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The future of **sustainable on-water propulsion**

Developed by European Boating Industry
Initiated by boot Düsseldorf

EBI
European Boating Industry

Prepared by
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STUDY FRAMEWORK

This document represents the results of the study on “The future of sustainable on-water propulsion", developed by European Boating Industry and initiated by boot Düsseldorf.

European Boating Industry contracted Sea Teach to undertake a set of face-to-face interviews and to collaborate with the ADAC (Allgemeiner Deutscher Automobil-Club/ General German Automobile Club) to conduct an online survey, both with the aim to discover from the nautical industry and its customers the trends and strategies for the future of the propulsion systems and fuels in the boating industry.

A sample of 38 representatives from the nautical industry, including boat manufacturers, engine manufacturers, associations, and customers participated in the face-to-face interviews and 532 users from ADAC completed the online survey. Two types of user surveys were executed:
a) qualitative surveys through interviews that lasted for an average of approximately 40 minutes, and
b) a quantitative survey of about 10 minutes length in cooperation with the ADAC.

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BACKGROUND

Companies are increasingly offering more environmentally friendly alternative propulsion systems for boats. The range is diverse and developing in different directions. Manufacturers know their own customers and needs well, but there are few reliable studies on how customer needs will develop overall in the different segments and across brands. This is where European Boating Industry (EBI) together with boot Düsseldorf, wants to provide the industry with relevant information that will help to further develop their business approach.

The European Climate Law enshrines the goal of the European Green Deal into law and requires Europe's economy and society to become climate neutral by 2050. The law also sets an interim target to reduce net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels.

A number of pieces of legislation are currently on the table at EU level that target the maritime sector, automotive and many others. The expectation is that this will next also focus on the recreational boating sector even if it is relatively small in emissions compared to other sectors (0.4% of EU transport sector CO2 emissions according to study done for European Commission).

The questions asked in this study are therefore:

- What are companies in the boating industry doing regarding the implementation of the EU targets for 2030 and 2050 respectively?
- Have they set targets until 2030/2050?
- Which green technologies are they focusing on, which technology do they think has the most potential and why?

The EU has also agreed to phase out internal combustion engines for new cars and vans from 2035. Although there is no clearly stated date for the boating industry, the following was asked:

- Do the companies have a fixed date by which combustion engines will no longer be offered?
- And to what extent can the industry benefit from the developments in the automotive industry?
- What does the boating industry expect in terms of customer demand?
- And what are the barriers and the accelerating factors to the implementation of alternative drives?

BACKGROUND

Addressed in face-to face interviews were representatives from the management of boatyards who are responsible for product strategy in the various segments of the boating industry, engine manufacturers and national boating industry associations. This report also contrasts its findings against qualitative interviews and a quantitative survey with existing and potential customers. The results evaluate customer needs and the development of product ranges of manufactures, puts them into relation and comparison with each other.

SUMMARY

38 qualitative interviews with industry representatives as well as 532 quantitative responses from customers paint a diverse, but also connected picture of the current market situation with regard to the change to alternative drives in the boating industry.

Customers are in favour of sustainability and are open to alternative propulsion options, but are not prepared to pay significantly higher prices or make compromises regarding comfort, range and safety.

This confronts the industry with a difficult situation where it has to accelerate the development of alternative drives in the boating industry, whilst catering for customers' needs of affordable prices, range and comfort.
As there is not yet a clear focus on one technology to decarbonise boating and the existing options all carry their own set of challenges for implementation in the marine environment, market players are engaged in understanding the alternatives and developing suitable solutions for the different market segments.
Currently many companies in the industry are still in the process of defining their strategies and different segments of the industry are waiting for other segments to start the initiative, such as boat builders relying on engine manufacturers.
Regulations are likely to be put in place and customers will react to them in the coming years, locally, nationally and at European level. Therefore the boating industry needs to be ahead and ready to react to new requirements and expectations.

This study aims to raise awareness within the boating industry that it is time for boat builders, engine manufacturers, associations and consumer representatives to come together, form a Task Force and develop joint strategies.
This strategy could include a joint agreement of the entire industry on a date to phase out the (current fossil fuel) combustion engines that can be communicated to policy-makers, stakeholders and consumers.
The EBI and boot Düsseldorf should, as one action, repeat studies like this for the industry to have a clear picture of market interests and developments.

Call to Action: Join the Task Force!!

Support for this call to action is needed at all levels and ideas and initiatives are welcome!

SUMMARY

COMPARING ALL RESULTS

The following table provides a quick overview of the most prominent answers from the different market segments that have participated in this study.

This table includes on one side six categories of respondents and on the other side the four main topics asked during the research process.

SEGMENT	Favoured sustainable alternative propulsion systems (in future)	Factors that facilitate the implementation of sustainable solutions	Customer demand	Life-cycle
Consumers (qualitative)	Electric Propulsion	Price, regulations and social pressure	Price, comfort and sustainability	Materials being considered during boat purchase
Consumers (quantitative ADAC Survey)	Electric Propulsion	Price and regulations	Price, comfort and design	It is important to a clear majority that boats are manufactured from environmentally friendly materials
Up to 10 metres and outboard	Electric propulsion	Social Pressure, Customer demand and government grants	Price and environmental awareness	Use of as recycled plastic or hemp fibres
Over 10 metres and inboard	Combination of diesel and electric in hybrid propulsion systems and moving towards hydrogen	Price and infrastructure	Price and sustainability	Preparing initial plans
Sailing Boats	Correlated with the customer experience	Customer demand and value depreciation of combustion engines (when they get phased out)	Not much demand yet	Preparing initial plans
Engine manufacturers	Electric and hybrid propulsion	Regulations and infrastructure	Price and sustainability	Not relevant

Table 1. Comparison of the results from all segments participating in the study

SUMMARY

Summarizing the different market segments and subjects of the study:

Customers favour electric propulsion, but focus firstly on factors such as price, comfort, design and range as a decision-making factor when buying a boat, sustainability is only of subordinate importance, although it is an important factor to many. They are also interested in hydrogen and other future technology options.

Builders of boats up to 10m with outboard engines prioritise electric engines as future propulsion and experience rising customer demands for this technology. Some companies in this sector have specialised on electric propulsion solutions and change to sustainable materials. Other technologies are also being considered.

Builders of boats over 10m with inboard engines are mostly in the planning phase and are developing hybrid solutions of diesel and electric propulsion systems. Electric propulsion is not viable for them in most cases because of its restrictions in range, power and charging infrastructure, which are are detrimental to the purpose of their products and their customer's expectations. Other technologies are also being considered.

Builders of sailing boats are less concerned about the future of propulsion, as they only use the engine as an auxiliary form of propulsion and the customer demand is not very strong yet. Solutions can be tailored to customer expectations, including electric propulsion for short distance and hybrid systems for offshore use.

Engine manufacturers mostly focus on electric solutions for outboard engines and on hybrid propulsion systems for inboard engines, depending on the layout and purpose of the boats. Price and sustainability drive their customer's demand, whilst better regulations and improved infrastructure would facilitate the implementation of sustainable drives.

Associations are guiding the companies by participating in different research studies, pilot projects, and monitoring how new start-ups are developing new prototypes, so the best models can be replicated on bigger vessels. They are also monitoring regulations and are in exchange with policy makers to ensure that the specific requirements of the sector are observed.

Life-Cycle factors and recycling of boats at the end of their life is of interest to many customers, although not a deciding factor. Boat builders are increasingly moving to changing materials and are making plans for further developments.

METHODOLOGY

In the preparation phase of the study proposal, Sea Teach checked with existing contacts and affiliations and used its intimate knowledge of the sector to target companies that suit the groups foreseen for the interviews.

A total of 38 representatives from the boating industry, including boat manufacturers, engine manufacturers, associations, and customers participated in the face-to-face interviews and 532 users from ADAC completed the online survey.

The study focused on boats under 24 metres and priority was given to EU-based companies. As some UK and US brands are very popular, researching their strategies was also of great interest as it strongly influences the market developments.

The companies, associations and customers were contacted in week 38 and appointments for the interviews were arranged: Having chosen companies that represent a large part of the market, Sea Teach conducted 18 B2B interviews, 9 Association interviews and 11 B2C interviews during weeks 39 to 42.

The B2B and association interviewees were given the prepared questions upfront so that they could be well prepared for the interview. The interviews were mostly held online by videocall and were recorded with the permission of the interviewee. Each interview took between 30 and 60 minutes, the answers were noted down by hand, afterwards checked against the recording and then transferred into digitally written records.

Additionally, between November 16th and 27th, 2022, more than 1,500 participants from the ADAC skipper club were invited to answer the survey on the topic of “Alternative Drives”. The participation rate was 35%, with answers from 532 participants. The results were deeply analyzed, and compared to the qualitative data.

CONCLUSIONS

CONCLUSIONS

The obtained results from the research phase show how the industry finds itself in a paradox situation: governments and policy-makers are making a shift towards sustainability and zero-emissions targets and are requesting companies to reach their milestones, but on the other hand, customers are not 100% willing to purchase boats which have sustainable propulsion systems, due to factors such as higher prices, perceived lack of safety or lack of knowledge on latest developments.

The challenge of decarbonising boat propulsion is one of the most challenging aspects of the overall journey to environmental sustainability. Infrastructural problems, a lack of innovation due to the comparably small market size and a not yet pressing demand from customers have led to a cautious approach of the industry: Different segments of the boating industry are waiting for the other segments to take first steps and see which technology works and fits better with the various use requirements and customer demands.
In this current situation it is therefore essential that boat builders and engine manufacturers cooperate to design boats that have sustainability in-built to enhance the green transition, but keep the factors demanded by the customers (price, comfort, range, etc.) in the foreground. This also needs to include looking into the materials used and considerations for end-of-life dismantling and recycling.

Companies producing smaller boats (up to 10 metres) equipped with outboard engines are more positive in the use of electric propulsion, and some of them are taking advantage of it by making e-boats their company philosophy.

On the other hand, companies that produce boats that are mostly over 10 metres with inboard engines are working on hybrid solutions of diesel and electric, because pure electric propulsion is not an effective solution for their boats. They are expecting transferable hydrogen developments from the car industry, as they see electric propulsion rather as a stepping stone than the future solution. This is mostly explained with limited ranges from batteries and missing charging infrastructure in marinas. It will be an important future factor for these companies to better manage expectations of customers and policy makers by explaining clearly why the boating industry is not comparable to the car industry and that it has to find specialised solutions.

CONCLUSIONS

Companies producing sailing boats are less concerned about the future of propulsion, as they only use the engine as an auxiliary form of propulsion. This will potentially allow the use of electric propulsion due to lower range requirements.

Overall, issues are however still identified for electric propulsion that inhibit their adoption, such as range, infrastructure and price.

Engine manufacturers are at the starting point of creating sustainable plans alternative propulsion systems. They highlight that it has to be a global solution rather than a regional solution that will only be used by a subset of their customers. They are also waiting for boat manufacturers to improve hull efficiency and address spatial concerns.

Associations are trying to guide the companies by participating in different research studies, pilot projects and monitoring how new start-ups are developing new prototypes, so the best models can be replicated on bigger vessels. Having analysed the customer demand in their countries, associations recognize that customers either are part of a small group that is looking for 100% sustainable options vs. those in the larger group, who see sustainability only as a supplement.

Customers focus firstly on factors such as price, comfort and range as a decision-making factor when buying a boat, sustainability was only raised as an important factor when suggested the interviewer. The quantitative survey painted a slightly different picture where customers stated that sustainability is an important factor, although their deciding factors for buying a boat are price, comfort and security. Electric propulsion is seen by many customers as the best future propulsion solution, but not by a majority.

The boating industry anticipates the mindset of consumer to change drastically when the customer profile changes. Especially the Generation Z (born between 1997 and 2012) is anticipated to make a major difference in expectation of sustainability.

In conclusion: the industry as well as the customers have started implementing sustainability and currently changing their offers and demands in small segments. But both sides of the market are becoming increasingly aware of sustainability necessities and whilst the industry is developing new concepts, the customers are becoming more interested and demanding.

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