



Dredging automation

Royal IHC employs the Bachmann platform on its standardized Trailing Suction Hopper Dredgers

Royal IHC is an established name in the dredging industry. In fact, the Netherlands-based company has built up more than 300 years of experience delivering dredgers and dredging equipment to customers all over the world. Due to this long history, Royal IHC is the ideal company to approach to see how dredging is in a state of constant evolution, with new techniques born out of supplier innovation and client demand.

Taking Royal IHC's standardized trailing suction hopper dredger (TSHD) Easydredge® as an example, it is clear to see that systems automation plays a vital role in the modern dredging industry.

The Easydredge is Royal IHC's range of smaller-sized TSHDs, with hopper (cargo) capacities from 700 up to 3700 cubic metres. For larger hopper capacities, Royal IHC directs its clients to its Beagle® range of standardized TSHDs or custom-built vessels. Easydredge marks itself as cost effective, easy to operate and capable for diverse dredging jobs such as maintenance of ports and navigation channels, and small land reclamation works.

Regulation automation

The Easydredge series not only uses a standard design; the vessels are also installed with standard automation and control equipment, explains Jeroen Peters, engineering manager at Royal IHC Systems. "This is a very efficient way of shipbuilding. We can reduce lead times and reduce costs."

Our Dredge Control System focuses on operational efficiency and is designed to be very operator friendly. We are flexible in the brands/suppliers we use to build the system. We use suppliers like Rockwell, Cimplicity, Proface, Moxa, Siemens, Wago, but we also build several control systems with the help of Bachmann hardware and software. In every case our dredging knowledge is captured in our own modular software platform called Digisys. This enables us to configure the desired functionality of the control and monitoring system very efficiently.



▼ The Easydredge series vessels are installed with standard automation and control equipment

To improve efficiency, we add automatic controllers like, a pump controller (maintaining flow) or suction pipe control to steer and safeguard the pipe position or a controller that maintains the trailing speed adds Pieter de Boer, Royal IHC's lead engineer.

"We use e.g. Bachmann to integrate all this automation into the control system. We want to deliver an integrated system to the client, so it is important that the end user interface has one look and feel. atvise® is a great platform to build the visualization for the operator. It is as very user-friendly platform for engineers to design and make the HMI's."

Market pull & Technology push

The dredging industry illustrates a phenomenon that is most probably visible throughout the maritime industry: that of the different needs of 'old school' and 'new generation' ship crews. "The dredging market is quite conservative; it can sometimes be difficult to introduce innovations," says Jeroen. "But we are seeing an opportunity: the younger generation is coming on board and they are more open for new automation techniques. This gives us the chance to apply automation software that supports them



in operating the ship. At the end of the day, it is always a balance between 'market pull' and 'technology push'. Of course, the market demands certain developments. But, on the other hand, it is also important for us to promote new technologies that can support our clients." Automation techniques like one-man bridge control to reduce the crew onboard and virtual reality to control and maintain the vessel. Density measurement with radio activity needs certification and capable crew, therefore we developed an easier alternative with radio frequency or density estimation based on other sensors.

Identifying the bottom line

Given the long history of dredging (first observed in channels in the river Nile 6,000 years ago), the subject of automation is obviously quite new. However, as on-board crews get smaller, and onshore support teams get larger, the role played by automation is only set to become more significant in the future. For Jeroen, it is the versatility of the Bachmann platform that will provide an important benefit. "We all need each other. Royal IHC needs the practical experience of the dredging companies. They need us to translate that experience into better equipment. And the Bachmann platform gives us the flexibility to build an automation system to fit the need of our clients and gives us as systems integrator so many possibilities to integrate new technologies."

- ▼ The Easydredge is Royal IHC's smaller-sized standardized TSHD's, with hopper (cargo) capacities from 500 up to 4.000 cubic meters



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Our Highlights in the Maritime Sector



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