



# IECRE OD-550-1

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# IECRE OPERATIONAL DOCUMENT

IEC System for Certification to Standards relating to Equipment for use in Renewable Energy applications (IECRE System)

Acceptance of RECB for type and component certification





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## 1 Objectives

This Operational Document ~~gives details~~ the procedures for accepting new entrant RECBs into the IECRE system, and reassessment of RECBs previously approved as part of the WE (Wind Energy) Sector.

The basic acceptance procedure is given in the ~~WE-OMC~~RoP applicable for the wind sector and this operational document gives the detailed procedure. The assessment is based on peer assessment in line with ISO/IEC 17040.

The IECRE scheme intends to promote high standards, transparency and fair competition in the industry and as such, the focus of the assessment will therefore be on the quality of work performed.

## 2 Definitions and acronyms

Definitions are given in ~~IEC-WE-OMC~~RoP applicable for the wind sector and ISO/IEC 17040.

CB is used to cover both RECB and new ~~entrance~~entrant candidate RECB.

RoP: Rules of Procedure

## 3 Certification ~~schemes~~ scheme

~~There are presently two schemes defined under which an RECB can be accepted:~~

This document covers acceptance of RECBs for the following scheme:

- Type and component certification
- ~~• Project certification~~

~~These schemes are~~The scheme is defined ~~WE-OMC~~in RoP applicable for the wind sector and the related operational ~~documents OD501~~document OD-501 for type and component certification ~~respectively OD502 for project certification~~including the further details given in documents (sub-ODs) OD-501-1, OD-501-2, etc. for specific topics.

## 4 Requirements

The ~~WE-OMC~~RoP applicable for the wind sector gives the basic requirements and procedure for acceptance of an RECB. The basic requirements are ~~amended~~listed and further detailed in this chapter.

### 4.1 The RECBs to be reassessed and the new ~~entrance~~entrant candidates must be accredited by an IAF/MLA accreditation body per ISO/IEC 17065.

The RECBs to be reassessed and the new entrant candidates must be accredited by an IAF/MLA accreditation body per ISO/IEC-17065 with the scope including ~~one or several of the following~~ IECRE system ~~schemes:~~

- ~~a. scheme for~~ Type and component certification

~~Project certification new entrance candidate RECBs shall be accredited by an IAF/MLA accreditation body per ISO/IEC 17065 with the scope including the applicable IECRE scheme~~ or an equivalent scheme. Equivalent scheme shall be understood as a certification scheme for the wind energy sector having the following features:

- a. Covers component, ~~and~~ type ~~respectively project~~ certification
- b. Organized in modules, with intermediate conformity statement for each module
- c. Has design ~~review~~evaluation, independent load analysis, measurements and testing as well as inspections activities

- d. Has equivalent level of detail for the assessment activities as the applicable IECRE scheme
- 4.2 Active participation in SG550 which apart from sharing the workload assigned to SG550 also implies participation and presence in more than half of its face to face meetings. The presence may be through web based participation but physical presence is required for minimum one meeting per year.
- 4.3 Knowledge and understanding of IECRE system rules and the WE-OMC wind energy sector procedures and related technical codes and standards relevant for the scheme. The CB shall have implemented their own procedures and instructions to ensure compliance.
- 4.4 State of the art knowledge (active participation in IEC TC88 WG or local mirror groups e.g. blade design to understand state of the art).
- 4.5 **Human Resources:**
  - a. The CB shall limit subcontracting to cover maximum 1/3 of the technical certification work.
  - b. The CB shall have a minimum of 2 experts available in each technical area
  - c. The CB shall have implemented a system for qualification of its technical certification staff. The system shall include training programs (theoretical and practical) relevant to the type of certification work covered by the qualification. The system shall also address the maintenance and updating of qualifications.

#### 4.6 Experience:

##### ~~1.1.1 Type and component certification:~~

Both RECBs subject to reassessment and new entrant candidate RECBs shall demonstrate that ~~it has~~they have sufficient experience or that ~~it has~~they have maintained the experience by issuing 3 type certificates for different wind turbine types according to IECRE or equivalent scheme during the last two years (for new ~~entrance~~entrant candidate RECB) or since the last peer assessment (for RECB). An equivalent scheme shall at least include design evaluation, independent load analysis, manufacturing evaluation, type measurements and testing and design evaluation, as well as inspections activities.

One of the type certificates could be replaced by ongoing certification work per IECRE or equivalent scheme. In this case the process should be at a stage where certification reports are available at least for loads and critical components and at least one conformity statement. Or one type certificate may be replaced by multiple component certificates such that the component certificates make out the full scope of a type certificate. For clarity sake, a minimum of 2 full type certificates shall be available.

If this requirement is not fulfilled, additional peer assessment will be required as outlined in chapter 5.5.

~~If this requirement is not fulfilled, additional peer assessment will be required as outlined in chapter 5.5.~~

##### ~~1.1.2 Project certification:~~

~~Both RECBs subject to reassessment and new entrant candidate RECBs shall demonstrate that it has sufficient experience or that it has maintained the experience by issuing 3 project certificates according to IECRE or equivalent scheme during the last five years (for new entrance candidate RECB) or since the last peer assessment (for RECB). An equivalent scheme shall at least include independent integrated load analysis, design evaluation, manufacturing evaluation, installation and commissioning. A project certificate may be replaced by multiple conformity statements such that the conformity statements make out the full scope of a project certificate. Two of the project certificates shall be for a deep water offshore project and with more than 5 wind turbines.~~

~~If this requirement is not fulfilled, additional peer assessment will be required as outlined in chapter 5.5.~~

### ~~1.1.3 Onshore Project design certification:~~

~~Both RECBs subject to reassessment and new entrant candidate RECBs shall demonstrate that it has sufficient experience or that it has maintained the experience by issuing 3 project design certificates according to IECRE or equivalent scheme during the last five years (for new entrance candidate RECB) or since the last peer assessment (for RECB). An equivalent scheme shall at least include site specific load analysis, design evaluation. A project design certificate may be replaced by multiple conformity statements such that the conformity statements make out the full scope of a project design certificate.~~

### ~~1.1.4 Offshore Project design certification:~~

~~Both RECBs subject to reassessment and new entrant candidate RECBs shall demonstrate that it has sufficient experience or that it has maintained the experience by issuing 3 project design certificates according to IECRE or equivalent scheme during the last five years (for new entrance candidate RECB) or since the last peer assessment (for RECB). An equivalent scheme shall at least include independent integrated load analysis and design evaluation. A project design certificate may be replaced by multiple conformity statements such that the conformity statements make out the full scope of a project design certificate. Two of the project design certificates shall be for a deep water offshore project and with more than 5 wind turbines. If this requirement is not fulfilled, additional peer assessment will be required as outlined in chapter 5.5.~~

### ~~1.1.5 Site suitability evaluation:~~

~~Both RECBs subject to reassessment and new entrant candidate RECBs shall demonstrate that it has sufficient experience or that it has maintained the experience by issuing 3 site suitability evaluation conformity statements according to IECRE or equivalent scheme during the last five years (for new entrance candidate RECB) or since the last peer assessment (for RECB). If this requirement is not fulfilled, additional peer assessment will be required as outlined in chapter 5.5.~~

## 5 RECB Acceptance process

### 5.1 RECB Application Form

Each CB subject to assessment shall submit the completed form AD\_001 to the IECRE Secretary. New ~~entrance~~entrant candidate RECBs shall submit AD\_001 through the national Member Body for their endorsement.

The IECRE Secretary will review the received AD\_001 for completeness before proceeding with the assessment planning.

### 5.2 Applicant

Each applicant shall provide relevant documents together with the application form according to the requirements listed above in chapter 4, such as:

- a. Accreditation documents
- b. Process/Work instructions
- c. QM manual

### 5.25.3 Peer assessors

Each peer assessor shall be approved ~~by WE-OMC~~according to the RoP applicable for the wind sector and shall as a minimum meet the following criteria:

- a. 5 years of experience in conformity assessment of which the last 2 years within wind industry.
- b. 5 years of experience in the wind industry including at least 2 years of experience from one relevant technical area.
- c. fluent in the English language.

Each RECB shall at least provide two peer assessors to the pool of approved peer assessors. The application form AD\_002 shall be used for new peer assessors. The peer assessment planning should be such that all peer assessors are utilised at least once every three years.

The IECRE Secretary shall maintain the list of peer assessors meeting the qualification requirements and approved ~~by WE-OMC according to the RoP application for the wind sector.~~ This list shall be made available to ~~WE-OMC and~~ SG 550.

All qualified peer assessors shall receive training on the IECRE peer assessment rules and best practices once every three years. Details and further requirements related to training are given in a separate document.

#### **5.35.4 Assessment team**

The IECRE Secretary shall select the peer assessors from the above list of qualified peer assessors. The assessment team shall consist of two assessors from two different RECBs ~~and they should have expertise in at least two different technical areas.~~ The selection shall be based on the mandatory expertise and by maximizing other expertise areas for the whole assessment team by having as many expertise areas as possible covered, see Annex B. The IECRE secretary may consult with the SG 550 convener on the composition of the peer assessment team.

The IECRE Secretary or an appointed qualified assessor will participate as lead assessor.

The IECRE Secretary shall inform the ~~RECB/~~applicant RECB of the names of the assessors at least two months before the planned date of the peer assessment.

#### **5.45.5 Assessment preparation**

The preparation for the assessment consists of:

- For the lead assessor:
  - to define, in agreement with the ~~RECB/~~applicant RECB and the two peer assessors, the dates for the peer assessment
  - to prepare, in coordination with the two selected peer assessors, the assessment plan (describing the content of the assessment and the sharing of works between the assessors); and to send it to the applicant RECB, at least two weeks before the beginning of the assessment
- For the applicant RECB: to prepare the assessment report OD-004 to the extent possible, and submit this to the lead assessor, at least two weeks in advance or as agreed with the lead assessor.
- ~~For the RECB/Applicant RECB: to prepare the part of the assessment report OD-004 which can be completed in advance and submit to the lead assessor.~~

### **5.6 Assessment**

#### **5.6.1 Duration and process**

~~The assessment covering one scheme will last for maximum two full consecutive working days allowing for around 8 hours of interviews and document review and provided the requested information is readily available in English language. If two schemes are to be covered, two additional working days for one peer assessor is required (this may be an additional peer assessor or an extension of the duration for the full team of peer assessors).~~

The duration of the assessment shall be determined by the peer assessment team based on the experience of the entrant RECB and may be shortened or extended beyond the durations stated below based on the observations and findings made during the assessment. During the planning is shall be considered that the peer assessors may work in parallel.

For an experienced CB a duration of 2 full consecutive working days will initially be planned to allow for at least 8 hours of interviews and document review per assessor and provided the requested information is readily available in English language.

In case the requirement in chapter 4 related to experience is not fulfilled (new ~~entrance-entrant~~ candidate RECB or RECB with limited experience since the last peer assessment), the



assessment will ~~be extended by one working day~~~~last for three full consecutive working days~~, allowing ~~one extra day~~ for additional vertical assessment, i.e. a complementary technical assessment on at least two technical areas (one for each selected peer assessor).

~~To extend the scope for an RECB qualified for type and component certification to also include project related certification, the following applies:~~

- ~~a) **Site suitability evaluation:** No additional peer assessment required. Demonstration through correspondence of additional required competency in site assessments to be evaluated by the original peer assessment team.~~
- ~~b) **Onshore Project Design Certification (including site suitability evaluation):** No additional peer assessment required. Demonstration through correspondence of additional required competency in site assessments and civil engineering to be evaluated by the original peer assessment team.~~
- ~~c) **Offshore Project Design Certification:** The RECB shall demonstrate that it has sufficient experience by issuing 3 design evaluation conformity statements according to IECRE equivalent scheme during the last five years including at least independent integrated load analysis and sub structure. Two of these conformity statements shall be for locations with significant wave loading and with more than 5 wind turbines.~~

~~The scope for offshore project design certification also covers onshore project design certification.~~

~~An additional assessment is required and the assessment will last for maximum two full consecutive working days allowing for around 8 hours of interviews and document review provided the requested information is readily available in English language. The lead assessor will attend corresponding to one working day as the review of the management system is already done for the initial RECB assessment.~~

~~In case the requirements above related to experience are not fulfilled, the assessment will last for three full consecutive working days, allowing one extra day for additional vertical assessment, i.e. a complementary technical assessment on at least two technical areas (one for each selected peer assessor).~~

- ~~d) **Onshore Project Certification:** The RECB shall demonstrate that it has sufficient experience by issuing 3 project certificates (alternatively conformity statements covering the full scope of a project certificate) according to IECRE equivalent scheme during the last five years including at least independent integrated load analysis, foundation design evaluation, manufacturing surveillance, installation and commissioning.~~

~~An additional assessment is required and the assessment will last for maximum two full consecutive working days allowing for around 8 hours of interviews and document review provided the requested information is readily available in English language. The lead assessor will attend corresponding to one working day as the review of the management system is already done for the initial RECB assessment.~~

~~In case the requirements above related to experience are not fulfilled, the assessment will last for three full consecutive working days, allowing one extra day for additional vertical assessment, i.e. a complementary technical assessment on at least two technical areas (one for each selected peer assessor).~~

~~An RECB approved for Onshore Project Certification will also be approved for Onshore Project Design Certification (including site suitability evaluation).~~

- ~~e) **Offshore Project Certification:** The RECB shall demonstrate that it has sufficient experience by issuing 3 project certificates (alternatively conformity statements covering the full scope of a project certificate) according to IECRE equivalent scheme during the last five years including at least independent integrated load analysis, sub structure design evaluation, manufacturing surveillance, installation and commissioning. Two of these~~

~~conformity statements shall be for locations with significant wave loading and with more than 5 wind turbines.~~

~~The scope for offshore project certification also covers onshore project certification and project design certification.~~

~~An additional assessment is required and the assessment will last for maximum two full consecutive working days allowing for around 8 hours of interviews and document review provided the requested information is readily available in English language. The lead assessor will attend corresponding to one working day as the review of the management system is already done for the initial RECB assessment.~~

~~In case the requirements above related to experience are not fulfilled, the assessment will last for three full consecutive working days, allowing one extra day for additional vertical assessment, i.e. a complementary technical assessment on at least two technical areas (one for each selected peer assessor).~~

#### **5.4.15.6.2 Assessment scope**

The assessment shall take place at the CB site where its most important certification activities are carried out.

The assessment starts with an initial meeting:

- gathering all 3 assessors, and the **RECB** representatives
- where the assessment objectives, organisation, timing, participants are confirmed. The applicant RECB shall be evaluated against all requirements in chapter 4 of the present document.

The assessment activities consist of:

- Organisation documents (~~Organigram~~**Organogram**, Quality Manual) review with focus on impartiality.
- Accreditation documents (accreditation certificate, accreditation audit report) review
- Certification process documentation (procedures, templates) review with focus on the specifics for the IECRE system.
- Qualification files (internal resources and sub-contractors) review ▲
- Project files review, including: ~~below topics in order to confirm that relevant requirements in OD-501 (and OD-501-x as applicable) are appropriately managed and evaluated in the project. See Annex A of this document for more detailed listing of the scope for review:~~
  - Records (contract review, evaluation review, certification decision, annual reporting ...)
  - Identification of the certified wind turbine/component
  - Standards considered (all relevant standards for type and component certification shall be mentioned)
  - Technical certification documents (evaluation plan, evaluation reports, independent calculation results and other relevant reports)
  - Final evaluation (review by someone not taking part of the review/evaluation work)
  - Deliverables (conformity statement, certificates)
  - Outstanding issues, conditions, limitations (type component certificate must not have any ~~open~~**outstanding** issues)
  - Certification decision (background for decision documented)
  - Annual reporting for maintenance of certificate (demonstrate that this is implemented)

- ~~2½-year surveillance~~Period inspection (demonstrate that this is implemented)

- It shall be assessed that the RECB has experience to evaluate all possible elements of the scope.

The applicant RECB shall ensure all necessary information and/or documentation is made available to the peer assessors. This will also include all documents referred in the technical certification documents.

### **5.4.25.6.3 Assessment report**

The reporting template OD-004 shall be used for the reporting from the peer assessment. Any non-resolved deviations shall be highlighted in the conclusion of this report. For further requirements to reporting and handling of non-conformities, see the ~~WE-OMC~~ Rules of Procedures- applicable for the wind sector. ~~For RECB re-assessment non-conformities shall be closed within 3 months.~~

For new RECB assessment non-conformities shall be closed within 3 months. If non-conformities cannot be closed within the 3 months period, an exceptional extension for 1 month can only be granted at the discretion of the IECRE Secretariat based on progress evidence to resolve the outstanding non-conformities. If the deadline cannot be met a new application (incl. fees) will be required.

For RECB re-assessment non-conformities shall be closed within 3 months. -If non-conformities cannot be closed within the 3 months period, an exceptional extension for 1 month can only be granted at the discretion of the IECRE Secretariat based on progress evidence to resolve the outstanding non-conformities. If the deadline cannot be met, the acceptance will be suspended for 12 months, after which it will be withdrawn and then a new application (incl. fees) will be required.

The conclusions of the assessment report shall be agreed upon by the assessment team (lead assessors, and the two peer assessors), and by the CB representative.

The summary assessment report, is established by the IECRE Secretary within 10 days from the assessment, and excludes all confidential information, such as the name of the staff interviewed and the sensitive identifying information (name of customer, project or wind turbine names ...). The summary report will be sent to ~~the WE-OMC for voting and provisional approval allowing RECB to start/continue operating. Subsequently the summary report will be sent to REMC for final~~REMC for approval per the IECRE system rules.

## **6 Re-assessment**

The acceptance of the RECB is valid for a period defined in the ~~WE-OMC~~ Rules of Procedures applicable for the wind sector.

The IECRE Executive Secretary will notify RECBs early in the year as to when their reassessment is required for that year. ~~The~~ RECB shall then apply for re-assessment within one month of the notification. In case of unsuccessful re-assessment or refusal, the RECB will be suspended.

## **7 Confidentiality**

Confidentiality in the RECB acceptance process is considered as essential, as peer assessors are originating from ~~competitive RECB~~competitor RECBs, and certification information and documentation should be confidential within the RECBs. The protection of confidential information is managed as follow:

- Each person, when submitting ~~his~~their request to become a peer assessor to the IECRE Secretary, commits (to the IECRE and to the concerned ~~RECB/~~applicant RECB) to keep ~~secret~~confidential all information ~~he~~they will ~~received~~review and assess from the ~~RECB/~~applicant RECB (and ~~from~~ its customers) during the complete acceptance process, for a duration not shorter than 10 years.

- Each (applicant and accepted) RECB will add in its contracts with its own customer a clause allowing the participation of third ~~part~~party observers (in line with §4.1.2.2.c.3 of ISO/IEC 17065)

## **Annex A**

### **Scope for review during peer assessment**

The detailed scope for review for a specific assessment depends on the scope of the applicant and shall be developed for the assessment by the peer assessors as part of the preparation.

The following topics shall be considered as a guidance during the peer assessment:

#### **Final Deliverables**

- Availability of certificates
- Availability of conformity statements for each module
- Content: Period of validity, content according OD-501-T0x, listing of outstanding matters (if applicable)
- Maintenance: Performance of annual maintenance and periodic inspection to maintain the validity of certificates

#### **Design basis**

- Used codes and standards
- Methods and procedures deviating from ODs or IEC 61400 series

#### **Design**

- Control and protection system
  - Evaluation of control and protection system according to OD-501-5
- Loads and load cases
  - Evaluation of load assumptions according to OD-501-4
- Rotor blades
  - Evaluation of rotor blades according to OD-501-1
- Machinery structures and structural components
  - Evaluation of load-bearing machinery structures
  - Evaluation of Gearbox according to OD-501-2
- Electrical components
  - Evaluation of electrical components according to OD-501-7
  - Evaluation of earthing
  - Evaluation of lightning protection
- Housings
  - Evaluation of Spinner
  - Evaluation of nacelle cover
- Evaluation of component tests
- Evaluation of tower design according to OD-501-3
- Foundation design and foundation design requirements
  - Evaluation of foundation design
  - Evaluation of interfaces to the tower and wind turbine design
- Evaluation of processes
  - Manufacturing process
    - Identification of critical manufacturing processes
    - Specification of workshop tests

- Transportation process
  - Evaluation of the description of the transportation process against the design requirements
- Installation and Maintenance process
  - Verification of adequacy of the wind turbine design by installation and commissioning processes
- Personnel safety
  - Identification of elements in the design documentation that pertain to personnel safety

### **Type testing**

- Approval of the test program
- Use of test laboratories approved by IECRE (RETL) for established competence areas
- Type inspection
  - Evaluation of the applicability of the wind turbine used for testing (representative turbine of the type being certified)
  - RECB inspection of implementation of critical personal safety features at the installed wind turbine
- Safety and function tests
  - Verification of satisfactory demonstration of the control and protection system functions with reference to the design requirements for control and protection system functions
  - Evaluation of safety and function test according to OD-501-5
- Power performance measurements
  - Verification that the measurement procedures are in conformity with IEC 61400-12-1
- Load measurements
  - Verification that the measurement procedures are in conformity with IEC 61400-13
  - Validation of design calculations through comparisons between measured and calculated loads
- Blade tests
  - Evaluation of the applicability of the rotor blade used for testing (representative rotor blade of the type being certified)
  - Verification of blade structural design and assessment of the suitability of manufacturing processes by full-scale structural testing according to IEC 61400-23 and IEC 61400-24 (lightning test)

### **Type characteristics measurements**

- Use of test laboratories approved by IECRE (RETL) for established competence areas
- Power quality performance measurements
  - Verification that the measurement procedures are in conformity with IEC 61400-21
- Low voltage ride through measurements
  - Verification that the measurement procedures are in conformity with IEC 61400-21
- Acoustic noise measurements

- Verification that the measurement procedures are in conformity with IEC 61400-11

### **Manufacturing**

- Quality system evaluation
  - Checks if the quality system is certified to be in conformance with ISO 9001
  - Evaluation of the system against the ISO 9001 requirements (only needed if the quality system is not certified to be in conformance with ISO 9001)
- Manufacturing inspections (including foundation)
  - Verification by inspection that wind turbine components as per ODs or clarification sheets are manufactured according to the design under certification

### **Final Evaluation**

- Evaluation of completeness of the modules design evaluation, manufacturing evaluation and type test evaluation (Optional: type characteristics measurements) according to OD-501
- Evaluation of interfaces between the modules design evaluation, manufacturing evaluation and type test evaluation (Optional: type characteristics measurements)
- Evaluation of the final version of the following processes
  - Manufacturing processes
  - Transportation processes
  - Installation processes
  - Maintenance processes

## **Annex B**

### **Experience matrix for peer assessors**

In order to be able to establish peer assessment teams with maximum technical knowledge, the experiences of peer assessors shall be registered using the following 'experience' areas. For each peer assessor, the experience shall be marked using the categories:

- Expert
- Generalist

Experience areas for type and component certification are listed below. When a peer assessment team is established, at least one assessor with the mandatory experience area marked with \* in below list shall be part of the team:

- Loads & Control and protection system \*
- Composites
- Machinery structures
- Machinery components
- Electrical & safety
- Support structure, steel & concrete



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