



**IMMENSE  
LIFTING  
POWER**

**MAMMOET  
MEGA JACK**



# OVERVIEW

**Mammoet's Mega Jack System revolutionises heavy construction.**

**With unlimited lifting power, it allows modules to be built where, when and how it's most efficient to do so. It helps large infrastructure to be fabricated and lifted in one piece, reducing disruption. With completed lifts in excess of 40,000t, no job is too big.**



# MEGA JACK

The rising use of modular construction techniques across a range of industry sectors has meant increasing demand for new technology that can move heavier loads efficiently and safely.

Mammoet's innovative solution is the Mega Jack – a revolutionary system developed to push structures of staggering weights and sizes. Its flexible, efficient design is based on individual towers that can be configured in any formation to suit the particular demands of a project, providing enormous strength and stability.

The series includes the Mega Jack 5200, which has lifted modules of over 40,000t, and the smaller-scale Mammoet Mega Jack 800, Mega Jack 500 and Mega Jack 300 – meaning there is a system suitable for a wide range of applications within industry sectors such as nuclear, offshore, civil construction and petrochemical.

## INNOVATION SERIES

We think big to help our clients find new and more efficient ways to solve their challenges. Nowhere is this better demonstrated than through our Innovation Series, which includes world-first technology that has reduced schedule and risk for a range of major projects.

The Innovation Series evolved from the collaborative approach we take with our clients to identify key challenges at the pre-FEED stage and engineer the ideal solution. This allows us to develop best-in-class equipment and new ground-breaking implementations, where the challenge demands it.



# A SAFER, EFFICIENT SOLUTION

**The Mega Jack's design offers a number of key benefits above and beyond other jacking and lifting alternatives.**

#### **UNLIMITED LIFTING POWER**

Mega Jack towers can be used in any configuration and number.

#### **REDUCED RISK**

Jacks remain at ground level during operation, minimising work at height. Their computer-controlled system and comprehensive user-machine interface mean accuracy is increased.

#### **COST SAVINGS**

Quick system operation requires fewer working hours. All systems are containerised for cost-effective shipping and transportation.

#### **TIME EFFECTIVE**

Fully automated beam feed-in system improves jacking speed.

#### **SITE OPTIMISATION**

Compact format saves site space to allow work on multiple activities simultaneously.

#### **TURNKEY SOLUTION**

Can be integrated with other systems for different applications, from weighing to support.

#### **ENHANCED STABILITY**

Multiple towers can be used to provide required stability.

#### **MECHANICALLY LOCKED**

Unlike a crane, operators are able to work safely underneath the system.



# MEGA JACK 300

The Mega Jack 300 offers a quick, flexible solution for projects where time and space is limited. Jacking operations can be completed in as little as one hour, and the system can easily be moved or reconfigured on site.

A superior alternative to conventional equipment such as timber jacking, this compact system maintains the core benefits of the series whilst offering important advantages for reducing schedule and risk on smaller-scale Mammoet projects.

## OVERVIEW OF KEY FEATURES

- 300t capacity per tower
- Ease of global shipping and enhanced logistical schedule as two trucks can transport four towers
- Feed-in from one side to optimise space
- Increased stability from multiple lift points
- Suitable alternative to other, larger equipment
- Load spreading base



# JACK-UP AND MATING OF MODULES, NORWAY

**The Mega Jack 800 was used to jack-up a Living Quarter (LQ) module, weighing 1,000t, before mating it to a lower module, weighing 600t, in Norway.**

The entire operation took just ten days in total from mobilisation to demobilisation, with the jack-up operation taking only five hours.

#### **KEY BENEFITS**

- Quick operations
- Increased stability

Offering a greater capacity and stability than other jacking systems, the Mega Jack 800 also benefits from bespoke control and monitoring systems that allow movement of the jacks to be closely controlled within less than a millimetre. This sophisticated level of control and accuracy was extremely important when jacking large weights to the required height of 13m.

Once the LQ module was jacked-up to 13m the lower module was moved underneath by SPMT and the LQ lowered to meet it. The combined module of 1,600t was then placed onto support stands ready for load-out.

# AL ZOUR REFINERY PROJECT EPC 2 AND 3, KUWAIT

**As part of providing the full onshore heavy lifting solution for one of the largest refineries in the Middle East, Mammoet used its Mega Jack 300 for jacking-up 188 modules, measuring as large as 40m in length and weighing up to 2,100t.**

The flexibility, jacking speed and easy reconfiguration of the Mega Jack 300 was critical in dealing with various module weights, sizes and foundation heights within the project schedule. This allowed operational time to be vastly reduced, with the jack-up of individual modules taking as little as one hour.

The pre-assembled pipe rack modules were received from barges at the project's construction dock, where they were transported on SPMTs over 4km to a staging area. Once at the staging area, the modules were required to be raised to various heights to suit the finish foundations on site, using 16 towers of the Mega Jack 300 to accurately lift the modules.

As the components of the Mega Jack 300 system are both compact and easy to handle on site, the re-configurations were made in as little time as possible. Therefore, the Mega

Jack 300 was the most time-efficient and stable solution that had the ability to work within a restricted project site. The trailers also fitted easily alongside the system for seamless loading.

#### **KEY BENEFITS**

- Cost effective
- Quick operations
- increased stability
- Limited site space
- Bespoke solution



# MEGA JACK 500

The Mega Jack 500 provides a fast and safe jacking solution in areas with minimal space. Its compact size ensures on-site disruption is reduced. The system can be conveniently and cost-effectively shipped around the world for swift mobilization.

The system is fitted with valves that can safely pause a procedure if any potential issues arise. The system has been designed to operate with minimal reinforcements and its sensors offer maximum precision.

## OVERVIEW OF KEY FEATURES

- 500t capacity per tower
- Minimal or no reinforcements required
- Easy and swift mobilization
- Compatible with skidding systems and SPMT





# LIFTING OF AN ACTIVE POWER PYLON, NETHERLANDS

**Mammoet used the Mega Jack 500 system to jack-up a high voltage power pylon while maintaining its power supply. It was the first time this type of elevation had ever been carried out.**

The project to lift the 35t power pylon included the civil works; the fabrication of the elevating piece; the complete engineering package; the reinforcement of the power pylon; and the elevation of the power pylon.

#### **KEY BENEFITS**

- Precise lifting
- Stability
- Increased safety

The power pylon had to be elevated by 4m in situ. Four Mega Jack 500 jacking towers were used, one at each corner of the structure, to elevate the power pylon and ensure a precise jacking maneuver. Throughout the jack-up, there was a margin of just 5mm between each leg of the pylon, securing the structural integrity of the construction. As the Mega Jack 500 system could be operated remotely, the need to construct a costly emergency power bypass was avoided. Mammoet was able to work at a safe distance with the power supply maintained.



# MEGA JACK 800

The Mega Jack 800 bridges the gap in jacking capacities between conventional 60t - 500t climbing jack systems and the Mega Jack 5200. This allows it to offer the same core efficiency and safety benefits of the larger system, but for a different, complementary range of project sizes and scopes.

Its versatility to accommodate a wide variety of weights and structures means the Mega Jack 800 has been instrumental in the successful delivery of projects across a range of industry sectors.

## OVERVIEW OF KEY FEATURES

- 800t capacity per tower
- Multiple towers can be used for a range of weights and sizes
- Fully-automated cassette system enables multiple tower configurations
- Feed-in from one side to optimise space
- Low assembly height so little overhead space is required



# MEGA JACK 800 THE ONLY SOLUTION FOR STS CRANE EXTENSION

**The Mega Jack 800 was subcontracted by ZPMC to perform the jacking of three STS cranes, weighing 1,390t each, at Barcelona's BEST terminal in order to install 5m leg extensions.**

The Mega Jack 800 was the only solution that could perform the work within the demands of an extremely busy site, limited working area and tight timeframe. Each jacking operation was executed in just four hours to complete the project with no unplanned site disruption or delays.

Four towers were configured with jacking frames consisting of a gantry support structure measuring 27m x 20.6m x 10.75m in order to lift the cranes to a height of 6m. The upper section of each crane, including the portal beams, was jacked-up using the Mega Jack 800's four hydraulic jacks in a fully synchronised manoeuvre. Jacking brackets were attached to the portal beams to support the jacking frame installed at the bases of the system.

## **KEY BENEFITS**

- Stability
- Quick operations
- Bespoke solution
- Only technique that could jack-up to that height



# DE VLAAMSE WATERWEG BRIDGE INSTALLATION, BELGIUM

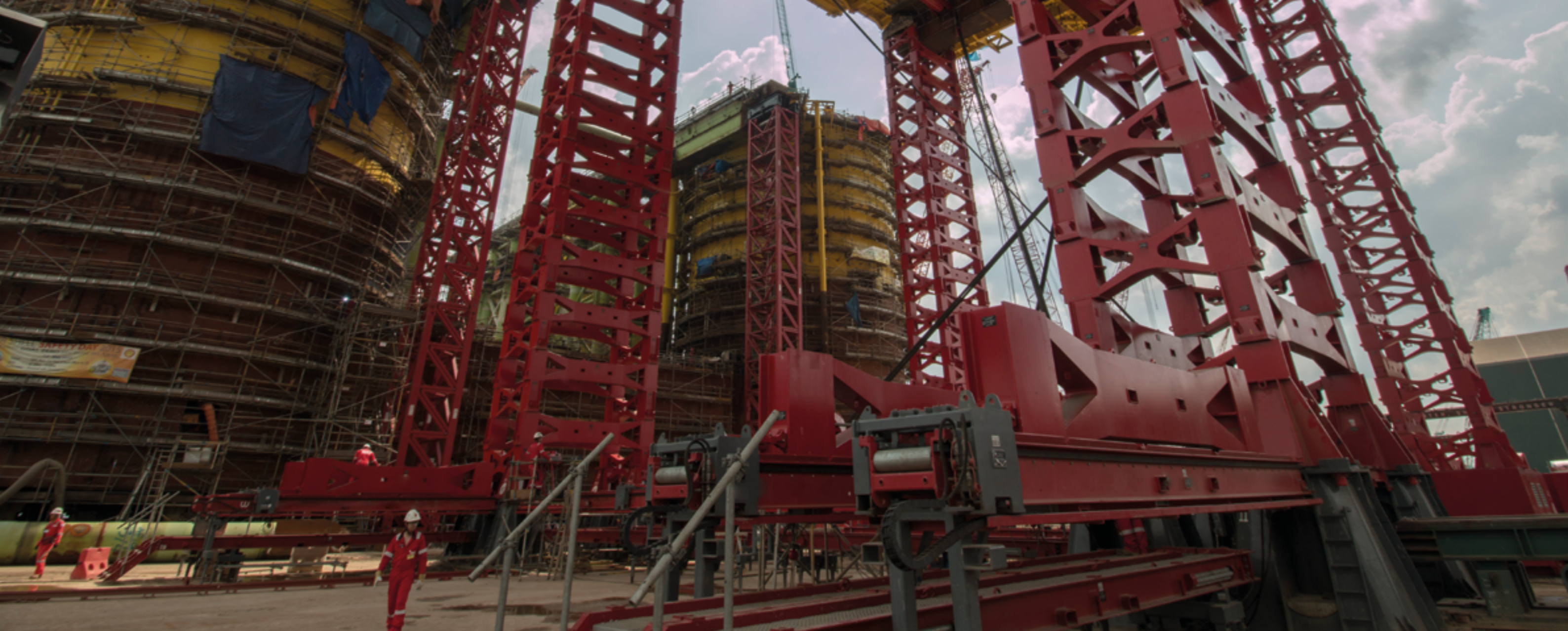
**Use of the Mega Jack 800 allowed the swift installation of Antwerp's new Brug van den Azijn in just one weekend.**

The operation was part of a multi-service operation, which included the transport of the 1,200t 124m long bridge 75km by barge from the fabrication yard. Following assembly work it was jacked-up by 8m above its abutments, moved into position and then lowered 3m into place.

The Mega Jack 800 was fully installed on site to save vital time and space, providing easy integration with other equipment to further expedite the schedule. It is one of the most stable jacking solutions available, which was an important factor in mitigating wind and float-in forces acting on the bridge and allowing the project to complete on time.

#### **KEY BENEFITS**

- Quick operations
- Integrated solutions
- Optimised logistics



# MEGA JACK 5200

The original Mega Jack system has opened the possibility of new, more efficient construction methodologies for our clients.

It has allowed the offshore industry to construct larger modules onshore, reducing project time, cost and risk - and setting

several world records in the process. In the civils sector it has demonstrated the flexibility and strength of its configuration on a range of high-profile bridge installation projects.

## OVERVIEW OF KEY FEATURES

- 5,200t capacity per tower
- No limit to weight that can be lifted
- Modularised
- Fully-automated beam system enables multiple tower configurations
- Variable footprint is ideal to accommodate site requirements
- Optional gantry crane system
- Load spreading base



# A MORE EFFICIENT SOLUTION FOR ONSHORE TOPSIDE CONSTRUCTION

**The jack up of the 13,800t Malikai EPC TLP topside to a height of 40m allowed mating operations with the hull to be completed on land and at ground level – a more efficient alternative to wet mating with the hull semi submerged.**

These operations were carried out at Malaysia Marine and Heavy Engineering (MMHE) West in Johor Darul Takzim, Malaysia, where the topside was skidded 90m onto the Mega Jack 5200, which then raised it to 40m. Both the Mega Jack and skidding systems are equipped with computerised controls and were operated remotely, which provided a safer way of working and protected both workers and the client's equipment whilst being lifted.

The modular format and quick assembly of the Mega Jack 5200 using standard site equipment meant that the technology was able to be installed within the deadline set by the client, and to complete the lift without any delay to the project.

## **KEY BENEFITS**

- World record
- Construction cost savings
- Safer solution
- Bespoke solution
- Quick mobilisation
- Multi-service integration
- Time saving



# INNOVATIVE MATAGARUP BRIDGE INSTALLATION, AUSTRALIA

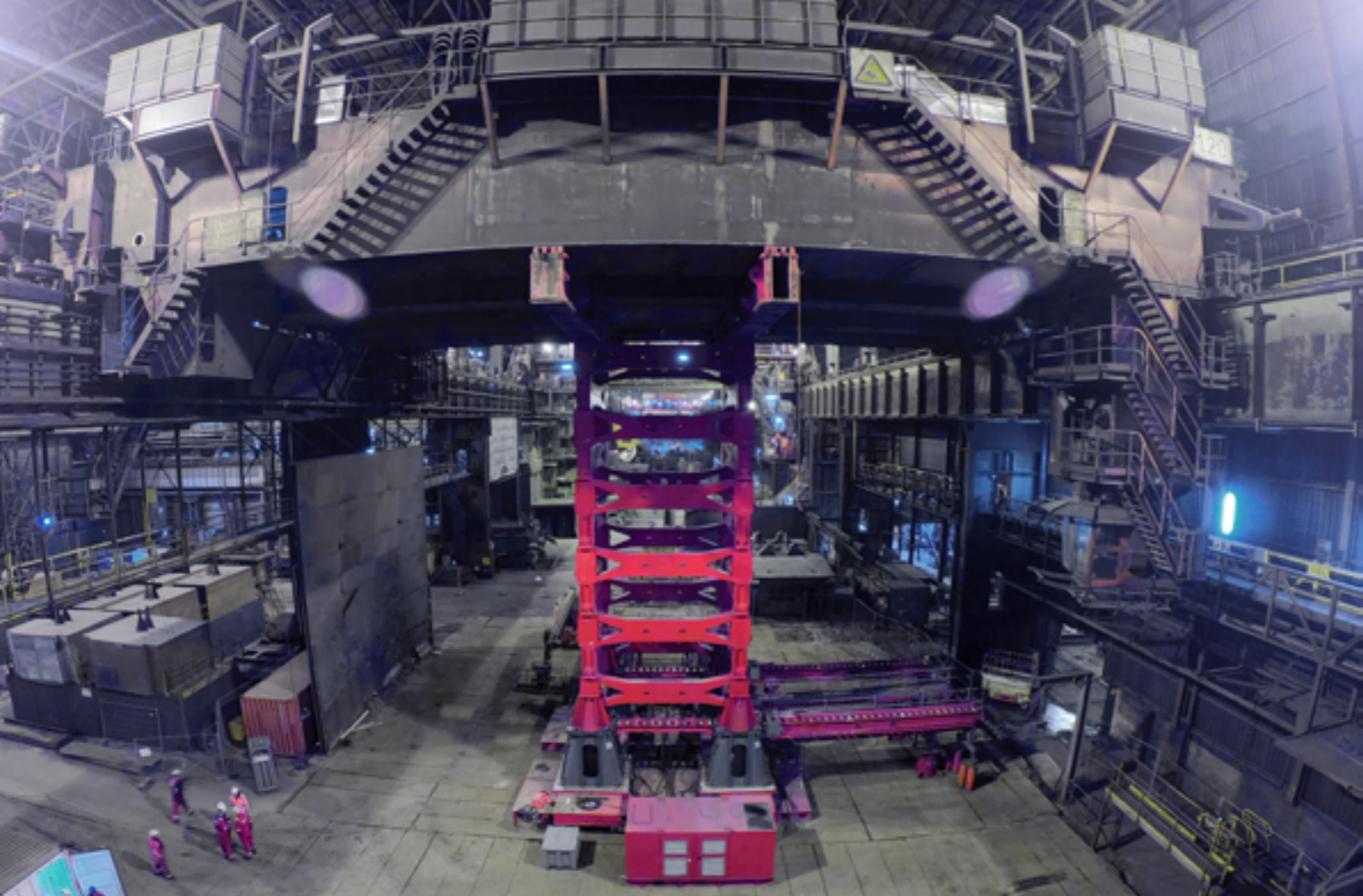
**The Mega Jack 5200 provided the only possible solution for the installation of the new Matagarup Bridge in Perth, Australia – which will provide a key route linking the busy city centre with the Burswood Peninsula.**

The location of the site meant that it was not possible for a crane to lift the 400t sections of the bridge's central arch into place. Instead, the Mega Jack system was built as two 50m construction towers above the bridge piers. These were then used in conjunction with strand jacks to lift the 120m x 35m components and hold them in place whilst they were welded together to form the central bridge arch.

Each component was lifted in just one day, with the structural stability of the Mega Jack system allowing the necessary height of 72m to be achieved within the highly limited space available.

## **KEY BENEFITS**

- Bespoke solution
- Engineering expertise
- Improved infrastructure
- Innovative methods and technology
- Small footprint for working in restricted spaces



# MEGA JACK 5200 OPTIMISES SITE SPACE ON CRANE DEMOLITION PROJECT

**This project prepared the site for a major gantry crane upgrade programme whilst ensuring that day-to-day activities could continue unimpeded.**

The small footprint, stability and quick jacking capabilities of the Mega Jack 5200 have enabled a steel plant to minimise downtime and save valuable project time during the removal of an overhead crane in Gent, Belgium.

One of the main challenges during the demolition project was the limited space within the plant and finding a solution that also enabled other operations to continue in the plant. The small site space meant that the overhead crane needed to be taken apart and removed in pieces. It also made it impossible to use a large crane for the dismantling. The engineering planning and preparations were completed, calculating what equipment would optimise each stage of the operation.

The Mega Jack 5200 was the ideal solution as it is narrower than other alternatives, with a single 5m x 5m jacking tower configuration and steel load spreading underneath, taking up an area of only 10m x 10m at ground level. Not only did the system's compactness make it suitable, but it also provided the required stability and enough clearance on both sides. The system's compact footprint meant the client could use elevated working platforms around the Mega Jack to get full access to the crane from above and commence cutting of the crane girders after fixation of the end-carriage to the hall structure.

This safe and stable solution was installed beneath the overhead crane, weighing 864t, which it then partly jacked-down. The client used a shear crane to remove the extending cabin, allowing further jack-down.

The next section to be removed was the hoist trolley, weighing 53t, which was lowered onto SPMTs by a mobile crane and transported to a demolition area. Using climbing jacks, the load of the crane was transferred from the Mega Jack so the Mega

Jack could be removed easily and swiftly. The climbing jacks enabled the overhead crane to be lowered even further. This height reduction was required to meet the height restrictions of the existing hall exit door.

Then, the main trolley, weighing 199t, was jacked-up with a second set of climbing jacks to provide clearance between the trolley and the crane girders. Once SPMTs had removed the girders from both sides, the main trolley was lowered onto waiting SPMTs and transported to the demolition area.

Calculations were completed prior to the commencement of the operation, but was able to use the Mega Jack to verify the in-place weights of the end-carriages, which were left at height on both crane tracks until the end of the operations inside the plant. The end-carriages were removed one by one by a tandem crane operation, before being placed onto SPMTs ready for demolition.

The Mega Jack's fast operating system also enabled the work to be completed swiftly and on schedule, removing the whole crane comfortably within the 10-day schedule.

## KEY BENEFITS

- Minimised disruption
- Swift turnaround
- Bespoke methodology
- Innovation
- Time saving



**MAMMOET HAS OVER 140 OFFICES AND BRANCHES WORLDWIDE.**

Below are the Mammoet regional head offices on each continent. To contact an office near you, please visit [www.mammoet.com/contact](http://www.mammoet.com/contact) and select 'Find an office'.



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