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Knuckle junkies

The world's knuckle boom crane producers have, over the past 12 months, been as busy as ever keeping this fast moving sector at the forefront of crane design. C&A rounds up the highlights.

Palfinger in 2004

2004 has been a very successful year for Palfinger. Achieving record revenues and profits, the company seems intent on maintaining the momentum in the years ahead.

Recovery unit

Palfinger's new 'T' crane range is specifically designed for mounting on recovery vehicles. Each unit has been designed with side-mounted boom cylinders to minimise the transport height in the stowed position, while internally routed

hydraulic hoses keep it compact and give greater component protection. The cranes also feature high controls over the base of the boom. The line comprises four versions, the PK 12000 T, PK 14000 T, PK 16000 T and PK 18000 T, with capacities ranging from 12.4 to 17.2 tonne/metres.

Top of the tree

The company also extended its heavy-duty knuckle boom range with the introduction of its



117-tonne/metre PK 150002 "Performance" (above). Palfinger says that the geometry of the crane enables the unit to carry out loading and unloading of its vehicle and work in a much smaller space than is usual for this size of machine, providing a significant advantage over mobile cranes on general lifting work. The PK 150002 offers a maximum outreach of 21.5 metres and is available with up to six fly jib extensions, offsetable by up to 25 degrees.

Automatic set up and stowage

Most recently though the company launched details of its automatic control technology, the Autofold System (PAS), which has been integrated into Palfinger's remotely activated 100 electronic. With the aid of a special control sensor system, the crane can be automatically put into the working position and stowed again at the push of a single button.



Hiab extended its XS-Series knuckle boom range spanning from five to 76 tonne/metre units. The smallest, the 11.4-metre outreach XS 055, targets middle-weight trucks, while the at the other end of the scale is the XS 800, which features Hiab's integrated computerised Space 5000 operating system. Pictured is the XS 288.

Effer shines at SAIE

Italian producer, Effer, made the most of the SAIE show in Bologna in October, launching two new crane models. At the heavy-duty end of the capacity scale was the 114-tonne/metre 1550-J-Power 6S (pictured above) with up to 29 metres of full-powered outreach, six extensions and a 6S fly-jib and two mechanical extensions. The other new model at the other end of the range was the 11-tonne/metre 110E-115, featuring Effer's now standard DMU 3000 (Data Monitor Unit), which among other functions, automatically reduces the speed of the boom extensions as they approach the end of their stroke.

At an Effer convention held during the SAIE show, attended by more than 150 Effer delegates from around the world, the company announced an 18 percent increase in Effer sales in 2004, with a further €10 million (£7 million) generated by access affiliate, Bizzocchi. During the last four years, Effer has invested €15 million (£10.5 million) in the enlargement of its Taranto production facility and is due to complete a new, €4.5 million (£3.2 million plant, Minerbio 3, in 2005.

Effer Holding and Bizzocchi managing director, Roberto Meneghinello, also announced that a further eight knuckle boom units will be added to the Effer range in 2005.



Fassi fuels top-end range

Fassi says that it has completed its heavy knuckle boom range with the "little sister" version of its flagship 150-tonne/metre F1500 AXP, the F1300 AXP. The 130-tonne/metre unit features Fassi's Extra Power (XP) system which, when used in conjunction with the FX hydraulic load control system, slows down the crane's movements, while proportionally increasing the power and lifting capacity.

The crane is remotely operated and uses Fassi's extra fast system (XF) system which, combined with the LS load sensing function, gives effective multifunctional operation.

Fassi was also present at the SAIE show in Bologna in October with a significant development to its mid-range offering. The F175A, F195A, F215A and F235AXP, according to Fassi, bring two new design elements to the mid-range sector. Firstly, there is a double connecting rod system engaging the main and secondary booms to ensure that the lift power is maximised in all configurations. Secondly, the Pro-Link (Progressive Positive Link) system permits the secondary booms to rise up 15 degrees beyond the horizontal. All four models are available with six hydraulic extensions.

At the smaller end of the Fassi range at SAIE was the 2.8-tonne/metre ultra light F28B unit for mounting on non-HGV vehicles. Up to three hydraulic extensions can be applied, while extra-wide stabilisers keep the weight to a minimum.

Terex Atlas brought six new knuckle boom models to the forefront at the IAA exhibition in Hannover, in October, including the models 210.2 and 240.2E 'fold-up' cranes." Commenting on the new units was Terex Atlas construction manager, Andreas Finger: "The cranes are distinguished by an optional ratio between their unloaded weight and the lifting power. Eight hydraulic booms with a reach of up to 20.7 metres together with the articulated jib arm, which can be over-stretched, enable an extended area of movement for cranes this size."

Italian force

Italian producer Amco Veba had an eventful year having taken over fellow Italian producer Flii Ferrari. The two companies continue to operate separately in terms of products and branding, but are benefiting from synergies, such as pooled purchasing power, according to the company.

Amco Veba unveiled two new models at SAIE, the 911 designed primarily for tilt bed recovery vehicles and the 950 range. In its most extreme version, the 950/65+ jib4s, offers a 32-metre maximum under hook height, an almost 90-degree powered offset of its 11 metre jib and an outreach

of almost 28 metres, where it can lift over 500 kilograms. Both models utilise standard HBC Radiomatic remote controls.

The company is also currently developing a new knuckle boom series in the 85-tonne/metre class. Dubbed the VR 85, the range will be available with up to 10 hydraulic extensions and three slew motors instead of the traditional two.

Flii Ferrari, now owned by Amco Veba, is currently in the development stages of three new knuckle boom models to be launched in 2005, one of which will be in the 50- to 60-tonne/metre class.

Cormach will be adding to its product line-up in the coming months with the addition of two new wallboard cranes, dubbed the 45 and 65. The Italian firm is currently processing an order from the Italian fire brigade for 11, 160-tonne/metre units.

HMF serves the access sector

Earlier in the year, the only Danish knuckle boom crane producer, HMF, added its access basket capabilities to its flagship knuckle booms, Odin and Thor. "The reach offered by these two giants is 38 metres height and 34 metres horizontal outreach with a platform capacity of 215 kilograms," says René Dahlkilde, technical manager at HMF. "The double safety system also means that there are no external sensors that can be damaged during utilisation. The solution has been tested several times and is based on standard components."

HMF now delivers all of its knuckle boom cranes ready to accept the company's range of personnel baskets so that the local vehicle body builder can easily fit the platform attachments and basket options, complete with overload systems, after the sale.

Keep it safe

2004 also saw the development of a new safety system from HMF for the protection of the manual extensions



on its cranes. The ECT 5075 system ensures that the manual extensions are not overloaded and damaged while the knuckle boom is working. Using a control panel, the operator is able to programme the crane so that the maximum working load is not exceeded. The system was accepted by the German Working Environment Service and meets the requirements of the EU's Machinery Directive.



When Mary Rose

Avon Cranes in the UK joined forces with PM Cranes to replace the existing cranes that had been assisting in the preservation of King Henry VIII's 16th Century Mary Rose warship at its Portsmouth location. The project meant replacing two 18-year-old 34-tonne/metre PM 34003 lorry loader units with new larger 43-tonne/metre PM 43024 units complete with three-extension fly-jib, twin man basket and remote control. The contract also entailed the refurbishment of one of the PM 34003s as a tailing unit. The cranes were designed to marine standards, with heavy duty chroming on the cylinders and wide use of stainless steel hardware. The units are mounted to self-propelled Pelloby platforms that allow the crane to travel up and down the length of the ship.

During the project, special access had to be prepared using a temporary rail track and scaffolding to dismantle the cranes. Working conditions were made all the more tricky due to low lighting inside the ship hall and the

fact that the engineers were required to wear breathing apparatus to avoid intoxication from the preservative chemicals that are continually pumped onto the historic ship.

The lorry loaders form a significant part of the project to both modernise the ship hall and preserve the Mary Rose and will be used to assist archaeologists to inspect the ship and monitor its condition. After serving King Henry VIII for many years, the Mary Rose was sunk on 19 July 1545 while defending attacks from advancing French galleys two kilometres off the coast of Portsmouth. She was discovered again in 1836 and, following several failed attempts, was eventually brought to surface in 1982.

*Autogru PM launched two new models at SAIE 2004, the 28-metre outreach 43S and 47SP. Both models are available with between two and eight hydraulic extensions and a four-extension jib with reverse angle articulation of up to 20 degrees from the horizontal.



Alternative loaders

While the versatility of the knuckle boom is widely appreciated for many lorry loading tasks, the market for "piggy back" fork lifts has continued to expand, nibbling away at some knuckle boom applications. However, Manitou has introduced the Manitransit product to offer a unit that offers the benefits of a mobile fork with the advantage of a telescopic boom.

Manitou claims that it has introduced the logistics sector to the first truck-mounted telescopic handler. The four-strong Manitransit range with lift capacities from 2 to 2.5 tonnes has been designed to carry out the duties that would be normally carried out by small knuckle boom cranes.

The unit can be mounted on the tail-end of a truck and dismantled for unloading duties as required. The range offers an outreach of up to two metres, while the booms are built to withstand repetitive and intensive loading and unloading. Each unit is equipped with stabilisers and a safe load indicator.

British Standards Committee to update lorry loader standard

Peter Oram, crane safety expert and chairman of the British & European Crane Standards Committee, has told C&A that, following discussions with the Association of Lorry Loader Manufacturers and Importers (ALLMI) and Health & Safety Executive, the BS 7121 Part 4 Safe use of Lorry loader cranes standard will be updated to accommodate larger lorry loader cranes.

Over the past few years, the ever-increasing lift capacities and capabilities of lorry loader cranes have seemingly outgrown the BS 7121 Part 4 Safe use of Lorry loader cranes standard issued back in 1997, causing much confusion among users over the correct procedures and guidelines of operation.

Mr Oram addressed the issue in the August/September issue of C&A, stating that the very large loader cranes have to now be looked upon as mobile cranes and subjected to Part 3 of BS 7121 Code of Practice for the safe use of mobile cranes.

"The consequence of this is that the crane operator cannot take on any other role than driving the crane," said Mr Oram. "The lifting operations that these larger lorry loaders perform must be supported by a written plan, be supervised, and have slingers as defined by Part 3 of the standard." Mr Oram was unable to confirm when exactly a revision of Part 4 of the standard would take place.



Bridge bashers

Network Rail has collaborated with the freight and construction plant transport industry to produce two new guides 'Transport Managers' Guide' and 'Professional Drivers' Guide', in attempt to raise awareness and reduce the number of 'bridge-bashing' incidents in the UK.

According to Network Rail, the number of bridge bashing strikes has almost doubled in the UK since 1996 to over 2,000 incidents, or, around five a day. One of the main causes is unsecured knuckle booms, which account for 88 percent of all bridge strikes. Of this number, 11 percent are caused by the lorry not being in the centre of the road at arch bridges, 26 percent caused by the knuckle boom being left in the raised position and 32 percent due to the driver being ignorant of the vehicle height. According to drivers, the most risky bridges are those that cross the road at an angle because if the vehicle is travelling at speed the top of the vehicle is deflected sideways causing it to overturn.

Both guides feature information including what the law says about bridge strikes, actions to prevent bridge strikes and to what should be done if a strike occurs.



The present situation with regard to Stabiliser Interlocks (SI) for lorry loaders is that they are not mandatory. By definition, a SI comprises a device that would prevent a lorry loader being operated unless the extendable stabilisers are fully extended and secure. Whilst one or two loader manufacturers presently offer such a device, this is usually to meet a specific customer requirement on a specific model and not across its whole range.

It is a requirement of the Machinery Directive in Preliminary Observation No 2 that suppliers must take into account 'State of the Art'. 'State of the Art' as defined by CEN is the developed state of technical possibilities at a given time relating to products, processes and services as based on scientific knowledge and experience'.

Subsequent to the action of the HSE in issuing statements to the effect, SIs were mandatory, a

meeting was held in April 2002 in Finland where European lorry loader manufacturers, the HSE and ALLMI were represented. It was recognised that, at present, manufacturers fully comply with the requirements in EN12999 through the Machinery Directive in that their machines are 'State of the Art' with respect to SIs.

It was agreed that manufacturers would work towards introducing a practical system of SIs, but that any such industry introduction was unlikely before 2006.

At this time, VOSA, who are responsible for inspecting vehicles for compliance with 'The Road Vehicles (Construction and Use) Regulations', is making the installation and satisfactory operation of stabiliser leg locking devices subject to examination at any inspection. These are purely simple locking catches to prevent the stabiliser leg support beam from extending sideways uncontrolled.



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