

1 Deliverable 7.1 Review of FOWT guidelines and design practice

The report presents and compares the existing guidelines and standards addressing the design of floating offshore wind turbines (FOWT) published by classification societies, including DNV GL, ABS, and Class NK, as well as the upcoming technical specification IEC 61400-3-2. Furthermore, publically available design practices and publications related to the FOWT design process are reviewed and documented to lay the groundwork for the design practice development and to avoid any duplication of work already done

The four designers involved in LIFES50+ have agreed to use the DNV-OS-J103, Design of Floating Wind Turbine Structures, as main reference standard for the design of their concepts.

This report includes a brief description of the requirements included in DNV-OS-J103 and a comparison with some of the other standards available in the market:

- IEC 61400-3-2, Design requirements for floating offshore wind turbines (draft technical specification (DTS); standard to be published);
- GL Guideline IV-2, Guideline for the Certification of Offshore Wind Turbines, edition 2012;
- ABS Guideline #195, Guide for Building and Classing Floating Offshore Wind Turbine Installations, January 2013;
- Class NK, Guidelines for Offshore Floating Wind Turbine Structures, July 2012.

The guidelines are compared by topic. The focus of this comparison is on technical requirements, not on certification services. Table 1 gives a brief overview about the technical aspects of the reviewed standards and guidelines.

Table 1: Content overview of the reviewed guidelines and standards

Topic	DNV-OS-J103	IEC 61400-3-2	GL 2012	ABS #195	Class NK
Safety Philosophy and design principles	Yes	No	Yes	Yes	Yes
Site conditions, loads and response	Yes	Yes	Yes	Yes	IEC 61400-1, IEC 61400-3
Structural design	Yes	Yes	Yes	Yes	Yes
Materials and corrosion protection	Yes	ISO 19904-1, ISO 20340	Yes	“Industry standards”	Yes
Floating stability	Yes	Yes	Yes	Yes	Yes
Station-keeping	Yes	Yes	GL Rules of Offshore Technology, GL Rules for Material and Welding	API RP 2T, API RP 2SK	API RP 2SK
Design of anchor foundations	Yes	No	GL Rules of Offshore Technology, GL Rules for Material and Welding	API RP 2T, API RP 2SK	No
Mechanical system	Yes	Yes	Yes	Yes	Rules for the Survey and Construction of Steel Ships: Part D and Part H
Cable design	Yes	No	Yes	No	No
Control system	Yes	Yes	Yes	No	No
Transport and installation	Yes	Yes	Yes	No	Yes
In-service inspection, maintenance and monitoring	Yes	Yes	Yes	No	Yes
Guidance for coupled analysis	Yes	No	No	Yes	No

