IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reexamination Application of:
Nicholas Leason

Application No.: 90/015,269 Confirmation No.: 5917

Filed: August 9, 2023 Art Unit: 3993

For: Powered Hydrofoil Board Examiner: G. Spahn

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF NICK LEASON
UNDER 37 C.F.R. § 1.132

I, Nick Leason, hereby declare as follows:

1. I am a co-founder and CEO of MHL Custom, Inc., the assignee of U.S. Patent No. 9,586,659 ("the '659 Patent"), which is the subject of the present *ex parte* reexamination. As a co-founder and CEO, I am intimately familiar with the history of development of hydrofoil products covered by the claims of the '659 Patent, the difficulties and unexpected successes experienced during this development, the creation of a market for these products, the great success we have achieved, and the value of the '659 Patent, in terms of licensing third parties and pursuing unlicensed infringers, and the underlying products themselves.

2. I have been involved in the preparation of Patent Owner's response to the pending Office Action, and in doing so I have reviewed and am familiar with the Office Action and cited prior art, namely: U.S. Patent Application Publication No. 2011/0111650 to Braden *et al.* ("*Braden*"); U.S. Patent No. 5,544,607 to Rorabaugh *et al.* ("*Rorabaugh*"); and U.S. Patent Application Publication No. 2005/0255764 to Woolley ("*Woolley*"). I have also reviewed the specification and claims of the '659 Patent that is the subject of the present reexamination.

NEXUS BETWEEN PRODUCT AND CLAIM ELEMENTS

3. I understand that, in order for evidence of secondary considerations to be applicable to rebutting an obviousness challenge, the evidence must have a so-called "nexus" to the claim elements. In my opinion, this nexus is readily achieved through the various evidence included and discussed below. I know Jacob Langelaan, the sole inventor of the '659 Patent, has also provided a written declaration ("Langelaan Declaration"), accompanying my declaration, and I have reviewed his declaration. I understand he compared the claims of the '659 Patent to the features of an exemplary product, Lift3 and Lift4. I agree completely with his assessment that these products are fully encompassed by the claims. It is also my opinion that the predecessor products, Lift1 and Lift2, also include each and every element of independent claim 1. (also see Exhibits C, D.) All exhibits relating to our products that I discuss with this declaration are based on one of these "Lift" products notes above.

COMMERCIAL SUCCESS

4. We have achieved great commercial success with our hydrofoil products. As we created the market for these so-called e-foils (electric, hydrofoil boards), we command a majority of the sales and revenue in the market, and our revenue has grown year-over-year, again due to the success of our product. For instance, in 2023 our sales were about $36 million, up from revenues of under $10 million when we first started sales of the products in 2018. On an individual basis, our products cost about $12,000 each.

5. Furthermore, the '659 Patent itself has proven to be quite valuable in the market. First, when we first learned of the '659 Patent, we negotiated an exclusive license to the patent, and later we, MHL Custom, Inc., purchased the patent outright, and are now the recorded assignee of the '659 Patent. These agreements are withheld as they are confidential, but in any event, I do not believe the details of the agreements would be pertinent for the present purposes. If you wish to review them, please let us know.

6. Since obtaining our license to the '659 Patent, and completing the subsequent acquisition of it, we have licensed the patent to a few third parties. License royalties on the '659 Patent, and its related parent patent, U.S. 9,359,044, total in the many millions of dollars (again, these agreements are confidential, not just to us, but to our licensees as well). As I stated previously, the '659 Patent covers the efoil products in the market we created, and into which others have ventured. The direct correlation between the claims of the '659 Patent to the products themselves is central to

the value and success of the '659 Patent. Our ability to have the original, and in my opinion best, product in the market we created, and to have the product be directly protected by the claims of the '659 Patent, is testament to our commercial success.

7. We also estimate our market share based on a combination of our sales, the sales reported by our licensees, and then our general knowledge of other competitors in the market, including, for instance, Waydoo, who we successfully sued for patent infringement of the '659 Patent. Based on our estimates, we currently have a market share of about 50%, while our licensees have about 25-30%. In other words, 75-80% of the products in the market are covered by and sold under the '659 Patent. Waydoo made up part of the remaining 20-25%, and they were also found to be covered by the claims of the '659 Patent. As such, based on our estimates, the claims of the '659 Patent cover nearly 100% of the efoil market, and our individual market share remains at about 50%, despite the entry of these various other competitors.

8. Indeed, in my opinion, as demonstrated by my extensive experience speaking with and teaching customers and users of our products, the ability for our products to be passively stable, with no movable steering systems or surfaces, makes the product so appealing to people of all skill levels. Typically, I can have the average person riding on the hydrofoil board within about 15 or 20 minutes. In fact, I have experienced firsthand people ranging from small children to late-age adults being able to ride our products with little to no experience with such products – something I take great pride in seeing. (see Exhibits A, B, also see e.g., Exh. W.) The ability for people of all skill levels to be able to ride our products makes for a large market, and therefore, in my opinion the large sales volume (as well as the entry of other products into the market as I discuss below) is directly attributable to the passively stable and simple riding experience which we created in our products. By creating a product that is passively stable and free of any moveable or steerable surfaces, we were able to make this product approachable for people of all levels of ability.

COPYING BY OTHERS0

9. Of course, in 2018, when we first launched our product, we had 100% market share. But following our launch, we quickly saw competitors jump into the market we created. In my opinion, these third parties were able to get into the market by studying our product and making copycat products. Upon review of our product, they were able to understand that our product remained stable in the water even without any movable surfaces or steering components – they saw

that, by practicing the claimed inventions of the '659 Patent, a passively stable hydrofoil board was possible.

10. Initial prototypes of our product, and early marketing videos, launched around 2016, so competitors would have been able to start studying our product around that time. In particular, a marketing video we distributed on Facebook in 2017, as a teaser for our product launch, obtained 140,000 hits almost immediately. We had people interested in our product almost immediately, and people in the industry noticed that we had that sort of web activity and buzz in such a short amount of time. Within a couple weeks of this video and another teaser marketing video, we had over a hundred million views across many social media channels. It was a huge public reaction.

11. Following these initial marketing videos, we started displaying our product publicly, and started disseminating information through sales channels – we were not shy about expounding on all the great details of our product. (e.g., see Exhs. H, N, O, V.) Our first public sale was in May 2018.

12. As discussed herein, these competitors have also understood the value of the '659 Patent, as they recognize that these products, in order to be as commercially successful as ours have been, must practice the claims of the '659 Patent. As a result, we have licensed many of the follow-on competitors, or have asserted our patent to protect our rights. These patent assertions have been successful and include the aforementioned infringement verdict against Waydoo and have also led to settlements by other competitors to agree to exit the U.S. market.

13. The Waydoo product serves as a good comparison of a copycat product, as it has similar dimensions, components, and functionality as our products:





And, just like ours, it meets the claims of the '659 Patent, including the fact that it is passively stable and does not include any movable surfaces on the hydrofoil or a movable steering system – this was established by the aforementioned favorable finding of infringement of at least claim 1 of the '659 Patent.

14. Indeed, I have seen efoil "review" articles that mention, one way or another, that "most efoils have very similar characteristics – about 28 to 35 kg weight, around 1.5 hours of riding time, 2.5 hours to charge…," and as a result most of the competitor products have similar features as ours. (Exh. E at 2; also see e.g., Exhs. N, O, X.) In order to compete with our products, they have had to design their products to be nearly identical to ours, which not only makes them look similar and operate in a similar fashion, but also include the elements set forth in the claims of the '659 Patent. In other words, these competitor products have a nexus to the claims of the '659 Patent, just as our own products do.

LONG-FELT BUT UNRESOLVED NEED

15. When I first started developing our efoil product, I was looking at the current arc of watercraft – jet skis, paddleboards, surfboards, powerboats, etc. – and I wanted to challenge all of them. (see e.g., Exh. G.) A hydrofoil allows you to use less power and provide a unique experience that cannot be found with any of these other watercraft. The use of hydrofoils has been generally known for a very long time, including hydrofoil boards that could be propelled by the force of a wave or by an outside force such as from a kite, jet ski or powerboat – the *Woolley* prior art reference involved in this Office Action is one such example. (see Exhs. J, M.) But no one had as yet figured

out how to incorporate a hydrofoil and propulsor in combination and yet keep it a simple, stable, and easy to use design. As I evaluated the use of a powered hydrofoil board, I came across the patent application that eventually became the '659 Patent, and I knew someone had already been thinking about this. Though again, there was no product and no market for such a product yet.

16. The teachings of the '659 Patent provided additional insight we needed to achieve a working prototype, as it taught the fundamental elements to create a passively stable hydrofoil board that, importantly, did *not* use movable surfaces or steering components. Anyone trying to combine a hydrofoil with a board and a propulsor would, again, determine that movable elements would be needed to control the watercraft. But the inventor of the '659 Patent discovered that a simpler design, without the need for these movable features, was possible.

17. Indeed, this simpler design opened the door to a larger market of potential users, as evidenced by the large amount of sales realized by us and by other licensed and/or copycat designs, and by the differences between our products and those in the prior art These differences include, for instance, the ability to use an electric battery to power our products, the ability of our product to provide an exhilarating yet stable experience, and the ability for this experience to be available to people of all ages and abilities. All of these differences, not found in prior products but demonstrably longed-for in the market, are attributable to the features of the product which are also found in the claims of the '659 Patent – namely, a passively stable, weight-shift controlled personal hydrofoil board that has a hydrofoil and a propulsor but does *not* have movable surfaces or a movable steering system which would render the watercraft overly complex and more difficult to operate.

FAILURE OF OTHERS

18. I am aware that the Examiner is combining multiple references from the prior art in order to show that a person of ordinary skill in the art would recognize that a hydrofoil could simply be added to a powered surfboard to arrive at the claimed invention of the '659 Patent. In my experience with these types of products, I respectfully disagree with this assertion. Indeed, as noted above, I am not aware of anybody else that had previously attempted or was able to make the device recited in the claims of the '659 Patent.

19. In fact, my own efforts to build this product spanned many years. I worked day-in and day-out, 7 days a week, 12-14 hours a day, for six years developing and experimenting with hydrofoils and other watercraft products. But everything we were making was either underpowered (e.g., a

stand-up paddleboard) or was difficult to ride (e.g., a hydrofoil kite board). But one day, I started thinking about how to actually power a hydrofoil board without the need for an external power source, like a kite, a jet ski, a wave, or the like. I looked all over in conducting research on such a device, just to get a frame of reference to see if it was even possible. I came up empty – I couldn't find any information on such a device, how it might operate, etc.

20. Eventually, my own efforts were to the point where I was starting to build prototypes and really try to manifest my ideas into a physical representation. But I was not yet having much luck. I was having trouble getting these ideas to work in the real world. I was having many more failures than successes.

21. At this time, I also considered filing a patent application. I consulted with a patent attorney, who advised me to conduct a patent search before going through the process of preparing and filing a patent application. We started our search, and eventually discovered the patent application that, through a continuation application, eventually became the '659 Patent. As I noted above, upon learning of this patent application, I contacted the inventor and eventually negotiated an exclusive license.

22. The '659 Patent held the "secret sauce" that advanced my ideas and rough prototypes into a working product, which eventually became the wildly successful product it is today. The inventor of the '659 Patent was far ahead of where I was, and his teachings and expertise allowed me to make giant leaps and avoid many more failures.

23. Without the teachings of the '659 Patent, I would not have had enough information or teachings to build the hydrofoil boards covered by the claims of the '659 Patent. I would have made further failures, and probably end up where others had in this industry – i.e., requiring an outside force to propel the hydrofoil (like *Woolley*) or include a complex control system to help stabilize the hydrofoil (like U.S. Pat. No. 7,047,901 to Chen, which is discussed in column 1 lines 50-56 of the Background of the '659 Patent).

UNEXPECTED RESULTS

24. I reviewed the Langelaan Declaration, which accompanies my present Declaration and other documents in response to the Office Action in this reexamination proceeding. In particular, I like his analogy of positioning the tow rope either around a user's waist or around their ankles, and the drastically different results upon the application of a pulling force. In my opinion, this illustrates

the unexpected results we experienced as we developed this product based on the teachings of the '659 Patent. Specifically, by positioning the propulsor on the mast near the hydrofoil, the result should be a strong and immediate "nose-up" pitching moment of the board. This would result in an unusable product. The natural solution for counteracting this force would be to include movable surfaces that would provide opposing forces that could vary depending on the amount of thrust applied by the propulsion source.

25. As I mention numerous times herein, including such movable surfaces would over-complicate the product and likely render it very difficult to use for a majority of people. Thus, both the inventor and I believed that a hydrofoil with no movable surfaces would need to be used.

26. While the inventor's declaration focused this analysis on why a person of ordinary skill in the art would not combine the prior art references, the analysis is in my opinion equally applicable to show the unexpected success we had in realizing that the claimed invention was also successful in real life.

INDUSTRY PRAISE

27. It goes without saying based on the above demonstrated financial success and the evidence of many new entrants into the market after the launch of my company's product, but I have received a mountain of industry praise from competitors, customers, distributors, everyone. The product was something entirely new and never seen before – we created the market from nothing. The praise was generally around how simple it is to get people of all ages and abilities to ride on the efoil products with relative ease.

28. In fact, many of my sales are to resorts and watercraft rental companies that cater to tourists and, generally, first-timers. (e.g., see Exh. B.) Of course, if these resorts and rental companies are charging money to let people experience these products, it is important for the customer to enjoy the experience, and that means being able to stand up on the board and use the hydrofoil to fly above the water, all within a relatively short amount of time. As I mentioned above, I rarely have somebody that cannot use the board in this manner during their first time using the product. Again, the ability for users to enjoy the experience so quickly, even if it is their first time, is due to the passive stability of the watercraft and the lack of additional control surfaces and steering mechanisms, which would only complicate the experience and make it much more difficult to use (if it could even be used at all).

29. Of course, what better industry praise is there than when copycats try and copy your idea and put their own products on the market? As I noted above, we have had plenty of these situations. Some of these are now sanctioned competitive products, licensed under the '659 Patent, while we have had to assert patent infringement actions against others in order to force them to stop infringing on the product that resulted from countless hours of effort and monetary investment. Our success in licensing and patent infringement activities leave no doubt, in my opinion, of the importance of the claimed elements of the '659 Patent relative to both our products and those of our competitors. That is, without passive stability and the absence of movable surfaces and steering components, the product would be neither usable nor commercially viable.

30. Attached hereto are examples of the overwhelming industry praise our product has received since the days we first introduced the device to the world. I provide only a sampling here for illustrative purposes, but I can provide many more examples upon request. (see e.g., Exhs. A-G, I-M, P-U, W, Y.)

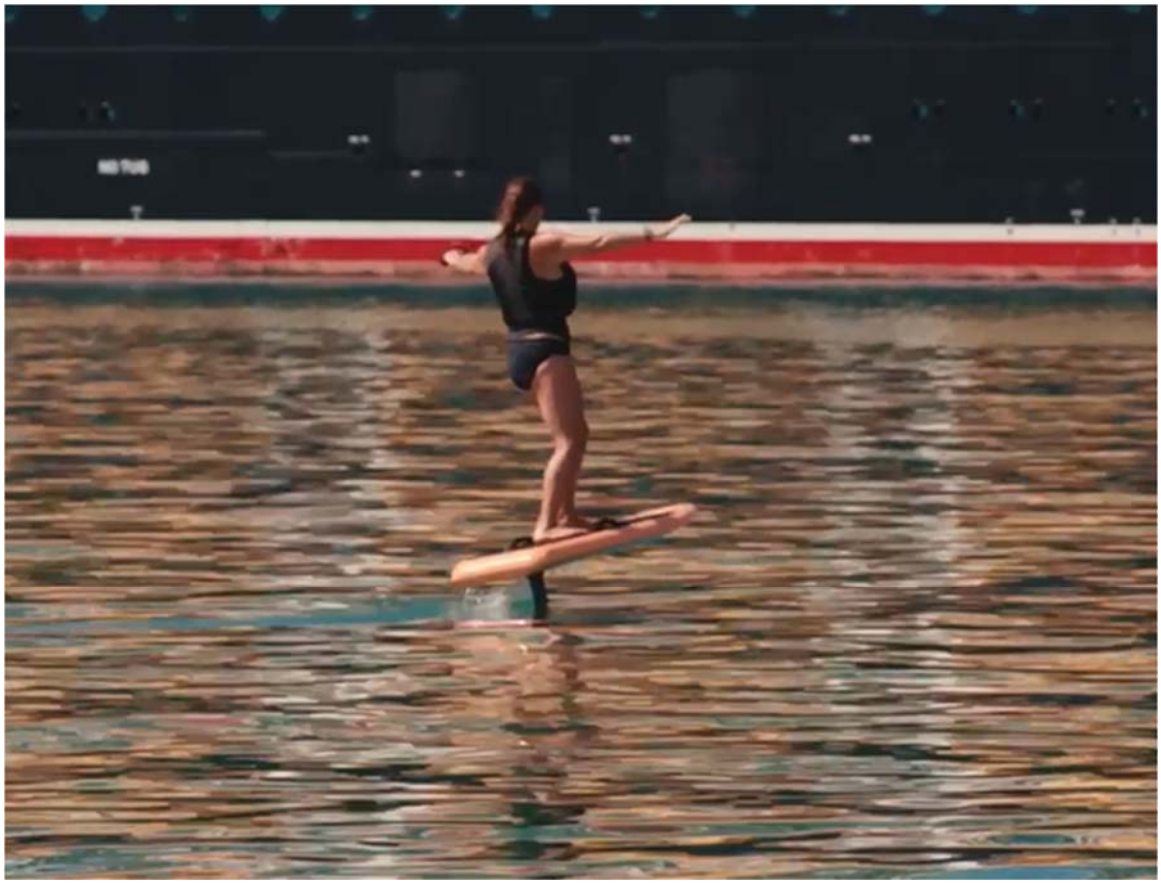
I declare under penalty of perjury that the foregoing is true and correct. I further state that I have been warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code and such willful false statements may jeopardize the validity of the application or any patent resulting therefrom. I state that all statements made of my own knowledge are true and all statements made on information and belief are believed to be true.

Dated:_____

_____
NICK LEASON

EXHIBIT A

Screenshots of a video demonstrating late-age adults riding assignee’s products:














LIFTFO
LIFTFO

EXHIBIT B

PHOTO BY | ELEVATED EAST

FEATURED

SKIMMING OVER THE WAVES LIKE SUPERGIRL

Elevate Your Experience

JULY 16, 2019

BY | NICOLE TEITLER (HTTPS://INDYEASTEND.COM/AUTHOR/NTEITLER/)

SHARE



(https://southforkwindfarm.com/?utm_source=Fall19_Display_Advertising&utm_medium=Desktop_Display_Banner&

William Graham and Kieran McGuire are two guys with a $12,000 toy that anyone can experience for roughly $300. Their company, Elevated East, which officially launched June 1, allows customers to rent a Lift eFoil (that's the $12,000 toy) for 90 minutes. But what's an eFoil? In short, it's a motorized wakeboard that allows riders to hover above the water like Supergirl (or Superman).

MHL Custom v. Waydoo
21-cv-0091-RGA
PTX028
MHL_0100376

The longer explanation: The Lift eFoil uses a "hydrodynamic torpedo design to raise riders up on the hydrofoil to literally fly above water" using a "lithium-ion battery to power a silent electric motor." All of this is controlled by a waterproof, wireless handheld throttle that uses Bluetooth technology to power the board for at least one hour. As you cut through the water, you will float above the horizon at speeds that can reach over 25 mph.

All of this aquatic technology intrigued me as I met up with the guys at Long Beach in Sag Harbor one morning. After a quick tutorial on the shore, I put my safety booties on (they can't get stuck in the propeller, which automatically shuts off once the throttle hits the water anyway), life vest, and helmet. The closest thing I came to doing something this unique in the water was flyboarding — that crazy device that rockets you up into the air like Iron Man (I like my comic book references). The eFoil was a completely different experience.

Like many people on Long Island, I grew up around surfing, and it seemed my muscles remembered the feeling. As I gently pressed the throttle, I went from laying flat on my stomach to progressing onto my knees before fully standing upright — as instructed. But, as Kieran pointed out, I popped up on the board without much use of the in between. Look ma, no hands!

As I glided across Noyac Bay, I felt invincible. My toes guiding the board's direction, eyes taking in the scenery, arms spread open at times like an eagle. Heart racing, mind calm. Invigorated, yet completely at peace. It was a feeling

MHL_0100377

unlike anything else. With surfing, you need a wave. With wakeboarding, you need a boat. With the eFoil, all you need is open water. I didn't need to rely on anything other than my desire to keep lifting up.

My legs and abs definitely felt a bit sore the next day from constantly stabilizing the board. As a beginner, I didn't quite get the air I hoped for. But I still got that natural high, the rush from the experience.

Elevated runs out of Montauk, East Hampton, Sag Harbor, Shelter Island, Southampton, and Hampton Bays. As a client, you pick the village and the guys will pick a spot. There are two 90-minute options: the early bird, a 7 AM time slot for $250, or any other time that's available for $350. The price point also comes with free photos and drone video footage throughout the summer (Will's other profession).

Check out all the ways you'll be elevating your summer at www.elevatedeast.com (http://www.elevatedeast.com/) and on Instagram @elevatedeast.

nicole@indyeastend.com
@NikkiOnTheDaily

MHL_0100378

EXHIBIT C

< https://mikeshouts.com/ >

SHOUTS < https://mikeshouts.com/> Tech Culture and Lifestyle Stuff.

Lift Foils eFoil Hydrofoil Board Lets You Carve Water Even Without Waves

Mike chua < https://mikeshouts.com/author/admin/>
October 1, 2019 < https://mikeshouts.com/lift-foils-electric-hydrofoil-surfboard/>

0 Comments < https://mikeshouts.com/lift-foils-electric-hydrofoil-surfboard/#disqus_thread>

15
SHARES

< https://www.facebook.com/sharer.php?u=https%3A%2F%2Fmikeshouts.com%2Flift-foils-electric-hydrofoil-surfboard%2F>

< https://twitter.com/intent/tweet?text=Lift%20Foils%20eFoil%20Hydrofoil%20Board%20Lets%20C
foils-electric-hydrofoil-surfboard/&via=mikeshouts>

Subscribe

MHL Custom v. Waydoo
21-cv-0091-RGA
PTX034

Quit staring at your too-calm-to-be-true local lake and wishing it had waves so you could surf like you were at the Malibu, thousand of miles away. Just grab yourself a **Lift Foils eFoil < https://liftfoils.com/efoil/>** and you will be carving the water even the lake is as still as the deep layers under frozen tundra.

As an electric **hydrofoil < https://mikeshouts.com/tag/hydrofoil/>** surfboard, eFoil lets you experience a sense of flight as you zip across over the water at speeds of up to 25 mph (about 40 km/h or 22 knots). This may be as close you will get to the *Back to the Future II*'s hoverboard. The only thing is, this has to be use on water.

Key features include an all-carbon hydrofoil, wireless Bluetooth hand controller, interchangeable lithium-ion battery that provides an hour of operation per charge, hydrodynamic liquid-cooled electric propulsion, custom milled aluminum propellers, interchangeable wings and finally, it can be broken down into separate components for easy transportation.

eFoil is suited for riders ages 16 and up and weighing no more than 250 lbs (around 113 kilograms). eFoil electric hydrofoil surfboard can be had for **$12,000 < https://liftfoils.com/efoil/>** . It is available in four board sizes: 4'4 Pro w/ 170 Classic, 5'0 Sport w/ Classic, 5'6 Cruise w/ 200 Classic and 6'2 Explorer w/ 200 Classic.

≤
https://d2cdo4blch85n8.cloudfront.net/wp-content/uploads/2019/10/Lift-Foils-Electric-Hydrofoil-Surfboard-image-3-1024x576.jpg>

≤
https://d2cdo4blch85n8.cloudfront.net/wp-content/uploads/2019/10/Lift-Foils-Electric-Hydrofoil-Surfboard-image-4-1024x576.jpg>

≤
https://d2cdo4blch85n8.cloudfront.net/wp-content/uploads/2019/10/Lift-Foils-Electric-Hydrofoil-Surfboard-image-5-1024x683.jpg>

<

https://d2cd04blch85n8.cloudfront.net/wp-content/uploads/2019/10/Lift-Foils-Electric-Hydrofoil-Surfboard-image-2-1024x576.jpg>

All images courtesy of Lift Foils < https://liftfoils.com/> .

MORE STUFF ON MIKESHOUTS



<

https://mikeshouts.com/https://mikeshouts.com/waydoo-flyer-electric-hydrofoil-board-ces-2019/>

Waydoo Flyer Lets You "Fly" Over Water With "Aircraft Tech" <

https://mikeshouts.com/https://mikeshouts.com/waydoo-flyer-electric-hydrofoil-board-ces-2019/>



<

https://mikeshouts.com/https://mikeshouts.com/boost-surf-electric-motorized-fin-for-any-surfboard/>

Boost Surf Electric Motorized Fin Turns Any Surfboard Into A Powered Surfboard <

https://mikeshouts.com/https://mikeshouts.com/boost-surf-electric-motorized-fin-for-any-surfboard/>



<

https://mikeshouts.com/https://mikeshouts.com/onean-electric-surfboard/>

You Don't Need Waves to Surf with Onean Electric Surfboard <

https://mikeshouts.com/https://mikeshouts.com/onean-electric-surfboard/>





< https://mikeshouts.com/manta5-hydrofoiler-xe-1-hydrofoil-bike/>

This Is Manta5, A Pedal-Assist Bicycle For The Water < https://mikeshouts.com/manta5-hydrofoiler-xe-1-hydrofoil-bike/>

NOW READ **This River Trash Collecting Vessel Is Capable Of Extracting Over 220,000 lbs Of Trash A Day**
< https://mikeshouts.com/the-ocean-cleanup-interceptor-river-trash-collector/>

—

Published by Mike chua Avid tech enthusiast, gadget lover, marketing critic and most importantly, love to reason and talk.
View more posts < https://mikeshouts.com/author/admin/>

Our website uses cookies. By continuing we assume your permission to deploy cookies, as detailed in our Privacy and Cookies Policy < https://mikeshouts.com/privacy/> .

OK

EXHIBIT D

Lift eFoil: Electric Hydrofoil Surfboard

By **Gadget Junkie** - December 5

Subscribe on YouTube Here



Meet the Lift eFoil: an electric hydrofoil surfboard that makes you feel like flying on the water. It has an all-carbon fiber hydrofoil, lithium-ion battery, a silent electric motor, and a wireless Bluetooth hand controller. You will be able to go for an hour at up to 25mph.

> **More gadgets like this: here**



The eFoil can handle up to 250lbs load. It has a rugged, waterproof, and fully submersible construction. With auto shut-off function, the eFoil stops when the hand controller is submerged in water or the lever is released. The bad news? These gorgeous electric hydrofoil surfboards are not cheap.

[HT]

Related Gadgets:

MHL Custom v. Waydoo
21-cv-0091-RGA
PTX134
MHL_0100362



Wavestorm 8' Classic Pinline Surfboard

$274.99

(17)



Bell 7052916 Radian Locking Light Set

$10.63 ~~$24.99~~ prime

(190)



Hover Glide Foil Wake Package Complete - …

$1495.00

(1)



Waterblade Motorized Electric SUP Stingr…

$519.99 ~~$620.00~~

(2)

Ads by Amazon

*Our articles may contain aff links. Please read our disclaimer on how we fund this site.

Load Comments

EXHIBIT E

The AURA



The ultimate best eFoil 2021 overview

WINGFOILDAILY 2. APRIL 2021 1 325 0 0

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are

Ok No Privacy policy

MHL Custom v. Waydoo
21-cv-0091-RGA
PTX135



Best eFoil 2021 – what has this exciting new sport to offer this year?

We all love wing foiling – but how do we get on the water when there is no wind? The eFoil is a great toy to spend time on a calm day on the water. Great for fun for you and your friends but also a perfect tool to learn and improve your foiling skills.

This article will give you some info about the best eFoil 2021! Thanks to Mike Zed from *jetsurfingnation.com* for the great work.

Top Electric Hydrofoils for 2021 season

The new exciting sport of electric hydrofoils or efoils is taking over the world with new efoils appearing almost every month!

Let's have some fun and take a look at the best and most promising electric hydrofoils – the best eFoil 2021.

This time we'll exclude all untested efoils, DIY efoils, and prototypes, Chinese ripoffs of the legal brands sold on Alibaba marketplace, and boards that are not ready for sale yet!

In case you are wondering, most efoils have very similar characteristics – about 28 to 35 kg weight, around 1.5 hours of riding time, 2.5 hours to charge, and the price range from 6 to 12 thousand USD. True, they are pretty expensive luxury water toys but remember it's a next-generation product and that involves a lot of expensive research and development especially in making a powerful electric battery that can be safe for use and fully waterproof.

Efoils are easy to learn even if you have no surfing experience. They are fun, addictive, and can be used everywhere – from calm lakes to wavy oceans. A zero-emission electric motor is noiseless and provides an amazing feeling of flying over the surface of water.

Before we go any further, make sure to hit the Subscribe button and check all our in depth reviews of electric hydrofoils and jetboards on our channel to find out more about these amazing boards.

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok No Privacy policy

eFoiling is the perfect option for no wind days. Rachel having fun in Cape Town.

Here are our top picks for the best eFoil 2021 by the JetSurfingNation team!

There is no particular order, they are all great products and provide very similar flying experience but differ in quality, price, and customer service.

LIFT FOILS

Lift Foils is one of the oldest original electric hydrofoils; one of the main pioneering machines in this industry. Lift is a product created by Nick Leason and his team from Puerto Rico. Currently, Lift is one of the market leaders shipping a big amount of high-quality efoils around the world and developing new models of wings and styles. Lift Foils is known for its wide range of board shapes, a foldable propeller, and a big and active community of Lift fans and followers. You can watch a detailed video review on our channel to learn more about this exciting product.

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok No Privacy policy

Rodeo is an exciting efoil from Slovenia, this machine was developed by the talented engineer David. We had a chance to meet David and his team and tried out the board last year. Flying rodeo is lightweight, sturdy, and provides over 1 hour of exciting foiling action. Unfortunately, the board is custom made so it will ship only in small amounts.

Waydoo

Waydoo is a new promising Chinese brand formed from Kickstarter that offers several models such as Waydoo Flyer ONE and Carbon version which feature Plug&Play design, the world's first cordless battery, and affordable price. It's also very lightweight and fun to ride. Unfortunately, for its low price point, it comes with several known quality issues (as expected) and the motor is pretty noisy compared to other efoils on our list.

The Waydoo eFoil – your choice for 2021?

E-Takuma

e-Takuma is also known as Avante efoil in North American markets. This company offers a fun and affordable foil from Takuma Concept, a famous French-Japanese brand that is also producing traditional hydrofoils and wings. It features a modular system and should let you ride up to 75 minutes, gliding at a speed of 35 km/hour. Their new smaller model called carver is lighter and has a longer mast which makes it better for pro riders and wave riding.

Powerfoil

Powerfoil is a promising French foil by Chris from Redwoodpaddle – maybe the best eFoil 2021? Like in many other boards, the electric foil is separated from the board, which will allow the board to be adapted according to its weight, but also the possibility of changing boards according to the evolution of one's own practice. A beginner will easily start with a large inflatable board, for example, but will be able to move on to a small rigid board overtime for more maneuverability.

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok No Privacy policy

Ewave is a very interesting revolutionary concept that combines both efoil and electric jetboard, two in one! The Ewave electric jet board has a 6000 RPM engine promising the top speed of up to 56 km/hour and a battery life of up to 35 minutes. The best part about this board is its new dual system which lets you switch between jetboard and hydrofoil attachment, making it the first "two in one" solution on the market combining jetboard and efoil together as an interchangeable system. The riding time in efoil mode is significantly longer and provides you with more than an hour of cruising above the water surface. This machine lets you enjoy the rapid turns, jumps, and adrenaline rides! Make sure to check our full tests and interview with the developers of ewave before you buy it!

FLITEBOARD

FLITEBOARD is an outstanding efoil from Australia which combines the quality and the top features that every hydrofoil user desires. Fliteboard comes in several shapes and sizes, including the inflatable one for easier learning. Everything about fliteboard screams high quality, and that's why it is one of the top picks among all hydrofoils this year! Make sure to watch the interview with the developers and our tests on our channel to learn more about it.

Video: The best eFoil 2021!

There are many other hydrofoils on the market but most of them are either not on sale or barely tested so we can't recommend them yet as the best eFoil 2021.

Such efoils include Chinese Hover Foil H5 by Havospark, candy-looking foil from GetFOIL which should be finally shipping this year, PegasusFoil from Singapore with modular click design, CabraTec which is a Czech Republic development, Neptune X from Efoilfly, Manta efoil and many more!

That's all for today. I hope you enjoyed our list and become a part of this exciting new sport of motorized surfboards and efoils.

If you want to learn more about each board from our list, make sure to check other videos on our channel where we meet the developers and ride and test their boards together!

Thank you for watching, and don't forget to subscribe to Jetsurfingnation!

I'll see you in the next one! Cheers!

Pictures: Rider Rachel Shenton photo by WINGFOILDAILY.

WINGFOILDAILY / Equipment

Post Views: 325

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok No Privacy policy

0 0

TAGS Best Boards E-Foil Efoil Electric Equipment Foil Hydrofoil News Overview Wingfoildaily

Previous Post

Launch of the Duotone Slick 2021

Next Post

New FreeWing Air V2 is here!

LEAVE YOUR COMMENT

Your comment *

Your Name *

Your Email *

Your Website

Save my name, email, and website in this browser for the next time I comment.

POST COMMENT

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok No Privacy policy

Al Ex
2. October 2021 at 13:37

Reply

GETFOIL.COM is total garbage. Received mine almost 4 months after I paid for it. In the 3 weeks ive owned it, controller, battery, and motor/prop have all failed. Leaky hatch, rusty hardware. 3 WEEKS!!!
No refunds, period.

English





About WINGFOILDDAILY

WINGFOILDAILY is the website with everything about the sport. Wing foil news, boards, wings and foils. See action videos and pictures from the wing foil community and more.

FOLLOW US ON SOCIAL MEDIA

RECENT POSTS

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok No Privacy policy

GWA Wingfoil World Tour New Zealand Finals

Day 4 GWA Wingfoil World Cup New Zealand

Wingfoil World Tour New Zealand 2023, Day 01

GWA Wingfoil Tour Debuts in New Zealand

Copyright WINGFOILDAILY 2022

Terms and Conditions - Privacy Policy

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok No Privacy policy

EXHIBIT F

ADVERTISEMENT

The innovative surfing tech making waves

14 March 2022



KIANA FORES

MHL Custom v. Waydoo
21-cv-0091-RGA
PTX136

> Foil boards have a long carbon-fibre rod extending downwards from their underside to two underwater wings

By Richard Baimbridge

Business reporter

With more than 35 million surfers around the world, the sport is big business. The industry is increasingly turning to technology for bigger, better and safer thrills.

Kiana Fores appears to be standing on a surfboard that's flying through the air almost 3ft (1m) above the waves.

Moving smoothly over the water off the coast of the Hawaiian island of Oahu, the former professional surfer is riding on a hydrofoil surfboard, also known as a foilboard.

These are surfboards that have a long carbon-fibre rod, or mast, extending downwards from their underside to two underwater wings.

When the speed and momentum of the sea is sufficient, the wings (also made from carbon fibre) are pushed through the water, lifting the surfboard and its rider up into the air.

In turn, many foilboards now have electric-powered propellers built into their masts, giving extra power so they be used when there are no waves. This means that the user can go surfing not just on flat seas, but even on lakes and rivers.





LIFT HYDROFOILS

"Part of what got me into foiling was the fact that there weren't many women doing it," says Ms Fores, aged 26. "Sometimes I catch the guys off guard, because they're like 'oh, there's a girl out here'.

"And then I think it trips them up that I can actually foil. So it's kind of exciting," she laughs.

While hydrofoil technology has existed in boating for more than a century, it wasn't until the early 2000s that it started to make its way into surfing. Electric-powered hydrofoil surfboards or 'efoils' then arrived in 2018 when Puerto Rican firm, Lift Hydrofoils released the first that was commercially available.

"Foiling is opening up the realm of what's surfable," says Nick Leason, the company's chief executive.

Our biggest efoil sales, by far, are coming from people who don't live by the ocean. They're like 50-year-old women who live near lakes." Mr Leason adds that the firm sold more than 4,000 products last year.

Artificial, inland surfing facilities **have been around since the late 1960s,** and to this day the aim for designers is bigger and better waves.

Australian firm, Surf Lakes, is preparing to debut what it says is the biggest thing to hit the sector, literally and metaphorically.

Still in the research and development stage, it has built a large test facility 20km (12 miles) inland from the Queensland coast. In the middle of a 3.6 hectare (nine-acre) man-made pool, a 1,400-ton, compressed air, steel pump goes up and down every six seconds. Powered by electricity, the pump creates 360-degree waves up to 8ft (2.4m) high, at a rate of 2,000 per hour.





SURF LAKES

vary in shape as they hit different parts of the lake. "So you can have a whole family with different surfing levels all surfing together at the same time."

Although the company has yet to open a facility to the public, it says it now has 20 projects in development across Australia, Asia, Europe and the US. Its biggest sites will allow 200 people to surf at the same time.

"The real market is the 99% of people in the world who have never surfed," says Mr Trevis. "In the next 10 years surfing could be 10 times the size the industry it is now."

He adds that Surf Lakes' system could theoretically make 15ft waves for professional surfing competitions.



SURF LAKES

Surf Lakes says its facilities can create 2,000 waves per hour

Back out in the ocean, Maya Reis Gabeira from Brazil, holds the record for the highest wave successfully surfed by a woman. This was back in February 2020 when she conquered one 22.4m (73ft) high in Nazaré, Portugal.

"There's so much improvement with the help of technology," says the 34-year-old. "Like measuring the height of waves scientifically, in real time, for world record prospects.

"And communication is also now becoming much more sophisticated between people in the water [on jet skis] and on the cliffs," she adds, in regard to the crews on standby to rescue professional surfers that get into difficulties.



GETTY IMAGES

Maya Reis Gabeira, bottom right, surfing a very large wave

For surfers with environmental concerns, the fact that the majority of surfboards are still made from polyurethane, a type of plastic, is problematic.

A small start-up French company called Wyye, says one of the solutions is 3D-printing surfboards using bio-plastics which are made from corn starch.

NEW TECH ECONOMY

New Tech Economy is a series exploring how technological innovation is set to shape the new emerging economic landscape.

Founded two years ago by friends, Sylvain Fleury and Leo Bouffier, Wyye now has eight employees, and four 3D printers running day and night at its base near Biarritz in south west France. The firm makes the boards according to each surfer's size, weight and requirements, and ships them across Europe.

In the future it wants to set up other manufacturing facilities overseas, each near key surfing locations.

"The goal is to duplicate our micro-factory model and 3D-print boards near popular surf spots around the world," says Leo Kerhir, Wyve's head of international business development.

He adds that it currently takes an average of 20-50 hours to print a single board. "But 3D printing technology is improving super fast. Now it's a two-week process from order to delivery, which is the same as a regular custom surfboard. And I think we can reduce that very soon."



MAUD FRYDA

Leo Bouffier, left and Sylvain Fleury plan to set up production facilities near surfing hotspots around the world

While shark attacks around the world **remain thankfully rare, with a global average of 72 a year,** they do worry many surfers.

Nathan Garrison is one such person, after a childhood friend from his hometown Charleston, South Carolina, was attacked when he was a teenager. And then years later a neighbour of his in California was killed by a great white shark.

To help prevent attacks, Mr Garrison launched a product called Sharkbanz, back in 2014. It is a small device that a surfer can wear on his or her wrist or ankle.

It uses magnets to create an electromagnetic field of about 6ft that interferes with the electric field senses that a shark uses to hunt and navigate.



SHARKBANZ

The Sharkbanz tag is bought by up to 30,000 surfers per year

"It's kind of like [the human equivalent of] looking at the sun with your eyes, or shining a bright light in someone's face," says Mr Garrison. "It's unpleasant for the shark and makes it want to turn away."

Although he now sells up to 30,000 Sharkbanz per year, a report by the Western Australia government found that the technology has a 65% success rate. That is less than two thirds, and in 2016 a surfer in Florida who was wearing the device required 44 stitches after a bite.

"Like any safety device, it's never going to be 100% effective," says Mr Garrison. "Sharks are wild animals. But this has been shown to at least reduce the risk. It tells a shark that you're there, and to look elsewhere for its meal."

Related Topics

3D printing **Plastic** **Surfing**

Top Stories

Mexico cartel turns in own men over US kidnappings

1 hour ago

Deadly shooting at Hamburg Jehovah's Witness hall

1 hour ago

Ukraine hit by hypersonic missiles in new barrage

5 hours ago

ADVERTISEMENT

Features











Quiz of the week: Why was cheese in the news?



Afro-soul star Libianca set for UK chart first



The Afghan woman who won a gold medal in India





Africa's top shots: Cool frames and gold nuggets



The driver of the 'insect apocalypse'

The false claims fuelling Tunisia migrant tension



Why Russia's energy war strategy isn't working

PAID AND PRESENTED BY



Elsewhere on the BBC







Why scraping burnt toast may be wise

Most Read

1 Mexico cartel turns in own men over US kidnappings

2 Deadly shooting at Hamburg Jehovah's Witness hall

3 Actor Robert Blake, once tried for murder, dies at 89

4 Ukraine hit by hypersonic missiles in new barrage

5 What Fox News stars really think about Trump

6 Canada police investigate Chinese 'police stations'

7 Oscars urged to remove presenter over China remarks

8 Tiger Woods' ex says she was tricked into eviction

9 US man puts phone on drone to send rescue message

10 UN buys huge ship to avert catastrophic oil spill

BBC News Services

On your mobile

On smart speakers

Get news alerts

Contact BBC News

© 2023 BBC. The BBC is not responsible for the content of external sites. **Read about our approach to external linking.**

EXHIBIT G

BOATING
(https://www.boatingmag.com)

ADVERTISEMENT

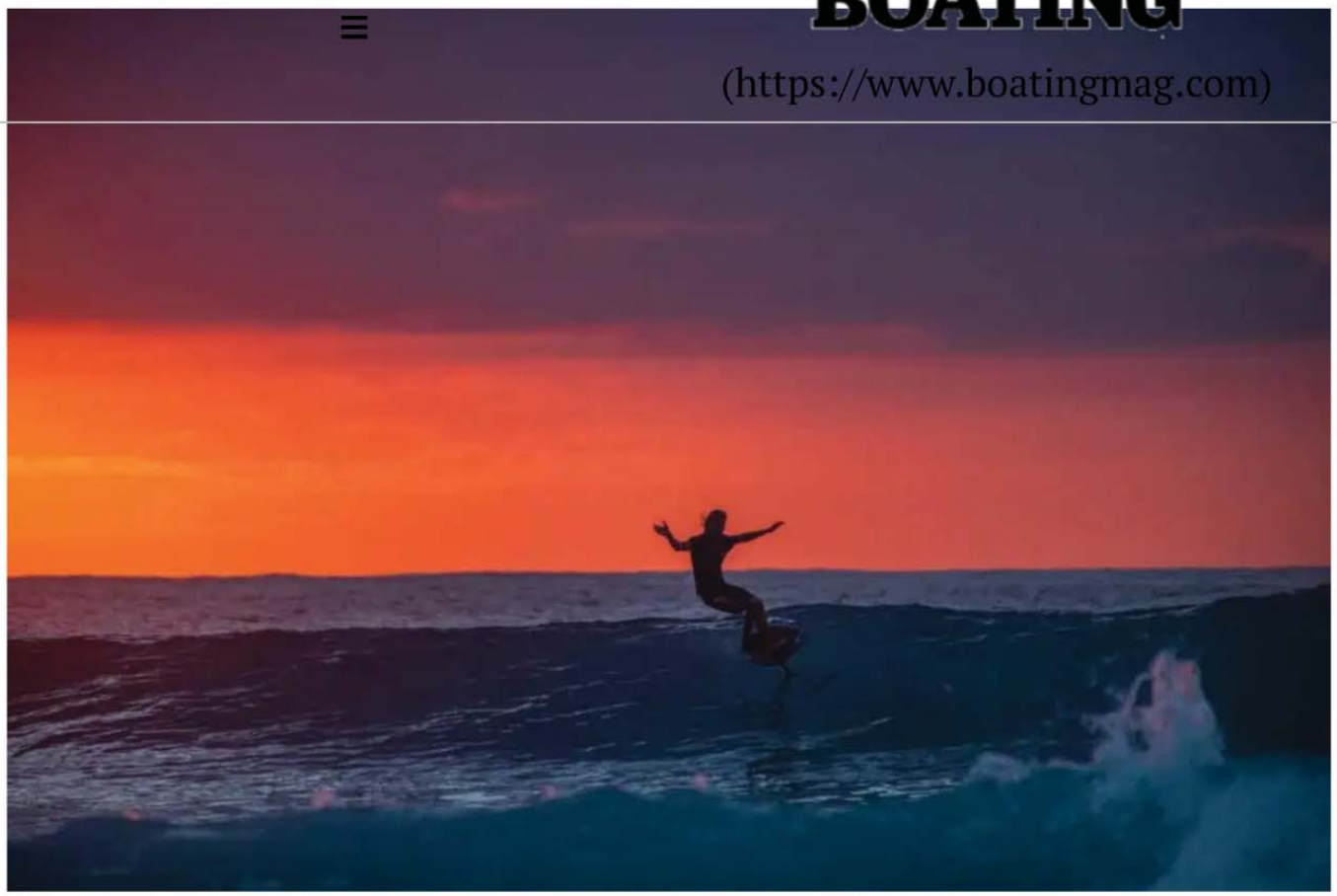
GEAR (HTTPS://WWW.BOATINGMAG.COM/CATEGORY/GEAR/)

eFoils are the Next Personal Watercraft

Why eFoils might be the next fun water toy for boaters.

By Andrea Gaytan | August 14, 2021

MHL Custom v. Waydoo
21-cv-0091-RGA
PTX137



The eFoil is a fun way to catch more waves at your favorite break. *Zach Stovall*

On a recent surfing trip to Puerto Rico, I witnessed something I'd never seen before. My son, Kai, and I paddled out into a crowded lineup, where the local surfers chitchatted while hungrily waiting for waves. When a set approached, a figure appeared on the horizon moving toward the break, silent and swift like a shark but hovering a few feet above the water.

Through squinting eyes, I made out the silhouette of Nick Leason foiling toward us, towing wakeboarding legend Brian Grubb with a rope. In an instant, Leason disappeared behind the swell as he whipped Grubb into the steep face of the wave. Grubb let go of the rope and breezed by us, foiling right through the lineup. In awe, we watched him surf the foil down the line, leaving no trace behind but the baffled expressions of the crowd.



An eFoil makes for a great tow-in vehicle. *Zach Stovall*

Moments later, Leason foiled toward Grubb, picked him up, and towed him into another wave before we could even blink. And again, Grubb flew by with his unique swinging style while the rest of us duck-dived. Coming up for air, surfers with confused looks searched for the invisible personal watercraft.

ADVERTISEMENT

What had just happened?

Welcome to the future.

Time to Fly

BOATING
(https://www.boatingmag.com)

What those stunned surfers in Puerto Rico watched happen in the water that day was a real-time introduction to the possibilities of e-foiling. What is it? It's based on centuries-old technology: using a foil to generate lift in the water.

ADVERTISEMENT

Hydrofoiling is the art of flying over the water using a winged keel, like a small airplane wing that goes through the water and creates lift. Foils were first invented by the father of the telephone, Alexander Graham Bell, as he tried to elevate his boat over the water and make it fly. Hydrofoils are now used in commercial ferries, the fastest sailboats in the world and, as we saw, under the coolest surfboards you've ever seen. What makes them unique is that they fly over the water, free of noise and chatter.

You can launch it and ride it everywhere—whether it's glassy, windy or choppy, in rivers, lakes or the ocean. You can foil through the open sea or navigate crowded waters. *Zach Stovall*

What does this have to do with boating? The eFoil is technically the smallest personal watercraft on the market, created and built by Leason, Lift Foils' CEO. It also harnesses the latest advances in electric marine propulsion. The company's headquarters is located on the North Shore of Puerto Rico, the perfect place for us to test its possibilities.

Ready for Takeoff

Our crew included Kai, Grubb, Leason and his girlfriend, Morgan Lowry, and photographer Zach Stovall. When we arrived, we were delighted to find an 8- to 10-foot swell in the warm blue water peeling along prime surf spots just minutes away from Leason's home.

ADVERTISEMENT

The eFoil totes easily, doesn't take very long to assemble, and the waterproof battery pack is easy to install and remove. *Zach Stovall*

After feasting on delicious arepas (cornmeal cakes), we drove from Leason's house to Wilderness surf break, where he and Grubb carried the eFoils down to the beach and set them up in less than five minutes. As they got in the water, Kai and I paddled conventional surfboards toward the point.

Leason's invention offers amazing utility. With the eFoil, there's no need for a large personal watercraft, which requires the added inconvenience of towing a trailer, to drop into the surf. The portable watercraft is quick and easy to assemble. You can launch it and ride it everywhere—whether it's glassy, windy or choppy, in rivers, lakes or the ocean. You can foil through the open sea or crowded waters.

All foil functions can be controlled by the rider from the wristband, including adjusting the speed during operation. *Zach Stovall*

Because the eFoil is all-electric, it has minimal impact on the environment. It's powered by rechargeable batteries, which last more than 90 minutes. The eFoil is boosted by a finger-triggered remote control and can reach speeds up to 35 mph with a gentle squeeze of the hand.

ADVERTISEMENT

After watching Grubb and Leason have all the fun, I wanted to give it a try.

Flight Simulators

BOATING
(https://www.boatingmag.com)

The next morning, eager for a turn, we chose the calmer waters at Crash Boat Beach.

"Are you ready?" Grubb asked from across the water while I held the remote control in one hand and got ready to do a kneeboard start on the glossy new eFoil. Gasping, I reminded myself to stop accelerating if I fell down because my hand was controlling the fanlike propeller underneath the board. I thought of a famous quote from Sir Edmund Hillary, the first person to climb Mount Everest: "It's not the mountain that we conquer but ourselves."

It's easy to get the hang of foiling. *Zach Stovall*

I took a few deep breaths, noting that the wind had picked up and feathered the ocean. Grubb laid his eFoil next to mine to help guide me through the water start. As soon as we got underway, (http://www.boatingmag.com)

BOATING

The sensation of foiling is unlike anything else. Once the board catches speed and lifts above the water, the wing takes control and the flight begins. “Even if you’re not a surfer and you know nothing about the feeling of gliding on the water, on your first session, not only are you gliding on the water, but you’re actually flying over it as the board rises up and becomes some sort of magic carpet,” Leason says.

He was right. After just a few tries, I was flying like Aladdin, surprised by how easy it was. The speed helped the board stay balanced. I was in charge.

From cruising to tricks, the eFoil is a versatile performer. *Zach Stovall*

The eFoil allows everyone to participate. You don't have to be a skilled athlete to get up and ride. With a proper introduction, most people are riding within their first 30 minutes, and even absolute landlubbers — especially me.

BOATING (https://www.boatingmag.com)

In Formation

To further demonstrate the eFoil's versatility, we next drove 30 miles to the lush Rio Guajataca. On the glassy river waters, Lowry and I flew by packs of kayakers without disturbance. Afterward, none of us could stop smiling. Leason invited us to another luscious meal, where we celebrated and delved into the backstory of his foil.

Before Leason created (and patented) the first electrical foil, he got into foiling in 2009, when it first started to appear in the world of kitesurfing.

The foil acts similarly to an airplane wing, generating lift and allowing the board to glide above the water. *Zach Stovall*

"There was a group of legendary surfers in Maui, strapping themselves into full-metal hydrofoil surfboards and riding massive waves. A few guys tried to adapt the sport to a more user-friendly design to be sailed behind a kite. It was the beginning of a brand-new sport," he explained.

He took it upon himself to design his own foil for kitesurfing and learn the tools necessary to build one.

"I spent several years on that initial project, designing new wings and figuring out how it all worked. It became an obsession that took over my life," Leason said.

Advancements in battery technology as well as electric components made foils possible. *Zach Stovall*

The concept on an electric-powered, hydrofoil surfboard came from discussions with some of his friends. It was a radical idea but perfect timing with the emergence of better, lighter batteries and electric-propulsion technology.

Leason developed the first prototypes in 2015 and quickly discovered that it was possible and the idea had potential, but it faced a lot of challenges. The most difficult part of the project was assembling a team of engineers and suppliers to help build this new craft. There was nothing in the world like it and nothing to visualize.

“I had to create a decent enough prototype and visual representation to show them that this was what we wanted to build and perfect. Once the visualization started to align, it was game on,” Leason explained.

The eFoil looks like a simple build. It's a surfboard with a battery and a motor, right? Wrong. "It's a product of contradictions. It has to be light but strong. Batteries are in the water. It has to be structurally strong enough to handle heavy loads. Every little detail of the eFoil offered a unique challenge, and it took years before we had something that we could ship."

BOATING
(https://www.boatingmag.com/)

The most difficult part of the project was assembling a team of engineers and suppliers to help build this new craft. There was nothing in the world like it and nothing to visualize. *Zach Stovall*

In 2018, Leason launched his product. "It was a leap of faith in many ways, but we made it happen, and our customers have been loving it ever since," he says.

Read Next: Water Skiers Try Wake Foiling (https://www.boatingmag.com/story/water-sports/old-dogs-learning-new-tricks-water-skiers-try-wake-foiling/)

The novel activity opens a new horizon to watersports, whether you're surfing or going for a cruise down the coast with your friends. It's an evolutionary jump in what is possible on the water in a powerful and eco-friendly manner.

BOATING (https://www.boatingmag.com)

"The feeling is indescribable, and every cell in your body is awake and alive," Leason says. "It's a moment of magic and disbelief. It's like you bypassed learning to walk and went straight into flying. That's the kind of experience we're creating with our eFoils, and people are loving it."

As I seemingly glided through the air on our last day in Puerto Rico, I could not disagree. I felt freedom, like there was nowhere I couldn't go. I can fly, as long as I'm standing on an eFoil.

MORE GEAR (HTTPS://WWW.BOATINGMAG.COM/TAG/GEAR/) ,
WAKEFOIL (HTTPS://WWW.BOATINGMAG.COM/TAG/WAKEFOIL/) ,
WATER SPORTS (HTTPS://WWW.BOATINGMAG.COM/TAG/WATER-SPORTS/) ,
WATERSPORTS (HTTPS://WWW.BOATINGMAG.COM/TAG/WATERSPORTS/)

More Gear

Popular in the Community

Test: Sionyx Nightwave D1 (Https://Www.Boatingmag.Com/Gear/Test-Sionyx-Nightwave-D1/)



(https://www.boatingma
sionyx-nightwave-d1/)



Sponsored by: YouTube TV

YouTube TV Official Site

Try it Free. Terms apply, cancel anytime

AdChoices Sponsored

Use An NMEA Translator To Net dio (Https://Www.Boatingmag.Co \n-Nmea-Translator-To-Network-A-Vhf-Radio/)



Conversation 4 Comments

Commenting as **Guest**

What do you think?

Sort by **Best**

DP 38off
26 September, 2022
I had an air chair and enjoyed it but after a while I got tired of it. This is a very nice but expensive toy
Reply • Share

PETER HOSCHL
6 April, 2022
Awesomeness
Reply • Share

Powered by OpenWeb

Terms | Privacy | Feedback

Lowrance HDS Pro Series (Https://Www.Boatingmag.Com/Gear/Lowrance-Hds-Pro-Series/)

Prescription Polarized Sunglasses Can Improve Your Boating Experience (Https://Www.Boatingmag.Com/Gear/Prescription-Polarized-Sunglasses-Can-Improve-Your-Boating-Experience/)

(https://www.boatingmag.com)
(https://www.boatingmag.com/story/gear/lowrance-hds-pro-series/)
(https://www.boatingmag.com/story/gear/prescription-polarized-sunglasses-can-improve-your-boating-experience/)





Read More

(https://www.boatingmag.com/gear/test-sionyx-nightwave-d1/)

Test: SIONYX Nightwave D1 (https://www.boatingmag.com/gear/test-sionyx-nightwave-d1/)

(https://www.boatingmag.com/gear/use-an-nmea-translator-to-network-a-vhf-radio/)

Use an NMEA Translator to Network a VHF Radio (https://www.boatingmag.com/gear/use-an-nmea-translator-to-network-a-vhf-radio/)

(https://www.boatingmag.com/gear/lowrance-hds-pro-series/)

Lowrance HDS Pro Series (https://www.boatingmag.com/gear/lowrance-hds-pro-series/)

(https://www.boatingmag.com/gear/prescription-polarized-sunglasses-can-improve-your-boating-experience/)

Prescription Polarized Sunglasses Can Improve Your Boating Experience (https://www.boatingmag.com/gear/prescription-polarized-sunglasses-can-improve-your-boating-experience/)

(https://www.boatingmag.com)

Cookie Preferences

SUBSCRIPTIONS

Subscribe (/subscribe-footer/)

Renew (/subscribe-renew/)

Digital Edition (/subscribe-digital/)

Customer Service (/subscribe-cs/)

ABOUT US

Privacy Policy (https://www.bonniercorp.com/privacy-policy/)

Terms of Use (https://www.bonniercorp.com/terms-conditions/)

Abuse (https://www.bonniercorp.com/abuse/)

Contact Us (https://www.boatingmag.com/contact-us/)

Careers (https://phh.tbe.taleo.net/phh03/ats//careers/jobSearch.jsp?org=WORLDPUB&cws=1)

FOLLOW US

Email Newsletters (https://link.boatingmag.com/join/7fr/boating-signup?loc=footer&lnk=em)

Facebook (https://www.facebook.com/boatingmag/)

Twitter (https://twitter.com/boatingmagazine/)

Instagram (http://instagram.com/boatingmagazine/)

YouTube (https://www.youtube.com/BoatingMagazine)

BONNIER BRANDS

Boating (https://www.boatingmag.com)

Cruising World (https://www.cruisingworld.com)

Florida Travel + Life (https://www.floridatravellife.com/)

Islands (https://www.islands.com)

Marlin (https://www.marlinmag.com)

BOATING

(https://www.boatingmag.com)

Sailing World (https://www.sailingworld.com)

Salt Water Sportsman (https://www.saltwatersportsman.com)

Sport Fishing (https://www.sportfishingmag.com)

Wakeboarding (https://www.wakeboardingmag.com)

Yachting (https://www.yachtingmagazine.com/)

Many products featured on this site were editorially chosen. Boating Magazine may receive financial compensation for products purchased through this site.

Copyright © 2023 Boating Magazine. A Bonnier LLC Company (https://www.bonniercorp.com/). All rights reserved. Reproduction in whole or in part without permission is prohibited.

EXHIBIT H

MARINE

Lift Foils $12,000, 25 mph electric hydrofoil surfboard set to launch in September

By Mike Hanlon
July 12, 2017



MHL Custom v. Waydoo
21-cv-0091-RGA
PTX172



Ad closed by Google

The power of the eFoil electric hydrofoil surfboard is controlled by a wireless hand controller and the rider's "body English," with the waterproof controller using Bluetooth connectivity and designed so that it floats if it should be dislodged from the rider's hands.

MORE STORIES



Amogy plans world's first ammonia-powered ship for 2023



Polaris decides to get very serious about UTV racing

The eFoil has a top speed of 22 knots (25 mph), and deliveries will begin in September of this year for US$12,000.

The eFoil board will initially be available in two sizes: 168 cm x 71 cm (5 ft 6 in by 28 in) for the standard E1 eFoil, and 152.5 cm x 63.5 cm (5 ft 6 in by 25 in) for the E1 Sport model. "The standard eFoil is more stable with the bigger deck, while the smaller board is more nimble and turns quicker," according to Lift Foils founder Nick Leason.

Ad closed by Google

Both models will be available in four colors: carbon black, carbon free, carbon blue and carbon purple. A variety of masts and foil wings for specific purposes, such as surfing, will also be available.



The Lift Foils eFoil Lift Foils

Production will begin in September with volume production scaling up in October, though the order books are already threatening to overwhelm production capabilities and if you want one prior to Christmas, be quick.

"The top speed of the eFoil is about 22 knots (25 mph), though it's a pretty exciting ride at that speed, and my preferred cruising speed on the eFoil tends to be a bit less than that where the ride is not quite as crazy," Leason told New Atlas.

"At that speed (22 knots), you're burning quite a bit of juice and although I've never actually run it at full speed for that long, I'd expect you might only get 20 to 25 minutes from a full charge," said Leason. "I'm 175 pounds and typically I ride anywhere from 45 to 55 minutes at my cruising speed of 16 to 17 knots."

For those who want to get the most from their eFoil, the battery is a stand-alone unit with an integrated carrying handle and easily swapped, with a second battery available at $3,000. The battery can be recharged via a normal home power outlet and the 1,200 watt charger that comes with each eFoil, with recharging taking around two and a half hours.



The Lift Foils eFoil Lift Foils

"Inside the board is a big waterproof compartment that houses the battery and other electrics," said Leason. "To access the battery, you open two compression latches and the battery is secured by a seat belt arrangement. It's easily accessible and can be swapped out easily and quickly."

"The battery is two kilowatt hours (2 kWh) though, so it offers quite a long ride and I don't think that most people will need a second battery," he added.

Lift Foils is run by American Nick Leason from Puerto Rico, though the majority of the eFoil's components are being manufactured in Asia, including all composite components and the hand controller, while the batteries are being manufactured in San Francisco.

"Everything is being assembled here in Puerto Rico where we can monitor the quality assurance and ensure everything is exactly as we want it to be," said Leason. "That will change in the future, but only once we're confident we can maintain the quality.

"We'll be scaling up production one step at a time, and I'm currently bringing on additional suppliers for each of the components and we'll continue to scale up production across 2018 in preparation for manufacturing a broader range in 2019.

"The aim is to have a couple of different price points and a couple of boards with different construction materials. I'm hoping for a linear growth in our production capacity over the next few years."

You can see more of the eFoil in the mini documentary video below.

Source: Lift Foils



Lift eFoil Mini Documentary

Lift Foils

05:33

Lift eFoil Mini Documentary

VIEW GALLERY - 25 IMAGES

We recommend

Recent advances in the application of biomimetic nanomedicines in disease treatment
Yu Wu et al., Biomedical Engineering Communications, 2022

Biomimetic microstructural scaffolds and their applications in tissue engineering
Ru-Rong Lin et al., Biomedical Engineering Communications, 2022

Recent developments of fluorescence imaging technology in the second near-infrared window
Shu-Tong Wu et al., Biomedical Engineering Communications, 2022

Clinical Diabetes Video Series: Optimimizing the Use of GLP-1RAs in Type 2 Diabetes
John Anderson et al., Clinical Diabetes

Clinical Diabetes Video Series: CGM to Optimize Diabetes Care
Eden Miller et al., Clinical Diabetes

Video Series: CGM to Optimize Diabetes Care
Eden Miller et al., Clinical Diabetes

Powered by TREND MD

TAGS MARINE WATERCRAFT SURFBOARD HYDROFOIL ELECTRIC SURFBOARDS EFOIL

7 COMMENTS



Mike Hanlon

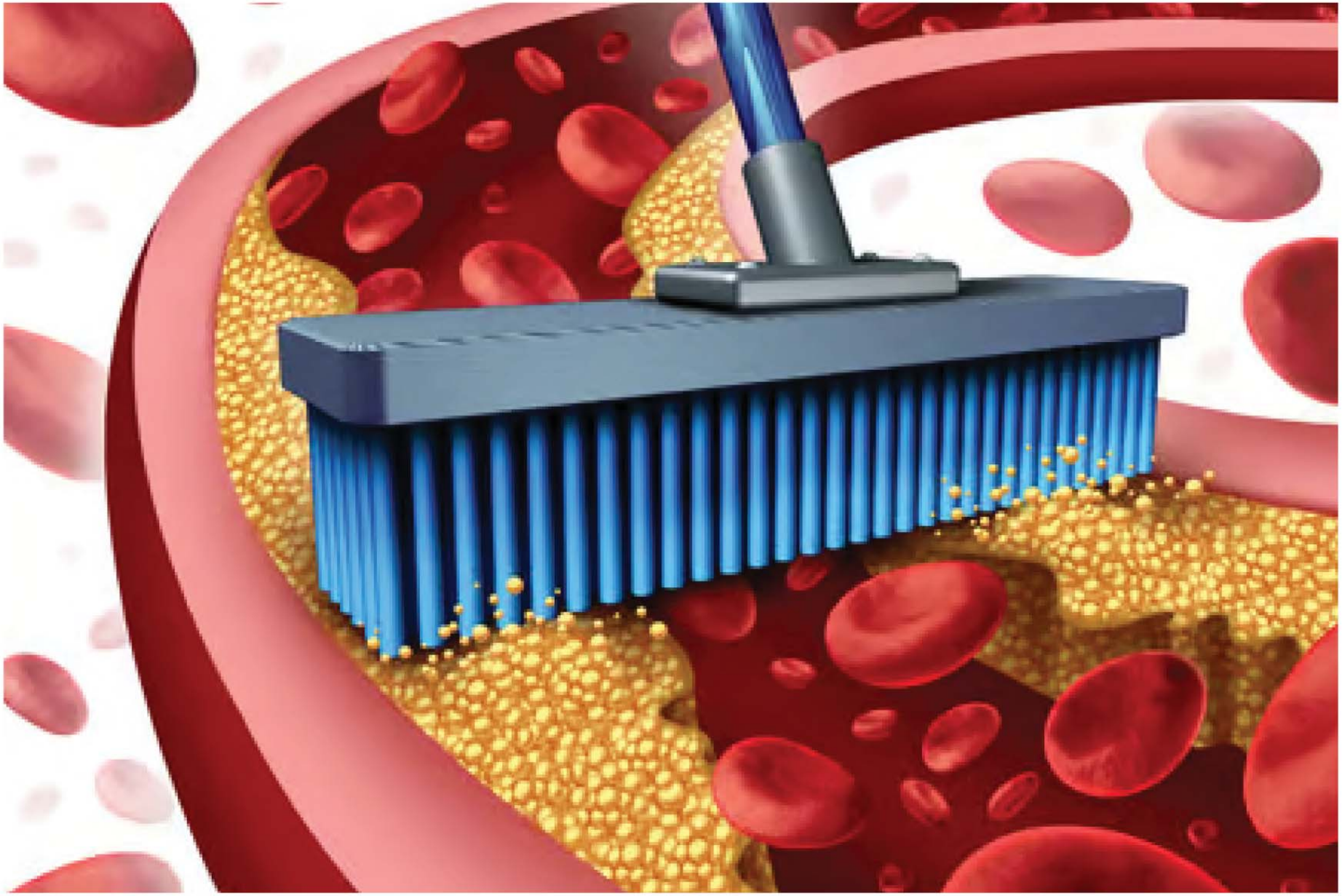
As a photojournalist, Mike's work has been published in a dozen languages across 20+ countries. He has edited or managed over 75 different print publications, each with a different target audience: sports, automotive, advertising, marketing, design, ad infinitum. Mike has been working in the internet for more than 25 years and was the veteran of five internet start-ups before founding New Atlas in 2002.

MOST VIEWED



PHOTOGRAPHY

The struggle is over in the World Nature Photography Awards



MEDICAL

Oral pill cuts bad cholesterol by 60% in phase 2 clinical trial



HEALTH & WELLBEING

Good and bad news for older adults in link between sleep and dementia

LOAD MORE

You May Like

Sponsored Links by Taboola

7 Retirement Income Strategies Once Your Portfolio Reaches $500k

Fisher Investments

Learn More

Nutrisystem, Noom Or WW? Who Has The Secret To Weight Loss?

Topdust for Nutrisystem

Read More

Chrome Users? Don't Forget To Do This Before Friday

guard.io

Learn More

Home Chef Fast And Fresh meals are no-prep, no mess & no dishes.

Home Chef

Learn More

7 COMMENTS

Sign in to post a comment.
Please keep comments to less than 150 words. No abusive material or spam will be published.

Asgard JULY 12, 2017 01:57 PM

I think for a rich or well off person's toy; this could be a lot of easy going fun and it's best feature is it fits right in a car or SUV. I have a feeling most people would put that money toward something a bit more exciting that could last all day though. Something like a jet ski or maybe a jet pack with the tether/jet in the water.

Carl246 JULY 12, 2017 06:59 PM

I think $2000 would be overkill but $12,000 yeah right, good luck with that one.

Nelson Hyde Chick JULY 12, 2017 08:18 PM

Another toy for the wealthy while the poor are allowed to rot away.

ljaques JULY 13, 2017 12:09 AM

Love it, love it, love it! Waaaaaay too expensive. Battery life is waaay too short. Hey, if Tesla can sell a 14kWh battery for $5,500, why are these 2kWh batteries $3k a pop? . But I'll bet they sell a million of them. So cool.

Jason Catterall JULY 13, 2017 07:01 PM

Wow, $1,500 per KWH for the battery. That's a bit steep. Wish them all the best but this product looks more like $4-6k than $12k to me. At $5k I'm in, at $12k I'm laughing.

Buzzclick JULY 15, 2017 12:59 PM

This toy is not light. The battery pack has to be substantial enough to give that little motor/prop unit enough oomph for a good hour of fun, but I wouldn't take it out too far in open water. The fun factor is obvious once you see the video footage but Leason has to bring his costs down to make it realistically a viable expense for the consumer. $3-5K tops. Even less. Is there a concern that having it fully made in China means copies will be produced too easily? Probably. But the trade-off may be necessary if he wants this concept to catch on.

SaysMe NOVEMBER 5, 2018 09:55 AM

Why again is it $12000? I could buy a decent electric car for that amount... That I could use for getting to work...

NEW ATLAS

GET OUR NEWSLETTER

Over 220,000 people receive our email newsletter. Get your daily dose of extraordinary ideas!

REGISTER

HOME
SUBSCRIBE
FEATURES
REVIEWS
ABOUT
ADVERTISE
TERMS
PRIVACY
CONTACT
RSS
FAQ
LIFESTYLE
20th Anniversary
Architecture
Around the Home
Children

Collectibles

Good Thinking

Health & Wellbeing

Holiday Destinations

Outdoors

Pets

Remarkable People

Tiny Houses

SCIENCE

Biology

Electronics

Energy

Environment

Materials

Medical

Physics

Quantum Computing

Space

TECHNOLOGY

3D Printing

Computers

Deals

Photography

Drones

Games

Home Entertainment

Laptops

Military

Mobile Technology

Music

Robotics

Smartwatches

Telecommunications

Wearable Electronics

Virtual Reality

TRANSPORT

Aircraft

Automotive

Bicycles

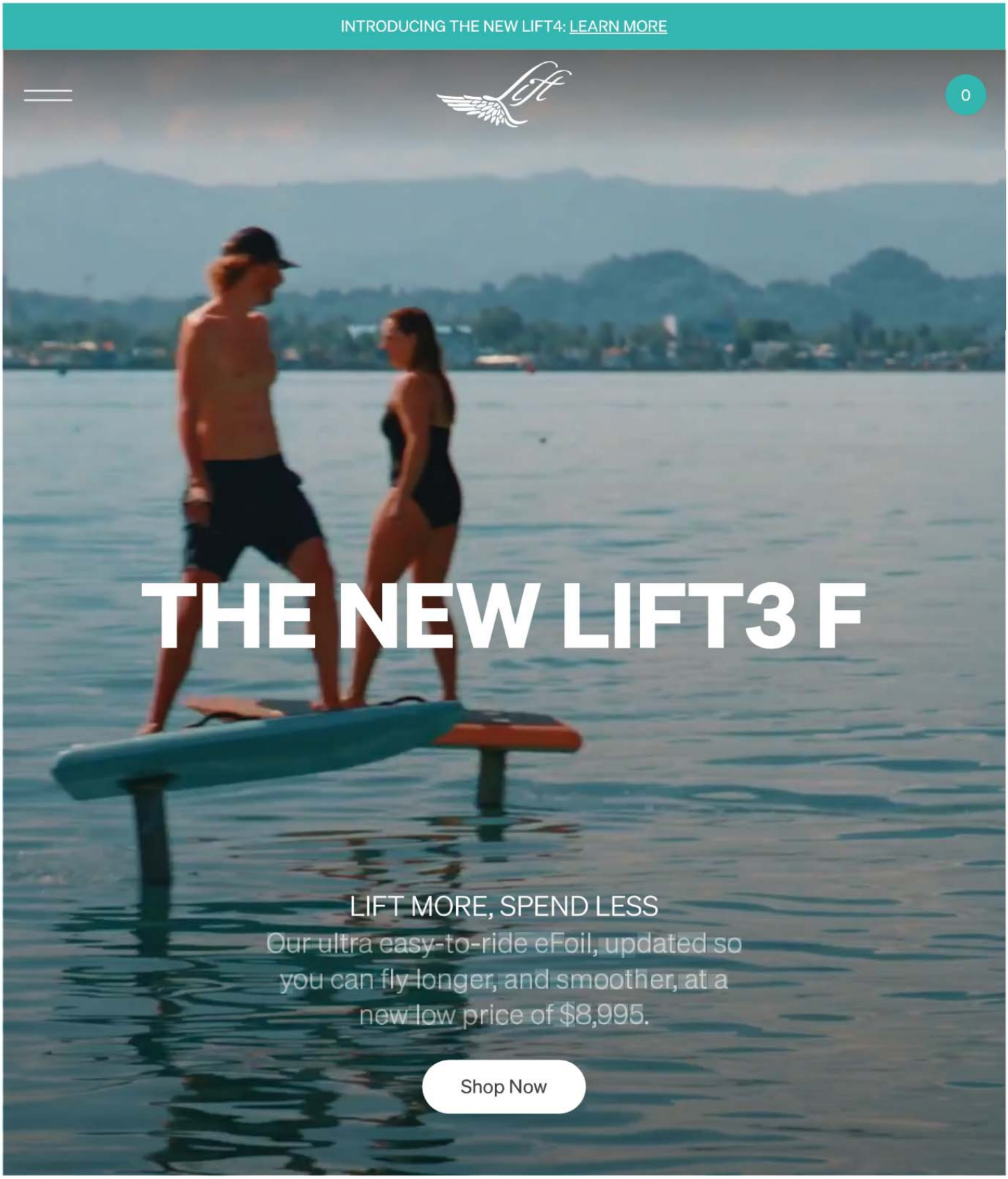
Marine

Motorcycles

Urban Transport

© 2023 New Atlas

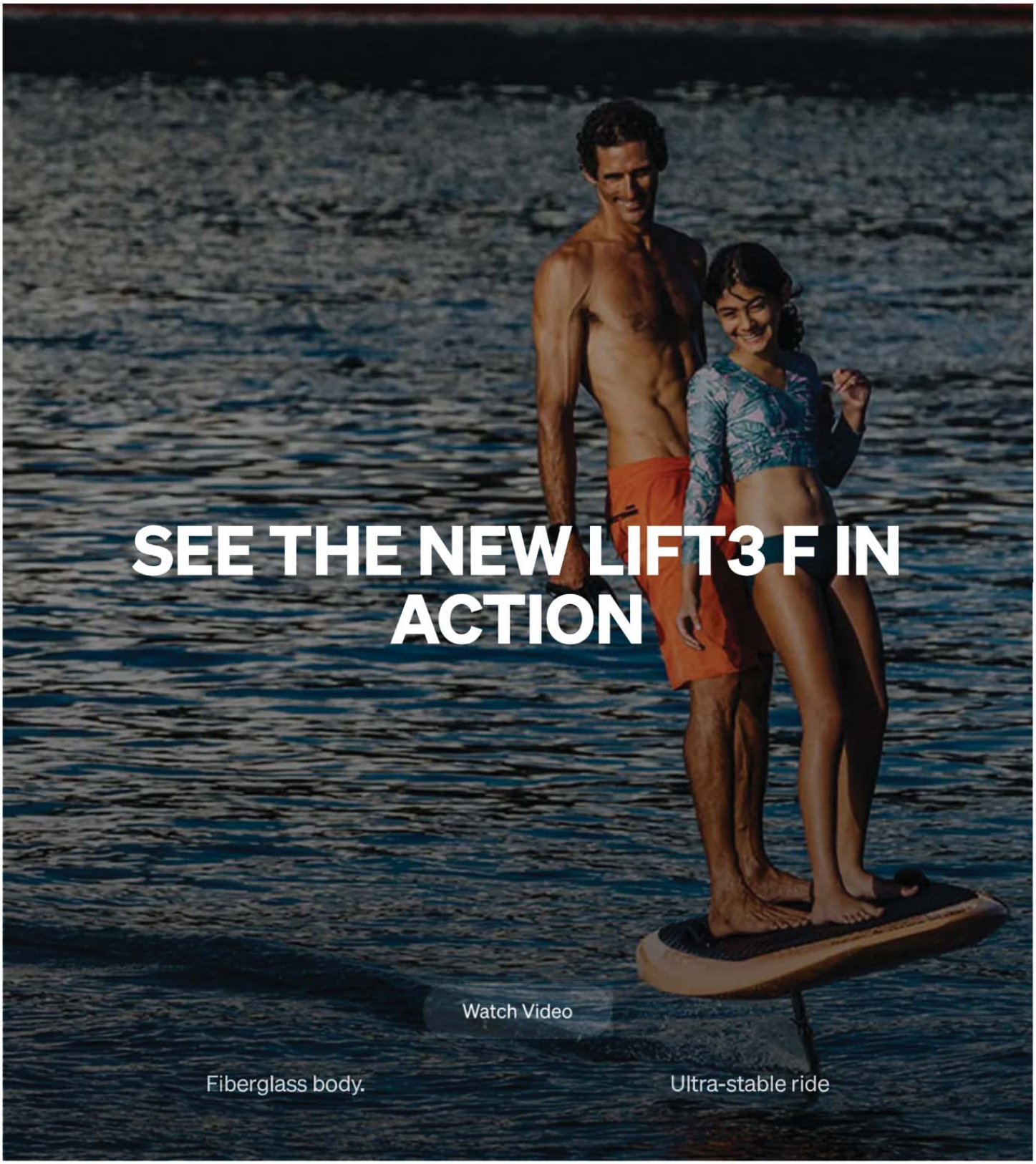
EXHIBIT I



THE NEW WAY TO FLY

MHL Custom v. Waydoo
21-cv-0091-RGA
PTX175

Fun, easy to ride, and accessible. With our LIFT3 F, we took a new approach to our industry leading eFoils–working with fiberglass boards to offer stability over performance, at a new low price.



HOW IT WORKS

Lift's eFoil technology combines a state-of-the-art battery, a custom shaped, ultra-durable aerodynamic board, our next-generation propulsion system, carbon fiber hydrofoil components, and a Bluetooth hand controller for the ultimate watersports experience.

ON

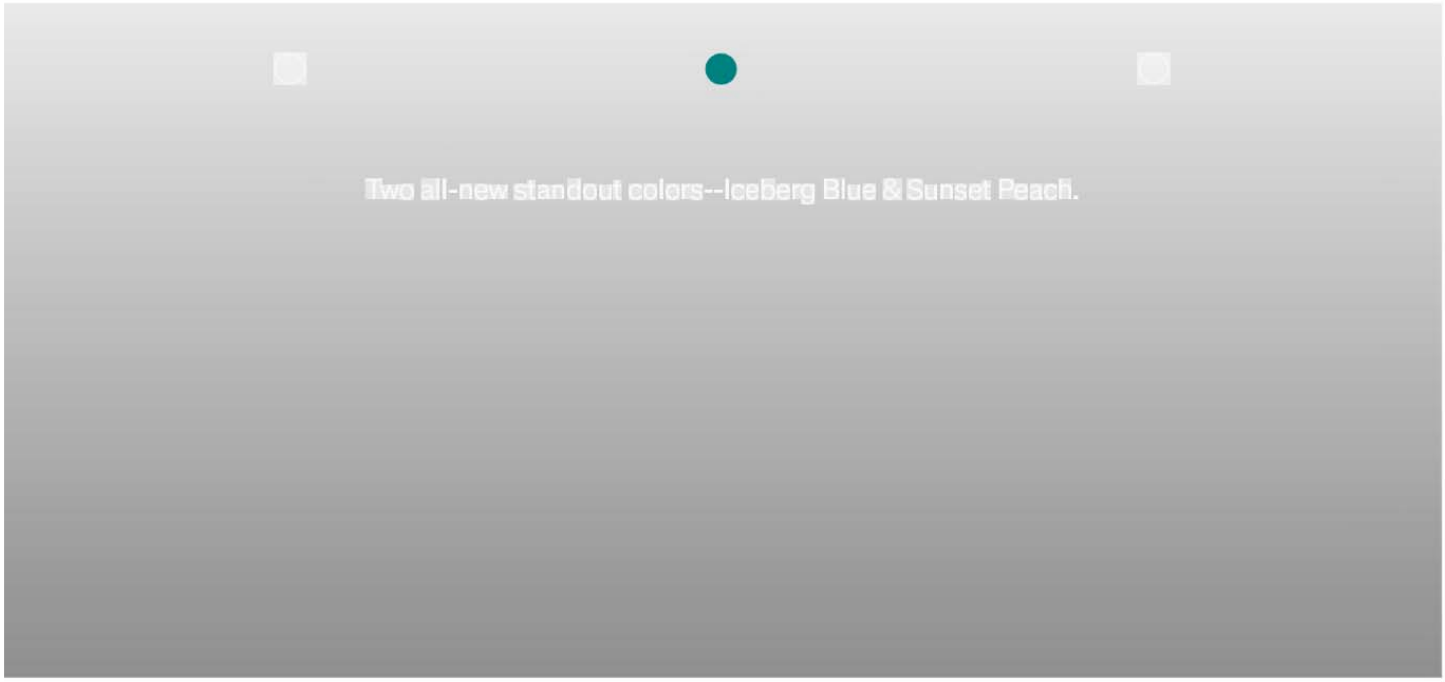
features our brushless
gned and manufactured by
best engineers in the
wing for speed and ride

PROPELLER

The New LIFT3 F features theLift FRP (fiber reinforced polymer) propeller--experience increased efficiency, reduced drag, and dampened vibration with our new tapered propeller hub design.

HAND CONTROLLER

Our ergonomic wireless Bluetooth hand controller easily shows battery life, and allows riders to swap intuitively between speed and performance settings.


Two all-new standout colors--Iceberg Blue & Sunset Peach.

LIFT3 F CONSTRUCTION

The LIFT3 F features a proprietary fiberglass blend – tiny strands of fiberglass melted down into an ultra-sturdy material, crafted by Lift's engineers into the perfect aerodynamic shape for hydrofoiling.

This new form factor offers a stable ride that newer riders and families will greatly appreciate. The new LIFT3 F features our signature 28" precision milled aluminum mast, and our efficient carbon fiber front wings and back wings.

Watch Video

The **“Light Battery”** is a custom lithium-ion battery built for rugged marine environments that offers 60 minutes of ride time and weighs 7 pounds less than the “Full Range Battery”, making it easier to transport your eFoil.

The **Full Range Battery** offers **100 minutes ride time**, and you can easily explore around with no stress. Batteries are interchangeable and **compatible with all generations** of the Lift eFoil.

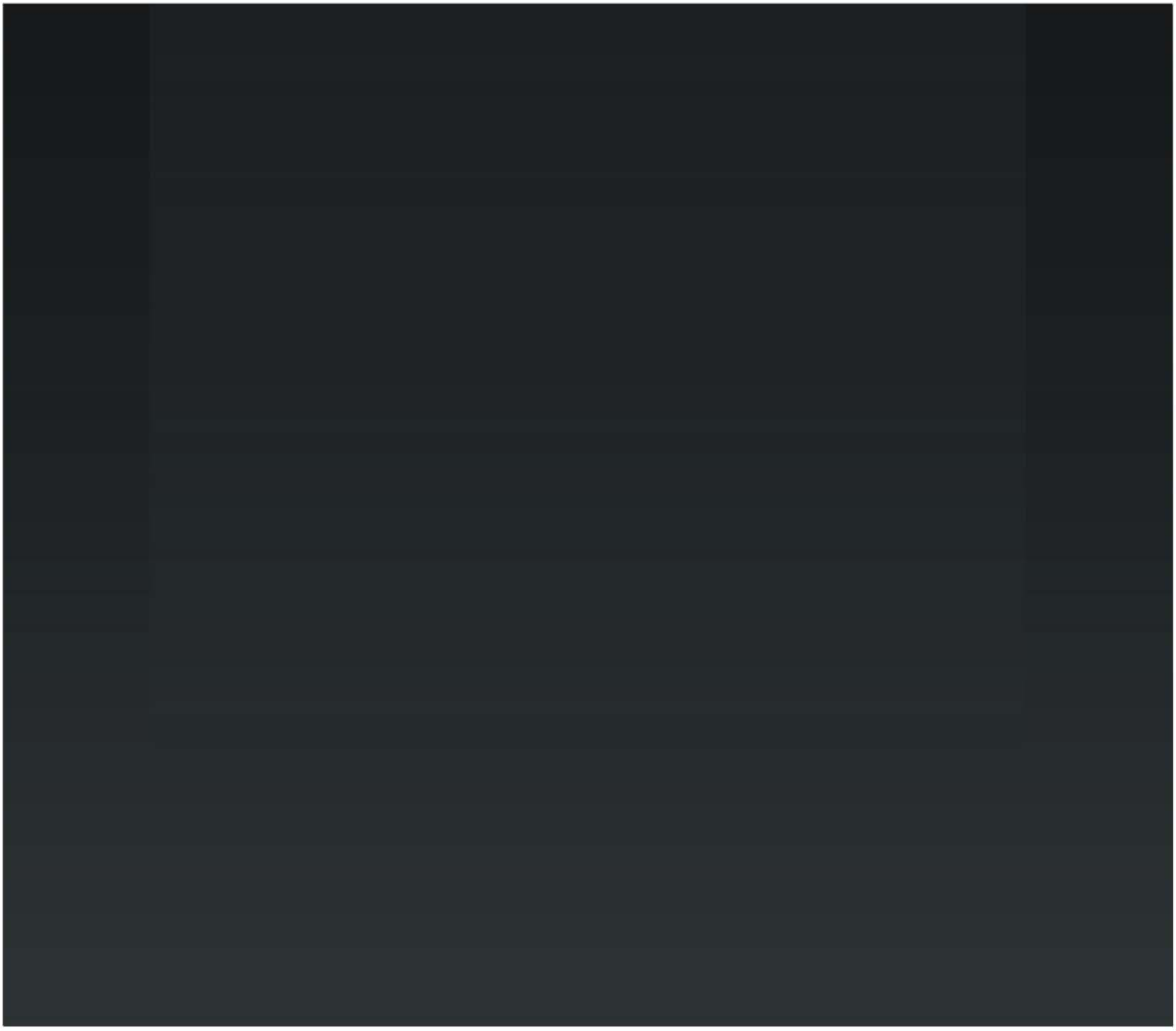
RIDE WITH CONFIDENCE

The LIFT eFoil Experience

eFoils Shipped 10,000+	Partner Locations 350+
Lift eFoil Rides 1,000,000+	Extended Warranty 2 Years

A GLOBAL COMMUNITY

When you choose a Lift eFoil, you're not just getting the ultimate watersports experience for you and your family, you're entering into our community of 300+ locations that offer lessons, demos and meetups, worldwide, and a super active and supportive online community of users who share experiences, ride together, and grow together.



Configure Your eFoil

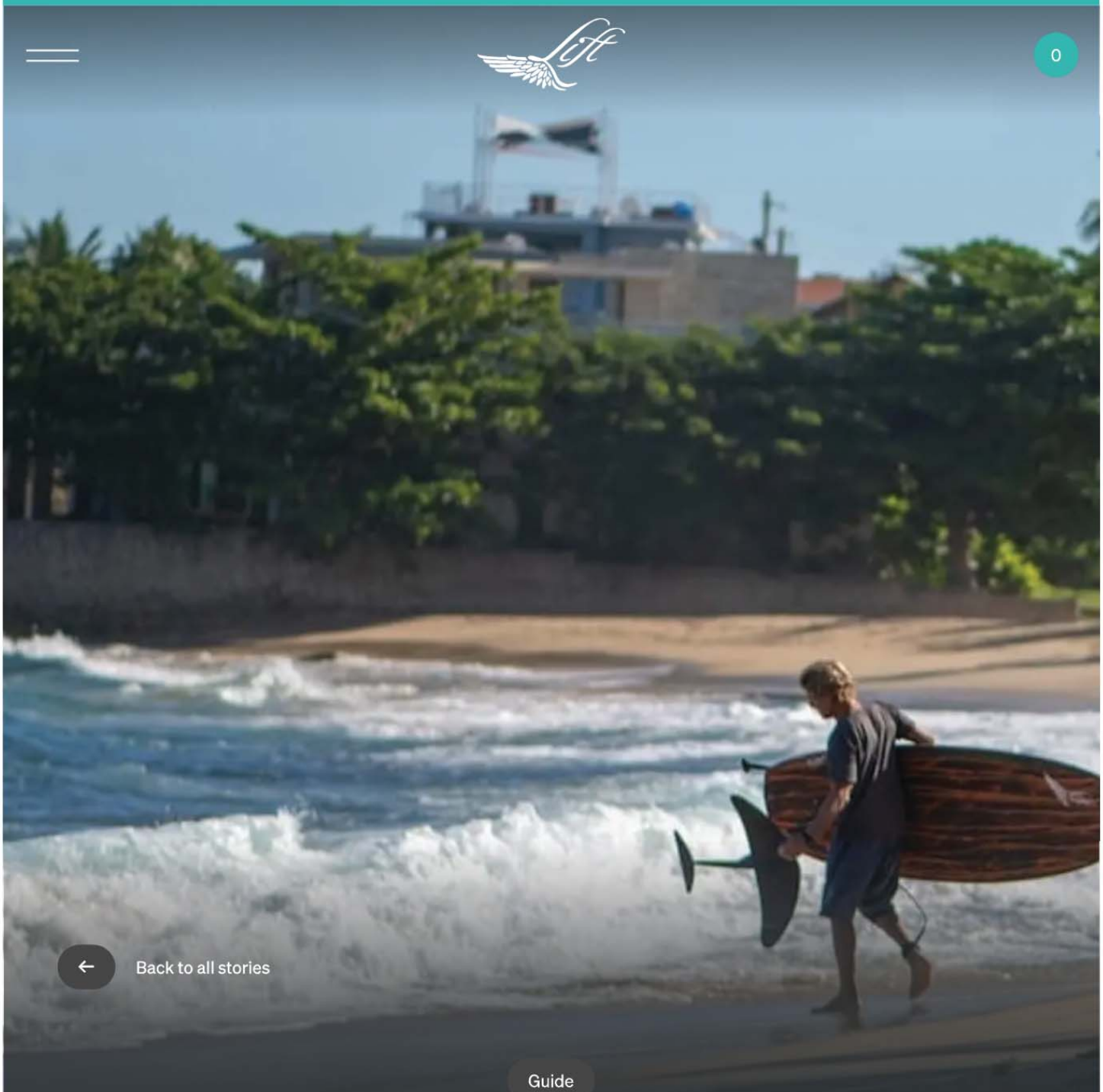
LIFT3F EFOIL
$8,995.00

EFOIL BATTERY - LIGHT BATTERY
$2,495.00

Join the Lift Newsletter
for the latest videos & releases

EXHIBIT J

INTRODUCING THE NEW LIFT4: LEARN MORE



Back to all stories

Guide

A COMPLETE HISTORY AND GUIDE TO HYDROFOIL SURFING| NEWS | LIFT FOILS

2020-01-06

If you're looking to hydrofoil, read about the history and different types of foiling experiences out there and choose the best

MHL Custom v. Waydoo
21-cv-0091-RGA
PTX176

adventure for you.

If you Google hydrofoil surfing, most top hits show super HD pictures of talented athletes riding in unbelievable locations. It looks like a new sport that's just gaining traction now, but the truth of the matter is that the technology that supports it has been evolving since the late 19th century. Initially invented for boats in order to make them go faster without having to use more fuel, the basic components of the design and the automatic upgrade that it provides for traditional water-craft experiences are tried and true.

That's right: people have been trying to get to the next level of hydrofoiling for over a hundred years.

Because the feeling's that good, and it gets better the closer you get to it.

So in case you're looking to foil, we've created a brief intro into the different types of experiences so that you can choose the best adventure for you.

First of all: What's a hydrofoil?

Wikipedia describes it as a "lifting surface, or foil, that works in water." Basically, it's a wing-shaped underwater fin that lifts whatever craft it's on out of the water when it reaches a minimum speed. This significantly reduces drag which in turn increases speed.

A Brief History of Foil Surfing

The first iterations of this technology came about in the second half of the 19th century in order to increase speed in boats without having to use more fuel. The design was interesting enough to be explored by the likes of Alexander Graham Bell (in case you need a refresh, he invented the telephone) and his chief engineer, Casey Baldwin, who ultimately pioneered the creation of the first passenger and naval hydrofoil boats using the previous designs of Italian inventor Enrico Forlianini. In the sixties and seventies, hydrofoils made their way onto more recreational activities like water skiing and knee boarding. Big names in the sixties, seventies, and eighties include Walter Woodward and Lucas Emmanuell (water skiing), Henry Buxton (water skiing), Mike Murphy (water skiing, knee boarding, the

Air Chair), Bob Woolly (also water skiing, knee boarding, and Air Chair), Mike Mack ("the Mackstrap", essentially a heel-strap for your board), and Brad Barnett (Air Chair).

It's probably worthwhile to note that most of the early innovators in this field were also big into the sports that they were trying to upgrade. From the start, the process of creating, testing, and fine tuning was carried out by people who were working hard to find the best way to play. By the time the hydrofoil made its way to surfing, wind-surfing, and kite-surfing, the previous generations' had made their own trial-and-error a way of life. The big names in early foiling- Laird Hamilton (surfing), Kai Lenny (stand-up paddle surfing and surfing), Mango Carafino (surf-board hydrofoil pioneer), Austin Kalama (SUP), Neyl Pride (wind-surfing hydrofoil), Robby Naish (windsurfing), to name a few- are all synonymous with the limitless quest for the enhanced version of their sport, no matter how impossible it seems at first.

The latest and most advanced version of the hydrofoil, the eFoil, came into existence much in the same way as its predecessors. Father-and-son team Nick and Michael Leason started a company of hydrofoils and boards that allowed them the room to try and get at what they thought was missing from their adventures. After much trial and error, Nick finally came up with the first hydrofoil powered by a battery pack and maneuvered through a wireless remote. This has taken the seamlessness of the hydrofoiling experience not only into new scenarios but also into a whole other level.

A quick timeline of some major events in hydrofoil history, in case you go to trivia night:

- 1898: Enrico Forlanini gets the first patent for the design of the "ladder" foil system
- 1908: Alexander Graham Bell and Casey Baldwin begin experimenting with the hydrofoil boat
- 1919: Bell's hydrofoil boat HD-4 sets world marine speed record (114 km per hour) which stands for two decades
- 1950s: English couple build the White Hawk, the first jet-powered hydrofoil watercraft
- 1960s: Walter Woodward invents the first waterski hydrofoil
- 1973: Mike Murphy and Bud Holst develop the hydrofoil kneeboard
- 1979: Joop Nederpelt designs the first windsurf hydrofoil
- 1984: Bob Woolley creates the first sit-down hydrofoil
- 1990: the first Air Chair is sold

- 2003: Laird Hamilton brings hydrofoiling to the masses in Dana Brown's Step into Liquid
- 2004: Mango Carafino makes the first hydrofoil for a kiteboard
- 2016: the world is taken aback by the footage of Kai Lenny Stand Up Paddle hydrofoiling in Hawaii
- 2017: Lift Foils makes the world's first eFoil commercially available

About the foiling experience

Technically, you can hydrofoil with almost every watercraft: boats, surfboards, wind-surf boards, kite boards, and hydrofoil boards. There's even a hydrofoil bike! They all offer a different way to ride on waves or flat water, but they have one thing in common: they allow you to glide over the surface, increasing speed and eliminating drag. Maybe this sounds like a small thing, but trust us, once you've felt it, you can't unfeel it.

Here's a quick breakdown of all the different ways you can get out there, regardless of your level of athletic expertise:

Foil surfing:

The best thing about surfing with a foil is that it allows you to ride waves you'd never think were surfable. The wings of the foil push down against the water, propelling the board up, and since this can happen at speeds of as little as three miles per hour, your ride becomes much faster with the decreasing friction. According to Kai Lenny, "it is the ultimate equaliser for crap and crummy surf. When you are going downwind for 10 miles it feels like you are cruising on a pointbreak." (We recommend reading the whole interview, as his is the ultimate insider's perspective).

Kite foiling:

The same as with surfing, the magic of kite foiling happens when the board increases its speed and lifts out of the water, but with the kite, the speed is generated by both the water and the wind. This makes the biggest advantage of kite-boarding with a hydrofoil the fact that you can get out there and have fun much closer to the shore and with much lighter winds. It also makes riding upwind much easier and eliminates a lot of the chop and the sound.

Wind foiling:

As with kite foiling, you can reach higher speeds with less wind when you're windsurfing with a hydrofoil, which in turn allows you to use a smaller sail. The windsurf board is lifted over 2 feet over the surface of the water, meaning that you not only get to play with the upwind and downwind control, you also get the added bonus of using your body to control the board's altitude. Fun fact: The 2024 Olympics will require windsurfers to foil.

SUP foiling:

Made especially popular by Kai Lenny the first time he took a SUP foil downwind, this sport has become increasingly popular in the last 3 years. There are two ways to do it: downwinding and surfing. Downwinding takes some practice and requires you to be in optimal physical shape, but surfing is easier and allows you to ride waves for much longer than you could without the foil (not to mention surf waves that you usually couldn't). Alex Aguera, Go Foil founder and inventor of the first SUP downwind foil board, says that "the technology and the performance have already come a long way," so you should expect smaller and lighter equipment to consistently join lineups.

Wing foiling:

Wing foiling is essentially a hybrid of windfoiling, kitefoiling, and SUP foiling. You hold on to a wing that is unattached to your board with both of your hands while riding a short stand-up paddle hydrofoil board. Because the wing is so close to you and the board is so sturdy and wide, this sport allows you to manage your ride with a lot of stability and control. It also allows you to switch between going upwind and downwind without having to be a professional athlete.

eFoiling:

Perhaps the most sci-fi of all the available hydrofoil experiences, the orignal eFoil uses an advanced lithium-ion battery to power a silent electric motor that's mounted on an all-carbon fiber hydrofoil. All of this is controlled by a bluetooth remote. In a sense, it is the purest hydrofoiling experience as it needs neither water currents nor wind to allow you to glide over the surface of any body of water. You can foil on flatwater or in swells, you can be a professional athlete or a complete amateur: the possibilities with the eFoil are endless.

So now that you've picked your foiling poison...

Now you know the basics- that the hydrofoil improves your ride with less drag and greater speed, that it allows you to fly over the surface of the water, that it allows you to explore places and waves that you never thought you'd be able to explore on a board. It's time to think about what equipment you're going to choose when you decide to get out there. That's where we come in.

If there's anything that we can deduce from the history of hydrofoiling it's that the people who are constantly evolving the product are the people that are also using them. Many of the pioneers of the sport came up with prototypes because they realized they needed them out on the water, blurring the line that separates the fine tuning of the experience from the fine tuning of the product. At Lift, we are those people. We're obsessed with what we get out of what we create. This is why we can't stop working to consistently make it better.

If you're looking to buy a hydrofoil as a way to upgrade your windsurfing, kitesurfing, or SUP surfing experience, we'd always recommend starting your quest with the people who started feeding the frenzy: Robby Naish, Mango Carafino, Alex Aguera, Kai Lenny, Laird Hamilton, etc. Laird uses our foils. He gives us constant feedback. The Lift lineup of eFoil boards come in four shapes and sizes: the 4'4 Pro with 170 Classic, the 5'0 Sport with 170 Classic, the 5'6 Cruiser with 200 Classic, and the 6'2 Explorer with 250 Surf. Pro or novice, it doesn't matter, we've got something for everybody.

What's next for foiling?

There seems to be no end in sight for hydrofoil enthusiasts. Not only is the sport growing at lightning speed, it's also bringing more and more innovators and inventors into the mix. We're really happy to be a part of its history and to continue working towards its never ending possibilities. Stay tuned and let us impress you.

Share this story

Join the Lift Newsletter
for the latest videos & releases

Enter email address Sign up

By signing up to the Lift Foils newsletter you agree to our Terms and Conditions and that you have read our Privacy Policy, including our Cookie use.

Customer Service

About

Legal

US | $ Sign in

. Lift Foils © 2023 Credits

EXHIBIT K



ELECTRIC DREAMS

NICK LEASON

When trailblazers like Laird and Kai are openly expounding the clear 'water-time' benefits of riding eFoils, you know it's something that the rest of the foiling world (and the world in general) is going to stand up and take note of. Puerto Rico-based Lift Foils have been at the forefront of electric foiling from day one, with their fair share of slam-dunks and stumbles along the way. Founder/CEO Nick Leason filled us in...

MHL Custom v. Waydoo
21-cv-0091-RGA
PTX191

Exhibit
0058
N. Leason

MHL_0100566

Hey Nick. Thanks for taking the time to catch up with us. Can you tell us a little about the history of Lift Foils?

Lift started in 2010. I was fresh out of University with an engineering degree and my father and I started a surf factory in Puerto Rico. I had gone to school with a passion for learning about aerodynamics and when I first saw someone using a foil for kitesurfing, I fell in love. There was not a lot on the market at the time and nothing to really reference in terms of design and construction so it was a slow start being solo and starting from scratch. 2013 was the first year that we started selling foils to the public and it was a total hand-building process to put them together in the shop. 2015 was a solid year for us as the kite market was starting to catch onto the fun and we were building Slingshot's first foil for them. It was also the year that I started working on the electric foil. We started to grow a lot faster at that stage as we fine-tuned our knowledge for foil construction and had a better idea for design.





When did the eFoil first become a reality as a consumer production option?

In 2016, we were fully committed to getting the eFoil to market and increasing foil production, when an electrical fire burned our factory to the ground back in Puerto Rico. It was a complete loss for Lift and our custom board factory MHL at the time, but as I look back, it was a blessing in disguise. The custom SUPs and surfboards were beautiful, but not really making money for the business and they consumed a lot of time. I took a deep breath and didn't hesitate for a minute on the choice to move forward. It opened an opportunity to quiet everything down, design the eFoil and restructure the business for a new launch. My father and business partner backed me up with a whole new facility and the support we needed to launch again.

Then in 2017, still pushing hard to get the new projects out, category 5 Hurricane Maria hits Puerto Rico and shuts down the island for months. I had a waterfall of mud pouring off the cliff behind the shop into our back door. It was a mess. I had to escape to the US to keep things rolling and my crew back home were amazing and kept things going.

2018 was a big year for us. After years of developing the eFoil and setting up teams around the world focused on building the components needed, we started delivering with great success. Not only that, but Kai Lenny had introduced foil surfing with a whole new twist and it opened our eyes to new passions on the water. So here we are today – after a decade of work and investment – and things are finally starting to take off... literally.

Who else is in the Lift team and what type of person does it take to bring this type of technology into the market?

In Puerto Rico, I have a full force of employees that have been hand-building foils and boards with me for almost a decade. My guys are unbelievable carpenters, electricians, craftsmen, board builders .. you name it. They come from a world where if you want it, you have to build it. All of my office staff have at some point or another operated the CNC machines or played up carbon fiber into the molds.

In California, I have my propulsion systems team of engineers. We have ex-Tesla guys with a dedicated factory in San Francisco building our battery packs. We also have a group of engineers designing our software and electrical systems. Combined, they have skills that are far beyond my understanding and they work very futuristic projects – flying electric surfboards being one of them! Then in China we have an amazing team of composite suppliers. China gets a bad rap for so many reasons, but the truth is there are people in that country who work hard and take pride in what they do. My team in China have become good friends and have blown me away with their craftsmanship when it comes to building boards and hydrofoils. I'm proud to say that we have the best suppliers in the world for the crafts that we all love to ride. I pay a premium, but my suppliers take great care of me and, more importantly, they take care of their employees.

Then there's me and my family. I drive the teams and trim the sails; my family is my pillar of strength that guides my moves and protects me from myself. I get the foils built and if my father is happy and he just can't seem to find a way to break them, I know we have something good.

How much of the R&D process is on the computer and how much is on the water?

What can I say.. my computer is attached to me except when I am surfing, so it's kind of an even balance. The truth is when it comes to hydrofoils, you need CAD expertise and full digital support to know where to start.





ABOVE
The life-cycle of a foil: from laptop to the final polish...

TOP RIGHT
Is it more satisfying paddling out on something you have created yourself? Nick's face would suggest it is.

BOTTOM RIGHT
Never too late to turn and go...

MHL_0100567


With eFoil power engaged
looks fun...


With wave energy engaged
also looks fun...

MHL_0100568



LEFT
Chances are, you won't find many Lift Foils lying around on the beach. But this is how it would look if you did.

BOTTOM
Laird Hamilton has been one of electric foiling's (and foiling in general's) biggest proponents.



I have spent years drawing my own designs on CAD and running our own CNC machines to build tools. Nine years with no free weekends to be exact. If I had to rely on someone else to draw for me, it would be too challenging. It's been a closed loop of evaluating, drawing, building and testing. I spend hours staring at a computer screen and days out on the water.

When it comes to dialing in a wing design for instance, I would say it's 20% numbers and 80% getting out on the water. I use programs to select my foil sections and compare important values to my past collections. But most importantly, I get on the water and ride to find the magic balance. Over the last 9+ years, I have made many, many wings to test the feeling behind certain parameters. For example, what is the effect of a high asoect wing vs a low aspect wing of the same surface area? Sure, my computer will tell me that I might have a 25% increase in a lift/drag ration with the high aspect, but what does it feel like in the water? So I would build them both and try it. Then I would dial it in based on what I feel. That's just one example of many and the interesting thing that I noticed is that as I improve as a foiler, I see that my designs improve too...

What were the main challenges when you began developing eFoils?

Pretty much not knowing anything about anything and having almost nothing to reference! Let's face it, wing designs can be intimidating and composite molding is straight-up difficult. When I witnessed the Carafino for the first time (the first composite kite foil which was a total dog, but it worked), I gave myself a task: I need to build a hydrofoil that works. In order to do that, I had to learn more about aerodynamics, CAD drawing, CNC machining and composite layups. That's a lot to take on. I was 24 years old at the time and had just completed a university engineering project where we built a unique radio-controlled airplane. With that project, I had an idea of what I was getting into.

With desire and drive, you can do pretty much anything. I like the saying that it takes 10,000 hours to be good at something. That sounds about right. Time and picking yourself up from failure. I can assure you that my first foil was a total disaster, but ironically, I could probably make it work today.

It is clearly a technical and complicated piece of kit – was it (and is it!) difficult to be completely confident in the functionality before you began selling them commercially?

We talked about the years needed to build a hydrofoil... Electric propulsion was like starting all over again. You look at the hobby world and think, "well this shouldn't be too hard." Think again. This is not the hobby world. This is full on electric propulsion for a human watercraft and take note of the world's humans and water. Challenging combination. Here is the basic breakdown of an eFoil and what makes it challenging:

1) The board and hydrofoil. It's not a surfboard anymore, it's a watercraft. This craft needs to be strong but light, stable but small in size, rigid but thin, fully sealed but accessible. These parameters completely contradict themselves and it took all of our experience and more to put it together.

2) The battery. 17 miles of power for flying packed into a tight little black box. I ittle does the user know that there are thousands of pieces connected together in order to function. Fully water submersible (lithium does not like water). Integrated circuitry and software for automatic regulation and safety. The battery is a living thing that protects itself from the user. We are basically taking a very technical item and simplifying it into a power pack that is capable of pulling not one but two people through the water. Battery packs are not created equal and ours is top of the food chain.





3) A brushless motor. Let's just say that we very efficiently convert a great amount of electrical power into mechanical power within a small space and with very few moving parts. How did we do it? I contracted the best motor engineer in the US and sold him on the cream of flying over water. That was not easy. I'm still impressed on what our motor can do and how well it's holding up to the elements.

4) A wireless hand controller and computer that regulates all communication. There are a whole bunch of wireless hand controllers in the world that we can take out into the water, right? Nope... There was not a single one in the world... None. We invented it and it was a beast of a project. And by the way, radio waves do not travel through salt water and carbon fiber, but take our controller out in the nastiest of surf and you can bet your life that it's going to connect and get you out of there. Our controller kicks ass.

5) Software. We have five computers in the eFoil with individual software and they all communicate and interact. Then we have multiple engineers that have a hard time communicating and have never surfed a day in their life, until now. The greatest challenge is always people, but I have a lot of passion about what we do and I know how to spread it. My guys are great. ☞

ABOVE
Nick wasn't shy in picking some pretty epic testing grounds when developing the foils...

MHL_0100569

It has been a LOT of work and once again, we were leading the pack with no reference. When we first launched our videos, we were way too early and it went mega viral with over 100 million views. Oops. When we delivered product, it was quite the gamble because you don't know what you don't know, but you have to start somewhere. We had millions invested, years of hard work and relationships at stake under the amount of stress to get things going. We got a little lucky in all honesty, and the mindset was simple: solve problems and take care of all our customers so that they have a positive experience. I am happy to say that we are on stable ground now and I am pleasantly surprised to see how things are holding up. I mean... people ride the hell out of these boards! It's great.

You have now sold a lot of units, how are your warranties and have you tweaked the design or technology at all based on the end user's experience?

We are rapidly approaching 1000 units and expect great things for the remainder of 2019. Have we had warranties? Absolutely. It was expected, but it's not our first product and I knew that we had to make things modular so we could turn big problems into small problems. The issues have been minor, but one small problem means: 'my board stopped working.' The foundation of the design is good and we have been improving each component a piece at a time so that everyone can update their board with smaller investments. For example... you bought a board last summer for 12 grand, but this summer with $100, you can upgrade the shroud and gain 30% efficiency. Pretty cool.

How efficient in terms of battery power is a hydrofoil compared to a non-foiling craft?

It's quite the difference. For starters you reduce a lot of drag from the surface of the board not touching the water so you greatly reduce power needed for velocity. Also, our propulsion is lower in the water so it is running in much smoother water vs the surface. This increases efficiency a lot and allows for smoother control on the throttle. I don't have an exact number, but when I add it all up, it's at least twice as efficient and four times more fun.

What are the limits in terms of speed and performance of eFoils?

I'm not sure what the limits will be as we get started. I can currently hit 30mph on the eFoil and that is quite fast when you are flying over the water. I would say that I have a personal goal of closing the gap between our surf foils and our electric. We have some pretty cool toys that are working really well in that respect such as our folding prop and 4'4" eFoil board, but I can see us developing some cool systems that enable the rider to get out and surf pure swells with a loose and seamless integration between power and glider.

In your experience so far, who is buying eFoils and where are they using them?

This is the beauty of the sport that we have just created... we are opening the sensation of foiling to a wide demographic of people in all bodies of water. This is no longer a sport of surfers and what's even better is that with the eFoil, riders are directly jumping surfing to becoming surf foilers. Imagine that you have never surfed before and you live on a lake... Then you purchase an eFoil and next thing you know, you are carving perfect buttery turns up over the water... You would be pretty stoked wouldn't you?

Our demographic ranges from the world champion of surfing to the guy that never ever dreamt about it. There is something majestic about flying over the water that grabs a lot of attention. Sure... 12K is a lot of money, but this summer you will see lots of affiliates pop up where you can go take a lesson and test one.

"Our goal is to get everyone foiling in some way or another and we are working hard to achieve it."

What type of maintenance is required on the eFoil?

It's a pretty simple plug and play. A fresh water rinse goes a long way with the addition of a little love for your electrical contacts. It's like an electric skateboard that you need to rinse and let dry.

Looking more generally at the foil market – where do you see the main growth areas being?

We are heavily invested in the electric side of things because I see a large market demographic to sell to with lots of water access. I think the eFoil will see large growth across the world and prices will come down with time.

We are also heavily invested into surfing our traditional foils and I think the whole world of surfing will soon have a Lift in their quiver. Let's face it, even in the best surfing areas of the world, most of the days are mediocre as you wait for the good stuff. Foiling makes those waves some of the best rides you have ever had and it's crazy addictive. I just saw John John Florence and team heading out to Australia for a large surfing event and what is at the top of their quiver? A Lift! It's not going away, it's just going to grow substantially and we hope to lead the movement in foil design.

So what are you most excited about for the future?

Everything. We are expanding our lineup of product on both the electric and traditional foils. Our goal is to get everyone foiling in some way or another and we are working hard to achieve it. You will see how we develop a complete line of wings to suit everyone everywhere. Beyond that, we now know a thing or two about electric propulsion and watercraft and I have some wild ideas to work on that will take years, but we will do it... ⁂



MHL_0100570

RIGHT
When product testing doesn't really feel like work at all...





THE 101 TIPS & TRICKS

SURF FOILING BASICS

Surf foiling is an incredible new way to ride waves, offering a unique feeling of freedom and the ability to tackle waves and lumps of moving water you never thought possible. Whether you're completely new to surfing or a WCT veteran, there are a few tips that can save you a lot of time on your way to becoming a foil wizard.

WORDS **SKY SOLBACH**

SELECTING A SPOT

The most important thing to know when looking for a good wave to learn to foil is that you don't actually need a "good" wave to get up on the foil. This is great because it means you won't have to share the line up with other surfers and risk being a hazard to them. The best waves for foiling are waves that just barely break and feather out are not very steep. Mushy, fat waves are absolutely perfect for foiling! You only need a wave that just breaks enough to allow you to paddle in and get up on the foil. Once you're up, you can easily ride the non-breaking lump.

SAFETY POINTERS

- You definitely want to wear a leash. A foil board can travel a long distance when pushed by a wave and become a serious hazard to other water users, so be smart and wear that leash.

- Be aware of shallow water, coral heads, and other submerged objects. The typical length of the foil mast is around 75cm, so you'll need at least this much water when paddling out. You can always flip your board upside down when leaving the beach and paddle or swim it out until you reach deep enough water

- Wear some protection at least until you know what you're doing. A helmet and impact vest can save you from injury and it's better to look like a bit of a kook until you figure things out. The helmet will also let others know to steer clear...

GEAR

It will be easiest to start with a board with a bit more length and volume. The added length and volume will give more paddle power and allow you to catch waves earlier than you would with a smaller board. This means your take offs will happen in the less critical part of the wave and your success rate will be higher. Once you figure it out, you can step down your board length and volume. Also, get a foil that is recommended for your weight and wave size. A foil that is too big will be tough to control and a foil that is too small will be difficult to maintain flight. Another general rule is that a longer fuselage is more pitch stable, and makes learning much more forgiving.

POSITIONING TO CATCH YOUR FIRST WAVE

Just like in surfing, positioning yourself to catch the wave is critical. The difference with foiling is that you don't need or want to sit in the same spot to take off as you would when surfing, at least in the learning stages. If you have a big board with plenty of volume, you'll want to sit a little farther outside in order to catch the wave before it starts breaking. If you have a small board with little volume you can even sit inside and catch the white water reform. In either case, you will be taking off in an area of the wave that has just enough power to give you the push needed to get you up to your feet. One of the great things about foiling is that you don't need to take off "in the pocket" to keep up with the wave, because once you are up on the foil you will have all the freedom you need to go anywhere you want on the wave – even way out on the shoulder or even pumping out to catch the next wave.

STANDING UP ON YOUR FIRST WAVE

When standing up on your first waves, you'll want to stay low and forward as much as possible. Keeping your center of gravity low gives you balance and staying forward will prevent the foil from rising too quickly. Gradually shifting your weight back will cause the foil to rise and you will quickly figure out where the sweet spot (or not so sweet spot) is! It's also very important to stand on the center line of the board. Getting your feet too far off to one side will result in the foil simply rolling you off the side.

Once you have mastered your first take offs you will be ready to start doing carves and pumping back out to catch multiple waves in a row. But we'll leave that part 'til next time... ⋘

TOP LEFT
Sky proving that mushy waves really are perfect for foiling...
Photo John Carter

BOTTOM LEFT
Keeping that center of gravity low...
Photo Si Crowther

MHL_0100571

EXHIBIT L

ADVENTURER

Gift Guide for Adventurers

Rezvani Tank

Half tank, half SUV. The Rezvani Tank is an extreme off-road vehicle designed to tackle even the most challenging terrains. Featuring small military-esque mirrors, thermal night-vision systems and optional bullet proof exterior, this car will get you out of any sticky situation.

$155,000, Rezvanimotors.com

Loro Piana Snower Lech Storm System Jacket

Made in Italy from a stretch fabric finished off with Loro Piana's groundbreaking Storm System, this jacket offers unrivaled protection against the elements while maintaining a sleek appearance and lightweight construction. Whether you're up against howling winds of the deepest of snow, the Lech Storm System Jacket will offer you the protection you need.

$3,695, Mrporter.com

Haibike xDuro FullSeven Carbon 10

Featuring an entirely carbon frame, Fox 38 Float forks, Magura hydraulic disk brakes and a Bosch 250w motor, this bike is the ultimate off-roader, and with a Shimano 11 speed gear system and 27.5" wheels you'll be able to climb hills without even breaking a sweat.

$16,699, Haibike.com

Mujjo Leather Crochet Touchscreen Gloves

When you're outdoors you need the best gloves possible, and while almost any pair of gloves will suffice for keeping your hands nice and toasty, there's very few that will work with touchscreens and

smartphones. This is where Mujjo's gloves come in, featuring a mix of Ethiopian Leather and Egyptian cotton and a design that ensures compatibility with touch screens, these are the ultimate gloves for any situation.

$117, Mujjo.com

William Henry Kestrel Silver Lair Knife

With only 100 pieces available worldwide, the Kestrel Silver Lair knife is one of the most exclusive knives available on the market. Featuring a handcarved sterling silver handle and a fossil coral inlay, the knife is eyecatching as well as practical, especially when combined with its tungsten DLC-coated blade.

$2,250, Williamhenry.com

Princess Yachts x Cayago Seabob

Bringing together two of the world's finest seafaring brands, the Princess Yachts and Cayago Seabob is a zero emissions personal diver that allows users to explore the open waters. Featuring artwork by renowned artist, Jaume Vilardell, a portion of the sale will be donated

to the Marine Conservation Society to help support sustainable marine environments.

$13,000, Princessyachts.com

Hasselblad X1D Field Kit

Coming in at half the weight of a conventional SLR, the Hasselblad X1D is the perfect gift for any keen adventurer. Not only does it come with three lenses (30mm, 45mm and 90mm), the camera also comes in a custom Rugged Pelican case to ensure the Hasselblad can accompany you on any trip.

$18,000, Hasselblad.com

Technogym Run Personal

With a huge touchscreen designed by UNITY, the TechnoGym Run Personal is a front runner when it comes to treadmills. Featuring an impressive 19" touchscreen, responsive speed and gradient adjustors and the ability to choose from a wide array of virtual runs as well as downloading your personal data onto a memory stick for analysing your personal bests on the go.

MHL_0100367

$16,400, Technogym.com

Lift eFoil

If you've always wanted to surf but have some doubt about your ability, the Lift eFoil is the perfect solution. Resembling what can only be described as an electronic surfboard, the eFoil uses groundbreaking technology to fly its user across the water with relative ease. The way the propellor is designed allows the eFoil to maintain a steady and stable ride even when taken out on the choppiest of waves.

$12,000, Liftfoils.com

Swarovski EL50

Swarovski aren't just one of the world's biggest diamond and crystal companies they also deal in optics, and these EL50 binoculars are a perfect example of the brand's expertise. Compact enough to be packed away into a small bag, yet powerful enough to provide clear pictures in low light with their 10x optical zoom. Ideal for hunting, bird watching or just scouting out your next adventure.

$3,110, Swarovskioptik.com

Technogym Vision Kinesis Personal

Featuring a full 360 degrees worth of workouts the Technogym Kinesis offers over 200 different types of exercise, covering everything from core strength right through to toning. Whether you play competitive sports, are a true adventurer or in need of upgrading your home gym, the Technogym Kinesis is the one for you.

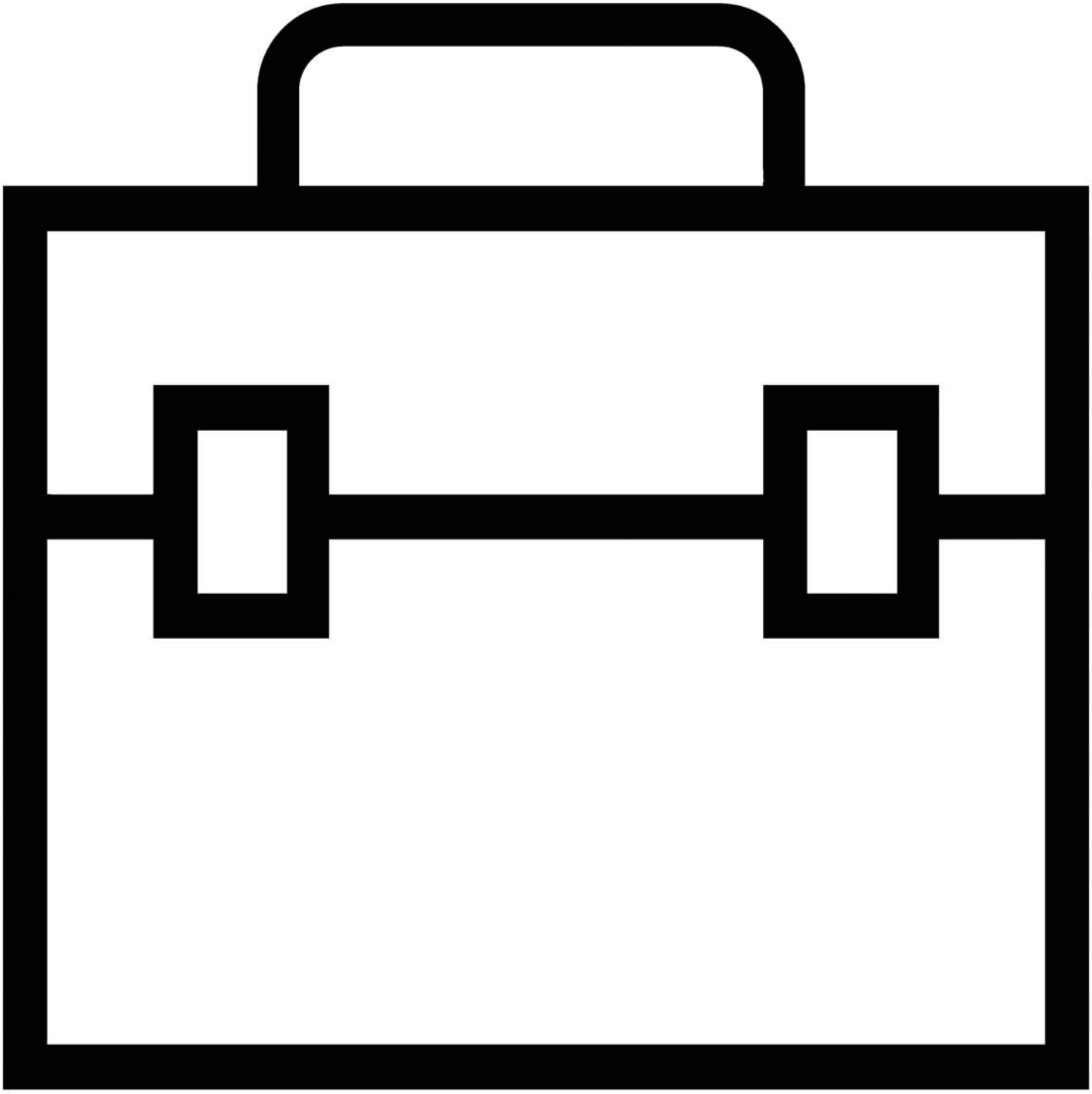
$14,300, Technogym.com



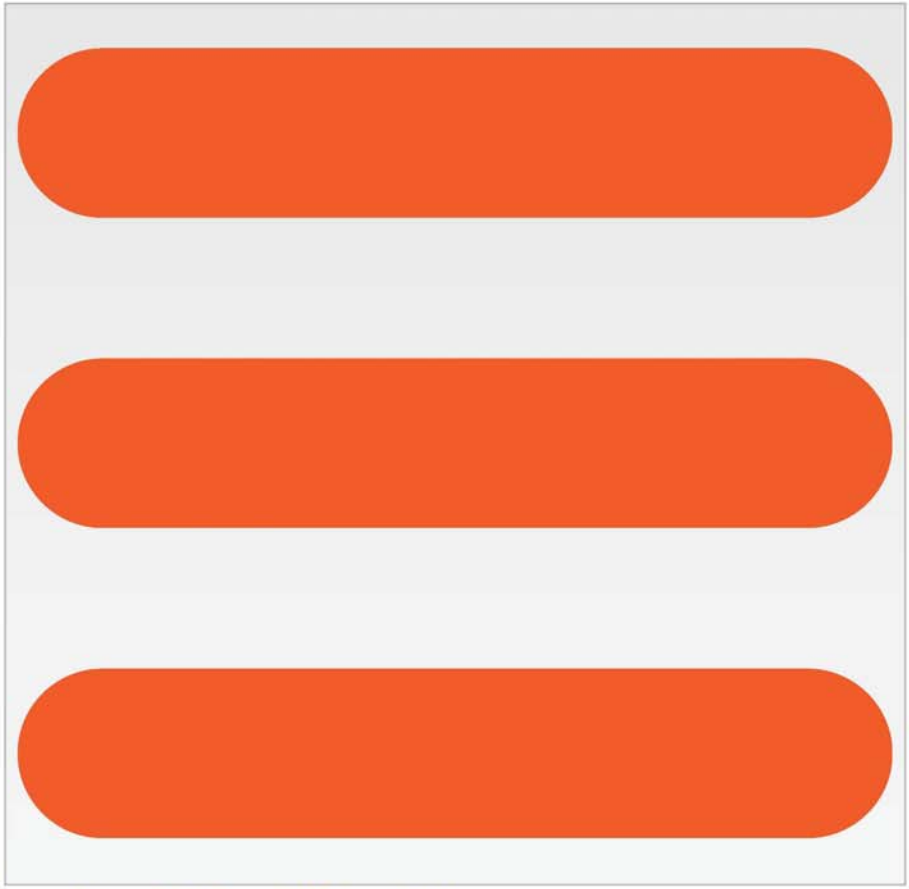


Privacy

EXHIBIT M



- Job



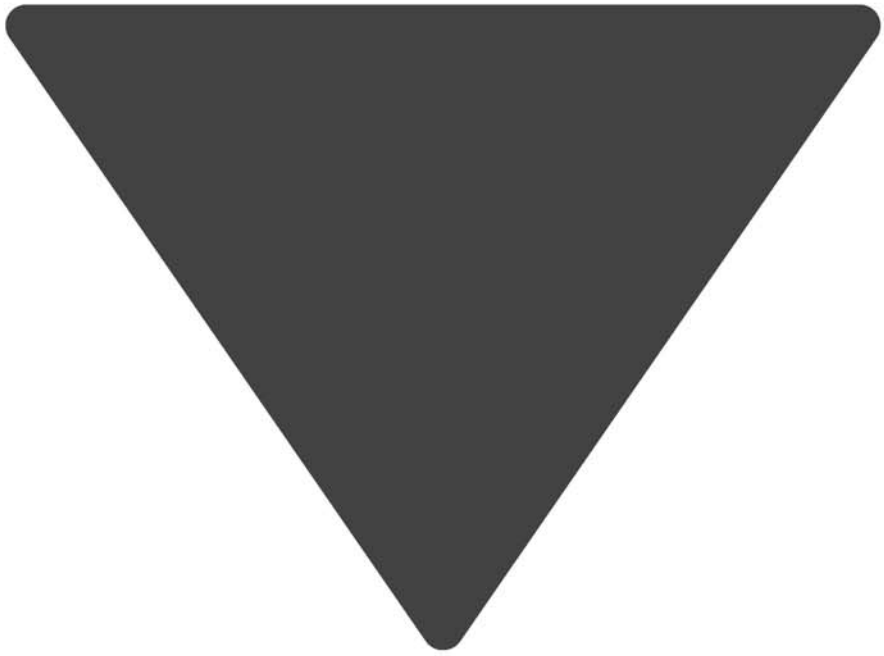
IrishExaminer

News Sport Business Views Life Property Motors Tech Farming

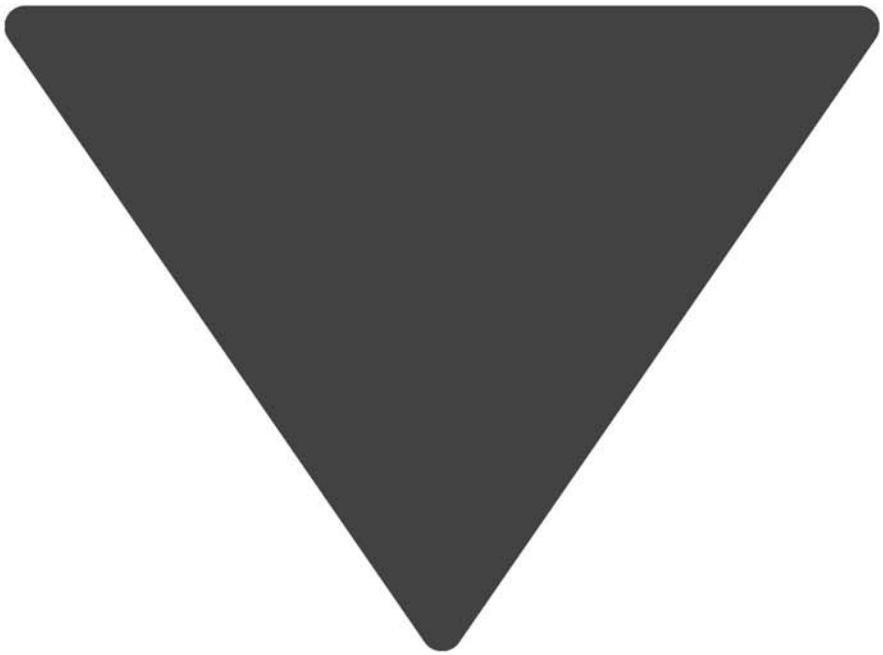


Menu

- SEARCH HERE... go
-
- Home mobile
- Hot Topics

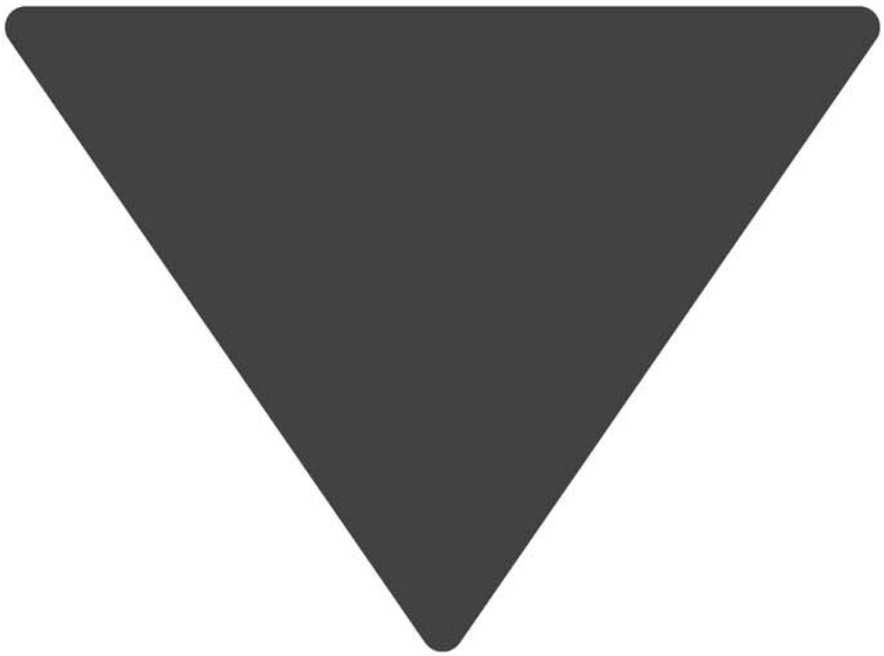


- Ireland
  - - Ireland
  - - Special Reports
  - - Sponsored Content
  - - Weather
  - - Web Archive
- World

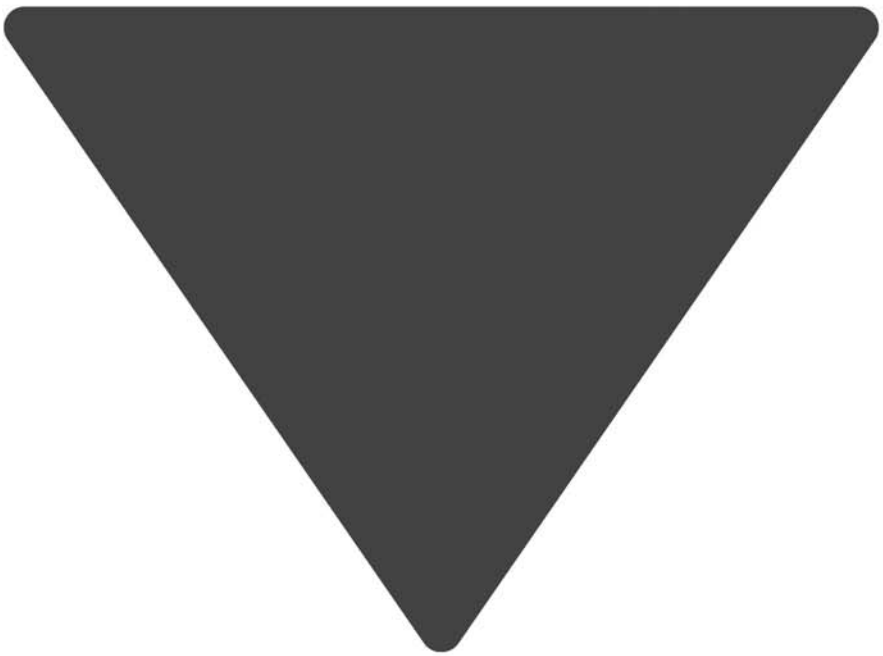


- Sport
  - - GAA
  - - Rugby
  - - Soccer
  - - Racing

- - Golf
  - - Others
  - - Columns
  - - Podcast
- Business

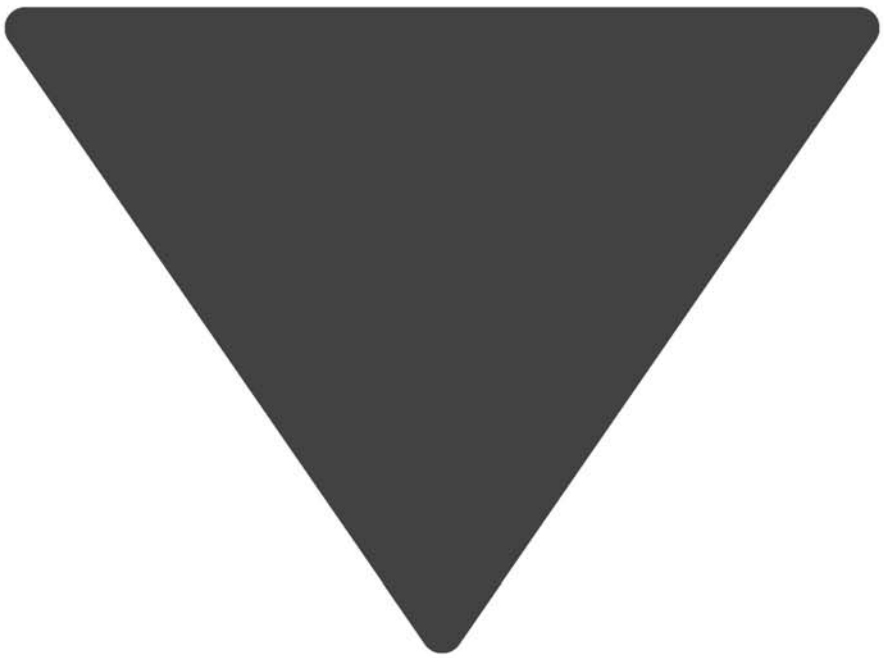


- Views
  - - Columns
  - - Analysis
  - - Our View
  - - Your View
  - - Send your views

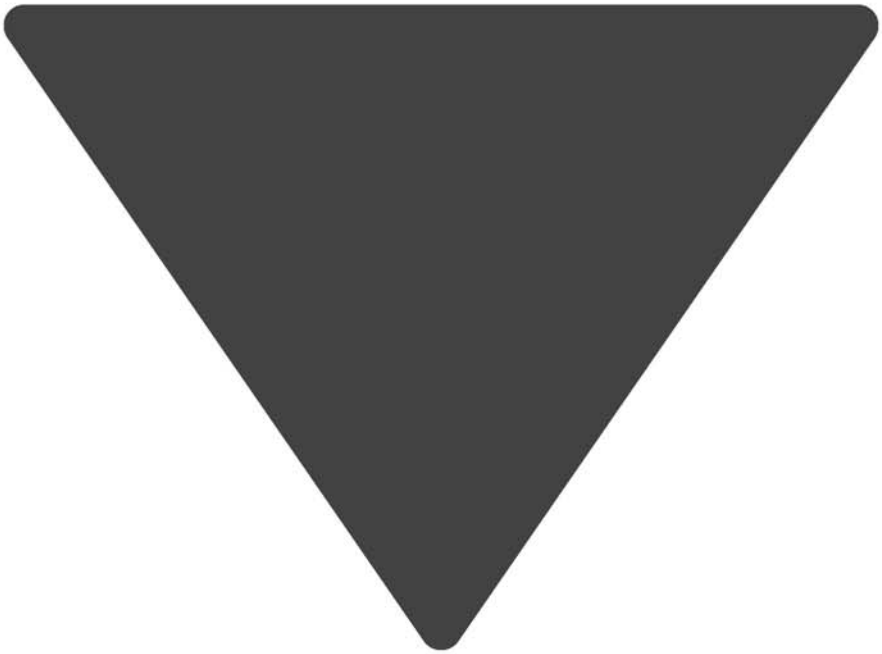


- Life

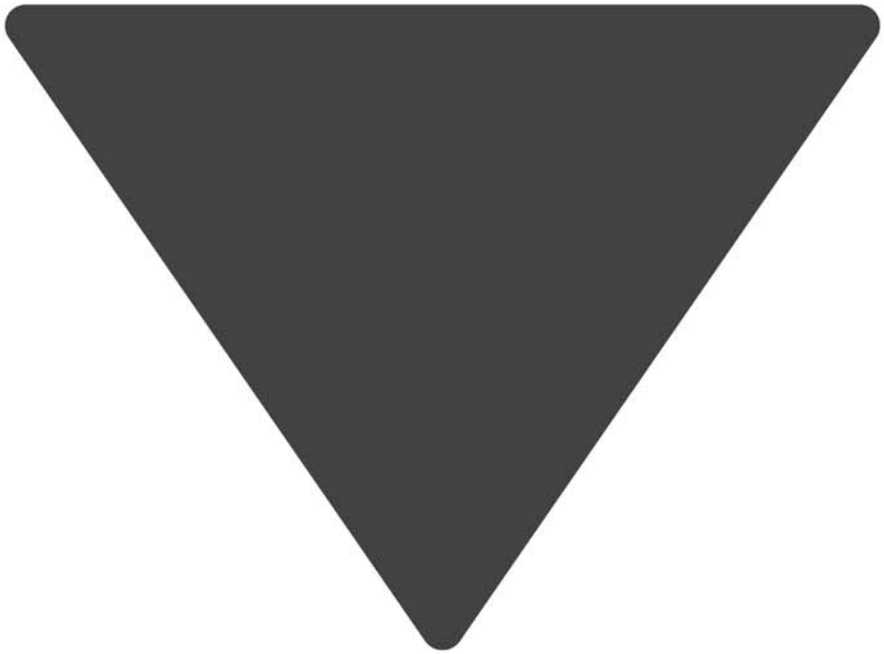
- - Culture
  - - Fashion/Beauty
  - - Features
  - - Food/Drink
  - - Health/Life
  - - Outdoors/Garden
  - - Showbiz
  - - Travel
  - - Home
- Technology
- Farming
- ExamViral
- Technow



- Property
  - - Property Search
- Motoring
- Showbiz
- Weather
- Horoscopes
- Death Notices
- Web Archive
- Newspaper Archive



- Help
  - - Advertise With Us
  - - Apps
  - - Contact Us
  - - Cookie Policy
  - - Competitions
  - - ePaper
  - - FAQ
  - - Photos
  - - Privacy Policy
  - - Postal Delivery
  - - RSS
  - - Shop
  - - Subscriptions
  - - Terms and Conditions



- Find a
  - - Home
  - - Job

- **Follow the Irish Examiner**











© Irish Examiner Ltd, Linn Dubh, Assumption Road, Blackpool, Cork. Registered in Ireland: 523712.

MHL_0100396

- VIEWS
  - Columns
  - Comment/Analysis
  - Our View
  - Your View
  - Send Your View

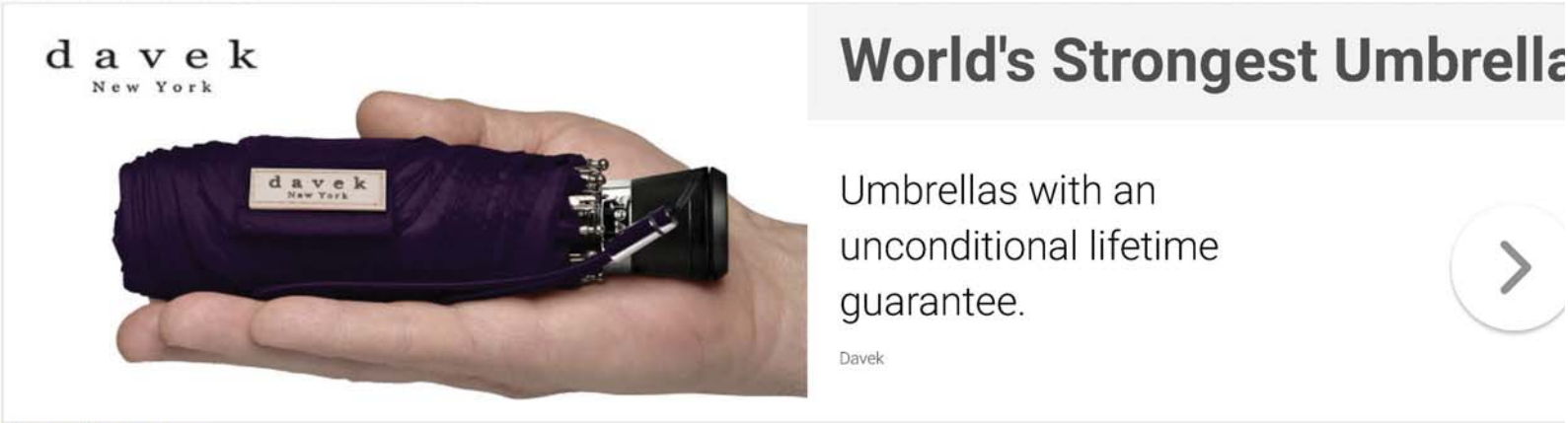
- LIFE
  - Culture
  - Fashion
  - Features
  - Food/Drink
  - Health/Life

- Outdoors/Garden
- Showbiz
- Travel
- Horoscopes
- Home/Interiors

- PROPERTY
- TECH

- SHOWBIZ
  - ExamViral

- MOTORS
  - News
  - Reviews





This 'flying' surfboard can help anyone master the waves

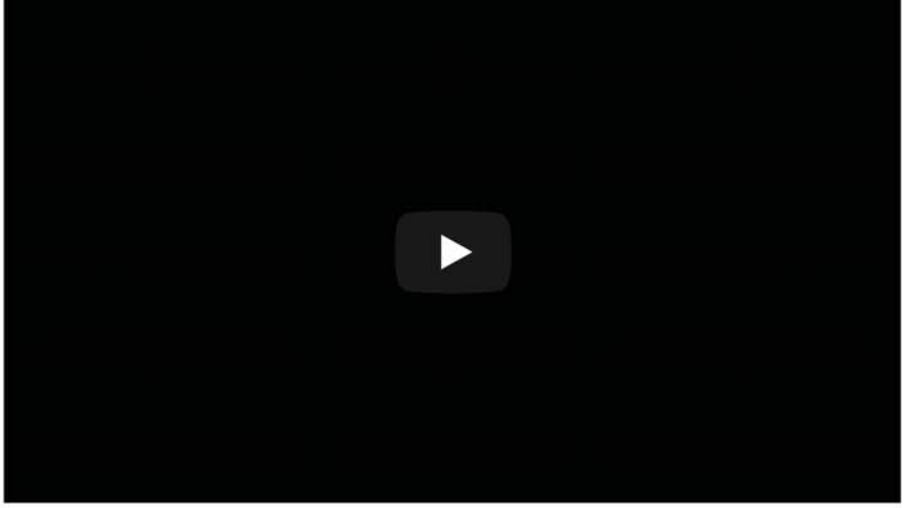


Facebook Twitter Messenger LinkedIn WhatsApp + More

Friday, July 07, 2017 - 05:18 PM

A new surfing invention that has the potential to enable anyone to surf has been created by a start-up in Puerto Rico.

Lift, a small surfing company that creates hydrofoils, has been working on a new version called the eFoil which has a small electric motor attached, propelling riders through the water.



Hydrofoils use a small set of wings beneath the water to lift the craft they're attached to out of the water as it moves forward, reducing drag and increasing speed.

By adding a motor to the hydrofoils on their surfboards, Lift says it makes it possible for anyone to quickly learn to surf, and do so on any body of water.

The eFoil uses a waterproof lithium battery connected to a small, silent, electric motor that sits below the water.

The board also comes with a wireless hand controller that's used to adjust speed. It comes with a strap and can float, and pressing the throttle helps get the eFoil up to its top speed of 25 miles per hour.

(Lift)

Lift's Nick Leason said the desire to create the eFoil came from the difficulty many have with mastering using hydrofoil boards.

"To harness the power of a wave and surf like a bird, although extremely rewarding, is difficult," he wrote in a blog post.

"Not because riding a foil is hard, but controlling the source – flying a kite or surfing a wave – takes skill. To harness that type of power and gain excellent control is something that may take years to master.

(Lift)

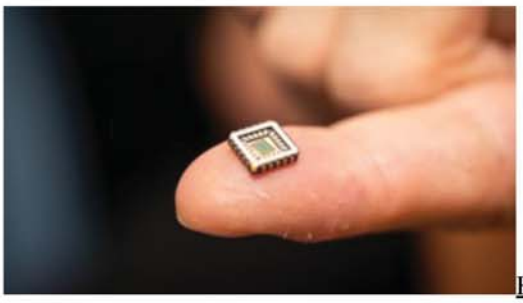
"So I set out to make it easy."

Leason and his team built a prototype, and following a range of tests officially unveiled it earlier this year. The eFoil is now available to pre-order from Lift's website.

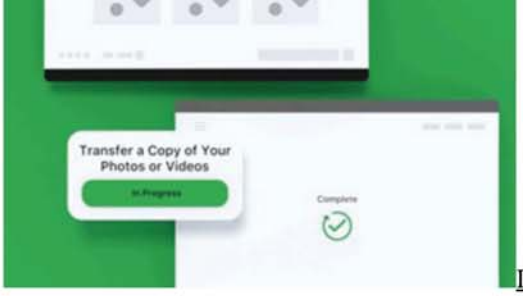
Such an experience does come at a price though – $12,000, which is just over £9,000.

Sci-TechSurfboardUKElectric motorHydrofoilLiftSurfboardTOPIC: Heathrow

More in this Section



Hope for cure of chronic diseases with artificial neurons on silicon chips



Ireland first in line as Facebook launch new tool to transfer images to Google Photos



The best portable Bluetooth speaker for rocking out


Audio Technica earbuds boast excellent sound and battery life

Lifestyle


'Break the rules and have fun': Meet interior designer Jackie Tyrrell


5 ways to lower your risk of high cholesterol


Question of taste: The Young Offenders' Michael Sands


How Edward Norton learnt from the masters

More From The Irish Examiner

- 

- 

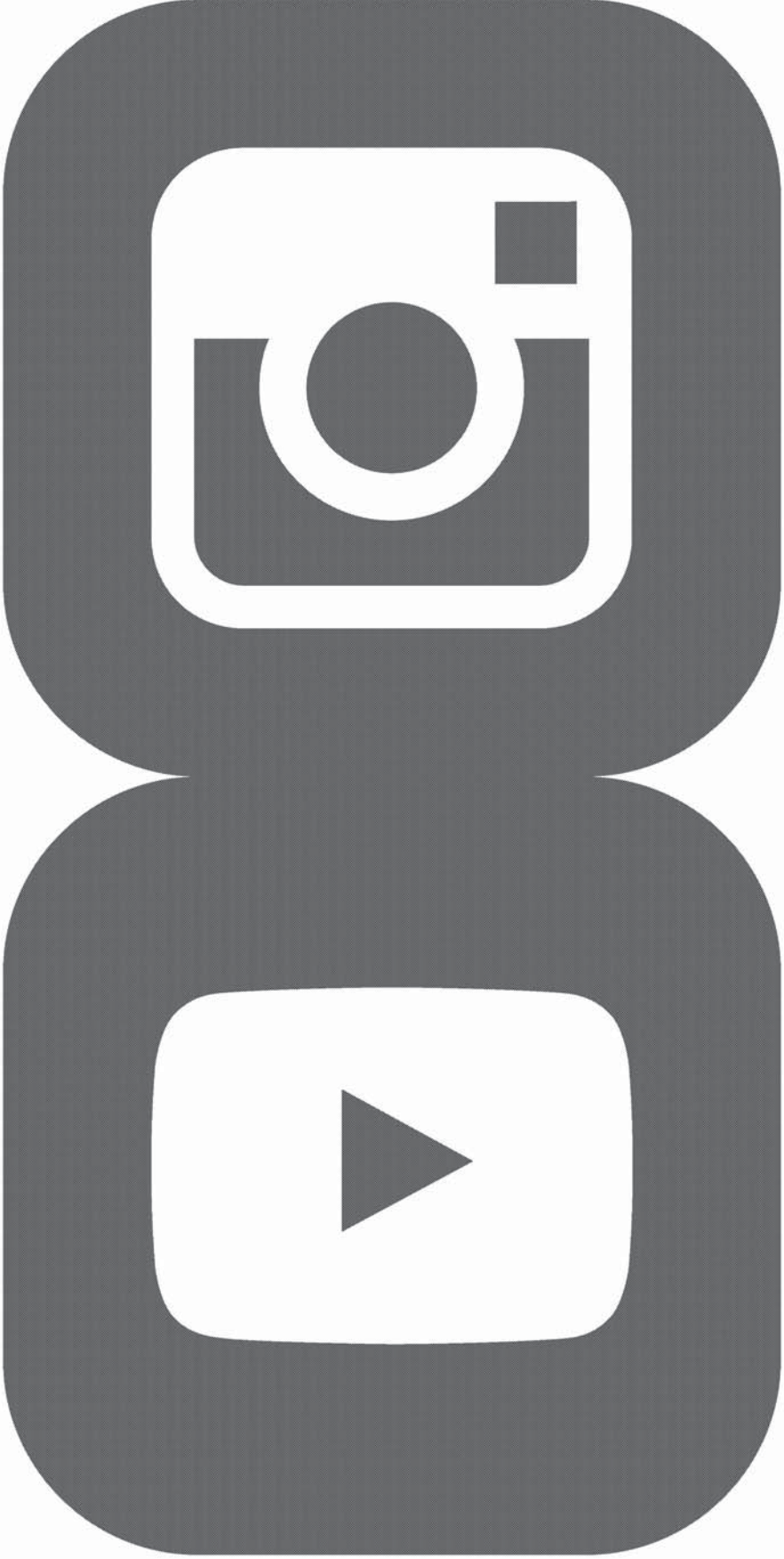


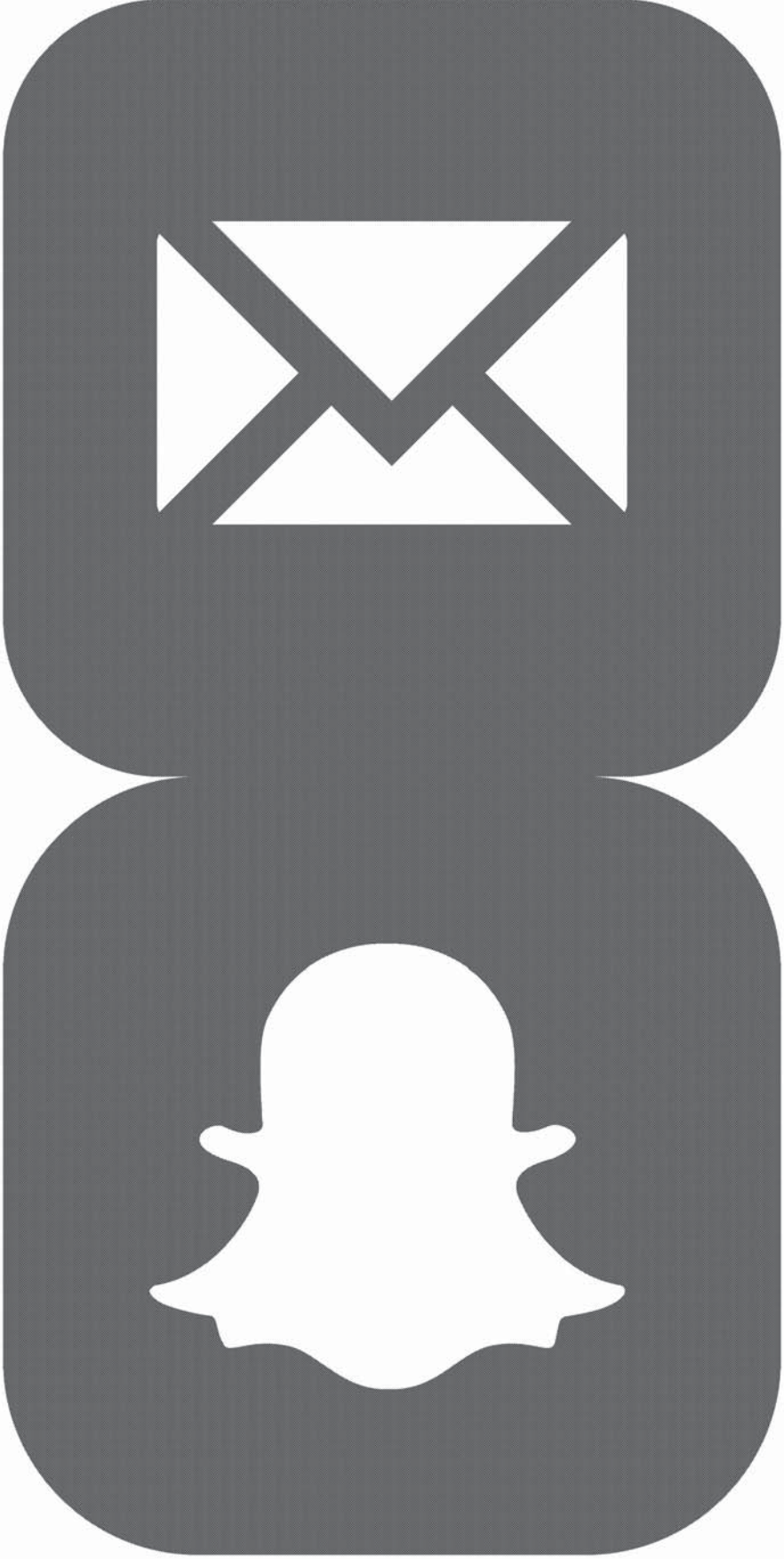




Follow the Irish Examiner











GAA coaching from those who know best: A brainstorming session with football's sharpest minds

SOUNDCLOUD

Cookie policy

Listen on Apple Podcasts

Follow on SOUNDCLOUD

Listen on Spotify

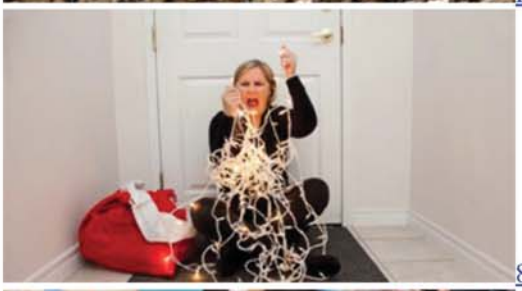
- Most Read
- Top Stories

-  Update: Gardaí locate car after urgent appeal for its occupants
-  Trust behind Cork City FC and GAA manager among latest tax defaulters published by Revenue
-  This Much I Know: Dáithí Ó Sé, broadcaster and television presenter
-  Judge issues arrest warrant for Father Ted actor accused of 'constantly spitting' on cell door
-  Planning permission approved for 17-storey apartment block in Cork city
-  Concerns raised over air quality in Cork City, EPA confirm monitoring station returns 'poor' readings
-  10,514 men, women and children: Demands for urgent action as record homelessness figures revealed

-  DJ Carey rejected county offers to take role with Kilkenny
-  After 36 years of wondering what happened to him, Conor Whooley's family finally know
-  'I found myself, uncharacteristically, having to take very deep breaths every so often,' says Toy Show host
- **IRELAND**
-  Irish Water warn of increased risk of stormwater overflows at Ringsend plant
-  The lotto results are in...
- **SPORT**
-  FAI delay annual accounts announcement until Friday
-  19-year-old McSharry wins bronze and sets new Irish record at European Championships
- **WORLD**
-  Johnson: We will stop talking about Brexit after January
-  SpaceX delays space station delivery due to high wind
- **BUSINESS**
-  Cork conference 'ambassadors' honoured amid renewed call for events centre progress
-  Mortgage rules stem 'price spiral' of up to 26%
- **LIFESTYLE**
-  Question of taste: The Young Offenders' Michael Sands
-  Richard Hogan: Managing great expectations at Christmas time

Examviral

-  Christmas lights 'powered by electric eel' at aquarium

-  Endangered lizards bred for first time
-  8 things you'll only know if you're not ready for the festive period to begin
-  Climate change protesters dressed as bees invade Brexit Party office
-  Eco conscious firefighters pledge to plant a tree for every gift sold at Craft and Design Fair
- 

Burger King advert mocks Vote Leave's campaign bus

.COM

Start the search

for your new job

e.g. engineer

All Regions

GO

Lotto Results

Wednesday, December 04, 2019

- 14
- 16

- 26
- 27
- 32
- 36
- 17

Full Lotto draw results »

- NNI
- ePaper/Digital Edition
- Postal Delivery
- Competitions
- RSS

© Irish Examiner Ltd, Linn Dubh, Assumption Road, Blackpool, Cork. Registered in Ireland: 523712.

EXHIBIT N

Translate »

Check out the Plugboats directories of electric boats, motors, batteries, and other accessories



Personal Craft | Recreation | World Firsts

The incredible rise of the electric hydrofoils!

April 23, 2019 Jeff Butler 4999 Views 0 Comments Australia, Canada, China, Czech Republic, Hydrofoil, Italy, Norway, Puerto Rico, Slovenia, USA

Here are 12 amazing zero-emission electric hydrofoil personal watercraft that fly over the water, a technology that didn't even exist 4 years ago!

No wonder it is catching on. Nearly every description of the experience, from the inventors and developers who first came up with these machines to first time e-foilers, is that it feels like flying on water. Some of the manufacturers even say, when referring to the battery life: "flying time of one hour".

A quick history and explanation. A hydrofoil is literally a wing that attaches underneath a boat or any kind of vessel. It acts the same way as the wing of an airplane – as the boat (or in our case, board) moves through the water, it increases water pressure on the underside of the foil, decreases it on the upper side and when the

NEWSLETTER Sign up for e-boat news & updates in your mailbox

Email address:

Subscribe

Plugboats Guides



board reaches a certain speed the foil lifts the board out of the water.

Wikipedia says "The first evidence of a hydrofoil on a vessel appears on a British patent granted in 1869 to Emmanuel Denis Farcot, a Parisian." Over the years they have been used on military vessels and passenger ferries, and in 2009 Alain Thébault, inventor of the electric foiling water taxi SeaBubbles, and foiling FlyBus ferry, put hydrofoils on an 18m sailing trimaran – the Hydroptere – and proceeded to break the world's speed records.

As for boards rather than boats, surfer celeb Laird Hamilton put a foil on a surfboard in Maui around 2009 and started flying over water either on the waves as in this video or by having it towed by jetskis or kites.

In 2016 the electric hydrofoil concept sprang to life

It seems that around 2016 the idea of an electric motor hydrofoil board was occurring to a few people. Electric motors and batteries had developed to the point that the propulsion system could be light enough and powerful enough to be attached to the wing itself, under the water, and provide enough speed to lift the board.

Some of the people with the concept were already in the watersport business, others were just surfers or wakeboarders or unpowered hydrofoilers who had dreams of being set free from the towing mothercraft. Some had already been working on it in their basements and garages. Literally all over the world.

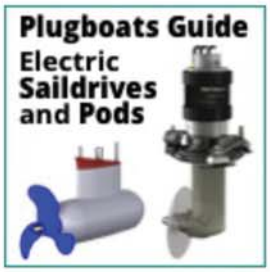
You'll see below that these dreamers and visionaries were in Puerto Rico, San Francisco, Norway, Canada, Slovenia, China, Italy and the Czech Republic.

The first public breakthrough seems to have come in October of 2016 when Dan Montague, who had been head of R&D at the Naish International surf/wake/kiteboard company (see Jetfoiler below) put up a video on YouTube of him flying over the waters around Fiji.

At about the same time, in Puerto Rico, the hydrofoil factory of Nick







Motors + Engines

Commercial
Motors + Engines
Podcasts
Shows/Exhibitions
Weekly Roundup
World Firsts

Plugboats electric boat roundup – Nov 22

November 22, 2019 Jeff Butler 0

Welcome to our regular Plugboats electric boat round up of e-boat highlights and news from the past few weeks. Click

Leason's company LiftFoils – which had been making towable hydrofoil boards – had a catastrophic fire and he and his partners made the decision to concentrate on launching the world's first commercial e-foil.

Below is a mini-documentary about the founding of the e-foil project, starring Nick himself.

Perhaps because the electrically powered hydrofoil isn't dependent on water conditions – or temperature – developments and advances could be tested everywhere instead of in just the usual warm ocean places for surfing and boarding innovation, like Hawaii or California or Ibiza.

In the promotional video for Cabratec, you can even see the inventor, Miroslav Schuetz, step off an ice shelf on a fjord onto his 'Easy Goat' e-foil, zip around the open water and then follow the edge of the shelf before he slows down and steps onto the ice again!

Here are 12 companies making e-foils

Below is a collection of the 12 companies we could find that are making viable electric hydrofoils – plus an instructables project for those who want to build their own.

Plugboats makes no assertions about which of these are the best, but each item is linked to the company website for more information.

Most are in pre-order or reserve stage – except for Nick Leason's Lift – which came on the market in May of 2018 and has already delivered over 600 boards to customers as of this writing. (April, 2019).

There will almost inevitably be some sorting out in the industry as to which boards can make the transition to being successful in the marketplace, but with so many people working on e-foils it also inevitable that the technology involved will become better and more affordable, probably very quickly.

For now, here is a look at the intrepid pioneers who are leading these

Electric motor optimizer invests in Templar e-boats
November 21, 2019 0

METSTRADE Boat Show electric exhibitor guide
November 19, 2019 0

Are ultra light batteries in electric boating's future?
November 12, 2019 0





Recreational

Batteries Recreation Tenders Yachts

Electric

exciting new advances.

Lift The first production e-foil, which started shipping in May, 2018. Like all of the e-foils, it has an electric motor, battery (in this case lithium-ion) and a hand controller. Lift's is connected via Bluetooth. Riders can fly for up to an hour at speeds of 25 mph or more.

Jetfoiler Is the Don Montague creation being developed with his Kai Concepts team in San Frnacisco – who also invented the trimaran kiteboat. The Jetfoiler is still in prototyping, but it has already undergone a lot of real life testing and they "will make an announcement when we have boards available to sell."

Flite was founded by Australian entrepreneur David Trewern who had learnt to surf, windsurf and sail by age 10, became one of Oz's first Kitesurfers in 1998 and in 2005 broke the (GPS) Kitesurfing world speed record with a top speed of 48.5 knots. He's assembled a group of 25+ experts who share the passion to create an amazing new way to ride water.

VEFoil started when a couple of dreamers from Canada decided to act on their idea and launched a Kickstarter project to cover R&D costs, receiving 366 backers and setting them on their way. They've designed the board so that the motor can be removed to convert it to a kite foil or wake foil.

Cabratec came about because Miroslav Schuetz was so inspired by Don Montague's 2016 Fiji video that he set out to build his own e-foil. As he saw prices for others he concentrated on a more affordable option. Engineering, testing and prototyping took up 2017 and his

Frauscher 747 prototype in new video

November 14, 2019 Jeff Butler 0

Kreisel Electric, one of the world's most innovative battery companies, has put up a YouTube video of the three founders

Riding on water – 2 new electric 'watercycles'

November 13, 2019 0

Electrified Mercruiser Alpha 1 hits 78 km/h

November 11, 2019 0

New modular electric boat batteries at Fort Lauderdale Show

October 30, 2019 0



20 Ingenious Inventions

They're selling like crazy.Everybody war

Techgadgetstrends.com

EasyGoat became available for pre-order in 2018.

HoverStar Flight Technology began in Shenzhen China in 2015 with their H1 Flying Car. From there they moved to the water and put together a hand held electric motor 'AquaJet' for snorkeling, the 'HoverArk', a sort of floaty with motors, and the HoverFoil is just the next natural progression, an electric motor on a bigger platform.

Albatross from Okarbon is a little bit different, an inflatable board that comes with a battery powered compressor. The whole thing can be stored in a backpack and the video on their website shows the components being put together in a couple of minutes.

The Elevate Eco-Foil e-foil is another inflatable that is made for easy transport. In addition, its developers say that the actual hydrofoiling part with the motor can be easily attached to other wakeboards or SUP (Stand Up Paddling) boards to convert them instantly to e-foils.

Flying Rodeo is another kit-type e-foil with different components that are assembled, but the board is rigid, not inflatable. There are also two types of rigid board offered, with the motor and other hydrofoil elements being interchangeable to give different flying experiences.

And if you have an extra 17 seconds to spare, this video of the Flying

Commercial
Motors + Engines
Podcasts
Shows/Exhibitions
Weekly Roundup
World Firsts

Plugboats electric boat roundup – Nov 22

November 22, 2019 Jeff Butler 0

Welcome to our regular Plugboats electric boat round up of e-boat highlights and news from the past few weeks. Click

Electric motor optimizer invests in Templar e-boats

November 21, 2019 0

World's busiest ferry systems going electric hybrid

November 8, 2019 0

Renault '2nd life batteries' power Seine electric boat

November 6, 2019 0

Rodeo alternative to Santa's traditional sleigh and reindeer is well worth a look.

EldoRIDEdo comes from the Czech Republic, the creation of a team at SportProp that has been making carbon and composite propellers and other parts, for aerospace, auto racing and even hang-gliding trikes, since 1993. When they imported a kite-hydrofoil in 2012 they started working on their impeller powered version

---

e-takuma is the last of our kit type e-foiling offerings, with the motor easily detaching from the foiling wing to make a towable foiling wake, kite or SUP board. One of their claims is ease of use, noting that out of 500 test users, the average time to 'learn to fly' was just over 3 minutes.

The **Waydoo Flyer** is from a subsidiary of TXA, a Chinese company that makes intelligent drones used in agriculture and applied that learning to electric hydrofoils. The e-foil division was founded in 2018, the big unveiling took place at the Singapore Yacht Show in April and orders are now being taken, with a one month delivery promise.

Build Your Own E-Foil! After seeing video of an e-foil and realizing they were really expensive, Hans, Jonas and Nikolai Hiorth of Norway – decided to build their own. Learn from them with their Instructables page that also has video of the great looking finished e-foil. Two-part instructions: board, hydrofoil, propulsion unit; battery and controller.

Photos are © the respective e-foil companies. Plugboats video uses footage from: Albatross, JetFoiler, Lift, Flite, Cabratec, Elevate, Waydoo, VEFoil

---

Select Category

Tags

ABB Amsterdam Arctic Australia Austria Awards Ballard batteries Canada China Corvus Denmark DIY Energy Observer Evoy Finland France Frauscher Germany Hydrofoil Italy Japan Miami Boat Show Monaco Netherlands New Zealand Norway Oceanvolt SeaBubbles Silent Yachts solar Solar Sport One Sweden Switzerland Templar Torqeedo UIM UK United States USA Vector Venice Vita Volvo-Penta X-Shore

Keep up with the world of electric boats, ships and watercraft. Sign up to get the Plugboats weekly update sent to your mailbox.

Email address:

Subscribe



Swedish electric hydrofoil boat starting to fly!

May 20, 2019
In "Recreation"



New hydrofoiling electric jetski WaveFlyer

August 12, 2019
In "Personal Craft"



Electric flying water taxi has 1st U.S. customer

February 17, 2019
In "Commercial"



JB Equipment

Great for a chilly day



← World's 1st electric harbour skimmer for Oslo

1,000 tractors to be shipped across Atlantic – by sail →

Leave a comment

Boating Accessories and Other Suggestions

Sports & Leisure | Search Amazon | Go



Premium Boat Scuff Erasers | Marine Boating Accessories for Cleaning Black Streak Deck

£14.07



£18.95 prime

Life Mounts LED Boat Torch with All Weather Flex Mount (Black)

(1)



£19.99 prime

Bateson 2Pcs Boat Dock Line, Mooring Sailing Rope, Bungee Cords for Boats,…

(6)



2 Waterproof CellPhone Dry Bag Case & 1 Waterproof Floating Dry Bag Case Waist Strap with Waist/Shoulder

(33)



VIMOV Fishing Pliers (2 Pack), Stainless Steel Multi Tool Pliers (Hook Remover, Braid Line Cutter, Split Ring Opener)

(25)



Classic Accessories Lunex RS-1 Boat Cover For V-Hull Runabouts



Premium Waterproof Bag, Sack with phone dry bag and long adjustable Shoulder Strap Included, Perfect for

(1321)



CampTeck 5L, 10L & 20L Dry Sack Waterproof Floating Storage Dry Bag for Camping, Rafting, Fishing, Canoeing…

(6)

Ads by Amazon

Plugboats Information

About Plugboats

Contact

Electric boater gifts for under $100

Privacy Policy

Terms and Conditions

Follow Plugboats

Copyright © 2019 Plugboats. All rights reserved.

EXHIBIT O

- Advertisement -

This motorized hydrofoil surfboard can 'fly' over the water at 25 mph

TechStartups Team

POSTED ON MARCH 27, 2018

Share On Facebook Tweet It



A company in Puerto Rico, is preparing to launch an electric motorized surfboard which can rise up above water and 'fly' over the water at the speed of 25 mph. Founded by a surfer turned mechanical engineer, the surfboard, (called 'eFoil') uses a hydrofoil technology found in larger boats and airplanes to create the hovering effect. Lift The US$12000 eFoil can be recharged from a household power outlet in 2.5 hours, or the $3000 Lithium Ion battery can be

CATEGORIES

Acquisition
Aerospace
Agriculture
Apps
Artificial Intelligence
Bitcoin
Blockchain
Bootstrapping
Cloud
Crowdfunding Campaigns
Cryptocurrency
Cybersecurity
Design
Drones
E-Bike
Editor Choices
Education

swapped for continuous usage.

eFoils is the next generation of hydrofoils. It comes with a wireless hand controller, silent electric motor and fully programmable computer. eFoil comes with superior lithium battery technology. As the battery of choice for electric applications, we worked with the best engineers in the USA to create a custom lithium battery built for a rugged marine environment. Coupled with performance and convenience, our battery offers the most comprehensive safety components on the market. It lasts up to an hour -depending on rider weight/speed- and is enclosed in a corrosion protected, IP67 waterproof housing that allows it to be transported and installed safely. The battery is also easily replaceable and rechargeable. Just plug it in and go.



Features

- **Battery Management System (BMS) with Redundant Safety Features.**
  Our battery is equipped with a BMS that protects the battery against overcharging, overcurrent, excess voltage, deep discharge, short-circuit and overheating. In addition, all safety related components contain a duplicate backup system.
- **Waterproof.**
  Our battery is fully submersible to IP67 standards keeping the internal components protected from moisture and corrosion.
- **High Energy Density.**
  Our battery lasts approximately one hour riding at 15 mph.
- **Easily Interchangeable and Rechargeable.**
  Recharge time is 2.5 hours. Just plug it in and go.
- **Weight: 30 lbs.**

Wireless Hand Controller

With complete control in the palm of your hands, you can easily adjust your speed for an effortless, smooth ride. By simply pressing the throttle you can

Emerging Technology
Energy
Environment
Environment
Ethereum
Failed Startups
Featured
Gadgets
Gaming
Guest Post
Hacking
Hardware
Healthcare
ICOs
Internet of Things
Latest Technology News
Launch
Machine Learning
Music
New Discovery
Press Release
Privacy
Product Reviews
Research
Robots
Security
Self-Driving
Smart Car
Smart City
Smart Home
Smart Living
Social Media
Software
Space
Sponsored
Startup Funding
Startups
Startups to Watch
Tech Startup News
Tech Startups
Token
Train
Training

go up to 25 miles per hour or automatically shut off the engine by releasing the lever. Rich content such as speed and battery charge percentages are displayed on the screen. Our waterproof controller also floats and comes with a strap to keep it secured to your hand.

Transportation
Venture Capital
Wearables

- Advertisement -



Features

- **Wireless Bluetooth Technology.**
  We created a hand controller that gives you complete control over your ride. Every time you press the lever, the controller gives a wireless signal to the board. The motor then reacts instantaneously to adjust your speed.
- **Magnetic Actuator.**
  The trigger uses magnets and a hall effect sensor to control throttle actuation leaving the internal components sealed and completely waterproof.
- **Safety.**
  The hand controller commands the motor. The motor will automatically shut off by simply releasing the lever; if submerged in water; or outside a distance of 10 feet.
- **Display Screen.**
  Speed and battery charge percentages are displayed on the screen.
- **Automatic Power Regulation.**
  In the event of a low battery, the controller will automatically throttle you back to a low power setting allowing you to get back to shore safely.

Silent Electric Motor

Our motor was designed to be an extension of you. Unlike gas engines, electric motors have no lag and deliver maximum torque on command. This instant response allows you to have complete control over the motor. There is no delay from rider input to motor output making your ride not only safer, but exhilarating.



Features

- **Motor Controller.**
  A Computer runs our electric motor. We programmed it to set the perfect accelerations, decelerations and speed outlets so you get the most stability out of your ride.
- **Silent Electric Motor.**
  Lots of energy in a compact space allows you to travel swiftly through the water without the irritant noise created by gas engines.
- **Submersible in Water.**
  Every component is double sealed against the elements and uses high-end corrosion resistant materials.
- **Hydrodynamic Torpedo Design.**
  Pierces through the water smoothly with minimal drag.
- **Ducted Propeller.**
  Our ducted propeller offers the best thrust to energy ratio over a variety of speeds. This helps conserve battery power and maximizes thrust for an exhilarating ride.

Board & Foil Design

Lift set out nine years ago to create the best foils on the market. The knowledge gained from designing numerous foils through refinement and innovation pioneered the new smooth, easy to use hydrofoil featured in the Lift eFoil. It strikes the perfect balance between stability and maneuverability so you can lean, carve and edge with ease. A unique feeling that combines the sensations of surfing and flying all in one.

The eFoil has a top speed of 22 knots (25 mph), and deliveries will begin in September of this year for US$12,000.(Credit: Lift Foils)

The eFoil has a top speed of 22 knots (25 mph), and deliveries will begin in September of this year for US$12,000.(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)



The Lift Foils eFoil has a top speed of 22 knots (25 mph), and deliveries will begin in September 2017 for US$12,000.(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)



The Lift Foils eFoil has a top speed of 22 knots (25 mph), and deliveries will begin in September 2017 for US$12,000.(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)



The eFoil board will initially be available in two sizes: 168 cm x 71 cm (5 ft 6 in by 28 in) for the standard E1 eFoil, and 152.5 cm x 63.5 cm (5 ft 6 in by 25 in) for the E1 Sport model. "The standard eFoil is more stable with the bigger deck, while the smaller board is more nimble and turns quicker," according to Lift Foils founder Nick Leason.(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)



The Lift Foils eFoil has a top speed of 22 knots (25 mph), and deliveries will begin in September 2017 for US$12,000.(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)



"At that speed (22 knots), you're burning quite a bit of juice and although I've never actually run it at full speed for that long, I'd expect you might only get 20 to 25 minutes from a full charge," said Leason. "I'm 175 pounds and typically I ride anywhere from 45 to 55 minutes at my cruising speed of 16 to 17 knots."(Credit: Lift Foils)



The Lift Foils eFoil has a top speed of 22 knots (25 mph), and deliveries will

begin in September 2017 for US$12,000.(Credit: Lift Foils)



The eFoil can be recharged from a household power outlet in 2.5 hours, or the $3,000 Lithium Ion battery can be swapped for continuous usage.(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)



The Lift Foils eFoil(Credit: Lift Foils)

You can visit their website to place your order.

Below is a mini documentary of Lift eFoil



Share On Facebook Tweet It

TRENDING NOW



Google's Waymo acquires self-driving AI startup Latent Logic to expand into Europe

TechStartups Team DECEMBER 13, 2019



LeanTaaS secures $40M from Goldman Sachs to optimize hospital and health clinic operations with AI

TechStartups Team DECEMBER 13, 2019

- Advertisement -



READ NEXT

Top tech startup news stories you need to know this Wednesday, March 28

Stay Updated

EMAIL ADDRESS:

Your email address

SUBSCRIBE



© Copyright 2017 TechStartups.com

EXHIBIT P

https://www.theweeklyjournal.com/business/here-s-a-surfboard-that-can-fly/article_188bbc58-fa84-11e9-bff2-b77a03606a1e.html

FEATURED

LIFESTYLE

Here's a Surfboard That Can 'Fly'

The eFoil can reach speeds up to 25 miles per hour and lets the rider cruise smoothly above the water

Cynthia López Cabán, The Weekly Journal Oct 30, 2019 Updated Oct 30, 2019



Lift began manufacturing custom made surfboards, paddleboards and hydrofoils for kitesurfing a decade ago in Isabela. >Carlos Rivera Giusti.

MHL_0100451

Back in 1989, the movie "Back to the Future II" envisioned a world were people would float above the ground and travel over the water in a wheelless skateboard. At the time, that place seemed to only exist in the imagination or the celluloid.

Fast-forward three decades. In the secluded sector of Bajuras in Isabela, on the northwestern region of the island, stands a small factory that pioneered the technology of the electric surfboard, a state of the art device with a futuristic vibe that seems to effortlessly levitate over the water.

"It's a magic carpet. It's the hoverboard," said Nick Leason, CEO and cofounder of Lift, to highlight the gliding and unorthodox characteristics of his wave riding machine.

The company, a joint venture with his father Michael, began manufacturing custom made surfboards, paddleboards and hydrofoils for kitesurfing a decade ago in this town of 40,268 inhabitants. It is a family business -that employs 20 workers- inspired by a father and son's shared passion for the ocean and the sport of riding waves in their backyard at Villa Montaña, a secluded seaside resort near Jobos beach.





Nick Leason is the CEO and cofounder of Lift, a joint venture with his father Michael Leason. >Carlos Rivera Giusti

MHL_0100452

Six years into the venture, an electrical fire burned down the factory in the midst of the eFoil's prototype testing process, but Leason's dreams didn't turn into ashes. Far from discouraging the young entrepreneur, the setback helped him refocus the business. From that point on, the factory shifted its attention and devoted its resources toward the development of the new gadget, which would revolutionize the future of water sports.

Up to that moment, Leason recalled, foiling or foil surfing was relatively unknown. Surfers like Laird Hamilton were beginning to embrace hydrofoils -a long fin or mast with wings- and discovering its potential to cruise in all types of water, thus redefining the concept of a rideable wave.

But things were about to change. In 2017, Lift introduced to the world the first commercially available electric-powered hydrofoil surfboard after testing the device in the turquoise waters of Crashboat beach in Aguadilla and the Guajataca Lake in Quebradillas.

MHL_0100453



Launched in 2018, the eFoil is an electric surfboard that floats over the water. >Carlos Rivera Giusti

"The invention of the eFoil, to make it electrically propelled and pull it out of the waves, that is an invention that took place here in our backyard," the 34-year-old engineer told THE WEEKLY JOURNAL. "It has technology from the Tesla vehicle inside," he added with pride.

How does it work? Leason combined a high-performance board with a silent electric motor that's mounted on an all-carbon-fiber hydrofoil and works with an advanced lithium-ion battery.

It doesn't stop there. A wireless remote throttle that feels like a joystick controls the sleek electric surfboard that comes in three colors: white, blue and black. A rider can travel for over an hour at a speed that ranges from 5 to 25 mph.

MHL_0100454

Besides offering wayfarer the thrill of flying over the water, the eFoil is an emission and pollutant-free watercraft. "Riding the eFoil evokes a completely unique feeling," indicated Leason of the sense of freedom and adventure that comes from cutting waves.



Since April of 2018, Lift has sold 1,600 eFoils. >Carlos Rivera Giusti

The majority of the eFoil's components are manufactured in China, including all composite components and the hand controller, but the battery is built in San Francisco. Just one detail: to stroll around Puerto Rican waters in an eFoil you need a permit and a license issued by the Department of Natural and Environmental Resources.

"Everything is being assembled here in Puerto Rico where we can monitor the quality, but that could change after we build the brand, make it stronger. We could also go back to manufacturing those components here from raw materials as we did in the beginning," said Leason.

MHL_0100455

As part of the expansion plan, Lift submitted a proposal to acquire a space in a government-owned industrial park in nearby Aguadilla.

"We started shipping the product in April of 2018 and since then we have shipped 1,600 units, which is pretty good because they are $12,000," Leason indicated with a grin on his face. "It is one of the world's most expensive surfboards. At first, everybody would say 'you are crazy that's never gonna work'".



At a price tag of $12,000, the cFoil is an emission and pollutant-free watercraft. >Carlos Rivera Giusti

He proved them wrong. The business is growing and next year's goal is to double the number of units sold, which ship mainly to the United States. Lift also sells surfing foils that range from $2,500 to $2,700.

So, how does an American man end up designing and developing fancy surfboards in a quiet corner in Puerto Rico?

MHL_0100456

"I was born in Hato Rey. My parents are Americans. They came here in the early '70s when they were 21- years-old," indicated Leason. "My grandfather, Hayden Leason, had come down in the '60s and started two factories in Maunabo for automobile and medical manufacturing, those were offered tax incentives back in the days."



Tommie Hernández and Her Two Worlds

For some time, Leason and his family lived at Palmas del Mar in Humacao. They eventually moved to the United States for a few years, before finally settling back in Puerto Rico. He attended high school at Saint John's School in Condado, where he fell in love with physics and studied engineering at the University of Utah in Salt Lake City. His brother and sister also live on the island.

A self-proclaimed man obsessed with water sports and foils, Leason was a champ in the windsurfing racing scene.

MHL_0100457

"My family stayed here because of the lifestyle. My mom considers herself to be Puerto Rican. She does not associate herself with American culture anymore," Leason said. "There is no place like home [Puerto Rico]."

> "It has technology from the Tesla vehicle inside." -Nick Leason, CEO and cofounder of Lift

Cynthia López Cabán, The Weekly Journal
Reporter for The Weekly Journal. She is a curious and fearless journalist, equipped with 16-plus years of writing. Cynthia received a bachelor's degree in Spanish and English Literature from Sacred Heart University.

OUR E-EDITION

e-Edition Updates
Would you like to receive our e-Edition every Wednesday? **Signup today!**

Enter email address

SIGN UP

MANAGE YOUR LISTS

MHL_0100458

EXHIBIT Q

Learning To E-Foil: Tips From Brian Grubb



BY TONY SMITH(HTTPS://ADVENTUREAPP.IO/AUTHOR/TONY-SMITH/) •
AUGUST 19, 2019(HTTPS://ADVENTUREAPP.IO/2019/08/19/)

Ready to learn how to make your first day using the Lift e-foil a huge success? According to professional watersports athlete and Adventure IO guide Brian Grubb, master these simple steps and you'll be foiling like a pro in no time.

1.) First, you want to start by lowering the power on the wireless hand controller down to 50 percent. If you don't, you'll probably be a little overwhelmed when starting up. Once that's set, lay yourself stomach down on the board and get comfortable, holding the wireless trigger in your dominant hand and the nose of your board with your non-dominant hand.



Your first lesson: Don't start out with the hand controller at full blast.

2.) Now that you're in the "beginning" position, the goal is to get the board moving, get to your knees, then your feet.

Gently start the board's electric motor with your wireless trigger. At this point, the increase in speed should shift the nose of your electric hydrofoil slightly upwards. Once you're at a comfortable pace, hold the nose of your board tightly and use it as leverage to bring yourself up to your knees.

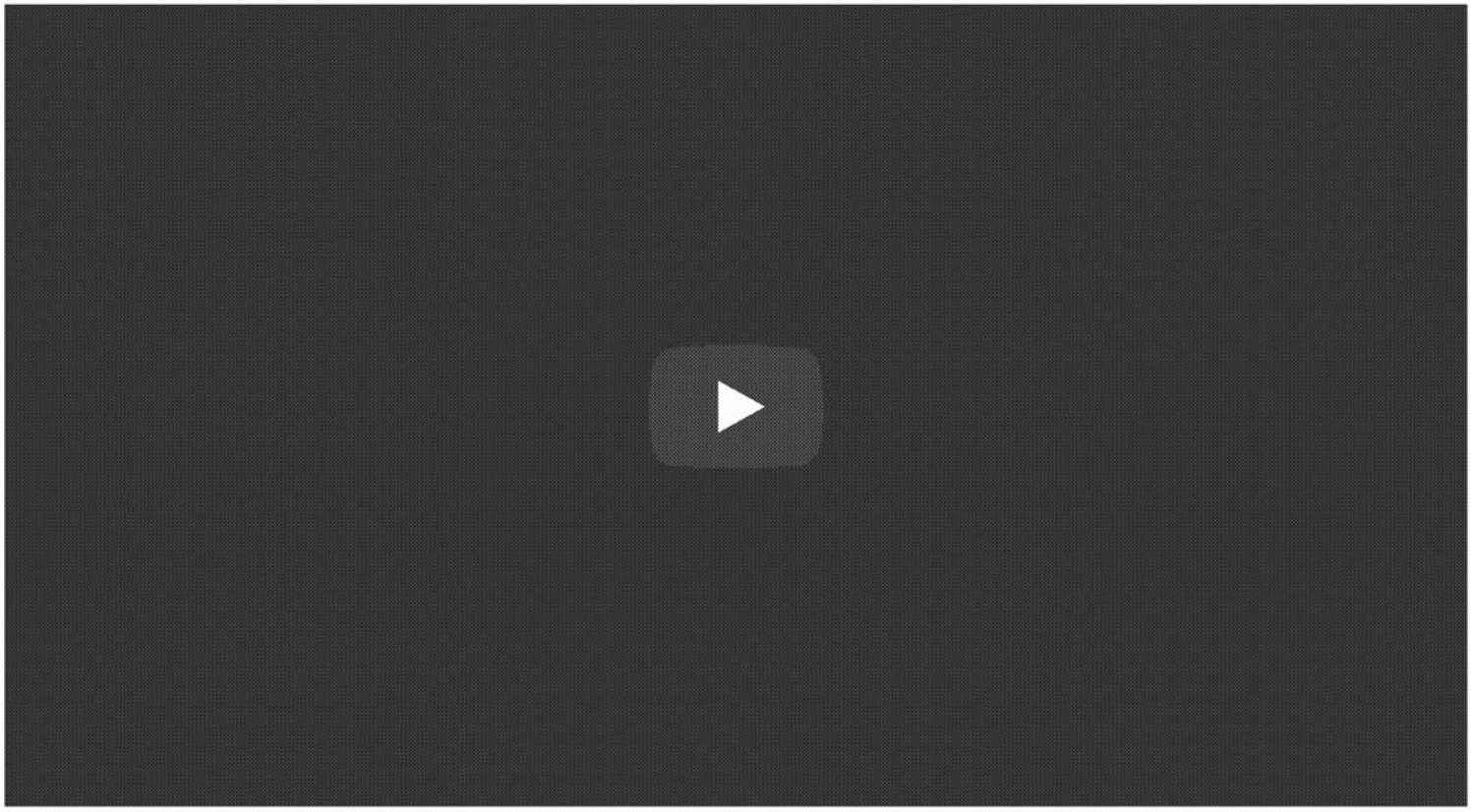
3.) Nice! Now you're in the "kneeling" position. It's essential to feel the way your board is moving while in this position. It should feel like you're gliding smoothly on top of the water with no drag; this is called being on "plane." You should always have your board on plane before trying to stand up.

Slow and low: Crawl before you learn to walk.

"IF YOU TRY TO STAND UP BEFORE THE E-FOIL IS ON PLANE YOU WILL FALL."

Lift Foils Founder Nick Leason teaching a beginner the ways of the Efoil.

4.) Okay. After the board is on plane and you're comfortable moving, with your hand still on the nose, place one foot forward and stand yourself up. It's important that when you do this you keep weight on the FRONT of your board and just keep riding it on the water, without trying to lift up onto the foil yet.



Congrats! If you made it this far, you've successfully got yourself into the "riding" position. When you're comfortable and ready to fly, put weight on your back foot to trim the board up off the water and then back onto your front foot to balance it out. It's all about balancing the board where the wing and prop are in the water and the board is off the water.

Now you can start practicing small turns and going a little faster. Just remember to keep the nose of the board level using your front foot. After a few minutes up on the board, you'll notice it's is all about balancing the wing and prop.

Grab your friends and go!

And that's it! Keep practicing these steps, and in a short amount of time, you and your crew can begin flying over water.

Share this:

(https://adventureapp.io/learning-to-efoil-tips-from-brian-grubb-%e2%80%8b/?share=twitter&nb=1&nb=1)

(https://adventureapp.io/learning-to-efoil-tips-from-brian-grubb-%e2%80%8b/?share=facebook&nb=1&nb=1)



(https://adventureapp.io/riding-the-lift-e-foil-with-brian-grubb/)

Riding the Lift E Foil with Brian Grubb (https://adventureapp.io/riding-the-lift-e-foil-with-brian-grubb/)

June 21, 2019

In "adventures"



(https://adventureapp.io/5-epic-wakeboarding-adventures-on-aio/)

5 Epic Wakeboarding Adventures on AIO (https://adventureapp.io/5-epic-wakeboarding-adventures-on-aio/)

November 25, 2019

In "adventures"



(https://adventureapp.io/learn-to-foil-with-aio-co-founder-and-guide-jeff-mckee/)

Learn to Foil With AIO Co-Founder and Guide Jeff McKee (https://adventureapp.io/learn-to-foil-with-aio-co-founder-and-guide-jeff-mckee/)

September 14, 2019

In "adventures"



MHL_0100464



(https://adventureapp.io/aio-guides-

(https://adventureapp.io/saving-lives

(https://www.instagram.com/adventureio/)

(https://www.facebook.com/adventureio/)

© 2019 AdventureIO. All Rights Reseved

#adventureio

EXHIBIT R

20 Ingenious Inventions 2019
They're selling like crazy.Everybody wants them - Tecl

JUNE 3

First Ride: Lift eFoil electric hydrofoil board literally flies above water

Micah Toll - Jun. 3rd 2019 2:19 pm ET @MicahToll

FEATURE

15 Comments

You're reading Electrek— experts who break news about Tesla, electric vehicles, and green energy, day after day. Be sure to check out our homepage for all the latest news, and follow Electrek on Twitter, Facebook, and LinkedIn to stay in the loop. Don't know where to start? Check out our YouTube channel for the latest reviews.

The Lift eFoil is part of the small but growing electric watersports market. It's basically an electric surfboard with hydrofoil that lets you raise up out of the water and glide along like a silent, airborne dolphin. The sleek and expertly engineered board is really something special and unlike anything I've ridden

You are seeing this message because ad or script blocking software is interfering with this page.
Disable any ad or script blocking software, then reload this page.



20 Ingenious Inventions 2019

They're selling like crazy.Everybody wants them

Techgadgetstrends.com Open >

Lift eFoil electric hydrofoil board

Electrek got invited out by TechWeWant to test out their eFoil board from Lift.

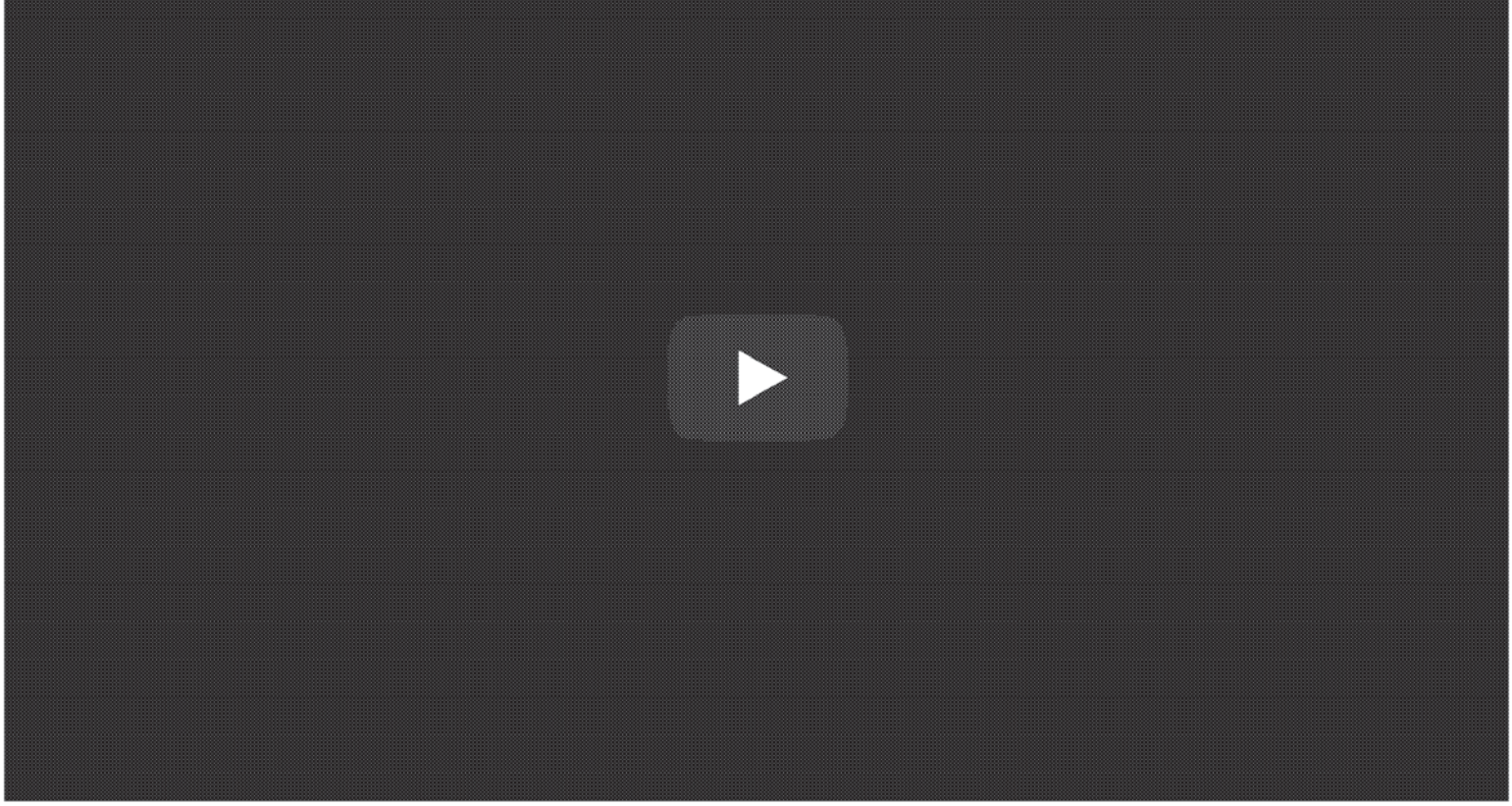
And as much of a bummer as working on the weekend is, I took one for the team and suited up in my board shorts to give this thing a whirl.

I should note that I've never ridden an electric hydrofoil board before. Nor have I ever surfed. I went water skiing once when I was 15, but that's the closest I've come to anything like this before. So needless to say, I wasn't overly confident going in. But I figured I'd give it the ol' college try. How often do you get to ride a $12,000 American-made electric hydrofoil?

The eFoil waiting for my ride

Video review

With something like the Lift eFoil, words and pictures only go so far. Seeing it in action really gives you a better sense of the board. Check out the video below to see me riding (and crashing) the board, then read on for all of the details!



The Lift eFoil board

Checking out the board in advance, I was quite impressed. The entire board and foil are 100% premium carbon fiber. The inner compartment is entirely waterproof, but the battery and all connections inside are also waterproof to serve as extra redundancy. The sealed controller is water cooled using an inlet down by the motor. The 2 kWh battery is fully submersible, just in case you ever removed it and dropped it overboard, I guess.

That battery is built by Lithos Energy, a battery design company founded by Tesla engineers.

The charger is gigantic, but can fill the battery in just 2 hours.

Beneath the board, the eFoil has a nearly 1 meter (3 ft) strut supporting its hydrofoil at the base. Just above the foil is the silent, submersible and maintenance-free motor.

Its propeller is machined out of a solid block of aluminum and is hand balanced to ensure the highest efficiency and thrust.

The hand controller uses Bluetooth connectivity and is submersible, though it also floats in case it is dropped. The screen is easy to read, even while flying across the water surface. It features a power governor with three different settings for varying riding experiences.

I know it can be hard to assess quality in pictures, but the board is incredibly well-designed and manufactured. The carbon fiber is perfect. The hardware is of very high marine grade. The foam and rubber are all heavy-duty and properly designed for the environment. The craftsmanship here is simply second to none — you can tell the company takes pride in its work.

Riding the Lift eFoil

I could admire the Lift eFoil all day, but I'd rather be riding. Greg Vanthong, the founder of TechWeWant, gave me a quick intro that proved to be very helpful. Basically, you start by laying on the board, keeping your weight toward the front of the board. As you squeeze the throttle and pick up speed, you transition to your knees. Then you stand up, again trying to keep your feet with your weight shifted forward. During each transition it is critical to keep a steady amount of throttle applied, which keeps the board stable. Sounds easy, right?

Well, sort of.

I started out on my stomach and got comfortable tootling around for five minutes like that. Even just riding it like a boogie board, the eFoil is super fun. It drags you around effortlessly, and I could really feel the power. It takes off smoothly if you give it gentle throttle, but rockets off as soon as you squeeze the throttle quickly.

I got comfortable leaning and making sharp turns before I took it up a notch. I rose to my knees and immediately found out why you need to keep the throttle steady. It's not like an electric bicycle, where releasing the throttle means you just coast along at almost the same speed. This is water, and without the throttle applied you come to a stop very quickly. I almost slipped off the front before I came back on the throttle and tried to keep it steady.

Lesson learned.

Once I focused on keeping the throttle steady, I could easily move to my knees. From there, I rode around for a while just like that, on my knees, having a blast and feeling like the coolest kid on the lake. Because I was. Those kayakers in the distance had nothing on me and my Lift eFoil!

While transitioning to the knees was pretty easy, the next step was anything but. Standing up may sound easy, but you have to focus on maintaining balance on a

moving, floating object while simultaneously holding the throttle steady. It took me a couple of tries before I got it.

Within about 15-20 minutes I had gone from never seeing an electric hydrofoil to successfully standing up and riding one. I think that says more about the board than me, but I'll take any compliments that come my way.

And while riding the eFoil while standing was awesome, that wasn't the last step.

At this point, I was basically surfing, not foiling.

The board was on the surface and I was leaving a wake. I could hear the water splashing around me as I cruised over the water surface, and performing a 180º turn meant crossing back over my wake.

But as I increased the speed even faster, something amazing happened. Suddenly, the water underneath started to drop away, the splashing stopped and the board went completely silent, leaving no wake. I was flying!

Flying for a second, that is. As soon as I realized what was happening and I felt the water disappear out from under me, my brain kind of freaked out and I released the throttle to slow down. But releasing the throttle basically stops you.

Issac Newton's unrelenting laws of physics kept my body going at its current speed as I rocketed forward and met the water's surface in the least graceful rag doll motion I've ever experienced.

The crash was unpleasant but the thrill leading up to it was worth it. And like that, I was an eFoiler!

I spent the next half hour or so repeatedly practicing the transition to standing and then foiling. I found that by playing with my weight balance, I could move weight to my rear leg and allow the board to rise up out of the water and start foiling. Then I could move weight back toward my front foot and lower the board back down to the water. By playing with the balance, I could foil at different heights.

I have to admit that I never became great at it. I spent nearly an hour riding and had around 10 encounters with the water at various rates of speed. While surfing, the eFoil felt largely like riding my electric skateboards. But once you rise up and start foiling, the dynamics of the board change and you are really flying. The board feels different and that takes some getting used to. I could maintain it for a while, but once I got going pretty fast, I would inevitably get the speed wobbles and end up bailing, sometimes on purpose and sometimes by surprise.

The beginning of an accidental bail. It looks almost peaceful, but the next half-second was anything but…

The process felt a bit like when I learned to ride an electric unicycle. In the beginning you simply hop on and fall off a number of times until your brain and muscles can figure out the subconscious communications necessary to make the process work. Once it clicks in your head, you basically relinquish control and let your body figure it out. It's kind of like riding a bike, where you don't have to

think about turning the handlebars to balance — your body just does it. Except that riding an eFoil is such a different type of balance that it takes the brain a bit longer to figure it out.

But with just an hour of riding I became reasonably confident on the board. With a few more hours, I believe I could actually be half decent. Even with my amateur riding ability, the eFoil was a blast to ride.

While the eFoil is rated for an hour of riding, my hour only dropped the battery from 90% to 25%. But I spent a decent amount of time flailing my way towards a splashdown, so continuous riding is likely to use more battery than I did. With swappable batteries, you could theoretically keep a second one around so that one battery is always charging while the other is being used.

Is it worth it?

Sure, $12,000 is a lot of money to throw at a water toy, even considering it is made in America, but I can totally see why someone would get one. If you live by the water and want to enjoy watersports, you can get a similar thrill to a jet ski or water skiing, without the equipment. You don't have to pay dock fees or own a money pit of a boat. You can literally carry the 55 lb. (25 kg) eFoil right down to the water — no truck or trailer necessary.

You don't have to visit marine gas stations or deal with finicky engines. You don't have to smell exhaust or hear your engine running.

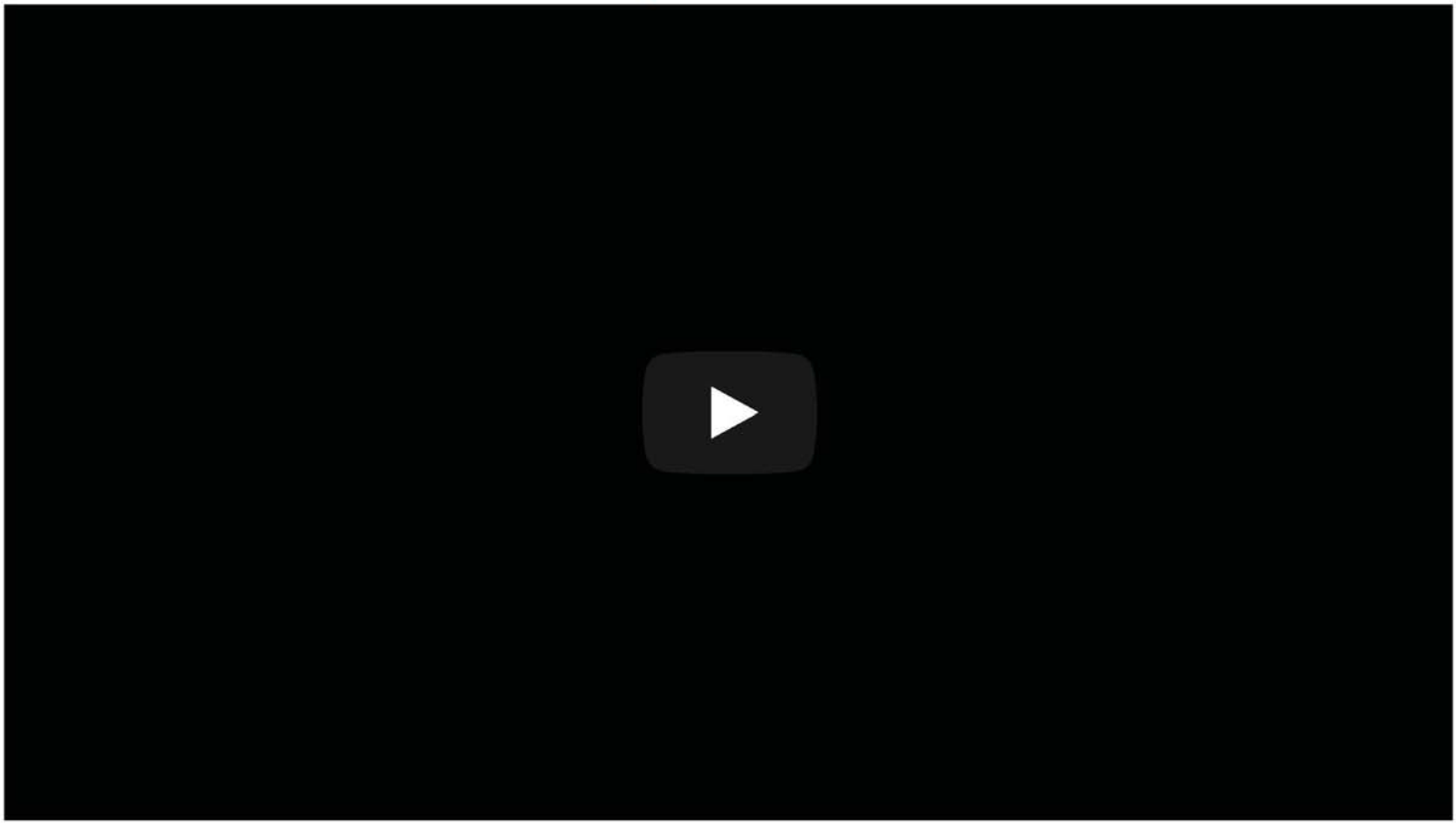
You just get a sleek, silent and thrilling electric watersport experience.

I don't have a yacht and I don't have $12,000 burning a hole in my pocket. But if I had both, I would surely be putting the eFoil on my yacht for some awesome fun on a lake or in the bay.

But short of that, a big thanks goes out to the team at TechWeWant for hooking me up with the Lift eFoil and showing me the ropes. Make sure you check them out on YouTube where they have their own video on the eFoil.

FTC: We use income earning auto affiliate links. More.

Subscribe to Electrek on YouTube for exclusive videos and subscribe to the podcast.



About the Author



Micah Toll

@MicahToll

Micah Toll is a personal electric vehicle enthusiast, battery nerd and author of the Amazon #1 bestselling books Electric Motorcycles 2019, DIY Lithium Batteries, DIY Solar Power and the Ultimate DIY Ebike Guide.

You can send him tips at Micah@electrek.co

Micah Toll's favorite gear



25 MPH WideWheel electric scooter

Fast and fun and affordable electric scooter!



Swagtron's $499 EB-5 electric bicycle

A small but surprisingly capable electric bike!



20 Ing

They're se
wants the

Techgadgetstrends.

Watch Cybertruck accelerate like a sports car

BMW's e-moto prototype crushes gas bike rival

Powered by WordPress.com VIP

EXHIBIT S

24,188 views | Sep 25, 2019, 10:00am

Billionaire Superyacht Toys: The 10 Best Toys And Tenders For 2020



Jim Dobson Senior Contributor ⓘ
Travel
Searching the world for the most amazing People, Places and Things



Superyacht toys aboard MY Loon FUNAIR

Once a year I compile my favorite superyacht toys that I have seen at the Monaco Yacht Show where more than 30,000 visitors descend on Port Hercules to see the most exciting new yachts as well as more than 580 exhibitors.

Cookies on Forbes

MHL_0100529



U-Boat Worx submarine being hoisted onboard a superyacht U-BOAT WORX

With a unique selection of submarines, toys, and futuristic tenders available to purchase, captains and owners are trying their best to create magical experiences for their passengers and this wide variety of options will keep everyone entertained. I have personally experienced most of these, so please enjoy my list of the best toys an tenders for 2020.

MHL_0100530



PAL-V Liberty Pioneer Edition PAL-V

Today In: Lifestyle

PAL-V Liberty Pioneer Edition Flying Car $599,000

The PAL-V Liberty Pioneer Edition Flying Car is limited to only 90 vehicles for delivery in European, and North America.

Nothing could be better than having a flying car you can park like any regular car. There are no limits to where you want to go and the PAL-V is 80% less affected by turbulence and self-stabilizing in gusts. Designed to free you from the ties of traffic, you are in control of your individual travel schedule. No more airport parking hassle and no taxi, train, bus or rental car required after landing. A traffic jam? Just fly over it.

MHL_0100531



Iguana X-100 Beach Tender IGUANA

Iguana X-100 Beach Tender $242,000

The Iguana X100 can transform wet and sometimes dangerous beach landings into a dry and safe experience for guests. Comfortable space and well designed to deliver saccessible adventures.

The Iguana is constructed with the strongest materials including Hypalon 860 grade tubes. The best options are offered like the super power twin 300hp outboards a generous T-Top, integrated head and the well considered Comfort and Fishing pac allowing owners to create their ideal boat. The rugged tracks can climb straight inclines of 29% and on variable beach slopes like coming out of the water the capacit can exceed 45%

MHL_0100532



Flying Mantis airborne foiling RICK TOMLINSON

Flying Mantis $35,000

The Flying Mantis is designed to be sailed with a conventional daggerboard that can be swapped for a central T-foil, to go foiling by creating form stability via two floats/extra hulls. This 14ft lightweight carbon trimaran can also be sailed with a regular rudder and daggerboards, depending on conditions, and can accommodate taller and heavier sailors up to 120kgs.

MHL_0100533

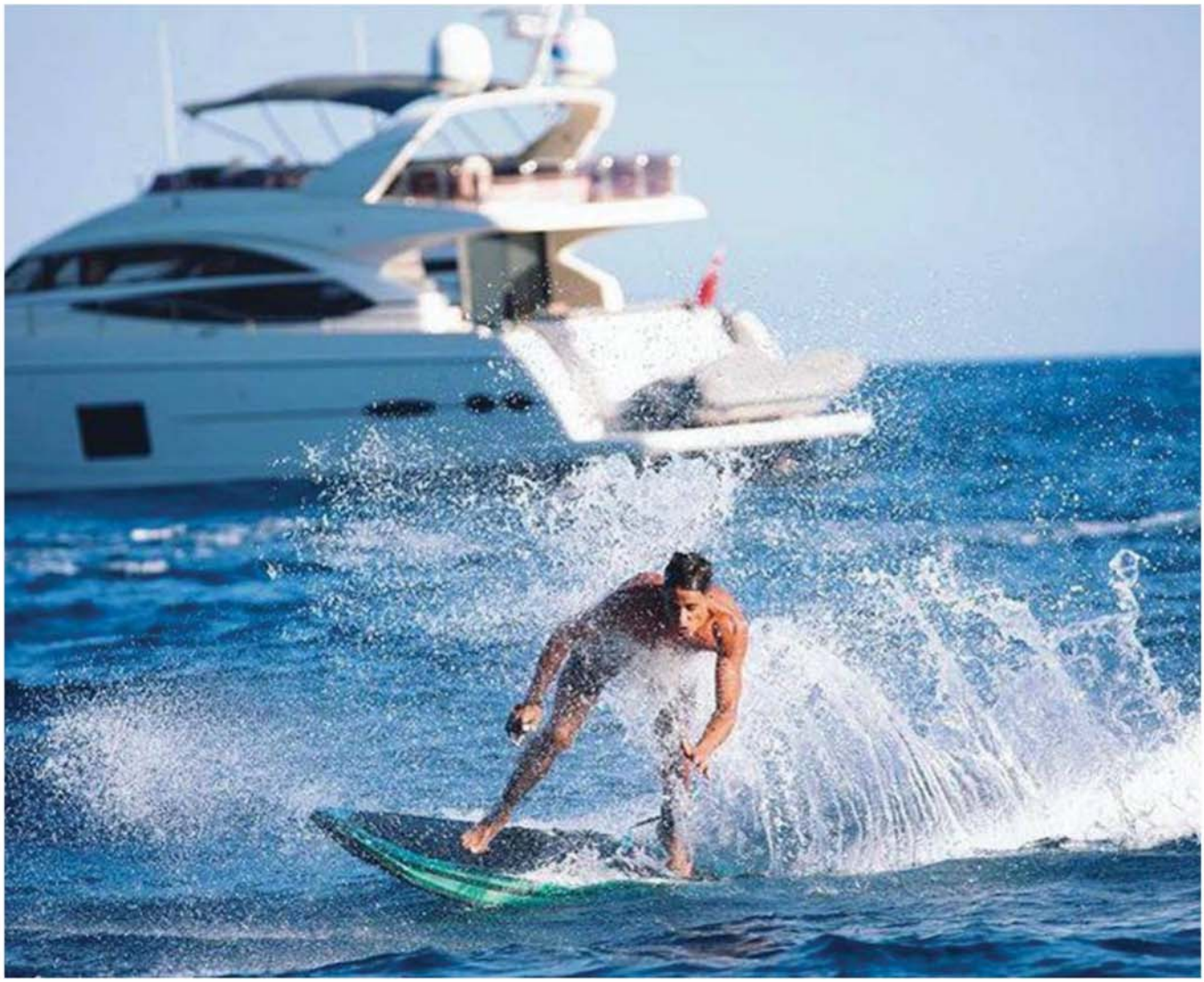


Lift e Foil LIFT

Lift eFoil $12,000

Revolutionary innovations in tech have created electric foiling, in which riders of all capabilities can lift above the water on a board attached to a mast with a motorized propeller system (otherwise known as the eFoil, which was pioneered by Puerto Ricc based company called Lift). The eFoil uses an advanced lithium-ion battery to powe a silent electric motor that's mounted on an all-carbon fiber hydrofoil, all controlled with a wireless Bluetooth hand controller. Riders can fly for over an hour at speeds o up to 25 mph. The Lift eFoil has a Bluetooth hand controller that gives the rider tota control over their speed. If the rider releases the control, or if the controller is submerged in water, the motor automatically stops.

MHL_0100534

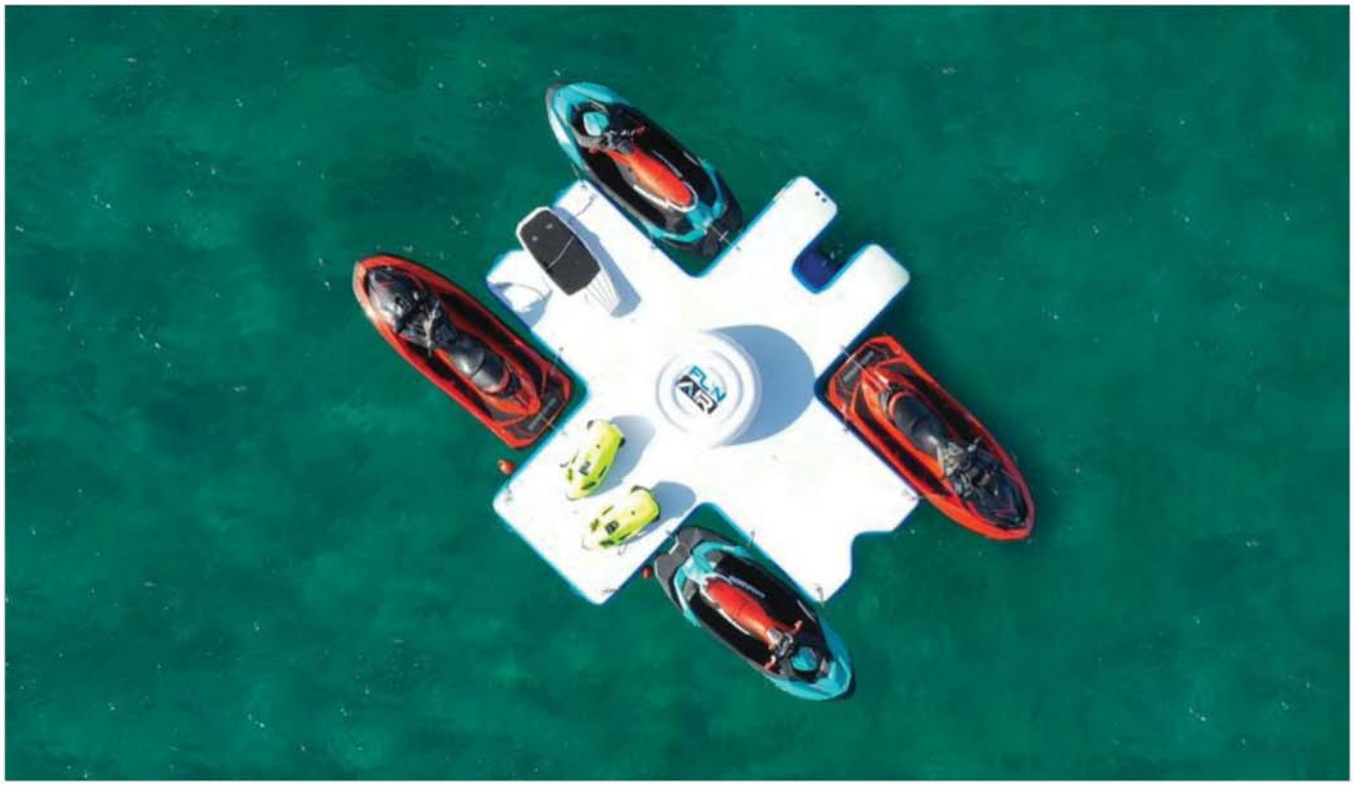


Radinn Electric jetboard RADINN

Radinn G2X Electric Jet Board $12,000

The Radinn G2X electric jet board takes the breathtaking experience of a surfboard and infuses the electrifying adrenaline rush that only motor sports evokes. It reaches speeds of up to 37 mph in near silence, requiring no messy oil changes and maintenance. The state-of-the-art device removes all hassle and stress allowing you to head out and enjoy the brand new sport without the need of wind, waves or a boat

MHL_0100535



FunAir Toy Island FUNAIR

Fun Air Toy Island

The FunAir Toy Island is a brand new yacht inflatable that can attach to a superyach as an extension of the swim platform, or trailed behind.

Designed to dock a variety of watercrafts away from the yacht so that multiple activities can happen at the same time, it can also be tethered from a secluded beach or jetty and used to securely dock crafts during beach days.

The Toy Island has the capacity to hold a combination of items including four jet ski or sailing dinghies, two SeaBobs, two eFoils, a Jet Surf or SUP's and several guests.

MHL_0100536