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WELCOME



Barry Pennypacker,
President and CEO

Dear valued customers and partners,

If you had any doubts that "The Revolution is Real" at Manitowoc Cranes, then I invite you to check out our showing at bauma 2019! We debuted six new cranes at the industry's biggest trade show from across our Grove and Potain ranges, and we showed off another six that have all been introduced in the last two years. But as exciting as it was to launch these new units, there is one thing better than introducing our latest crane lineup ... talking directly with you, our customers and dealers.

The bauma event was a tremendous opportunity to connect and hear from the entire Manitowoc network. One of the biggest focuses of *The Manitowoc Way* is integrating your voice into our crane designs. So while we may tout our fast product cycles, improved design and engineering, and upgraded factories, we couldn't bring any of these exciting new cranes to market without your input. In a way, bauma 2019 was a success for everyone who has a stake in doing business with Manitowoc. We have a full wrap-up on page 18.

But while we look back to celebrate a successful bauma 2019 — and we did celebrate with many of you — we must also look forward. We're not content to ride the wave of our new crane models. We're already on to the next batch, improving our manufacturing capabilities to keep pace with the intense demands of the global lifting market.

In this issue we are taking a deep dive into our new range of Grove rough-terrain cranes. Since I joined Manitowoc just over three years ago, the GRT range has been a particular focus. We set out

to dramatically improve the reliability and quality of these cranes, and many of our customers expressed their desire to see a revamped, improved rough-terrain lineup. I'm pleased to say that though the constant improvement will never cease, we've already come a long way with our industry-leading Grove rough-terrain cranes.

John Bair, our product manager who specializes in rough-terrain cranes, walks us through these changes in an interview on page 8. He highlights the advances we've made in design, engineering, testing, quality and operator comfort for the range. He also explains why we decided to expand our rough-terrain crane manufacturing to Italy, where our Niella Tanaro factory is giving customers in Europe and other regions a boost.

Grove rough-terrain cranes have always found good homes on energy industry job sites, so in this issue we also take a look at how they are helping support the ongoing global rise in energy demand. Energy job sites consistently present great challenges for lifting companies, demanding higher output, better efficiency and new technology. It's a challenge we relish at Manitowoc, and we know that we need the most cutting-edge cranes in terms of transportability, mobility, reach and capacity. But above all, customers in the energy sector demand the most reliable cranes that can stand up to the harshest job site conditions.

I'm confident that Grove GRTs are the best-made, most reliable cranes the lifting industry has to offer.

Sincerely,
Barry



ON THE COVER:

Brown Tank LLC deploys a GRT8100 to construct a new water tower in Dallas, Texas, U.S.

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GROVE.
REAL
TOUGH.

Grove GRT655L

The latest generation of rough-terrain cranes from Grove set new standards for quality, reliability and performance.

Debuting three years ago at bauma 2016 in Munich, Germany, the GRT8100 and GRT880 embodied the innovation and velocity at the core of *The Manitowoc Way*. The pair were the first cranes to sport the new GRT (Grove Rough Terrain) designation and were later followed by the long-boom GRT655L, which was introduced at CONEXPO 2017, along with its sister model, the regular-boom GRT655.

Manitowoc designed and built each of

the cranes following extensive customer research, incorporating discussions with rental companies, owners and end-users. This methodology is referred to as the Voice of the Customer, a research process that ensures cranes are developed and delivered with customer feedback in mind. The launches of each of the cranes were also notable for the speed at which they were completed, with the whole process wrapped up inside a period of a few months.

In 2018, Manitowoc took a further step forward with RT crane production under *The Manitowoc Way*, adding a manufacturing line for the GRT8100 and the GRT880 at its plant in Italy. Adding this capability to the facility in Niella Tanaro translates to measurable benefits for customers in Europe, Africa, the Middle East and Asia Pacific, including shorter lead times and lower shipping costs, with the same high-quality build and specifications as the rough-terrain cranes manufactured in

Shady Grove, Pennsylvania, U.S. Indeed, it has proven such a success that the company is now adding production of the GRT655 and GRT655L models to Niella Tanaro.

“This project was made possible thanks to the successful and effective collaboration between the teams in Shady Grove and Niella Tanaro,” said John Bair, product manager for rough-terrain cranes at Manitowoc. “It’s a true testament to the spirit of *The Manitowoc Way*, and the innovation and velocity it delivers to customers.”

GRT8100: exceptional construction

The GRT8100 was designed to reflect the needs of the global market and customer base, with a 47 m (154 ft), five-section main boom for better reach and versatility. It also features a tilting cab, impressive load charts and extensive component testing. The last point is particularly important, with the development of the GRT8100 benefiting from in-depth component and machine testing at the Manitowoc Product Verification Center (PVC) in Shady Grove. The result is a crane that is already demonstrating advanced levels of uptime on the job site and reduced warranty claims.

The GRT8100 is manufactured both at the Manitowoc plant in Niella Tanaro and the Shady Grove factory. As with all new

Grove rough-terrain cranes, it



Grove GRT8100

features the Crane Control System (CCS), with its user-friendly interface, for faster and more efficient operations. It can lift up to 100 t (100 USt) with best-in-class reach of up to 73 m (239.4 ft) when working with a full complement of boom extension and insert options. Other lifting options include the 3 m (9.8 ft) heavy-duty jib that can be offset to 40 degrees, for even greater versatility.

GRT880: powerful performance

Like the GRT8100, the GRT880 has several class-leading capabilities plus the CCS interface. The 80 t (80 USt) capacity model has a 41 m (135 ft) boom, which is significantly lighter than other cranes in its class. This not only enables it to lift more, but also contributes to its exceptional reach, with the 41.1 m (134.8 ft) boom capable of extending up to a maximum tip height of 68 m (223 ft) when using its offsettable boom and fly extensions. These enable customers to lift heavier loads to greater heights, which in turn allows them to bid on projects that were not previously accessible.

The boom extension stowage system for the unit’s manual, offsettable jib offers valuable time-saving capabilities, too. This option decreases erection and stowage time for the crane by up to 60 percent when compared with previous generations of Grove cranes. Faster setup and teardown means greater return on investment for owners, boosting their bottom line.

GRT655: outstanding versatility

Rounding out the new generation of Grove rough-terrain cranes is the long-boom GRT655L and its regular-boom version, the GRT655. This 51 t (55 USt) capacity model has a 43 m (141 ft) boom on the GRT655L and a 34.8 m (114 ft) boom on the GRT655. For the GRT655L, the



Grove GRT880

tip height can be extended up to 60 m (196 ft), which is a reach advantage of 8 m (27.3 ft) over the closest-competing model.

The longer boom of the GRT655L gives it a maximum working radius of 36 m (120 ft), while its lift capability is 3 percent greater than competing cranes at that radius, with improved maneuverability. With these features, and a compact footprint of 3 m (9.8 ft) by 13 m (41.9 ft), this model is ideal for job sites with limited workspace that require a reliable, versatile and flexible crane.

Practice what you preach

For Manitowoc, the introduction of the new Grove rough-terrain cranes is about retaining its place as the world’s leading supplier of RT cranes. That’s why the company is backing up its words with actions, offering a standard two-year warranty on all three models, with the option to extend that up to five years.

The warranty was introduced to ensure the improved reliability of rough-terrain cranes, and it is a testament to the company’s commitment to its customers to provide cranes that deliver increased uptime and a better user experience for operators.

GLOBAL ACCLAIM

We hear from customers on how Grove RT cranes deliver superior performance on the job site.

United States

The first Grove GRT880 in New York City is being used for a variety of applications by Great Lakes Dredge and Dock (GLDD), one of the largest providers of dredging services in the United States. The company has been using the 80 t (80 USt) crane since 2017 for marine equipment installation and repairing vessels at its Staten Island facilities.

Prior to the acquisition of the GRT880, GLDD had been using multiple cranes to accomplish the same amount of work. The addition of the rough-terrain crane caused a spike in efficiency, and the crane was found to be ideal for the tight quarters of the company's shipyard.

Stephan Brogna, yard manager for GLDD, said that the GRT880 has already made a positive impact on the company's bottom line.

"The GRT880 was the smallest, most compact crane we could find that offered the capacity we needed for the job," he said. "It's so versatile that we don't need to use as much equipment during peak work periods. We can get the same amount of work done with the GRT880 as we did with multiple previous-generation cranes, which has helped us to achieve a solid return on investment."



Italy

A fleet of four 45 t (50 USt) Grove RT550E rough-terrain cranes are conducting petrochemical construction work in Italy. Officine Dandrea chose the units because of their impressive lifting capabilities and compact footprint.

"The RT550E fits our requirements perfectly," said owners Giacomo and Nicola Dandrea. "It can perform lifts that were previously only possible with a two-axle all-terrain crane, meaning it also has a lower total cost of ownership."

The company found the cranes particularly useful for conducting work in congested areas with limited workspace. The units also have dimensions that fit within European road regulations for heavy machinery.



France

A Grove RT550E helped construct the Stade des Lumières (Stadium of Light), a 60,000-seat soccer stadium in Lyon, France. In addition to being the new home of Olympique Lyonnais, one of France's most successful soccer teams, it also hosted the UEFA Euro Championship in 2016.

Vinci, the project's main contractor, chose the RT550E for its versatility and ability to handle a wide variety of tasks around the job site. The crane was provided by Vernazza Autogru, an Italian crane rental company.

"The RT550E is a unique machine offering a telescopic boom of 39 m (128 ft) and is quick and easy to set up," said Diego Vernazza, owner of Vernazza Autogru. "With its ease of use and affordability, the RT550E was a great addition to the job site."

For this project, the crane was primarily used to move materials and install steel structures, but thanks to its long boom, it was able to complete installations at heights previously only attainable by all-terrain cranes. Its Crane Control System (CCS) provided a user-friendly interface that enabled operators to complete installations with greater accuracy and control.



Puerto Rico

A Grove RT760E rough-terrain crane was among the units used to facilitate expansion at a pharmaceutical manufacturing plant in Vega Baja, Puerto Rico. Crane rental company Forteza Equipo chose the unit because of its smooth operation and compact footprint, which made it ideal for job site requirements, including maneuvering in tight spaces.

"We had to operate in such narrow spaces that even the setup of the crane and ground preparation required extra planning beyond what is normally needed," said Luis Forteza, president of Forteza Equipo. "We used the RT760E for many jobs, such as placing jib extensions on our Grove all-terrain cranes. This had to be done over operating machinery and pipe networks that could not be disrupted."

The quality and reliability of the crane enabled the job to be completed within both the tight schedule and project budget.



THE INTERVIEW:

QUALITY CONTROL

John Bair talks about the progress Grove has made in recent years in enhancing rough-terrain crane reliability and efficiency, along with the arrival of Italian-made GRTs.

John Bair is a Jack-of-all-trades. He's been with Manitowoc since 2007 and has held a variety of roles. Starting as a sales administrator and working his way through product management across all of the Grove product lines, his experience gives him unique insight into what dealers and customers desire in their mobile cranes.

Currently, Bair is a product manager who focuses on the Grove GRT rough-terrain crane lineup. And though he is based in Shady Grove, Pennsylvania, U.S., *Looking Up* learned during this interview that his global view of product development transcends conventional borders.

John Bair, product manager,
Grove GRT cranes

LU: Three years ago Manitowoc introduced the “GRT” line of rough-terrain cranes. Can you tell us about the introduction of these cranes and how they are faring in the market?

JB: The reintroduction of Grove rough-terrain cranes as the GRT range signified a tremendous shift in focus for us. We are now wholly focused on what customers need and what the market needs to succeed. That means greater reliability, longer booms with strong capacities, enhanced operator comfort and improved efficiency. We have spent a lot of time particularly on reliability and efficiency, and we’re seeing a very positive reaction to these cranes among our customers and dealers.

LU: How have Grove rough-terrain cranes improved over the years?

JB: We put great focus on comfort and efficiency for our customers, and the cranes reflect these improvements. For example, the Crane Control System (CCS) that is introduced on all of our new cranes makes operation easy, and it is very simple for an operator to go from one model to the next with minimal training required. And we’ve improved the overall comfort for the operator, too, such as enhancing the heating and air conditioning systems. In addition, we’ve recently introduced our new wide cab that will be 3 inches (8 cm) wider with redesigned armrests for greater operator comfort. This will be launched first on the new GRT9165.

Reliability has also been greatly improved. We have redesigned and reengineered our rough-terrain cranes from the ground up to be more reliable. Our work at the Product Verification Center (PVC) has enabled us to ensure every component on a GRT crane is of the utmost, industry-leading quality. We’re confident

enough in these products that we now offer a standard two-year warranty on new GRTs with up to five years of total coverage. No one else in the industry is doing that.

LU: How have things changed at the factory where GRTs are built?

JB: Over the last few years we have made several improvements at the Shady Grove factory to help us improve efficiencies and better react to changing market demands. We’ve added new robotic frame welders and five new plasma burners that enabled us to increase capacity and provide consistent quality, for example.

Grove is now manufacturing GRTs out of our Niella Tanaro factory in Italy in addition to our Shady Grove plant in the U.S. This enables us to better serve customers in Europe, the Middle East and other regions outside of the Americas. These Italian-made cranes are manufactured to the same standards as those in our Shady Grove plant and offer benefits in these regions, such as not having to pay to ship cranes across the Atlantic Ocean, shorter lead times, and fewer taxes and tariffs.

We’re also moving to a new value stream organization that allows for closer collaboration between various departments such as product management, engineering, manufacturing and sourcing for a specific product family. One of the key goals is to ensure everyone is aware of the customers’ feedback and that our new cranes meet market desires. I’m excited to be working closely with these other departments and to further strengthen the link between the “Voice of the Customer” and product design.

LU: As a global brand, how do you ensure Grove rough-terrain cranes appeal to such a diverse range of customers?


JB: By talking to them. We are in a constant dialogue with our customers and dealers from around the world to learn about their needs. It’s through this consistent communication that we can best comprehend the global market.

LU: Are there any new technologies or design features that are resonating?

JB: Definitely. We’ve designed lots of new features that enable customers to be more efficient and our cranes to be more reliable. For example, our new encoded smart outrigger beam cylinders use magnetic pulses to identify the position of the beam, which is then relayed to the CCS display. Prior to this new design, manufacturers were mainly using cable systems that are susceptible to jams or breaks, and that means unplanned downtime on the job site. With this new design, we conducted extensive life-cycle testing at our PVC, and they showed 100% accuracy. This is a great step forward in improving the overall reliability of our cranes. We look forward to implementing this new design as we move forward with new models and product updates.

We’ve also added the ECO mode feature, which is part of the CCS, to improve fuel efficiency and decrease wear and tear on the powertrain and hydraulic systems.

Another example is the counterweight installation cylinders we introduced on the GRT8100 and GRT880. We now use a new cylinder design with the seals facing downward so they are protected from rain, dirt and UV rays. This extends the life of the seal, reduces maintenance costs and ensures customers stay working.

These are just a few examples of the many updates we’ve made to the GRT line, and we look forward to expanding these cranes’ global reach. 

MANITOWOC AROUND THE WORLD



1

Hungarian dealer for Grove

Grove customers in Hungary can now count on the premium sales and aftermarket services of Nyírség Nehézgép 93' Bt. The new Grove distributor for the country is a seasoned dealer with extensive knowledge of the market, having been in business since 1993.

“With the sale and service of Grove cranes, we add the leading brand for mobile cranes to our product portfolio,” said Balász Séra, sales manager at Nyírség Nehézgép 93' Bt. “Combined with our high service reputation, we will expand the market position of Grove cranes in the country.”

For Manitowoc, the partnership with Nyírség Nehézgép 93' Bt will help strengthen its presence in Central Europe and boost market share in Hungary. The new dealer operates across Hungary from its base in Nyíregyháza.

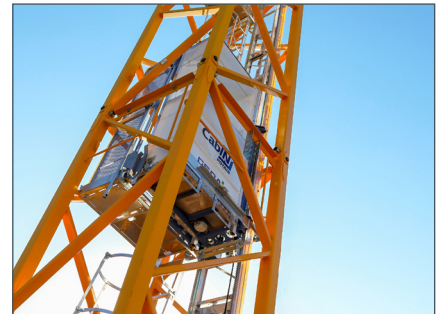
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Indian Open House

Manitowoc customers and dealers attended an open house event to celebrate the inauguration of the new Potain factory in Chakan, India. Dozens of guests were able to tour the new plant and see how *The Manitowoc Way* has influenced the facility's layout and production lines.

“We are serious about doing things in line with *The Manitowoc Way*,” said David Semple, Manitowoc's vice president for the Middle East and India. “The relocation of our Potain factory to Chakan is keeping with that. The factory occupies a reduced land area but features new equipment and lean processes that ensure the MCT 85 and MC 125 are produced more efficiently and with greater quality than before.”

The new factory sits in the industrial hub of Chakan, which offers good connectivity to national highways and means expedited deliveries for customers in India. The new facility is also closer to Mumbai, where Potain cranes are shipped to export markets.



3

New operator lift for Potain

Potain top-slewing crane customers can now use an internal mast operator lift for fast and easy travel to and from the cab. The new Potain Cab-IN can accommodate up to two people at the same time, at a maximum weight limit of 200 kg (441 lb). It is compatible with all K Mast bases/chassis and fits into both existing and new models.

Thibaut Le Besnerais, Manitowoc's global product director for tower cranes, said the Potain Cab-IN was designed with the help of Voice of the Customer feedback and meets demands for the continued use of the access ladders, even with the lift installed.

“We developed the idea for an internal mast operator lift, taking special care to ensure unrestricted access at all times,” he said.

The Potain Cab-IN was designed in partnership with GEDA (a successful industrial elevator manufacturer) to meet French regulations, which require that all crane masts that exceed 30 m (98.4 ft) include an elevator.



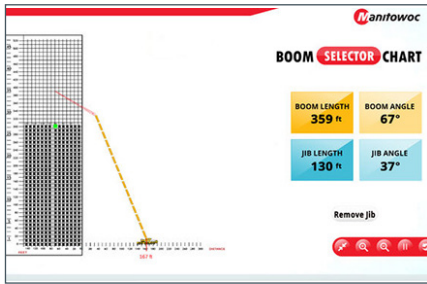
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Celebrating at bauma 2019

Sweden’s Lambertsson Kran purchased the new Potain MDT 809 that was on display at Manitowoc’s booth for bauma 2019. The MDT 809 will be available for rental use within the fleets of both Lambertsson and Norwegian crane sales and rental company Kranor AS.

The recently unveiled topless crane reflects a valuable partnership between Potain and Lambertsson. Lambertsson provided design input through Manitowoc’s Voice of the Customer program, one of the key strategies of *The Manitowoc Way*.

Aaron Ravenscroft, executive vice president of cranes at Manitowoc, presented Lambertsson with a plaque to mark the occasion and thanked Managing Director Jan Heed for his company’s input in the MDT 809’s design.



5

New app for operators

Lifting jobs from now on will become much easier with Manitowoc’s exclusive Boom Length Selector App. Released by Manitowoc to help customers select the right crane setup for specific tasks, the new smartphone application analyzes a combination of parameters — such as overall boom and jib length, boom radii, building height and more — and quickly and easily determines what is the best option for a certain lift.

Manitowoc is the first crane manufacturer to offer a smartphone app of this kind.

“By simply entering a few details, the app immediately generates a setup for that specific lift. It is a great tool to use during pre-planning or on site to get the job done,” explained John Alexander, director of all-terrain crane service, mobile training and telematics at Manitowoc.

6

Potain to rebuild Notre Dame

Following the April fire that caused large-scale damage to Notre-Dame de Paris, Potain has pledged to support reconstruction efforts of the historic French cathedral.

Manitowoc will provide tower cranes and related services free of charge, and the terms of this offer have now been officially presented to the authorities.

“It seemed natural to us that Potain, our tower crane brand that for more than 90 years has been involved in the construction of the most emblematic works of French architecture, is committed to rebuilding Notre Dame de Paris. Our cranes and technical expertise will be there to meet the challenge of a rapid reconstruction of the cathedral,” said Barry Pennypacker, president and CEO of Manitowoc.



THE FORCE BEHIND THE POWER

With demand for energy continuing to grow worldwide, Manitowoc is continuing to support the sector with its latest generation of cranes that have the reliability, versatility and durability to support this demanding sector.

While there is ongoing debate about what type of energy will power our world in the future, there is no debate about which way energy demand is headed: up. According to modelling work undertaken in the International Energy Agency's New Policies Scenario, global energy demand is set to grow by more than 25% by 2040, requiring more than US\$2 trillion a year of investment in new energy supply.

Alongside this, the energy market is experiencing an ongoing evolution. Recent years have seen mixed fortunes for the oil industry, yet it remains a dominant element in the energy mix. Demand for natural gas is on the rise, and government legislation is likely to be key in determining the future success of the nuclear industry. Government policies are equally important for the renewable energy industry, where future growth will be closely tied to policy decisions.





Voice of the Customer

Sam Hess, crane manager for B&K Equipment and Crane Service, discusses his company's experience using a Grove GRT8100 rough-terrain crane to build a gas-fired power plant and to work on a hydraulic frack well.

"My crew and I are all 100 percent impressed with the GRT8100 when using it to build a gas-fired power plant. It's reliable enough to handle any task we throw at it. Our operators used it for everything from setting 453 kg (0.5 USt) steel beams to lifting 11 t (12.5 USt) boilers. It has a very strong chart for a crane of this size. You don't normally see a crane of this capacity with this small of a footprint.

"Shortly before construction of the power plant, I used the GRT8100 to hoist a 10.4 t (11.5 USt) coiled tubing injector above the wellhead on a hydraulic frack well. We needed a crane that could hold the injector in place for 30 hours on a very congested job site, and this crane was ideal for getting the job done.

"The CCS has been very user-friendly. You can adjust your controls and deploy your outriggers using the same convenient dial. You don't have to reach up and use a touch screen each time. Accessing all of the crane's boom lengths is very intuitive, too."

There are also other issues for the industry to contend with, such as an increasing concern from providers over energy security, as well as the global expansion of energy distribution networks, particularly into markets such as Asia and Africa.

For Manitowoc, the growth and ongoing transformation of the global energy sector presents a host of opportunities and challenges, explained Aaron Ravenscroft, executive vice president for cranes at Manitowoc.

"Our experience in the energy sector dates back decades, so we've been tracking developments with interest over the years," he said. "Our customers in this sector are looking for cranes that are both reliable and versatile to help them adapt to today's changing energy landscape. They also want machines that can cope with the rigors of today's job site conditions. In fact, if you take a look at the latest rough-terrain cranes from Grove, for example, you can see design features that are tailor-made for today's global energy sector, and that's no coincidence."

Versatile and reliable RT cranes

Grove rough-terrain cranes are the most popular choice of Manitowoc products for customers in the energy sector, Ravenscroft said. Their versatility and reliability make them a perfect choice for all kinds of lifting and support work on oil and gas, nuclear, solar and wind projects. Marketed under the "Grove Real Tough" banner, the cranes offer a host of design features that make them ideal for energy job sites.

For example, the cranes deliver ultimate productivity on the job site, thanks to the inclusion of Manitowoc's proven Crane Control System (CCS) that features on a range of models, including the RT530E-2, RT540E, RT550E, GRT655/GRT655L, GRT880, GRT8100 and the new GRT9165. Its user-friendly interface has two full graphic LMI displays and an ergonomic jog dial for easy navigation and greater lift

planning, enabling the cranes to take on a wide range of lift duties.

This aspect is particularly welcome on energy projects, where cranes are often used for all kinds of maintenance and support work, generally covering large areas, too. CCS is also a benefit for projects such as installing solar panels, where precise control is a must.

On the GRT8100, a new boom is featured as well. It offers up to three operational telescoping modes: a choice of sequenced or synchronized extension/retraction, plus one mode for maintenance. Again, with these cranes used for a variety of lifts from different locations, this ability to select more options for boom configuration gives Grove customers a real advantage.

It is just one feature in these latest-generation cranes that reflects a decade of design and engineering improvements to bring class-leading levels of quality and reliability to customers.

Tailor-made crawler cranes

One of the fastest growing energy sectors of the past 15 years has been the wind power market, and cranes from Manitowoc have facilitated the development of this renewable energy sector. Manitowoc crawler cranes such as the MLC300, MLC650 and 16000, and Grove GHC telescoping crawler cranes, are frequently used to assemble wind turbines.

All of these cranes offer dedicated attachments for wind work. One of the newest technologies for crawlers in wind work is the 3.5 meter-wide boom inserts for the MLC300 and MLC650. These boom inserts deliver additional capacities and tip heights for greater performance on wind and other job site applications.

The MLC300 and MLC650 also feature Manitowoc's unique Variable Position Counterweight (VPC). This patented technology automatically adjusts the position of the counterweight to match the required



Voice of the Customer II

U.S. contractor White Construction used a Manitowoc MLC300 crawler crane to complete work on a wind farm ahead of schedule. The 300 t (330 USt) capacity crane built 30 wind towers for the Hog Creek Wind Project in Ada, Ohio, wrapping up the work three weeks ahead of schedule.

“We chose the MLC300 with Fixed

Position Counterweight because of its extra capacity compared with competing lattice boom crawler cranes,” said Jason Ruggles, director of crane operations for White Construction. “Combined with its smaller footprint, the crane enabled us to easily maneuver around the hilly terrain of the wind farm and complete each lift.”

lift. Advantages of the VPC for customers include reduced ground preparation, lower ground-bearing pressure and less counterweight. This not only benefits users working on wind power projects, but also those using the cranes in power plants where ground conditions may be an issue.

The new GHC140 is the latest crane in the telescoping crawler crane lineup that is growing in popularity in the energy sector. Customers in this industry make use of the crane’s crawler ability on uneven or rough

terrains, combined with the convenience of a telescoping boom. This setup enables 100 percent pick-and-carry capabilities that enable lifters to assemble solar panels or assist in wind turbine assembly with greater ease. These cranes can make several lifts without being re-set up for each load, and they easily maneuver around the job site from lift site to lift site.

The GHC140, which was introduced at bauma 2019, is the biggest model yet, with a 52.1 m (171 ft) boom, and 127 t (140 USt)

capacity. The crane can pick and carry at 100 percent of its load chart on inclines up to 4° and swing loads a full 360°.

“We know that with today’s fast-changing energy landscape our customers have to be agile, and that means we have to be agile, too,” Ravenscroft said. “Our customers know that by investing in a Manitowoc or a Grove product, not only will they get a crane that they can use in more applications, they will also get industry-leading product support from brands they can trust.”



A Grove GHC55 helps build a solar farm in the U.S.

ENHANCED PRODUCTION

Updates to Manitowoc's factories are leading to greater efficiencies and quicker turnarounds for Grove rough-terrain cranes.

Shady Grove, Pennsylvania

Manitowoc is continually looking for ways to improve and maintain its position as one of the leading innovators in the crane industry. That not only means producing the latest and greatest crane models, but also improving operations to work more efficiently and minimize its environmental impact. Over the last few years, the company has made several improvements to its factory in Shady Grove, Pennsylvania, U.S., where it builds the majority of its Grove rough-terrain cranes. The changes have all been implemented to improve efficiency and enable the company to better react to changing market demands.

To kick off its factory update and operational improvement exercise at Shady Grove, Manitowoc held a series of Kaizen events to analyze what areas it could best improve. This led the company to identify processes, production and testing operations as key areas to enhance.

For production, Manitowoc has upgraded the facility's operations in several ways. This includes the introduction of additional robotic welding for crane frames, which improves both the quality and repeatability of the welds. Outside Shady Grove, Manitowoc is also moving to a new value stream that brings together cross-functional teams from across the company to better share customer feedback to ensure new cranes meet market desires. This includes sales, engineering and sourcing,

and that information is used to directly improve design and manufacturing operations in Shady Grove.

"The goal is to eliminate waste in operational and administrative capacities, while also enhancing our focus on delivering the highest-quality, customer-driven products," said Mike Reed, value stream director for Mobile Hydraulic Cranes.

The Manitowoc Way at work

These changes enable the company to produce more equipment at a quicker pace at the Shady Grove location. *The Manitowoc Way* allows for direct customer feedback, which enables engineers to know exactly what customers are looking for and incorporate changes into specifications, even while the design process for new cranes is ongoing.

"Talking with our customers and dealers to see what companies are looking for in the market helps us identify our next innovation," said John Bair, product manager for Grove rough-terrain cranes. "The velocity with which we are able to get that feedback, design a solution and get it out to the market helps us maintain our reputation as a leader in the industry."

The Manitowoc Way is a driving force within the company. Innovation throughout all operational silos is leading to greater efficiencies and quicker development, resulting in solutions that meet Manitowoc's customers' needs.

Overseas Grove production expands

Manitowoc's Niella Tanaro, Italy, factory achieved a notable milestone in 2018 when it manufactured its first Grove GRT8100. The 100 t (100 USt) capacity crane is the largest Grove RT crane ever built outside the U.S. (the GRT8100 is also manufactured at the Shady Grove plant).

The strategic move to produce GRTs in Italy enables Manitowoc to better serve customers around the world and was the direct result of customer feedback. Benefits include shorter lead times, lower shipping costs and preferential import duties in certain countries that recognize the EUR1 certificate of origin, with the specifications and quality levels being as high as the rough-terrain cranes manufactured in Shady Grove.

"This project was made possible thanks to the successful and effective collaboration between the teams in Shady Grove and Niella Tanaro. It's a true testament to the spirit of *The Manitowoc Way*, and innovation and velocity," Bair said. "The team in Niella Tanaro in particular has done a tremendous job. They managed to utilize the factory for GRT8100 production in only a few months."

Since 2005, Manitowoc's Niella Tanaro factory has manufactured other popular rough-terrain crane models including the RT530E-2, RT540E and RT550E. An additional model, the 80 t (80 USt) Grove GRT880, was added to production in 2018. The GRT655 and GRT655L will also be manufactured in both Italy and Shady Grove by the end of the year.



A welder works in the Shady Grove factory.

THE REVOLUTION IS REAL



Grove GMK5250XL-1



Potain MRH 125

Manitowoc showed the crane industry that "The Revolution is Real," with an impressive showing at bauma 2019 in Munich.

Manitowoc enjoyed a successful bauma 2019 in Munich, Germany, in April. Thousands of visitors to the exhibition took the time to stop at the 3,300 m² (35,500 ft²) Manitowoc booth to see the latest innovations, meet old friends and talk shop. There were 12 cranes on display — six brand new — from the Potain and Grove ranges, as well as a 242 m² (2,600 ft²) technology pavilion, showcasing the latest customer-focused innovations.

The company's booth included a two-story building, complete with a celebration terrace, where dozens of customers and dealers were recognized over the week-long show for their ongoing support and investment.

On the first morning, over a hundred guests, including media, customers and dealers, gathered to hear Barry Pennypacker, president and CEO of Manitowoc, highlight just how far the company has progressed since its last



Grove GMK3050-2

appearance at the show three years ago.

"Since the last bauma, we have moved to a regional operating structure, invested heavily in new products and incorporated the 'Voice of the Customer' into our development cycle," he said. "We've also transformed our manufacturing facilities to improve delivery times, product quality and reliability. I'm proud to say that *The Revolution is Real* at Manitowoc. Not only did we launch six new cranes at bauma, we have introduced 51 new models since the last time we were here. This is a testament to the relentless effort of our 5,000 employees and their dedication to *The Manitowoc Way*."

CRANES ON DISPLAY

Dominating the Manitowoc booth was the new Potain MDT 809, the largest topless crane ever built by the company, with up to 40 t (44 USt) of maximum capacity available and a jib of up to 80 m (262 ft).

“The launch of the MDT 809 is one of the most significant Potain tower crane launches of recent times,” said Thibaut Le Besnerais, Manitowoc’s global product director for tower cranes. “We wanted to build a new model that satisfies demand for greater capacity and is also easy to transport, fast to assemble and provides industry-leading performance. The MDT 809 provides all that and more.”

Another new Potain on show was the MRH 125, the first hydraulic luffing jib model from the company’s European range.

From Grove, there were three new all-terrain cranes, including the impressive five-axle GMK5250XL-1 which has a mighty 78.5 m (258 ft) main boom along with a 250 t (300 USt) maximum capacity. Sitting alongside it were two new three-axle models: the GMK3060L and the GMK3050-2, with capacities of 60 t (65 USt) and 50 t (55 USt), respectively.

Andreas Cremer, global product director for all-terrain cranes at Manitowoc, said the new models underscore the company’s increased desire to give customers a

competitive advantage.

“We believe in developing cranes our customers can use in a wider variety of projects for better return on investment,” he said. “The GMK5250XL-1 is a great example of that. It’s an update to our GMK5250L, but we’ve added 8.5 m (28 ft) of boom for more reach, so it can take on more jobs.”

From the Grove rough-terrain range, the company showed the 100 t (100 USt) capacity GRT8100 and a 51 t (55 USt) capacity GRT655L. The GRT8100 was built at the Manitowoc plant in Niella Tanaro, Italy, and plans are in motion to build the GRT655L there later in 2019. Both are also built at the Manitowoc factory in Shady Grove, Pennsylvania, U.S., again giving Manitowoc customers more choices when doing business with the company.

In terms of Potain self-erecting cranes, Manitowoc presented the new Hup M 28-22, the third crane in the groundbreaking Hup range and the first with a design based around mobility.

“The new Hup M 28-22 optimizes

mobility, productivity and versatility for our customers,” Le Besnerais said. “This combination will increase return on investment for owners.”

Among the other eye-catching products on the Manitowoc stand was the Potain Cab-IN operator elevator for Potain tower cranes. It enables for fast and easy travel to and from the cab, while retaining regular mast ladder access.

CONTINUED INNOVATION

At its technology pavilion, Manitowoc called attention to its diverse portfolio of tools and services that help customers achieve more. One feature that captivated attendees was the range of Grove simulators for both rough-terrain and all-terrain cranes.

“Manitowoc aims to support the lifting industry with the most comprehensive lineup of service and support options on the market,” Pennypacker said. “From building digital tools to expanding our training and support offerings, we want to help our customers get the most return on investment from their cranes. This is *The Manitowoc Way* in action.”



From left: Potain MDT 809, Grove GMK3060L and Potain Hup M 28-22

GROWING WITH — GROVE



Irving Equipment's relationship with Manitowoc enables the two companies to develop industry-leading mobile cranes that are built to last.

For more than 60 years, Irving Equipment (Irving) has been deploying Manitowoc and Grove cranes on its job sites. Little did the company know that someday it would be helping design new Groves for the entire lifting market.

The Saint John, New Brunswick, Canada-based company specializes in heavy lifting, pile driving, specialized transportation and project management, and it deploys a fleet of more than 100 cranes. Some 60 percent of those cranes are Manitowoc-made. As its business has grown over the years, leading it to become one of the most well-known crane providers in the country, its fleet has expanded in size to match pace.

Irving says it has come to rely on Grove cranes for their reliability, both on the job site and off, as the support Manitowoc provides helps the company excel. (In one telling example, Irving still has a 1959 Manitowoc 3900B that it can deploy if the right job comes along, such as for pile-driving projects.) Two new additions to its crane lineup — a GMK5250L all-terrain crane and a TMS9000-2 truck crane — have the company poised for another breakout year, according to Victor Murty, operations manager at Irving.

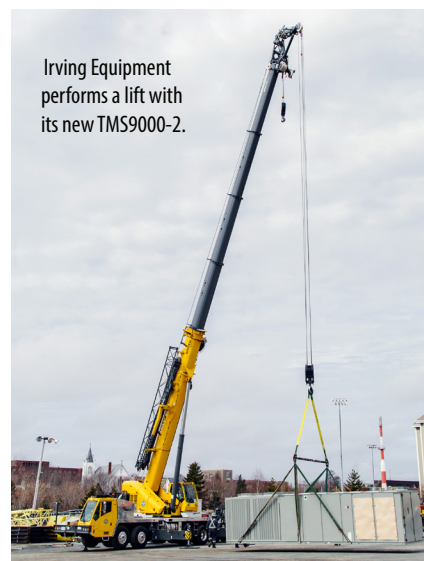
“We purchased a new GMK5250L and a new TMS9000-2, so we are now better equipped to provide the best lifting solution for our clients,” he said. “Both cranes enable us to perform two-hook operations, which we weren’t able to do before, and now we have even more lifting options. This will help us compete for and win jobs we couldn’t have previously.”

Relationships that make a difference

While the cranes themselves have superior features that enable Irving to have a more versatile fleet, it was ultimately the company’s relationships with its dealer, Shawmut Equipment (Shawmut), and also its partnership with Manitowoc, that led to another Grove purchase.

Shawmut helped Irving connect directly with Manitowoc’s design team for collaboration. Irving collects data on all of its equipment, and it shares the data from Grove, Manitowoc and National Crane models with Manitowoc. In 2018 this led the Manitowoc engineering team to sit down with Irving to see exactly where changes could be made to improve its equipment.

“This type of collaboration is indispensable,” said Andrew Miller, director of business development at Irving. “Not only are we receiving great support, but we are able to help Manitowoc deliver quality



Irving Equipment performs a lift with its new TMS9000-2.

products to the market. Together, this relationship enables us to be aggressive when bidding on new jobs because we are confident that our machines are reliable and efficient enough to perform any lifting job.”

This close working relationship is evident in Irving’s recent crane purchases. The company plans to keep a close watch on the performance of its two new Groves, and report directly back to Manitowoc to feed the data into future crane designs.

“In addition to the two-hook operation capabilities of both cranes, the TMS9000-2 had a greaseless boom and an automatic truck transmission, which we will be able to compare with our other machines to see if

we use less fuel with this one,” Murty said. “The GMK5250L is a one-engine crane and employs MAXbase outriggers, so the hope is that with one engine we will cut down on maintenance, and the MAXbase technology will enable us to better position the crane around job sites.”

Working smarter

Irving strives to be on the leading edge of technology. Its engineering department is no exception, which is why it recently unveiled the Lift Lab. This space enables the planning engineers to work closely with the customer and to showcase new technology that the department is incorporating into its planning.

To ensure that Irving maximizes its lifting capabilities, the company uses a proprietary system called CraneCAD. It’s a unique, computer-aided drafting system that creates three-dimensional drawings of all aspects of proposed lifts. Irving developed the software to help the company plan lifts according to the dimensions of the job sites, load details and crane specs, such as reach and capacity.

Another benefit is that the technology enables Irving to plan what crane is best suited for each job and ensure that it brings a specific amount of counterweight to the site, rather than bringing all of the crane’s counterweight, which cuts down on transport costs.

Irving says this greatly improves how efficiently it operates. With the ability to perform two-hook crane operations with the GMK5250L and TMS9000-2, combined with CraneCAD, Irving can maximize the utilization of its cranes because it can now complete jobs with one crane that used to require two.

“We’re excited to add these two cranes to our fleet,” Murty said. “While it’s nice to buy cranes, we also need the support that comes along with that. Having a dealer like Shawmut and a manufacturer like Manitowoc that are both invested in the product means a lot. That level of support and collaboration speaks to our strong relationships with them.”

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The NEW GMK4090 is designed to deliver unsurpassed work site versatility, putting more jobs within your reach.

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NEW GMK4090

SUPERIOR TAXI CHARTS

- Capacity: 90 t (100 USt)
- Main boom: 11 m – 51 m (36 ft – 167 ft)
- Maximum jib: 8,7 m – 21,0 m (28.5 ft – 68.9 ft)
- Maximum tip height: 75,0 m (246 ft)

All counterweight needed to achieve full capacity fits on one standard trailer

New comfortable driver and operator cabs enhance productivity

Boom configurator mode offers the easiest setup and optimal configuration

Bi-fold swingaway and boom extension enhances lifting over obstacles at greater heights

Six-section MEGAFORM™ boom with TWIN-LOCK™ pinning system delivers greater lifting capacity at all radii

BEST-IN-CLASS PHOTOS



BIODOME CONSTRUCTION

A Potain MD 689 M40 top-slewing crane is being used in the construction of a biodome at the ZooParc de Beauval in Saint-Aignan-sur-Cher, France. The crane was rented from Sofral, an established crane rental and sales company that is part of the Neremat Group. When complete, the structure will be able to accommodate 3,000 guests, and it will house wildlife that includes Komodo dragons, manatees and hippos.

©CMF Zooparc de Beauval Cabinet BOITTE

BRIDGES ABOVE SCRANTON

A Grove GRT8100 was used by Kriger Construction in Scranton, Pennsylvania, U.S., to build more than 30 bridges over the past two years. The company found the machine's Crane Control System (CCS) to be particularly helpful, especially on projects with limited working spaces, or those requiring lifting accuracy and precision.



CHURCH RELOCATION

A Grove GMK5150L all-terrain crane was used to move a church in Tasmania, Australia. The church was fragile, having been built in the 1800s, and thus required a crane with smooth operation to avoid structural damage. It took seven hours to relocate the church, which weighed 6 t (6.6 USt).

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Grove RTs are built to be the longest lasting rough-terrain cranes on the market, delivering unsurpassed performance for increased uptimes and a greater return on investment.

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NEW GRT655/GRT655L

- Max capacity: 51 t (55 USt)
- GRT655 Max boom length: 10,6 m - 34,8 m (34.9 ft - 114.3 ft)
- GRT655 Max tip height: 51,8 m (170 ft)
- GRT655L Max boom length: 10,8 m - 43,0 m (35.3 ft - 141.2 ft)
- GRT655L Max tip height: 59,7 m (196 ft)

NEW GRT880

- Max capacity: 80 t (80 USt)
- Max boom length: 12,6 m - 41,1 m (41.2 ft - 134.7 ft)
- Max tip height: 68 m (223 ft)

NEW GRT8100

- Max capacity: 100 t (100 USt)
- Max boom length: 11,8 m - 46,9 m (39.2 ft - 154.3 ft)
- Max tip height: 73 m (239.5 ft)

2019 GRT9165

- Max capacity: 149 t (165 USt)
- Max boom length: 13,7 m - 62,5 m (44.9 ft - 205 ft)
- Max tip height: 91,1 m (299 ft)

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