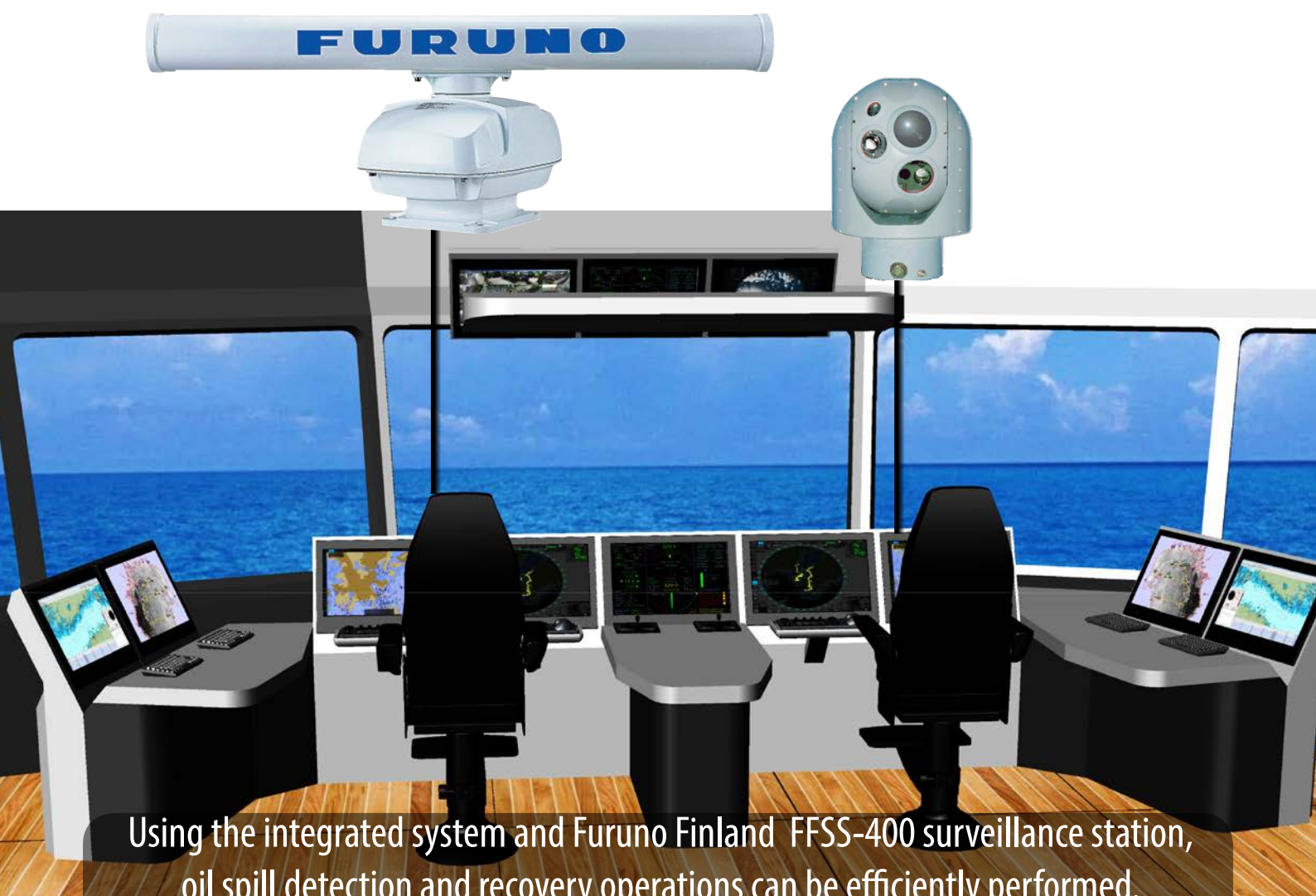


Integrated Oil Spill Detection System



Using the integrated system and Furuno Finland FFSS-400 surveillance station, oil spill detection and recovery operations can be efficiently performed.

Oil spill detections received from the oil radar can be rapidly verified with the workstation GUI integrating thermal camera and oil spill polygons to the same display. Recording of the situational picture and oil spill detections with the same system gives good possibilities for enhancing the environmental protection capability at sea and harbours.



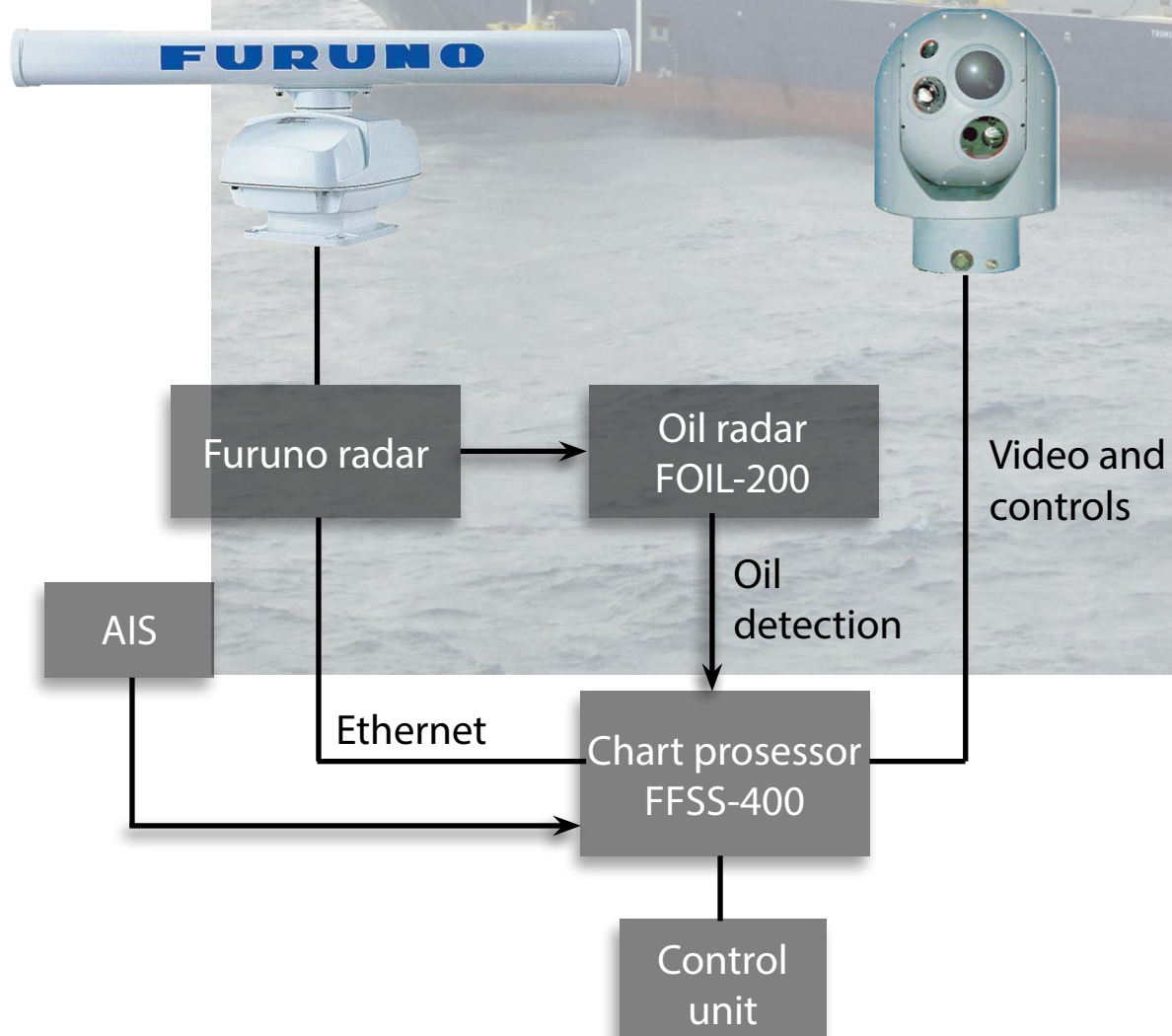
FURUNO FINLAND OY

Furuno Finland Integrated OSD system introduction

Furuno Finland integrated oil spill detection and surveillance system can be installed and operated either on board the vessel or in control centre connected to fixed shore based sensor stations. The system consists of following sub-systems

- Furuno radar system (eg. Furuno FAR-2xx7)
- Furuno Finland oil radar FOIL-200
- Thermal camera
 - Stabilized cooled thermal camera (Eg. Controp QUAD-2 or DSP-1)
 - Uncooled thermal camera (Eg. FLIR M-series)
 - Furuno Finland Oy Dual camera for fixed installations
- Furuno Finland Surveillance station FFSS-400

All sub-systems are integrated together to establish efficient operation platform for oil spill detection and surveillance activities.



Oil radar FOIL-200

Furuno Finland FOIL-200 is cost efficient oil radar processor to be connected with standard X-band Furuno navigation radar. FOIL-200 provides oil spill visualization and manual or automatic detection of oil spills. It forwards oil spill detection polygon to the FFSS-400 chart processor.



Thermal cameras

Thermal camera can be used to verify the oil spill detection received from the oil radar. Stabilized cooled thermal cameras can be integrated in the system. Supported models are Controp QUAD-2 and DSP-1 which can be installed in the offshore patrol vessels and patrol boats. Other manufacturers' models can be utilized upon request.

Uncooled lower cost FLIR M-series models can be used in the shorter range vessel systems and onshore based protection systems. For the fixed sensor stations Furuno Finland surveillance dual camera (daylight and thermal units) can be integrated. Different options for optics and sensors are available.

FFSS-400 Surveillance workstation

Furuno Finland Surveillance station FFSS-400 is the integration center of the system with following functionalities

Efficient chart engine for official ENC charts

Navigation radar integration

- radar echoes display
- radar control to track new ARPA targets

Situational picture creation

- radar tracks
- AIS tracks
- manual targets
- external targets

Oil spill detections

- detected polygons display

Camera direction and zoom sector display

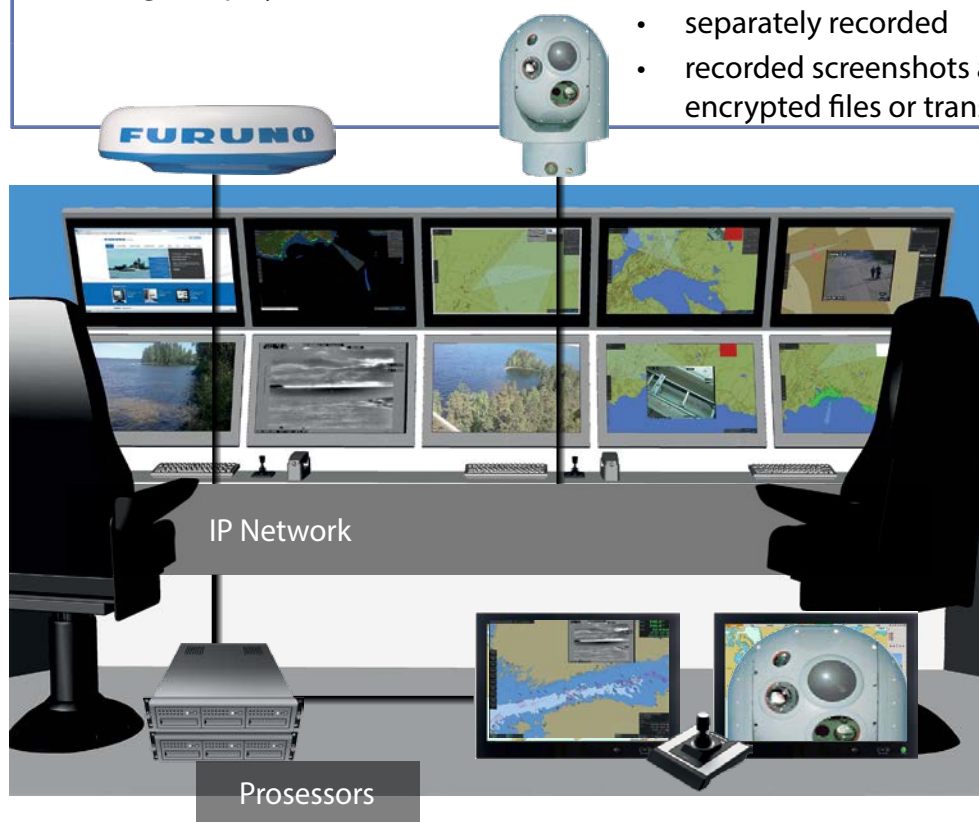
Camera video display

Camera control

- manual control
- automatic tracking of selected target

Recording and playback functionalities

- both workstation screenshots and camera video are separately recorded
- recorded screenshots and videos can be exported as encrypted files or transmitted to external systems



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