



# ETME

Greece, [www.etme.gr](http://www.etme.gr)

Thanks to its investment in R&D and strategic collaboration projects, a Greek SME is now commercializing an innovative solution in a joint venture with a trusted open innovation partner

## Executive Summary

ETME Peppas & CO. SA is an SME based in Athens, Greece with 45 years of history in the demanding hydro and environmental infrastructure projects, employing highly experienced civil engineers. Through its strategic investment in R&D and in strategic collaboration projects, ETME has gained know-how that goes beyond its traditional area of expertise and allowed them to develop an innovative solution for the demanding sector of offshore wind generators with very promising prospects.

CASE N° : SE26

SECTOR: ENVIRONMENTAL CONSULTING

TECH INTENSITY: HIGH-TECH

LIFE CYCLE STAGE: RENEWAL

INNOVATION VECTORS: PRODUCT, SERVICE

01 PARTNERS: PSR, OTHER SME

KEYWORDS: Offshore wind turbines, wind resource measurements, wind farms

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- INNOVATION CHALLENGE & MARKET OPPORTUNITIES
- OI TRAJECTORY
- BUSINESS IMPACT
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## BACKGROUND

ETME Peppas & CO. SA is a company with 45 years of history that focuses on hydro and environmental infrastructure projects. It employs 15 people with high technical expertise, the majority of whom are civil engineers. In its long history ETME has undertaken over 200 projects for the design of major hydro infrastructure works, such as aqueducts, irrigation networks, flood protection, dams, spillways, canals, weirs and waste water networks. Apart from technical projects, the company has invested in research and innovation; its participation as coordinator of the R&D project Deukalion gave rise to the Floatmast idea.

Their future plan is to take Floatmast to the commercialization stage. The vision of the company, based on Floatmast, is to develop innovative solutions that will solve current problems in different markets.

## INNOVATION CHALLENGE & MARKET OPPORTUNITIES

Between 2011 and 2014, ETME participated in the Deukalion project under the Partnership Agreement for the Development Framework (PA) (2007–2013). This project aimed at estimating flood flows in ungauged Greek basins under hydroclimatic variability and also to develop a physically-established conceptual-probabilistic framework and computational tools. Through this project ETME acquired significant know-how in 3D flow analysis with the use of the Flow 3D software package (Flowsience) and until this day, this expertise is unique in Greece. After finalizing the project, the company looked for other areas where they could utilize their expertise in 3D flow analysis.

After an H2020 meeting/presentation in Brussels and carefully studying the strategic documents of the European Commission, the company realized the important prospects of offshore wind energy and decided to focus on designing a floating offshore wind generator.

## OPEN INNOVATION TRAJECTORY

### Concept development

During the concept development phase ETME collaborated with the Centre for Renewable Energy Sources and Saving (CRES). This collaboration was critical in the development of the concept because the experts at CRES pointed out a very important challenge in the development of a floating offshore wind generator, which is the lack of measurements of potential wind energy in areas where offshore wind turbines are to be installed.

That was when the company decided to focus on the development of Floatmast, an innovative wind resource assessment tension leg platform for combined cup anemometer and lidar reliable and bankable wind measurements for offshore wind parks. After six months of market research they found out that there are only two solutions available on the market.

In order to design Floatmast and differentiate their offering from existing solutions, ETME needed complementary experience in naval/marine projects. They therefore searched for a partner who could contribute this type of know-how. When they concluded their research, ETME decided to collaborate with Streamlined Naval Architects, an SME that specializes in naval architecture design and studies. In the beginning, Streamlined was involved as a subcontractor in the preliminary design of Floatmast but they later became a partner in this effort.

An important challenge for the CEO Mr. Peppas was to find a partner who could not only offer specific technical expertise, but could also share their vision. The human factor and personality traits of the OI partner played a very important role in the selection decision, because apart from a financial and business relationship, it was important to find a partner to create a relationship based on trust and mutual respect that would generate value and results for both sides and formulate/share a joint vision.

### The development process, IPR and competition strategy

Apart from the critical role of Streamlined in the design and the development of the project, two research institutions contributed to ETME's R&D effort. The contribution of CRES, which brings significant know-how in wind measurements, was invaluable for the development of Floatmast. The

Hellenic Centre for Marine Research (HCMR) was another collaborator which provided added value to the validation of the oceanographic and environmental data.

At the beginning of the development stage of the project, a critical challenge was to define a clear role for each , and as the project progressed the partners had to adapt their role according to the demands of the project. Another challenge was sticking to the time-line of the project in order to avoid any increase in project costs due to a possible delay.

More specifically, there were two factors that affected the implementation of the time-line:

1. The first was the lack of technical know-how on the part of the subcontractors that ETME needed in order to do the pilot testing of the project. Due to the demanding conditions of marine projects there were very few subcontractors who were willing to undertake such a project. "No one could give a solution" to the technical challenges of the project.
2. The second factor was the weather: due to the "weather sensitive" nature of the project the testing was necessarily affected.

These two factors forced ETME to innovate in the deployment/execution of the project.

One challenge in forming the consortium was setting up a balanced partnership among organizations with different financial capacities. IP issues were not a concern.

Floatmast offers significant advantages compared with the existing solutions for measuring the wind energy potential of sites for offshore wind turbines. Floatmast competes with two different types of technologies: fixed met masts and floating lidars.

Compared to fixed met masts, Floatmast is cheaper by 50–80%. On account of their fixed position these met masts cannot be moved to other locations after the measurements have been finalized, whereas Floatmast can be re-deployed at other sites.

Compared to floating lidars, Floatmast can stay longer on site, even the entire lifespan of the wind turbine, making it a cheaper solution in the long run. It also has larger surface areas, which can be used for additional measurements with the incorporation of sensors. Moreover, it can transmit the data acquired over longer distances. A unique feature of Floatmast is its ability to offer Power Curve Verification for floating wind generators.

## Commercialization and follow-up

The scaling up of Floatmast to the commercialization stage is still ongoing. The teams are currently working to finalize the operational demonstration in real environment conditions. The main challenge is to secure a time-frame with the appropriate weather conditions in order to take the necessary measurements, prove its market readiness, as well as raise its investor readiness to support Floatmast's market uptake.

Because of its small size, ETME adopted an agile methodology in its operations by utilizing their extensive technical know-how, as well as training themselves to solve any technical problem that might occur during the project. One key lesson for the company was learning to identify the need for external innovation, contributions and expertise when necessary. By taking a continuous learning approach ETME's management team has managed to gain non-technical knowledge and build new skills, such as fund raising, pitching, etc. As a result, there was no need for significant organizational restructuring of the company during the Floatmast project.

The company has already participated and will continue to have a strong presence at relevant international conventions, conferences and exhibitions, through exhibition booths and posters as well as presentations and scientific papers.

It is evident that Floatmast's performance compliance evaluation and certification by third parties (e.g. the German wind energy association) according to the specific key performance indicators set out in the wind industry standards, will play a very important role in the dissemination and marketing activities of the solution.

When a company introduces a new product or service in such a demanding field like offshore wind energy, the acquisition of the necessary certifications and its evaluation by third parties are critical, since they secure the quality control and technical assurance of the solution and ensure acceptance by the offshore wind energy community (academia, developers, institutions etc.).

ETME is currently examining the development of a floating radar that is based on the know-how acquired by the Floatmast project which could be used in border control.

## BUSINESS IMPACT

Through this project ETME gained significant

technical know-how in demanding maritime projects, which is directly affected in all its aspects (from design to testing) by the conditions at sea and by weather which can be very unpredictable.

The Floatmast project offered the company a valuable opportunity to network and gain EU-wide visibility since it was awarded an SME Instrument Phase 1 grant from the European Commission. Floatmast is a very important addition to ETME's project portfolio, illustrating that they are at the cutting edge in their scientific field. As a result, the business development prospects of the company have been significantly strengthened.

In terms of IP, the project resulted in two granted patents (GR) and five patent applications (US, CN, KR, E, and WO). All patent rights belong to Mr. Peppas (vice president of ETME).

The main team gained experience and skills in managing projects that involve different partners and also in managing human capital more efficiently – both internally as well as in a strategic collaboration team (trust building, resources management, conflict management). The team also gained experience in managing difficult situations that are in the nature of maritime project in terms of security and safety. Similarly, the lead team at ETME learned to manage difficult financial situations that can jeopardize the success of a collaborative project.

In addition, the company learned to set the requirements for choosing partners and the importance of not only focusing on the technical know-how and experience that this partner will bring but also on their compatibility in terms of mind-set and vision.

FloatMast is a joint venture between the companies that participated in its development via a new company that was established in the UK. The specific business impact cannot be valued yet since the project is still in its final stage (demonstration).

## LESSONS LEARNED

The company used experience and know-how acquired from a previous open innovation project in order to develop an innovative solution for a new sector (offshore wind energy). The company was able to bring their concept to life through different open innovation partnerships in different stages of the development (with Streamlined, HCMR, CRES).

This case shows how open innovation can help an SME to pivot from its traditional line of business and achieve EU-wide recognition and success with

outside help and know-how in an industry with which they were not familiar.

Instead of following a path that had been traced for the past 45 years, ETME decided to think out of the box and take a risk in a new venture in an unfamiliar field. This effort would not have been possible if they had not formed open innovation partnerships in the different stages of the development, thereby providing the necessary knowledge and expertise that ETME was lacking in different development stages through win-win cooperation. These strategic collaborations contributed significantly to mitigate the technical and innovation risks relating to Floatmast's development.

It is also very important to acknowledge the important role that the policies of the European Commission played in influencing the development of the original idea and the direction that the company took.

### Main lessons learned:

1. Open innovation had a very positive impact on the company because ETME was able to gain significant know-how in a very demanding area that was new to the company and the lead team was able to improve their skills in managing such demanding projects.
2. According to ETME, the most difficult challenge in the development of a strategic collaboration project was to define accurately the role of each partner at the beginning of the project, according to their expertise, and to avoid any changes in the initial planning that would result in an increase in the project's cost and a deviation from the implementation time-frame.
3. When searching for the right partner ETME stressed the importance of being open and honest from the beginning of the collaboration and not to focus only on the technical skills that the partner can offer but also to search for compatibility in terms of mind-set and strategic alignment with the vision of the project.