

Strongest DELMAG diesel pile hammer in Caspian Sea

The largest DELMAG diesel pile hammer D200 will drive piles for an oil exploration project in the Caspian Sea.

At the beginning of this year DELMAG got the order for two diesel pile hammers D200 with suitable lead systems from an Italian company called Saipem. Saipem belongs to the Italian ENI group and carries out the pile driving jobs for AGIP Oil, another member of the ENI Group.

Diesel pile hammers are used to drive piles of any kind in different types of soils. Piles need to be driven into the bearing layer of the ground to assure the stability of the building on top of it.

Diesel pile hammers work after the principle of a one cylinder diesel engine. The DELMAG diesel pile hammer's combustion chamber does have a capacity of 500 l and the piston weight is 20 tons. With the power of approx. 550 HP it is the biggest hammer working after the principal of a diesel engine.

The lead system guides the hammer in "riding hammer" position and weighs approx. 42 tons. The impact plate with a weight of approx. 20 tons sits inside

To support the oil platform, steel pipe pile sections with a diameter of 2,1m, a wall thickness of 65 mm, a total length of 85m and a total weight of 265 tons per pile will be used. Next to these, smaller piles with a diameter of 1,5m, a wall thickness of 40 mm, a total length of 68m and a total weight of 100 tons will be used.

In order to monitor the pile driving process the diesel pile hammers are equipped with an "Energy Saximeter" supplied by Pile Dynamics, Inc. The Saximeter counts the number of blows and calculates the drop height and the speed of the piston, as well as the potential and kinetic energies.

This information is used to provide a report about the efficiency and the performance of the hammer. During the driving process

the number of blows per foot is counted to get a first idea about the load-carrying capacity of the pile. All information recorded by the Saximeter can be downloaded to a computer for further analysis or processing.

To start the hammer a hydraulic starting device, mounted to the back of the hammer, is used. This starting device is run by a hydraulic power pack. Starting device and power pack are connected through a hose bundle with a total length of 160 m. The excessive portion of the hose bundle is wound up on a hydraulic hose reel, which was supplied by DELMAG, as well as the power pack.

All the equipment has to withstand severe weather conditions. In the winter time the temperatures go below -20 C and the sea is covered with a thick layer of



Photo: DELMAG diesel pile hammers D200 bevor delivery

the lead and suits different diameters of piles between 1,2 and 2,1 meters. The impact plate is designed in a way that allows the shock wave to travel into the pile with minimal losses.

In the year 2000 an oil field, which takes the fifth rank in the list of the world's largest "known" oil fields, was found in

the Caspian Sea. The diesel pile hammers D200 will be used to drive foundation piles for several oil platforms into the bearing layers below the sea bed. Even though the average water depth is only 4 meters in this part of the sea, the length of the driven piles is around 80 meters.



Photo: DELMAG rope suspended leads, power pack and hose drum

ice. The oil field will go into production in three stages within the next 16 years. The first plant is scheduled to be finished in 2007.

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