

TECHNOLOGY

100% RECYCLABLE BOATS THANKS TO A NEW COMPOSITE STUDIED IN ITALY

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ecoPrimus and ecoRacer are built 100% with natural fibres, a recycled core and a new conception resin that allows the hull to be recovered at the end of its natural life, promoting a new circular economy in the yachting sector

Northern Light Composites is an innovative start-up thanks to the passion for the sea and sailing of its three founders: Fabio Bignolini, Piernicola Paoletti and Andrea Paduano. The company, which researches and develops natural fibres and recycle materials for building yachts, is a spin-off of Northern Light Sailing Team, a Trieste sailing club that was a leading player in recent offshore race seasons with several international successes, and from the know-how of former university students, formally involved in building sustainable skiffs for the 1001 Vela Cup, the well-known competition for universities throughout Italy that has for years been a hotbed of ideas for yachting.



A new composite material

The technology behind the project aims to solve one of the great problems of the yachting sector, where current vessels in fibreglass at the end of their useful lives are abandoned in yards, in ports or in the countryside when they are not deliberately sunk. For years recycling solutions have been studied, some still practical and implemented, but they have logistical and economic problems: where to dismantle the boats, the high cost of this operation and the poor mechanical qualities of the inert material obtained by grinding fibreglass. The composite material studied by NL Composites is based on the use of natural fibres and eco-sustainable resins, in particular Lynn in fibre and the heat setting resin that can be regenerated at the end of its life: it is pulverised and sent to plants that melted to return to liquid form, ready for use, while the linen fibre recovered can be reused to build new, non-structural components.

Both materials already exist, the start-up studied how to use them and optimise them to build a boat.

The prototype: ecoPrimus

Northern Light Composites has published renderings of the first project now being built near Trieste, a prototype of an eco-sustainable dinghy called “ecoPrimus”. The project manager is Fabio Bignolini, an expert yachtsmen and heart of Sailing Team. This small boat, designed in 2016 by Hungarian designer David

Technical data ecoRacer 769

Length overall	7.69 m
Beam	2.80 m
Draught	1.80 m
Displacement	1,100 kg
Upwind sail area	42 m ²
Downwind sail area	100 m ²
Preliminary ORC rating	GPB 615



Northern Light Composites is an innovative start-up born of the passion for the sea and sailing of its three founders

EcoRacer769 will be a test bed for the new Northern Light Composites technology, and after tests on the water and in races it will go on the market

Berezki who is collaborating with the project, is designed for sailing schools and first steps in racing for young yachtsmen. Defined as an Optimist 2.0 because it reinterprets in modern way the concept of the most widespread dinghy the kids, is slightly longer, 2.42 m, more rounded in shape, more ergonomic and hydrodynamic. Above all it is built using natural fibres and eco-sustainable resins and aims to change from below building habits in the yachting sector, embracing the values of the blue economy: technological innovation, re-use of raw materials and reduction of dangerous waste.

The ecoPrimus could become the heir of the Optimist, but it is a daunting challenge given the huge popularity of the “bathtub” but for now the most important thing is that it is being built as the first test for the use of this new Made in Italy technology.

The sportboat: ecoRacer769

The Northern Light Composites team is also working to finalise

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The ecoPrimus could become the heir of the Optimist, but it won't be an easy job given the huge popularity of the "bathtub"

The fact that ecoRacer769 is the first boat that is sustainable during construction and at the end of its life makes it a truly unique project

the project for the first prototype of the "ecoracer" series, a pure racer built entirely with the same technology of the ecoPrimus, a recycled PET sandwich with linen fibre in a heat setting resin matrix. The naval architecture was designed by Matteo Polli, the structures were engineered by Matteo Sconocchia and Alessandro Pera, the deck plan is by Gianluca Salateo and production is followed by Roberto Baraccani. ecoRacer769 is a state-of-the-art designed sportboat which aims to win and at the same time test in racing this new NL Composites technology. The mast and fin and rudder structures are in aluminium and steel, while the motor is electric: both are choices also dictated by sustainability. The rudder and centreboard are in linen, with a T-shaped bulb in lead, here too materials that can be recovered and re-used were chosen.

In addition to choosing eco-sustainable building materials, one of the aims of the Trieste start-up (it is actually more precisely based in Monfalcone, a city with a strong boatbuilding tradition) is to avoid all processes that could endanger the health of the boatbuilders: the composite will be made using the vacuum infusion technique and there will be no painting, using instead skins for external cladding.

Among the distinctive features of the boat, which aims to win in ORC Sportboat races, are the inverse bow and the sheerline,

solutions already used on certain maxis and latest generation racers to lighten the canoe body as much as possible, the stern geometry that seeks the best compromise between wetted surface and form stability and finally the decision to place the rather

well forward, details studied by designer Matteo Polli, who says: "The important and valuable objective of using eco-friendly materials adds one more challenge to the design of a racing yacht which does not only need to sail but it is also required to perform well and win races. The design process has required even more connection between the various design departments in order to create a shape that allows and helps this kind of construction without drawbacks on the performance side. The characteristic shape exploits the use of chines to reduce the structural elements and therefore secondary bonding which is a complex matter when using these materials. In the fore part of the hull, the chine acts also as a spray rail which prevents deep nose diving while allowing fine entries."

"Our aim is to bring to yachting innovative and eco-sustainable solutions. We have a young and competent team and we thank them for the great commitment they are putting into this fundamental start-up phase."
Piernicola Paoletti,
CFO

EcoRacer769 will be the testbed for the new Northern Light Composites technology, and after tests on the water and in races it will be put on the market, leading to mass production and the first sustainable one design class on the market. The yard also guarantees to take back the boats it is built at the end of their



It is made using natural fibres and eco-sustainable resins and aims to change from below the construction habits of yacht builders

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useful life, handling material recovery to create new components from the materials recycled.

“This boat is the result of months of work in the laboratory and in the design phase, with infusion tests on the small ecoPrimus dinghy, tests on materials and difficult choices given the unique nature of the build technology,” say nIcomp managers. “Matteo Polli has done an exceptional job as usual and the renderings speak for themselves: we can’t wait to get our hands on it and get on the water.”

The launch of the 769 is being rescheduled after the problems caused by the coronavirus, with the first sea trials planned further the autumn under the supervision of Roberto Spata, who says: “Wow: this is the first word that came into my head just looking at a rendering of this boat. Ecoracer769 is a project that has many features that could make it a winner: modern and innovative lines, a very captivating look and it will certainly have the twin function of being a possible one design but also potential as a winner also in the Orc Sportboat category. Then the team working to bring this project to life is of top quality, from Matteo Polli, who is a guarantee in himself, to all the guys at Northern Light Composites: there are very well prepared with clear ideas on where they are going and all driven by a great passion. Then the fact that ecoRacer769 is the first boat to be sustainable during build and at the end of its life makes it had truly unique project. Personally I’m really galvanised by being able to make my contribution to this project right from its development in the project phase, I can’t wait to sail her as soon as she hits the water.”