



Worldwide dredging with AutoCAD Civil 3D

With projects like Port2000 in Le Havre and Pearl of the Gulf in Qatar, the work of the dredging company Dredging International is becoming ever more complex and demanding. And because projects in this sector are always changing, flexibility is a must. Fortunately, Dredging International's survey department has discovered the many advantages of working with AutoCAD Civil 3D.

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Project summary

"The role of the contractor in the world of dredging has changed a great deal," explains Erwin De Jonghe, head of Dredging International's survey department and responsible for land surveys, hydrography and calculating the volumes of earth worked and to be worked.

The company's 70 employees work across the globe supported by six staff in Zwijndrecht. De Jonghe continues: "In the past we tended to be directly involved and projects were much simpler. Now we are part of larger projects in which the private and public sectors work together.

"For these projects the preliminary study is performed by the authorities. The contractor not only does the dredging work, but also manages the project. Then there are "Design and Construct" systems that are used on huge, mega-projects. In these cases, the contractor does the negotiation, sometimes directly with the study bureau, and is responsible for the delivery of a turnkey solution.

"So, increasingly we have to advise our clients and we have to be able to handle studies. What will happen to the cost price if we move the channel to a deeper point? What happens here if we use cheaper materials?"

Calculation and recalculation

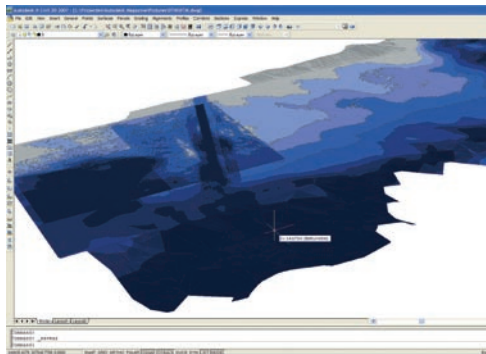
Bart De Maesschalck is responsible for the survey department's software. He explains: "Until recently we worked with a combination of Autodesk Land Desktop and Excel sheets with co-ordinates. Even with small changes we often had to entirely recalculate the project. Producing a diagram that showed the best position for a channel was a gigantic task."

This constant need for recalculation is typical of the dredging sector. There are constant changes and replacements, channels are laid, land reclamation displaced ...

During Dredging's search for a new solution, things didn't happen overnight. Suitable vendors were given multi-page questionnaires and trials were organised. De Maesschalck: "We needed a solution that could be solution used worldwide - even in the furthest corner of Africa.

Therefore, a basic requirement was that it ran on Windows.

"The chosen solution would also have to cope with up to two million points. With hydraulic engineering we process measurements from the ground in a matrix. If you bear in mind here that we are working on projects with 40 kilometres of dykes and 28 special islands, then the picture suddenly becomes clear.



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Testing and customisation

The results of the trials were more than convincing and Technosoft was given the order to supply AutoCAD Civil 3D. Dredging International then embarked on a pilot project laying out a port and run in parallel, both on the old solution and on AutoCAD Civil 3D. The results were compared and the differences assessed.

De Maesschalck says: "Of course, we noticed immediately that you could see differences in the blink of an eye in 3D – and without having to interpret lists of numbers to do it. So for instance, you see straight away that there is a hole somewhere in the ground. So you know you need more material there and that the price will be higher."

For two months Dredging International and Technosoft worked together intensively. De Maesschalck continues: "AutoCAD Civil 3D is not a specialist software for dredgers. But because it is an open platform, we were able to have it adapted closely to our requirements – for example by reinterpreting objects."

"In addition, the materials to be processed vary greatly in price from cheap mud to expensive stones. We therefore strike a compromise between approximation and precision. So in dredging we don't look at anything a thousand cubic centimetres or smaller. For instance, the load of our trailing suction hopper dredgers alone is a hundred cubic metres."

"But when we are building dykes we have to work with much more precision. In fact the cost price of the material in this case is especially high."

Invaluable time saving

"We would, of course, still be able to calculate our projects with the old system. But, to be honest, we'd rather not," explains De Maesschalck. "We now spend more time on the initial planning than earlier because we work in

more detail. But thereafter, the time saving on the many adjustments is invaluable."

"The more time we invest in the basic detail and the more complex the profiles, the greater the reward. So we have, for instance, a dyke profile with ten layers that we would otherwise have to draw and calculate one by one."

"The work is also more attractive thanks to its visual aspect. We don't input any numbers, we draw. Vertical input in co-ordinates is a major task, vertical drawings are a piece of cake. If you take data from a drawing program and input them, you also have more chances of making mistakes. Since we are working with objects, we can now amend a rotating image in two hours. This used to take two days. And since we can see what we are building, we are confronted immediately with the inconsistencies."

De Jonghe adds: "Working in 3D is also particularly practical when communicating with the client. The situation is immediately apparent without you having to convince him. Moreover we can generate data for all parties within a project: from designers to clients."

"All the data just flows through from the study level to the execution. Different parties often arrive at different results. With this software we no longer need to defend or explain our calculation method."

Future plans

Dredging International is only at the start of its "AutoCAD Civil 3D adventure". "Now we constantly do volume calculations from studies," says De Maesschalck. "It is our long-term aim that sites will also be equipped with AutoCAD Civil 3D for the follow-up."

De Jonghe adds: "In the future we will definitely make even greater use of the opportunities provided by AutoCAD Civil 3D. For instance, this solution will let us issue the same data internationally, with local styles in Arabic, for example. From our point of view AutoCAD Civil 3D can be introduced immediately into engineers' training."

For more information

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