

Session 1 – 20 October 2020, 7:00 p.m. U.S. Eastern time

Speaker: Neil Baird

Position: Maritime historian and commentator, formerly Maritime Editor and Publisher

Affiliation: Co-founder of Baird Publications, now Baird Maritime

Presentation Title: Keynote Address - Fifty Years of Foiling

Abstract:

Neil will provide a keynote address spanning over 50 years of hydrofoil development. At a young age, he experimented with the use of sailing craft centreboard, which, when the craft was heeled over while driven by the sail would help support the boat. Thereafter he encountered hydrofoil operations around the world. He will share his views on the potential future developments for hydrofoils. His keynote address will be provided on 20 October 2020, 50 years to the day after the International Hydrofoil Society held its inaugural meeting in London. His full written keynote address will be made available by the IHS thereafter. IHS is honoured that Neil accepted our keynote speaker role. It brings us full circle after 50 years given Countess Juanita Kalerghi, the former editor and founder of the similar trade magazine "Hovering Craft and Hydrofoil" had encouraged and supported the establishment of the IHS in the lead-up to the founding of the society.

Bio:

Neil Baird, in partnership with his wife Rose, founded Baird Publications, now Baird Maritime, in 1978. They rapidly established themselves as one of the world's leading maritime publishers and event organisers. As a ship and boat obsessive from early childhood, Neil's life and career gave him a unique opportunity and perspective from which to observe, study and experience all manner of vessel design and construction developments over more than half a century and over practically the whole world. He remains very interested in development of hydrofoil and other maritime craft.

Speaker: Paul Bieker

Position: Naval Architect

Affiliation: Bieker Boats, LLC, Anacortes, Washington

Presentation Title: Our Work with Foils—From Skiffs to America's Cup Yachts

Abstract:

Paul Bieker will start with a broad overview of the many types of boats and craft he has designed and built, with emphasis on those with foils. They have ranged from small and simple to large and extremely complex and have included power boats and sail boats, monohulls and multi-hulls. The most challenging by far have been the America's Cup craft, which have become large foiling machines not at all like the traditional-style monohulls of decades back.

Paul has been on the Oracle America's Cup Team for the last five competitions and has made particular contributions in the area of structural design, especially for the foils and

other elements that have to be extremely strong but also extremely light. He will show examples of that and describe the processes for designing and constructing them.

He will finish with preliminary information and figures of a proposed 150-passenger 35-knot hydrofoil ferry for Puget Sound operation.

Bio:

The website of Bieker Boats, LLC <https://biekerboats.com/> shows a great diversity of their designs that have been built and are in use around the world. Many are foil-supported, both sail and engine-powered, some are commercial but the majority are for personal use.

In sailing craft he has had 25 years experience designing high performance keel boats, those with deep heavy keels for stability in high winds and waves. For the last five America's Cup competitions he has also been part of Oracle Team USA designing their craft, most recently as lead design engineer for the 35th Cup in Bermuda.

A particular focus of his on the America's Cup projects as well as on various other competition boats has been designing the foils and other appendages for maximum performance yet minimum weight, for which he developed computer-aided design and lofting methods.

Mr. Bieker received a bachelor's degree with high honors in Naval Architecture & Marine Engineering from the University of California, Berkeley and is a Registered Professional Engineer in the State of Washington for the practice of Naval Architecture and Marine Engineering.

Session 2 – 22 October 2020, 11:00 a.m. U.S. Eastern time

Speaker: Professor Gunter Hoppe

Position: Director, Foil Assisted Ship Technologies cc
Emeritus Professor, Stellenbosch University

Affiliation: Foil Assisted Ship Technologies cc, Somerset West, South Africa

Presentation Title: The Future of Hydrofoils

Abstract:

Professor Hoppe reviews classical Hydrofoils and analyses design constraints which might have led to reduced interest in further Hydrofoil developments. The most important constraints are listed and compared to another hybrid, a catamaran or multi-hull equipped with hydrofoil wings. The comparison shows that nearly none of the constraints of the classical Hydrofoil appear in his Hysucraft designs.

He describes the Hysucraft and how it was developed, then compares its design problems with the ones of Hydrofoils and concludes that higher efficiencies are possible with Hysucraft than with other typical seagoing boat types. As the constraints in the classical Hydrofoil design are absent in Hysucraft, these can be used in small craft and also in larger craft up to 30m or even 40m. Professor Hoppe describes how larger fast craft are possible with variations of the Hysucat principles called Hysuwac (for Hydrofoil Supported Watercraft). One example of such a foil is shown and is fundamentally

different than the Hysucraft, with a smaller front foil near the bows and a mainfoil aft of the LCG position. The hulls are usually symmetrical demi-hulls of the semi-planing type.

A method to compare efficiencies of craft is presented based on the well-known Transport Efficiency, and formulas and a collection of data are provided for anybody to check out his own boat efficiency. The method shows that Hysucraft are some of the most efficient small craft and prove that hydrofoils aren't getting extinct but live on in varying forms.

A Hysucraft foil system is shown for the Thunder Child 2 of Safehaven Marine in Ireland, which on 8 September 2020 broke the World Record for 50-foot and larger boats on the course between Cork and Fastnet Rock in Ireland. The calculated performance on this run is given in table form with full data from the run showing that the foil system improved the craft's efficiency by about 40 percent, a huge advantage against usual boats, allowing the World Record.

Bio:

Professor Hoppe (Prof. Dr.-Ing. Karl-Gunter Wilhelm Hoppe) is a naval architect specialised in ship hydrodynamics, inventor and developer of the Hysucraft Hydrofoil Supported Catamaran, and president of Foil Assisted Ship Technologies cc.

He studied naval architecture at the Technical University Berlin/Germany, then joined the Versuchsanstalt für Wasserbau und Schiffbau in Berlin for research in ship and propeller hydrodynamics and model testing and trials. Dynamic ship stability research formed the basis for his PhD studies for which he was awarded the degree "Doctor-Ing." in 1968 at the Technical University Berlin/Germany.

From 1968-72 he worked for AC de Bretagne in France designing reversible pitch propellers; was Research Officer at the CSIR in hydraulics; and served as marine transportation advisor in the European Commission Development Aid Program in Zaire.

In 1973 he became Senior Lecturer and later Professor at the Mechanical Engineering Department of the University of Stellenbosch, South Africa for Fluid Mechanics, general Mechanical Engineering, and Marine Engineering. He is registered as Professional Engineer with SACPE and is a Fellow of SA-IMENA. He developed the Towing Tank, High Speed Circulation Tank and the Cavitation Tank at the University and consulted, and his favorite research project was the development of the Hydrofoil Supported Catamaran (Hysucat!).

While still at the University he developed in 1998 the company Foil Assisted Ship Technologies cc (FASTcc) to design foil applications for monohulls and catamarans in collaboration with Unistel Technologies (Pty) Ltd, the University's technology transfer company. In 1999 he retired from academic duties but is still active in foil-assist research and application work worldwide and looks back on over 1000 foil assist applications.