

Identification of Oil Spills from offshore structures.

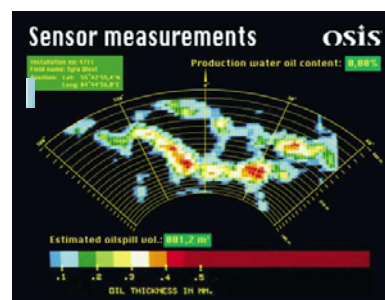
Presentation of methods and results from the Oil Spill Identification Sensor (OSIS) project.

The key driver behind the development of the OSIS sensor system was to pursue implementation of the MARPOL 73/78 annex 1 protocol on offshore structures in line with what is already implemented on vessels. Due to the high number of offshore structures within the “Special Areas” these structures have so far been subject to exemption from the MARPOL 73/78 annex 1 directive. The main reason for this regulative exemption is the lack of surveillance methods capable of monitoring oil spills from offshore structures effectively. The objective for the OSIS project is to develop and demonstrate a sensor system mounted directly on offshore structures performing 24hours a-day surveillance, hereby providing the means to remove the legislative exemption.

A prototype model of the OSIS sensor system has been built in 2003 and tests are currently being performed onshore as well as offshore, demonstrating the capability of the system to identify and measure volume of oil spills effectively.

The input to the OSIS system is collected by a Sensor Pack based on advanced microwave sensors placed on the offshore structure. The Sensor Pack is continuously monitoring the surrounding waters measuring both area and volume of oil spills. Based on data from the Sensor Pack a rule based pattern recognition system identifies the oil spill. When an oil spill is detected pictures are transmitted to an onshore based Central Server. In the paper various sensor types and oil detection systems are discussed and the resulting components in the OSIS system are presented.

Governmental and non-governmental target groups can have access to the info screens illustrated below via a traditional web interface. The end user is presented relevant information about the location of the rig, status of the sensor measurements and in case of an oil spill, the estimated contamination area and amount spilled. Data is transmitted into an onshore database by a satellite link from a local positioned master unit, gathering data from up to 16 sensors placed on different offshore rigs.



The OSIS sensor system has been tested under controlled conditions by discharging various amounts and types of oil on a water surface. The paper will present these results and discuss the accuracy that can be expected from the oil volume measurements.

The OSIS demonstration project was started in December 2001 after receiving commitment from the Danish Environmental Protection Agency and Danish Energy Agency to build a prototype system. With financial support from LIFE Environment and the Ministry of Science Technology and Innovation, OSIS International pursued the objective of designing a sensor that was able to monitor oil spills from offshore structures.

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