

RECORD BREAKER

Impressive is the only word to describe the UK's tallest demolition rig. The heavily modified 67m-high Liebherr R984C is owned by Technical Demolition Services.

High-reach demolition in the UK has reached new heights with a modified Liebherr excavator that slides out its telescopic boom to a breath-taking 67m. Steven Vale travels to Newcastle to see the record-breaking machine in action.



The 207t excavator splits into three loads for transport. The base excavator needs a powerful tractor unit and a lot of space to manoeuvre.

Kocurek has done it again. As reported late last year, the Ipswich-based engineering company has developed its tallest telescopic demolition front-end equipment so far, able to reach the dizzy height of 67 metres.

Owned by a very proud Technical Demolition Services (TDS) and mounted on a 120-tonne Liebherr R984 base unit, it takes working heights to record levels in the UK. It is also the world's second tallest excavator-based demo machine, behind Euro Demolition's 90m rig, which incidentally has just gone back to work.

The bragging rights for TDS are enormous, but avid readers will recall a similar converted Liebherr R984, originally owned by Coleman and now working in New Zealand. Beating Coleman's Liebherr by two metres, TDS's demo rig left Kocurek's base at Ipswich last October. Its first destination was Ibrox, where it made a start on taking down solidly-built

22-storey tower blocks for the Glasgow Housing Association. One tower block still remains, but TDS diverted the machine to Newcastle to make a start on a number of high-rise buildings.

For the last 10 years Scotswood Road, which follows the River Tyne for nearly three miles, was the UK's largest regeneration area. Several decades ago, the river side of the road was crammed with armament factories and shipyards. On the other side of the road were the terraced streets of those that worked in the factories. Some of these terraced houses came down in the early 1960s and were replaced by the Cruddas Park housing scheme – a series of multi-storey tower blocks – part of T. Dan Smith's grand plan for a city in the sky.

However, half a century after the first tower blocks were built, the community's housing requirements have changed. Two of the towers were recently refurbished at a cost of several million

pounds each. A different fate awaits the other tower blocks, as in these cost-conscious times, it is apparently cheaper to demolish and re-build.

TDS has won the contract to take down the last five tower blocks. It is estimated that this will result in 47,500t of concrete and bricks, 450t of metal and 60t of timber being recovered, and under 15t of mixed demolition waste being generated.

Before they could make a start on the demolition works a huge amount of household fixtures and furniture had to be removed by hand, taking 15 to 20 large skips per building. Then there were nearly 50t of asbestos that had to be carefully stripped from the five structures.

The giant R984's job is to take off the top seven storeys, after which a 30m Liebherr R954 will take over, followed by a Hitachi ZX460 mopping up the debris. The plan is to get the R984 to reduce the heights of two of the blocks, and possibly a third, before it is needed back up in Glasgow. It will return to Newcastle for the final two buildings sometime in the early summer.

OUTLINE HISTORY

Previously, TDS used to crane a mini-excavator to the top of a building that was out of reach for their 30m Liebherr R954. Even today, they still use this method. Also, where space is tight for super-sized machinery, they still use explosives; an option successfully used to take down three of the seven high-rise buildings in Glasgow. However, blow downs are expensive, and as the company continues to take on more high-rise work then the need for a machine capable of single-handedly and safely tackling them increased.

Kocurek has made 55 telescopic booms since the first one left the factory in 2001. At 67 metres this is the tallest one so far.

For one job TDS even hired in one of 777 Demolition's 55m Hitachi EX1200s, another Kocurek creation. But they soon realised this did not make a lot of sense. It cost upwards of £4k a day plus fuel to hire in a machine of this size, money that they felt could be better spent in-house. There is also the promotional aspect to consider of having another company's machine on site.

However, the upturn in fortunes of the opencast industry led to increased demand for larger excavators, which resulted in the prospect of a two-year wait for a new Liebherr R984C, their preferred choice of base machine. After much discussion TDS decided to sacrifice one of its own machines. Unlike Coleman's excavator, which was based on a brand new R984C, the base machine for TDS's creation was a 2008 model.

Managing director Austin Tap of TDS admits they were not overly keen to modify a hard working member of their fleet. He said, "It was great as it was and we were not sure about giving it to Kocurek to pull apart. However, it did make sense to use the base machine, and then buy an arm for it."

Great it certainly was. Prior to its new lease of life, the excavator used to wield a massive 22t La Bounty R9500 scrap shear. Almost 7.5m long, at one time it was the only attachment of its kind in Europe, and was normally found on the end of the 11m boom of the R984. Fitted with a heavy-duty scrap handler undercarriage, the excavator was able to pulverise everything in its path to a height of 19m.

Its first job was a nine-month contract to tackle a decommissioned 10,000t oil rig in the Shetland Islands. The excavator was then moved to Southampton to take down three 1000t container cranes, followed by an old aluminium foundry in Oxford, then on to a project at Ellesmere Port for Cabot Carbon. This was its last job before being trucked to Kocurek for modification.

So just what has the Ipswich-based engineering company done to TDS's Liebherr excavator? Well, for starters, lots of things we have come to expect on a machine of this type, including extra guarding and hydraulic tilt for the cab.

The excavator's tracks were already longer than those fitted to a standard R984C. Stretching their length by almost a metre provides a lot of extra stability. So, too, does hydraulic track width extension. When extended, the outer track width increases from 4.3 to 6.1m.



Fully stretched to a pin height of 67m, the R984 can carry a 1.5t attachment. At 62m it can take a 2t tool, and much larger units with the three-stage boom retracted.



Part of the conversion work included adding two extra main lift rams to provide the extra capacity to raise the 60t boom from the ground.



Operator Paul Konnick greases the attachment in preparation for the first day's work at Newcastle.





With five high-rise tower blocks to tackle in Newcastle, and another one in Glasgow, the R984 has plenty to keep it busy for the next few months.



The counterbalance is now hydraulically detachable. In front of it sits two internal 1000-litre water tanks for dust suppression.

At the rear of the excavator, the 22.5t ballast block can now be hydraulically removed to reduce the transport weight. Just ahead of it are two neatly-packaged water tanks, each with a capacity of around 1000 litres, sufficient for a couple of hours of effective dust suppression without a refill.

The 60t telescopic boom is largely the same as that fitted to the Coleman machine, but tweaked here and there to get the extra 2m of height. On the subject of the boom, it is so heavy that the excavator's two standard rams were simply not up to the task of lifting it off the ground, so Kocurek have added another pair.

All told, when coupled to its new front-end equipment, the modified Liebherr excavator now tips the scales at around 207t.

SITE VISIT

The 67m demo rig splits into three loads, one for the boom, one for the counterweight and attachments, and finally the heaviest load – the base excavator. The excavator itself is transported by a newly-purchased 660hp Volvo F16 tractor unit. So far, it has only been moved twice, from Ipswich to Glasgow and then Glasgow to Newcastle.

TDS is finding that moving such a big load is not without its problems. With a front and rear escort, a five-mile tailback developed during the move down the A69 from Glasgow to Newcastle. Even though they were just 12 miles from the job site, police pulled them over at 5pm and took them to a layby. They were not allowed to continue until early the next morning.

When the convoy eventually arrived on site, there was not enough room for the vehicle to physically turn off Scotswood Road into Clumber Street. They had no other option but to pull down part of the perimeter fence. Even then, the excavator had to be tracked off the low loader to make the last part of the journey under its own steam.

It was here that TDS learnt of the value of paying extra for the flat track pads. "There was no damage the tarmac," says site manager Deric Wright.

TDS is very pleased with Kocurek's back-up service, as they sent an engineer up to Glasgow to help pull it apart and then again to Newcastle to help re-assemble the giant. It took the team just 10 hours to disassemble the demo rig for the first time on site. It was midday by the time the base excavator eventually arrived on site in Newcastle, by 8pm that evening the excavator was fully assembled.

First thing the next morning a Hitachi ZX460 was putting the final touches to the level surface for the big Liebherr to stand on. As final checks were being made to the UK's tallest demo rig, not too far away the smaller R954 was patiently waiting to tackle the lower half of each tower block, and another ZX460 was already tooled up with a 7t La Bounty scrap shear.

With spotters in place in the local park – to make sure there was no dust or flying debris – the all-clear was given to start up the Liebherr's engine, extend the boom and make a start at nibbling away the top of the first building.

It is often said that first impressions are lasting. This is certainly true with this latest demolition giant, which easily reaches the top of the 15-storey Newcastle tower blocks with just part of the three-stage telescopic boom extended. The Cummins engine sounds fantastic, purring at a low speed. When it used to work with the giant shear the excavator drank at least 1000 litres of diesel a day, in this role it sips about half of this.



Although the base machine already had longer than standard tracks, Kocurek lengthened them by nearly a metre for even greater stability.

From the ground, the 1.5t attachment at the top of the arm appears tiny. This structure offers little resistance to it, but we are informed that a slightly heavier attachment would have been welcome for the stubborn lift shafts at Ibrox. With the additional dipper removed, the rig can carry a 2t attachment at 62m, and considerably heavier versions with the three-stage telescopic boom retracted.

Paul Konnick is one of two operators put through the Construction Plant Competency Scheme level 4. In practice, however, Paul is the sole operator after the other – Gary McHugh – was promoted to site manager at Ibrox. Paul reckons only 22 operators in the UK are qualified to this super high-reach level.

Paul was the operator of this excavator when it carried a huge scrap shear and describes its metamorphism to a high-reach demolition machine as simply fantastic. He said, "Kocurek has done a really good job. The machine does exactly what they said it would do and is really stable at height."

He is still not sure about the camera at the top of the rig though and said, "It is not much use. With the dust suppression system on it soon gets caked with dust."

As to the controls, these are largely similar to the standard excavator. However, one feature he does like is that as well as controlling the attachment via a pedal, he has the option to do this using a toggle on the joystick. This has proved much easier, as it means the operator does not have to keep moving his feet.

CONCLUSION

The burning question now is whether there is enough work in the UK for a machine of this size? The official line from TDS is that it undertook a review of the planned demolition contracts throughout the UK and Europe. This review led them to believe that given the additional height it will be successfully utilised over the coming years, either from direct contracting with the client base or through sub-contract hire to third parties.

With five big blocks of flats to tackle in Newcastle and the final building to come down in Glasgow, there is plenty of work for it until the autumn. With other jobs in the pipeline, possibly in Scotland and northern England, it would appear that TDS has gambled wisely.

Even if the high-reach work does eventually dry up, they still have the option to remove the telescopic boom and again use the excavator with the 22t La Bounty scrap shear on the 11m standard boom. In fact, the base excavator is so much stronger now that it even may be possible to mount the giant La Bounty attachment on a small dipper stick at the end of the boom for an even larger working envelope.

TDS has already completed a number of fairly substantial scrap metal demolition projects – some of them quite well known such as HMS Intrepid, which served in the Falklands War. Their biggest job so far was a five-year 100,000t of scrap steel contract to dismantle the Harland and Wolff shipyard in Belfast, which is where the Titanic was built. Other similar projects, including offshore work, would certainly be ideal for their R984 if the high-reach work dries up.

One thing is certain, after just 1500 hours of scrap work with the La Bounty shear and just 400 hours of demolition duty, there is still plenty of life left in their Liebherr excavator, which really does look as good as the day it left the factory.



With the three-stage telescopic boom extended, Technical Demolition Services' modified Liebherr R984C is able to carry a 1.5t tool to a pin height of 67m.