



Hydrofin Technical Performance Analysis:
Unlocking the True Potential of Pontoon Boats

April 13, 2026



Hydrofin Demo Boat

In an era where efficiency, performance, and elevated boating experiences are paramount, the Hydrofin hydrofoil system stands as a revolutionary advancement for pontoon boat owners. This document presents a comprehensive technical analysis demonstrating how Hydrofin fundamentally transforms pontoon performance, delivering unprecedented gains in speed, fuel efficiency, and overall handling. Forget the days of sluggish acceleration and excessive fuel consumption; forget bow spray wetting passengers; forget fighting to turn the boat; Hydrofin redefines what's possible, allowing your pontoon to glide effortlessly and economically over the water, providing an unparalleled experience previously reserved for far more expensive and complex vessels.



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Understanding Hydrofin: Innovation, Functionality, and Accessibility

Hydrofin represents a pioneering innovation in marine technology, specifically engineered to overcome the performance limitations inherent in traditional pontoon boat designs. Conceived and developed over the last decade by an avid boater frustrated with the significant hydrodynamic drag and inefficient operation of pontoon boats, he teamed with America's Cup marine engineers, and created Hydrofin with three primary goals: to achieve **increased speed**, deliver **better fuel efficiency**, and provide **more comfort and superior handling**.

At its core, the Hydrofin system is a sophisticated, passively engaged hydrofoil that, when integrated beneath a pontoon, generates significant hydrodynamic lift as the vessel gains speed. This lift effectively raises the pontoon's hulls partially out of the water, dramatically reducing the wetted surface area and, consequently, parasitic drag. The result is a fundamental shift in dynamics: **the boat transitions from 'plowing' through the water to gracefully 'gliding' over it**, minimizing resistance and maximizing the engine's propulsive effort.

Hydrofin's business model is strategically designed with a primary mission to facilitate the application of this transformative technology onto Original Equipment Manufacturer (OEM) products, **allowing for integration of the product at the point of manufacture, which in turn simplifies the acquisition of the product in the marketplace**. Beyond OEM integration, Hydrofin is also made accessible through a comprehensive network of authorized dealers, marinas, and directly to commercial rental and boat club operators. For individual pontoon owners, our user-friendly online platform provides direct-to-consumer access, often complemented by flexible financing options, ensuring that enhanced performance, efficiency, and an elevated boating experience are within reach for a world-wide audience.



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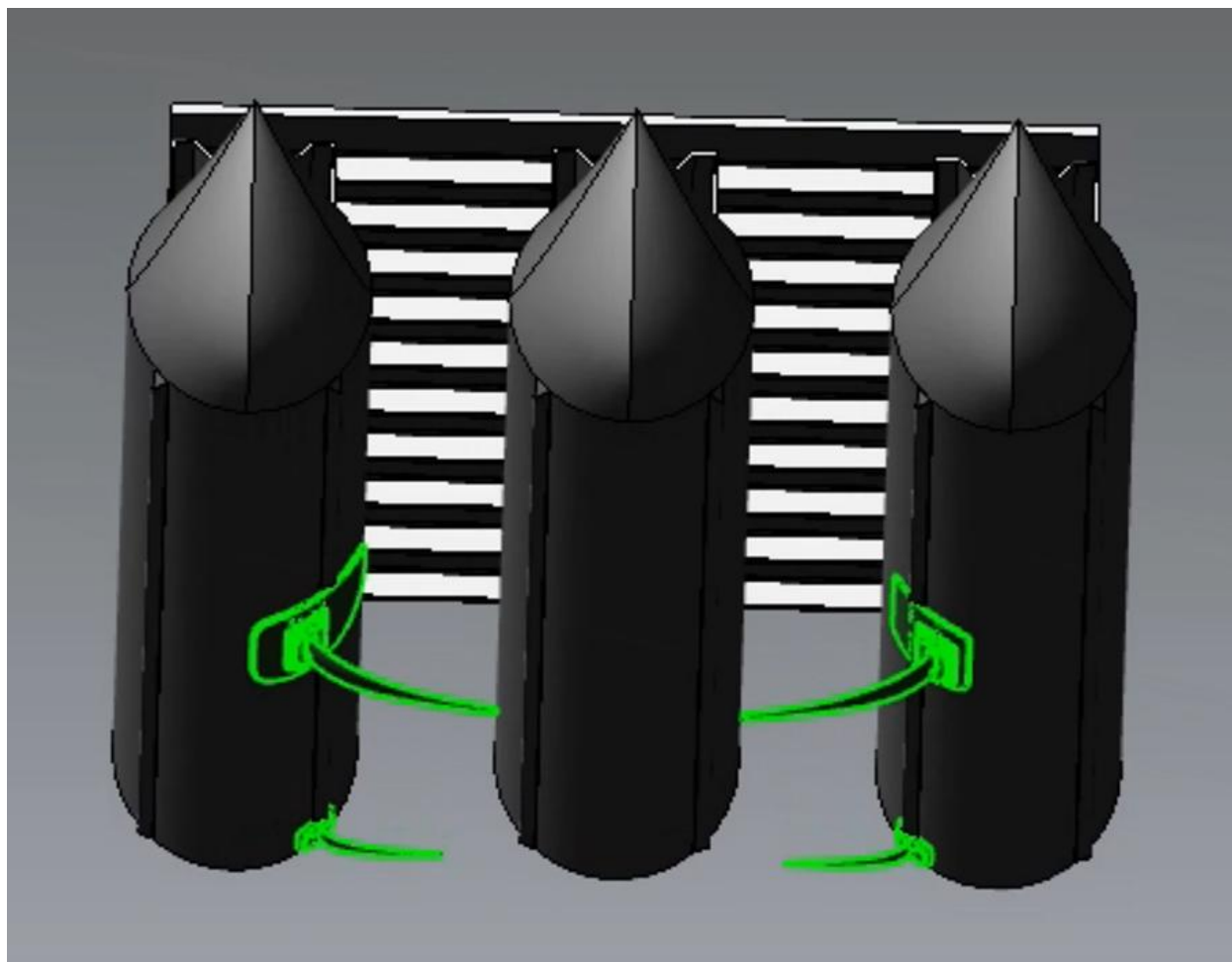
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Pontoon and Tritoon Product, Super Ride XL



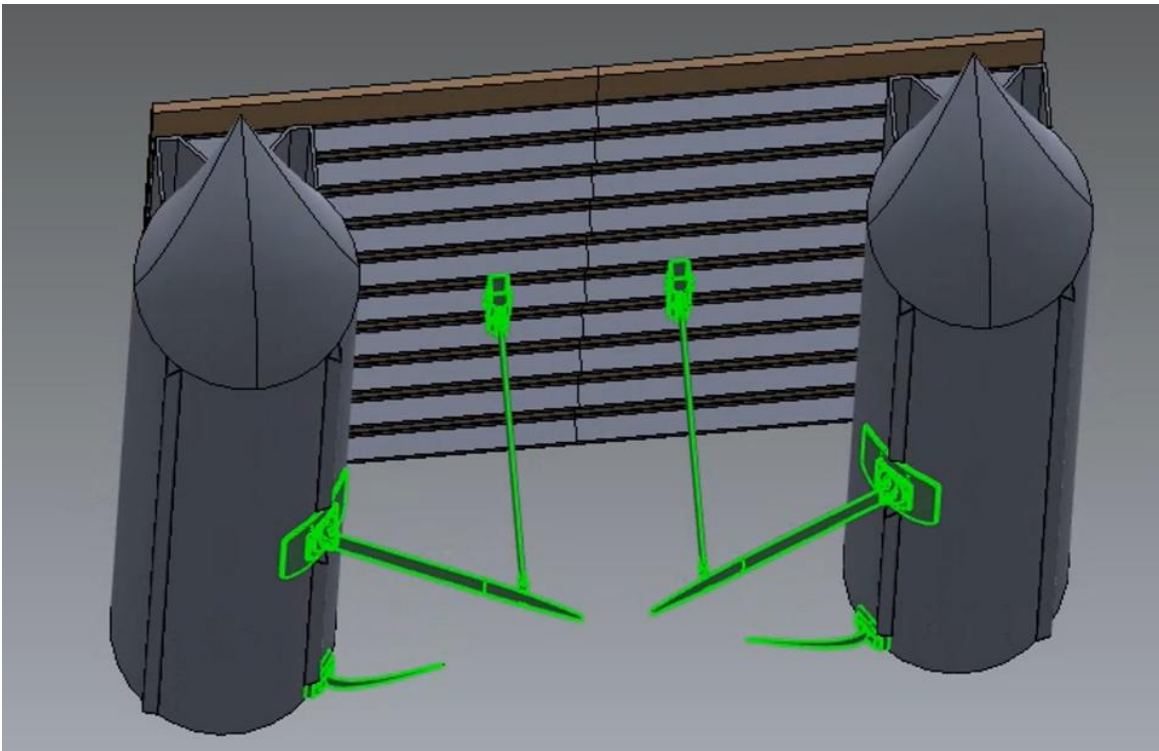
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1. Executive Summary

To quantify the profound performance enhancements provided by the Hydrofin hydrofoil system, extensive sea trials were meticulously conducted utilizing a standard 22-foot twin-tube pontoon boat. The vessel was systematically tested across a spectrum of available power, employing three distinct outboard engine configurations: 60hp, 90hp, and 115hp Mercury outboards. The empirical data unequivocally demonstrates that the strategic addition of Hydrofin yields transformative results across all tested horsepower ranges. Notably, the system facilitates an increase in top-end speed by up to 33%, improves fuel efficiency by up to 54% at optimal cruising speeds, and dramatically reduces the RPM required to achieve and maintain planing speeds. This analysis confirms Hydrofin not as an accessory, but as a critical hydrodynamic upgrade that redefines pontoon boat capabilities.

Pontoon Product, Super Fly – Currently installed on Demo Boat



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2. Methodology

The integrity of our findings rests upon a rigorous and standardized testing protocol designed to ensure direct comparability between baseline performance and Hydrofin-enabled performance.

2.1 Test Vessel: The platform for these trials was a 2015 Suntracker 22' Party Barge DLX, a representative model of a standard twin-tube pontoon configuration. This choice ensured that the results would be highly applicable to the vast majority of existing pontoon boat owner's and potential customers out in the market. The twin-tube and tritoon pontoon boat design inherently presents significant hydrodynamic drag, making it an ideal candidate to demonstrate the efficacy of drag reduction technologies like Hydrofin. A similar testing methodology will be implemented for a representative tritoon product, with results to follow.

2.2 Engines Tested: To assess Hydrofin's impact across a diverse range of power applications, three common Mercury outboard engine configurations were utilized:

- 60hp Mercury Outboard: Representing lower-horsepower, often displacement-mode pontoons.
- 90hp Mercury Outboard: Typical for mid-range performance pontoons.
- 115hp Mercury Outboard: Providing ample power for higher-performance pontoon applications.

2.3 Testing Protocol: For each engine configuration, the test vessel underwent a comprehensive series of runs under identical, controlled conditions. These "standard water conditions" imply calm to minimal chop, negligible wind, and consistent ballast/passenger weight distribution throughout all comparative runs to minimize external variables.

Two primary sets of data were collected for each engine configuration:



1. **Baseline Configuration:** The factory-standard vessel, operating without the Hydrofin system installed. This provided a true benchmark of unassisted pontoon performance.
2. **Hydrofin Enabled Configuration:** The identical vessel, now equipped with the Hydrofin foil system. This allowed for a direct, apples-to-apples comparison of performance improvements attributable solely to Hydrofin.

At precise RPM intervals, ranging from 1000 RPM (idle/low speed) up to Wide Open Throttle (WOT), two critical performance metrics were accurately recorded:

- **GPS Speed (MPH):** Measured via a high-precision GPS unit to ensure accurate ground speed readings, unaffected by currents.
- **Fuel Consumption (MPG):** Recorded using Mercury Connect, a calibrated fuel flow sensor and app, providing precise real-time fuel efficiency data.

This meticulous data collection ensured the empirical basis for analyzing performance differentials in speed, acceleration characteristics (implied by RPM-to-speed curves), and fuel economy.



3. Results & Analysis by Engine Configuration

The comprehensive data analysis reveals that Hydrofin is not a static additive but a dynamic system that intelligently interacts with available horsepower to mitigate specific performance bottlenecks inherent to pontoon boat designs. Pontoons, by their nature, suffer from extensive wetted surface area and inefficient hull shapes for anything beyond displacement speeds, leading to significant hydrodynamic drag. Hydrofin strategically addresses this fundamental issue.

3.1 Scenario A: 60hp Mercury (The "Horsepower Multiplier" Effect)

A 22-foot pontoon powered by a 60hp engine typically operates in a perpetually "underpowered" state. Without hydrodynamic assistance, these vessels largely remain in displacement mode, pushing a significant bow wave and failing to achieve true planing. This results in an inefficient, "plowing" motion through the water rather than gliding over it.

- **Detailed Speed Transformation:** In its baseline configuration, the vessel struggled, maxing out at a modest 18 mph. The addition of Hydrofin fundamentally altered this dynamic. By generating significant hydrodynamic lift, Hydrofin allowed the vessel's twin tubes to rise partially out of the water, dramatically reducing the wetted surface area and overcoming the displacement barrier. This transformation enabled the boat to achieve a top speed of 24 mph – an impressive **33.3% increase**. This isn't merely an incremental speed gain; it's a qualitative shift, allowing a previously displacement-bound boat to enter semi-planing regimes, fundamentally changing its utility for activities like tubing, water skiing, or faster transit.
- **Detailed Efficiency Gains:** For an underpowered pontoon, achieving any meaningful speed without Hydrofin often necessitates prolonged operation at Wide Open Throttle (WOT), which typically leads to abysmal fuel economy as the engine struggles against overwhelming drag. With Hydrofin, by lifting the hull, the engine no longer has to overpower the water as much. This efficiency is evidenced by a **22.9% improvement in MPG at WOT (6070 RPM)**. More significantly, at a slightly reduced, yet still high, RPM of 5500, fuel efficiency improved by an impressive **39.4%**. This



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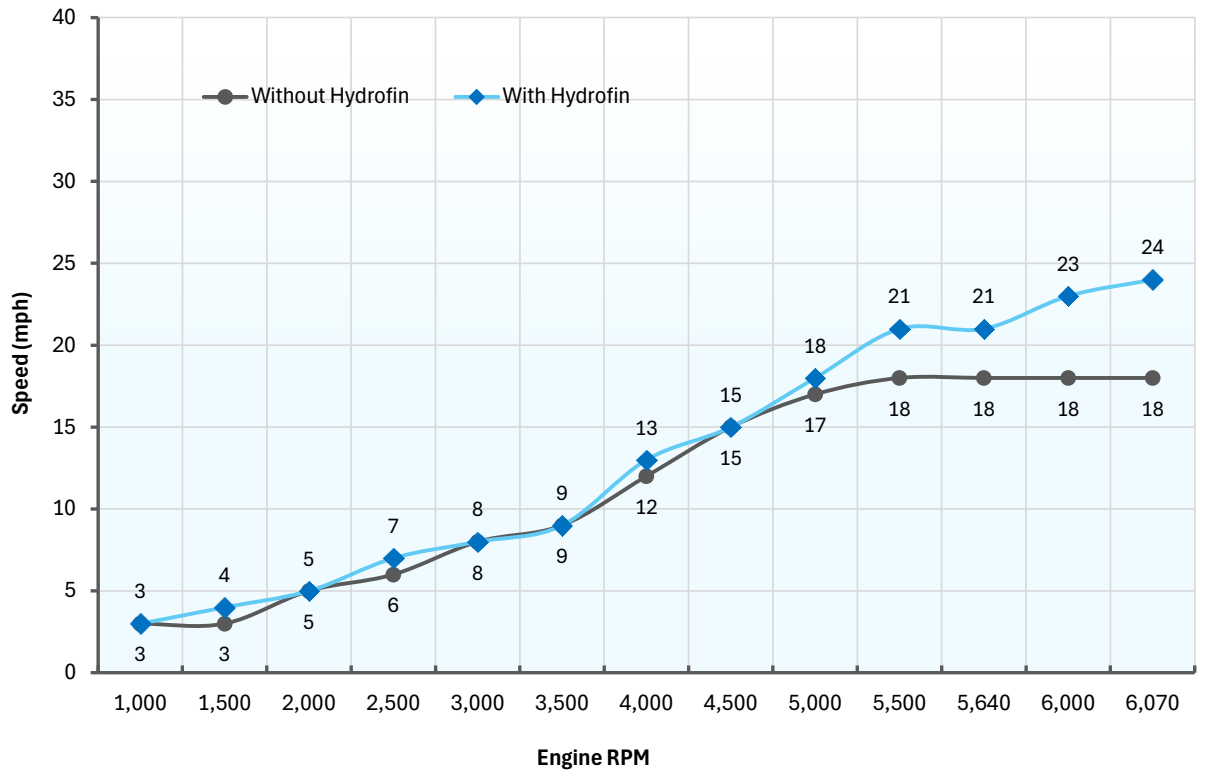
illustrates that even when pushing the engine hard, Hydrofin enables it to convert horsepower into forward motion far more effectively, delaying the typical dramatic drop in fuel economy seen in unassisted pontoons at high RPMs.

- **Assessment:** For owners of underpowered pontoons, Hydrofin acts as a virtual horsepower upgrade. It effectively grants the boat the planing capabilities and cruising speeds that would otherwise demand a significantly larger, heavier, and substantially more expensive engine. This provides a cost-effective pathway to enhanced performance without the overhead of a major engine upgrade.

Hydrofin Sea Trial — 60 HP Engine Performance						
	Without Hydrofin		With Hydrofin		% of Speed increase	% of MPG increase
RPM	Speed	MPG	Speed	MPG		
1,000	3	8.0	3	9.7	0.0%	21.3%
1,500	3	8.1	4	9.9	33.3%	22.2%
2,000	5	9.4	5	8.6	0.0%	-8.5%
2,500	6	6.7	7	7.1	16.7%	6.0%
3,000	8	6.0	8	5.9	0.0%	-1.7%
3,500	9	5.0	9	5.2	0.0%	4.0%
4,000	12	5.2	13	5.7	8.3%	9.6%
4,500	15	4.7	15	4.9	0.0%	4.3%
5,000	17	4.1	18	4.8	5.9%	17.1%
5,500	18	3.3	21	4.6	16.7%	39.4%
5,640	18	3.5	21	4.5	16.7%	28.6%
6,000	18	3.5	23	4.3	27.8%	22.9%
6,070	18	3.5	24	4.3	33.3%	22.9%



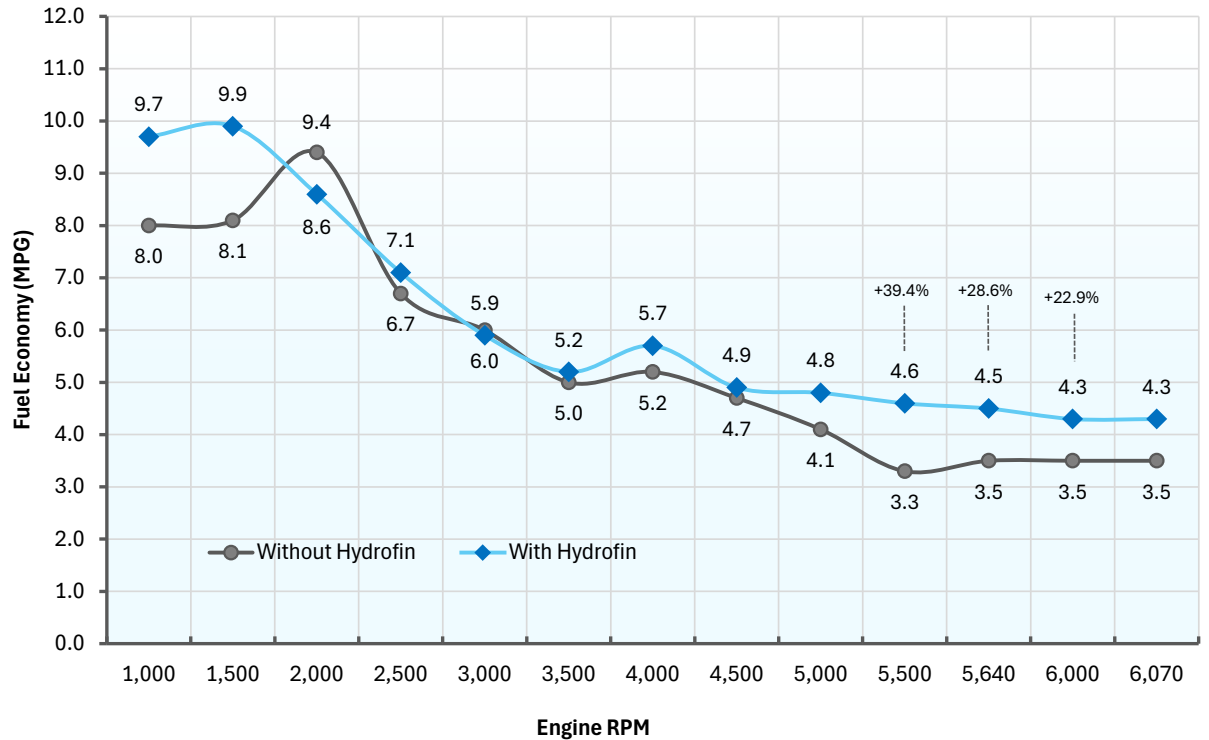
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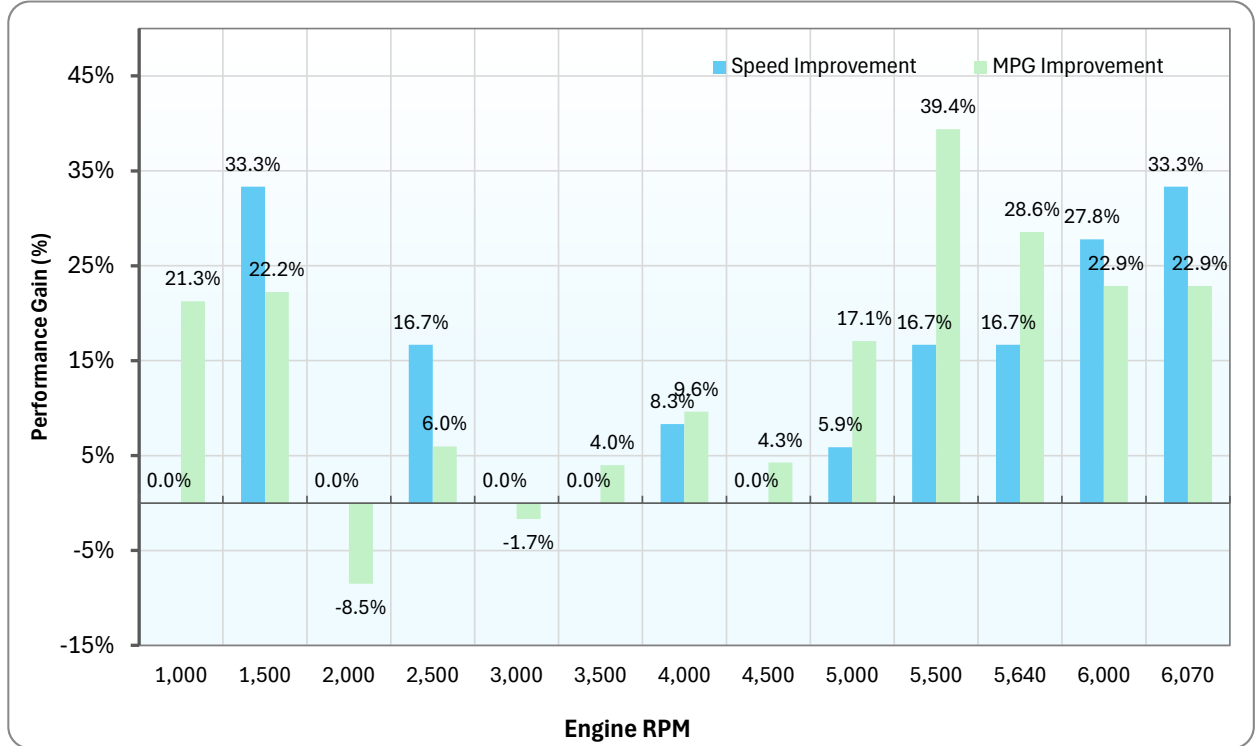
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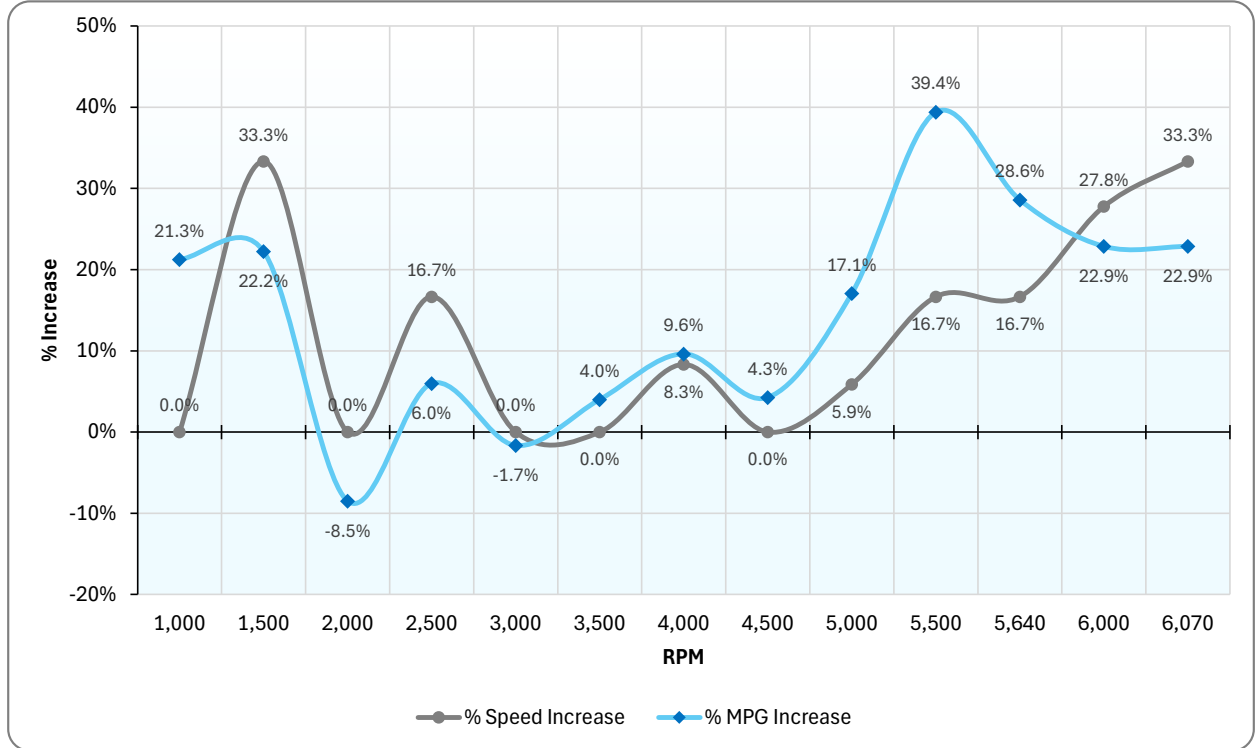
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3.2 Scenario B: 90hp Mercury (The Mid-Range Revolution)

The 90hp test starkly highlights Hydrofin's unparalleled ability to rapidly overcome the initial resistance to planing, thereby eliminating the notorious "sluggish mid-range" and transforming cruising dynamics. Without Hydrofin, pontoons in this power bracket often exhibit significant bow rise and struggle to climb over their own bow wave, leading to a prolonged and inefficient transition period.

- **The Planing Threshold - Detailed:** The baseline boat, at 3500 RPM, was still deeply embedded in the water, plowing along at just 10 mph. This "plowing" is characterized by high drag, reduced visibility, and poor fuel economy. With Hydrofin engaged, the system's lift immediately and significantly reduced this bow rise and wetted surface. At the *exact same 3500 RPM*, the speed dramatically jumped to 17 mph – a staggering **70% increase**. This indicates a rapid and decisive transition to an efficient, semi-planing attitude.
- **Detailed Fuel Economy:** The most impactful benefit for mid-range engines lies in the ability to achieve planing speeds at much lower RPMs. Because the boat is no longer "stuck" in a high-drag displacement mode, the engine operates far more efficiently. Across the crucial cruising range (between 3000 and 5800 RPM), fuel efficiency improved by an average of **40%**. This improvement peaked at an outstanding **54.5% improvement at WOT**. Simultaneously, the top speed for the 90hp configuration increased from 23 mph to a more spirited 30 mph, representing a **30.4% gain**.
- **Assessment:** Hydrofin completely revolutionizes the experience for mid-tier pontoons. It eliminates the slow, inefficient mid-range struggle, allowing the boat to get out of the water faster, cruise effortlessly at significantly lower and more economical RPMs, and achieve massive fuel savings during a typical day on the lake. The enhanced responsiveness and reduced transition times create a far more enjoyable and practical boating experience.



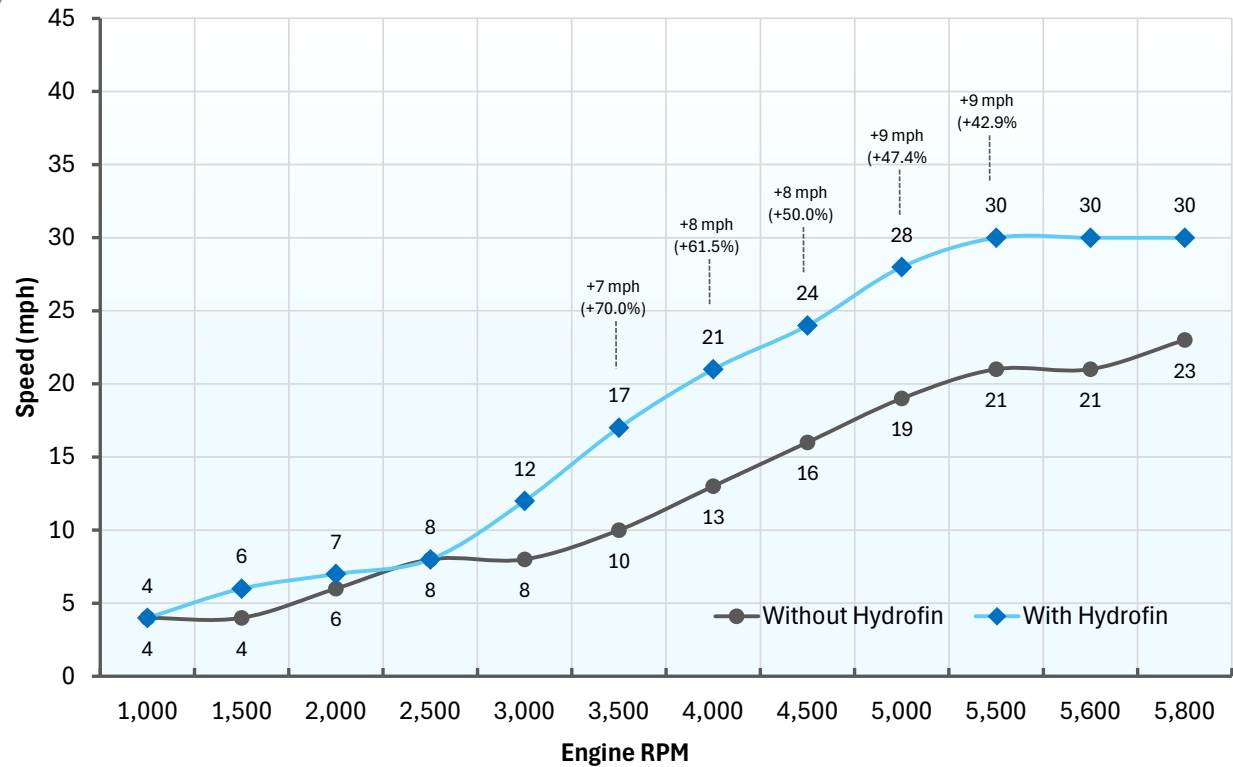
Hydrofin Sea Trial — 90 HP Engine Performance						
RPM	Without Hydrofin		With Hydrofin		% of Speed increase	% of MPG increase
	Speed	MPG	Speed	MPG		
1,000	4	6.5	4	6.1	0.0%	-6.2%
1,500	4	4.8	6	4.8	50.0%	0.0%
2,000	6	5.1	7	4.5	16.7%	-11.8%
2,500	8	4.2	8	4.2	0.0%	0.0%
3,000	8	3.6	12	5	50.0%	38.9%
3,500	10	3.3	17	4.8	70.0%	45.5%
4,000	13	3.4	21	4.4	61.5%	29.4%
4,500	16	3.0	24	4	50.0%	33.3%
5,000	19	2.9	28	3.9	47.4%	34.5%
5,500	21	2.5	30	3.4	42.9%	36.0%
5,600	21	2.4	30	3.4	42.9%	41.7%
5,800	23	2.2	30	3.4	30.4%	54.5%



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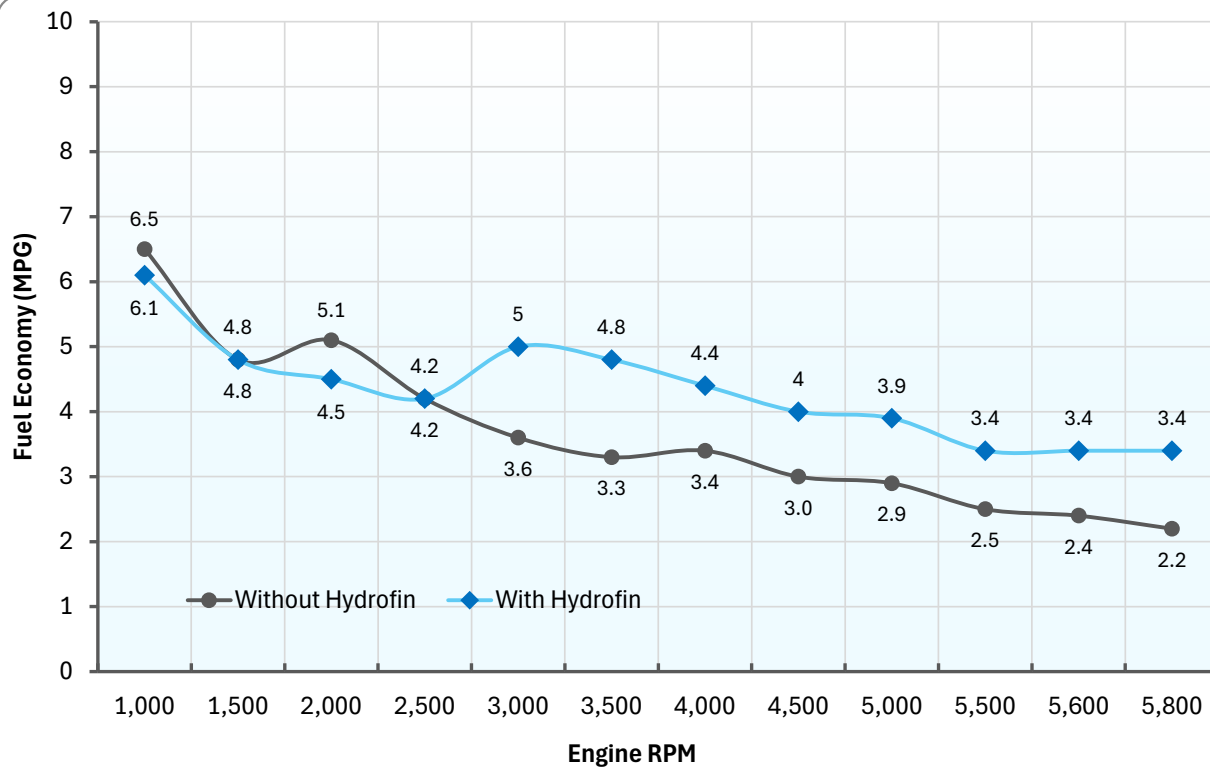
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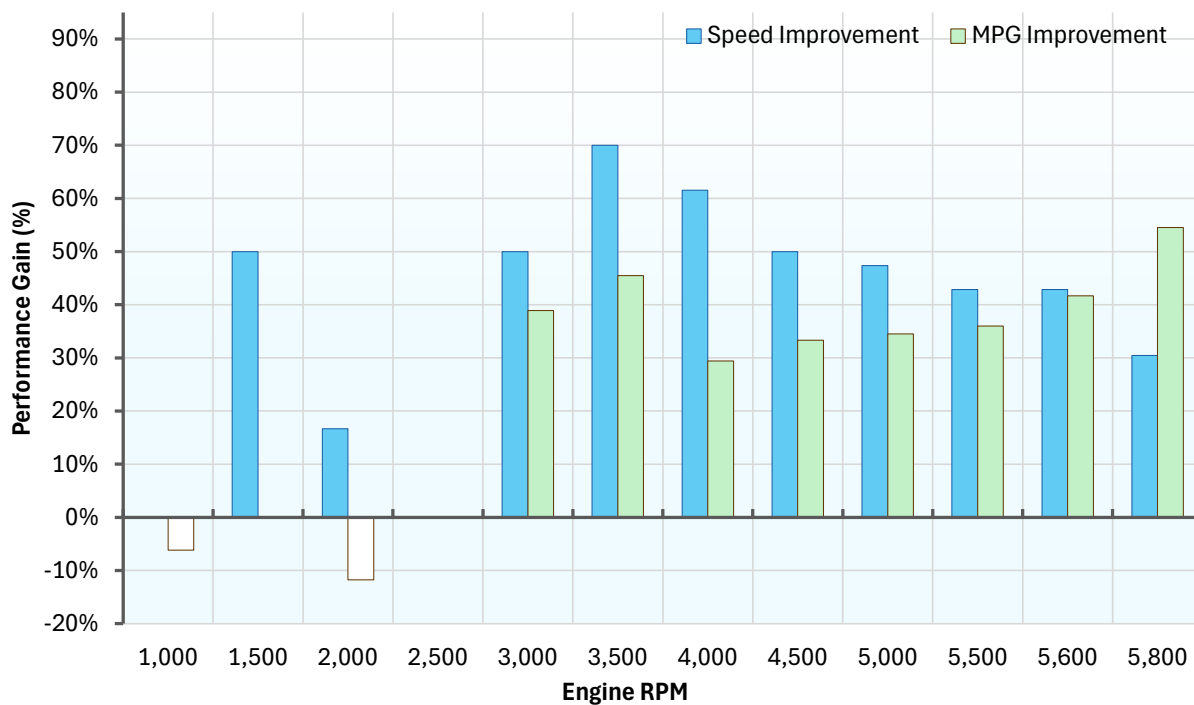
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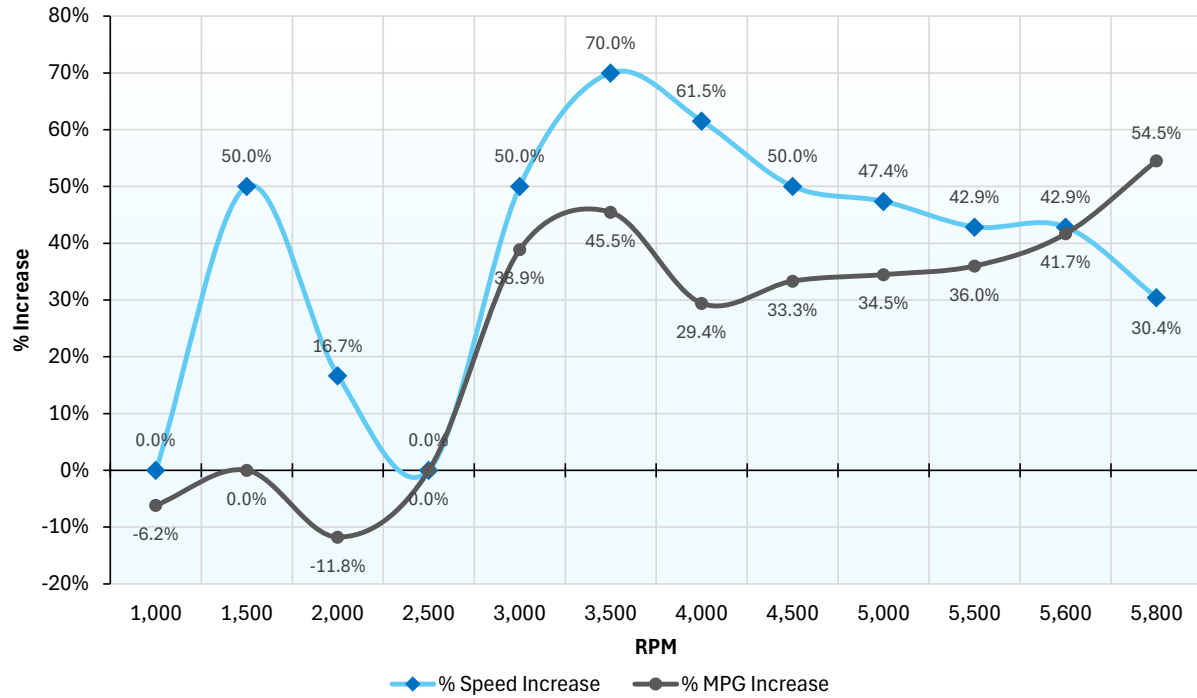
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3.3 Scenario C: 115hp Mercury (High-End Optimization)

Even with 115hp, a 22-foot pontoon still contends with the inherent hydrodynamic drag of its twin-tube design. While capable of respectable speeds, much of that power is expended simply overcoming the resistance of water. Hydrofin in this scenario acts as an optimizer, ensuring that the substantial available power is channeled into efficient lift and thrust, rather than inefficiently pushing water.

- **Detailed Speed Optimization:** The baseline top speed for the 115hp engine was a respectable 29 mph. With the Hydrofin system and an optimized propeller, this top speed was further increased to **35 mph**, a **20.7% improvement**. This demonstrates that even for adequately powered pontoons, Hydrofin can unlock additional speed potential by reducing parasitic drag.
- **Detailed Cruising Efficiency:** Perhaps the most compelling benefit for the 115hp configuration is the exceptional fuel savings achieved at typical cruising speeds. At 4500 RPM, the speed saw a healthy increase from 22 mph to 25 mph, while fuel economy improved by a notable **28.1%**. The efficiency gains become even more pronounced at 5000 RPM, where speed climbed from 24 mph to 30 mph, yielding an impressive **42.9% improvement in MPG**. This signifies that owners can cruise at higher speeds or maintain existing speeds with significantly less fuel burn.
- **Important Testing Note (Propeller Optimization):** Initial trials with the 115hp engine highlighted a crucial aspect of hydrodynamic transformation: propeller efficiency. The standard propeller, designed for an unassisted hull, proved sub-optimally pitched for the newly elevated hull dynamics provided by Hydrofin. Upon replacing it with a properly matched stainless-steel propeller, the performance trajectory aligned perfectly with our projections. This optimized propeller effectively harnessed the drastic reduction in hydrodynamic drag, allowing the vessel to reach and sustain the 35 mph mark at a highly effective 5840 RPM. This emphasizes that Hydrofin's core benefit (lifting the hull) can sometimes require minor adjustments to other components for maximum synergistic effect.



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- Assessment:** For higher-powered pontoons, Hydrofin ensures that the significant engine output is utilized with maximum efficiency. It transforms raw horsepower into refined performance, drastically reducing the wetted surface area and hydrodynamic drag. The outcome is not just higher top speeds, but substantial and consistent fuel savings across all cruising ranges, translating to extended range and reduced operational costs.

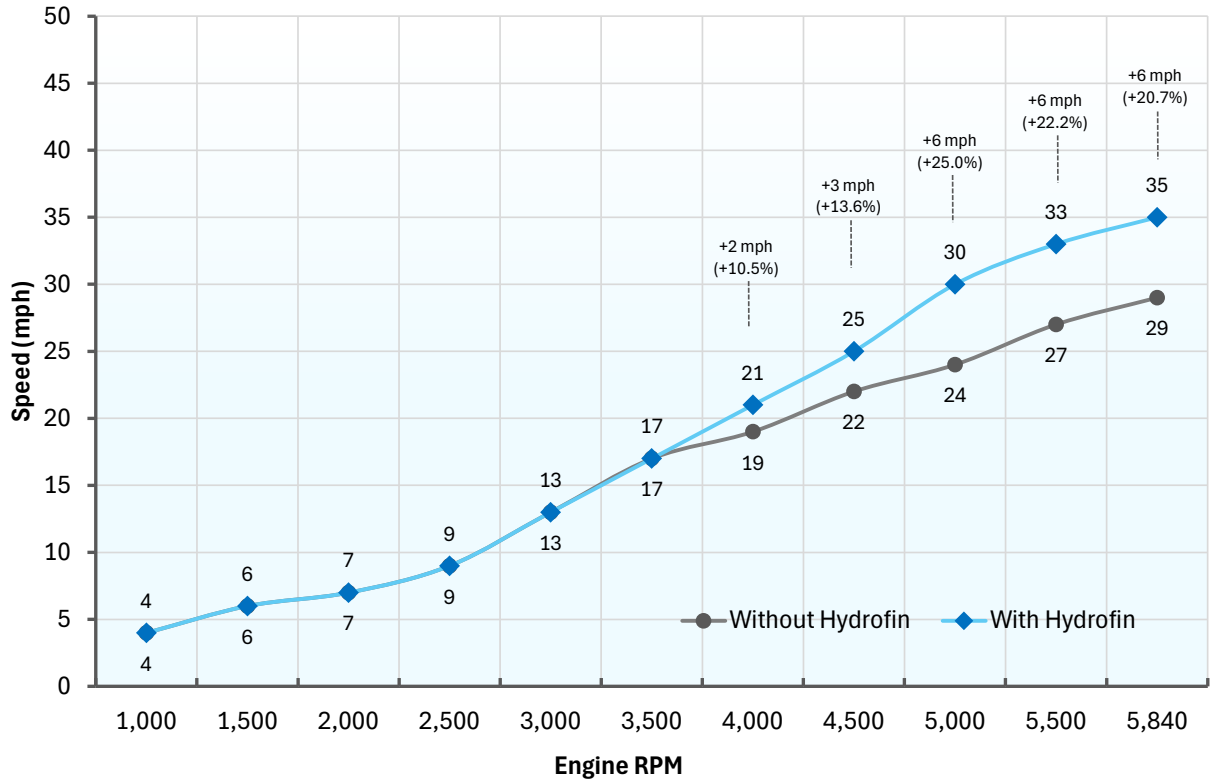
Hydrofin Sea Trial — 115 HP Engine Performance						
RPM	Without Hydrofin		With Hydrofin		% of Speed increase	% of MPG increase
	Speed	MPG	Speed	MPG		
1,000	4	5.9	4	6.6	0.0%	11.9%
1,500	6	5.4	6	5.5	0.0%	1.9%
2,000	7	5.1	7	5.1	0.0%	0.0%
2,500	9	4.7	9	4.4	0.0%	-6.4%
3,000	13	5.1	13	5.4	0.0%	5.9%
3,500	17	4.5	17	5	0.0%	11.1%
4,000	19	3.7	21	4.5	10.5%	21.6%
4,500	22	3.2	25	4.1	13.6%	28.1%
5,000	24	2.8	30	4.0	25.0%	42.9%
5,500	27	2.6	33	3.5	22.2%	34.6%
5,840	29	2.7	35	3.1	20.7%	14.8%



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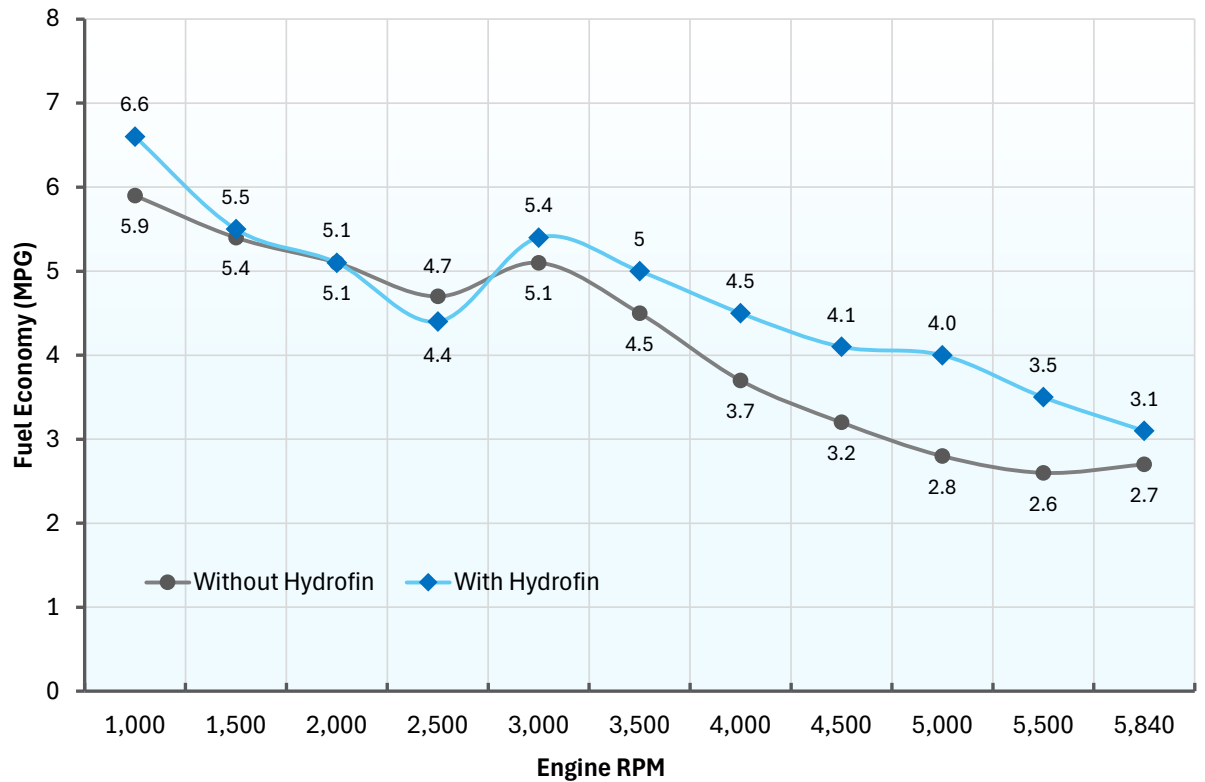
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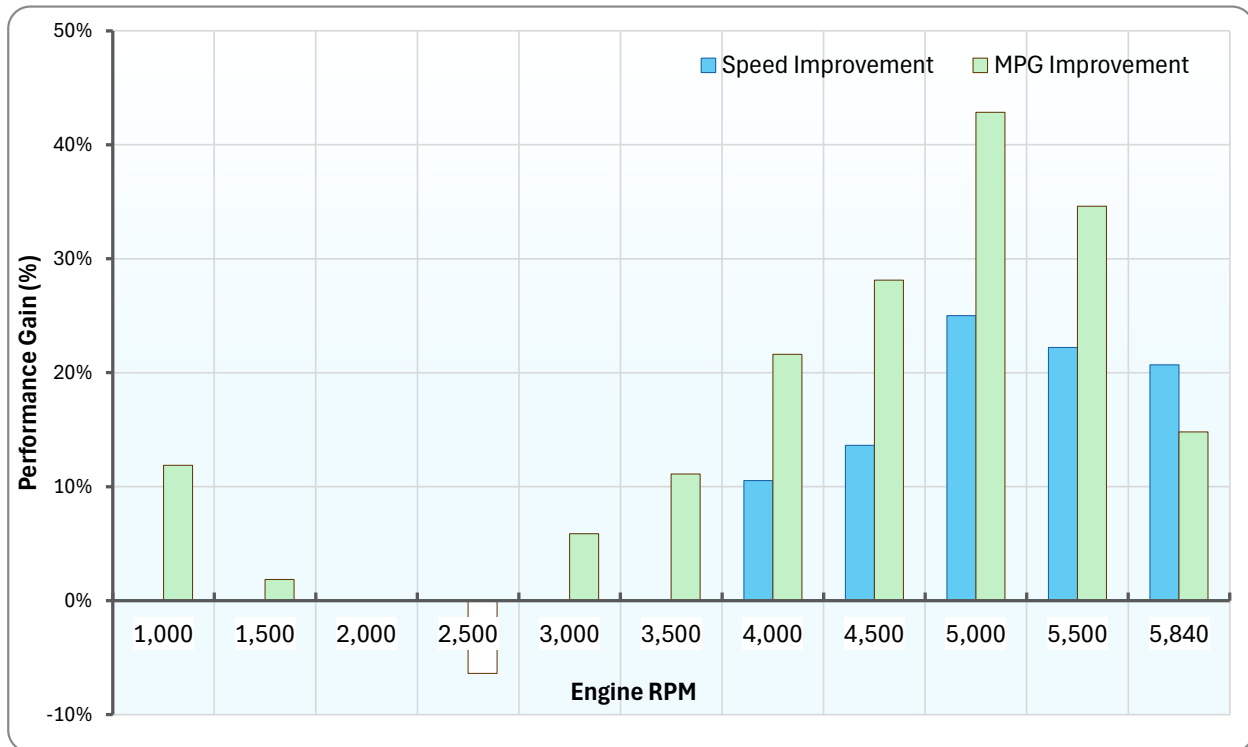
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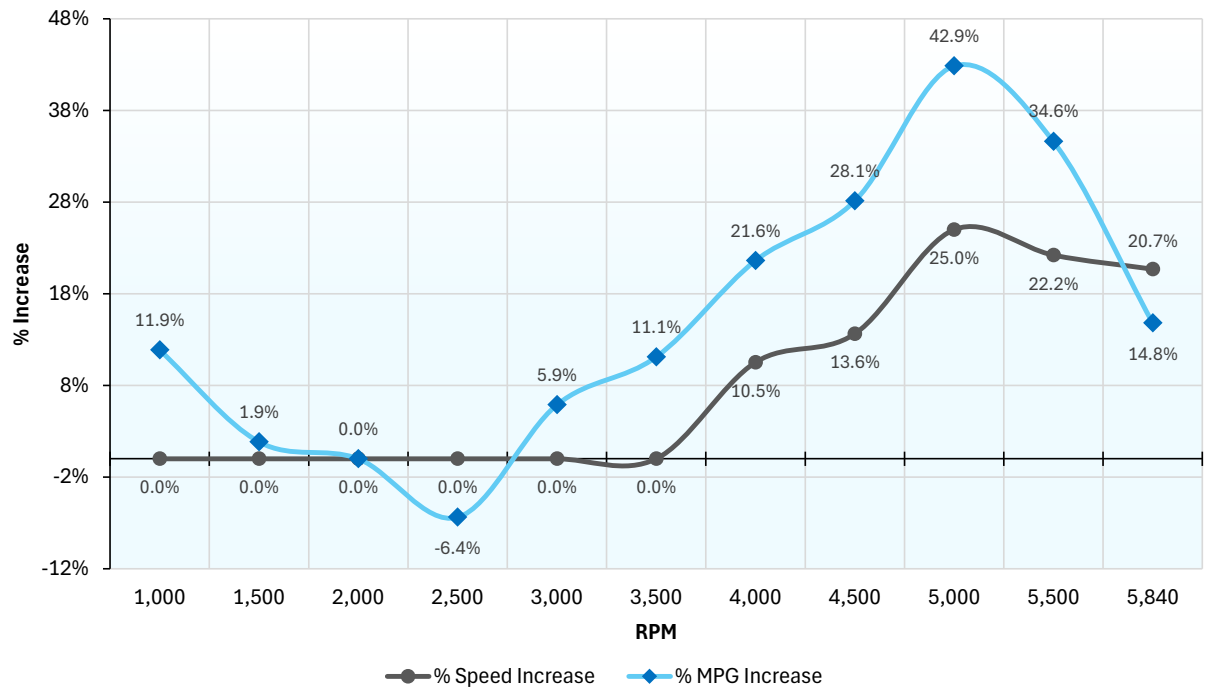
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4. Overall Assessment and Technical Conclusion

The aggregated sea trial data provides irrefutable evidence of the physical principles at play with the Hydrofin system. Traditional pontoon boats, by their fundamental design, are plagued by immense hydrodynamic drag stemming from the continuous, large wetted surface area of their twin or tri tube hulls. While increasing engine size can force the boat to go faster, it does so inefficiently, by simply overpowering this inherent drag.

Hydrofin fundamentally shifts this paradigm. **Instead of powering *through* the water, the system enables the pontoon to effectively *fly over* it**, significantly reducing the surface area in contact with the water and thereby minimizing frictional and form drag.

4.1 Key Conclusions:

- **RPM Shift & Operational Efficiency:** Hydrofin fundamentally shifts the entire performance curve to the left. This means that speeds which previously demanded high engine output (e.g., 4500 RPM) can now be effortlessly achieved at significantly lower RPMs (e.g., 3000-3500 RPM). The implications are manifold: reduced engine noise, decreased wear and tear, extended engine lifespan, lower vibration, and a demonstrably quieter, more comfortable ride for passengers.
- **Profound Fuel Economics:** Across all engine sizes tested, the dramatic reduction in hydrodynamic drag directly translates into substantial savings at the fuel pump. Documented improvements ranging from 30% to over 50% in Miles Per Gallon (MPG) at typical cruising speeds indicate that the Hydrofin system offers a tangible, rapid return on investment through significantly reduced operational costs, which are especially important in today's high fuel pump prices.
- **Engine Equivalency & Value Proposition:** The empirical data powerfully suggests that integrating a Hydrofin system into a lower-horsepower engine configuration (e.g., 90hp) can yield performance characteristics – in terms of both speed and efficiency – that are comparable to, or even superior to, an unequipped boat utilizing a much larger, more expensive, and heavier engine (e.g., 115hp). This presents an



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unparalleled value proposition for pontoon owners seeking to maximize performance without the prohibitive costs and complexities of engine replacement.

4.2 Final Verdict: The rigorous empirical data collected during these sea trials unequivocally validates that Hydrofin transcends the definition of a mere accessory. It is a transformative hydrodynamic upgrade, meticulously engineered to optimize pontoon performance. Regardless of the current engine size or existing performance profile of a twin-tube pontoon, Hydrofin consistently delivers measurable, significant, and tangible enhancements across all critical performance indicators: top speed, time-to-plane, and fuel efficiency. Investing in Hydrofin is not just an upgrade; it's an investment in a superior, more efficient, and ultimately more enjoyable and fun pontoon boating experience.

Contact us today to discover how Hydrofin can elevate your business's performance and redefine your customer's time on the water. Join the growing number OEMs, Dealers, Boat Clubs, and satisfied Owners who have unlocked the true potential of their brand and boat with Hydrofin.




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