November 2025

The NEWSLETTER

INTERNATIONAL HYDROFOIL SOCIETY

P.O. Box 8911, Reston, VA, 20195

Contents

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President's Report

There is nothing to report -- except good news. On the military hydrofoil front as you will see below, Mark Bebar and histeam are making great progress in getting the USS Aries reestablished in Key West.

Other military news -- to be made -- is that hopefully someone influential will provide the Navy or Coast Guard with thekey to humanely intercepting the drug-laden powerboats coming from South America. My personal vision would behydrofoil boats small enough and light enough to be suspended underneath a helicopter. They would be placed in thewater near the offending boats thereby eliminating the need to blow the drug boats out of the water. The crews could betaken on board to face justice, and the boats and their cargo would be destroyed without the cost of lives.

My vision is that these small hydrofoils could be lightly armed with machine guns at the bow and rocket launchersamidships to be able to overwhelm the operators of these small boats..

More good news is boats like this could be created in a very short time and for very little cost. The science is well proven,and there are plenty of boat yards and aircraft manufacturers that could lay up the appropriate hulls without delay. Crewtraining need not be extensive for professional military sailors. There is ease of operation; a well designed hydrofoil willbecome foil borne with a push of the throttle. Conventional armaments would be taken off the shelf. Because of theirlightweight, small size, and relatively low power requirements the maintenance costs would be low and could be handledby conventional boat yards.

This, in my opinion, is a more appropriate explotation of hydrofoil characteristics than the lumbering beast of days goneby. Hydrofoils are flying machines and should be lightweight. They should be transportable to far off areas of conflict inopen water. When compared to conventional small boats, they have the advantage ofrough water speedand stability.
So, take that, Venezualan drug lords!!!

If You are not into drug boat interdiction, how about hydrofoil surfing, windsurfing, pumping, peddling,or throttle twisting?

If so, go onto Youtube and you'll see scores of hydrofoil videos demonstrating that there are youngand talented innovators who are coming up with some great ideas for recreational hydrofoils. (Incidentally, there are 40 plus 40 = 80 Youtube Videos posted under "Ray Vellinga" and "Hydrofoils"). Here's a sample other interesting videos from Youtube:

- Hydrofoil Surf Heaven in Hawaii
- Perfect Pumping Hydrofoil Board for Lake Foil Surfing?
- How do hydrofoils work - a deep dive into the physics
- Index of Hydrofoil videos.

Happy hydrofoiling
Ray Vellinga
IHSpresident2016@gmail.com

USS Aries (PHM-5) Return to Key West, Florida

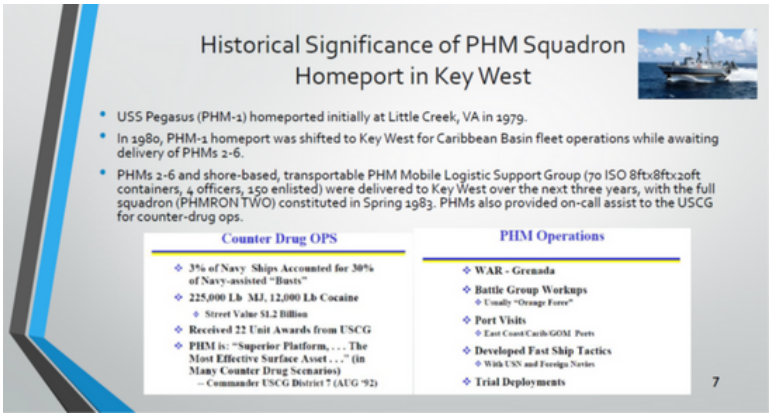
Mark Bebar,
Vice-President, IHS

In January 2024, a small group of IHS members initiated an effort to explore the possibility of moving the USS Aries (PHM-5) museum ship from its current location in Gasconade, MO (shown below) to Key West, FL. For information on USS Aries, go to: https://www.ussaries.org/uss-aries-phm-5

Group members:

- Eliot James – President, USS Aries Hydrofoil Memorial, Inc.
- Mary Meinhardt – USS Aries Hydrofoil Memorial, Inc. Support Staff
- Ray Vellinga – President, International Hydrofoil Society (IHS)
- Mark Bebar – Vice-President, International Hydrofoil Society (IHS)
- CAPT Carl Weiscopf, USN (ret) – Commissioning Commanding Officer, USS Aries (PHM-5)
- Chuck Shannon – PHMRON 2 Mobile Logistics Support Group (MLSG)

This effort has been coordinated with Mr. Dorian E. Patton III, Special Projects Coordinator, Key West City Manager's Office and Mr. Bill Verge, President of the USCGC Ingham Memorial Museum Ship, website: https://uscgcingham.org/
Go to this link to see an interview with Bill: https://youtu.be/yJ6gHpNgX0Q



On April 11, 2024, Mark Bebar made a presentation to the Key West City Manager and city council seeking their approval to study the relocation of the USS Aries Museum to Key West, near USCGC Ingham.
The presentation can be accessed using this link: https://foils.org/ihs-uss-aries-presentation-2024/

A key slide from that presentation is shown below, followed by a photo of three PHMs docked in Key West in the 1980s. Since April 2024, the city of Key West has selected a new City Manager and new members of the city council. We are waiting for the opportunity to brief these individuals and bring them up to speed on efforts to date. Since the location we are seeking for USS Aries will require approval from the Navy (and possibly the Coast Guard), we are in the process of scheduling a Zoom meeting this Fall with the following officials:

- CAPT Colin Thompson, USN: Commanding Officer, Naval Air Station Key West
- CAPT Joshua Empen, USCG Sector Key West Commander
- CAPT Marty Jenkins, USN (ret), President, Navy League Key West Council

As this effort advances, we will post updates on the IHS website and in future issues of the Newsletter.

2025 Mandles Prize Papers

https://foils.org/mandles-prize/2025-winner-announcement-and-papers/

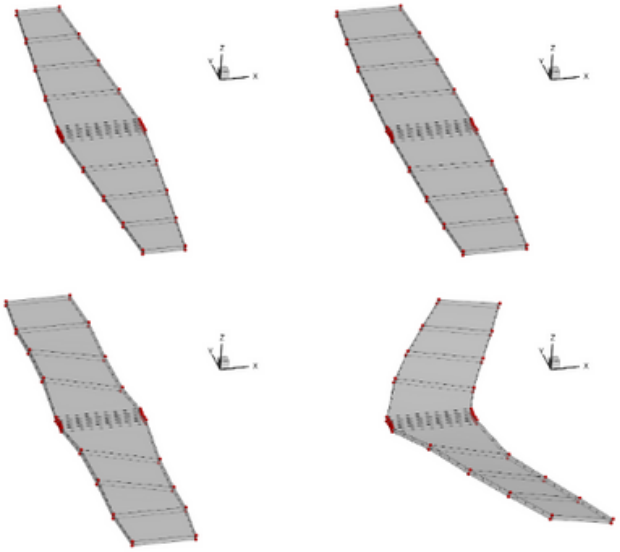


Figure from First Prize Paper:
Baseline and all geometric variables

The entries for the 2025 Mandles Prize reflected a range of hydrofoil-related research and technology. We are fortunate to have an outstanding panel of judges to review the entries. Details of the awards are as follows:

First Prize (one at $2,500):

- *Gradient-based Optimization of Submerged Composite Hydrofoils with Flutter and Ventilation Constraints*
  - *By: Galen Ng, University of Michigan, Ann Arbor, Michigan, USA*
  - *Faculty Advisor: Professor Joaquim R.R.A. Martins*

Honorable Mention (two at $1,000)

- *Operational Effectiveness of Hydrofoils for Littoral Craft: Investigating the Potential of Hydrofoils for High-Speed Daughter Craft in Amphibious Operations*
  - By: R.M. Zwinkels, R. Kalisvaart, L.F. Minerva and A.A. Kana, Delft University of Technology, the Netherlands
  - Faculty Advisor: Professor Jaap L. Gelling M.Sc
- *HySuCat - Parcel Delivery Vessel*
  - By: John Park, Karan Rajan, Jiahao Mei and Nithin Babu The University of British Columbia, Canada
  - Faculty Advisor: Professor Jon Mikkelsen

Our appreciation and thanks go to the many prominent schools of the previous (2014-2024) and 2025 Mandles Prize cycles and the students and faculty advisors that have competed. They include: Australian Maritime College, University of Tasmania; Cedarville University; Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland; Florida Institute of Technology; Massachusetts Institute of Technology; Stevens Institute of Technology; Ghent University, Hamburg University of Technology, Hamburg Germany, Swiss Federal Institute of Technology; Technical University of Delft, the Netherlands; Tolani Maritime Institute, India; University of Genoa, Italy; University of New Orleans; University of New South Wales, Australia; University of Southampton, United Kingdom; Newcastle University, United Kingdom; United States Naval Academy, Annapolis, Maryland; Adam Mickiewicz University in Poznan, Poland; Federal University of Rio de Janeiro, Brazil; and Webb Institute, Glen Cove, New York, University of Michigan, Ann Arbor, Michigan, Texas A&M University, University of Tennessee, Knoxville, University of British Columbia, Canada, College of the Florida Keys, and University of Florida.

The International Hydrofoil Society thanks entrants for their interest in hydrofoil technology and for their excellent work. We wish all of you the best in your professional careers and sincerely hope that you will continue to participate in activities of the IHS.

By virtue of applying for the 2025 IHS Mandles Prize, all students and their faculty advisors are now members of the International Hydrofoil Society. We invite them and anyone who is interested to volunteer for our not-for-profit efforts encouraging hydrofoil research, development, and applications.

2026 Mandles Prize for Hydrofoil Excellence

The International Hydrofoil Society is pleased to announce that thanks to the continuing generosity of Mr. Martinn Mandles, a long-time member of IHS and his wife Connie, we will once again sponsor The IHS Mandles Prize for Hydrofoil Excellence competition. The competition, now in its 13th year, includes up to $4,500 annually in IHS hydrofoil achievement prizes for students, with a $2,500 First Prize and up to two $1,000 Honorable Mention awards.

In order to open the competition to a wider spectrum of qualified entries, submissions by students based on work completed since 2021 will be eligible for the 2026 IHS Mandles Prize for Hydrofoil Excellence.

Students are requested to send IHS an informal expression of interest in competing by 5 December 2025. The due date for Competition Application Forms (included in the Rules) is 20 February 2026 and entries (student report submissions) are due on or before 30 June 2026.

This is an outstanding opportunity for the next generation of hydrofoil developers to be acknowledged for their efforts to advance the state of the art in hydrofoil and hydrofoil-assisted craft engineering, design and construction. Rules can be downloaded from the IHS website:
https://foils.org/mandles-prize/mandles-prize-rules/

We anticipate an exciting competition and look forward to receiving many high-quality entries. Expressions of interest, application forms, and questions, may be sent to
IHS Vice-President Mark Bebar at
markbebar334231@gmail.com or
IHS President Ray Vellinga at
IHSpresident2016@gmail.com

Background

The Mandles Prize for Hydrofoil Excellence was established in 2014. The namesake and benefactors of these awards are Connie and Martinn Mandles of Los Angeles, CA. In the early 1960s, Martinn was the first co-pilot of Boeing's only jet-powered hydrofoil research hydroplane, and then of the Navy's unique Boeing-built and operated high-speed research hydrofoil, FRESH-1. After completing his engineering degree at Stanford University, receiving his commission as a military officer and serving in Vietnam, he became the first captain of the Navy's prototype hydrofoil gunboat, the Boeing-built USS Tucumcari (PGH-2), in 1968.

Martinn Mandles and his wife Connie

In his four-decade civilian career that followed, Martinn advanced to Chairman of the Board of a prominent company listed on the New York Stock Exchange. He now serves as an independent executor and trustee of several large estates.

This article includes the results of the 2025 Mandles Prize competition and the announcement for the 2026 Mandles Prize.

Hysucraft – Ship Evaluation Method

Excepts Below, For full paper go to: https://foils.org/hysucraft-ship-evaluation-method-2024/

by Prof. Dr.-Ing. Karl-Günter W. Hoppe, MD
Foil Assisted Ship Technologies cc,
Somerset West, South Africa, 2024

Concerning ship design and especially the design of Fast-Light Craft the environmental pressure will increase in future as more catastrophic weather appearances will appear.

Naval Architecture requires new input as ships have to become more efficient to reduce carbon footprint.

The ships performance alone is not sufficient but requires now also highest possible efficiency to reduce carbon emissions which means "Greenboats" are in question. Electric batteries are still very heavy for these kW-hours used in ships and on which the range of a ship is dependent. This applies especially to the so-called Fast Light Craft which are used as Yachts, Fishing boats, Ferries, Patrol Boats, Police and Military craft etc.

It was found that most efficient craft for these applications with good speed could be Hysucraft-type hulls. In the discussion below this shall be elaborated, see Hoppe [2].

TABLE 1

Hydrodynamic Performance Comparison of High-Speed-Small-Craft

Syn. No	Name of Craft	Builder	Δ[t]	V[knot]	p[kw]	Fn∇	EPS	H.P.R.*** Rating
Round bilge Displacement and Semi-Displacement Craft								
□ 1	Type S 143	Lürssen	375.00	38.0	13235	2.330	0.184	12.540
□ 2	PX	Italy	1361.00	35.0	4706	0.740	0.046	16.110
□ 2a	Sharger, Lürssen	Bremen - Germany	188.00	45.5	11290	3.130	0.262	11.920
Deep - V - Planing Craft								
◇ 3	PT	Damen	85.00	24.0	1847	1.880	0.186	10.12
◇ 4	Cohete	Lmal Dsgn	60.00	24.0	1544	2.000	0.213	9.38
◇ 5	SAR33	Abeking&Rasm	250.00	40.0	13235	2.630	0.262	10.08
◇ 6	Zarnia 16	Lmal Dsgn	23.00	25.0	735	3.460	0.265	9.27
◇ 7	Zarnia 12	Lmal Dsgn	8.00	24.0	243	2.790	0.251	11.12
◇ 8	Nasty Class	Norway	83.00	44.0	4559	3.470	0.248	14.00
◇ 9	P2 000	G.S.	49.00	40.0	2118	3.440	0.214	15.00
◇ 10	P3 000	Dhawb Al Sehar	49.00	36.0	1765	3.100	0.198	15.60
◇ 11	Interman.	MK55	165.00	50.0	10294	3.510	0.247	14.19
◇ 12	Vikal	Lmal Dsgn	9.00	28.0	412	3.190	0.324	9.84
Hydrofoil Craft								
△ 13	PT 20	Supramar	33.00	34.0	810	3.12	0.143	21.82
△ 14	PT 50	Supramar	63.00	34.0	1620	2.80	0.149	18.81
△ 15	PT 75	Supramar	78.50	36.0	2420	2.86	0.170	16.83
△ 16	PT 150	Supramar	150.00	36.0	5058	2.57	0.186	13.81
△ 16a	PT 150	Supramar	150.00	36.0	with start. power boosting			
△ 17	High PointPCH1	USA	120.00	48.0	4706	3.56	0.182	21.94
△ 18	Tucumcari	USA	53.00	48.0	2941	4.50	0.23	18.206
△ 19	Flashview AGEH-1	USA	320.00	50.0	20588	3.15	0.255	12.32
△ 20	PHM Aero Hydr.	Boeing	218.00	50.0	19265	3.35	0.350	8.52

Table 2

High Speed 80' Yacht with optimized Superstructure and Surface Propellers

```
DATE : 3112022          HYSUCRAFT PROPULSION DATA
================================================================
CHINE LENGTH= 22.000 m  DISPLACEMENT: 73.400t LCG=36.0 %LCHI LCP=46.0%LCHI
PROPULSION POWER: 2830.0 kW   FUEL STORAGE: 6250.0 KG   FUEL SPEC.DENSITY:0.860
HEAD WIND: 0.0KNOT %LEND.RATIO=  5.49 TRIMTAB:1.00 DOR  RFOILDIHDR:  0.00 DOR
SPEED  TRIM   Rtot    Peff     Pb      FUEL      RANGE   FUEL   CO2     MPG   EPS    FND     HPR      MPH   RANGE
KNOTS  DEGREE  KN      KW       KW      l/h       N.MILES L/N M Kg/h     USA   ---    ---     ---      USA:MILES
20.00  2.59   52.938   544.68   1233.45   299.5    485.75 14.961  805.1   0.294 0.166 1.612    9.68    23.02 559.10
30.00  2.23   53.154   820.37   1552.36   377.3    578.48 12.563 1014.5   0.345 0.140 2.418   17.31    34.52 665.83
40.00  2.88   57.782  1189.04   1892.92   465.4    625.28 11.623 1250.9   0.374 0.128 3.224   25.24    46.03 719.70
50.00  2.78   52.925  1361.38   2010.90   497.6    731.00  9.942 1337.5   0.438 0.109 4.030   37.12    57.54 841.38
60.00  2.36   52.199  1611.23   2336.66   592.5    736.77  9.864 1592.4   0.441 0.105 4.836   46.00    69.05 843.02

EXPLANATION OF PERFORMANCE DATA
Speed:Shipspeed in Knots
TRIM: Aangle at speed in degree
Rtot: Hull total resistance in K-Newtons,Propulsionsdrag
  not included but part of overall propulsive coefficient
Peff: Effective hull power in Kilo-watt ( Peff=Rtot*VS )
Pb:   Engine crankshaft power in kW ( Pb=Peff/OPC )  see[1]
FUEL: Fuel consumption in liter per hour at speed
RANGE:Traveldistance of ship in Naut.miles with full fuel
FUEL: Fuel consumption in LITER per Naut.-mile
CO2:  Carbondioxyd Consumption in kg per hour
MPG:  Stat.miles/US-Gallon(multiply by 0.8676for naut.miles
      OR BY 0.229194 FOR Naut.Miles per liter fuel )
EPS:  Inverse of well known Transport efficiency
      EPS=Pb[KW]/(D[t]*9.81[m/sec**2]*VS[m/s])
FND:  FROUDE DISPLACEMENT NUMBER, DIMENTIONLESS SPEED
Best efficiency indicator,lowest value=highest efficiency
HPR:  HYDRODYNAMIC PERFORMANCE RATING : HPR=FND/EPS
MPH-USA:ONE USA-MILE IS 0.8676N4 NAUTICAL MILE
[1] D.L.Blount,D.L.Fox,"Small-Craft Power Prediction"
    Marine Technology,1st.January1976,pp14-45
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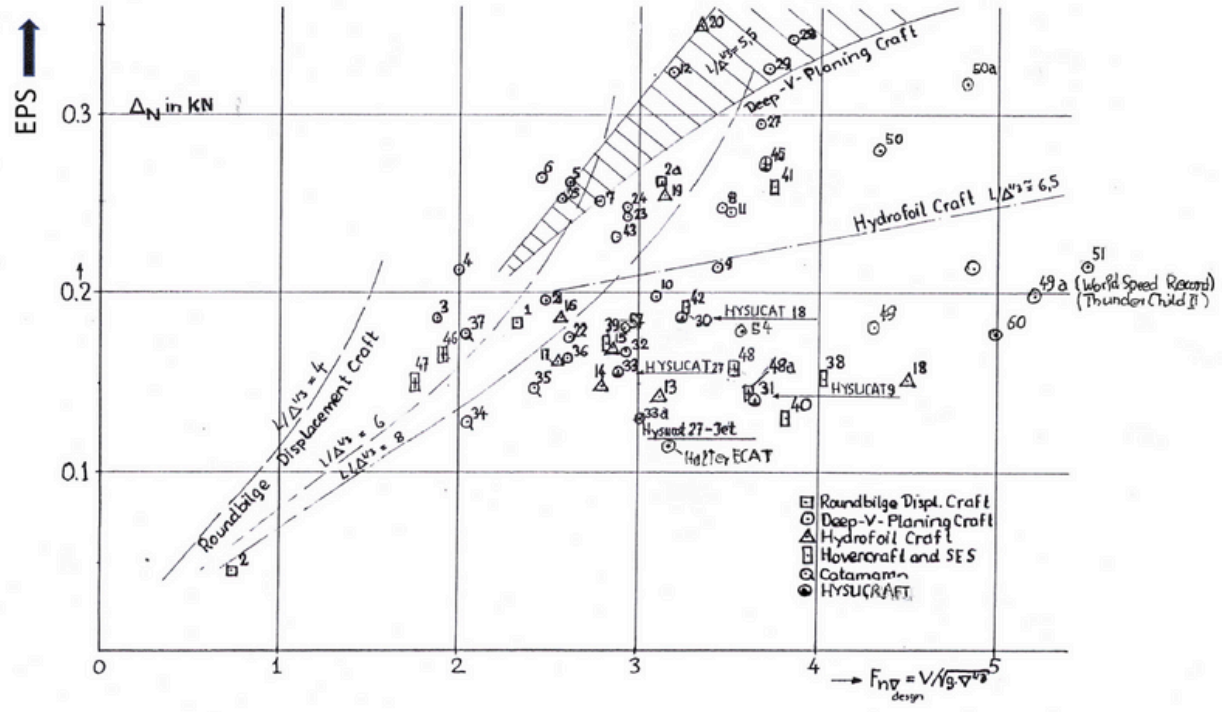

Figure 1. High-Speed-Surface Craft Power-Ratio EPS

The IHS Foiling News - Around the World

ABYC Standards Week to Explore eFoils and Powered Surfboards
Professional BoatBuilder

Industry leaders to convene in Charleston to discuss standards for rapidly evolving technologies.
ANNAPOLIS, Md. (Oct. 22, 2025)

The American Boat & Yacht Council (ABYC) announced that Standards Week 2026 will take place Jan. 11–15 at the Francis Marion Hotel in Charleston, South Carolina, bringing together marine industry leaders, technical experts, and safety advocates to address emerging technologies and shape the future of boating through collaborative standards development.
This year's event will feature a new exploratory subcommittee meeting focused on eFoils and powered surfboards. The session scheduled for Monday, Jan. 12, follows a request from the U.S. Coast Guard (USCG) to evaluate the need for standards addressing these rapidly expanding segments of the recreational boating market.
Topics under consideration include:

- Emergency cut-off mechanisms
- Capacity
- Battery and electrical system safety
- On-product warnings and labeling

Registration is free for all events.
https://abycinc.org/standardsweek

Photo credit Professional BoatBuilder

Artemis Technologies electric foiling ferries being built for Seattle area [Article Link]
February 27, 2025 Jeff Butler
Double Gussies Award Winner Artemis Technologies is growing their US presence and opportunities with a Memorandum of Understanding (MOU) with Delta Marine for manufacturing electric foiling vessels specifically for Washington's Puget Sound.

Foil Ferry project wins $5.2 million for development [Article Link]
September 19, 2024, Written by Nick Blenkey
We've been following the Washington State Foil Ferry project from some of its earliest days. Now Kitsap Transit, which would operate the all-electric, zero-emission fast ferry, is set to receive $1.2 million for the design of a demonstration vessel and its shoreside charging infrastructure, the Washington State Department of Commerce recently announced.

Mumbai's JalVimana places 11-vessel order for Candela foiling ferries [Article Link]
June 17, 2025, Written by Nick Blenkey
Mumbai, India-based JalVimana has placed a landmark order with Sweden's Candela Technology AB that will see a fleet of 11 hydrofoiling Candela P-12 commuter ferries create new links across Mumbai's waterways. They will form the nucleus of an electric transport network that, according to Candela, is set to eventually include thousands of vessels.

A Candela P-12 became the world's first foiling electric ferry to enter public service back in October 2024 becoming a part of the Stockholm transit system.

The IHS Foiling News - Around the World

Noatum Maritime orders Artemis EF-12 foiling pilot boat [Article Link]

April 28, 2025, Written by Nick Blenkey

Belfast. Northern Ireland-headquartered Artemis Technologies reports that Noatum Maritime, part of AD Ports Group, is to purchase a state-of-the-art 100% electric Artemis EF-12 foiling pilot boat to operate in the United Arab Emirates.

Partnership to introduce electric foiling ferries for operation in Washington's Puget Sound [Article Link]

Baird Maritime, Published on: 26 Feb 2025

UK-based marine technology company Artemis Technologies and Seattle-based yacht builder Delta Marine have entered into a memorandum of understanding (MOU) on the manufacture of electric foil-equipped passenger vessels specifically for Washington's Puget Sound.

Swedish Maritime Administration orders hydrofoil pilot boat from UK builder [Link]

Baird Maritime, Published on: 15 Oct 2024

UK-based marine technology company Artemis Technologies has been awarded the tender to supply the Swedish Maritime Administration with a 100 per cent electric-powered, hydrofoil-equipped pilot boat.

Swedish Maritime Administration orders hydrofoil pilot boat from UK builder

UK-based marine technology company Artemis Technologies has been awarded the tender to supply the Swedish Maritime Administration with a 100 per cent electric-p

Baird Maritime / Work Boat World / Oct 16, 2024

Photo: Candela

Stockholm to increase Candela P-12 foiling ferry service

Written by Nick Blenkey

April 08, 2025

The world's first electric hydrofoil ferry to enter public service, the Candela P-12 Nova is set to return to the waters of Stockholm on April 15 after the ice season.

Candela P-12 is the world's first passenger ferry that combines electric propulsion with hydrofoil technology, allowing it to literally fly above the water surface—with lower energy consumption and higher speeds.

Red Funnel and Artemis Technologies enter construction and delivery stage [Article Link] © Shippax

High-speedRed Funnel Ferries and Artemis Technologies have completed the first phase of their partnership, announced in July 2024, and are now entering the construction and delivery stage for the Artemis EF-24 Passenger ferry, a zero (direct)-emissions electric foiling vessel. The ferry will reduce CO_2e emissions by up to 4,150 tonnes annually when powered by renewable energy.

The IHS Foiling News - Russia

Yevpatoria, a Project 23160 hydrofoil ferry, United Shipbuilding Corporation

Russian owner's newest hydrofoil ferry to be operated in Azov-Black Sea Basin [Link]

.Gareth Havelock, Published on: 04 Aug 2025

Russia's United Shipbuilding Corporation, via its Vympel Shipyard division, has handed over a new hydrofoil ferry to local shipowner Mashpromlizing.

Named after a city on Crimea's Black Sea coast, Feodosia is the latest example of the Project 23160 series of hydrofoil ferries, which are each crewed by five people and are capable of transporting up to 120 passengers at speeds of over 32 knots.

Sea trials completed for new Russian hydrofoil ferry [Link]

Jens Karsten, Published on: 10 Jul 2025

Russia's Zelenodolsk Shipyard has completed conducting sea trials of a new hydrofoil ferry.

The vessel belongs to the Project 03830 series of hydrofoil commuter ferries, which are also the newest variants of a series of hydrofoil ferries that were introduced in the Soviet Union in the 1960s.

New hydrofoil ferries enter service in Russia's Tatarstan Republic [Link]

Gareth Havelock, Published on: 25 Jul 2025

The Government of the Republic of Tatarstan in Russia's Volga Federal District will soon begin operational sailings of two new fast hydrofoil ferries in a series built by local company Zelenodolsk Shipyard to a design by naval architecture firm Sea-Tech.

New hydrofoil ferry to enter service in Russia's Saratov Oblast [Link]

Gareth Havelock, Published on: 24 Jun 2025

A new hydrofoil commuter ferry will soon commence operational sailings in Saratov Oblast in Russia's Volga Federal District.

Pyotr Stolypin honours a former Prime Minister of the Russian Empire who had also served as Governor of Saratov Oblast. Designed and built by Alexeev's Hydrofoil Design Bureau, the vessel will be the second Project 23180 hydrofoil ferry to enter service in Saratov.

VESSEL REVIEW | Pyotr Stolypin – Hydrofoil commuter ferry to be deployed on Russia's inland waters [Article Link]

Baird Maritime, Published on: 01 Jul 2025

A new hydrofoil commuter ferry will soon commence operational sailings in Saratov Oblast in Russia's Volga Federal District.

A Project 23180 hydrofoil ferry similar to Pyotr StolypinAlexeev's Hydrofoil Design Bureau

The IHS Foiling News - Russia

Russian hydrofoil ferry Pavel Popovich enters service [Article Link]

Gareth Havelock, Published on: 04 Jun 2025

Russia's State Transport Leasing Company has begun operational sailings of a new hydrofoil ferry built by United Shipbuilding Corporation's Vympel Shipyard.

Kosmonaut Pavel Popovich honours the late Pavel Romanovich Popovich, a Ukrainian-born former fighter pilot and Soviet Air Force major general who died in 2009.

Russian yard floats out hydrofoil commuter ferry [Article Link]

Gareth Havelock, Published on: 22 Apr 2025

Russian ship design and construction firm Alexeev's Hydrofoil Design Bureau launched a new commuter hydrofoil ferry into the water at its Nizhny Novgorod facilities on Tuesday, April 22.

Petr Stolypin honours a former Prime Minister of the Russian Empire who had also served as Governor of Saratov Oblast, where the new ferry will be operated primarily. The vessel will be the second Project 23180 hydrofoil ferry to enter service in Saratov.

Launch of the Project 23180 hydrofoil ferry Petr Stolypin, April 22, 2025 Alexeev's Hydrofoil Design Bureau

Sarma, United Shipbuilding Corporation

VESSEL REVIEW | Sarma – Hydrofoil catamaran ferry for operation on Russia's Lake Baikal [Article Link]

Published on:
11 Nov 2024, 10:09 pm

Russia's Vympel Shipyard has completed construction of a new catamaran ferry for operation by the East Siberian River Shipping Company. Sarma was built for operation on Lake Baikal, linking the cities of Irkutsk and Severobaykalsk, and was designed by local engineering firm the Sea Tech Group in compliance with Russian River Register rules.

"It was designed in cooperation with Dr Gunther Migeotte in South Africa," Sea Tech CEO Petr Ezhov told Baird Maritime. "Both parties have extensive experience in designing hydrofoil vessels and the foil system brings together the von Schertel and Alexeyev schools of knowledge on hydrofoil design."

Russia's newest hydrofoil ferry floated out [Article Link]

Gareth Havelock, Published on: 02 Jun 2025

Russia's Zelenodolsk Shipyard launched a new hydrofoil ferry during a ceremony on Friday, May 30.

The vessel belongs to the Project 03830 series of hydrofoil commuter ferries, which are also the newest variants of a series of hydrofoil ferries that were introduced in the Soviet Union in the 1960s.

Report - Candela Demonstrates Electric Hydrofoil C-8 on the Potomac

Photo: Candela

By Roger Schaffer, IHS Tresurer

On *October 22, 2025*, I had the opportunity to participate in a demonstration of Candela's C-8 electric hydrofoil boat on the Potomac River. The event, arranged by Bill and Kevin, took place at the Columbia Island Marina, adjacent to the Pentagon.

Originally, I had expected the demonstration to feature Candela's P-12 passenger ferry, but the company instead showcased its smaller C-8 leisure craft. The demonstration was led by ***Mikael Mahlberg***, Candela's Director of Communications, assisted by ***Kristian***, a young software engineer from the company. Two Candela representatives and three guests were aboard for the demonstration run.

The trial was brief—about ten minutes in total, with roughly five minutes on foil—but it provided a clear sense of the boat's performance and refinement. The C-8 reached a top speed of approximately ***25 mph***, gliding nearly silently across the calm morning water.

The most striking impression was the ***remarkable quietness and smoothness*** of the ride. Even when crossing light wakes from nearby powerboats, the C-8 maintained its stability and foil height with ease.

The vessel, built entirely from ***carbon fiber***, features a ***hardtop configuration*** seating six passengers. Its flight control system utilizes ***six radar-based height sensors***, allowing for

Candela Report, continued

precise and automatic adjustment to water conditions. During the demo, the boat executed coordinated turns gracefully and demonstrated impressive control and engineering integrity.

After the run, I had the opportunity to speak further with Mikael while Kristian took another group—including Harry's daughter—for a test ride. Mikael's background is in journalism rather than engineering, but he displayed a strong understanding and enthusiasm for hydrofoil technology. He was also well-acquainted with the ***International Hydrofoil Society's website*** and Harry's ongoing work in the field.

According to Mikael, ***Candela has received orders for more than 30 of its P-12 ferries***, primarily for clients in the Middle East, and has already sold over ***50 C-8 leisure craft***, priced around ***$300,000 each***. He noted that Candela is expanding rapidly and anticipates reaching profitability in the coming year. The company has also been in contact with ***real estate developers in the Washington, D.C. area*** to explore the possibility of establishing ferry service on the Potomac River.

Based on my experience, the Candela C-8 appears to be a ***well-conceived, well-engineered, and well-built vessel*** that offers an exciting look at the future of quiet, efficient, electric hydrofoil boating. While its widespread adoption may depend heavily on cost considerations, the technology itself is clearly mature and impressive in operation.

— Roger Schaffer, Treasurer, International Hydrofoil Society

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Resurrecting a Legend: Yoichi Takahashi's Radio-Controlled Yamaha OU32

Yamaha OU32 hydrofoil prototype in flight – the inspiration for Yoichi Takahashi's radio-controlled model.

By Ray Vellinga

When longtime hydrofoil innovator Yoichi Takahashi unveiled his latest radio-controlled model of the Yamaha OU32, it was more than a hobbyist's experiment — it was a tribute to decades of pioneering Japanese hydrofoil engineering and to one of the field's most brilliant minds, Kotaro Horiuchi.

The OU32 was originally a Yamaha prototype hydrofoil from the late 1980s — a bold, jet-fighter-inspired personal craft that combined the agility of an aircraft with the efficiency of hydrofoil lift. Three decades later, Takahashi's miniature version brings that spirit of innovation back to life, this time in the form of a precisely engineered, fully functional RC electric hydrofoil.

A Tribute to Foil One Pegasus and Kotaro Horiuch

Takahashi's newest creation pays homage to the Foil One Pegasus, a modern personal electric hydrofoil announced overseas last year. "It seems that the developer of Foil One Pegasus was influenced by Kotaro Horiuchi," Takahashi wrote. "In that sense, we are in the same circle of people who respect Horiuchi."

Indeed, Takahashi's OU32 echoes the same design philosophy that Horiuchi introduced decades ago: fully submerged tandem foils with responsive, dynamic control surfaces — a system that sacrifices simplicity for performance and elegance.

Yamaha OU32 Article, continued

Engineering the Model: Precision in Miniature

Unlike many RC hydrofoils that rely on gyros or automated stabilization systems, Takahashi's OU32 model remains true to the spirit of manual hydrofoil flight. "It does not have a stabilizing device such as a gyro," he explains. "The front hydrofoil is equipped with a mechanical water surface sensor. This allows manual control of the angle of attack, just like the real thing."

This sensor — a mechanical arm inspired by Horiuchi's designs — detects changes in water level and automatically adjusts the front foil's flaps to maintain steady altitude. The system is deceptively simple, yet remarkably effective: "It captures the water surface very well," Takahashi notes. "Pitch is almost automatically maintained while driving."

You can see the OU32 in action in Takahashi's latest video, YouTube

Aerodynamics and Hydrodynamics in Harmony

In addition to the control system, Takahashi refined the foil geometry itself. His front hydrofoil employs what he calls a "conical camber airfoil," a shape that delivers high lift at low angles of attack with minimal drag. The result is a smooth takeoff with almost no spray — a hallmark of well-balanced hydrodynamic design.

But stability on a tandem foil is never a given. Through experimentation, Takahashi discovered that a touch of instability can actually improve maneuverability. Initially, he added a large dihedral angle to the rear foil for roll stability, but the result was overcorrection: "The stability was too strong," he recalls. "It did not enter the bank and repeatedly slipped out and capsized."

Drawing inspiration from jet fighter stability theory, he reduced the dihedral angle, introducing a measured degree of roll instability — enough to allow smooth, controlled banking turns. He then added ailerons to the rear hydrofoil, coordinated with the steering of the front strut and the rear rudder. The water jet propulsion, mounted aft, is linked to move in the opposite phase to the front strut, producing balanced, natural turning behavior.

Yamaha OU32 Article, continued

A Conversation Across Generations

When I wrote to Yoichi earlier this year, I shared my admiration for his work and reflected on our shared connection to Horiuchi-san, my late friend and fellow hydrofoil pioneer. “Your OU-32 model continues to amaze,” I told him. “It has always been beautiful, but the new-improved performance shown in the video is awesome. Kotaro Horiuchi would be so proud of you if he were still alive.”

Horiuchi’s influence on hydrofoil design was profound. His systems relied on nuanced interactions between hydrodynamics and human control — what he called the principle of “turning over the fall.” When a hydrofoil rolled right, the pilot would steer right, and the resulting centrifugal force would naturally right the craft. It was an intuitive, pilot-dependent system — elegant but challenging.

Takahashi’s work brings that same philosophy into the world of autonomous and remote-controlled craft, blending artistry and engineering in miniature form.

The OU32 Reborn

For those familiar with the OU32’s history, this revival carries special significance. Yamaha’s engineers originally conceived the craft as a “jetfighter-style hydrofoil,” capable of agile, high-speed travel using a submerged foil system and waterjet propulsion. But like many experimental hydrofoils of the era, it faded into obscurity — until Takahashi brought it back to life at 1/10th scale, complete with electric pod propulsion and authentic handling.

His first version, built in 2013, struggled to maintain stable foilborne flight. “It was initially difficult to get it to run on foil bones,” Takahashi admits. “But after three modifications, and the latest one this year, I’ve managed to achieve speed and cornering performance close to the real thing.”

The evolution of his model is captured across years of refinement — each change meticulously tested and documented. The current version glides smoothly, banks gracefully, and carves turns with the same confidence as the full-scale Yamaha prototype.

Yamaha OU32 Article, continued

RC model that pays tribute to the FOIL ONE

Parallel Paths: The Pegasus Connection

Interestingly, Takahashi's OU32 revival coincides with the emergence of the Foil One Pegasus, a new small electric hydrofoil that has gained international attention. "Earlier this week," Takahashi wrote, "Foil One Boat announced a small electric boat called Pegasus. It seems that the developer was inspired by Kotaro Horiuchi. If you watch the video, it seems to be controlled in the same way."

Takahashi sees this as part of a global resurgence of interest in the fine art of hydrofoil balance — whether through human pilots, mechanical sensors, or digital control. And while others chase automation, he remains focused on the elegance of mechanical feedback and aerodynamic precision.

Looking Ahead

As of late 2024, Takahashi is already planning his next-generation RC model, debating whether to retain the mechanical surface sensor or adopt a new system using ailerons for roll control. "I am currently thinking about whether to use the same control method as Kotaro Horiuchi, just like the real thing, or whether to use ailerons," he said. "Please look forward to future developments."

Kotaro Horiuchi, just like the real thing, or whether to use ailerons," he said. "Please look forward to future developments."

In a world increasingly dominated by digital automation, his approach reminds us that hydrofoiling — at its best — remains a dance between craft, water, and pilot. His models embody the spirit of the pioneers who built the foundations of modern hydrofoil technology: experimentation, perseverance, and an unshakable curiosity about how flight and water can coexist.

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Yamaha OU32 Article, cont.

A Community of Innovators

For the International Hydrofoil Society, Takahashi's work exemplifies the kind of innovation that keeps our field alive. It bridges generations — from Horiuchi's early experimental craft to today's electric hydrofoils — and inspires both engineers and enthusiasts to continue exploring the physics of lift and control.

As Takahashi refines his OU32, he continues to share videos and progress reports with fellow enthusiasts worldwide. His craftsmanship and analytical rigor make each iteration not just a model, but a working laboratory for future hydrofoil design.

We look forward to following Yoichi's next developments and sharing his results in future editions of this newsletter.

About the Author:

Ray Vellinga is a longtime hydrofoil designer, educator, and author of Hydrofoils: Design, Build, Fly. He is a founding member of the International Hydrofoil Society and continues to chronicle the progress of hydrofoil technology and design innovation worldwide.

Sue Stedd, sister of Skipper Richard Stedd delivers Richard's collection of memorabilia to IHS headquarters in La Jolla, California.

Richard was a pioneering U.S. Navy officer who was the officer in charge of the experimental hydrofoil gunboat **USS Tucumcari (PGH-2)** from 1969 to 1971.

Key details about his service with the Tucumcari:

- **Pioneer in Hydrofoils**: Lieutenant Stedd was one of only three men who could claim the command of this original fleet operational hydrofoil in the U.S. Navy, making him a pioneer in the military application of hydrofoil technology. It is believed he is the only Skipper of a Navy hydrofoil to achieve more than 1,000 foilborne hours.
- **Vietnam Deployment**: During his command, the Tucumcari was sent to Vietnam for evaluation in combat scenarios. This deployment was a significant test for the high-speed, shallow-draft vessel in a real-world operational environment.
- **Technological Legacy**: The Tucumcari's deployment and operations under Stedd's leadership were crucial in demonstrating the potential of hydrofoils for high-speed naval operations, influencing future naval designs and programs.

Richard was a long time member of the International Hydrofoil Society and retired to San Diego, California.

On June 11, 2025 Richard shipped out to hydrofoiler's heaven. We miss you, Richard,

Video of Richard: https://www.youtube.com/watch?v=0MgA8EGHIio