Propulsion Options

Renewable energy powered prime mover.

Traditional **screw propeller propulsion** has been around for more than one hundred years. In it various forms, it has been proven to be reliable, and has morphed into the most modern evolution of electric pods (tractor and tug). Personal watercraft slow speed options include very efficient fins. All have the inherent issues of grounding, and line fouling. Providing planing hull propulsion requires a great deal of horsepower, while foiling devices require clean water due to fouling.

Overall Constraints: Multiple power drive options. Reliability. Resistant to underwater hazards (grounding, line fouling). Repairability. Low maintenance. Ease of access. Sub-planing speeds for sustainable fuel efficient power (less than 15 knots).

Final Choice: Look forward by looking back. Recent trips to Switzerland have shown paddlewheels are still being used, to great effect. While maybe not the most efficient option, they are extremely reliable, and great for overall propulsion. Relatively maintenance free, they are less prone to grounding issues, and easy to fix. This is our option for propulsion. Using a top mounted magnetic gear powered wash-down stainless steel motor, you can run at most efficient RPM while adjusting blade depth and profile (angle of attack). You can even attach a wind turbine axis output to direct drive the paddle wheel from the top diameter of the unit.

Design Characteristics:

Electric Drive: An electric drive option gives the user the option of multiple ways to produce power, including fuel engine, wind, thermal, and solar electric.

Using AC Motor with DC: While contradictory to common knowledge, a AC motor can run on DC. The advantages of a AC motor are longer running life, and less acquisition cost. On smaller AC motors in commercial appliances, you'll need to replace the switch, which will burn out quickly. This gives two options.

Multiple Paddlewheel Drives: The paddlewheel drive mechanism will be mounted forward inboard of each outboard hull. This gives a tug-oriented pull format, with independent reversible propulsion that can act as bow thrusters for maneuvering during docking and anchor. A third paddle wheel will be mounted center hull aft for long range drive.

Functionality: Each drive will have a vertical raising and lowering track for paddlewheel maintenance or lifting from the water. Underway, the vertical axis movement can be used to increase waterplane and more bite (thrust). Blades are flow engineered and tested for fluid dynamics and optimized for depth.

Summary: There are multiple legacy options for marine propulsion. While screws have dominated the past 100 years, the most reliable and consistent drive is the paddlewheel. Using higher RPM electric motors with a magnetic gearbox to a lower RPM wheel will provide the best option for durability and less maintenance. Three drives not only provides redundancy, but also provides highly maneuverable directional control.