



D1.6: Ethics Compliance

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Acronyms and Abbreviations	
Acronym/Abbreviation	Meaning
ABS	American Bureau of Shipping
AM	Additive Manufacturing
CA	Consortium Agreement
CINEA	European Climate, Infrastructure and Environment Executive Agency
D	Deliverable
EC	European Commission
EEAB	External Experts Advisory Board
EU	European Union
FSA	Formal Safety Assessment
GA	Grant Agreement
GDPR	General Data Protection Regulation
HRA	Human Reliability Assessment
IPR	Intellectual Property Rights
ISO	International Organization for Standardization
MSDS	Material Safety Data Sheets
NDA	Non-Disclosure Agreement
NTNU	Norwegian University of Science and Technology
PC	Project Coordinator
PEB	Project Ethics Board
R	Report
SEN	Sensitive
VRF	Vanadium Redox Flow
WP	Work Package

Disclaimer

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1 - Executive Summary

The enclosed Ethics Compliance report is prepared as part of the Blue Bunkering of Anchored ships with Renewable Generated Electricity (BlueBARGE) project, an initiative co-funded by the European Union (EU).

The report describes the way the project will adhere to ethical principles, including the highest standards of research integrity, and applicable EU, international and national laws.

The Ethics Compliance report is in harmony with the stipulations of the executed Grant Agreement (GA), [1], and Consortium Agreement (CA), [2], and serves to enhance the GA and CA by offering further insights and elucidations. Should any inconsistencies arise, the provisions of the GA and CA will take precedence.

2 - Introduction

The BlueBARGE project aims to design, develop, and demonstrate a fully integrated and sustainable power barge solution, primarily for offshore power supply to moored and anchored vessels.

BlueBARGE activities will be compliant with the principles of dignity, freedom, equality, solidarity, citizens' rights and justice by complying with all the ethical principles, including the highest standards of research integrity, and the applicable national, EU and international laws.

Ethical considerations related to humans, personal data, non-EU countries and environment, health and safety, and research integrity are the most relevant to the BlueBARGE project and are addressed in this deliverable. The BlueBARGE project will not utilise human embryonic stem cells or embryos, human cells or tissues, animal testing or artificial intelligence, and therefore these topics are not further elaborated on in this document.

3 - Humans

3.1 Human participation

The human aspect is linked to the activities of BlueBARGE with the participation of persons external to the Consortium in activities such as external workshops, demonstration activities, etc. In all project activities, participation of external parties is voluntary and based on informed consent, ensuring respect for persons and dignity and the rights and interests of the participants.

Even though the project foresees human participation in all its liaising activities, there is no risk of privacy or fundamental rights affection. Humans involved in the activities are adults, not belonging to vulnerable groups, who voluntarily decide to take part in such activities. In all cases, proper, complete and transparent information and voluntary consent compilation will be ensured, regarding treatment of personal data, pictures, videos, etc. Following the general principle of ethical research, all events (workshops, webinars, interviews, etc.) will be strictly limited to volunteers recruited after a clear explanation of the project activities and scopes. BlueBARGE will not involve children or adults unable to give informed consent.

The procedure for participants in BlueBARGE activities will strictly adhere to the conditions below:

1. Every participant has the right to remain anonymous.

2. Every participant will have his or her data protected as stated in the National Data Protection legislation and in the European Commission (EC) General Data Protection Regulation (GDPR) regulation.
3. All data released by the eventual participants brings a duty of confidentiality.
4. Every participant's free and informed consent is required also while doing interviews. The purpose of informed consent is to empower individuals to make a voluntary informed decision about whether or not to participate in that activity based on knowledge of its purposes, procedures and outcomes.
5. Every participant will also have the right to know who will benefit from his or her participation in the activity and, if they so wish, to receive information on any potential commercial exploitation of the research that involves their participation.

3.2 Informed consent forms

As the research to be conducted as part of the BlueBARGE project does not involve vulnerable groups or the collection of sensitive data, an informed consent form is not expected to be explicitly required. However, if a need for collecting and processing sensitive data arises during the project, an appropriate informed consent form shall be drafted (in line with available EU templates), accompanied by information sheets written in a language and in terms fully understandable to the participant. The sheets will describe the aims, methods and implications of the project, the nature of the participation and any benefits, risks or discomfort that might be involved.

4 - Personal Data

The project will generate and reuse various types of data, including (but not limited to) data related to power generation, energy storage, environmental and operational aspects, safety and compliance, connectivity, and financial aspects. The bulk of the data generated is expected to be of a technical nature, rather than (sensitive) personal data.

However, if applicable, questionnaires, interviews, workshops, webinars and all other activities involving humans will be subject to current European regulations on matters of data handling and privacy, namely the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation, GDPR).

The project outcomes will always be reported without contravening the right to privacy and data protection. The BlueBARGE Consortium will store and analyse data that has been collected only after the participants have given their consent to take part in the specific activity.

If personal data is collected, this will be stored in a safe and secure web space and only a restricted number of partners will have access. Data will consist of digital data. Digital data will be stored on hard disks disconnected from the network, which will be stored in secured drawers; and/or on secured servers, with defined protocol that limit access to authorized personnel. Data access will be limited to BlueBARGE authorized staff only, and only within the spatial and temporal limits agreed with the participants to the activities and in no case beyond what is prescribed by the current legislation. Data will not be modified or falsified. Data will be securely destroyed according to the data protection policy of the project, once the project is over. Paper data will be physically, permanently and securely destroyed.

Reference is also made to the BlueBARGE Data Management Plan (D1.3), [3], and the IPR Management and Business Sustainability Model (D8.4), [4], for more detailed information on the project's data management strategies.

5 - Non-EU countries

Since non-EU countries are involved in the project, as Associated Partners, Chapter V of the GDPR will be applied, framing the transfer by using the appropriate instrument which aims to protect any personal data transferred to third countries or international organizations.

Activities that will be performed outside the EU will be completed by partners (CORVUS, ELKON, NTNU, REGBES) that have been selected due to their expertise and the quality of their work. All these partners have experience working in EU projects and are fully compliant with the EU's ethical requirements.

Integration and testing will be done within the EU and will adhere to the EU's ethical requirements.

6 - Environment, health and safety

The environmental, health and safety aspects listed below are considered:

- Batteries utilised in the BlueBARGE concept, including Lithium-Ion and Vanadium Redox Flow (VRF) batteries, may inherently pose a hazard to humans or the environment. For this reason, the Consortium will proceed with risk assessments to identify such risks and mitigate such hazards. Furthermore, International and National regulations, as well as classification requirements on such batteries, including associated chemicals, will be considered and applied during all development and testing stages. The integration works will be performed by a certified shipyard following the highest safety standards.
- Partners working with metallic powders in Additive Manufacturing (AM) processes use Personal Protective Equipment like masks, gloves, glasses, boots and clothes during the handling of engineered materials to remove hazardous conditions.
- Composites processing involves the manipulation of thermoset resins, and, for this activity, adequate protective filtered masks and vapour extraction systems are used, according to the technical data sheets from providers.
- In laser processes, systems operate in a locked room interlocked with an initialization system subordinate to two voluntary operator actions, one inside the room and the second outside is used. The system is monitored from the outside to protect the operator from the risks of exposure to smoke, noise and radiation from the process.
- Partners will always consider applicable Material Safety Data Sheets (MSDS) or any other information about materials necessary to handling them without risks, safeguarding the health of the workers.
- Finally, the partners follow standards management systems (ISO, etc) for environment or safety and health issues, and standards on laser safety.

7 - Research integrity

The European Code of Conduct for Research Integrity, [5], mandates that beneficiaries adhere to the core principle of research integrity, which encompasses several key practices. These include ensuring the

reliability of research through sound design and methodology, maintaining honesty in all aspects of research execution and communication, and showing respect for all stakeholders and the environment. Additionally, researchers are held accountable for the entire research process, from conception to publication, and must engage in good research practices that promote openness and reproducibility. The overarching goal is to avoid any violations of research integrity, thereby fostering a trustworthy and ethical research environment.

All Partners of the BlueBARGE Consortium aim to uphold good research practices in general, with the project-specific approaches highlighted in the following contexts:

- **Safeguards**
BlueBARGE will follow a detailed safety assessment process, in accordance with the standards of the maritime industry, which will include the identification of hazards and a detailed risk analysis, followed by the identification of risk mitigation measures to feed them back into the design optimisation process, in a risk-based design approach. The assessment process will focus on the individual modules' safety (e.g., battery modules, electrical connections) and the safety of the integrated system. Safety events will consider technical failures (e.g., explosion-fire incidents) related to the power supply modules and integration and interfacing modules, but also accidents related to the surrounding maritime environment (e.g., collisions, groundings, contacts). Relevant methodologies will be considered for hazard identification and risk analysis, considering the International Maritime Organization's Formal Safety Assessment (FSA) and suggested methods, including Human Reliability Assessment (HRA) methods for addressing human factors. The BlueBARGE safety assessment process will also consider implementing a system's approach to deal with the novelty of the suggested solution and capture all possible safety aspects.
- **Data Practices and Management**
BlueBARGE's open access strategy promotes Open Science by ensuring research is accessible and respects the rights and privacy of researchers and third parties. The strategy includes transparent sharing of early findings within the consortium and broader initiatives like publishing in open access journals, adopting open peer review, and freely sharing data and results. The Data Management Plan, [3], aligns with EU standards, emphasizing FAIR data principles, detailing dataset characteristics, selecting appropriate repositories, allocating resources for data management, and establishing security protocols.
- **Collaborative Working**
BlueBARGE unites multidisciplinary partners from various countries to address the project's challenges, including shipbuilders (MMS), ship operators (DANAOS, CSM), ship designers (HYDRUS), batteries specialists (CORVUS, ENERNOX), system integrators (REGBES, ELKON), academic institutions (NTUA, AAU, NTNU), port operations (VPF), maritime safety specialists (ABS).
- **Publication, Dissemination, and Authorship**
Work Package 8 of the BlueBARGE project includes the elaboration, assessment and validation of exploitable BlueBARGE results, as well as overall engagement, outreach and commercialisation actions.

- Reviewing and Assessment
Quality of research and deliverables is ensured through structured peer-review processes. All deliverables are reviewed by two authorized internal reviewers, who are registered in the quality control table in the preliminary pages of each document.

8 – Conclusion

The BlueBARGE project is committed to the ethical principles of the EU, including the highest standards of research integrity, and applicable EU, international and national laws. This document has elaborated on the project's approach to ethical considerations relating to humans, personal data, non-EU countries, environment, health and safety, and research integrity.

9 - References

- [1] BlueBARGE Grant Agreement, Project 101138694, 2023-11-21
- [2] BlueBARGE Consortium Agreement, V1.0, 2023-12-22
- [3] BlueBARGE “D1.3 Data Management Plan”, V1.0, 2024-06-21
- [4] BlueBARGE “D8.4 IPR Management and Business Sustainability Model”, V1.0, 2024-06-27
- [5] ALLEA (2023) The European Code of Conduct for Research Integrity – Revised Edition 2023. Berlin. DOI 10.26356/ECOC