Modular Multi-Hull Boat

The case for a unsinkable, modular composite hybrid boat hull.

Wound Matrix Hulls: The hulls would be constructed from sheets of high strength bubble pack or foam, spiral wound within sheets of fiber material (bamboo mat, carbon fiber, fiberglass, or other fabrics), infused with vacuum bagged epoxy resin. The epoxy resin is made with graphene, from a inexpensive process for color and strength. The hull sections can be made with a continuous casting (feed) mould or loom. For additional strength, the outer layer can be fiber filament wound(similar to carbon fiber tubes).

Overall Constraints: Proa, catamaran, or trimaran. Lighter weight construction materials. Positive buoyancy without any bilge. Sectional builds for modular construction. Efficient hydrodynamics requires less power. Modular construction ease in maintenance and repair. Entire hull is a crash bulkhead.

Multipurpose Hulls: Sole purpose of hulls is for buoyancy (lifting) and bulk fluid storage (water and power storage): Hull construction allows the actual fabrication to make hull a large battery or super-capacitor. Not only does the lightweight hull provide battery storage, but becomes a solid-state utilities infrastructure.

Roll Forming Composite Hull

A new process to form boat hulls, by vacuum bag epoxy infused rolling bubble-pack with composites and other fibers for strength.

Hull Super-Capacitor

Roll forming using bubble pack and carbon or graphene separation allows assembly to become a battery or super-capacitor.

Hull Design: The three hull ship would have a center hull for main propulsion, while the outer hulls would be for directional control and thrusters for slow speed maneuvering and docking. Outer hulls would have bulk liquid storage built into the sections, and become a super-capacitor storage device.

Propulsion: Center hull would be for main propulsion, which would be a large fin-type design that has pod drive thrusters at the tips of the fins which not only provide upward and downward motion to the fins to move large volumes of water at slow speed, but also low volume, high speed tip thrust for maneuvering at slow speed. The small tip thrusters would have counter-rotating props for 30 percent more efficient power. Propulsion would have line guards for anti-fouling from crab/lobster pots or other fishing line.

Modular Deck: The multi-hulls would provide anchor supports for a deck, which would have anchor points for modular structures, such as cabins, galley, salon, wheel house, storage, greenhouse, and other modules, which give the user an unlimited configuration option, depending on the ships mission.

Hybrid Power: The electrical system would powered by a combination of solar electric, wind, solar thermal, and conventional engine generator (backup). Storage via super-capacitors in the hulls.

Summary: The modular multi-hull boat gives the user ultimate flexibility in ship purpose configuration, build cost, operational cost, hydrodynamic and energy efficiency, and safety at sea. The design maximizes the operation of the ship with the least amount of downtime. Considering that most emergencies at sea are: running aground, fouling prop from lines, fitting hull breach leading to flooding, and collision hull breach, this design addresses each one of those legacy ship hull design inherency's with a more simplistic approach that prevents the ultimate disaster at sea- sinking. While catamarans and trimarans are well known for positive buoyancy, they can still swamp, which renders them useless (aside from acting as a raft for rescue). The next generation ship will have a design to maximize operational efficiency, while minimizing legacy ship disasters, by providing solutions, and eliminating cascade-effect emergencies (i.e. hull breach, flooding, loss of power, and sinking). Shrink-wrap hull with plastic (1/1/2018). No paint option.