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HYBRID HYDROFOIL SYSTEMS Hybrid Hydrofoil Systems, such as the **HYSUCAT** (Hydrofoil Supported Catamaran) patented by Stellenbosch University and invented by Prof. KG Hoppe in 1982 which reduce the effective hull resistance by raising it enough to be as effective as pure hydrofoils has allowed vessels to be designed and built using standard propulsion methods, thereby reducing the fabrication cost substantially. Effective sea keeping is also improved as is stability.

Fuel savings are substantial - up to 30% or more; therefore if a vessel is used constantly, the increase in price offsets the additional build cost. In larger vessels, where diesel engines are used, the same speed can be achieved with Hybrid Foil systems by using smaller engines, thereby reducing the overall build cost to match or be lower than other hull forms that require more power to achieve the same speeds.

The lack of experience, technical complexities including the design, placement and geometry of hydrofoil systems, which is not in normally academic curriculae for naval architects at present means that very few Naval Architects are qualified technically to design foil assisted vessels. Good results are nearly impossible to achieve without an extensive grounding in hydrofoil mathematics, fluid mechanics, experience and know how. Due to this lack of knowledge, few boat yards will risk building foil assisted vessels unless they have people with prior experience in Hull / Foil Design and construction combined with end user experience as well. Those that have ventured into this field without knowledge but attempted to go into foil assisted boats have done so privately with limited success and those who have done so commercially, nearly all have failed.

The few with proven designs and experience are beginning to emerge. Examples of completed craft that work well include: HYSUCRAFT designed by Prof. KG Hoppe, HYSUCAT Ribs by Malan Conradie, HAWC Technologies Ltd, All American Marine. All these vessels are being built using the original K G Hoppe / Stellenbosch University patented HYSUCAT system.