

home to a great diversity of fauna and would help to improve habitat conditions. In addition, it would also lead to improvements in the working conditions of employees and boatmen, who are daily exposed to unhealthy noise levels.

On the other hand, we have estimated the economic support needed for the electrification. This would add to approximately 50% of the initial investment. This would make profitable this proposal in the short term and under the current conditions. However, keeping in mind the critical state of the Albufera ecosystem, the electrification of vessels should be considered as an interesting measure to improve the conditions of the lake, even though public incentives are necessary.

On the other hand, although the main components of the propulsion system and the loading process have been dimensioned, aspects of the design of the boat remain under discussion with the Fishermen's Community at *El Palmar*. Aspects such as the location of the batteries, the distribution of the components, and other actions to ensure that the final design is optimal for the work activity to be carried out will be future developments that are now on the table. Future research will focus on validating the studies carried out and deploying the obtained results in field pilots.

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References

- [1] H. Brix, B. K. Sorrell, and B. Lorenzen, "Are phragmites-dominated wetlands a net source or net sink of greenhouse gases?," *Aquat. Bot.*, vol. 69, no. 2–4, pp. 313–324, 2001.
- [2] Servicio Devesa-Albufera. Ayuntamiento de Valencia, "L'albufera de València. Guía aves." 2019.
- [3] Generalitat Valenciana, "L'albufera. Fauna," 2019. [Online]. Available: <http://www.parquesnaturales.gva.es/es/web/pn-l-albufera/fauna-3817>. [Accessed: 11-Mar-2019].
- [4] C. Doña, V. Caselles, J. M. Sánchez, A. Ferri1, and A. Camacho, "Herramienta para el estudio del estado de Eutrofización de masas de agua continentales."
- [5] BOE, "Real Decreto 61/2006, de 31 de enero, por el que se determinan las especificaciones de gasolinas, gasóleos, fuelóleos y gases licuados del petróleo y se regula el uso de determinados biocarburantes," 2006.
- [6] IDAE, "Estudios, informes y estadísticas," 2019. [Online]. Available: <https://www.idae.es/estudios-informes-y-estadisticas>. [Accessed: 02-Oct-2019].
- [7] R. B. Perpina and H. Martin, "El vehículo eléctrico y la eficiencia global. Vibro-Acoustics Design Optimization of the PMSMs View project," 2015.
- [8] Á. I. Rodríguez Cea, "Modelo para la batería de ión de litio de un vehículo eléctrico," 2017.
- [9] C. Peña Ordóñez, "Estudio de baterías para vehículos eléctricos.," 2011.
- [10] Y. A. Çengel, J. M. Cimbala, and J. E. Murrieta, *Mecánica de fluidos : fundamentos y aplicaciones*. 2007.
- [11] E. Industrials and J. M. Bergad, "Mecánica de fluidos. Problemas resueltos," 2006.
- [12] H. Ahadme Yahyai, "Estudio y diseño de una embarcación de 18,5 metros de eslora," 2017.
- [13] J. M. de Juan-García Aguado, *Principios de teoría del buque : dinámica*. 1993.
- [14] MATLAB, "Sensor Data Collection with MATLAB Mobile." [Online]. Available: <https://www.mathworks.com/help/matlabmobile/ug/sensor-data-collection-with-matlab-mobile.html>. [Accessed: 12-Oct-2019].
- [15] MathWorks, "Suavizado de señal." [Online]. Available: <https://es.mathworks.com/help/signal/examples/signal-smoothing.html>. [Accessed: 12-Oct-2019].
- [16] Krantz, Steven George, and Krantz, *Calculus demystified*. McGraw-Hill, 2003.
- [17] Avamet. Associació valenciana de meteorología Josep Peinado., "València l'Albufera/Tancat de la Pipa." [Online]. Available: <https://www.avamet.org/mx-records.php?id=c15m250e16>. [Accessed: 12-Oct-2019].
- [18] J. L. Ferreiro Castiñeira, "Estudio de eficiencia de un motor principal.," 2016.
- [19] Ayuntamiento de Valencia, "Ordenanza Reguladora del Registro de Embarcaciones del Lago de L'Albufera," 2019.
- [20] A. Jansen, B. van Deursen, and C. Howe, "The aerodynamics of sailing apparel," *Procedia Eng.*, vol. 34, pp. 50–55, Jan. 2012.
- [21] E. M. Lewandowski, *The dynamics of marine craft : maneuvering and seakeeping*. World Scientific, 2004.
- [22] T. H. Reif and D. A. Guenther, "A Comparative Study of the Aerodynamics and Hydrodynamics of a Tunnel Boat Hull," *J. Hydronautics*, vol. 12, no. 4, pp. 166–168, Oct. 1978.
- [23] O. P. Bairon, "Análisis del ciclo de vida de las baterías convencionales."
- [24] Levante-EMV, "Medio ambiente en Valencia: 'El lago de la Albufera está en la UCI.'" [Online]. Available: <https://www.levante-emv.com/comunitat-valenciana/2019/10/04/lago-lalbufera-uci/1929101.html>. [Accessed: 21-Oct-2019].
- [25] J. R. Chávez Miranda, "Ruido laboral," *Cienc. y Trab.*, vol. 8, 2006.
- [26] BOE, "Ley 7/2002, de 3 de diciembre, de protección contra la contaminación acústica." [Online]. Available: <https://www.boe.es/buscar/doc.php?id=BOE-A-2003-613>. [Accessed: 26-Oct-2019].