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Spoilt for choice

The special 18 tonne capacity Valla 180ES showing off its 16 metre reach

With more and more types of lifting equipment available, the days of automatically using a pick & carry crane for industrial applications is now not a given. The best machine for the task however may not be immediately obvious and its choice a combination of many factors.

Is this the best method of installing these containerised offices?

In last month's Cranes & Access we covered All Terrain cranes and highlighted a 'simple' task of stacking containerised offices in an area with limited headroom. The installation contractor opted to use a Terex AC 40 City crane, but due to overhead restrictions (the roof) used a 15 tonne boom nose mounted 'runner' with double hook and lifting chains to lift the sizeable but relatively light (2.5 tonne) containers.

Apart from probably owning and therefore needing to use the 40 tonne City crane, the containers could probably have been lifted into position more easily/quicker/ and more efficiently using a large telescopic handler. With fork lift points already designed into the container and a lift height of less than four metres, almost any full size telehandler could have carried out the task.

What this example illustrates is that lift solutions are often decided by the contractor's or rental company's available equipment and not necessarily the best equipment for the job. In this month's telehandler feature we look at the increasing demand for large - over 25 tonne capacity - units which are ideal for industrial pick & carry applications.

The downside of these monster telehandlers is their physical size which may restrict working in confined spaces. Indeed many of the larger machines are working in the mining and quarrying sectors where size is not an issue.

Industrial movers

An industrial version of the telehandler/forklift is the Versa-Lift fork truck which is becoming increasing popular for machinery removal and installation, primarily because of its huge lifting capacity for its compact dimensions. The models have an extending frame/ counterweight giving increased lift capacities and they can also be fitted with a removable hydraulic boom for moving heavy machinery smoothly and safely. Versa-Lift now has a four model range covering capacities from 11.3 tonnes to

Versa-Lift 40-60E with special adapter being operated by remote control

UK-based Pooler LMT is now distributing the Lowry compact heavy lift truck

63.5 tonnes with frames extended and the machines have all power options including propane and electric drive as well as being fully remote control.

For those not needing such large capacities there are smaller alternatives. As well as distributing the Versa-Lift range of machines in the UK, Pooler LMT (Load Moving Technology) has just taken on the Canadian-built Lowry compact heavy lift truck. The seven model range has capacities from eight to 18 tonnes, but Pooler says it will be concentrating on the smaller three models with capacities of eight, nine and 10 tonnes. With widths of 1.42 metres and powered by propane or diesel, the machines are the heavy duty forklift equivalent and has the built in benefit of excellent visibility through its two or three stage mast.

Lowry is part of the Manitex group which in recent years has expanded its range to include Liftking fork trucks, Badger cab-down RTs and more recently Valla pick & carry cranes both of which can be used in industrial lifting applications.

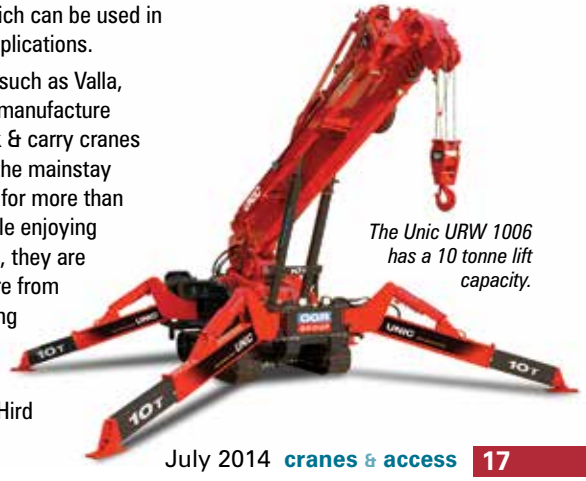
Italian companies such as Valla, Ormig and Galizia manufacture the traditional pick & carry cranes which have been the mainstay of industrial lifting for more than 50 years. And while enjoying increased demand, they are also under pressure from new industrial lifting equipment.

Valla recently supplied the UK's Hird group with a special version of its 18 tonne capacity180ES for machinery moving contracts. Based on the Valla 180E the ES features an improved 13 metre fully hydraulic telescopic boom, which can be extended to 16 metres with a hydraulic fly jib that luffs to 40 degrees. The maximum radius with main boom is 10 metres, at which point it is capable of lifting 1,500kg. Working with the manufacturer Hird wanted and got a machine that eliminated manual handling.

Spiders for small spaces

Another item of equipment finding more work in industrial applications is the spider crane. Although relatively small - 10 tonnes and under - the spider's main advantage is its ability to get very close to the lift thanks to its narrow, manoeuvrable tracked chassis *(see page 18).*

Once set up its capacity is normally more than enough because it is working at a much smaller radius than a larger crane which have to stand off because of their size - which brings us back to where we started and the 40 tonne City crane. There are various ways of lifting and moving a heavy object. Plan the work and look at all available methods and not just the one your local supplier suggests. Some may make it a lot easier, quicker and safer than you expected.



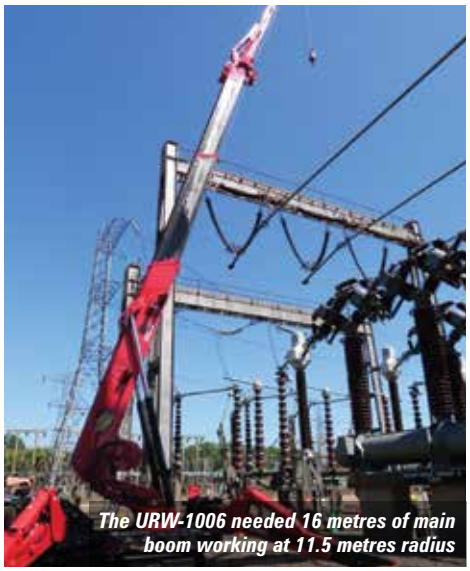
The Unic URW 1006 has a 10 tonne lift capacity.

Getting close to circuit breakers

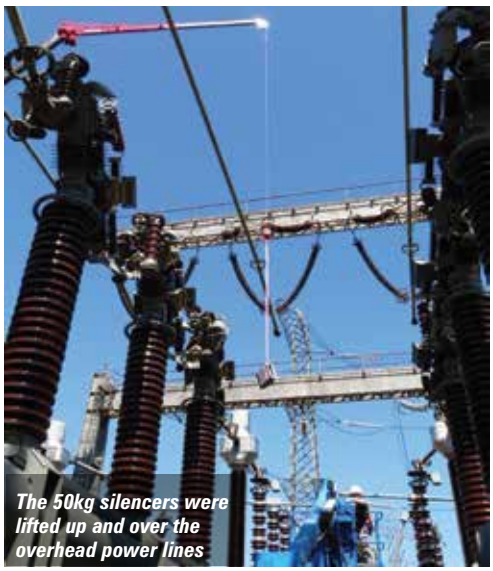
When the National Grid needed to remove and replace 16 silencers on air blast circuit breakers at its substation in East Claydon, Buckinghamshire, UK, it decided to try a new method. In the past the company has used a City type All Terrain, sited on in the road outside the 400KV sub-station to carry out the essential maintenance work, but was persuaded to do the job this time with a 10 tonne capacity Unic URW-1006 spider crane, which with its much smaller tracked chassis allowed it to work closer to where the silencers are located.

The URW-1006 needed 16 metres of main boom to lift the 50kg silencers up and over the overhead power lines. With power isolated from the circuits, the crane's working area limitation function was set in order to prevent the boom from straying into the substation's restricted zones, keeping it away from any high voltage power.

After a practice run to check the crane's radius setting was suitable in practice to carry out the lift, the URW-1006 removed each silencer, with a slinger/signaller working from an access platform making sure each silencer was slung securely. Working at an 11.5 metre radius, the crane removed all the 16 silencers, then made a return visit to East Claydon to reinstall the fully refurbished items. The silencers are used to muffle the deafening noise when a circuit opens and a blast of air extinguishes the arc.



The URW-1006 needed 16 metres of main boom working at 11.5 metres radius



The 50kg silencers were lifted up and over the overhead power lines

A slinger/signaller worked from an access platform making sure each silencer as slung securely

Tank installation in Poland

Polish chemical company CRT Profarb has used a Maeda tracked spider crane to install equipment on a paint factory production line.

The project involved installing several large tanks measuring eight metres high and weighing up to 6.5 tonnes. The warehouse had a ceiling height of only 10.5 metres, so space when standing the tanks up was tight. Two Maedas - a 2.98 tonne MC305-2 and 3.8 tonne MC405 CRME - were used and completed the task easily, efficiently and safely.

Tanks weighed up to 6.5 tonnes and up to eight metres high

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Take two at BP Lingen


The old cooler was removed using a skidding system


In with the new


Two 200 tonne capacity ATs were needed to lift the 103 tonne cooler

Heavy transport and lifting company Wagenborg Nedlift recently received a repeat order to replace a cooler at the BP Lingen refinery in Lower Saxony, North West Germany. In 2006 the company had replaced the same cooler - which measured 24.55 metres long, 3.5 metres in diameter with a weight of 103 tonnes - but after years of service that too needed replacing.

Due to changes in the cooler design the lifting method used in 2006 was no longer suitable or possible. Wagenborg's engineering department therefore had to develop a new method of lifting out the old and installing the new unit.

First the new cooler had to be transported from a fabrication facility in Stassfurt to the Lingen refinery, the company used 16 Self-Propelled Modular Transporter (SPMT) axle lines. The unit was then stored in a temporary storage area while a skidding system was assembled on site.

The exchange operation consisted of several phases starting with the removal of the old unit which was supported horizontally between two concrete foundations and the only way to remove it was to slide the column out of its position with skids, including a 20 degrees turn out of the aisle to a point where two 200 tonne capacity All Terrain cranes were able to lift and slew it onto the transporter, which took it to the storage area.

The two cranes moved with it to offload the old unit and replace it with the new one, which was then taken to the skids, where the two cranes reversed the first tandem lift to place the new cooler to the skid track so that it could be slid into position on the concrete foundations.

Starting operations in 1953 and designed for heavy and acidic crudes, BP Lingen is one of Europe's leading conversion refineries, with thermal and hydro catalytic cracking units (coker and hydrocracker).

Big boiler lifts


The 195 tonne boiler had to be lifted over a set of overhead wires

Irish crane rental company Crane Hire Dublin, was recently faced with a challenging boiler move. The boilers weighed 195 tonnes and measured 14.5 metres long, 6.6 metres wide and 7.1 metres high, and had to be lifted over a set of overhead wires and into a very tight location.

The solution involved a series of highly planned tandem lifts with two Liebherr All Terrain cranes - a 500 tonne LTM 1500 and a 750 tonne LTM 1750. For the lifts over the wires the 500 tonne crane operated at a maximum radius of 14 metres with a maximum capacity of 111 tonnes, while the 750 tonner operated at up to 19.82 metres with a capacity of 111.2 tonnes.Positioning the first boiler was straight forward enough with the 750 tonne crane having ample capacity though the 500 had to lift 102.88 tonnes at 11.95 metres. The final positioning was extremely tight with the 500 tonner short rigged where it handled up to 109 tonnes at a nine metre radius. The 750 tonner lifted 99.74 tonnes at 21.57 metres. With very little space for the cranes to slew between the boilers, boom clearance was absolutely critical and manoeuvring the load without touching the crane cabs was a challenge. The cranes had to be positioned and set up in precisely the right position. In the end the lifts were completed without a hitch, planned and managed using the Crane Manager software from Cranimax.

Salt of the earth

A Unic URW-095 mini crane is working 200 metres underground at Winsford Rock Salt Mine in Cheshire, UK. The one tonne capacity crane will be used to assist with maintenance work on the mine's conveyor belts and processing lines, helping with mining salt that was formed in the Triassic period 220 million years ago when the UK was still joined to the rest of Europe.

Winsford is the UK's oldest working mine and largest rock salt mine at roughly the size of 700 football pitches. It was discovered in 1844 and then closed in 1892, reopening in 1928. It now supplies rock salt used to de-ice Britain's roads during the winter. The dark and dry environment in the mine is also used as a storage facility for historical records, documents and even paintings.

Gantry crane upgrade

An interesting challenge faced the managers of the Liebherr excavator plant in Kirchdorf, Austria recently.

As excavator components have become larger and heavier, the capacity of the overhead cranes in the steel component production hall was proving inadequate. The challenge was how to replace them without disrupting production and also without excessive cost. A solution was found that involved replacing a total of eight girders within the current system, thereby doubling the crane's lifting capacity from 20 to 40 tonnes.

The next challenge was how to place the girders without having to strip out all of the machining tools and equipment. The solution was found in conjunction with crane rental company Schmidbauer. It used two new 45 tonne Liebherr LTC 1045-3.1 city type compact All Terrain cranes working in tandem to handle the six tonne girders. The cranes were rigged with short assembly jibs and hooks, as headroom and space did not allow a hook block to be used. With very little space between the girders and the building's heating/ventilation ducting, which run above the tracks, absolute precision placement was essential, two self-propelled telescopic boom lifts were employed by riggers for rigging and monitoring the final placement of the beams.

54 year old reactor replaced

Developer and manufacturer of crude-oil based chemical/pharmaceutical specialty products and precision plastic components, H&R ChemPharm is the oldest specialist refiner in the world.

The ChemPharm production site in Salzbergen has produced the same chemical/pharmaceutical raw materials for decades, resulting in some components being outdated and needing to be replaced. One such component was a reactor installed 54 years ago however the installation of its replacement involved a complex lift. Measuring 37metres long and 1.37 metres in diameter the new reactor is twice as big as the old.

Built in Grimma near Leipzig, the 101 tonne reactor had to be positioned and installed in a steel framework 40 metres high. Lift and transport specialist Wagenborg used a 750 tonne Liebherr LR1750 crawler crane, which on paper had enough reach and capacity to make this lift look easy. However with very little space to manoeuvre on site the reactor had to be lifted at a radius of 58 metres. The LR1750 was equipped with a 35 metre main boom and 65 metre jib with 300 tonnes of counterweight.

From a temporary storage area on site the reactor was lifted horizontally by the LR1750 and a 500 tonne AT crane which then helped to tail the reactor into the vertical position, allowing the LR1750 to swing the reactor to its final position in the steel construction framework. The job was completed within four hours.

The reactor was lifted horizontally then into the vertical position before being placed in the steel framework

F200E ideal for installations

The 20 tonne capacity Galizia F200E Plus pick & carry crane is proving to be ideally suited for short term rental. Its 20 tonne pick & carry capability and quiet, fume-free battery powered operation allow it work in sensitive areas makeing it particularly suited for machine installation.

Galizia's UK distributor GGR has kept its new machine very busy this year. Its first project was to relocate and install a paper treatment oven in a paper manufacturing plant. Helped by its front wheel drive, 180 degree rear steering and 2.29 metre wide chassis, the compact crane was able to navigate easily around the congested site and squeeze the oven into its new location, avoiding any major disruptions to the plant.

The crane then went on to a project to fit seven tonne steel moulds into an injection moulding machine at a moulded plastic products manufacturer. The crane's optional radio remote controller proved useful on this job as locator pins needed to be lined up accurately to install the mould correctly, the crane operator was able to get close to the pins rather than relay on commination from a signaller for such a precise job..

The crane has removable counterweights for easier transportation and in areas of low point loading it can be used with the counterweights removed and still has a 15 tonne lift capacity. Other features include an on-board battery charger and optional non marking tyres.

The F200E helping install seven tonne steel moulds in the injection moulding machine


Working on the paper treatment oven

The Fassi F660XP and Versa-Lift fork lift were used to install the horizontal baler and incline conveyor

Baler and conveyor installation

UK-based specialist lifting, installation and removal company Merritts has worked with long-term customer Dicom Paal to deliver and install a Paal Dokon 700 horizontal baler and incline conveyor to a recycling facility in Grantham, Lincolnshire.

Merritts used a Fassi F660XP loader crane and Versa-Lift fork truck to lift the machinery into position, having collected them from Paal in Germany.

In addition to organising all of the transport arrangements Merritts worked with the site to ensure all necessary ground preparations were carried out before the equipment arrived in order to ensure the efficiency of the installation process.

The main body of the baler was offloaded using a mobile crane and placed onto a pre-cast plinth at its location outside of the building. The Versa-Lift forklift truck and a Fassi F660XP mounted on a Scania R420 chassis fitted with remote controls, were then used to lift, transport, manoeuvre and install the machine ancillaries into position in the building. Next the inclined and awkwardly sized conveyor was loaded and moved into the facility, where it was offloaded and then installed using the loader crane operating outside, with the Versalift assisting from within the building.

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