THE DRAGON PROJECT
ZERO-EMISSION EXPEDITION YACHTS
THE GREEN 4X4 OF THE SEA™
ZERO-ENERGY - ZERO EMISSION EXTREME EXPEDITION YACHTS
THE DRAGON PROJECT
Zero-emission expedition yachts
THE GREEN 4x4 OF THE SEA™

THE WORLD’S FIRST ZERO-EMISSION, EXTREME EXPEDITION SUPER YACHT

THE GREEN 4x4 OF THE SEA™

SERIAL PRODUCTION IN CHINA
Purpose: to construct and market a number of 105ft, zero-emission, ice re-enforced extreme expedition, sailing super yachts.

Hybrid electric propulsion
Affordable functional luxury
Ice re-enforced steel hull
Super efficient insulation
Unrestricted navigation
Extremely sea-worthy

RINA Charter Class
Unrestricted Navigation
MCA LY2 certified
unrestricted Navigation
TRADITIONAL SUPER YACHTS:

• Excessive fuel consumption:
  Pollution, CO2, vibrations, smells and noise:

• AC Generators must run at high speed 24/7 to provide hotel loads:
  Pollution, CO2, smells and noise

• High energy consuming equipment:
  Constant high-speed AC motors
  Inefficient air-conditioning and heating units
  Energy wasting water makers.

• Inadequate insulation of hulls:
  High energy consumption for heating/cooling,
  Increased noise transmission
  Serious condensation problems
ZERO-ENERGY DRAGONS:

• Propulsion by sails or silent battery-driven electric propulsion:
  Battery Bank re-charges by renewable energy via controllable pitch propeller,
  wind turbines and photo voltaic panels. Two redundant emergency back-up generators.

• Run hotel loads from battery bank:
  No pollution, no CO2, no smells, no noise

• Energy saving equipment:
  Variable speed DC motors and highly efficient water makers

• Super efficient double-insulated hull:
  50% less energy used for heating or cooling,
  Very efficient noise insulation,
  No condensation.
The Green 4x4 of the Sea™

L.O.A. 31.9m - 105ft
L.O.D. 24.9m - 82ft
L.W.L. 20.6m - 68ft
Beam: 6.7m - 22ft
Draft: 3.3m - 11ft
Min. freeboard: 2.2m - 7.2ft
Air draft: 31m - 102ft
Displacement - full load: 105t
2 x 183kW silent back-up gensets
Automated electric sail furling
Upwind Sail area: 420m²

* Bow and stern thrusters
* 290kw el-motor/sail power re-generator
* Efficient, double super-insulated hull
* 220kWh battery bank – 6.3 tons
* 2 silent wind turbines – 4.5kW
* 40m² solar panels – 5kW
* 5 or 6 double cabin lay-out – 8 passengers - 4 crew
* 2 full height inner decks

* MCA LY2 certified – Unrestricted Navigation
* RINA Charter Class – Unrestricted Navigation

* Denotes unique Dragon features
Dragons are zero-emission vessels, which can be energy self-sufficient over prolonged periods at sea or at anchor in remote places.

At the heart of the energy system is a massive, 220kWh AGM battery bank, placed in the keel.

The Dragons can be propelled for up to 8 hours by renewable energy stored in the battery bank. The battery bank sustains 3-4 days of hotel loads. The battery bank can be charged in five ways:

1. Using the controllable pitch propeller to turn the 290kw electric motor/generator, when powered by sail.
2. By the two silent wind turbines (max 5kW)
3. By the 40m² of solar voltaic panels (max 5kw)
4. Using one of the two redundant, silent, variable speed, emergency back-up diesel generators, each 183kW;
5. Using shore power.
The Dragons are equipped with a 4.5m bow sprit and a 3m stern sprit in order to increase sail area. They are also useful as observation platforms and when boarding or leaving the vessel. Due to the high loads, they have been calculated using finite element calculations with an added safety factor of 200%. The construction is made by high tensile strength stainless steel tubes.
The Colin Archer rescue sailing vessels are generally considered to be the most sea-worthy sailing vessels in the world and the Dragons will be the biggest, most comfortable - and most affordable - high quality, Colin Archer inspired, steel sailing yachts ever built. Colin Archer designed 70 yachts, 60 pilot boats, 72 other vessels and 14 sailing rescue boats. The rescue boats patrolled the Norwegian North Atlantic coast under sail during the very strong winter storms. The first - and smallest - of these vessels, the RS1 Colin Archer, had no engine and was only 14m long, yet it rescued 67 ships, saved the lives of 236 people, assisted another 1522 vessels during its 40 years of active service in the early 20th century. Today, 116 years later, she still sails.
HIGHLIGHTS:

✓ The only zero-energy extreme expedition yachts available
✓ Capable of sailing around the world without burning fossil fuel
✓ Exceptionally seaworthy, safe - and very comfortable
✓ Highly affordable, functional luxury
✓ Built for new polar sailing grounds, where other yachts cannot safely go
✓ Designed and built for safe heavy weather sailing
✓ 30% more living space compared to similar sized vessels.
✓ Ultra low running and maintenance costs
✓ Long-lasting durability – design life of hull in excess of 100 years
✓ RINA Charter Class – unrestricted navigation
✓ MCA LY2 certified – unrestricted navigation
✓ RINA Green Star Platinum+
The interiors can be customized according to buyer’s wishes. The interiors of the prototype, Dragon One, will be made to convey solid, elegant and functional luxury. They will be bright and airy with lots of natural light entering through very big, but secure portholes and skylights. The flooring will be hotel quality carpeting in muted colors with a sound and vibration dampening layer as a base. The furniture and walls will be bright marine-quality maple plywood, lacquered to a high-quality matte finish. All equipment and furniture will be designed and fastened for safety in severe weather conditions.
Dragon One will not be sold. It will be a show boat and research vessel for alternative, renewable energy systems afloat. It will visit the world’s major boat shows, creating massive, positive media coverage and promoting the zero-emission super yacht concept.
The Dragons have one internal and one external steering position and the possibility to steer from any point of the vessel using the remote controlled autopilot. The open aft cockpit seats up to 14 people in comfort for dinner “al fresco”. The open forward cockpit provides extra privacy.
Steel Treatment & Welding: All steel surfaces blasted to clean metal (SA2.5) and primed before welding. All plate welding double sided. Outside hull welding in 60° notches. All outside welding seams ground to perfect level and blasted to SA2.5 before re-priming and epoxy spraying. Treated this way, all above waterline exterior - and all interior - undamaged steel paintwork, will be maintenance-free for at least 10 years. The inside of the hull plates will be double super-insulated with Delta-T paint and fire-retardant, sprayed polyurethane foam. This will save approximately 50% on heating and cooling energy, dramatically cut noise transmission and prevent condensation.
The propulsion system is hybrid diesel-electric with a 4ft, 4-bladed, controllable pitch propeller. The 290kW electric motor has a very high linear torque from under 50 rpm. When running under sail, the propeller blades can be adjusted to turn the motor and generate massive electric power with <10% reduction in boat speed. The battery bank can silently drive the vessels for up to 8 hours.

40m² of the latest generation marine quality solar voltaic panels provide extra battery charging power. Made from saltwater resistant, heavy-duty flexible materials, they can be walked upon. Max effect: 5kW.

Dragon One is equipped with two wind turbines giving a maximum output of 5kW. They are both state-of-the-art, chosen for their silent operation and tolerance of turbulent wind conditions. They can both survive wind speeds in excess of 200km/hr. Above: the Turby wind turbine, produced in Holland. It even accelerates when the wind is coming from different directions simultaneously. Diameter: 1.8m, height: 2.8m. Max output: 3.5 kW.

The 1.8m diameter, ultra-silent SWIFT wind turbine. Noise < 40db, max output 1.5 kW.
PROJECT STATUS

Phase One: Concept to finished hull

Includes the following successfully completed stages:

- Conceptual design and initial budgeting
- Market research and sales feasibility
- Company formation and infrastructure
- Project development & fund raising
- Shipyard location and negotiation.
- Detailed construction design and workshop drawings
- World-wide equipment research and price negotiations
- Hull construction – incl. water tightness & welding tests
- Certification of design, materials and hull construction quality to RINA Charter Class and MCA LY2 - Unrestricted Navigation
- Mast design and construction
- Project documentation for marketing purposes
PROJECT STATUS

Phase Two: Outfitting to Delivery

Equipment installation, interior decoration and sea trials

Outfitting has been planned and partly executed concurrently with Phase One.

- Interior decoration and furniture design is ready - workshop drawings are finished.
- 95% of all equipment have been delivered to the shipyard.
- The masts are finished and will be stepped on the boat after launch.
- FlexiTeek, custom made, superior teak look- and feel-alike, curved plank deck, has been delivered.
- Both foresails are finished; main and mizzen sails are in production.

Dragon One will now progress rapidly to a high-quality finish.
Expected completion: Primo June, 2014.
here be dragons…

…only when I saw it from space, in all its ineffable beauty and fragility, did I realize that human kind’s most urgent task is to cherish and preserve it for future generations.
- Sigmund Jähn, German astronaut - (the thin blue line surrounding the Earth is the atmosphere….)