

Dredging simulator



A cutter suction dredger is working in the estuary of a large sea harbour. The operator is following the specifications closely: a 'Mondriaan' of coloured squares containing all coordinates for location and depth. Besides the survey data, data of the desired final result are also included. First, a thin layer of dirty mud must be dug off precisely; not too little, because the dirty dredging species must be fully removed separately, but also not too much because in that case too much mud will go to the expensive dumping location. Just at the end of the last sweep, before the spud pole must be shifted, the cutter head stops on a hard obstacle. Action: What must be done? By letting the cutter slowly cut into the obstacle, it seems possible to cut it into pieces and remove it. Valuable time is lost in dealing with the problem. In fact, the dredging enterprise was promised a considerable bonus if the job would be

completed sooner than the date in the contract. After the spud pole has been shifted, the operator continues his routine actions. Almost too late, he discovers that the concentration of sand he is pumping into the drain-pipe is too high. Quick reaction ensures that more water is added to the mixture. In this way he prevents a blocked pipe which would imply being unable to work for days.

This scenario, including many details not mentioned, unfolds in the dredging simulator of the STC-Group. This simulator has been developed in close co-operation with industries from the dredging sector in the Netherlands. Thanks to the mass of detailed knowledge industries have made available, an operator can practise the complete complex dredging process on this simulator.



The simulator

The dredging simulator was built in a spacious room in which six dredging consoles are placed in separate cabins. The control desk of the instructor is in the centre of the room like a thread in the centre of a web. Learners who are being trained as dredging operators sit in front of monitors on which they can activate various screens for the various functions that are of interest in dredging. The operator must divide his attention among several vital parts of the dredging process: the exact carrying out of the instruction according to survey data and contractual stipulations, the technical process of the dredging, co-operation on board and the situation in the environment (repair ships, other navigation traffic etc.). This gives the operator a lot of work, especially with the technical process of the dredging. He must bring the ship into the correct position and keep it there, ensure a proper tempo of sweeping the cutter arm, determine the correct number of revolutions of the cutter head and ensure optimal production and the correct ratio between water and sand.

Flexible

Actual survey data of any conceivable location in the world can be fed into the program of the simulator. The simulator program is able to supplement depth data from the survey with data about the nature of the submerged bottom layer. The information can be refined to squares with a grid of ten centimetres. The instructor can add all possible influences like kinds of soil, movement of tides, surge, obstacles and the functioning of the pumps to convey water/sand. Learners experience everything like a reality which hardly differs from actual practice on a real cutter suction dredger. That is what it is all about, because it is unthinkable that an expensive dredging ship would be used for training.

Like all other simulators of the STC-Group, the cutter suction dredger simulator registers every action of the learner, making it possible after the exercise to analyse the course of the process step by step and discuss mistakes made.

Effectiveness

Dredging training by means of the simulator of the STC-Group has led to strengthening the competitive position of the Dutch dredging industry, which is already the largest in the world. The training is on a high level, and dredging personnel go to sea well prepared. Surge, shallow water, various lengths of the floating transport pipe, but also unforeseen circumstances: they have experienced all this several times on the simulator. Thanks to well-trained personnel, Dutch industries can achieve a greater return. For instance, learners have experienced during their training – without causing actual damage – what it means when they let a pipeline run full of sand. They have also learnt how to prevent such a situation. Thus, working with the cutting head sucker simulator pays off!

Further information

For further information about this and other simulators, you can contact STC B.V. STC B.V. is a subsidiary division of the STC-Group and responsible for non-subsidised activities. STC B.V. provides standard courses as well as courses that are tailor-made for your industry. Included in STC B.V. are the contract education division of the Shipping and Transport College, Maritime Simulation Rotterdam B.V. (MSR), Dynamar Consultancy B.V. and the International Maritime Transport Academy (IMTA).

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