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## Central European rental companies

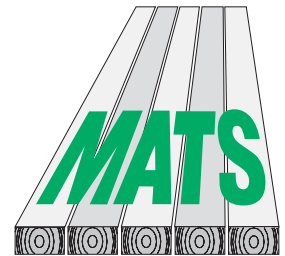
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# Heavy and alternative Lifting

*The 110 tonne Lorain MC9115, in 1962 the worlds largest mobile crane*

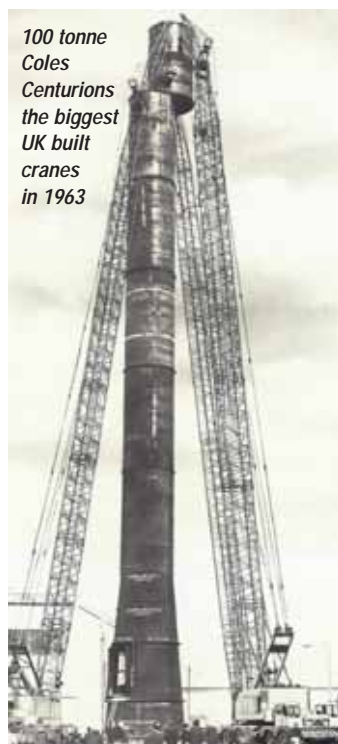
The lifting of heavy loads always attracts a great deal of interest. Everyone, even non-crane people, loves to see the world's largest cranes being set up and doing their stuff. Lifting professionals also admire a clever alternative solution to lifting very heavy loads, whether employed to save money or because a crane could physically not get close to the lift.

The world's largest mobile cranes are now concentrated in the hands of a few specialist crane hire companies and the business has become very international. It has to be in order to keep the largest cranes busy. Yet 27 years ago, all of the big UK crane hirers were bickering publicly over whose big Gottwald would be delivered first, and which would have the best duties. Hewden Stuart had an 850 tonne on order and Sparrows a 1,000 tonner, then up popped Scotts claiming that the all-new Gottwald AK680GS it had on order would not only out lift the other two but would be delivered first, in April 79. Gottwald, stuck in the middle, had to try and keep all three happy. So sensitive was the issue that Scotts while advertising it as a 1,000 tonne class machine refused to disclose its real nominal capacity, it was in the end 850 tonnes but has since been upgraded to 1,200 tonnes. The crane, which is still working in the UK (See Bridges to the west, Bridges to the north page 29) was eventually delivered almost a year later in the Spring of 1980.

Such public one upmanship seems far away these days, along with the frenetic purchasing of such big cranes. Yet the majority of calls we receive following the publication of our annual Top 20 crane hirer survey, are not to complain that we have a company's details wrong, but to complain that a competitor has exaggerated the size of his largest crane.

## Nothing changes.

What is interesting and often forgotten, is that what qualifies



*100 tonne Coles Centurions the biggest UK built cranes in 1963*



as a big crane has changed over the past 40 years or so.

In 1962 the 110 tonne Lorain MotoCrane MC9115 (a four axle truck crane) was looked on with awe... as was the 1963 100/105 tonne Coles Centurion. Today a 100 tonner is almost considered a taxi crane! In 1966 the 45 ton Grove TM425T was the world's largest telescopic crane with a 32 metre main boom it was initially mounted on five axle carrier in the UK.

In the 1970's German engineering began to take over. The 500 tonne Gottwald AK600 was such a mind blowing product, that it featured on the television programme, Tomorrow's World. Could cranes ever get larger than this?

Today at least UK nine companies operate cranes of 500 tonnes or more, most of them telescopic. So what constitutes a heavy lift crane today? Well when Hewden recently announced that it will officially pull out of heavy cranes from next month, it was referring to cranes of over 100 tonnes. Most crane companies would consider anything below 160 tonnes as a day to day crane these days, while cranes over 200 tonnes are definitely considered as large.

In a regular look at the subject we cover lifts with large cranes as well as a few alternative methods for lifting, whose use appears to be on the increase.

# Alternative solution for setting vessel

When a 70-tonne high-pressure steam vessel needed to be installed at a leading chemical plant in the north west earlier this year, local firm Ainscough Heavy Cranes was asked to plan and design a safe lifting solution. It soon became apparent that it was impossible for the necessary cranes to gain access without significant disruption to the working environment and incurring great expense. Sister company Ainscough Vanguard, which specialises in alternative lifting methods, was called in.

*The K.E.D. gantry system and a Versa-Lift riggers' forklift carry the 70 tonne vessel (out of shot on the left) to the installation point.*



The planning engineers soon reached the conclusion that the safest, cheapest and thus most effective solution was to use hydraulic jacking gantries, together with a heavy-duty riggers' forklift.

When the vessel was delivered to site, a K.E.D 450 tonne hydraulic gantry system lifted the unit from the trailer and lowered it to the ground. Two of the four gantry system jacks were removed, and using Versa-Lift 60/80 riggers' forklift at one end and the track-mounted K.E.D system on

the other, they carried the vessel to its installation point. It was then lowered onto supports and the K.E.D. jacks removed.

To raise the vessel from horizontal to vertical and place it in position, a second gantry system was set up on three metre high rails that ran at 90 degrees to those of the K.E.D gantry. The second jacking system comprised four J&R 400 Series Lift-n-Lock gantry legs, set up in pairs, with a cross-beam between each pair with two beams on top of these to support the lifting beam. The J&R system was able to

extend to the full 12 metres height that was required.

The top end of the vessel was attached to the J&R gantry using Vanguard's 150-tonne spinning hook attachment, while the Versa-Lift was used for tailing in. The J&R system was extended upwards to the 12 metres required to bring the vessel fully vertical.

The Versa-Lift was then detached and thanks to the spinning hook and the side shift skate system, the Vanguard crew was able to position the vessel precisely without any further rigging.



*The J&R 400 Series Lift-n-Lock gantry system raises the vessel to vertical and installs it.*

## ALE's long haul

Abnormal Load Engineering (ALE), has recently completed the installation of four huge components each weighing well over 300 tonnes at an 800MW power station in Turbigo, to the west of Milan, Italy.

The Staffordshire based company, which carries out alternative lifting and heavy transport projects all over the world, had to install two

generators, each weighing 318 tonnes, and two gas turbines, each weighing 310 tonnes.

However, before work could start on site, ALE had to transport the huge components from their port of arrival in Italy, Porto Marghera, to the site several hundred kilometres away.

The cargo was carried, one element at a time, on a specialised river vessel, through the Venice Lagoon and via canals and the Po River to Mantova, a distance of a couple of hundred kilometres.

At Mantova each load was transferred using quay cranes to ALE's 30-axle transporter frame trailer. The road route to Turbigo was 180km and took 14 days for each convoy.

On arrival at Turbigo, self-propelled trailers were used with the transporter

frame to allow the convoy to manoeuvre through an old arch bridge and onto the site.

Once on site, the components were installed using ALE's 500 tonne capacity strand jack gantry.

*The 318 tonne generators were transported from Venice to Turbigo*



*ALE's jacking system installs one of the gas turbines over the generator foundation at the power station in Turbigo, Italy*



*Installation and final rough set of a generator.*



An overview of the drained dock site in Rotterdam

# Extending a cruise ship

One of the most fascinating heavy lifting projects of the past year was the lengthening of the cruise ship 'Enchantment of the Sea' by inserting a new middle section.



The new mid section weighed 2,800 tonnes

The ship's length was increased by 22.2 metres to 301.8 metres. The new mid-body section, which weighed 2,800 tonnes, had to be loaded out and transported from Turku in Finland to Rotterdam in the Netherlands where the surgery took place.

ALE Lastra devised a hydraulic skidding system to insert the new mid-body section



The ship was docked on a skidding system specially developed by ALE Lastra and the 10,200 tonne bow section was moved forward a distance of more than 29 metres. The mid-body section was then inserted between the fore and aft ends of the vessel using a hydraulic skidding system.



The new section waits to be inserted...



...and there she goes!

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# Bridges to the West Bridges to the North

The wide variety of bridge contracts - new build, refurbishment and replacement - means that large cranes are ideal lifting tools, keeping disruption to a minimum. Here we report on one crane carrying out two very different jobs.

## New bridge for Newport

Phil Bishop reports on the heavy lifting required for a new footbridge that officially opens this month.

One of the UK's most iconic lifting machines is the Newport Transporter Bridge across the River Usk in South Wales. Opened on 12 September 1906, its centenary is being celebrated this month. To coincide with these celebrations, another bridge is being officially opened that its developers hope will become just as much a landmark for Newport.

symbolise cranes and reflect the site's earlier use as a trading wharf. One is 80 metres long and the other is 69 metres. Each mast is anchored by 120mm diameter cables. The five metre wide deck stands 4.1 metres above the water at mean tide.

The masts were assembled on site in three prefabricated sections and then raised into position by crane. The bridge deck was constructed in five sections, installed in sequence by crane and then welded together.

Main contractor was Alfred McAlpine and Newport-based

weighed 238 tonnes while the front one weighed 318 tonnes. Ainscough supplied the cranes however the largest crane in its fleet, the 1,000-tonne Liebherr LTM11000DS telescopic, could not manage this job. So it cross-hired Sarens' 1,200 tonne Gottwald AK 680 lattice boom truck crane.

of Fagioli PSC's 300 tonne capacity strand jacks, set on top of the temporary RMD structure. The strand jacks then lowered the front mast to an angle of 25 degrees. At this stage, the main cables were attached and the front mast lowered to its final angle of 65 degrees.



*The Gottwald worked at up to 102 metres radius with 34 tonnes to place the deck sections*



*The front mast is lowered into position*

The new bridge is for pedestrians and cyclists to access the retail centre of the city. It is part of Newport's multi-million pound regeneration programme and is a joint project between urban regeneration company Newport Unlimited, the Welsh Assembly and Newport City Council.

The 145 metre span steel structure is supported from the west bank by two A-frame masts, designed to

Rowecord Engineering the structural steelwork contractor. Lifting the deck into place was a key part of Rowecord's contract and for this task was assisted by heavy lift specialist Fagioli PSC and Ainscough Crane Hire.

Site assembly of the bridge began in January and all the lifting was carried out in just two weeks at the start of May. The masts were the heaviest components, the back one

The Gottwald arrived in Newport on 48 trucks and took six men four days to put together, with the help of an assist crane. The Gottwald was rigged with 600 tonnes of counterweight and 77 metres of boom. The Gottwald lifted the back mast at a radius of 57.6 metres, putting it within three percent of its limit. The heavier front mast, was almost as tight, at a radius of 43.4 metres it had four percent in hand. In each case, an Ainscough 500-tonne Liebherr telescopic acted as tailing crane.

The back mast was initially placed at nine degrees off vertical and then lowered to 15 degrees against an RMD Kwikform temporary propping system.

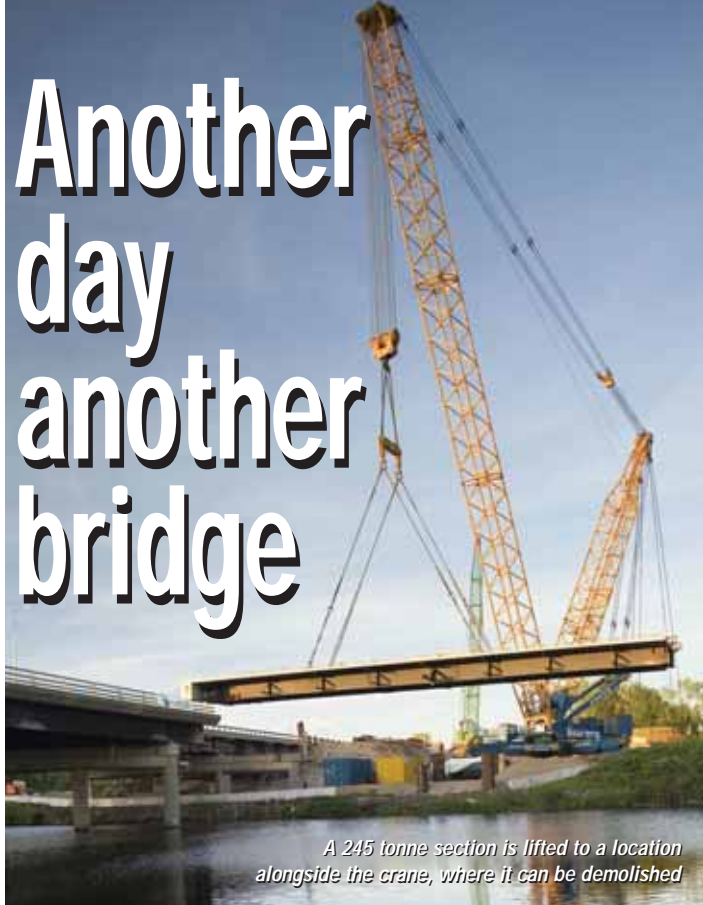
The front mast was placed at 11 degrees and then attached to pair

With the masts anchored in place, it was time to install the five deck sections. The first two sections on each side (sections one and five) were placed easily enough using a 400 tonne telescopic crane on one side of the river and a 500 tonner on the other. The three centre sections were trickier, however. The Gottwald was re rigged with 107 metres of boom, its maximum length. Deck section two weighed 34 tonnes and was relatively easy as was the centre section, which was the heaviest at 68.7 tonnes. The 34 tonne section four however required the cranes maximum radius of 102 metres.



*The bridge, when finished will look like this*

# Another day another bridge



*A 245 tonne section is lifted to a location alongside the crane, where it can be demolished*

The 1,200 tonne Gottwald AK680 has completed a series of lifts as part of a £14 million project to strengthen the A66 Surtees Bridge in Teesside. Rigged with a 65 metre main boom, 43 metre back mast and almost 400 tonnes of counterweight, the AK680 removed a total of four bridge sections each weighing between 170 and 260 tonnes.

The AK680-3 initially set up on the Middlesbrough side of the river and lifted the first two sections overnight before moving to the opposite side of the river and lifting the remaining two sections a week later.

Working at a radius of 54 metres, each section was lifted from the old bridge, put down alongside the crane and then demolished using excavator mounted hydraulic breakers. The reconstruction of the bridge will start with new supports in the river, ready for the new deck to be installed by the AK680 at the end of the summer. The crane will then return three months later to remove more of the existing bridge.

The AK680 is owned and operated by the UK arm of Belgium based transport and heavy lifting specialist Sarens. Its UK business is ideally situated in Middlesbrough just three miles from the site.

"There were several reasons for using a truck crane rather than a crawler," said Sarens project manager Paul Weston. "A primary reason is that the Gottwald is based here, but also a truck crane is much easier and quicker to move and this was paramount with a lift each side of the river."

Arun Sahni, project leader for the client, the Highways Agency said: "This is a very significant part of the replacement work on the bridge. With the crane being supplied by a local Middlesbrough company it is a real red-letter day for the area."

In all, four sections of the existing bridge were replaced, the actual lifts taking place between midnight and early the following morning. The bridge was fully closed during the lift for the safety of drivers and also the workforce involved with the lifts.

This new section of the bridge will be completed and open to traffic in the Autumn.



*Sarens Gottwald AK680 prepares to remove an old section of the A66*

## The AK 680

The UK's largest mobile crane that is featured in these pages is one of only two AK 680s that Gottwald ever built. It was delivered to Scotts early in 1980, joining the Grayston White & Sparrow fleet after owners BET acquired Scott Greenham. BET was then taken over by Rentokil, which changed GWS into Initial. When Rentokil finally sold its crane operations, Sarens bought the heavy crane division, while Ainscough took the telescopic fleet.

Sarens had the 26 year old AK 680 substantially rebuilt in 2001 including a new style driver's cab from Demag. (The Gottwald crane business was acquired by Demag in 1987). The crane has worked all over the world and been on contracts as far afield as Thailand and Argentina.

*The Gottwald AK680 rolls off the boat at Immingham in early 1980.*



	
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Demag's narrow track version of its 600 tonne capacity CC2800-1 NT is targeted specifically at windmill applications



## Terex Demag announces new 1,000 tonne telescopic... and unveils the CC2800-1 NT

At the end of July Terex Demag unveiled the Narrow-Track version of its 600 tonne capacity (at 10 metres radius) CC2800-1 at its Zweibrücken facility. At the same time it also announced that it is working on a new nine axle 1,000 tonne All Terrain crane, the AC1000/9, for shipment in 2008.

Targeted specifically at windmill applications the CC2800-1-NT is designed to lift 75-125 tonne gondolas up to hub heights of between 90 and 130 metres above ground level.

The Narrow Track Kit can be used either with 1.2 metre wide track shoes for the five metres overall width, or 1.5 metre wide track shoes for lower ground pressures. The crane will also travel fully rigged with up to 114 metres of boom on a 2.4 degree side slope. To prove the point, the company demonstrated the crane working on a four degree slope.

Once in position two massive 'flop-down' 'sideways' outriggers are deployed along with jacks at the front and rear of the extended

carbody/chassis. The Narrow Track kit can be used in conjunction with a standard CC2800-1, allowing users to convert between the two formats depending on the application.

Further pictures are published on [www.vertikal.net](http://www.vertikal.net) and will also be included in our October issue.

*The crane can travel fully rigged - and turn through 360 degrees on the spot*



## .....And a 1,000 tonne mobile,

Announcing the new 1,000 tonne All Terrain crane, Klaus Meissner, Terex-Demag director of research and development, said that the design objective for the AC1000/9 was to produce a machine 'similar to its 700 tonne, AC700 plus 50 percent'.

He said that the machine should have a maximum load moment of 3,000 metre/tonnes and will be designed around the 'boom on concept' making it the largest wheeled crane that can travel with its boom.

Main boom length in this configuration will be 50 metres, possibly with a 100 metre boom for buyers interested in a 'boom off' version, where the boom is removed for transport. A luffing fly jib of up to 126 metres length will also be available. The nine axle unit will ride on 16.00x R25 tyres and achieve 12 tonne axle loads with the 50 metre main boom and front outriggers in place.

The cranes outrigger base will range from 10.0 x 10.0 metres up to 13.5 x 13.5 metres. It is also anticipated that the unit will be able to operate in wind speeds of up to 15 metres per second. Meissner also asked for feedback and comments on the possibility of mounting the telescopic boom from this unit onto a CC2800-1 chassis.

The crane is currently in the earlier stages of development and will not be ready until 2008.

## Manitowoc installs world's largest telescope

When Mexican crane rental company, ESEASA was called to erect the world's largest 'short millimeter wavelength', radio telescope, it chose its 750 tonne Manitowoc 18000 crawler crane for the job. ESEASA configured the 18000 with 73 metre boom and its Max-Er attachment which increases the crane's lift and reach capabilities.

The first task, lifting the 50 metre antenna, was one of the most difficult because it meant lifting a structural component weighing over 480 tonnes to a height of 33 metres and placing it over the telescope's steel support. The most challenging task however was positioning and installing the telescope's satellite dish. Weighing around 500 tonnes, it has a diameter of 50 metres.

The telescope sits at an altitude of 4600 metres on top of an inactive volcano,

*The Manitowoc 18000 crawler made light work of the 500 tonne, 50m dish*

Sierra Negra, in the Mexican state of Puebla, some two hours outside of Mexico City. The site is prone to high winds and given the size of the dish, not to mention its sensitivity, the lift was a real challenge which required a crane that had some capacity in hand.

The telescope is a US-Mexican collaboration between the University of Massachusetts and the Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE). Mexican president, Vicente Fox has described it as 'the most important science project in Mexican history'.

ESEASA has been in business for 17 years, has a fleet of 150 cranes and 2000 employees based at three locations, including Brownsville, Texas.

## The final bridge

In June the Heavy Crane Division of Ainscough was called on by Steelwork Specialist Fairfield-Mabey to help erect a new Rheola Bridge in Porth, South Wales. Access to the site was very restricted, but Ainscough managed to squeeze its 1,000 tonne Liebherr

11000DS into position to lift the main arch sections into place. The heaviest sections weighed 97 tonnes and were lifted at a radius of 36 metres. The bridge forms part of the Lower Rhondda Fach Relief Road which is due to open in December 2006.

*A Liebherr 11000DS was called in to lift the main arch sections on the new Rheola Bridge in Porth*





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