



The PERSEUS Concept of an innovative research vessel

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Innovation and flexibility

Innovation

One of the main innovation of PERSEUS vessel is the new conceptual vertical axis propulsion system with orbital blades, called PIVOT (Pasetto Innovative Variable Orientable Thruster). This system is constituted by a pair of contra-rotating impellers, which provide directional thrust to 360°, allowing in each case a centered thrust, avoiding parasitic components.

The direction of the thrust is obtained through a synchronized orientation of the blades on both impellers, directing the thrust in the full 360° without acting on the angular velocity and on the direction of rotation of the two crowns.

The PIVOT system allows getting both propulsion and steering for ships and boats from the same mechanical device. This system is proved suitable for congested areas and inland waterways, shallow water with a limited height of the blades, a complete absence of rudders, and the ability to perform maneuvers to 360°. Its use in open sea activities is suggested as well for its high efficiency and maneuver capabilities, so as to be used in dynamic positioning operations.



Underwater view of the PIVOT system

PERSEUS research vessel in the Mediterranean and the Black sea

The innovative small research and survey vessel concept is designed for the coastal areas of the Mediterranean and the Black Sea, and is capable to work and maneuver easily in port areas, estuaries, as well as shallow navigation channels.

PERSEUS has analyzed the currently operational scientific fleet with a length situated between 14 and 24 meter focusing on the key elements identified by the scientific community and the involved stakeholders, through a specific questionnaire, meetings and workshops.

The result of these studies is a concept vessel under 20 meter of length, developing as an ideal platform due to its stability, large deck area and manoeuvrability.

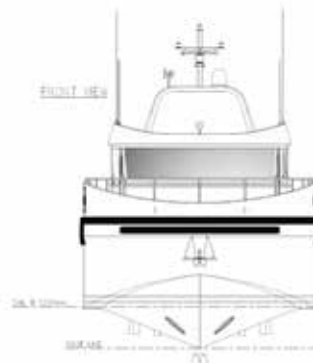
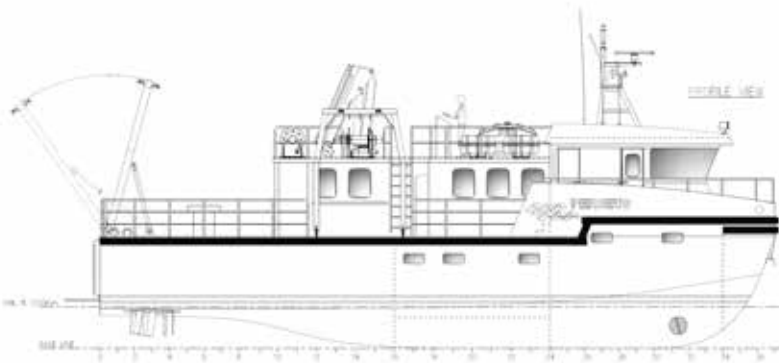
Artist impression of the PERSEUS concept vessel



Aerial view of the concept vessel

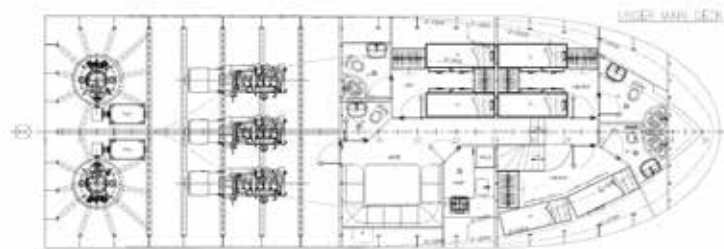
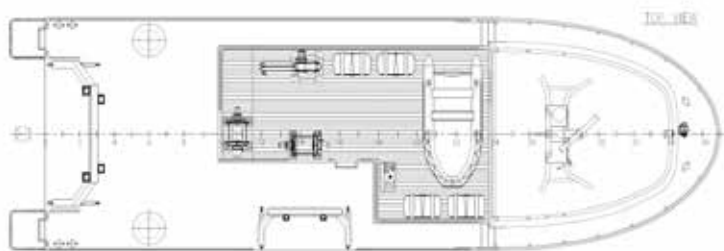


GENERAL ARRANGEMENT AND SPECIFICATIONS



Main specifications:

LOA:	19.5m
B:	6.7m
D:	3.2m
T:	1.25m
Speed:	16 knots
Crew:	4
Scientists:	4+4



Flexibility

What the initial analysis and the design process of PERSEUS research vessel revealed is the requirement of multiple vessel configurations varying from operator (institute, stakeholders, etc). Knowing that the concept of universal flexibility is both technically and economically unachievable, the aim of the new vessel is to adapt in response to changing, be flexible in a possible and probable way, customizable for different scientific purposes.

The innovative design optimizes the vessel's space dedicated to the work/scientists giving to the working space a full flat area on the main deck. The research/survey vessel is designed to offer a principal base unit that contains:

- Under the main deck: the engine room, cabins and living areas. For this reason a mono hull has been chosen.
- Above the main deck: the wheelhouse that fits all the instruments for the navigation, the DP system, a small office and services.

The superstructure has been placed in the forward area to obtain a free deck area of 86 sqm.

The working area is fully customizable in the building fase by every institute or consortium and can simply and fully adapt in function of specific requirements.



Principal base unit:
open deck configuration



Configuration with lateral A-Frame,
wet and dry labs



Configuration with customizable
containerized labs

This fact sheet is based on three PERSEUS deliverables: Identification and evaluation of scientific needs (D7.1), Report on the innovative systems design (D7.2) and Vessel concept preliminary design (D7.3)

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