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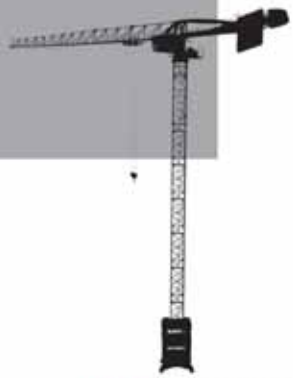

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Large telescopics?

Cranes & Access generally views 'large' mobile cranes as units with a maximum capacity of 500 tonnes and above. However with this sector still quite limited, in terms of selection, we are looking at telescopic cranes of 400 tonnes and over, highlighting how they compare and what they are capable of doing.

Over the past 12 months or so there has been a number of interesting large All Terrain cranes coming to market. Biggest of these is the Terex AC1000 which has had a long, five year gestation period and a difficult birth only recently entering full production after at least one re-design. Whilst Terex classify the crane as being in "the 1,200 tonne class", its performance is not too dissimilar to Liebherr's latest All Terrain crane - the 750 tonne LTM 1750-9.1 launched late last year. This raises the whole issue of how cranes are classified, particularly as Terex is moving away from nomenclature that indicates maximum lift capacity such as its 60 tonne AC60 or the 100 tonne AC100 etc. The introduction of its Challenger series in late 2010 was the start of this new regime and all new cranes since have been christened with family names - Challenger, Superlift, Quadstar and Easy - with numbers giving an indication of performance, in terms of load moment, rather than a specific maximum lift capacity.

A Liebherr LTM1400-7.1 on hire from BKL replaces the cover of the first parabolic antenna built in 1964 at Raisting, Bavaria.

A Terex AC1000 involved in a cooling tower tandem lift

A Grove GMK 7550 lifting a small RT

The old rating game

For example, the Challenger 3160 identifies it as part of the Challenger series, with the numbers representing how many axles it has - three - and its load moment of 160 tonne metres - an easy way, says Terex, to get a good idea of the performance of the crane. The Superlift 3800 crawler crane is a more powerful, updated version of the 600 tonne CC2800-1 (the name of which dates back to when Demag used a similar system) but on its own the name gives no indication of capacity and leaves the potential customer perhaps slightly confused as its maximum capacity is 650 tonnes. The same could be said about the Easy 90 self-erecting tower crane although its latest introduction - the Rough Terrain Quadstar 1100 - is probably a 110 ton/100 tonne Rough Terrain crane?

Other manufacturers are generally still keeping to more 'traditional' nomenclature systems, such as Tadano with its relatively new 400 tonne capacity ATF400G-6, and Grove's six axle 400 tonne GMK6400. Comparing cranes in any particular segment is still difficult even if the numbering suggests they are similar. Unfortunately there is no standard measurement, although most companies have based their maximum capacities on what the crane can lift at 2.5, 2.75 or three metres radius. However some of the larger capacity lifts are only possible when using 'special equipment'and often restricted to specific positions such as over the rear of the crane. Although it would be interesting in the real world to find such a heavy load (say 750 tonnes for the Liebherr LTM 1750) that could be lifted at such as small radii! However while not perfect the status quo did give crane buyers a quick indicator of where a crane fitted in, and most of all for many crane rental companies, what they could rent it out for.

There are moves afoot by several in the industry to standardise the way in which crane performance, or nominal rating, is measured and the sooner it can be adopted, then customers and users can more easily compare like with like. Such


A Liebherr LTM 1350-6.1


A Terex AC350/6 getting into position to lift a 9 tonne church spire in Erkelenz, Germany

a move would, in a way go back to something like the PCSA (Power Crane & Shovel Association) rating class in the USA. The PCSA rating class was the radius at which a crane could lift its maximum capacity and the capacity at a 40ft radius with a 50ft boom in 100s of lbs. So for example the P&H Omega 25 was a class 12-100 = 25 tons at 12ft and 10,000lbs at 40ft radius with a 50ft boom.

So what's its capacity?

At the moment the figures just cause confusion which brings us back to the AC1000 and LTM 1750. Terex says that its AC1000 is a 1,200 capacity class crane. According to its specifications it has a maximum capacity of 363 tonnes at up to five metres radius. The Liebherr on the other hand is a 750 tonne crane that can lift its maximum capacity at three metres


Grove GMK6400

	Tadano ATF400G-6	Grove GMK6400	Terex AC350/6	Liebherr LTM 1350-6.1
Boom length	60 metres	60 metres	64 metres	70 metres
Capacity @ radius	400t @ 2.7m 307t @ 3.5m	400t @ 2.4m	200t @ 3m	350t @ 3m
Main boom max counterweight	200.6t @ 5m 54.6t @ 20m 19.7t @ 40m 8.9t @ 56m 6.2t @ 58m	183t @ 5m 47.5t @ 20m 19t @ 40m 7.8t @ 56m	162t @ 5m 44.9t @ 20m 15.9t @ 40m 8.3t @ 56m 7.8t @ 58m 5.8t @ 60m	168.3 @ 5m 46.5@ 20m 18.2t @ 40m 8.7t @ 56m 7.9 @ 58m 7t @ 60m 3.9t @ 66m
O/A Length	19,027mm	19,342mm	16,710mm	17,745mm
Width	3m	2.975m	2.980m	3m
Height	3.9m	4,000mm with 16.00 R25	4,000mm	4,000mm
Maximum counterweight	138 tonnes	135 tonnes including 20 tonne option	116.7 tonnes	140 tonnes
Axles	6	6	6	6
GVW	72 tonnes	72 tonnes	72 tonnes	72 tonnes
Maximum boom & jib	126.5 metre	136 metre	125.7 metre	140.5metre
Outrigger spread	8.5 x 8.9m	8.5 x 8.7m	8.5 x87m	8.93 x 8.53m
Engine output	480kW	405kW	450kW	450kW
Gradeability	Up to 60%	50%	67%	51%
Max road speed	85 km/hr	85 km/hr	85 km/hr	80km/hr
Drive	12 x 8 x 12	12 x 8 x 12	12 x 8 x 10	12 x 8 x 12

and for direct comparison, 312.3 tonnes at five metres. However if we look at the other 1,200 tonne class crane, the Liebherr LTM11200-9.1 it handles its 1,200 tonnes maximum capacity with 55 metre main boom at 2.5 metres radius, in this configuration however it can also handle 580 tonnes at five metres.

If you look at the capacities on the 100 metre boom the LTM1200 and Terex AC1000 are more similar. This whole area has been a bone of contention since mobile cranes broke the 100 tonne barrier back in the 1970s. Over the years many manufacturers have introduced new cranes claiming them to be in a higher capacity class. The justification for such claims usually related to a crane with longer main boom and good long reach capacities. And this will be Terex's argument - with the AC1000 offering some similar capacities to the big Liebherr on fully extended main boom at boom angles that suit applications such as wind turbine installation. The argument for such design philosophies is that the crane can be made lighter by not having to worry about making the structure strong enough to cope with the half dozen heaviest capacities for which such cranes are rarely used.

400 tonnes and lots of capability

In the 400 tonne capacity range the Grove GMK6400 and Tadano Faun ATF400G-6 are interesting new launches. The Tadano is now the largest capacity All Terrain in the company's well regarded ATF range, while the Grove is the manufacturer's second largest crane behind the 450 tonne GMK7450.

In reality cranes over 300 tonnes are still a relatively rare sight on European roads, while 80 to 100 tonners are now very common and almost taxi cranes. For some manufacturers such as Liebherr and Terex whose ranges extend to more than 1,000 tonnes capacity, this sector is very 'mid-range'. And as discussed in our heavy lift feature in the December/January issue, there are precious few cranes between 500 and 1,000 tonnes capacity.

Tadano v Grove

Comparing the two new 400 tonners is an interesting one, with Grove having proclaimed the GMK 6400 as "the industry's most powerful six-axle crane", when unveiled as a prototype at Bauma 2010. The comparison table shows how close the performance is between the two

Liebherr LTM 11200-9.1 erecting a wind turbine tower

newcomers but the Tadano does have the edge through most of the lifting range. Two other slightly smaller 350 tonne capacity six axle cranes have also been added to our comparison - the Terex AC350/6 and the Liebherr LTM1350-6.1 - and while they are clearly less powerful up towards 40 metres, they both offer longer booms and perform well when lifting at the longest radii.

Liebherr also has a 400 tonner - the LTM 1400-7.1 - but as this is a seven axle it has not been included. So comparing the AC350/6 and LTM 1350 with the 400 tonners both put up a very credible performance particularly as the lift radius increases. This is undoubtedly helped by the fact that both the 350 tonners have longer main booms - 64 metres for the Terex and 70 metres for the Liebherr - and so are lifting at higher boom angles.

So comparing the Tadano and Grove, the Grove would appear to have met its match, although it should be recalled that the Tadano was a complete redesign of the 360 tonne ATF360G-6 shown as a prototype at Bauma 2007. Overall these two cranes have a very similar performance and capacities are unlikely to be the final decider between the two. The Tadano has a slightly heavier maximum counterweight (138 tonnes versus the Grove's 135 tonnes - which includes a 20 tonne option) which gives the Tadano the better capacities.

Tadano ATF400G-6

Tadano ATF400G-6

Tadano launched the 400 tonner in May 2011, some four years after it showed it as the prototype AFT360G-6 at Bauma 2007. While the ATF400 is rated at 360 tonnes at three metres and now 400 tonnes at 2.7 metres, the company says that the final product is a completely re-engineered crane and is much easier to set-up and road in Europe than the original. The ATF360G-6 was designed and built in Japan but missed a number of key criteria for the European market and as a result was never marketed or sold in Europe. The new model however is a truly global product and units have already been delivered in North America and Europe.

Its 60 metre main boom matches the Grove but is shorter than the smaller Liebherr and Terex cranes. However the benefit of the shorter, heavier boom shines through when the full counterweight is installed, out-lifting the other cranes up to 56 metres radius. The Tadano also has an interesting 31 metre four section telescopic luffing jib that can offset up to 60 degrees and lift up to 38.4 tonnes at nine metres radius. Maximum system length is 126.5 metres when the crane is equipped with full luffing jib. The Tadano uses a highly efficient, environmentally friendly Mercedes BlueTec carrier engine coupled to a ZF transmission and features a 12x8x12 drive steer configuration. As well as improved safety features which include a flat deck, guardrails and steps.

A Terex AC1000 travelling rigged

Grove GMK6400

Manitowoc surprised everyone when it unveiled the GMK6400 at Bauma 2010 as the bigger, heavy lift sister to its new 300 tonne GMK6300 and made claims that the GMK6400 would be the world's most powerful six-axle All-Terrain crane, which were true at the time but which Tadano has now overtaken. Its 60 metre main boom is 20 metres shorter than the smaller GMK6300, although a 79 metre luffing jib is likely to prove a popular option. A new Mega Wing Lift – superlift device transports separately from the crane and incorporates a patented self-rigging system.

Like the GMK6300L the GMK6400 has Grove's new carrier cab and steer by wire controls, but it also includes a single carrier mounted Mercedes engine, unusual on this size of crane, the power unit is teamed up with a ZF AS Tronic 12 transmission, but also incorporates a hydrostatic drive system on two of the axles, called MegaDrive. The MegaDrive cuts in whenever the crane's travel speed drops below 20kph, helping smooth starts and stops, but most importantly providing very smooth and precise travel for tight areas. When lifting the big eight cylinder engine runs almost at idle, and is thus only slightly less fuel efficient than a smaller dedicated superstructure engine, while being a good deal quieter. An auxiliary power pack cuts in when the crane is on standby to run functions such as electrics, the heater or air conditioning.

AC1000 v Liebherr 1750-9.1

The Terex and Liebherr cranes are two of the largest telescopic All Terrains on the market, regardless of how they are classified. They are also more similar than you might think given their nomenclature and perceived capacity. But what is a 1,200 tonne class crane? Should it be able to lift 1,200 tonnes? Should it be able to lift a lot more than a 750 tonner?

On paper these two cranes are quite close in terms of performance however the AC1000 lifts 15 percent more at five metres. Both have similar main booms, maximum counterweight, size, speed and engine power. In fact the main difference is that the AC1000 has the option to extend its 50 metre main boom to 100 metres by inserting an additional 50 metres of boom. However due to its weight with the 100 metre boom, it would only be road legal in the UK as axle weights would be 16.5 tonnes per axle. With standard booms both have the usual 12 tonnes per axle. Maximum system length for both is within a few metres with the Terex being slightly longer at 163.3 metres.

Maximum counterweight also slightly favours the Terex with 228 tonnes against the Liebherr's 204 tonnes which when working on the standard boom gives it better lifting right through the range. The Liebherr main boom however is two metres longer and the Liebherr is more manoeuvrable, having a tighter turning radius and a smaller price. The nature of the deal or brand preference may well be the final deciding factor between these two. For comparison we have added in Liebherr's 1,200 tonne LTM 11200-9.1. With its 100 metre telescopic boom the crane can lift 580 tonnes at five metres - 217 tonnes more than the AC1000. In truth, the AC1000 falls somewhere between the LTM 1750 and LTM11200 - and is probably more like a 900 or 1,000 tonne class machine - which is possibly why, when Terex came up with its name five years ago - it was called the AC1000.

Three Liebherr cranes - an LTM 1500, LTM 1400 and LTM 1360 - lift a new 18m diameter excavator bucket wheel weighing 140 tonnes into the vertical position

Schot's Liebherr LTM 1750-9.1

The Terex AC1000 v Liebherr 1750 with the 1,200 tonne LTM 112000 for comparison

	Terex AC1000	Liebherr LTM 1750-9.1	Liebherr LTM 11200-9.1
Axles	9 – all steered	9 – all steered	9 – all steered
Length	20.3 with standard 50m boom 22.48 with 100m boom	21.75m with 52m boom	24.9m with 55m boom 26.42m with 100m boom
Height	3.99m	4.0m	4.4m
Width	3.0m	3.0m	3.0m
Turning radius i/s	8.55m	7.87m	8.57m
Turning radius o/s	16.47m	16.45m	19.32m
Outrigger spread	13.45 x 13.54m	12.0 x 11.998m	13.01 x 13.03m
12 tonnes per axle	Standard 50m boom	Standard 52m boom	No boom
Speed	85km/hr	80km/hr	75km/hr
Max counterweight	228 tonnes	204 tonnes	202 tonnes
Max lift	363 tonnes @ 5m	750t @ 3m 312.3 tonnes @ 5m	1200t @ 2.5m 580t @ 5m
Boom lengths	50m with 100m option	52m	55m or 100m
Max system length	163.3m	160m	192m
Lift 50m high 46m radius	34.4 tonnes	23.8 tonnes	43.5 tonnes (@55m high)
Lift 52m high 50m radius	12.8 tonnes with jib extension	18.8 tonnes	35.5 tonnes
Chassis engine	480kW	500kW	500kW
Gradeability	38%	41.8%	38%

Investment pays dividends

The recent recovery of the tower crane in the high profile helicopter crash in Vauxhall, London by Ainscough Crane Hire underlines a renewed big crane strength within the company. The tragic accident happened on the morning of Wednesday 16th January yet just two days later, its Terex TC2800-1 was fully rigged and ready to recover the stricken tower crane located on the UK's tallest new residential building – the 181 metre St Georges Wharf Tower. A staggering 68 people were involved getting the crane prepared, on site and set up ready to work.

"The amount of backroom work that has to happen for a well-prepared crane to arrive on site, on time and ready to go is far more than customers think," says Gareth Jones, Ainscough's commercial director.

"The cause of this recovery job was unfortunate and unusual but shows the amount of manpower and costs that are involved. Even a basic crane hire with say a 50 tonner, requires a team of trained and specialist staff to ensure that the crane and lift is carried out to our safety standards, arrives on time and is fully equipped to carry out the lift. There is obviously a cost to this, particularly when dealing with a £400,000 crane, operator, maintenance and transport and clients should appreciate this when ringing around to obtain a cheaper price."

Ainscough is the UK's largest crane rental company and currently has a fleet of 458 cranes, ranging from 10 to 1,000 tonnes capacity. This figure is probably closer to its smallest fleet size over the past decade, having peaked at around the 600 mark. It does however include its Heavy Cranes division which has 18 cranes of 500 tonnes and above.

Gareth Jones Ainscough commercial director

Potted history

Cranes & Access has of course published the full Ainscough story before, but a more potted version runs like this: The Standish-based company was formed in 1976 by Gerald Ainscough and from 1984 was run by his three sons - Martin, James and Brendan. In October 2007 the sons sold the company for £255 million to a management buyout headed by the then chief executive and now managing director Neil Partridge. Six months later it acquired James Jack group Lifting Services of Invergordon, Scotland. A few months later it announced its intention to enter the large crawler crane market with new cranes arriving in May 2009.

Various management changes through 2009 and 2010 eventually resulted in the core of a new team being in place by mid-2012. This included Jones as commercial director, Chris Chambers as financial director and Andrew Winter as general manager Heavy Cranes division. Most recently the addition of Chris Beeton was made as head of field sales earlier this year.

Andrew Winter general manager Heavy Cranes Division

In June 2012 it completed its acquisition of Plymouth-based West Country Crane Hire together with its Devonport Dockyard facility, providing better cover south of Bristol. At the end of last year, Bradley Hall Holdings, the owner of Ainscough, was acquired by a partnership made up of Goldman Sachs and private equity firm TPG. The deal also coincided with £105 million of additional asset-based finance, provided by three other funders to help the company expand into the renewable energy market. The Ainscough group currently comprises Ainscough Crane Hire, Ainscough Heavy Cranes Division, James Jack Lifting Services and Ainscough Wind Energy Services (AWES).

Moving forward

Jones - who joined the company around 13 months ago - has been the driving force behind the company's commercial push into rebranding and re-positioning, after admitting that the company had lost market share in 2011-12.

"Everyone in the crane industry knows who we are, however companies outside of the lifting sector do not see Ainscough as a force - particularly for special projects and heavy lift - so we have done a lot of work to take the business forward," he said. "As UK market leader we have a good presence and market share, but thought the time was right to revitalise the business. We wanted to reinforce our position as market leader, become a more prominent player in the heavy lift sector and move forward with our turnkey solutions in the wind energy market."

One step towards this was acquiring a majority stake in a wind services company Windcom at the end of last year, which became AWES, allowing us to tackle the UK wind energy market, not just with crane hire but with labour and site management services. It also enabled Ainscough, through AWES to look outside the UK such as carrying out work in France and South Africa, but on labour and turnkey solutions rather than the supply of cranes.

Heavy cranes

"The Heavy Cranes division had lost its direction a bit so we brought in Andrew Winter - previously with Tadano distributor Cranes UK and Winterlift - as general manager last year. As a result of Andrew and other changes the business is performing very well now, with utilisation up from a low starting point - when I joined the company to 93 percent, with full utilisation seen on several occasions this year."

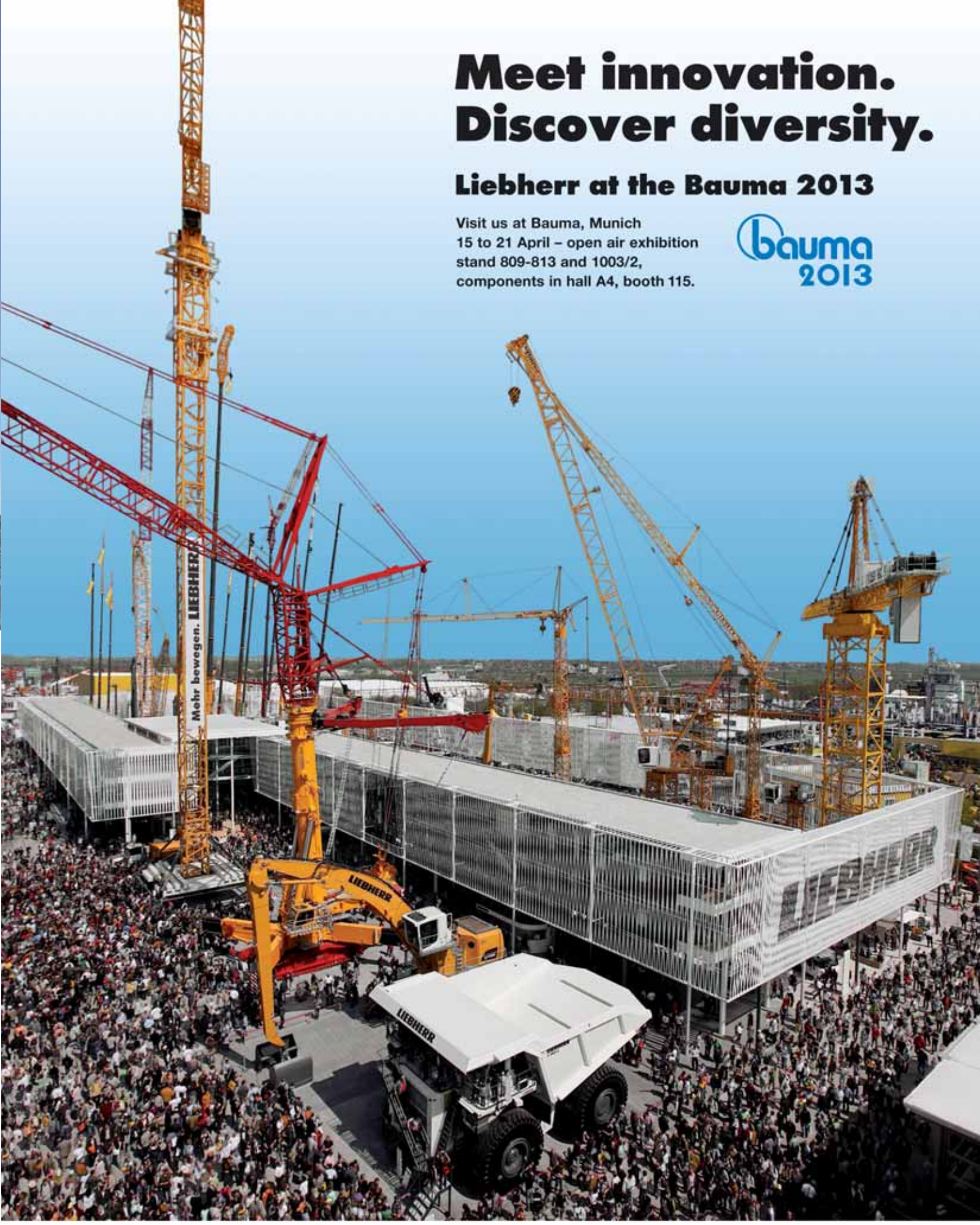
Historically Ainscough has been a firm Liebherr crane supporter. In 2007 it was Liebherr's largest single crane customer, taking around 65 units - the maximum Liebherr would allow at the time. Obviously investment in new cranes has decreased over the last few years, but it is currently still one of Liebherr's top 10 global customers.

Ainscough has 18 cranes of 500 tonnes and above in its Heavy Crane Division

"Our investment this year will be at least £11 million and this is primarily being spent on Heavy Cranes where the market is good. Four new All Terrains will be added – a new 500 tonner has just been delivered and in April we get the first of two 750 tonne LTM 1750-9.1 with another 500 tonner later in the year," says Jones. "Several years ago Ainscough was very serious about adding one or even two Terex AC1000 - with the official 'launch' arranged for Bauma 2010. However due to the delays and changes in specification, the company has decided to stay with Liebherr, opting to go for the 750 tonne LTM1750s."

Jones and Winter say that they are now looking for a new crane larger than 1,000 tonnes for special projects, and not necessarily a Liebherr.

The company is investing more than £11 million on its crane fleet this year including two Liebherr LTM 1750-9.1



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A shrinking national fleet

As well as investing in new cranes Ainscough has a continual crane refurbishment programme.

"We are constantly on the look-out for 25 tonne City cranes as there are very few around. Although we have 41 in the fleet it continues to be a problem so we have been refurbishing all the 25 tonners and have now started major work on the older 100 tonners. Our 1,000 tonner is now back in the fleet after being off the road for five months for a total rebuild."

"Although the media and economic commentators are trying to find the green shoots of recovery citing the numbers of new cranes being purchased, we see a different picture," say Jones. "The UK at its peak had about 3,800 cranes, but today that it is just below 2,000. Yes, we see the competition purchasing new cranes but they are also selling more of their older units with the net effect of reducing the total numbers. We believe that we are now the only single source, major national provider offering cranes from 10 to 1,000 tonnes capacity, because major competitors are either withdrawing smaller general cranes from the UK or the cranes are all on long term work."

Refocusing the business

"During 2010 and 2011 our market share slipped but I am pleased to say that we have regained share and are looking to take it to 40 percent or more. As market leader we have to set ourselves a challenge to push ourselves harder," he says. "The local competition is particularly strong so we now have the mentality of competing as though we are second in the market and wanting to become market leader. The business is working harder and we are not taking our customers or position for granted."

"I was recently reported as saying 'everybody knows the cost of everything but the value of nothing' and I think that is sometimes the case. All too often we are brought in when things go wrong or the contracts are high profile."

Like another leading UK rental company, Ainscough has deviated from the traditional crane company management succession plan, by recruiting from outside of the industry.

"With more than 1,000 employees there are over 90 per cent that know cranes inside out, but we made the decision to bring in new people with different skills that could offer different views," says Jones, previously commercial director at Northgate - "the Ainscough of the van world". He then brought in a team of people he knew with specialist knowledge of assets, bids, tenders and marketing as well as an external web/PR and branding partner.

"The new branding will be working its way through the fleet over the coming months and we hope it will send the right message of safe sustainable solutions. As well as the largest crane fleet in the UK we have the largest heavy haulage fleet with 57 tractor units (almost entirely MAN) and rigid bodied vehicles and 87 Nooteboom trailers."

The home page of the new extranet project manager/fleet management system

Online developments

"We also have exciting new developments on the new website," says Jones.

"There was uproar when we removed the "Guide to safe lifting" manual in hard copy format, however we did this because everyone used it to spec a crane but then did not use us. Now we have an interactive guide - enter the weight to be lifted and the radius and the crane required will be suggested - which gets about 400 hits per month from non-Ainscough customers."

"We have always had an online tool for customers but we have just developed a virtual project manager/fleet management system which will be launched shortly. It will provide a full breakdown of information on each account, including spend, invoices, debtors, cranes on and off hire. While providing a detailed breakdown by crane including earnings, queries, proof of hires, contracts plus a two way interactive portal – no-one is doing this yet in the crane business."

The new livery

Currently has 458 cranes in its fleet ranging from 10 to 1,000 tonnes capacity