FLOATECH

D6.1. Data Management Plan

DATE OF 1st SUBMISSION - 21/06/2021
DOCUMENT UPDATED ON 30/06/2022
DOCUMENT UPDATED ON 31/12/2023

Inès MARTORELL, EURONOVIA
Alessandro Bianchini, UniFi

FLOATECH
THE FUTURE OF FLOATING WIND TURBINES

Document track details

Project acronym	FLOATECH
Project title	Optimization of floating wind turbines using innovative control techniques and fully coupled open-source engineering tool
Starting date	01.01.2021
Duration	36 months
Programme	H2020-EU.3.3.2. - Low-cost, low-carbon energy supply
Call identifier	H2020-LC-SC3-2020-RES-RIA
Grant Agreement No	101007142

Deliverable Information	
Deliverable number	D6.1
Work package number	WP6
Deliverable title	Data Management Plan
Lead beneficiaries	Euronovia, UniFi
Authors	Laura De Nale, Alessandro Bianchini
Due date	30/06/2021
First submission date	21/06/2021
Updated version at the end of the 1st reporting period	30/06/2022
Updated version at the end of the project (M36)	31/12/2023
Type of deliverable	ORDP
Dissemination level	Public

Version management

Document history and validation			
Version	Name	Date	Comment
V 0.1	Laura De Nale, Euronovia	28/04/2021	First draft
V 0.2	Alessandro Bianchini, UniFi	01/05/2021	Updated draft internally reviewed
V 0.3	Laura De Nale, Euronovia	09/06/2021	Updated draft after contribution from all WP leaders
V0.4	Members of the Executive Board	21/06/2021	Quality review
V 1.0	Laura De Nale, Euronovia	21/06/2021	Final version
V2.0	Laura De Nale, Euronovia / Alessandro Bianchini, UniFi	30/06/2022	Update of the document at the end of the first reporting period (M18), after contribution from all WP leaders
V3.0	Inès Martorell, Euronovia Alessandro Bianchini, UniFi	31/12/2023	Update of the document at the end of the project (M36), after contribution from all WP leaders

Background: about the FLOATECH project

The FLOATECH project is a Research and Innovation Action funded by the European Union's H2020 programme aiming to increase the technical maturity and the cost competitiveness of floating offshore wind (FOW) energy. This is particularly important because, due to the limitations of available installation sites onshore, offshore wind is becoming crucial to ensure the further growth of the wind energy sector.

The project is implemented by a European consortium of 5 public research institutions with relevant skills in the field of offshore floating wind energy and 3 industrial partners, two of which have been involved in the most recent developments of floating wind systems.

The approach of FLOATECH can be broken down into three actions:

- The development, implementation and validation of a user-friendly and efficient design engineering tool (named QBlade-Ocean) performing simulations of floating offshore wind turbines with an unseen combination of aerodynamic and hydrodynamic fidelity. The advanced modelling theories will lead to a reduction of the uncertainties in the design process and an increase of turbine efficiency.

- The development of two innovative control techniques (i.e. Active Wave-based feed-forward Control and the Active Wake Mixing) for Floating Wind Turbines and floaters, combining wave prediction and anticipation of induced platform motions. This is expected to improve the performance of each machine and to minimise wake effects in floating wind farms, leading to a net increase in the annual energy production of the farm.

- The economic analysis of these concepts to demonstrate qualitatively and quantitatively the impact of the developed technologies on the Levelized Cost of Energy (LCOE) of FOW technology.

In addition to the technological and economic impacts, the project is expected to have several impacts at societal, environmental and political levels, such as: public acceptance, due to low noise and visibility issues of FOWT; very low impact on biodiversity and wildlife habitat because no piles are needed be to installed into the seabed; the use of less material and space thanks to an environmentally friendly design; the promotion of the installation of FOW in transitional water depths (30-50 meters), as the costs for FOW at those locations will become more competitive compared to the fixed bottom foundations.

Table of contents

List of acronyms and abbreviations

Acronym / Abbreviation	Meaning / Full text
FOW	Floating Offshore Wind
FOWT	Floating Offshore Wind Turbine
LCOE	Levelized Cost of Energy
WP	Work Package
DMP	Data Management Plan
IPR	Intellectual Property Rights
DOI	Digital Object Identifier
OA	Open Access

EXECUTIVE SUMMARY

This deliverable is the third and final version of the Data Management Plan (DMP) of the FLOATECH project, submitted in month 36.

The aim of the document is to provide an update of the DMP submitted in M18, including an updated list of data that were collected, generated, or processed within the framework of the project. At this scope, the following information is included in this DMP:

- Descriptions of the datasets that were collected, processed, and/or generated,

- Methodologies and standards adopted for the data management,

- Level of accessibility/confidentiality of the data,

- Methods used to curate and preserve the data during and after the end of the project,

- Methods used to enable third parties to access, mine, exploit, reproduce and disseminate the research data.

This DMP has been drafted following the guidelines on FAIR data management in Horizon 2020[1]. It also complies with the requirements of the article 29 of the Grant Agreement, specifically, in terms of obligation to disseminate results (art. 29.1 of GA), open access to scientific publications (art. 29.2 of GA) and open access to research data (art. 29.3 of GA). It also respects the IPR protection framework applicable to the project, potential conflicts of commercialisation and dissemination of own results, as defined in the section 8 of the project Consortium Agreement signed by the beneficiaries.

---

[1] h2020-hi-oa-data-mgt_en.pdf (europa.eu)

1. DATA SUMMARY

1.1. PURPOSE OF DATA COLLECTION / GENERATION

FLOATECH collected and produced several datasets during the lifetime of the project. The nature of the data was both quantitative and qualitative and was analysed from a range of perspectives for project development and scientific purposes. As participants in the Open Research Data Pilot, the FLOATECH partners carefully studied the possibility and pertinence of making data findable, accessible, interoperable, and reusable (FAIR) to the maximum extent possible without jeopardising the project objectives and property rights of the Partners producing the data.

The completion of the work plans associated with the 5 technical Work-Packages (WPs) of FLOATECH generated new and original scientific and technical data. Some of these data were created by a group of participants as a result of collaborative work, while others were created by one specific partner in individual work. Data was also collected in scientific publications or patents and served as reference cases, results, or knowledge for new research developments.

The data collection, selection, classification, and preservation were critical actions, which were maintained and carefully monitored all along the execution of the project. They enabled the exchange of relevant technical information among the beneficiaries and therefore increased the efficiency of the collaborative research work for the achievement of the objectives of the project. The preservation of the data after the completion of the project will permit to continue some research by providing useful and re-usable information to the partners engaged in the long-term development of similar technologies. Technical specifications of instruments, components, or processes, lessons learned from observations, and experimental operation will serve for conceptual improvements and future testing procedures without repeating the same work.

Partners shared project public results with communities of professors, students, researchers, engineers, managers, and policymakers and they will continue to do so even after the end of the project. This will contribute to increasing the impact of the project in the short, mid, and long-term.

1.2. CATEGORIES, TYPES, FORMATS AND SIZES OF DATA GENERATED OR COLLECTED

All the data generated or collected during the FLOATECH project lifetime are made available as electronic files (numerical files).

In general, the data is classified into 3 categories, each of them contains sub-categories of datasets.

- Text-based data
    - Publication, article
    - Report, scientific survey
    - Experimental result (structured text)

- o   Numerical simulation result (structured text)

- o   Datasheet

- o   Technical specification of instrument/process

- Software data

  - o   Script

  - o   Executable code

  - o   Source code

- Archives (compressed datasets)

Despite the different characteristics of the data generated and collected, data was either directly generated during the test or obtained by means of test data processing and analysis. So, the types and formats of data generated/collected in FLOATECH were those typical of experimental data delivered by instruments or data acquisition systems usually implemented in any experimental facility.

More information on the types, format and size of data are available in Annex 1.

1.3.   ORIGIN OF THE DATA AND RE-USE OF EXISTING DATA

Due to the scarcity of experimental data on floating wind turbines (due to the cost and complexity of experiments on these machines), already existing datasets were used, particularly those generated within Task 30 of the International Energy Agency (IEA) on Offshore Code Comparison Collaboration (OC4, OC5, OC6). These datasets are worldwide recognised as the reference sources for simulation codes' validation in floating wind. This contributed to the soundness of the verification and validation processes of the new software QBlade-Ocean. To have full access to these experimental datasets, two of the Consortium Members (i.e., TUB, leader of WP1, and UNIFI, leader of WP2) joined the IEA Wind Task 30.

Additionally, a literature review was carried out as part of WP5 to gather information about LCOE models for offshore floating wind turbines developed in previous works. First, publicly available results of previous EU-funded projects addressing the same subject were examined to capitalise on the EU funding efforts. More specifically, publicly available results of the recent projects LIFE50+ and COREWIND were studied in depth. In addition, results of the 'IEA Task 26 - The Cost of Wind Energy' were used since these provided datasets about costs of offshore wind farms commissioned in recent years in several countries. These data were likely to be useful as a reference in case of uncertainty about any specific wind farm costs.

Finally, a PhD thesis on the LCOE of floating wind turbines, developed in the recent past in collaboration with Seapower, was also used as a starting reference for WP5 activities. In addition to these data, an important and vast set of experimental and numerical data was generated within FLOATECH. More specifically:

- **WP1** revolved around the development and numerical validation of higher-order aerodynamic and hydrodynamic models within QBlade-Ocean along with the public dissemination of the code. To

simulate specific turbines, the user required input files that specified the turbine definition within QBlade-Ocean, including aerodynamic, structural, hydrodynamic, and controller parameters. These were provided with the release of QBlade for a range of standard turbine geometries investigated in the OC4/5/6 campaigns to allow a simple simulation setup for all users and to provide template parameters for turbine design and analysis.

- **WP2** delivered the majority of numerical simulation results on different test cases (both in terms of study cases and metocean conditions), including the detailed comparison of QBlade-Ocean with the open-access code OpenFAST and the commercial one DeepLines®, to evaluate not only the correct implementation of the code but also the uncertainty reduction gained in comparison to other pieces of software.

- **WP3** produced a feed-forward wave-based controller, as well as a full set of validation data from experimental campaigns undertaken in ECN hydrodynamic facility and on its Software in the Loop test bench. A set of wave field data retrieved at the SEM-REV test site from the floating wind turbine Floatgen was also delivered through this WP3.

- **WP4** delivered both numerical as well as experimental data for different research cases. This included comparisons between different wake mixing controllers as well as platform design. Simulations were done in QBlade as well as SOWFA for comparison. The developed controller code was also shared.

- **WP5** built LCOE models for floating wind turbines, implementing the control techniques that were developed during the project. Specific information about costs of wind turbines developed during the project was gathered with the support of the industrial partners directly involved in the work package and the partners involved in WP3 and WP4.

1.3.1. Access right to existing data

The FLOATECH project partners agreed on the access rights to existing data within the consortium, ruled by the terms of section 9 of the Consortium Agreement.

(9.3- Access rights for implementation) "Access rights to results […] needed for the performance of the own work of a Party under the Project shall be granted on a royalty-free basis […]."

(9.4- Access rights for exploitation) "Access rights to results if needed for exploitation of a Party's own results shall be granted on fair and reasonable conditions. Access rights to results for internal research activities shall be granted on a royalty-free basis".

Specific terms were agreed for the access to software (section 9.8.3 of the CA)

"Access rights to software that is results shall comprise access to the object code; and, where normal use of such an object code requires an application programming interface (hereafter API), access to the object code and such an API; and, if a Party can show that the execution of its tasks under the Project or the exploitation of its own results is technically or legally impossible without access to the source code, access to the source code to the extent necessary."

1.4. DATA UTILITY

Data generated or collected in the FLOATECH project has been and will be used by:

- The FLOATECH Consortium;

- European Commission services, European Agencies, EU and national policy makers;

- Research institutions, universities, institutes, training centers across the Europe and worldwide;

- Floating offshore wind and renewable energies related industries;

- Other floating offshore wind related EU projects;

- Private and public investment sector.

Open research data from FLOATECH will be useful to other researchers to underpin scientific publications by referring to the FLOATECH results or by incorporating the FLOATECH results in comparative analysis with their own project results. Moreover, FLOATECH data will be useful in the FLOATFARM project as it relies namely on the exploitation of the FLOATECH outcomes.

2. FAIR DATA

2.1. MAKING DATA ACCESSIBLE, INCLUDING PROVISIONS FOR METADATA

The consortium agreed to deposit the data and publications generated by the project in the Zenodo repository, where a project community has been created: https://zenodo.org/communities/floatech/. In addition to this official project repository, partners generating the data stored it in a repository located at their institution.

The Zenodo repository complies with the principles of FAIR data, offering several useful features to make data findable:

- (meta)data are assigned a globally unique and persistent identifier: DOI is issued to every published record on Zenodo. If a Digital Object Identifier (DOI) has been already assigned, this will be kept to unambiguously cite the data.

- Data are described with rich metadata: Zenodo's metadata is compliant with DataCite's Metadata Schema minimum and recommended terms, with a few additional enrichments.

- Version numbers are automatically provided by Zenodo for each new upload of the same entry.

- Keywords will be provided for each dataset to optimize the possibility of data re-use and facilitate the discoverability of the data in the Zenodo repository.

- (meta)data are registered or indexed in a searchable resource: metadata of each record is indexed and searchable directly in Zenodo's search engine immediately after publishing.

2.2.   MAKING DATA OPENLY ACCESSIBLE

According to article 29.3 of the Grant agreement, FLOATECH partners must:

a) deposit in a research data repository and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate — free of charge for any user — the following:

   (i) the data, including associated metadata, needed to validate the results presented in scientific publications, as soon as possible.

   (ii) other data, including associated metadata, as specified and within the deadlines laid down in the 'data management plan'.

b) provide information — via the repository — about tools and instruments at the disposal of the beneficiaries and necessary for validating the results (and — where possible — provide the tools and instruments themselves).

According to the article 26 of the GA, the partners who have generated the research outputs are the owners of the generated data and have right to disseminate their results as long as there is no legitimate purpose or need to protect them.

Whenever feasible, open-access (OA) scientific publications were chosen to disseminate public data, and whenever possible, the data/metadata required to validate the published results were linked to the publication. The access policy implemented for publications gave priority to the Green model with the requirement to fix the embargo to 6 months after the first date of publication, as required by the EC. However, when not applicable, the publication policy of the consortium was to pay the fees to make the scientific publications immediately available in open access for free. The costs related to paying this "Gold" open access were integrated into the budget of the project.

It is important to note that, according to Article 29.3 of the GA, the consortium did not have to ensure open access to all research data: exceptions are allowed according to the relevant policy of Horizon 2020. This referred, for example, to the obligation to protect results if providing open access would jeopardise the achievement of the main objective of the H2020 project from which the research data derived, confidentiality and security obligations, and other legitimate constraints.

In this case, the non-public data could still be uploaded on Zenodo under a "closed", "restricted" or "embargoed" access:

• Sharing files under restricted access is possible with the consent of the depositor or author of the data.

• The files under the closed access are protected against any unauthorised access at all levels.

• For the files under embargo status, the end data of the embargo was provided. The access to the embargoed data will be automatically opened after the end of the embargo period.

After the end of the project, uploaded data will be preserved in the repository regardless the access mode. The responsible partner(s) reserve the possibility to make the "closed" and "restricted" data openly accessible after the end of the project on the consent of the relevant partners if their confidentiality considerations change.

Confidential data was protected by means of patents and commercially used by the partners owning the IPR, or via agreements signed by the IPR owners with third parties.

The list of the datasets identified by the project consortium is available in Annex 1. For each dataset, information about accessibility is provided: all datasets planned to be used or generated by the project are expected to be made available in open access, except for three datasets: one dataset produced under WP2 with restricted access, one dataset produced under WP5 with restricted access and one dataset produced under WP3 that will be made available after embargo (see Annex 1 for more details).

2.3. MAKING DATA INTEROPERABLE

Data interoperability referred to the possibility for data exchange and re-use between researchers, institutions, organisations, countries, etc. To make the research outputs and underlying data generated within the FLOATECH project interoperable, the consortium used data in standard formats and prioritised the available (open) software, whenever possible. The consortium also respected the common standards officially applied to the various formats used for the data.

Additionally, the Zenodo repository was organised and managed to make data interoperable to the maximum extent, in agreement with the FAIR data rules and recommendations.
Since most, if not all, of the data/metadata that was collected/generated in FLOATECH was delivered or calculated on the basis of data recorded by data acquisition systems, the data/metadata format was those provided by commercial instruments commonly used in R&D centers. In some cases, data/data sets probably required some additional information about the boundary conditions of the experiments and any other complementary information that may be required for an efficient use of the data/data sets by users who were not directly involved in their generation.

Input files and settings used both for QBlade-Ocean and OpenFAST were publicly released so that any researcher in the world could double-check them, thanks to the open nature of both codes. To facilitate this, particular attention was paid to correctly relating the information with both standard vocabularies (to allow interdisciplinary interoperability) and to vocabularies specific to the two codes, to make them ready to use.

2.4. INCREASE DATA RE-USE (THROUGH CLARIFYING LICENSES)

Most of the data produced by the project was shared and made accessible for verification and re-use, according to the provisions foreseen in the CA, while distribution of specific data remained limited until the relevant new know-how acquired in the project was protected to avoid endangering the interests of the industrial partners and jeopardising the protection of the project's results.

All the openly accessible data and corresponding metadata are available for re-use, including after the end of the project, to avoid possible conflicts or duplication/overlapping of activities with other projects.

Moreover, the FLOATECH research data uploaded on Zenodo, excepting the data uploaded under closed, embargoed, or restricted access, was in open access under the Creative Common Licenses: Attribution, ShareAlike, Non-Commercial, and No Derivatives. For the FLOATECH data, only the first three license types were planned to be applied.

Chosen Licenses	Icon	Meaning	Abbreviation
		Attribution: Permits all uses of the original work, as long as it is attributed to the original author.	BY
		Non-commercial: License does not permit any commercial use of the original work.	NC
		Share Alike: Any derivative work should use the same license as the original work.	SA

The quality of the data collected/generated in FLOATECH was assured by the fact that they were either directly provided by measurement equipment with guaranteed accuracy (subject to periodic calibration) or the result of processing primary data delivered by calibrated sensors.

3. ALLOCATION OF RESOURCES

As mentioned above, the research data collected, generated, and/or processed by the project were uploaded and preserved during and after the end of the project in the Zenodo repository. The repository allowed uploading data free of charge, with the size limited to up to 50 GB per record. The data will be stored indefinitely (minimum 5 years). Currently, there are no costs for preserving data in this repository, and thus, no costs were foreseen for these matters by the project.

Moreover, each partner devoted its own human resources to respect the prescriptions set out by the deliverable D6.1 "Data Management Plan." Each Work Package Leader was responsible for the supervision of the management of the data within the FLOATECH project, including data verification before uploading. The Zenodo community of the project was created by Euronovia, who made sure WP leaders knew how to upload the datasets used or generated within their Work Package on Zenodo.

The costs of data storage and of the personnel assigned to the data management have been foreseen in the initial project budget estimation by some of the partners.

4. DATA SECURITY

The public repository Zenodo has been selected as a long-term secure storage of the FLOATECH project research outputs given its features fulfilling technical and legal data security requirements and long-term preservation. Please consult the terms at http://about.zenodo.org/infrastructure/. Several changes occurred in October 2023 on Zenodo's repository features. Please see the changes that occurred on the existing repository's features at https://help.zenodo.org/docs/about/whats-changed/ and the new features launched in October 2023 at https://help.zenodo.org/docs/about/whats-new/.

Also, as required by the article 18 of the GA, all the records and data will be preserved internally by the consortium during five years after the project.

In particular, the project data was also stored internally on TubCloud, that is a repository managed by the project coordinator, Technische Universität Berlin (TUB) to safely manage, store, and share the data and documents related to the project.

Meanwhile, most of the consortium partners have their own provisions in place for data security within organisations.

The openly accessible, restricted and closed data shared through the repository will be preserved after the end of the project.

5. ETHICAL ASPECTS

The FLOATECH project partners were to comply with article 34 concerning ethics and research integrity principles in the GA.

- Ethical principles (including the highest standards of research integrity)
- Applicable international, EU, and national law

In the FLOATECH project, no ethical or legal issues that can have an impact on data sharing have been identified throughout the duration of the project.

Concerning personal data, if any dataset that was collected and/or generated in the FLOATECH project dealt with data privacy issues, the responsible partner ensured to be compliant with the EU General Data Protection Regulation (GDPR). Moreover, personal data was collected for the purposes of webinars and the final infoday. This personal was used to manage invitations, registrations, and the logistical organisation of the events. The data collected will not used for purposes that have not been foreseen in advance and the registration list will be deleted in accordance with GDPR requirements.

6. OTHER ISSUES

Consortium partners have reported no obligation to comply with additional specific national, funder, sectorial, departmental, or institutional data management policies.

ANNEX 1 - PROJECT DATA AND RELATED MANAGEMENT PLAN

This Annex provides the list of datasets collected and generated by the partners of FLOATECH during the duration of the project, grouped by Work Package.

In order to collect this information, the template below was prepared by Euronovia at the start of the project, following the Guidelines on FAIR Data Management in Horizon 2020[2] and it was sent to each work package leader who filled it in with the help of the other partners involved.

Dataset information template

Work Package	Which WP is this dataset related to?
Dataset Name	The name of the dataset should be easy to search and find
Dataset description	- Please, write a brief description of the dataset that will be generated/ collected and the methodology that will be applied to generate the data - What is the purpose of the data collection/generation and its relation to the objectives of the project? - If the data is collected, please explain its origin
Type of data	Dataset, software, tool, etc.
Data format	XLSX ☐ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☐ Click or tap here to enter text.
Volume	Expected Size: Click or tap here to enter text. GB☐ MB☐ Number of files: Click or tap here to enter text.
Authors	Who are the persons responsible for the dataset generation/collection?
IPR Owner	Which project participant(s) own the intellectual property right?
Accessibility	Open Access ☐ Embargoed access ☐ Restricted access ☐ Closed access ☐ - Specify what methods or tools are needed to access the data - IMPORTANT: If it is not in open access, please explain why
Re-usability	- Specify how the data will be licenced to permit the widest reuse possible (Standard for Open Access in Zenodo: CC Attribution 4.0 International) - Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed - Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? - If the re-use of some data is restricted, explain why
Data security	Where the data will be stored, in addition to Zenodo? For how long?
Other	Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)

---

[2] h2020-hi-oa-data-mgt_en.pdf (europa.eu)

According to the answers received, 15 datasets have been identified by the FLOATECH partners, available below.

Datasets used or generated within FLOATECH

Work Package	WP2
Dataset Name	Aero-hydro-elastic model definition - DTU 10MW RWT Hexafloat
DOI	https://doi.org/10.5281/zenodo.6397314
Dataset description	QBlade definition of the DTU 10MW RWT mounted on the Hexafloat floater Model definition was validated against the model used by SAIPEM in their aero-servo-hydro-elastic definition in the DeepLines Wind software.
Type of data	Turbine definition file containing information about the geometric and aerodynamic turbine properties (*.trb) Polar data describing the aerodynamic properties on the respective blade stations (*.afl and *.plr) Structural definitions of blade, tower, RNA and floater (*.str)
Data format	XLSX ☐ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☒ *.trb/*.afl/*.plr/*.str
Volume	Size: Order GB ☐ MB ☒ Number of files: 30
Authors	TUB
IPR Owner	TUB, SAIPEM
Accessibility	Open Access ☐ Embargoed access ☐ Restricted access ☒ Closed access ☐
Re-usability	Restricted Access in Zenodo: any user may request access to the dataset. Due to IP concerns from SAIPEM, the dataset will only be made available for research focused requests.
Data security	In addition to Zenodo, the data will be stored in the TUB cloud for the duration of the project.

Work Package	WP2
Dataset Name	Aero-hydro-elastic model definition - SOFTWIND 10 MW FOWT
DOI	https://doi.org/10.5281/zenodo.6397359
Dataset description	QBlade definition of the DTU 10MW RWT mounted on the SOFTWIND floater Model definition was validated against an OpenFAST model developed at UniFi, a DeepLines Wind model developed at SAIPEM and experimental data carried out in the wave basin from ECN.
Type of data	Turbine definition file containing information about the geometric and aerodynamic turbine properties (*.trb) Polar data describing the aerodynamic properties on the respective blade stations (*.afl and *.plr) Structural definitions of blade, tower, RNA and floater (*.str)
Data format	XLSX ☐ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☒ *.trb/*.afl/*.plr/*.str
Volume	Size: Order GB ☐ MB ☒ Number of files: 32
Authors	TUB

IPR Owner	TUB
Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐
Re-usability	Open Access in Zenodo: CC Attribution 4.0 International
Data security	In addition to Zenodo, the data will be stored in the TUB cloud for the duration of the project.

Work Package	WP2
Dataset Name	Aero-hydro-elastic model definition - OC5 5MW MSWT
DOI	https://doi.org/10.5281/zenodo.6397353
Dataset description	QBlade definition of the MARIN Stock Wind Turbine (MSWT) mounted on the OC5 floating wind turbine structure Model definition was validated against an OpenFAST model developed at UniFi and experimental results carried out by a consortium lead by UMaine in the MARIN offshore basin.
Type of data	Turbine definition file containing information about the geometric and aerodynamic turbine properties (*.trb) Polar data describing the aerodynamic properties on the respective blade stations (*.afl and *.plr) Structural definitions of blade, tower, RNA and floater (*.str)
Data format	XLSX ☐ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☒ *.trb/*.afl/*.plr/*.str
Volume	Size: Order GB ☐ MB ☒ Number of files: 17
Authors	TUB
IPR Owner	TUB
Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐
Re-usability	Open Access in Zenodo: CC Attribution 4.0 International
Data security	In addition to Zenodo data will be stored in the TUB cloud for the duration of the project.

Work Package	WP1
Dataset Name	QBlade Ocean Software and Reference Models
Dataset description	- Files necessary for the installation & execution of QBlade Ocean - Validation Models - User manual and technical reports
Type of data	- Execution as necessary on multiple platforms - Supplementary libraries for execution - Source code for self compilation - Documentation files
Data format	XLSX ☐ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☒ (Numerous)
Volume	Expected Size: Order(GB) GB☐ MB☒

	Number of files: >10^2
Authors	TU Berlin (QBlade Development Team)
IPR Owner	TU Berlin, ECN, TUDelft
Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐ - Compilation-specific libraries are required - Qt Library necessary for compilation (Qt Creator- Freeware)
Re-usability	- Software and code shall be distributed as per the Academic Public License (APL) - Data will be made available upon completion of WP1. Preliminary results and trial releases shall occur previously to final date of WP1. - Data and software will be fully accessible to public users
Data security	Static (in house) version stored on TUB Cloud repository QBlade CE version and source code publicly accessible through qblade.org webpage

Work Package	WP2
Dataset Name	FLOATECH verification met-ocean data
Dataset description	- Met-ocean conditions used in verification - The purpose of the data is to make the validation fully reproducible by others
Type of data	Dataset
Data format	XLSX ☒ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☐ Click or tap here to enter text.
Volume	Expected Size: unkown GB☒ MB☐ Number of files: 100+
Authors	To be defined
IPR Owner	Open access data
Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐
Re-usability	Open Access in Zenodo: CC Attribution 4.0 International
Data security	In addition to Zenodo data will be stored in the TUB cloud for the duration of the project.

Work Package	WP2
Dataset Name	FLOATECH validation results
Dataset description	- Selection of results from numerical models (open -source and commercial). For experimental datasets full timeseries can be provided. For code-to-code comparisons in stochastic conditions only aggregated results: PSDs, data statistics (max, min, mean, std) - The purpose of the data is to make the validation fully reproducible by others
Type of data	Dataset
Data format	XLSX ☐ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☒ Click or tap here to enter text.
Volume	Expected Size: unkown GB☒ MB☐ Number of files: unknown
Authors	UniFi, TUB, ECN, Seapower, SAIPEM

IPR Owner	UniFi, TUB, ECN, Seapower, SAIPEM
Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐
Re-usability	Zenodo: CC Attribution 4.0 International
Data security	In addition to Zenodo data will be stored in the TUB cloud for the duration of the project.
Other	Google drive academic storage service

Work Package	WP3
Dataset Name	Wave tank tests of Feedforward wave-based control with SIL approach
Dataset description	- Experimental setup description - Loads cases description - Hydrodynamic data: motions, velocities, accelerations, forces and free surface elevation time series - Aerodynamic data: turbulent wind maps and wind velocity, turbine rpm and loads time series - Videos of selected runs
Type of data	Dataset
Data format	XLSX ☒ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☒ MAT file
Volume	Expected Size: 100 GB☒ MB☐ Number of files: 500
Authors	Félicien Bonnefoy & Vincent Leroy
IPR Owner	Ecole Centrale de Nantes
Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐
Re-usability	- Open Access in Zenodo: CC Attribution 4.0 International - Data will be available to third parties three months after the end of the project - Data will be available for reuse at the end of the project
Data security	Data will be stored on ECN internal server.

Work Package	WP3
Dataset Name	Feedforward wave-based controller
Dataset description	Control system developed during the PhD
Type of data	Matlab code
Data format	XLSX ☐ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☒ .m
Volume	Expected Size: 10 GB☐ MB☒ Number of files: Very difficult to estimate now
Authors	Jan-Willem van Wingerden & Amr Hegazy
IPR Owner	TU Delft

Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐ Matlab code will be required in conjunction with an appropriate simulation package to run the closed loop control.
Re-usability	All algorithms will be made available for reuse by publishing on our Github
Data security	Besides Zenodo the software will also be stored on the 4.TU server as part of the requirement of the TU Delft PhD program

Work Package	WP3
Dataset Name	In situ wave data from X-band radar measurement

Dataset description	- Experimental setup description
	- Hydrodynamic data:
	  - Sea surface evolution in time from X-band radar measurement,
	  - Determinisitic measurements from in situ wave buoy,
	  - Velocity profile in the water column

Type of data	Dataset
Data format	XLSX ☐ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☒ binary files (e.g. MAT files, Netcdf files)
Volume	Expected Size: Upper limit: 100 GB☒ MB☐ Number of files: Upper limit: 500
Authors	Yves Perignon, Peter Naaijen
IPR Owner	Ecole Centrale de Nantes, Next Ocean
Accessibility	Open Access ☐ Embargoed access ☒ Restricted access ☐ Closed access ☐
Re-usability	- Embargoed Access in Zenodo - Data will be available to third parties up to two years after the end of the project: this period is aimed at ensuring that the research is adequately published before opening the dataset. - Data will be available for reuse two years after the end of the project
Data security	Complementary storage of the dataset will be performed on SEANOE, with warranty of lifelong storage
Other	SEANOE (SEA scieNtific Open data Edition) is a publisher of scientific data in the field of marine sciences. This is the repository of choice for our Research Insfrastructure.

Work Package	WP4
Dataset Name	High-Fidelity Simulation Results
Dataset description	These datasets contain the simulation results from either SOWFA or Qblade. The data will contain information (velocity, pressure etc.) off the wake behind

	the turbine as well as turbine data. Its primary purpose is to evaluate wake mixing strategies.
Type of data	Data is primarily given in txt files and processed using Matlab code
Data format	XLSX ☐ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☒ .txt and .mat
Volume	Expected Size: 100 GB☒ MB☐ Number of files: Very difficult to estimate now
Authors	Jan-Willem van Wingerden & Daniel van den Berg
IPR Owner	TU Delft
Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐ Matlab code will be required (and provided) to process the data.
Re-usability	All data sets will be open access (CC 4.0) available after publication of the paper/document in which the data is used. Each data set will get its own DOI to make them citable and persistently available.
Data security	Besides Zenodo the data will also be stored on the 4.TU server as part of the requirement of the TU Delft PhD program

Work Package	WP4
Dataset Name	Wind Tunnel Experiments
Dataset description	Similar to the simulation results this dataset will contain all information used in any publication showing wind tunnel results.
Type of data	Data is primarily given in txt files and processed using Matlab code
Data format	XLSX ☐ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☒ .txt
Volume	Expected Size: 100 GB☒ MB☐ Number of files: Very difficult to estimate now
Authors	Jan-Willem van Wingerden & Daniel van den Berg
IPR Owner	TU Delft
Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐ Matlab code will be required (and provided) to process the data.
Re-usability	All data sets will be open access (CC 4.0) available after publication of the paper/document in which the data is used. Each data set will get its own DOI to make them citable and persistently available.
Data security	Besides Zenodo the data will also be stored on the 4.TU server as part of the requirement of the TU Delft PhD program

Work Package	WP4
Dataset Name	Control, estimation and optimization software

Dataset description	Software developed during the PhD
Type of data	Matlab code
Data format	XLSX ☐ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☒ .m
Volume	Expected Size: 10 GB☐ MB☒ Number of files: Very difficult to estimate now
Authors	Jan-Willem van Wingerden & Daniel van den Berg
IPR Owner	TU Delft
Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐ Matlab code will be required in conjunction with an appropriate simulation package to run the closed loop control.
Re-usability	All algorithms will be made available for reuse by publishing on our Github
Data security	Besides Zenodo the software will also be stored on the 4.TU server as part of the requirement of the TU Delft PhD program

Work Package	WP5
Dataset Name	LCOE of floating wind turbines - Reference works
Dataset description	- DATA COLLECTED - ORIGIN: Deliverable D6.1 of the COREWIND project (project website) Deliverables D2.2, D2.8, D2.9 of the LIFE50+ project (project website); Report "IEA Wind Task 26 – Offshore Wind Farm Baseline Documentation"; (project website, www.nrel.gov/docs/fy16osti/66262.pdf) Report "IEA Wind TCP Task 26 - Offshore Wind Energy International Comparative Analysis"; (NREL website, https://www.nrel.gov/docs/fy19osti/71558.pdf) PhD Thesis "Life cycle economic assessment of floating offshore wind farms", developed by Maienza, C. in collaboration with Seapower. - PURPOSE: These works, providing LCOE models and costs for floating offshore wind turbines, will be used in the WP5 as reference and starting point for the activities.
Type of data	Report
Data format	XLSX ☐ DOC ☒ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☐ Click or tap here to enter text.
Volume	Expected Size: 60 GB☐ MB☒ Number of files: 7
Authors	//
IPR Owner	//
Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐

Re-usability	Open access data
Data security	In addition to Zenodo data will be stored in the TUB cloud for the duration of the project.
Other	Google drive Seapower storage

Work Package	WP5
Dataset Name	FLOATECH - LCOE Estimation Tool
Dataset description	- DATA GENERATED - DESCRIPTION: Tool for LCOE evaluation of floating wind turbines implementing control techniques developed in the project. More details are provided in the open access deliverables. - PURPOSE: To provide a parameterised tool capable of evaluating LCOE of floating wind turbines characterised by different sizes, components and power control strategies.
Type of data	Spreadsheet tool
Data format	XLSX ☒ DOC ☐ PDF ☐ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐ Other ☐
Volume	Expected Size: 1 GB☐ MB☒ Number of files: 1
Authors	TUB, UNIFI, Seapower, SAIPEM, IDEOL
IPR Owner	TUB, UNIFI, Seapower, SAIPEM, IDEOL
Accessibility	Open Access ☐ Embargoed access ☐ Restricted access ☒ Closed access ☐
Re-usability	Restricted Access in Zenodo: the developed tool has been intended primarily for research purposes and access will be granted to interested researchers on request, in addition to the consortium members.
Data security	In addition to Zenodo data will be stored in the TUB cloud for the duration of the project.
Other	Seapower data storage

Work Package	WP5
Dataset Name	FLOATECH – LCOE and market value evaluation
Dataset description	- DATA GENERATED - DESCRIPTION: Reports on LCOE evaluation of the floating wind turbines considered during the project, describing the assumptions made for each parameter and the methodology applied. The reports, uploaded on Zenodo, represent the deliverables of Work Package 5. - PURPOSE: To provide LCOE results and a detailed description of the methodology applied to evaluate LCOE in order to make the methodology fully reproducible.
Type of data	Report
Data format	XLSX ☐ DOC ☐ PDF ☒ PPT ☐ JPEG ☐ OPJ ☐ TIFF ☐

	Other ☐ Click or tap here to enter text.
Volume	Expected Size: 2 GB☐ MB☒ Number of files: 3
Authors	Domenico P. Coiro (Seapower), Giancarlo Troise (Seapower), Guido Lazzerini (Seapower), Adolfo Grieco (Seapower), Francesco Papi (UNIFI), Alessandro Bianchini (UNIFI), Robert Beherens De Luna (TUB), Magali Mouriès (IDEOL)
IPR Owner	TUB, UNIFI, Seapower, SAIPEM, IDEOL
Accessibility	Open Access ☒ Embargoed access ☐ Restricted access ☐ Closed access ☐
Re-usability	Open Access in Zenodo: CC Attribution 4.0 International
Data security	In addition to Zenodo data will be stored in the TUB cloud for the duration of the project.
Other	Seapower data storage