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The resolution is a purpose built vessel for offshore windfarms with 300 tonne and 50 tonne cranes on board, shown here up on jacks

Offshore wind farm lifting

The UK's first offshore electrical substation has been installed at the Barrow offshore windfarm in the Irish Sea. The substation will transform the power generated by the 30 windmills (wind turbines) from 33Kv up to 133Kv, ready for transferring to the national grid via a 27km subsea cable. The farm when complete will generate enough power for 65,000 homes.

The 480 tonne substation was fitted out at ABPs Port of Barrow's Ramsden Dock, by a 20 strong team from Agrilek and then lifted and transported to the wind farm by the 1,500 tonne floating sheerleg crane, Matador 3, owned by Bonn & Mees of Rotterdam.

The windfarm construction is now over halfway complete with 17 of the 30 turbines already installed. The 70 metre high towers and components are being transported and erected by a special jack up vessel called Resolution. The ship-come- platform includes a 300 tonne crane as well as a 50 tonner for smaller lifts.The nacelles and blades for the Barrow farm are assembled on land and then transported as "Bunny ears"

The resolution loads tower tubes in floating mode.

by Resolution to the farm site along with the towers. Resolution can carry up to 10 nacelles and blade assemblies on board and is capable of placing them on towers up to 100 metres high. The vessel is owned by Marine Projects International.

Matador 3 lifted the 480 tonne offshore substation from the dock at Barrow and transported it to the offshore wind farm.

Electric Cranes replace forklifts

Three electrically powered Valla mobile cranes have been delivered to Cooper Avon tyres in Melksham to handle heavy equipment such as tyre moulds.

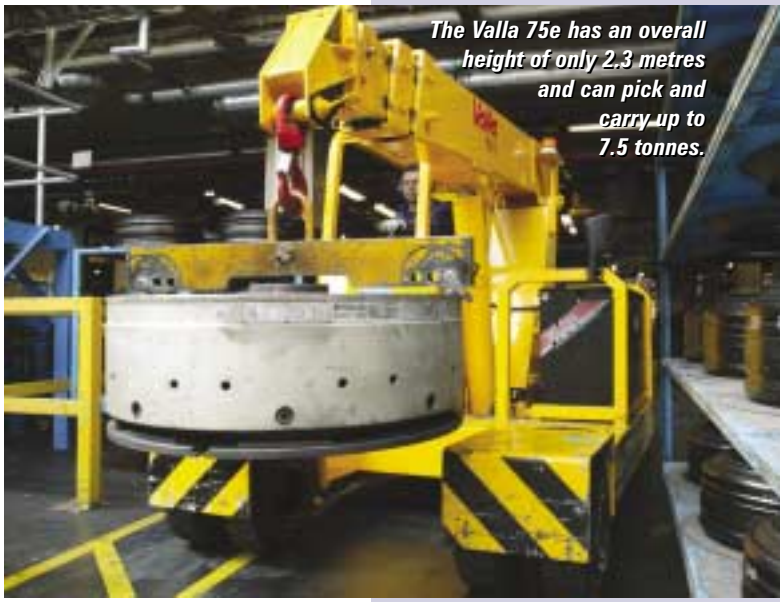
The delivery includes a 3.5 tonne Valla 35e and two 7.5 tonne Valla 75e.

The cranes are being used to lift, carry and place tyre moulds weighing up to 2,000 kgs in the production areas. The task is a repetitive one previously handled by forklifts with boom attachments. However the masts on the forklifts caused problems with overhead restrictions in some areas of the Melksham plant.

The 75e cranes are able to pass under overhead obstructions as low as 2.3 metres and lift the moulds as high as eight metres, or more critically to a radius of up to five metres, offering a huge improvement in versatility.

Chris Orchard the project safety engineer at Cooper Avon tyres said " The Valla mobile cranes are a great addition to our Melksham operation, besides their mould duties, they also give us the added flexibility to access more of the factory and safely lift and move everything we need without the inconvenience and expense of hiring in specialised lift equipment on a one off basis".

Cooper Avon supplies high specification tyres to car manufacturers such as Rolls Royce, Bentley and Morgan.



The Valla 75e has an overall height of only 2.3 metres and can pick and carry up to 7.5 tonnes.

Automatic crane for coating plant

Gerdsag Krantechnik has developed a special automatic crane for a Swiss metal production company for use in its coating plant.

The application involves lifting a wide variety of metal parts, up to 1,000 kgs in weight, through seven preparation baths at relatively high speeds and with great precision, tolerances are as close as +/- 2mm. The challenge of controlling load swing, within the tight space allowed, led the designers to go instead with a twin, three section vertical mast concept.

The masts are raised and lowered by a centrally mounted electric Nova hoist with two rope outlets from SWF Krantechnik. Each rope passes over a single diverter sheave and is anchored to the bottom of each mast. A load pendant is fitted to the bottom of the masts from which the items are carried on steel connectors.

SWF and Gerdsag teamed up to produce this unusual automatic crane for a Swiss manufacturer.

New Street crane has seven metres outreach

Street Crane Company has delivered a radically new single girder stockyard crane, commissioned by Ireland's Heiton Steels. The crane's main lifting beam projects seven metres beyond the track edge on one side and five on the other, permitting unimpeded loading and unloading of trucks on either side. With a clear span between the rails of over 21 metres, the design also enables the whole of the area between the tracks to be used for storage.

The crane is designed to handle eight tonnes to a height of nine metres; the single girder crane is of a special cantilever construction. The main beam is offset from the support frames, which combined with the cantilevered hoist design, keeps loads clear of the support legs when they pass onto the cantilever.

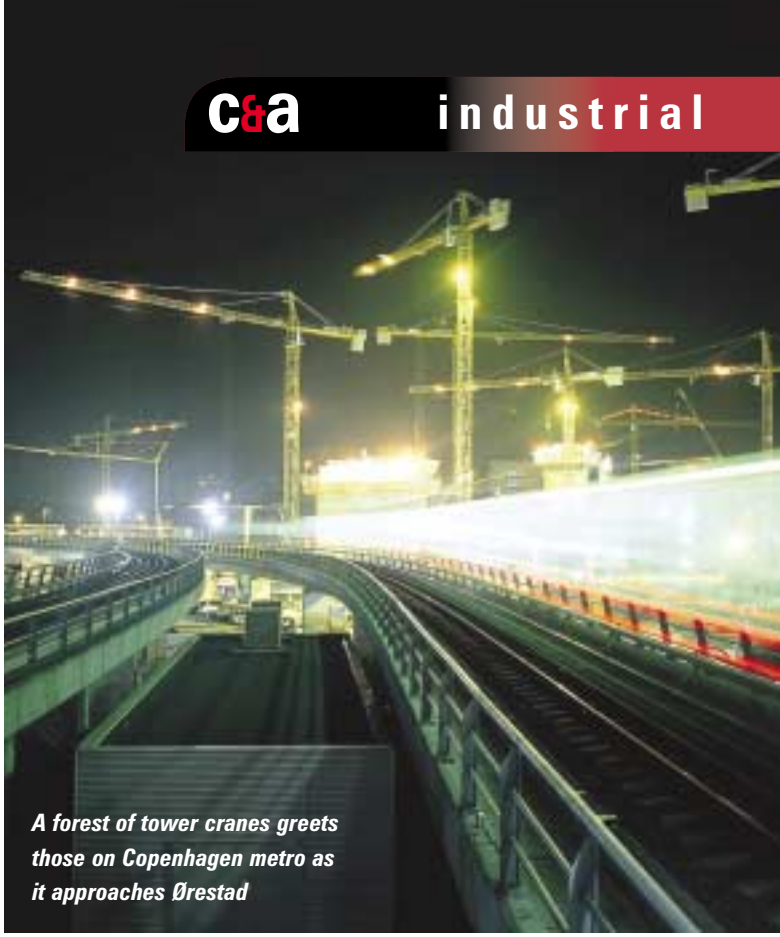
Street's sales director, Keith Rainford said, "This is an update to a style of crane that was always very popular with steel stockholders, concrete fabrication yards and in other high-turnover storage and manufacturing situations. It has not been available for a number of years and by bringing it up to date we are confident that we will attract interest from many industries."

The crane will be used to handle universal steel beams and shares the stockyard with an overhead travelling crane. As the paths for these cranes cross, Street has engineered multi-level safety systems into the project. A sophisticated anti-collision system recognises when either crane enters the critical area and prevents the other crane entering this zone.

To assist productivity, the new crane has a travel speed of 80 metres per minute, and 30 metres per minute for cross travel. All movements are moderated by a frequency inverter for smooth acceleration and deceleration and to assist load stability. Radio controls allow the operator to select a safe position with good visibility from which to control operations.

Heiton's managing director, John McGeever said, "We have had good performance from Street equipment over a number of years. Nevertheless, the contract was open to competition from several suppliers. In the final analysis, Street won the order because they understood our needs and came up with an innovative design that meets them most accurately."

Streets new crane offers up to seven metres of cantilever.



A forest of tower cranes greets those on Copenhagen metro as it approaches Ørestad

Tower forest protected by Top-Tracing

12 Potain tower cranes are providing most of the lifting on a radical new concert hall in the Ørestad area of Copenhagen. The cranes, which include Potain models MD 175B, MD 285B, MD 305B, MD 365B, GTMR 386 and HD 40A, have been supplied by the Potain dealer and rental company AJOS, to main contractor MT Hoggaard, which is also its parent.

The concert hall will form part of a distinctive new multi-media centre, to be known as the D R Byen Building, being built for the Danish Radio Broadcasting Corp. Its exterior design has been modelled on a middle eastern kasbah and it will eventually comprise four sections, each designed by a different architect.

The cranes are handling steel and concrete, with loads of up to 16 tonnes being lifted to heights of up to 61 metres. With so many cranes operating in the middle of a variety of other renovation and building projects, close to the city's metro lines with jibs of up to 65 metres, strict control of each crane operating area is vital. Potain's Top-Tracing anti-collision software is proving particularly useful; the technology is being used to both prevent collisions and to keep the cranes from straying in the airspace of adjoining sites or over the metro lines.

Blind Lifting

The young inventor with his crane.

A tricky crane problem in a boatyard has been solved with a new invention by the owner's teenage son.

A teenager has devised a method of allowing crane operators to place loads to within 50mm of the target without traditional signals.

The idea comes from a Staffordshire boatyard, where 17-year-old Joe Fuller has grown up beside the Trent and Mersey canal. While studying for his A-level in technology he solved a major lifting problem for his father's business.

The Roger Fuller boatyard builds canal boats from scratch, complete with distinctive traditional paintwork. There is strong demand for these high-specification custom-built boats, which typically cost over £100,000. The yard has orders for several years to come.

The problem the boatyard faced was handling the boats in a confined space. There is room for half a dozen boats in a dock which sits at right angles to the main canal, the main workshop is, in turn, at right angles to that dock. Between this shed and the main canal is a small area of ground on which sits a 30-tonne NCK crane, bought from Liverpool docks.

The crane lifts half-finished 21-metre boats from the shed, slewing them ninety degrees to the right to reach the water, where the superstructure is completed. Even with only hull and basic bodywork completed, the boats weigh around ten tonnes. Sometimes, a completed 18-tonne boat has to be lifted from the water and swung ninety degrees or more to the left, back into the workshop.

The in cab receiver

There is only room for the crane to move six metres forward or back, so the operator has to work at very tight angles, and relies on his mates for positional guidance.

"The problem was communication," explains Fuller. "Moving a boat needs a crane driver and two slingers, one at each end of the boat, and ideally another pair of eyes on hand, just in case. Vocal communication between these people is impossible because of noise, and hand signals are impractical because the crane operator can hardly see around the end of the workshop.

The transmitter is carried on a shoulder strap and includes a variety of signals and speeds.

"The big question was how to pass instructions through to the driver and also, as 18 tonnes takes a bit of stopping, will the boat hit the building before he gets them?

"We've never actually dropped a boat, but you can see a few dents in the shed, and we once destroyed the drainpipes."

Fuller studied conventional radio communication for his A-levels and dismissed it for boatyard use. "We went to look at other lifting operators, and saw they had problems of interference on hand-held radios, we saw drivers resorting to mobile phones. We also saw some very iffy-looking hand signals. Some of the signal methods I saw were frightening!"

He then reasoned that as the crane operator receives the majority of information, one-way communication leading to a visual signal in the cab might be the answer.

"I thought about coloured lights in the cab, but I realised that it was safer that the operator should only see one message at a time. The way to do that was with an LCD screen.

"These screens aren't hard to come by the hard bit was making it work!"

He decided on a system that would send brief text messages to the screen using AM radio technology, and wrote his own software to make it work. The frequency of 433MHz is licence-free, with very low risk of interference.

The screen is on a flexible mount in the operator's cab, the transmitter is carried by a slinger like a remote controller.

On that transmitter are six two-way switches, each referring to a crane function – so if the 'hoist' switch is pushed forward, the screen in the cab shows the message 'hoist direction – up' . The transmitter also includes a speed instruction in the form of a series of LED's.

The transmitter uses two six-volt batteries, giving over twelve hours of use, and transmission up to 70 metres. In the event of an error or loss of power, a default, STOP message appears.

Fuller's first theoretical experiments looked promising, but it was when the boatbuilders put his prototype to the test that they achieved a result which surprised everybody.

"We hung a lifting frame over the canal, and twenty metres away, ninety degrees to the left, past the workshop and by our paint shed, we marked four crosses on the ground which corresponded with the corners of the frame.

"Then we covered the operator's cab with a sheet!"

Using only the transmitter, with a whistle in reserve as an emergency-stop signal, Fuller began transmitting his series of instructions.

"The typical instructions were 'hoist-up-slow', to get the frame an adequate height off the canal. Then I transmitted 'slew left', which the operator continued to do until I told him 'stop'. In this, you have to allow for how quickly an operator reacts to an instruction, and how much a boat continues to swing when the crane stops.

"Then it was 'derrick-up-slow' to raise the frame over the workshop, and 'slew' to pass over the building followed by 'hoist-down-slow', until the frame was within a few inches of the ground, we paused and final adjustments were done with a combination of all the hoist/derrick/slew instructions.

"The operator was now seeing a lot of commands one after the other, but we waited until he had done one move before we sent the next.

"When we transmitted 'hoist down', and took the sheet off the cab, the operator was amazed. He had put the frame down 50mm from where we had painted the crosses."

The next step with Fuller's system will probably be done in co-operation with Loughborough University. He is considering more detailed messages, and LED screens for the slingers so that everyone on the team can see what is being transmitted, perhaps with additional emergency facilities to allow any one of the team to 'stop' the lift.

So far, the system has cost relatively little, other than a year's time and a vast amount of programming work, for which he now holds the rights.

It is possible, he thinks, that a commercial version might cost as little as £500.

The boatyard uses an NCK crawler crane to handle the movement of boats.