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OPERATIONAL MANUAL
for the
CERTIFICATION
of
FANS

OM-22-2017

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Published by Eurovent Certita Certification
48-50 rue de la Victoire
75009 Paris, FRANCE

Tel: + 33 1 75 44 71 71
E-mail: apply@eurovent-certification.com

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I. PURPOSE

The purpose of this manual is to prescribe procedures for the operation of the Eurovent Certified Performance (ECP) certification programme for FANS (FANS), in accordance with the Certification Manual.

II. SCOPE

The programme scope covers all the fans types that are intended to be used as Air Handling Units components.

The programme is divided into two sub-programmes as follows:

- The sub-programme FAN-C applies to the complete assembly as provided by the fan manufacturer and integrated in an AHU that is composed of at least the following:
    - Support structure;
    - Impeller;
    - Electrical motor;
    - Housing (whenever applicable).

  Whenever the product catalogue comprises the following items, these shall be included:
    - Inlet guard;
    - Inlet connection (cone, ring, nozzle, flange, bell-mouth, etc.);
    - Drive arrangement (see definition in Rating Standard RS/1/C/001);
    - Controller (see definition in Rating Standard RS/1/C/001);
    - Outlet guard (or outlet flange, whichever applies).

- The sub-programme FAN-I applies to the following basic assembly :
    - Impeller;
    - Housing (whenever applicable).

  Whenever the product catalogue comprises the following items, these shall be included:
    - Inlet guard;
    - Inlet connection (cone, ring, nozzle, flange, bell-mouth, etc.);
    - Outlet guard (or outlet flange, whichever applies).

All the components listed above have to be taken into account in the fan performance ratings that appear in the technical documentation (see definition in Certification Manual) in order to comply with the “wire-to-air” approach (see definition in Rating Standard RS/1/C/001).

III. BASIC OUTLINE OF THE PROGRAMME

Participation in this Eurovent Certified Performance programme consists of the following:

III.1. Application

The Applicant, after signing the License Agreement, shall send to Eurovent Certita Certification all information required for the qualification according to Rating standard RS/1/C/001: software or Dynamic Link Library (DLL) name and version, the software or DLL itself, declaration file and relevant literature (see also §IV.1).

III.2. Qualifying procedure

Once the application is completed, the qualification procedure is articulated as follows.

a. <u>For Brand Name companies</u>

For Brand Name (BN) companies, applicable steps of the software/DLL checking procedure (see §IV.4) and audit procedure (see §IV.5) shall be conducted.

b. <u>For Original Equipment Manufacturers</u>

For Original Equipment Manufacturers (OEM), Eurovent Certita Certification:

- requests the applicant to provide the appropriate number of test reports (see Appendix C.II);
- when applicable, evaluates the test rig(s) validation request (see Appendix D.I), checks the acceptability of the existing diploma(s) if any (see Appendix D.II) and/or orders the test rig(s) validation to the independent laboratory (see Appendix D.III);
- evaluates the test reports acceptability (see criteria in Appendix C.I)
- checks the software (or DLL) compliance to general (see Certification Manual) and specific (see §IV.4.a) requirements and its consistency with the test reports and/or the declaration file FANS-1 provided by the applicant;
- proceeds to selection (see §IV.2.a) of the models to be tested in the independent laboratory based on the declaration file FANS-1;
- proceeds to the selected units sampling during the audit (see §IV.5.b);
- orders the product performance testing to the independent laboratory;
- performs a “test-check” (see §IV.3) to evaluate the test success.

If the aforementioned checks prove the range compliance with the requirements specified in Rating Standard RS/1/C/001 and that all other requirements from the present Operational Manual are fulfilled, the certification is granted. If not, the procedure for failure treatment shall be applied.

When certified, the range is published on the Eurovent Certified Performance (ECP) website as specified in §V.1. Once the certificate is received, the participant is entitled to use the certification mark according to applicable requirements (see §V.2).

III.3. Repetition procedure

Every year, Eurovent Certita Certification checks whether the certified products still fulfil the requirements:

- For Brand Name (BN) companies, applicable steps of the software/DLL checking procedure (see §IV.4) and audit procedure (see §IV.5) shall be conducted.
- For Original Equipment Manufacturers (OEM), the following steps are conducted annually in compliance with the Certification Schedule (see Appendix A):
    - request to provide the appropriate number of test reports (see Appendix C.III);
    - when applicable, test rig validation diploma acceptability check (see Appendix D.II) or order (see Appendix D.III) ;
    - test reports acceptability check (see criteria in Appendix C.I);
    - check of the software (or DLL) consistency with the test reports and/or the declaration file FANS-1 provided by the participant;
    - selection (see §IV.2) of the models to be tested in the independent laboratory based on the declaration file FANS-1;
    - selected units sampling during the audit (see §IV.5.b);
    - order of the product performance testing to the independent laboratory;
    - “test-check” (see §IV.3) to evaluate the test success.

For the repetition procedure, the certification is renewed at the date specified in the Certification Schedule (see Appendix A) on condition that:

- The previous test campaign (N-1) has been successfully completed;
- The scheduled audits have been performed by the auditor and are successful or the corrective actions plan is considered satisfactory;
- The product sampling together with the technical datasheet delivery and the payment have been completed.

The company receives then a renewed certificate and the display of data is maintained on the Eurovent Certified Performance (ECP) website. If not, failure treatment shall be applied.

III.4. Failure treatment

When a range fails to comply with the requirements of the Rating Standard RS/1/C/001, the failure treatment shall be applied.

III.5. Challenge procedure

Under special conditions a challenge procedure may be carried out as described in the Certification Manual.

IV. OPERATION OF THE PROGRAMME

IV.1. Declaration of data

All characteristics shall be expressed in SI units unless otherwise specified by Eurovent Certita Certification.

The following data shall be rounded up to the next second decimal:

- flow rate whenever expressed in m^3/s ;

The following data shall be rounded up to the next decimal:

- efficiency in %

The following data shall be rounded up to the next integer:

- flow rate whenever expressed in m^3/h ;
- pressure difference in Pa
- electrical power input in W
- octave bands sound power level in dB

Submittal of data shall be made by filling in the forms provided by Eurovent Certita Certification as .xls or .xlsx files.

The forms (see Appendix B) shall be duly filled and sent by e-mail to Eurovent Certita Certification within the time limits specified in Certification Schedule (see Appendix A) :

- Declaration file FANS-1 will be used
  - for manufacturing companies (Original Equipment Manufacturer – OEM) to declare ranges, performance ratings and technical data.
  - for Brand Name (BN) companies to identify the corresponding models number of the original equipment manufacturer
- Technical data sheet FANS-2 will be used to complete technical description of all raw material or basic components for the units selected.

The applicant/participant shall inform Eurovent Certita Certification of any modification of the product portfolio by updating the declaration file FANS-1 and sending the updated selection software/DLL together with the software update record sheet FANS-3. Non-compliance of the applicant/participant is considered as non-application of procedures (see §IV.7).

Eurovent Certita Certification decides whether the modification is significant for the certified performance data or not. In the case of significant modifications Eurovent Certita Certification is entitled to request adequate tests to check the influence on performance data. This test shall not be considered as a repetition one.

Confidentiality of certification data: All data submitted to Eurovent Certita Certification will be held confidential except for information authorised to be published in the Eurovent Certified Performance website.

IV.2. Selection of units to be tested

a. Selection for qualifying procedure

Eurovent Certita Certification shall select units to be tested on the basis of its evaluation of the declaration file FANS-1 communicated by the applicant.

Three (3) models per range (called A, B and C in Table 1) shall be selected during the audits (see §IV.5.b) in order to cover the variations declared (see range definition in Rating Standard RS/1/C/001). It shall be ensured that various sizes are represented in the selected units.

Table 1 : Actions to be undertaken by the applicant/participant regarding units sampled and sealed by the auditor

Unit	*Action*
Model A, copy 1	Send to laboratory for regular test
Model A, copy 2	Send to laboratory in case of component failure (regular test) or unit failure (second test)
Model B, copy 1	Send to laboratory for regular test
Model B, copy 2	Send to laboratory in case of component failure (regular test) or unit failure (second test)
Model C, copy 1	Send to laboratory in case of unit failure (penalty test)
Model C, copy 2	Send to laboratory in case of component failure (penalty test)

Two copies of each selected model, that is six (6) units, will be sampled during the audit and sealed by the auditor. One (1) copy of two (2) of the selected models will be sent to the independent laboratory facility for testing.

The remaining copies will have to be sent to the independent laboratory in case of failure (see Table 1) and upon notification by Eurovent Certita Certification (see §IV.6.c).

On top of this selection, the applicant shall provide to Eurovent Certita Certification the appropriate number of test reports (see Appendix C).

b. <u>Selection for repetition procedure</u>

For the repetition procedure, Eurovent Certita Certification shall select three (3) models per range (called A, B and C in Table 1) for testing (see Table 1). If possible, a configuration different from that previously tested shall be selected.

Two copies of each selected model, that is six (6) units, will be sampled during the respective facilities auditing and sealed by the auditor. One (1) copy of two (2) of the selected models will be sent to the independent laboratory facility for testing. The remaining copies will have to be sent to the independent laboratory in case of failure and upon notification by Eurovent Certita Certification (see §IV.6.c).

On top of this selection, the participant shall provide to Eurovent Certita Certification the appropriate number of test reports as defined in Appendix C.III.

c. <u>Selection for penalty tests</u>

The two (2) copies of the remaining selected model sampled during the audit (see Table 1) shall be used for penalty tests whenever applicable (see §IV.6.d).

IV.3. Product performance testing

Within the programme, tests may be conducted under the following procedures:

- Scheduled tests in qualifying procedure
- Scheduled tests in repetition procedure

- Penalty test in qualifying and repetition procedure
- Challenge procedure test

The tests shall be conducted at the conditions stated in Rating Standard RS/1/C/001.

The test shall be conducted on a fan assembly that comprises as many components as possible in order to fulfil the wire-to-air approach requirement (see definition in Rating Standard RS/1/C/001). Any of the listed components (see §II) not included in the tested object shall be taken into account in the DLL/software in accordance with the Rating requirements section of Rating Standard RS/1/C/001 (see also §IV.4.a).

In addition to the provision of a suitable number of test reports (see Appendix C), product performance testing shall be performed on selected units (see §IV.2) at the premises of the independent laboratory selected by Eurovent Certita Certification.

Deadline for delivery of units to the laboratory, together with the technical data sheet completed and the payment, is defined in the Certification Schedule (see Appendix A). For the qualifying procedure the deadline is specified in the notification received from Eurovent Certita Certification.

If elements are not delivered within the time limitations, it is considered as non-application of procedures (see §IV.7). However, Eurovent Certita Certification has discretion not to discontinue the certification when the applicant/participant provides a definite and acceptable date of supply.

The laboratory shall have the responsibility of uncrating, handling, testing and recrating the unit for shipment.

At the units' reception, the laboratory shall check the product dimensions against the values declared in the technical datasheet to ensure that the unit corresponds to the selection.

The laboratory shall not perform the test and contact Eurovent Certita Certification who shall ask the applicant/participant to send a new unit in the following cases:

- one of the dimensions is not compliant with the technical datasheet,
- one of the units appears damaged (see §IV.6.b "Component failure").

Units shall be assembled and installed in the test facility by the laboratory personnel in accordance with the manufacturer's published installation instructions. The applicant/participant shall therefore provide the laboratory with full information about the installation.

No applicant/participant's personnel shall be present in the laboratory test facility during the tests.

Upon completion of the tests on each selected unit, the complete report shall be sent as a .pdf file to Eurovent Certita Certification.

Eurovent Certita Certification shall recalculate the values with the software (or DLL interface) according to the test operating conditions displayed in the test report ("test-check").

For each test, a performance item fails when the recalculated value and the measurement differ by more than the allowable tolerance (see Rating Standard RS/1/C/001).

When one or more performance items fail, the test status is considered FAILED and the failure treatment corresponding to unit failure (see §IV.6.c) shall be applied.

Eurovent Certita Certification will forward a copy of the report together with the test report result sheet FANS-4 and, if applicable, the test rerate form FANS-5 to the applicant/participant (see Appendix B).

If the test establishes that the unit fails to meet one or more of the requirements of the Rating Standard RS/1/C/001, the laboratory shall promptly notify Eurovent Certita Certification to receive instructions regarding further actions (see §IV.6.c).

The applicant/participant has to recover the products maximum six (6) working weeks after receiving the test reports and results. If the products are not recovered after this delay, the laboratory can destroy them and the corresponding invoice will be sent by Eurovent Certita Certification to the applicant/participant.

IV.4. Software checking procedure

a. Specific requirements

In addition to the general software requirements which are described in the dedicated appendix of Certification Manual, the software must comply with the following:

- the pressure (static, dynamic or total) and/or the density of the air should clearly appear together with the data on software printouts;
- the performances shall be consistent with one another;
- the software shall provide all the certified performances listed in Rating Standard RS/1/C/001 as output data, specifying (if need be) recommended fan component(s) to be included in the fan assembly in order to comply with the wire-to-air approach (as defined in Rating Standard RS/1/C/001);
- whenever applicable, downgrading factors and/or correction formulas shall be implemented in the software in accordance with the Rating requirements that appear in Rating Standard RS/1/C/001.

Sometimes the calculation tool is not a stand-alone software but a Dynamic Link Library (DLL), i.e. a library of functions made available to the user for integration in his own software.

When this is the case the requirements are the following:

- whenever the DLL itself and/or .XML data files are made available to the user it should be accompanied by appropriate instructions for extraction and use and/or a developer's guide for integration of the calculation module to the user's software. In particular, the following shall be specified:
  - the list of possible languages that enable to call the functions;
  - the version of the data access framework that needs to be installed on the user's computer;
- the DLL shall be provided with an interface;
- the DLL shall provide all the certified performances listed in Rating Standard RS/1/C/001 as output data, specifying (if need be) recommended fan component(s) to be included in the fan assembly in order to comply with the wire-to-air approach (as defined in Rating Standard RS/1/C/001);

- whenever applicable, downgrading factors and/or correction formulas shall be implemented in the DLL in accordance with the Rating requirements that appear in Rating Standard RS/1/C/001;
- the pressure (static, dynamic or total) and/or the density of the air should clearly appear on the DLL output files.

It is considered that the operating values (test conditions and measured performances) that appear in the tests reports provided by the applicant shall be used as reference for the software/DLL ratings.

b. <u>Acquisition and initial check of the software/DLL</u>

The software, or Dynamic Link Library (DLL) when applicable, shall be sent together with all required data when the applicant subscribes for the qualification procedure. For the repetition procedure, the deadline for the delivery of the software/DLL to Eurovent Certita Certification is defined in the Certification Schedule (see Appendix A).

The software/DLL compliance to general (see dedicated chapter in the Certification Manual) and specific (see §IV.4.a) requirements is to be checked by Eurovent Certita Certification prior to selection.

In particular, the measured values that appear in the tests reports provided by the applicant/participant (see Appendix C) are compared to the software/DLL output as a consistency check (see §IV.6.e for failure treatment).

For the qualifying procedure, the deviations between the software/DLL output values and the operating values (test conditions and measured performances) that appear in the tests reports provided by the applicant shall comply with Table 2 (see also §IV.4.a).

Table 2 : Maximum deviation between the software/DLL outputs and the operating values from the tests reports provided by the applicant

Operating parameter	***Software/DLL output value***
Volume flow rate	+ or – 1%
Static pressure difference	+ or – 1%
Motor/Drive/Control (electrical) input power	+ 2%
Shaft power, including bearings	+ 2%
Impeller / Overall (static) efficiency	– 1%

For any other comparison between the measured values and the software/DLL outputs, the deviations if any, shall be in accordance with the associated tolerance specified in Rating Standard RS/1/C/001.

Brand Name companies shall also send the operating version of the software/DLL to Eurovent Certita Certification to check the consistency with the OEM software/DLL version.

In case only in-house programmes are available, a person designated by Eurovent Certita Certification shall undertake himself the selection on site, during a specific visit for BN companies or the factory audit for OEM.

c. On-site checking of the software/DLL

The auditor appointed by Eurovent Certita Certification shall check the selection software/DLL consistency by selecting two (2) orders at random from the applicant/participant sales records.

This check shall be conducted:

- during factory audits for OEM;
- during the facility audit (where the orders to the customers can be accessed) for BN.

Whenever possible, the specific visit for BN shall be scheduled once the OEM has undertaken the testing procedure and/or the OEM on-site checking of software/DLL has been performed in order to compare the BN software/DLL results to recent OEM software/DLL results. Otherwise the software/DLL will be checked against the results of campaign N-1.

Whenever possible, one of the checks shall be performed on an order under manufacturing (for OEM) or preparation (for BN) so that the entire composition and technical specifications can be checked on site.

For the OEM, the other check shall be performed for one of the units selected for the test campaign (see §IV.2) or for which a test report was provided (see Appendix C).

The applicant/participant's representative shall fully inform the auditor by submitting all relevant assembly drawings, specifications and technical data sheets of the units under check.

For OEM, in case the products under manufacturing at the audit date do not fall into the certification programme scope, the auditor shall at least check the stock to verify that the raw material or basic components under common use in the factory are the same as that appearing in the declaration file FANS-1.

The composition, technical specifications and performance from recalculation shall be the same as the one specified and announced to the customer. If one of the performance values obtained by the auditor differs, this is considered as a software consistency failure and the applicant/participant shall update his software/DLL according to the relevant procedure (see §IV.6.e). If in the meantime the applicant/participant has officially launched a new software/DLL version and recalculation is made with this version, deviations should be traceable in the software update record sheet (sheet FANS-3, see Appendix B.III).

If it appears that different software/DLL had been used, this shall be considered as a non-respect of procedures (see §IV.7).

Eurovent Certita Certification shall transmit to the applicant/participant the result of the on-site checking as a .pdf file.

IV.5. Audit procedure

a. General

General audit requirements are stated in the Certification Manual.

The audit will consist of the on-site checking of software/DLL (see §IV.4.c), the units sampling and the verification that the applicable requirements specified in paragraph IV.5.b are fulfilled.

Whenever necessary, Eurovent Certita Certification has the right to ask an auditor to conduct an additional audit to the applicant/participants' factory as well as to collect data directly from customer and perform extra checking of software/DLL.

If audits are not conducted within the time limitations specified in the notification received from Eurovent Certita Certification, it is considered as non-application of procedures (see §IV.7).

In case of force majeure (e.g. accidents, labour disputes, natural events, acts of war) which would not allow Eurovent Certita Certification to perform a factory audit Eurovent Certita Certification can decide to replace it by another mean of verification, to postpone it within a reasonable deadline or to cancel it.

b. Audit requirements

During the audit, the auditor will:

- proceed to the units sampling and sealing (see §IV.2) for testing in the independent laboratory facility;
- verify, whenever applicable, that the aerodynamic tests conducted on the production site facility test rig
    - were conducted since the previous audit;
    - were conducted while the test rig validation diploma was still running;
- check that the ECP mark is displayed on the production units and on the documentation in compliance with the requirements specified in paragraph V.2;
- check the operating software/DLL consistency as per IV.4.c;
- check that the products in the sales record and/or production line and/or stock are compliant with the declaration file FANS-1;
- check that the corrective actions plan (see §IV.5.c) is completed or under implementation.

The auditor will also perform a complete review of the quality management system to check that:

- the suppliers are regularly evaluated and that the corresponding evaluations are recorded;
- the raw material or basic components are controlled at their reception;
- the products conformity with the bill of material (BOM) specifications is regularly evaluated and the corresponding evaluations are recorded;

- the manufacturing process key steps are submitted to a validation check which results are recorded. In particular, performing the following checks is required :
    - impeller dimensions checking at least once per batch (FAN-I);
    - rotation speed measurement at least once per batch (FAN-C);
    - operation (start-up) test on each (100% controlled) finished-product (FAN-C);
- the factory personnel is qualified to perform the specific tasks if any;
- every product traceability is ensured;
- calibration of measuring devices is performed on a regular basis;
- production non-conformities are recorded and corrective actions initiated;
- customer complaints are registered and treated.

c. Audit non-conformity

After evaluation, a non-conformity is classified as critical when, on the basis of objective evidence, the following cases are identified:

- there is a significant risk to the product conformity with respect to specified requirements;
- there is a significant risk regarding the quality management system ability to control the product conformity to specified requirements;
- there is systematic or repeated non-conformity to a specified requirement;

Otherwise the non-conformity is classified as not-critical.

In case of non-conformity, the applicant/participant shall be requested to provide Eurovent Certita Certification with a corrective actions plan within the deadline specified by the auditor (see also §IV.6.g for the audit failure treatment procedure).

IV.6. Failure treatment

a. Reasons of failure

The applicant/participant may examine the reasons of the failure.

b. Component failure

If the unit is damaged this is considered as a “component failure”. The laboratory shall immediately inform Eurovent Certita Certification who will notify the applicant/participant. The applicant/participant shall deliver within four (4) working weeks the second copy of the selected unit sampled by the auditor (see Table 1), which then shall be tested according to the availability of the laboratory.

c. Unit failure

For each failed test, the applicant/participant has four (4) working weeks from the notification of failure to select between the following alternatives:

- Rerate the data by adapting the software/DLL to the test results. The corrected software/DLL with its new version number shall be sent to

Eurovent Certita Certification who will check the consistency of the modifications. If the new software/DLL is in accordance with all the measurements, the range is published on the ECP website with the new rating and certification is granted/maintained. After verification ("test-recheck"), if the software/DLL is still not in accordance with the test results the certification shall be temporarily suspended until the software/DLL update proves consistency with the tests results.

- Ask for a second test scheduled by Eurovent Certita Certification according to the availability of the laboratory. The second test is to be conducted on the extra copy sampled and sealed by the auditor (see §IV.2). This request shall be accompanied by a cause analysis and a relevant corrective actions plan. If this second test is successful, no revision of selection software/DLL will be required, otherwise the data will have to be rerated and the software/DLL updated as explained in the rerating procedure (see §IV.6.f).

In both cases, penalty tests can be requested as described in §IV.6.d.

d. Penalty tests

In case of established failure on any of the performances items listed in Rating Standard RS/1/C/001, one (1) copy of the remaining selected model sampled and sealed by the auditor (see §IV.2 and Table 1) shall be sent by the applicant/participant for penalty test.

The penalty tests are full tests and shall be performed during the same test campaign, according to the availability of the independent laboratory.

e. Software consistency failure

In case the software/DLL is proved inconsistent during the initial check or the on-site check, the applicant/participant shall update it according to the Rerating procedure.

f. Rerating procedure

General Rerating procedure requirements are stated in the dedicated paragraph of the Certification Manual.

g. Audit failure

The applicant/participant shall resolve the non-conformity within the time limitation agreed in the corrective actions plan.

In case of critical non-conformity, the certification may be suspended/not granted until the critical non-conformity resolution and the corresponding verification.

h. Repeated failures along test campaigns

This section refers to the corresponding section of the Certification Manual.

IV.7. Non-application of procedures

There is no specific rule established for the FAN programme. The general consequences of non-application of procedures, described in the relevant paragraph of the Certification Manual, apply.

V. PROMOTION OF THE PROGRAMME

Promotion of the programme shall be done in accordance with relevant sections of the Certification Manual.

V.1. By Eurovent Certita Certification

The certified data of the certified products are published on the Eurovent Certified Performance website: www.eurovent-certification.com.

Eurovent Certita Certification will supply, on request, to any interested party, the current status of any participant or of any range (new, certified, deleted or obsolete).

The following data are published:

- Name of Company
- Trade or brand name
- Certificate number
- Range designation
- Range characteristics among those listed in Rating Standard RS/1/C/001
- Software/DLL name and version
- Production sites (city, country)

V.2. By Participants

It is highly recommended that the participating company indicates participation in the ECP programme for FANS by the following means.

a. Display of Eurovent Certified Performance logo on production units

Each Participant is entitled to display the Eurovent Certified Performance mark on each production unit of models which have been certified. The Participant may affix the certification mark at any location thereon satisfactory to him. The Eurovent Certified Performance mark may be applied as part of nameplate of certified models providing it meets the requirements stated in Certification Manual.

Whenever the participant applies the Eurovent Certified Performance mark on the product or its packaging, it shall be done in compliance with the design, minimum size and proportions presented in the Certification Manual. Also, the Eurovent Certified Performance mark shall include in the dedicated area (see Certification Manual) the name of the relevant programme the product is certified for, i.e. “FANS”.

b. Display of Eurovent Certified Performance logo on technical documentation

When used in technical documentation as defined in the Certification Manual (electronic and printed catalogues, websites, on-line and off-line selection software/DLL, specification sheets), carrying ratings or claiming certification of certified models, the Eurovent Certified Performance mark shall be used only for certified products. Non-certified products shall be clearly distinguished or presented in a separate document.

Any rating of a certified fan displayed in technical documentation shall comply with the “wire-to-air” approach as defined in in Rating Standard RS/1/C/001.

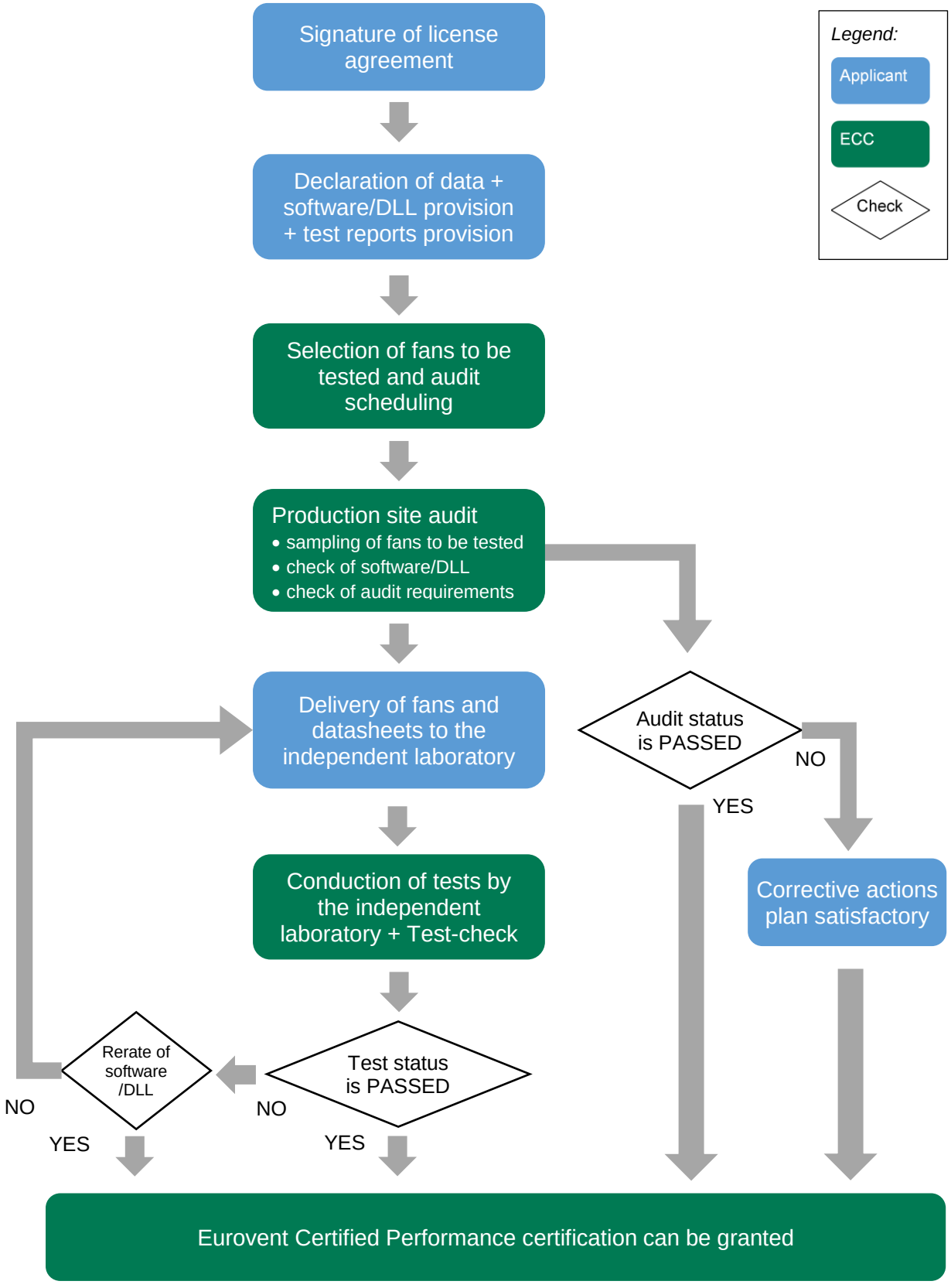
Whenever displayed on technical documentation, the ECP mark shall include in the dedicated area (see Certification Manual) the name of the relevant programme the product is certified for, i.e. “FANS”.

The ECP mark alone may be used in literature without certified performance data (general leaflets, advertising etc.).

Following the qualification procedure the basic documentation literature shall be submitted for approval to Eurovent Certita Certification. It shall be the responsibility of the participant to ensure compliance of other published literature.

APPENDIX A. CERTIFICATION PROCESS AND SCHEDULE

A.I. Qualification procedure



A.II. Repetition procedure

Table 3 : Certification schedule

Certification step	Deadline
Eurovent Certita Certification asks for update of declaration file from the participant.	30/09/n-1
The participant sends the updated declaration file as well as the software/DLL and the test reports.	15/11/n-1
Eurovent Certita Certification sends the list of selected models to the participant and schedules the audit(s).	15/12/n-1
All payments are completed by the participant.	31/01/n
The auditor audits the production site(s), checks the software/DLL consistency, samples and seals units for testing.	31/03/n
Sampled units delivery + technical datasheet transmission are completed by the participant	15/04/n
The participant sends the non-conformity corrective actions plan whenever applicable.	Deadline set up by the auditor
The auditor evaluates the corrective actions plan relevance	31/05/n
Eurovent Certita Certification sends the diploma if all requirements are fulfilled.	30/06/n
Diploma validity	30/06/n+1
All regular tests, and penalty tests when applicable, are completed and test report(s) sent by the independent laboratory to Eurovent Certita Certification	31/07/n
Eurovent Certita Certification verifies the software/DLL compliance with the test results (“test-check”) and forwards the test report together with the test report result sheet, and the test rerate form when applicable, to the participant	15/08/n
The participant can ask for second tests before	15/09/n
Rerated software / DLL is sent to Eurovent Certita Certification (when applicable)	30/09/n
Sampled units delivery + technical datasheet transmission + payment are completed by the participant for second tests (when applicable)	15/10/n
Second tests are completed and test report(s) sent by the independent laboratory to Eurovent Certita Certification (when applicable)	30/11/n
Eurovent Certita Certification verifies the software/DLL compliance with the second test results (“test-recheck”) and forwards the second test report together with the test report result sheet to the participant (when applicable)	15/12/n
Final corrections on the software/DLL in case of second failure	31/12/n

APPENDIX B. FORMS

B.I. Form FANS-1 : Declaration file

The form FANS-1 (declaration file) to be filled in shall be sent by Eurovent Certita Certification to:

- applicants who have signed the license agreement,
- participants on an annual basis before the deadline specified in the Certification schedule.

A template will be available for information and upon request.

B.II. Form FANS-2 : Technical datasheet (TDS)

The form FANS-2 (Technical Data Sheet) to be filled in shall be sent by Eurovent Certita Certification to applicants/participants who have returned the form FANS-1 duly completed.

A template will be available for information and upon request.

B.III. Form FANS-3 : Software/DLL update record sheet

COMPANY LOGO

XXXX Software/DLL name
Software/DLL update record sheet

Prepared by:

Software/DLL version	Revision date	Brief description of the update

B.IV. Form FANS-4 : Test report result sheet

The form FANS-4 (Test report result sheet) shall be sent by Eurovent Certita Certification to applicants/participants together with the test report.

A template will be available for information and upon request

B.V. Form FANS-5 : Test rerate form

CERTIFICATION PROGRAMME FOR FANS

RESPONSE FORM AFTER FAILURE ON TESTED UNIT
This response form shall be sent back by e-mail to Eurovent Certita Certification within four (4) working weeks maximum. Without news from you within this delay, revision of selection software/DLL with rerated data will be required.

Date : _____ Name : _____ Signature : _____

According to the document OM-22-2017, you are asked to select one of the following alternatives:

☐ **Ask for a second test, i.e. on another copy of the same unit sampled and sealed by the auditor.**

☐ **Rerate the software/DLL in line with test results**

APPENDIX C. SPECIFICATIONS FOR AERODYNAMIC TEST REPORTS PROVISION

C.I. Acceptance criteria for the test reports

Any sensor included in the airflow measurement system (temperature, humidity and differential pressure) has to be calibrated regularly. The calibration date has to appear on the test report and the calibration certificate, if any, shall be enclosed.

The uncertainty of measurement shall clearly appear in the test report or in a technical appendix provided together with the report.

Whenever necessary, Eurovent Certita Certification has the right to witness a test or to conduct a round robin test to validate the test report provided by the applicant/participant.

C.II. Tests reports to be provided in the frame of the qualifying procedure

For the qualification procedure the applicant has to provide N_{FAN-I} or N_{FAN-C} reports of tests conducted:

- Case 1: by the personnel of the independent laboratory selected by Eurovent Certita Certification at the premises of the independent laboratory facility (test ordered by Eurovent Certita Certification) and conducted according to §IV.3;
- Case 2: by the applicant on the production site laboratory test rig provided that the test rig was validated in accordance with Appendix D and that the validation diploma is still running;
- Case 3: by an independent laboratory organised according to ISO 17025:2005.

In case 2 and case 3, the compliance to requirements listed in Appendix C.I will be systematically checked by Eurovent Certita Certification.

In case 3, the elements of evidence that the independent laboratory organisation complies with ISO 17025:2005 will have to be provided together with the test reports in order to be checked by Eurovent Certita Certification.

The number of reports to be provided is calculated as follows:

- For FAN-I (basic assembly) the applicant has to provide N_{FAN-I} test reports and

  $$N_{FAN-I} = N_{impeller}$$

  where $N_{impeller}$: number of impeller tip diameters available in the range

- For FAN-C (complete assembly) the applicant has to provide N_{FAN-C} test reports and

  $$N_{FAN-C} = Max(N_{impeller}; N_{motor}; N_{drive})$$

  where

  $N_{impeller}$: number of impeller tip diameters available in the range

  N_{motor}: number of motor sizes available in the range

  N_{drive}: number of drive types available in the range

Example: The range to be certified concerns centrifugal fans fitted with either a variable-speed drive or a multi-speed drive. There are nine (9) impeller tip diameters and six (6) motor sizes possible so

$$N_{FAN-C} = Max(9; 6; 2) = 9$$

Nine (9) models of fans will be selected in such a way that each impeller tip diameter, each motor size and each drive type is represented at least once.

C.III. Tests reports to be provided in the frame of the repetition procedure

The applicant has to provide one (1) test report per production site. The tests have to have been conducted since the previous audit:

- Case 1: by the personnel of the independent laboratory selected by Eurovent Certita Certification at the premises of the independent laboratory facility (test ordered by Eurovent Certita Certification) and conducted according to §IV.3;
- Case 2: by the applicant on the production site laboratory test rig provided that the test rig was validated in accordance with Appendix D and that the validation diploma is still running.

If only part of the production sites is equipped with a validated test rig, the participant can either deliver the units to be tested to these particular sites or to order the tests to Eurovent Certita Certification. In both cases the tested units will have to be traceable so that it can be evidenced that each of them comes from a different production site.

Example: If the participant has five (5) production sites that manufacture the certified ranges then five (5) test reports shall be provided annually.

APPENDIX D. TEST RIG VALIDATION PROCEDURE

D.I. Request for test rig validation by the applicant/participant

The applicant/participant who wants to have his test rig validated shall send an application form to Eurovent Certita Certification.

Essential characteristics of the test rig shall be indicated.

The test rig shall be able to satisfy the requirements of the ISO 5801:2007 standard concerning the maximum allowable uncertainties for the measurement of individual parameters but also for the test results.

D.II. Existing test rig validation diploma delivered by an approved entity

Existing test rig validation diplomas can be accepted by Eurovent Certita Certification if they were granted by an approved entity and that they fulfil the following requirements:

- For the qualifying procedure the test rig validation shall have been granted maximum three (3) years before the programme entry into force date;
- For the repetition procedure, the test rig validation shall be renewed regularly enough to comply with the maximum duration of the diploma validity which is 24 months.

The list of approved entities is available upon request.

D.III. Test rig validation by the independent laboratory chosen by Eurovent Certita Certification

Eurovent Certita Certification asks the independent laboratory to proceed to the test rig validation by the means of a Round Robin Test for a reference fan.

The Round Robin Test consists of having a reference fan tested

- on the one hand by the applicant/participant on the test rig to be validated;
- on the other hand by the laboratory personnel, at the premises of the independent laboratory chosen by Eurovent Certita Certification for the FANS programme, using the independent laboratory's instruments;

The product performances tested are the ones corresponding to the aerodynamic test as described in §V.I of the Rating Standard RS/1/C/001.

The comparison between the test results will enable determining if the applicant/participant's test rig can be validated or not.

The diploma validity is 24 months and the test rig validation renewal shall be scheduled accordingly in the repetition procedure.