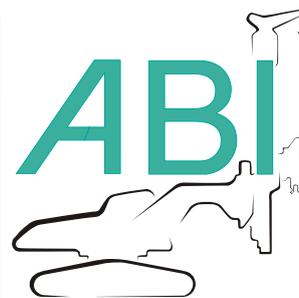


## Renaissance of the Diesel hammer?

*Twenty years ago diesel engine powered vehicles were considered inferior to their petrol engine counterparts. Very few cars on our roads were diesel powered. Much has changed, however, and modern diesels are now more popular than ever. The concept is simple and efficient, delivering performance, economy and reliability – precisely the same attributes of the modern Delmag diesel hammer.*

*Experienced piling personnel will recall the benefits offered by the humble diesel hammer but associate them with the dirty, inefficient and unreliable hammers of twenty or more years ago. Many are curious to see how they have improved but are reluctant to go against the current trend.*

*One UK contractor, however, has been prepared to think outside the box and has commercially benefited from their decision to use modern, reliable diesel hammer technology.*



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**Southbay Civils Limited**, the Newcastle based marine and civil engineering contractor, commenced piling operations for the new Tyne crossing in June 2008. Works involved the installation of 200-linear metres of 'high modulus combi-wall' consisting of 30m long Ø1067x13mm spiral welded tubes interlocked with U-profile steel sheet piles. Piles were being installed conventionally using crane suspended piling equipment and a robust set of temporary works. Driving commenced with a crane suspended vibrator and the plan was to finish drive the tubes to level using a hydraulic impact hammer.

By the end of June 2008 hard driving conditions combined with high rebound forces, typically associated with driving long spiral welded tubes, had proven too challenging for the hydraulic hammer. The single acting hammer, with a 9,000kg ram weight, failed to take the piles to level, stopping some 8-metres short of target.

**ABI Equipment Limited** were asked to supply a new Delmag D62-22 diesel hammer in order to finish drive the tubular piles. The hammer was commissioned on site on 21st July 2008 and within four days 26No tubular piles had been driven to final level. Paul Stephenson, contracts director for Southbay Civils, said "we were a little apprehensive about being the first UK contractor to put a diesel hammer to work on such a high profile project after so many years of their absence from the UK market. ABI Equipment Limited provided considerable support in helping us make the decision to try the diesel hammer. Driveability studies and recent hammer performance data convinced us that the hammer should do the job and do it with minimal impact on the environment. We were working over water so had a duty to minimise environmental impact".



The use of diesel hammers had been considered by Southbay Civils during the project planning stage. However, they had been ruled out over concerns about poor energy transfer efficiency having taken advice from consultants who, with respect, had not been exposed to the use of a diesel hammer in more than 15-years. There were also some concerns that the level of exhaust emissions might not be acceptable.

Paul says that "the hammer has operated reliably, efficiently and with entirely acceptable exhaust emissions. We also found the hammer used far less fuel per shift than anything else and provided us with a very cost effective overall solution".

Delmag diesel hammers use modern technology to ensure modern fuels are burnt cleanly and efficiently. The diesel hammer cannot be beaten in terms of overall efficiency for turning potential fuel 'energy' into impact energy delivered into the pile - it is essentially a two-cycle single piston engine! Hydraulic and air hammers require power packs that use complex diesel engines to convert the same potential fuel 'energy' into hydraulic or compressed air energy. Ultimately, very little of the original fuel 'energy' actually makes it into the pile with such hammers. This explains why the diesel hammer consumes significantly less fuel per pile than an equivalent hydraulic hammer.

The Delmag D62-22 used at Newcastle was mounted in a rope-suspended lead system. Basic hammer weight was 12,250kgs which included a 6,200kg ram weight. Together with the lead system, drive cap and tubular guide the entire set-up weighed approximately 21,000kgs. The hammer had a maximum energy rating of 224,000 kNm and a blow rate between 35-50 per minute. Fuel consumption was around 20 litres/hour plus 1 litre/hour lubrication oil - Delmag diesel hammers can also be run on biofuel or kerosene.



Delmag hammers can be equipped with a hydraulic starting mechanism where they may be used with hydraulic piling rigs, for example.



To find out more about this proven technology, or to discuss how we may be able to assist you with your next piling project, please contact ABI Equipment Limited - the UK subsidiary

of ABI GmbH, Germany, exclusively authorised to supply the full range of Delmag diesel hammers and accessories for hire and sale in the UK and Republic of Ireland.