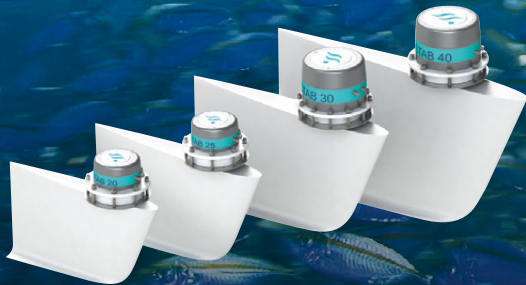


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e-dock

Paolo Ferrari

Sailing into the future

Today more than ever, the future of mobility lays in the electric power: charging infrastructure for the automotive sector has increased exponentially over the past five years in Italy. e-dock is the first and innovative charging infrastructure for the naval transport and it is born in Venice

“e-concept” is an Italian company founded in 2019 as an innovative start-up operating in the field of green economy, in response to the environmental emergency caused by pollution and transportations supplied by fossil fuels. As everybody knows, the deputies of the European Parliament approved, on 10th September 2020, the 60% target reduction of greenhouse gas emissions by 2030 as an intermediate target towards the one set by the famous Green Deal: to achieving climate neutrality by 2050. The Municipality of Venice too participates in the effort of a more sustainable future by joining the new Global Covenant of Mayors for Climate and Energy, which undertakes the Municipality to draw up a new Action Plan for Sustainable Energy and Climate (SECAP) by 2022.

Project philosophy

e-concept shares the vision of a new future, especially for Venice and its lagoon, where engines would not pollute and would be silent, without fuel burns ending up in air and water. In this project, the company’s team brings in different professional experiences and skills: Claudio Iannelli is the Head of Technical Development.

He has focused his entire career on electrification of transport and consultancy for companies specializing in energy efficiency. Matteo Bartoli, Head of Management and Finance, contributes with his organizational and managerial capacity, while Francesco Pannoli, Head of Sales, has always been an active member of projects for the eco-sustainability of Venice lagoon. Mara Sartore, Head of Marketing and Communication, brings in her expertise for the dissemination of the company’s project.

The e-concept idea

e-concept’s core project is “e-dock”: a charging infrastructure for the electric yachting sector, with a special focus on Venice venue. Here, the decarbonisation of nautical transport is a priority, due to the unique nature of this city. Venice’s entire private and public transport system is nautical but, as we have already seen in the automotive sector, the gradual electrical conversion of the nautical sector and the launch of its connected market depends on the construction of charging devices. While the current, yet often dated endothermic system causes severe environmental impact, marine electric motors are characterised by the absence





e-dock, by e-concept, is a charging infrastructure for the electric yachting sector, with a special focus on Venice venue

e-dock is designed to easily permit electric boats to access the electricity supply infrastructure during the mooring phase, allowing them to draw the energy needed to recharge the batteries



of both chemical (exhaust gases and lubricants) and physical (fine dust and noise) harmful emissions.

From here, the need of creating a recharging network available to boats, to enable the recharging of batteries whilst they are moored. e-dock is designed to easily permit electric boats to access the electricity supply infrastructure during the mooring phase, allowing them to draw the energy needed to recharge the batteries. e-dock is born with the aim to respect the aesthetic and functional limitations imposed by the delicate and precious environmental, architectural context of Venice. It integrates the electric charging technology into the typical Venetian nautical mooring pole. Its two-section design includes a top one, where the technological equipment is concentrated, and the basis, which is anchored to the seabed.

Project's partnerships

The pole was designed with 100% recyclable materials chosen to withstand the constant impact of boats when mooring and the aggressiveness of sea salt.

Moreover, e-dock's technologies comply with the European legislation on public charging standards. Of course, to achieve this goal the company collaborates with professionals and companies who share their vision. Among them, Enel X, with whom e-concept signed a partnership agreement for the provision of the technological supply for the public and private charging system type 2, mode 3. They also signed a partnership with Veritas - one of the main Italian utilities - to install the e-dock poles in strategic points for the use of their own electric boat for waste collection. e-concept's network is endorsed by its institutional partners, such as Confindustria Venezia and Assonautica Venezia. e-concept's project was among the ones that made possible



e-concept is an innovative start-up operating in the field of green economy, born in 2019. e-concept designs and offers technological products and services for sustainable innovation, with a focus on system electrification in the nautical sector. Its varied team arises from the combination of different backgrounds and skills.

PRODUCTS

The pole was designed with 100% recyclable materials chosen to withstand the constant impact of boats when mooring and the aggressiveness of sea salt. Moreover, e-dock's technologies comply with the European legislation on public charging standards



The engineering definition of the upper part is the result of collaboration with ORVIM S.r.l., a local company specializing in composite materials and prototype design

The boat used for the test phase in Venice was built by Edyn Marine Company, based on a project by the German nautical designer Kaiser. It is equipped with an 11 kW Edyn engine and a battery with a capacity of 8.5 kWh

the Municipality of Venice's participation in the European Call for the Intelligent Cities Challenge (ICC), a European Commission initiative that brings together 126 cities to achieve socially responsible growth.

The crowd funding campaign

During last October, e-concept also launched the first campaign of equity crowd funding on the Ecomill web platform, to collect the financial resources for the research and development of e-dock. The campaign exceeded all founders' expectations to the point that, not only the project reached the overfunding, but it was also decided to extend the campaign until the end of December. To invest in e-dock is very simple, but also profitable. Investments in equity crowdfunding bring with them a series of tax incentives. Through the campaign, for example, the Energy Social Company InfinityHub S.p.A. entered e-concept's share capital as a professional investor. Moreover, the excellence of the project was further enhanced through the quality evaluation by Banca Etica, the ESG - Environmental, Social and Governance. InfinityHub was also part of another recent milestone for e-concept: together, they signed an agreement for the positioning of a new electric pole at the island of San Servolo, in the Venetian lagoon. The project is part of a bigger plan for the island's energy upgrading by InfinityHub. Recently, e-concept came also to a similar arrangement with Veritas, for the installation of two more poles in Venice city centre.

Construction, testing and installation of the prototype

The e-dock pole is built on the basis of an initial project that has undergone some improvements over the last year, especially regarding the choice of materials and construction details. The native idea of the two-part realization proved to be successful, allowing e-concept to reach the executive project phase in a short time. The lower part, indeed, was entrusted to one of the leading local companies in the construction of mooring poles, REIN S.r.l., thanks to whose experience it was possible to avoid many of the problems related to the very particular Venetian environment. The engineering definition of the upper part is the result of collaboration with ORVIM S.r.l., a local company specializing in composite materials and prototype design. Even with them, the synergy was immediate, making it possible to reach a satisfactory



solution very quickly. The prototype is largely passing the expected technical and ergonomic test phases that will run out at the end of January 2021.

The experimental boats

The Edyn Marine Company, based on a project by the German nautical designer Kaiser, built the boat used for the pilot site in Venice. The collaboration between the e-concept Company and Edyn Marine was born following a meeting at the METS in Amsterdam in 2019. Since that, the two companies have joined forces and shared skills, giving life to a partnership thanks to which today e-concept can use the boat in order to test its behavior and energy needs during navigation in the lagoon. It is equipped with an 11 kW Edyn engine and a battery with a capacity of 8.5 kWh. With this configuration, the boat has an autonomy of about 3 hours at an average speed of 6 knots, considering that in most of the internal channels the speed limit is 4 knots. Obviously, it is also a motorboat capable of gliding, although at this pace the autonomy is significantly reduced, while remaining satisfactory. Thanks to the collaboration of another local company specializing in marine electric motors, Huracan Srl, e-concept had the opportunity to use a TOPA, a typical Venetian boat particularly functional for work uses (cargo boat or for transporting people), equipped with a 10 kW electric motor and a 10 kWh battery pack.

The two boats, on which two trackers are mounted, allow the company to deduce many useful data for the real needs of navigation in the disparate uses and in different weather and nautical conditions. Data that will be useful both in identifying the best locations to build the public infrastructure as well as to share with the builders of boats and electric motors for boating, so that they can continuously optimize and improve performances.