

Web-based distance learning: The key to efficient training for cutter suction dredger operators

Dredger operator training

With dredging technology becoming more complex by the day, skills and knowledge of dredger operators must continuously be upgraded.

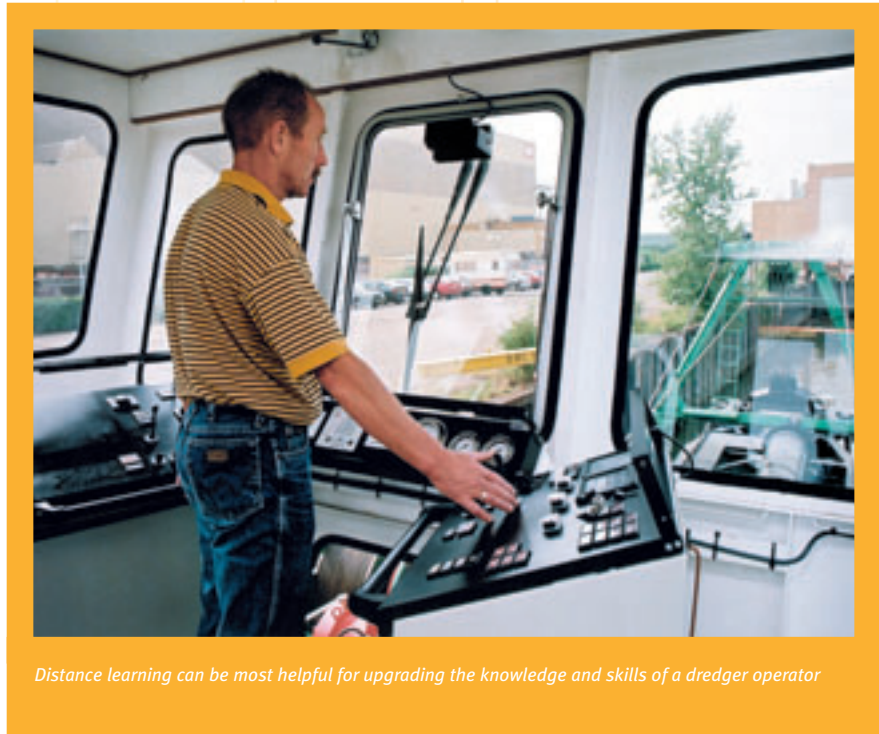
Consequently, intensive training is a prerequisite for efficient control of modern dredging vessels.

Regular training in the field of dredging is worldwide available at various levels of teaching, though generally limited in scope. The larger dredging companies therefore have in-house training, but for the majority of companies such facilities are beyond their means.

TID (Training Institute for Dredging) offers a solution with a variety of training facilities. Alongside open classes, such as TID's annual General Dredging course, TID also organises adapted or customised courses, on-the-job trainings and equipment trainings for individual clients. These training courses are all given by TID dredging specialists, thus guaranteeing a direct transfer of knowledge to participants.

Distance learning

These training activities are highly regarded by participants and their employers. Time and distance may, however, prevent attendance of such courses and therefore TID has introduced distance



Distance learning can be most helpful for upgrading the knowledge and skills of a dredger operator

learning as an alternative tool.

A trainee can follow an individual training in his own time, pace and place, and behind his own computer. Distance learning is gaining more interest as an efficient educational method and can be most helpful for upgrading the knowledge and skills of a dredger operator.

Cutter suction dredger operator CD ROM

TID developed its first distance learning tool in 2001, together with international contractor DEME. The comprehensive training course for cutter suction dredger operators on CD ROM can be used for individual training. Running the full course will take approximately 3 – 4 hours, but subjects can also be selected in any sequence the user desires.

The subjects are explained by a voice-over (English and Dutch) and topics are further enlightened by pictures, graphs, animations, diagrams, text and video fragments.



All TID's training courses are given by dredging specialists



Integrated simulator bridge

This interactive training tool makes it possible to significantly improve the understanding of essential aspects of cutter suction dredging in a very short time and will enhance basic knowledge of operators.

Simulator training

Efficient operation of modern dredgers, however, also requires many cubic metres of experience, which can only be gained by actually operating a dredger. Training on board a modern dredger costs uneconomical amounts of time and production, though, while training awkward situations may be prohibitively precarious. Therefore, with the use of simulators firmly established in training schemes for handling big capital goods, such as ships and aircrafts, simulation is now widely used in the dredging industry as well.

Simulators are used for regular educational purposes by a number of nautical

colleges in the Netherlands. A happy few of the larger dredging companies have their own facility. Early in 1990, TID and IHC Systems already joined efforts in developing a cutter suction dredger simulator and recently a dynamic hopper dredger simulator was developed for Belgian contractor Jan de Nul. A similar unit is available for TID.

These simulators have a number of consoles, showing the dredger's control functions and input/output of different dredging processes. The link between information and actual dredging simulation is usually based on PLC-controlled automation. Modern simulation technology achieves a high sense of realism: it actually feels like operating a real dredger. There are snags, though. The simulator unit will be part of a training facility with simulator room(s) and classroom. This requires a relatively high investment and high maintenance costs.

The limited number of trainees who can simultaneously work on a simulator further adds to the costs, certainly so if the ratio trainer to trainee is considered.

Web-based simulator tool for cutter suction dredgers

IHC Systems and TID are in the process of developing a more practical simulation solution for cutter suction dredgers.

It should allow a trainee to do the simulation on his own computer, without the guidance of a teacher. The program uses a separate soil model and dynamic simulation model, but without the PLC-controlled automation, so that the simulated dredger can only be operated manually. Various types of cutter suction dredgers will be available, each defined by its own configuration. The trainee will find the corresponding control unit on the lower half of his monitor, while the top half of the screen shows a front view or rear view, pump & pipe line characteristics, or a dredge profile. The simulated dredger is controlled by mouse and switchboard options. Access to this simulator program will be controlled by web-based data transfer.

Combining TID CD ROM training with new cutter suction dredger simulator

This web-based cutter simulator gives easy access to a practical training tool at relatively low costs. It will allow the trainee to gain more insight in the practical operation of a cutter suction dredger and rapidly prepare him for efficient control of the real thing.

Different training scenarios are developed and each one will show the trainee what to do in which circumstances. Furthermore, the trainee may use the simulation program to run his virtual dredger and practice operation. A test option is provided to check the acquired skills of the trainee and compare these with those of experienced dredger operators.

Since in-depth knowledge of the dredging processes is essential for efficient operation, the new TID cutter suction dredger simulator will be combined with the CD ROM training. The training setup is defined in such a way that using both

tools will help the trainee to rapidly make his skills operational.

Advanced application of the new cutter simulator

Though developed mainly for use as a distance learning tool, the new cutter suction dredger simulator may also be used in classroom training. The teacher can control the input data directly by using a classroom server with connected computers for trainees. Additionally the cutter simulator can also be used by IHC Systems as a testing facility for dredging automation and control units and for the development of new

automation applications. In this way the new cutter simulator not only provides a new training tool for operators, but it can also be used for developing new means of control and automation.



TRAINING INSTITUTE FOR DREDGING

The new cutter simulator



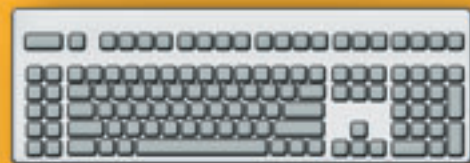
Different dredger configurations



Different dredger soil & environment



Different scenarios



- Easy to access and to use on any PC in the world
- Fit for self study
- Extensions and updates distributed via internet
- Generates training evaluation reports
- Trainee can select variables such as: different dredger configurations, different dredger soil and environment conditions, different scenarios