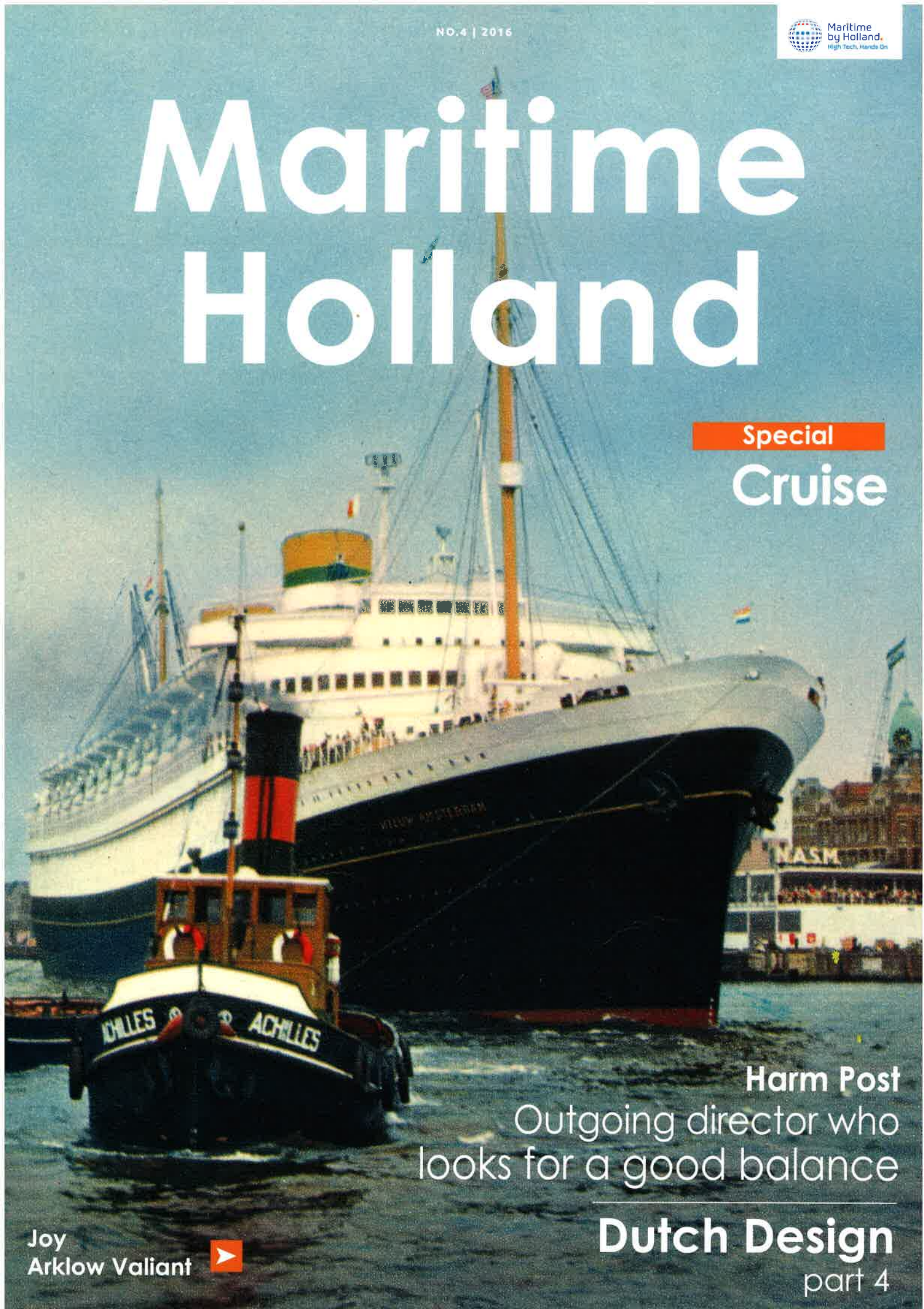


Maritime Holland

Special
Cruise



Harm Post
Outgoing director who
looks for a good balance

Joy
Arklow Valiant 

Dutch Design
part 4

SeaDarQ:

Chasing oil spills with the latest technology

A lot of green technologies revolve around efficiency. Normally it is about making more with the same amount of energy. Sicco Kamminga of the company Nortek BV does the same, only he makes data more efficient. With a technique called SeaDarQ, a radar-based tool, it is easy to spot oil spills from a large distance, making the cleaning process much more effective. "With SeaDarQ you can detect the oil before it washes ashore. Cleaning up oil when it floats on water is much easier than when it sticks to rocks or is laying on the beach." This summer, a light version of the system will also be available.

Sometimes a technique is so good, you have to make it less accurate to make it useful. This is the case with Radio Detection And Ranging, better known as radar. Modern radar systems used in the maritime industry gather a lot of information of its surroundings. Users of maritime radar are normally only interested in vessels, but also smaller objects and even the waves pop up as every radio wave that comes back is being processed. So a lot of information is being filtered out as radar systems concentrate on ships and boats.

Using all the data

Fifteen years ago TNO, the leading independent research organisation in the Netherlands, decided to look into the extra radar data to see if they could find a useful purpose for it. The researchers found out that variations of the surface of the sea could be made visible. "Oil is lighter than water, forming a thin layer on the sea surface on which the radio waves react differently", says Kamminga. In the beginning the bottle neck was

computer performance. A lot of processing power is needed to analyse the extra data. "Think of it", says Kamminga, "some radars scan an area every second and a half creating a lot of information." But as computers became more powerful, they were able to enhance the potential of the extra radar data.

One of the first test cases came in 2002 when oil tanker mv *Prestige* split in half during a storm off the coast of Galicia, causing the largest environmental disaster in the history of both Spain and Portugal. Huge oil slicks had to be cleaned up. Rijkswaterstaat, part of the Dutch Ministry of Infrastructure and the Environment, sent the ship the *Arca* to the disaster area. The *Arca* is an oil spillage recovery vessel with sweeping arms and this time they had an ace up their sleeves; SeaDarQ. The cleaning operation was a huge success. Normally oil spills had to be detected with the naked eye. "But with SeaDarQ the *Arca* could also be functioning during the night", says Kamminga. The ship worked the area for two months and because of the night shifts it was very effective.

Developing the product

After TNO invented the technique, an independent company tried to commercialize SeaDarQ. This company went bankrupt in 2011 and Nortek BV, Dutch subsidiary of Nortek AS based in Norway, stepped in to acquire SeaDarQ. The Nortek group manufactures acoustic instrumentation for current and wave measurements. Main offices are located in the United States, China, Brazil, Norway and the Netherlands. In the last five years Kamminga, who has a background in physics and mathematics, worked with his team on further development of SeaDarQ.

They invested a lot in making better visuals. "We 'cleaned up' the screen, making the oil slicks stick out more." SeaDarQ can distinguish oil spills from algae, variations caused by wind and shadows from land or vessels. Another improvement is that an alarm goes off when an oil spill is detected. "This extra feature comes in handy when SeaDarQ is operating from an oil platform or light house. You don't have to watch the radar all the time."

To spot an oil slick is one thing, but what you really want to know is where it is heading. Next to locating the spill, SeaDarQ is capable of identifying the pattern of ocean currents. The system shows currents during a full tidal cycle, as well as during storms, in a detailed and easily understandable manner. "To know how the currents are flowing and what the path of the oil spill is going to be, gives you better insights how to coordinate a cleaning operation", says Kamminga.



The Arca is an oil spillage recovery vessel with SeaDarQ on board
Photo by Flying Focus



Cleaning up an oil spill

Early action makes the difference

Current SeaDarQ users include eight standby vessels from the European Marine Safety Agency (EMSA). After the *mv Prestige* oil spill there was a demand for a network of ships that could respond directly after a spill. The vessels of EMSA are spread over the European coast and can act when necessary, reducing the spill's footprint through early action. Because together they constantly scan a large area, it is also possible to see the origin of a spill. This helps in seeking out who is responsible for leaking the oil.

Kammaing is not only targeting environmental agencies with his product. When it comes to the petroleum industry, SeaDarQ can be of use too. If something happens companies can give rele-

vant information about the spill to the authorities, environmental groups or the media. "With the disaster with the Deepwater Horizon oil rig, BP was in the dark on how the spill was evolving. With our product companies can show they are in control of the situation by providing accurate data."

To tap into that market, Nortek is launching a lighter version of SeaDarQ this summer. "The BP oil spill opened a lot of eyes in the industry. It had a huge effect on BP, almost toppling the multinational", notes Kammaing. The cheaper version of SeaDarQ can be installed on, for instance, workboats. "To clean up a spill you need information about it. The sooner, the better."

Jaap Proost



A screenshot of SeaDarQ

