



Certification Scheme for Marine Renewable Energy Technologies

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**Guidance Note
NI 631 DT R00 E**

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MARINE & OFFSHORE DIVISION

GENERAL CONDITIONS

ARTICLE 1

1.1. - BUREAU VERITAS is a Society the purpose of whose Marine & Offshore Division (the "Society") is the classification ("Classification") of any ship or vessel or offshore unit or structure of any type or part of it or system therein collectively hereinafter referred to as a "Unit" whether linked to shore, river bed or sea bed or not, whether operated or located at sea or in inland waters or partly on land, including submarines, hovercrafts, drilling rigs, offshore installations of any type and of any purpose, their related and ancillary equipment, subsea or not, such as well head and pipelines, mooring legs and mooring points or otherwise as decided by the Society.

The Society:

- "prepares and publishes Rules for classification, Guidance Notes and other documents ("Rules");
- "issues Certificates, Attestations and Reports following its interventions ("Certificates");
- "publishes Registers.

1.2. - The Society also participates in the application of National and International Regulations or Standards, in particular by delegation from different Governments. Those activities are hereafter collectively referred to as "Certification".

1.3. - The Society can also provide services related to Classification and Certification such as ship and company safety management certification; ship and port security certification, training activities; all activities and duties incidental thereto such as documentation on any supporting means, software, instrumentation, measurements, tests and trials on board.

1.4. - The interventions mentioned in 1.1., 1.2. and 1.3. are referred to as "Services". The party and/or its representative requesting the services is hereinafter referred to as the "Client". The Services are prepared and carried out on the assumption that the Clients are aware of the International Maritime and/or Offshore Industry (the "Industry") practices.

1.5. - The Society is neither and may not be considered as an Underwriter, Broker in ship's sale or chartering, Expert in Unit's valuation, Consulting Engineer, Controller, Naval Architect, Manufacturer, Ship-builder, Repair yard, Charterer or Shipowner who are not relieved of any of their expressed or implied obligations by the interventions of the Society.

ARTICLE 2

2.1. - Classification is the appraisalment given by the Society for its Client, at a certain date, following surveys by its Surveyors along the lines specified in Articles 3 and 4 hereafter on the level of compliance of a Unit to its Rules or part of them. This appraisalment is represented by a class entered on the Certificates and periodically transcribed in the Society's Register.

2.2. - Certification is carried out by the Society along the same lines as set out in Articles 3 and 4 hereafter and with reference to the applicable National and International Regulations or Standards.

2.3. - It is incumbent upon the Client to maintain the condition of the Unit after surveys, to present the Unit for surveys and to inform the Society without delay of circumstances which may affect the given appraisalment or cause to modify its scope.

2.4. - The Client is to give to the Society all access and information necessary for the safe and efficient performance of the requested Services. The Client is the sole responsible for the conditions of presentation of the Unit for tests, trials and surveys and the conditions under which tests and trials are carried out.

ARTICLE 3

3.1. - The Rules, procedures and instructions of the Society take into account at the date of their preparation the state of currently available and proven technical knowledge of the Industry. They are a collection of minimum requirements but not a standard or a code of construction neither a guide for maintenance, a safety handbook or a guide of professional practices, all of which are assumed to be known in detail and carefully followed at all times by the Client.

Committees consisting of personalities from the Industry contribute to the development of those documents.

3.2. - The Society only is qualified to apply its Rules and to interpret them. Any reference to them has no effect unless it involves the Society's intervention.

3.3. - The Services of the Society are carried out by professional Surveyors according to the applicable Rules and to the Code of Ethics of the Society. Surveyors have authority to decide locally on matters related to classification and certification of the Units, unless the Rules provide otherwise.

3.4. - The operations of the Society in providing its Services are exclusively conducted by way of random inspections and do not in any circumstances involve monitoring or exhaustive verification.

ARTICLE 4

4.1. - The Society, acting by reference to its Rules:

- "reviews the construction arrangements of the Units as shown on the documents presented by the Client;
- "conducts surveys at the place of their construction;
- "classes Units and enters their class in its Register;
- "surveys periodically the Units in service to note that the requirements for the maintenance of class are met.

The Client is to inform the Society without delay of circumstances which may cause the date or the extent of the surveys to be changed.

ARTICLE 5

5.1. - The Society acts as a provider of services. This cannot be construed as an obligation bearing on the Society to obtain a result or as a warranty.

5.2. - The certificates issued by the Society pursuant to 5.1. here above are a statement on the level of compliance of the Unit to its Rules or to the documents of reference for the Services provided for. In particular, the Society does not engage in any work relating to the design, building, production or repair checks, neither in the operation of the Units or in their trade, neither in any advisory services, and cannot be held liable on those accounts. Its certificates cannot be construed as an implied or express warranty of safety, fitness for the purpose, seaworthiness of the Unit or of its value for sale, insurance or chartering.

5.3. - The Society does not declare the acceptance or commissioning of a Unit, nor of its construction in conformity with its design, that being the exclusive responsibility of its owner or builder.

5.4. - The Services of the Society cannot create any obligation bearing on the Society or constitute any warranty of proper operation, beyond any representation set forth in the Rules, of any Unit, equipment or machinery, computer software of any sort or other comparable concepts that has been subject to any survey by the Society.

ARTICLE 6

6.1. - The Society accepts no responsibility for the use of information related to its Services which was not provided for the purpose by the Society or with its assistance.

6.2. - If the Services of the Society or their omission cause to the Client a damage which is proved to be the direct and reasonably foreseeable consequence of an error or omission of the Society, its liability towards the Client is limited to ten times the amount of fee paid for the Service having caused the damage, provided however that this limit shall be subject to a minimum of eight thousand (8,000) Euro, and to a maximum which is the greater of eight hundred thousand (800,000) Euro and one and a half times the above mentioned fee. These limits apply regardless of fault including breach of contract, breach of warranty, tort, strict liability, breach of statute, etc.

The Society bears no liability for indirect or consequential loss whether arising naturally or not as a consequence of the Services or their omission such as loss of revenue, loss of profit, loss of production, loss relative to other contracts and indemnities for termination of other agreements.

6.3. - All claims are to be presented to the Society in writing within three months of the date when the Services were supplied or (if later) the date when the events which are relied on were first known to the Client, and any claim which is not so presented shall be deemed waived and absolutely barred. Time is to be interrupted thereafter with the same periodicity.

ARTICLE 7

7.1. - Requests for Services are to be in writing.

7.2. - Either the Client or the Society can terminate as of right the requested Services after giving the other party thirty days' written notice, for convenience, and without prejudice to the provisions in Article 8 hereunder.

7.3. - The class granted to the concerned Units and the previously issued certificates remain valid until the date of effect of the notice issued according to 7.2. here above subject to compliance with 2.3. here above and Article 8 hereunder.

7.4. - The contract for classification and/or certification of a Unit cannot be transferred neither assigned.

ARTICLE 8

8.1. - The Services of the Society, whether completed or not, involve, for the part carried out, the payment of fee upon receipt of the invoice and the reimbursement of the expenses incurred.

8.2. - Overdue amounts are increased as of right by interest in accordance with the applicable legislation.

8.3. - The class of a Unit may be suspended in the event of non-payment of fee after a first unfruitful notification to pay.

ARTICLE 9

9.1. - The documents and data provided to or prepared by the Society for its Services, and the information available to the Society, are treated as confidential. However:

- "Clients have access to the data they have provided to the Society and, during the period of classification of the Unit for them, to the classification file consisting of survey reports and certificates which have been prepared at any time by the Society for the classification of the Unit ;
- "copy of the documents made available for the classification of the Unit and of available survey reports can be handed over to another Classification Society, where appropriate, in case of the Unit's transfer of class;
- "the data relative to the evolution of the Register, to the class suspension and to the survey status of the Units, as well as general technical information related to hull and equipment damages, may be passed on to IACS (International Association of Classification Societies) according to the association working rules;
- "the certificates, documents and information relative to the Units classed with the Society may be reviewed during certifying bodies audits and are disclosed upon order of the concerned governmental or inter-governmental authorities or of a Court having jurisdiction.

The documents and data are subject to a file management plan.

ARTICLE 10

10.1. - Any delay or shortcoming in the performance of its Services by the Society arising from an event not reasonably foreseeable by or beyond the control of the Society shall be deemed not to be a breach of contract.

ARTICLE 11

11.1. - In case of diverging opinions during surveys between the Client and the Society's surveyor, the Society may designate another of its surveyors at the request of the Client.

11.2. - Disagreements of a technical nature between the Client and the Society can be submitted by the Society to the advice of its Marine Advisory Committee.

ARTICLE 12

12.1. - Disputes over the Services carried out by delegation of Governments are assessed within the framework of the applicable agreements with the States, international Conventions and national rules.

12.2. - Disputes arising out of the payment of the Society's invoices by the Client are submitted to the Court of Nanterre, France, or to another Court as deemed fit by the Society.

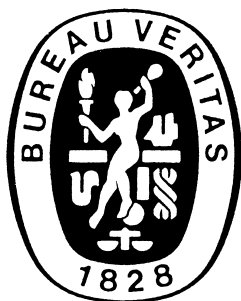
12.3. - Other disputes over the present General Conditions or over the Services of the Society are exclusively submitted to arbitration, by three arbitrators, in London according to the Arbitration Act 1996 or any statutory modification or re-enactment thereof. The contract between the Society and the Client shall be governed by English law.

ARTICLE 13

13.1. - These General Conditions constitute the sole contractual obligations binding together the Society and the Client, to the exclusion of all other representation, statements, terms, conditions whether express or implied. They may be varied in writing by mutual agreement. They are not varied by any purchase order or other document of the Client serving similar purpose.

13.2. - The invalidity of one or more stipulations of the present General Conditions does not affect the validity of the remaining provisions.

13.3. - The definitions herein take precedence over any definitions serving the same purpose which may appear in other documents issued by the Society.



GUIDANCE NOTE NI 631

Certification Scheme for Marine Renewable Energy Technologies

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SECTION 1 GENERAL

1 Introduction

1.1 Purpose of the document

1.1.1 The purpose of this Guidance Note is to provide an overview of the certification scheme applicable to Marine Renewable Energy (MRE) technologies. Description of the certification scheme is intended to help the different stakeholders to identify the necessary certificates to conduct their MRE projects.

This Note covers different types of technology for energy conversion from wind, wave, tidal or temperature gradients at sea, such as:

- Floating Offshore Wind Turbine (FOWT)
- Current and Tidal Turbine (CTT), including sea and river turbine
- Ocean Thermal Energy Converter (OTEC)
- Wave Energy Converter (WEC).

Specific requirements for design are not included in this Note, they may be found in the relevant Rules and Guidance Notes of the Society.

1.2 Certificates

1.2.1 To meet a broad range of needs within the MRE industry, different certificates are introduced, see Tab 1:

- Approval in Principal (AIP)
- Prototype Certificate
- Component and Type Certificate
- Project Certificate.

Note 1: For wind turbine, the Society's evaluation system can be based on the public, internationally recognized IEC 61400 series, including in particular the IEC 61400-22 describing the general certification scheme, the IEC 61400-1 related to general design and load cases, and the IEC 61400-3 for offshore wind turbines.

1.3 General definitions

1.3.1 Administration

Administration means the Government of the State responsible for or managing the area in which the MRE unit is operating.

1.3.2 Approval

Approval means the review by the Society of documents, procedures or other items related to certification, verifying solely their compliance with the relevant Rules requirements, or other referential where requested.

1.3.3 Certification

Certification is a procedure by which a third party gives written assurance that a product, process or service conforms to specified requirement; also known as conformity assessment.

1.3.4 Provisional Certificate

A Provisional Certificate may serve as a Certificate in some cases. It may be issued on request and when the Society deems it necessary. All outstanding issues are listed. As outstanding issues become closed, updated deliverables can be issued.

1.3.5 Evaluation of conformity

Systematic examination of the extent to which a product, process or service fulfils specified requirements.

1.3.6 Survey

Survey means an intervention by the Surveyor for assignment or maintenance of certificate or interventions by the Surveyor within the limits of the tasks delegated by the Administration.

Table 1 : Certificates overview

Life cycle phase	Certification phase	Deliverables	AIP	Prototype certificate	Component certificate	Type certificate	Project certificate
			Sec 2	Sec 3	Sec 4	Sec 4	Sec 5
Development	Risk assessment	Evaluation report conformity statement	Qualitative studies Sec 2	(Optional) Sec 3, [3]	-	(Optional) Sec 4, [3]	(Optional) Sec 5, [3]
	Design basis			Basic design evaluation Sec 3, [4]	Sec 4, [4]	Sec 4, [4]	Sec 5, [5]
	Integrated loads				-	-	Sec 5, [6]
	Design evaluation				Sec 4, [5]	Sec 4, [5]	Sec 5, [7]
Construction	Manufacturing	Evaluation report conformity statement	-	(Optional) Sec 3, [5]	Sec 4, [6]	Sec 4, [6]	Sec 5, [8]
	Transport and installation surveillance		-	-	-	-	Sec 5, [9]
Operation and maintenance	Testing	Evaluation report conformity statement	-	Sec 3, [6]	Sec 4, [7]	Sec 4, [7]	-
	Commissioning surveillance		-	(Optional) Sec 3, [7]	-	-	Sec 5, [10]
	Characteristics measurements		-	-	-	(Optional) Sec 4, [8]	(Optional) Sec 5, [11]
Final		Final evaluation report & Certificate	X (1)	X	X	X	X
In service		Report	-	Sea trials (optional) Sec 3, [8]	-	-	Sec 5, [12]
(1) For AIP, a letter of Approval is delivered in lieu of certificate							

1.3.7 Surveillance

Surveillance is a continued monitoring and verification of the status of procedures, products and services, and analysis of records in relation to referenced documents to ensure specified requirements are met.

1.3.8 Verification

The method used to ensure the quality of purchased materials, items or components or of in-process products at appropriate point of the process.

1.3.9 Conformity statement

The conformity statement is a document issued upon successful completion of evaluation of a certification module.

1.4 Technical definitions

1.4.1 Energy converter

The energy converter is the device for production of (electrical) energy from renewable energy (wind, current, thermal energy...) and its own structure.

1.4.2 Foundation

Foundations are installations at the seabed or in the seabed, serving as anchoring of station-keeping system and providing the transfer of loads to soil.

1.4.3 Sub-structure

The sub-structure is the part of the support structure which connect the station keeping system, if any, or foundation to the energy converter or to the tower if any.

1.4.4 Support structure

The support structure consists of the foundation, station keeping system, sub-structure and the tower, when relevant.

1.4.5 Tower

The tower is the part of a support structure which connects the sub-structure to the energy converter.

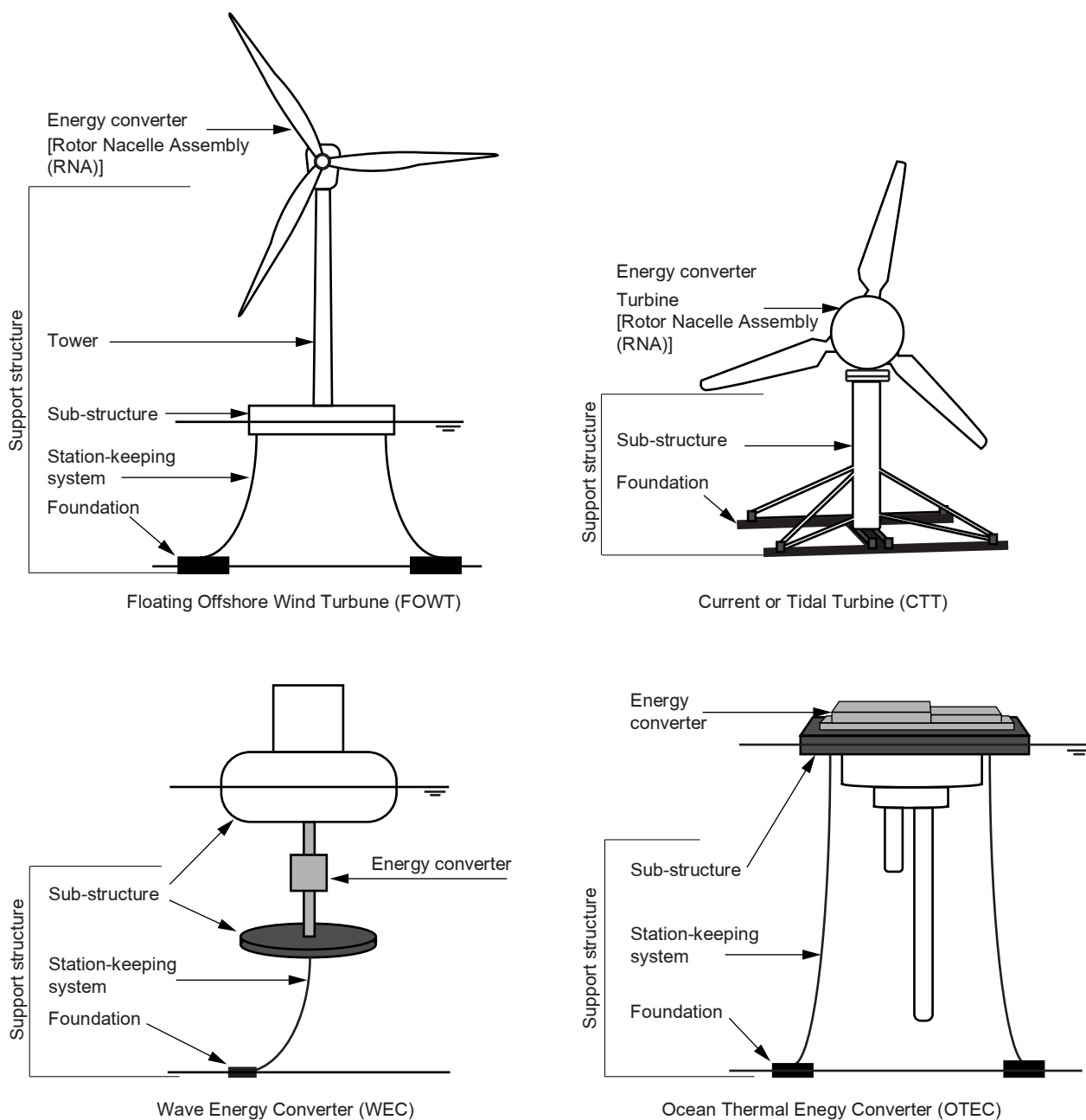
Note 1: Tower is generally to be considered for a FOWT.

1.4.6 Station-keeping system

The station-keeping system is a system capable to maintain the unit in position within specified limits.

Note 1: Station-keeping system may consists in mooring lines, tension legs, dynamic positioning system...

Figure 1 : Types of marine renewable energy



1.5 Acronyms

1.5.1

IEC	: International Electrotechnical Commission
ISO	: International Organization for Standardization
MRE	: Marine Renewable Energy
FOWT	: Floating Offshore Wind Turbine
CTT	: Current and Tidal Turbine
OTEC	: Ocean Thermal Energy Converter
RNA	: Rotor Nacelle Assembly
WEC	: Wave Energy Converter
O&M	: Operation & Maintenance
P&ID	: Piping and Instrumentation Diagram.

1.6 Guides, codes or standards

1.6.1 The documents presented here are only the governing documents. Specific documents to be used on each relevant design aspect are defined as part of the Design Basis of each element.

1.6.2 General

The following Society documents may be considered:

- NR183 Rules for the towage at sea of vessels or floating units
- NR320 Certification scheme of materials and equipment for the classification of marine units
- NR426 Construction survey of steel structures of offshore units and installations
- NR445 Rules for the classification of offshore units
- NR462 Recognition of test laboratories
- NR476 Approval testing of welders
- NR480 Approval of the manufacturing process of metallic materials
- NR493 Classification of mooring systems for permanent offshore units
- NI 525 Risk based qualification of new technology - Methodological guidelines.

For Floating Offshore Wind Turbine, the following standards may be considered:

- NI 572 Classification and certification of Floating Offshore Wind Turbines
- BV-WFPC-100: Bureau Veritas guide on offshore wind farm project certification
- IEC 61400: Wind turbines
(IEC 61400-22: Wind turbines - Part 22: Conformity testing and certification).

For Current and Tidal Turbine, the following standards may be considered:

- NI 603 Guidance Note on Current and Tidal Turbines
- IEC TS 62600: Marine energy - Wave, tidal and other water current converters.

The following documents may be considered:

- Norsok Standard NS 3473: Concrete structures - Design and detailing rules
- Eurocodes EN 1990 to 1998, with national annexes
- ISO 19900 to 19906: Requirements for offshore structures
- ISO/IEC 17065: Conformity assessment - Requirements for bodies certifying products, processes and services
- IEC 61892: Mobile and fixed offshore units - Electrical installations
- IEC 60146: Semiconductor converters - General requirements and line commutated converters.
- ISO/IEC 17021: Conformity assessment - Requirements for bodies providing audit and certification of management systems
- ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories

2 Certification approach

2.1 Overview

2.1.1 The certification scheme is based on the conformity of a serie of modules. Delivery of the certificate is subject to the completion of all mandatory modules. Optional modules are also proposed and may be added to the mandatory modules. The completion of a module may be based on a documentation review and/or independant calculations and/or audits and/or inspections.

2.2 Deliverable

2.2.1 Each module of the certification procedure, once validated, is concluded by an evaluation report and a conformity statement. At the end of each certification procedure, a certificate, attesting to the conformity and correctness of all mandatory and, if applicable, optional modules, is issued along with the final evaluation report.

2.3 Third parties' certificates

2.3.1 Different certification bodies may be involved in the certification process. The Client may therefore submit to the Society, Test Report, Conformity Statements or Certificates (e.g. Type Certificate) from other certification bodies.

The Society does not take responsibility for other Certification Bodies' work.

Note 1: About wind industry (FOWT), the Society follows the procedure prescribed by the IECRE Conformity Assessment System and described in IECRE clarification sheet n° 6A Project Certification Recognition Arrangement (available on the IECRE web page (<http://www.iecre.org/>)).

2.4 Methodology

2.4.1 The evaluation process consists of document review as well as independent analyses or inspections, depending on the module under consideration.

2.4.2 Evaluation plan

At the beginning of the process, a detailed Evaluation Plan is submitted to the client. This evaluation plan describes the evaluation process into details, together with the working methods and the primary planning.

2.4.3 Document review

A large part of the evaluation consists in reviewing calculation notes, specifications, drawings, data sheets, reports, certificates, etc. The evaluators verify the completeness of the provided documentation and its conformity to the reference set of standards for the verification.

A typical document verification loop consists of two successive reviews. Upon completing the first review, the Society issue a list of comments to be considered by the client. A second review is then performed to confirm that all these remarks have been correctly implemented in the updated document. No significant changes to the content or to the calculation methods other than the necessary corrections are allowed for in one review cycle.

2.4.4 Collaborative platform VPM

Bureau Veritas has developed a web-based collaborative platform, Veristar Project Management (VPM) as illustrated in Fig 2. It is a specific software tool for document review, ensuring smart management of the complete documentation and effective communication between the Society and the client. Each document submitted is recorded in this tool which centralizes all the comments made by the reviewer and answers from the Client. This reviewing process ensures transparency and efficiency.

2.4.5 Independent analyses

The Society may performs independent calculations based on its own assumptions and methods. The goal of these independent calculations is to verify some key characteristics of the project. They do not prevent the client from performing its own sensitivity analyses.

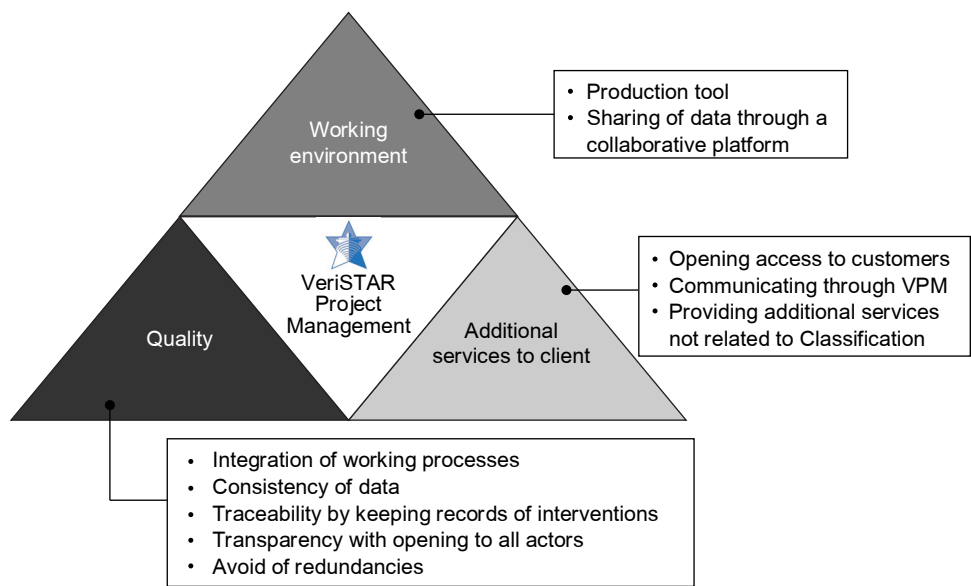
Independent analyses are usually performed for the most critical cases only and not as a standard basis. They are based on inputs provided by the client.

2.4.6 Tests

Tests are to be carried out by an accredited testing laboratory. If it is not the case, the party conducting the testing is to comply with at least the criteria of ISO/IEC 17025 or ISO/IEC17020, as applicable.

Note 1: Guidance may be found in NR462 Recognition of test laboratories.

Figure 2 : Veristar Project Management



2.4.7 Inspections and surveillance

The surveillance of a specific process (manufacturing, transportation, installation, etc.) consists of verifying that the procedures in force meet specified requirements. This verification usually involves several methods:

- Evaluation of the quality system
- Verification of the compliance of the procedures with the specified requirements
- Verification of the effective application of the procedures.

The quality system evaluation is normally limited to the verification that the quality systems of the different manufacturers or operators involved are certified according to ISO 9001. This quality system certification is to be carried out by an accredited certification body operating according to ISO/IEC 17021. If the quality system is not properly certified, the Society have to evaluate that it meets sufficient quality management requirements.

The evaluation of the compliance of the procedures usually consists of reviewing the different documents related to the process under scrutiny (manuals, checklists, reports, etc.) and verifying their compliance to the specified requirements.

Finally, the verification of the correct application of the procedures involves review of records and reports related to the process under scrutiny and several on-site inspections of the process. The exact scope and extent of the inspections depend on the component to be inspected and the manufacturing process itself.

3 Reference set of certification requirements

3.1 General

3.1.1 During the evaluation, the conformity of the component/unit/farm is assessed according to a hierarchy of requirements which need to be defined jointly at the start of the process. This set of requirements forms the reference basis for Prototype, Component, Type or Project Certification.

3.1.2 Different steps can be followed to determine the set of requirements:

- a) Breakdown into components

Depending on the technology considered and associated available standards, the level of details of the breakdown may vary. A functional analysis can be helpful to ensure exhaustive identification of each component constituting the unit such as blades, generator, cables, connectors, etc.

- b) Technology assessment

The maturity and similarity or difference in the operating conditions for each component identified is to be established by a Technology Assessment, conducted following Tab 2 (A methodology is described in NI 525).