logistics and energy, while fostering collaboration with customers and partners.



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