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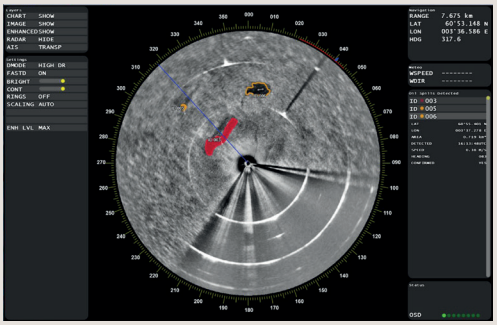
X-band Radar processor

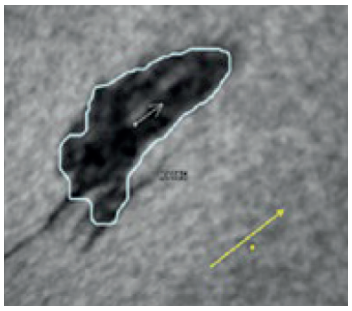
# SeaDarQ Oil Spill Detection

Long range, high resolution



Using a high resolution marine X-band radar, the NORBIT Aptomar SeaDarQ System can automatically detect and monitor oil spills on the ocean surface. Using a combination of fast update rates, high horizontal resolution and low detection limits, the SeaDarQ oil spill detection system is both cutting edge technology and well proven. Oil spills are detected automatically, and the advanced algorithms identify even the smallest spills and reduce false alarms to a minimum.

## FEATURES



- Oil spill detection in low visibility and darkness
- Fully automated with low false alarm rate
- Range up to 4nm, based on radar height and weather conditions
- Automatic detection with spill outline and area determination
- Calculate the position, area and drift of the oil slick
- Historical playback of potential and verified detections
- Integrated with any camera system
- Integrated with ENC map, AIS and ARPA targets
- Tested and verified by NOFO and EMSA

Integrated into the SEACOP VTMS System

Interfaced with both onshore and offshore radars

Built in work process management, documenting the OSD process

Vessel data cards for vessel risk assessments

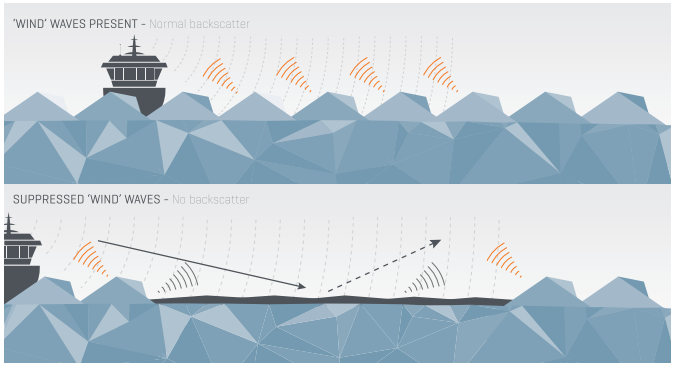
Integrate with infrared camera systems for visual verification and relative oil spill thickness measurements

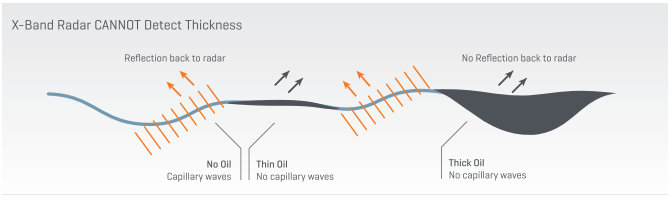
# HOW DOES IT WORK?

OSD Radar Processors monitor the presence of capillary waves, caused by the wind passing over the water surface. It does this by detecting the radar backscatter caused by the uneven water surface. This back scatter is filtered out of normal navigation radar to give a clear image of large, hard edged targets. Oil floating on the water surface supresses the capillary waves, this in turn provides no backscatter to the radar. When an OSD Radar processor detects an area with no capillary waves it alarms as a possible oil spill.

OSD Radar will then measure the area of the suspected slick, and will go on to calculate the speed and direction of drift of the slick.

To be operational, the radar needs wind between 2 and 12 m/s. Also note that x-band radar systems CANNOT measure relative or accurate thickness of an oil slick. This would break the laws of physics. To measure relative thickness, the most cost efficient is using infrared camera systems, cooled or uncooled.




# TECHNICAL SPECIFICATIONS

*Specifications subject to change without any further notice.*

## SeaDarQ SCANSTREAMER A/D CONVERTER

| | |
|---|---|
| Video input | -10 to +10 V analog, selectable input source |
| Trigger input | 0-18 V |
| Azimuth input | 0-15 V / RS422 pulses, up to 4096 pulses/revolution* |
| North reset input | 0-15 V / RS422 pulses, up to 4096 pulses/revolution* |
| Data communications | RS422*; baud rates: 4800, 9600, 38400 bps, UDP network |
| NMEA interfaces for housing | GPS, Gyro, AIS, Meteo, Echo |
| Housing | 19" rack mountable, height 2HE |
| Supported radar types | Sperry BridgeMaster E series<br>Raytheon MK II<br>Furuno FAR-2xx7 series<br>Terma Scanter 2000 series<br>GEM SU047<br>JRC selected Generic types |
| Power consumption | 30 W |
| Dimensions | 480x90x300 mm (19" rack mountable 2HE) |
| Weight | 3.42 kg |

## FEATURES

| **General** | |
|---|---|
| Image presentation | Display of radar reflection intensity, zooming, panning, scrolling, overlay of geocode information, AIS, world coastline database. Software STC (Sensitive Time Control), adjustable gain control |
| Detection range | Depends on wind conditions. |
| Resolution | Better than 3.75 m (short pulse modes) |
| Operational wind speed | > 2 m/s (auto switch-off at low wind speeds when meteo sensor is connected) |
| Vessel movement compensation | Real time<br>Recording of raw data<br>Snapshot (GeoTIFF) |
| Other software features | Diagnostics (Sperry radar, PC) |
| Language | English and Chinese |

| | |
|---|---|
| Spill animation | Up to 2 hours |
| Oil spill tracker | Display of area, speed, direction, time of first detection |
| Polygons | Polygon outline and area |
| Ship shadow detector | Detection of ships and shadows behind ships |
| Shadow detection | Detection of shadows behind land and fixed objects |
| Detection modes | Low false alarm rate / normal / high detection rate |
| Alarms | Audible / on screen |