

H₂ / Fuel Cells

LNG



Green Tech for Boats and Ships

Fuels as H₂ LNG CNG from BTL CTL GTL

Advanced Combustion and Gas-Electric Hybrids Technologies Green technologies for boats and ships

Scope and Topics of the Research & Development Project

Alternative drives – Energy efficiency – importindependent by self made renewable and sustainable gas, double use energy systems as plug and play for emerging and developing countries, safe and easy to use, simple handling, long life, durable, economic, clean energy Boats for all

Boats and Ships powered by alternative drives and power trains with clean and renewable liquid- or gas fuels and its newest fuel cell or gasturbine technologies, advanced combustion and gas-electric hybrids technologies.

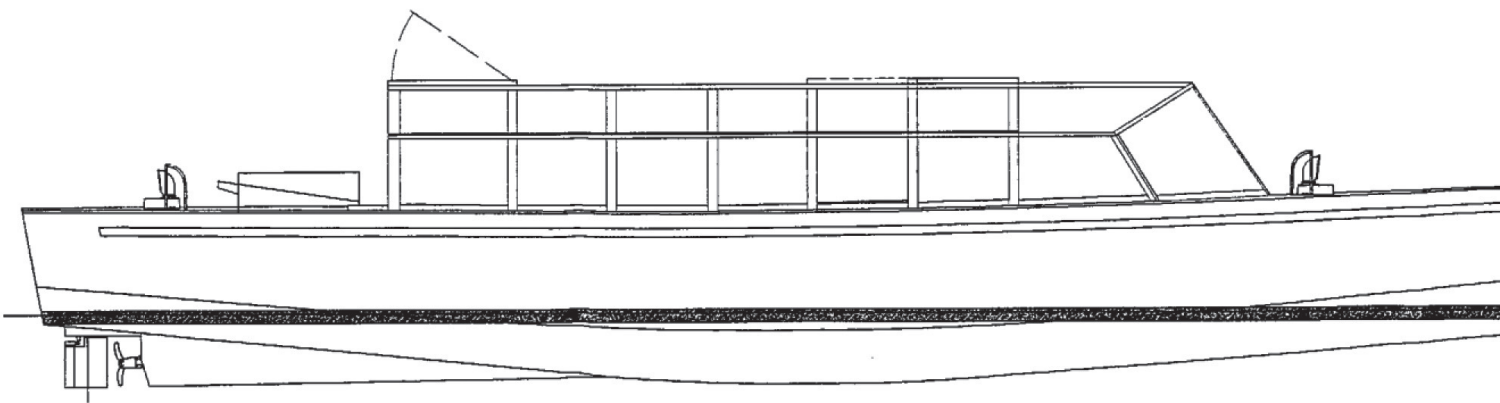
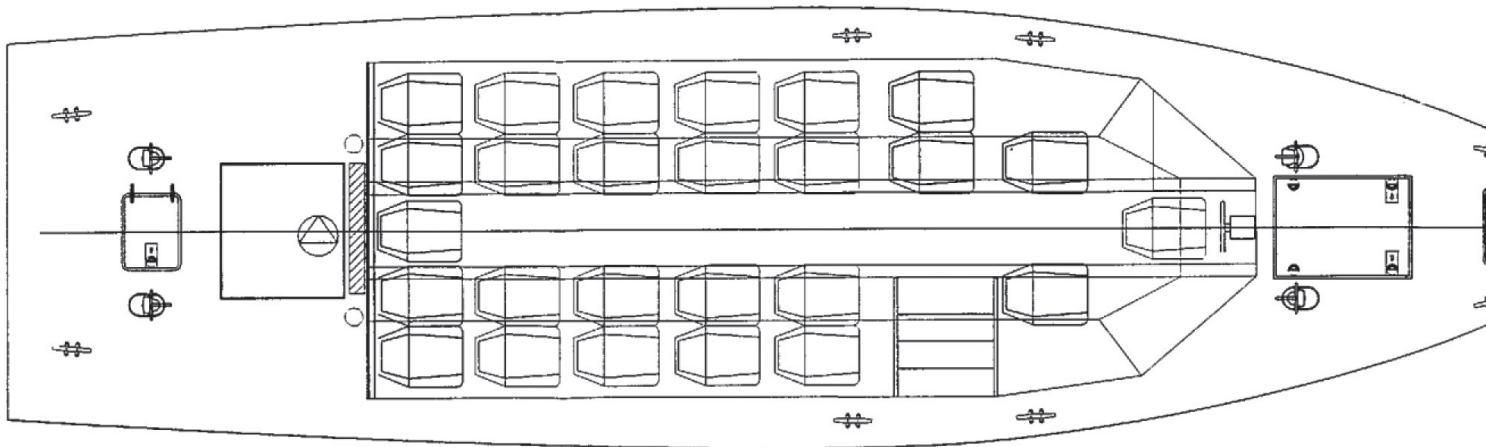
Research, Development and custom made production for Developing and Emerging Countries to deliver boats and ships for all with newest green technologies and alternative propulsion systems.

Twin/double use of the plug and play mobile energy systems/powertrains to be used on board and inhouse.

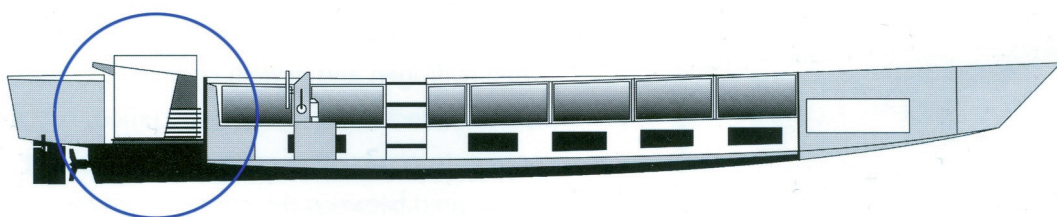
CONCEPT DESCRIPTION HYDRA GREEN WATER TAXI FOR 25 PASSENGERS

Loa:	13,8 m
Bmax:	3,6 m
Tmax:	0,6 m (with clodialpropeller 1 m)
airdraft:	2,0 m
materials:	Aluminium Al Mg 4,5 Mn F27, framework Al Mg 4,5 Mn F27 or Al Si 0,5 F22 or biological fiber as carbon or kevlar
construction options:	multi chine or round bilge hull; advantage of round bilge hull : lower energy consumption as multi chine hull.
passengers:	25 persons, 1 skipper
structural design:	longitudinal frames with transversal main frames
material thickness:	6 mm plating under water, 5 mm on side, 4 or 5 mm deck and minor structural details.
engine / rudder:	The main engine will be an electric engine with 14-16 kW. Next to the engine, a buffer accumulator will be used as buffer for the fuel cell system. The capacity of the accumulator has to be discussed with local authorities, according to the boat's field of application and area of operation.
alternative 1:	conventional stern tube, driving shaft, propeller and hydraulic steering with balanced rudder.
alternative 2:	conventional stern tube, driving shaft, propeller and hydraulic steering with Becker rudder. This option is an ideal solution for high manoeuvrability in narrow waters.
alternative 3:	cyclodial propeller: the water stream can be turned in every direction. With this alternative, no extra rudder is necessary. Under the hull, four rotating blades will be mounted. Steering and power will be done by a gearbox in the boat (extra costs).
alternative 4:	water jet propulsion for various engine types, is space and weight-saving.
alternative 5:	water jet propulsion with integrated electric engine, is particularly space and weight saving, due to the reverse mode with no need of a gearbox.

Hydra e-25 H₂ FC Waterbus 25 Passengers



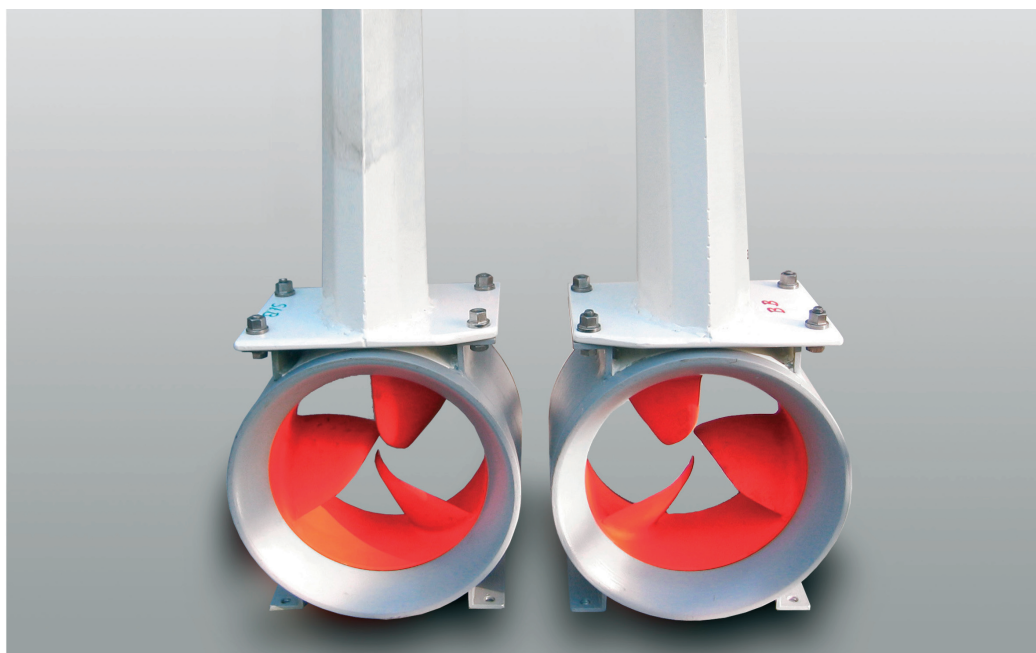
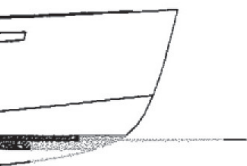
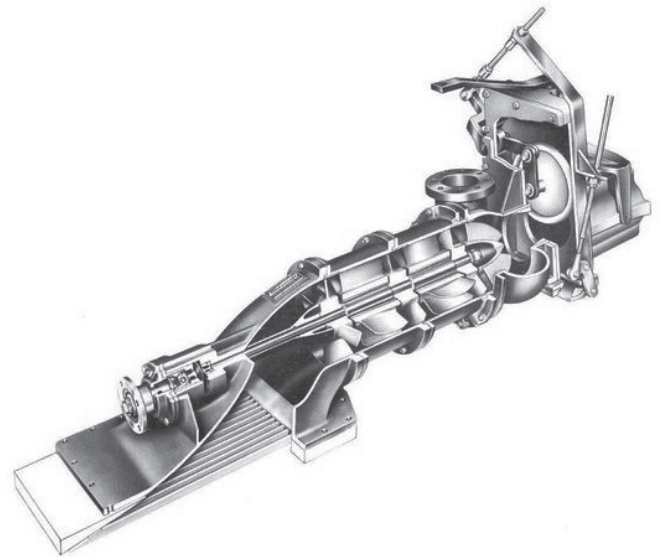
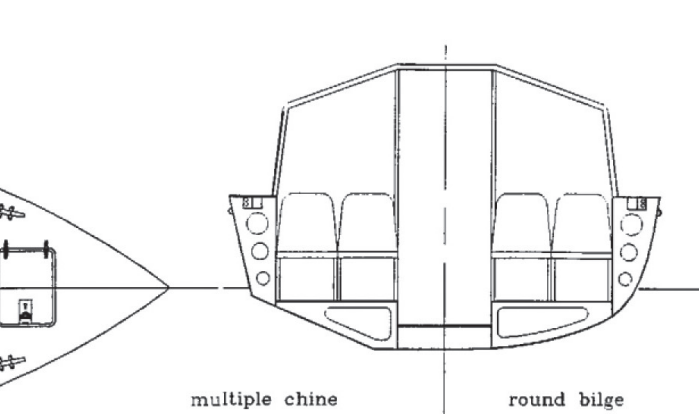
conventional propeller shaft



Hydra gas-electric mobility boats by H₂/Fuel cells. Advanced Combustion and Gas-Electric Hybrids Technologies

New Boat and Yachts Designs, new ecological materials as for example light Carbon, lightweight construction with sustainable grown wood, aluminium, new propulsion systems, new gas-electric on board Systems, new energy and engines systems and completely new innovation from Germany.

By German Naval Architects and Naval Designers, Renewable Energy and Environmental Researcher and Scientists of German High Tech Automotives and alternative power trains.



New Electric Propulsion System



Made in Bonn, in the CTC. Bonn Climate Project Energy- and Environmental Design and Innovation
 Thinktank for Concepts, Research and Development and Climate Education water food energy climate mobility

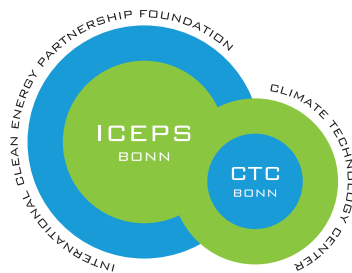


United Nations
 Framework Convention on
 Climate Change

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Climate Technology Center – CTC BONN

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