

Extreme machine

Three-piece demolition arms, commonly known as triples, continue to gain in popularity with European contractors. Providing the flexibility to carry a decent-sized attachment a to reasonable height both above the ground and below the water, Hitachi excavators are often used as the starting point.

In a recent issue, we featured the daddy of them all, the Kocurek conversion of a 120-tonne EX1200 to a colossal triple known as the 'Beast' for Heavy Decom International. Now we can reveal there is a second and equally extreme Hitachi EX1200 triple. Made in Holland, it is the result of in-house work by the Dutch Van Leeuwen Katwijk (VLK) Group.

Well known in demolition circles, readers may recall the Dutch company's red livery and white lettering on its two largest machines – Cat 385 and Hitachi EX1200 – featured on these pages a few years ago. The latter forms the basis for the new triple.

The 2004 muck-shifting spec EX1200 from Spain was originally converted by brothers Jan and Andries van Leeuwen so that the boom could carry their newly-acquired Genesis GXP2500R scrap shear. Over seven metres long, the world's largest rotating scrap shear and adapter topped 28 tonnes. The excavator was also required to carry two other extreme attachments, a Mantovanibenne CR100R concrete crusher and MS130R scrap shear.

However, three years later they concluded that while there was plenty of work for all these big attachments, it was at much greater heights. Keen to tackle more tough industrial projects, they decided that their by now nearly 12,000-hour EX1200 excavator needed extensive modifications to match potential projects.

CONVERSION

As a rule, specialist engineering companies, such as Kocurek in Britain, and STC in the Netherlands, tend to be behind many recent extreme demolition giants. Van Leeuwen's creation differs in that Jan, the technical brains behind the engineering works, has sufficient knowledge to have orchestrated and financed this project in-house, working together with a number of specialists.

This Page: With an operating weight well in excess of 200 tonnes, the Dutch Beast is currently chomping its way through a 950m-long quay wall in the Port of Rotterdam.



GORILLA *in the mist*

A stubborn quay wall in the Port of Rotterdam offers the first serious test for a new 200+ tonne demolition monster and its equally impressive 18-tonne attachment, writes Steven Vale.



now measure around 8.5 metres, a good two metres longer than the original components. Each track frame was cut in half and a set of used track frames used to lengthen them.

"We wanted to build as much weight into the lower half of the machine as possible to improve stability," says Jan.

To my mind, simplicity is one of the big features of the Dutch Beast – there is no unnecessary complexity. The team obviously knew exactly what they wanted from the start – a no-frills heavyweight machine capable of crushing everything in its path.

For example, there is no hydraulic track width extension nor any built-in hydraulic jacks to raise the base machine off the ground for track removal and fitting. Instead, with the ballast block and the mid-boom and stick removed, a low-loader trailer raises the remainder of the excavator clear of the ground.

With the hydraulic oil supply hoses disconnected, the only manual task is to pull out the locking pins and turn the ingeniously simple mechanical devices securing the tracks to the A-frame. The track beams then slide out of the excavator's chassis, and are lifted off by a crane.

There is no hydraulically-detachable ballast either. "We need a crane to help move the boom and lift off the tracks, so we may as well use this same crane to hoist the counterweight," adds Jan.

There was no need for the R&D department to work overtime when designing the 32-metre triple boom, which Jan admits was initially conceived on a piece of cardboard. They had no use for the excavator's front-end equipment, but the dipper stick does form the last part of the new three-piece arm. The new main and mid-boom were made in-house. The latter is the result of cutting a used EX1200 boom and dipper stick in half and then welding two sections together!

It was all-change on the hydraulic cylinder front too. The EX1200's original lift cylinders are now relegated to the mid-boom. The excavator's two main lift rams were initially replaced by a pair of dipper stick cylinders from a Hitachi EX1800.

However, even with these forceful cylinders the excavator struggled to lift the newly-developed 45-tonne arm and 18-tonne attachment from the ground. This was solved last autumn by adding a third identical main lift ram and increasing the hydraulic oil pressure and flow rates. At the same time, the weight of the excavator's rear ballast was also increased to nearly 40 tonnes.

Above Left (Two Pictures): Everything below the slew ring was made in-house by VLK. The result is an almost 8m-square undercarriage for maximum stability.

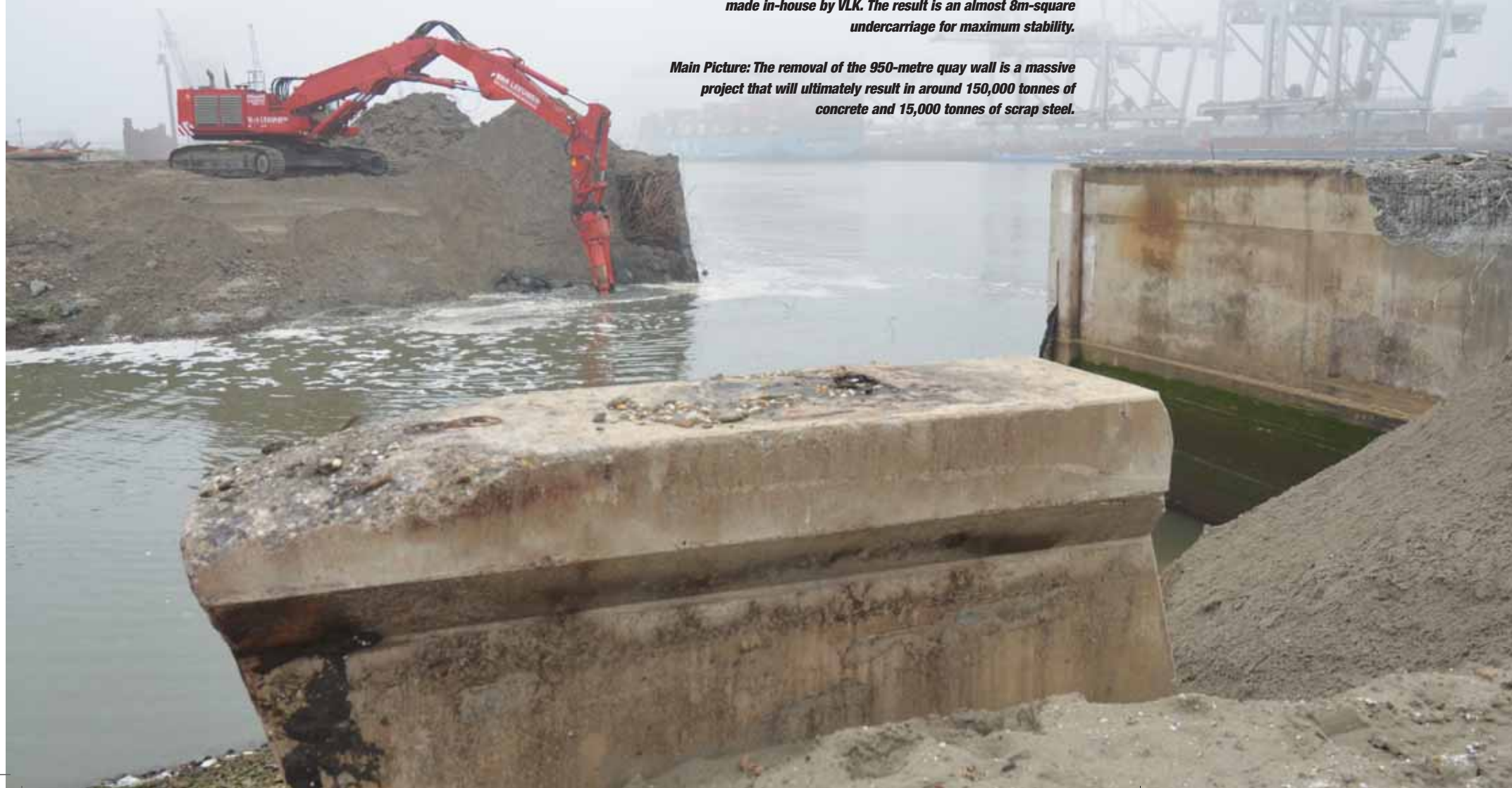
Main Picture: The removal of the 950-metre quay wall is a massive project that will ultimately result in around 150,000 tonnes of concrete and 15,000 tonnes of scrap steel.



Above: During the development work the two main lift cylinders on the original EX1200 were swapped for a trio of larger rams from a Hitachi EX1800.

Top Right: This control panel alters the hydraulic supply to the attachment, while the yellow and red lights are to warn the operator when the three-piece arm is approaching its limits.

Right: The jaws of the 18-tonne MS130R open to 2.5 metres. There are believed to be just a handful of these massive attachments in Europe.





At some point the cab may get 30 degrees of vertical tilt for high-reach work, and the company may even give it 15 degrees of downward tilt for underwater work.

Extreme operator

The operator of the EX1200 is Dirk Bos, a freelancer with many thousands of hours behind the controls of some of the world's most extreme demolition machines. Last year was an interesting one for Dirk and his company Bos Operators. He started the year as supervisor at a prestigious one-month contract to remove a beached tanker from France's rugged west coast, using one of Euro Demolition's heavily-modified Cat 5110 triples. This was followed by a trip to Germany to supervise the first outing with the former 90m machine, after the tragic accident that claimed the life of STC pioneer Ad Zwanink.

The demise of Euro Demolition for the second and final time last autumn could have heralded a low note for Dirk to end the year. However, it ended positively after being recruited by Van Leeuwen to sit on the rejuvenated EX1200.

Dirk reckons the Dutch Beast is similar to work with as the two Cat Triples he used to sit on. "It is very powerful and easy to operate," he says.



FIRST JOB

The first contract for the Dutch Beast was not working at height, but to tackle an extremely tough 950m-long quay in Rotterdam. With the dipper stick removed, the machine is capable of wielding its mighty 25-tonne Genesis scrap shear. This huge attachment is not needed in Rotterdam and for much of the morning of my visit, the excavator's bucket dug up huge volumes of sand from the murky depths.

After lunch the bucket was swapped for another of the EX1200's weapons – an 18-tonne Mantovanibenne MS130R multi-processor. Later in the contract it is planned to deploy the Italian-made CR100R concrete pulveriser on their Cat 385. The quay wall offers a serious test for the EX1200. The structure was built 20 years ago and allowed 22m-deep iron ore bulk carriers to dock and unload their contents at the EMO terminal in the Amazone harbour.

The bad news for Van Leeuwen is that even today it is one of the strongest quay walls ever built in Rotterdam. The bit protruding above the water is just the tip of the iceberg of a structure that was simply not made for demolition. At the bottom of the 8m-high wall lies the front part of the 18m concrete floor comprising a lengthy section of 3m-thick concrete. They may even need to consider explosives to loosen it! It does not end here because below the floor are over 800 28m-long concrete piles, all of which have to come out.

All told, the demolition works will probably result in upwards of 15,000 tonnes of scrap steel and 100,000 tonnes of concrete, which will be re-used at the Maasvlakte 2 expansion project.

The easiest bit of the project – tough as it is – is the first part of the demolition works to remove the three- to four-metre layer of sand from behind the quay wall and then tear off the top few metres of visible concrete. It is not yet set in stone, but it is possible the excavator will stand on a pontoon to tackle the deeper lying concrete.

The mammoth project, the first of its kind in the country, is in the capable hands of the Dutch main contractors Van Oord and BESIX, Belgium's biggest contractor. The reason for the job is easy to explain. The current 300m-wide entrance to the harbour is no longer big enough to accommodate the world's largest container vessels. Removing the old quay wall, and the estimated one million cubic metres of material between it and the new wall, will enable the approach to be widened to allow these bigger container vessels to enter the port.

However, the new 1km-long quay wall needs finishing before Dirk can make a serious start to nibble away the old one. Time is of the essence because it has to be gone by the autumn. Once finished, VLK is confident of being able to find enough prey for its EX1200, such as industrial premises, petro-chemical plants, motorway viaducts and shipwrecks.

Ultimately, the plan is to give the cab 30 degrees of tilt for high-reach work, and possibly devise a system to allow it to tilt down by 15 degrees, to simplify underwater work. But finding sufficient work to keep the Dutch Beast fully occupied in its homeland will not be easy. It is quite possible that the company's latest top-end machine could at some point cross the border, and even take to the water for some offshore work.

Finally, we are sworn to secrecy, but providing it is successful, then the Dutch company is looking to keep the momentum going with a bigger brother. It is a case of watch this space! 🏗️