

Anti-Piracy Combatant

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Global maritime security is insufficient, based on annual piracy incident reports for the past decade. Expensive warships are called out of their normal mission to respond; warships that may or may not be qualified for these type of threats. The APC was designed to address the need for maritime security in cost-effective way.

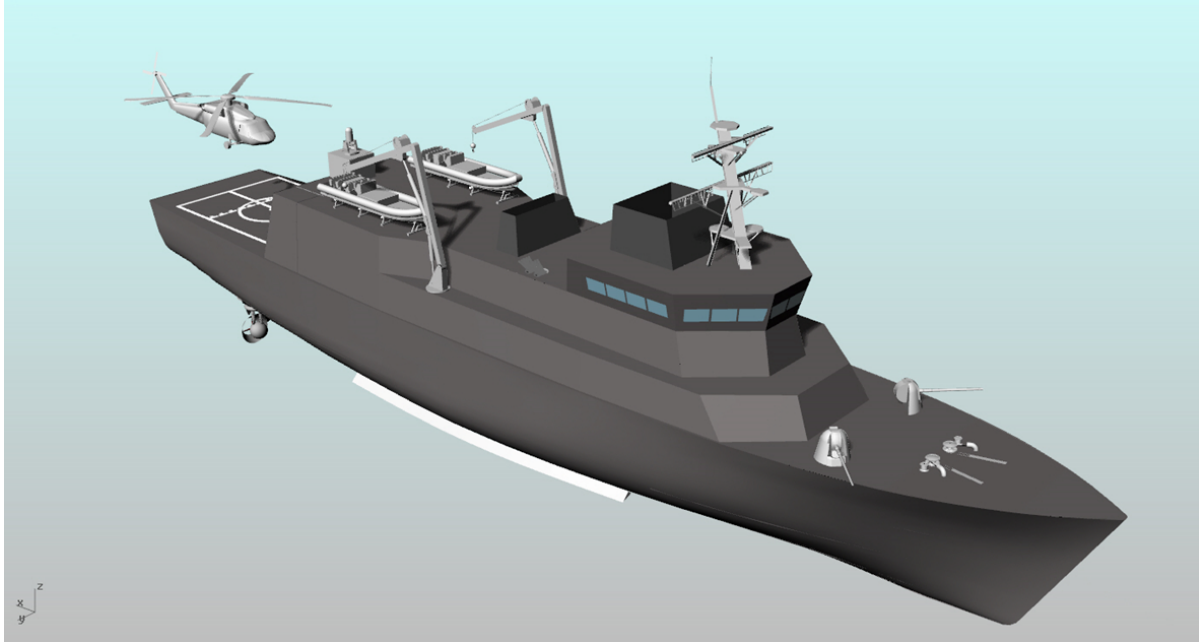
The primary required capabilities for this type of mission are a large surveillance range, large endurance and a high MIO (Maritime Interdiction Operations) capability. The APC (Anti-Piracy Combatant) achieves a surveillance range of 130 NM utilizing UAV (Unmanned Aerial Vehicle) technology: 5 STUAS type UAVs or similar. The vessel was designed to support the operations of 30 special missions crew by facilitating 2 RHIBs type 11m USN or similar, 2 MH-60S type helicopters and by having 200 sq. m. of reconfigurable space. A level IV VBSS (Visit Board Search Seizure) compliance was achieved, the highest level of MIO that is possible. The APC achieves an endurance range of 8000 NM with an endurance speed of 8 knots. With this endurance, the vessel can patrol high risks water for approximately 40 days without refueling, at endurance speed. All these capabilities were achieved at minimum cost. Low construction cost (\$200-300 million) was accomplished by discarding non-essential systems in the concept design phase, and by applying a combination of commercial and military standards were appropriate. Low operation cost was achieved by optimizing the propulsion plant for minimum installation/maintenance cost and lowest fuel consumption.

Typical stability and seakeeping checks revealed good vessel behavior in the intended ocean environment. Seakeeping was focused in predicting helicopters operations safety envelope (per STANAG 4154) , because helicopter operations are the most sensitive component of Level IV VBSS operations.

A detailed technical study was conducted to optimize the engineering plant. The chosen configuration is a hybrid electric plant, with a single shaft. In addition the propulsion plant utilizes 2 retractable, azimuthal thrusters. This configuration not only results in maximum fuel savings, but also offers more flexibility, reliability and lower maintenance costs.

In addition to the detailed study conducted in optimizing the propulsion plant, an optimization study in the area of general arrangements was conducted. This study sprang the development of a new computer tool suitable for designing general arrangements for any type of ship. Finally, the last detailed study involved the development of a seakeeping analysis tool, suitable for variant comparison in initial stages of ship design.

A potential area for further study could be the design of technologies that would further increase the surveillance range. A network of unmanned aerial, surface and sub-surface vehicles communicating with each other would offer a even larger surveillance coverage, than the one offered by current UAV technology.



APC Primary Characteristics:

Description	Value	Metric
Length	87	m
Beam	15.6	m
Design Waterline	4.95	m
Displacement	3358	MT
UAV Count	5	Units
Distance	8000	Nm
Crew	12 officers /12 CPO /58 Enlisted	Personnel
RHIBs	2	Units
Helicopters	2	Units
Addl. Berthing	30	People
Reconfigurable Payload	200	m ²
Ops Sea State	Beginning of SS6	-
Helicopter Ops: Sea State	Beginning of SS5	-
Reconfigurable Command Space	30	m ²
Sustained speed	16	Kts
Lead Ship Cost	174 Million	USD FY2013