

'Holland' Class Offshore Patrol Vessels for the Royal Netherlands Navy

- **P840: HNLMS Holland**
- **P841: HNLMS Zeeland**
- **P842: HNLMS Friesland**
- **P843: HNLMS Groningen**



Briefing

ACO Marine was assigned with assistance and consultancy, manufacturing, delivery and assisting with the installation of the complete system for collection, transfer and treatment of grey and black sewage waters.

Vessel description and assignment

High-speed patrol boat of the newest generation. It protects Dutch territorial waters and the EU borders. The assignment required reliable equipment accomplishing both the highest demands of the latest norms and requirements for the maximum capacity effectiveness. Overall demands as for the capacity were calculated to 17.25 m of wastewater. ACO Marine cooperating with the shipyard engineers proposed a complete system for treating the effluent water.

Proposed systems for transportation and water treatment

- Maripur 100 complete with modularly mounted black water vacuum collection system and grey water transfer system
- Lipomat NS2 complete with lift station, grease and sludge pumping system

Capacity (based on project specific details)

Number of equivalent inhabitants 90 PE
 Total volume of treated water 23 m³
 Total volume of treated grey water 15,75 m³
 Size of water tanks -

Effluent values and its comparison with alternative standards

	<i>IMO MEPC.2 (VI)</i>	<i>USCG 33CFR 159 PT1-300</i>	<i>USCG/Alaska 33CFR 159.309</i>	<i>IMO MEPC 159(55)</i>	ACO Maripur® IMO certified values
Coliform bacteria [n/100ml]	200	200	20	100	9
Total suspended solids [mg/l]	100	150	30	35 (70 at sea)	2
BOD5 [mg/l]	50	-	30	25	3
COD [mg/l]	-	-	-	125	45