

B.V. Ingenieursbureau M.U.C.

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B.V. Ingenieursbureau M.U.C. (Meeuwsen-Udink-Consult) has been established in 1981 and is as a complete independent advisory engineering company active in design and execution works for all infrastructural works: tunnels, ports, high speed and cargo railways, motorways, bridges, fly-overs, noise reducing structures, housing, warehouses, high rise buildings, car park sub-ground facilities, jetties, quay walls, industrial plants (oil, food, petrochemical), etc. Specialism for all fields mentioned often is foundation techniques.

The office staff finds her background in the Dutch Civil Engineering and in the Geotechnical as well as environmental consultancy practice.

M.U.C. works as a design and engineering company for amongst others building contractors, architects, the government, other engineering offices, private companies. The operations are executed for about 500 different clients, companies and institutes at home and abroad.

The current organisation of M.U.C. comprises 22 employees (a.o. 5 MSc and 4 BSc).

Multifunctional Offshore Crane - Vlissingen, The Netherlands

The project regards a multifunctional offshore crane which loads up to 1.500 metric tons in combination with the 63 meter double main boom.

Introduction

B.V. Ingenieursbureau M.U.C., situated in Terheijden, received from contractor Zwagerman International B.V. the order to calculate different structures for a multifunctional offshore crane.

The project concerns a base structure on which the components of the crane are fitted and the upper structure such as the A-frame, boom, and hoisting hooks. The crane can be set-up in many different boom configurations. This gives the crane an advantage because it is able to carry out different tasks. The whole machine is made of standard S355J2+N steel, except the main boom which is made of steel grade X70. The crane can be placed on a barge or work ship.

There are three different possibilities to make the base setup for the crane, these are:

- The crane is equipped with 450 metric tons counterweight which can revolve 360°

- It can be equipped with a ringer to increase the working range of the machine
- The crane can be fixed to the barge or work ship with shoring, in these situations the crane acts as a pontoon derrick

Calculations

The calculations which are made are: the main frame, the A-frame, the main boom, the hoisting hooks.

Overall description

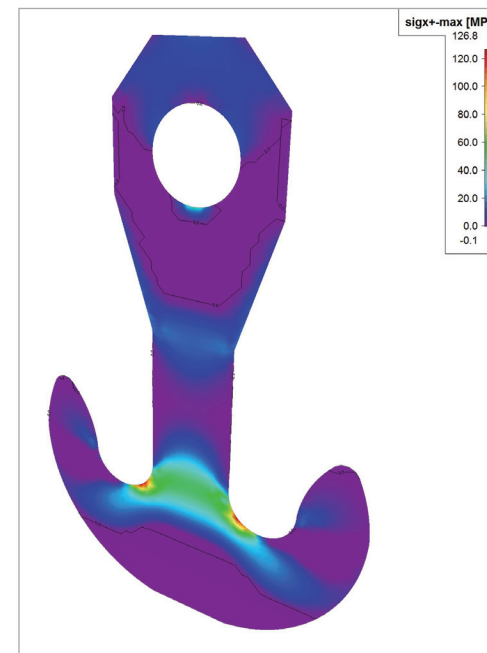
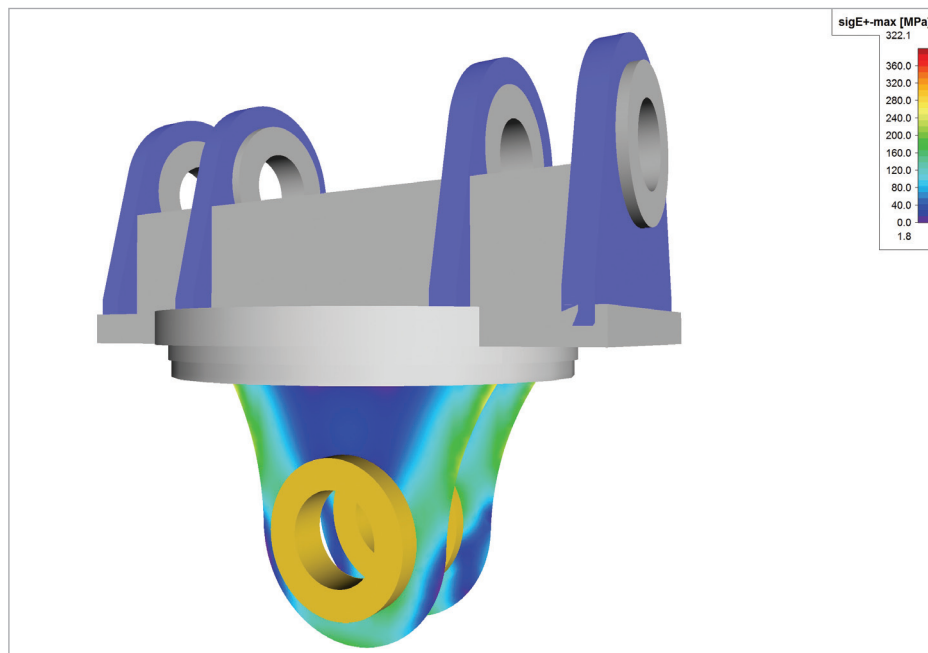
In the figures the model is shown, you see the complete structure assembly of the mainframe, boom and hoisting hook. The main structure consists of steel plates welded together; because the plates have great thickness special weld procedure must be applied.

The main boom is made from steel tubes with a maximum diameter of 406.4 mm; the tubes are joint together by welding. Every section of the boom has couplings on the outer ends so sections can be joint together with special M52 blots. With this system, various configurations can be reached.

There are two types of hoisting hooks, a 1.500 metric tons and a 800 metric ton hook. Both hooks are made out of steel plates and are welded together to form a rigid body. For the slewing of the hooks, slewing rings are used to give the hooks the ability to revolve 360°.

The crane is controlled with a high end electrical installation that monitors every process in the machine.

Every structure is calculated according to the NEN-EN 13.000 standard for mobile cranes. And the complete process is controlled and approved by T.Ü.V. as well.



Multifunctional Offshore Crane

Vlissingen, The Netherlands

Project information

Owner Zwagerman International B.V.
Engineering Office B.V. Ingenieursbureau M.U.C.
Construction Period 2010
Location Vlissingen, The Netherlands



Short project description

The project regards a multifunctional offshore crane that can be composed to be used in many configurations. The main boom of the crane can be set up in several lengths to give the crane maximal flexibility. It consists of two identical boom sections which can be placed one upon each other or next to each other. To increase the boom length, boom sections can be added. The boom can be used as a single or double boom depending on the configuration needed. The machine can revolve 360° to give it a wide working range. The machine can lift loads up to 1.500 metric tons in combination with the 63 meter double main boom.

