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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.

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 bottleneck 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.

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 invented 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 lighthouse. 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 patterns 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.
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.

Kamminga 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 relevant 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 Kamminga. 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

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