



TECHNICAL CERTIFICATION RULES OF THE EUROVENT CERTIFIED PERFORMANCE MARK



DRIFT ELIMINATOR

Identification: ECP-14 DE

Revision 2023 – **Dec**
(This version cancels and replaces any previous versions)

Approbation date: 16/11/2023

Comes into effect from: 01/12/2023

The purpose of this Technical Certification Rules is to prescribe procedures for the operation of the Eurovent Certified Performance (ECP) certification programme for Drift Eliminators (DE), in accordance with the Certification Manual.

Modifications as against last version:

No.	Modifications	Section	Page
1	New test thresholds for Counterflow & Crossflow of 0.002%, to comply with recognised international drift standards, however, if above this tested value to 0.01% then the existing threshold 0.01% will apply, any test result above 0.01% will be considered as a failure and no certification.	I.2	5
2	Includes 2 x new acceptance criteria of 0.002% & 0.01% with explanation of no. of digits after the decimal point.	A5	17

This document is strictly reserved for use in the Certification Programmes of Eurovent Certita Certification. Reproduction or translation of any part of the document is forbidden without written permission from Eurovent Certita Certification.

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

Tel: + 33 1 75 44 71 71
 E-mail: [i.butler@eurovent-certification.com]



Table of Contents

I. GENERAL INFORMATION.....	5
I.1. Scope.....	5
I.1.1. General	5
I.2. Certified Performances	5
I.3. Definitions	5
I.4. Contributors	6
I.4.1. Audit Body.....	6
II. REQUIREMENTS OF THE REFERENCE DOCUMENT	6
II.1. Reference Documents	6
II.1.1. Product and Test Standards.....	6
II.1.2. Specific Technical Requirements	7
a. Counter flow Testing Laboratory	7
b. Cross flow Testing Laboratory for Splash-type fill with Drift Eliminators.....	7
c. Cross flow Testing Laboratory for Film-type fill with Drift Eliminators	8
d. Break-through Velocity Measurement	8
II.2. Specific Requirements and Quality Management.....	9
II.3. Marking	9
II.3.1 Display of Eurovent Certified Performance Mark on Production Units	10
II.3.2 Display of Eurovent Certified Performance Mark on Sheets, Literature, Software and Advertising.....	10
III. CERTIFICATION PROCESS	10
III.1. Admission Procedure.....	10
III.1.1. Declaration of Data.....	10
III.1.2. Admissibility of the Application	11
III.1.3. Implementation of Checking Operations	11
III.1.3.1. Initial Admission Audit	11
a. General	11
b. Factory / Site Audit Purpose.....	12
c. Verification of Physical Data.....	12
d. Audit Report and Audit Conclusions.....	12
III.1.3.2. Selection of Units to be Tested.....	13
III.1.3.3. Tests at the Independent Laboratory.....	13
III.2. Surveillance Procedure.....	15
III.2.1. Implementation of Surveillance Operations	15
III.2.1.1. Surveillance Audit.....	15
III.2.1.2. Technical and Commercial Documentation Check.....	15
III.2.2. Evaluation and Decision	15
III.3. Declaration of Modifications	15
III.3.1. Changes Concerning the Participant	16
III.3.2. Changes Concerning Production Entities	16
III.3.3. Changes Concerning the Quality Organisation of the Manufacturing and/or Marketing Process	16
III.3.4. Additional Admission for a New Model and/or New Range	16
III.3.5. Changes Concerning the Certified Product	16
III.3.6. Temporary or Permanent Cessation of Production of a Certified Product.....	16
III.4. Suspension / Cessation Conditions	16
APPENDIX A. TECHNICAL APPENDIXES	17



A.1 Purpose	17
A.2 Testing Requirements	17
A.3 Rating Requirements.....	17
A.4 Certified Performance Items.....	17
A.5 Acceptance Criteria	17
A.6 Exclusion Clause.....	18
APPENDIX B. DISTRIBUTION SYSTEM LAYOUTS	19
B.I. For Counter flow testing	19
B.II. For Cross flow Testing of Splash-type Fill with Drift Eliminators	20
B.III. For Cross flow Testing of Film-type Fill with Drift Eliminators	21
APPENDIX C. CAMPAIGN SCHEDULE.....	22
APPENDIX D. FORMS	23
D.I. Form DE-1: Declaration File for Certification by Original Equipment Manufacturer	23
D.II. Form DE-2: Declaration File for Certification by Brand Names.....	23
D.III. Form DE-3: DE Manufacturer & Audit Location Declaration Form.....	24
D.IV. Form DE-4-5-6: Technical Form for Unit to be Tested, Reporting Form and Result Form ..	25
D.V. Form DE-7: Re-rate Form.....	26

I. GENERAL INFORMATION

I.1. Scope

I.1.1. General

The programme for Drift Eliminators applies to Drift Eliminators used for evaporative water-cooling equipment. There are three types of drift configuration covered by this certification programme, these being:

- Counter-flow
- Cross-flow integrated (film fill)
- Cross-flow non-integrated (Splash fill)

Drift eliminators of different material family (such as PVC, PP, steel, FRP, etc) and design shall be considered as a new drift eliminator.

I.2. Certified Performances

The following characteristics of Drift Eliminators shall be certified by tests:

- *For counter-flow and cross-flow film fill, the average drift losses of the two tests at $3.5 \text{ m}\cdot\text{s}^{-1}$ are declared either 0.002% when the tested drift rate is equal to or below 0.002% or 0.01% when the tested drift rate has exceeded this lower threshold value. However, should the result be above 0.01%, then the test result is considered non-certified.*
- *For cross-flow splash fill, the average drift losses of the two tests at $3 \text{ m}\cdot\text{s}^{-1}$ are declared either 0.002% when the tested drift rate is equal to or below 0.002% or 0.01% when the tested drift rate has exceeded this lower threshold value. However, should the result be above 0.01%, then the test result is considered non-certified.*

All characteristics shall be expressed in SI Units. On counter flow test results, velocities will be rounded with 3 significant digits (3.32 m/s).

All drift measured values will be rounded with 4 digits after the decimal point for the display, while the average will be calculated on the non-rounded value, and then it will be also rounded to 4 digits after the decimal point (for 0.002% threshold), and then it will be also rounded to 3 digits after the decimal point (for 0.01% threshold).

Note: No acceptance criteria will be applied on the average drift losses (example 0.0024 passed, however 0.0025 will result into a 0.01% threshold declaration) and 0.015 will result in a failure, with no certification declaration.

I.3. Definitions

Drift Eliminator: Inertial water droplet stripping devices used to reduce the amount of circulating water that can be entrained in the unit airflow and leave the equipment.

Evaporative Cooling Equipment: Any equipment that uses water distribution and generates aerosols for the purpose of heat transfer.

Drift Rate: Proportion of the drift volumetric flow rate to the circulating water flow rate entrained in the airflow and exiting at the discharge of the eliminator, expressed as a percentage.

Drift Concentration: Mass ratio of drift to the air leaving the eliminator, expressed in $\text{mg}_{\text{water}}/\text{m}^3_{\text{air}}$.

Break-through Air Velocity: Three stages can be observed: first, small droplets leave the DE then fall back down almost immediately; second, the small droplets float above the DE without leaving, then third, droplets are carried away by the airflow and leave the DE. The breakthrough velocity corresponds to the beginning of the third stage. Velocity shall be expressed in m/s.

Maximum Air Velocity: Maximum air speed at which the drift eliminator will be tested, expressed in m/s

Critical non-conformity: A non-conformity is classified as 'critical' when based on objective evidence:

- there is a significant risk to the product's conformity to specified requirements, or
- there is a significant there is a significant risk on management system's ability to control the product's conformity to specified requirements, or
- there is systematic or repeated non-conformity to a specified requirement.

Non-critical non-conformity: A non-conformity is classified as 'non-critical' when based on objective evidence:

- there is no significant risk to the product's conformity to specified requirements, or
- there is no significant risk on management system's ability to control the product's conformity to specified requirements, or
- there is no systematic or repeated non-conformity to a specified requirement.

I.4. Contributors

The lists of contributors are given for information and may be modified by EUROVENT CERTITA CERTIFICATION whenever necessary.

I.4.1. Audit Body

The audit functions are performed by the following body(ies), called audit body:

EUROVENT CERTITA CERTIFICATION SAS

48/50 rue de la Victoire

F- 75009 PARIS

Tel : + 33 1 75 44 71 71

www.eurovent-certification.com

EUROVENT CERTITA CERTIFICATION Ltd

Kemp House 152-160 City Road

London, EC1V 2NX

United Kingdom

Tel : +44 07896711612

II. REQUIREMENTS OF THE REFERENCE DOCUMENT

II.1. Reference Documents

II.1.1. Product and Test Standards

The test procedure is detailed in the technical appendix and in the product and test standards.

The applicable standards are as follow (non-exhaustive list):

All standard ratings shall be verified by Isokinetic tests conducted in accordance with the Cooling Technology Institute test code: ATC-140. Measurements shall be made at the discharge of the Drift Eliminator.

II.1.2. Specific Technical Requirements

a. Counter flow Testing Laboratory

For counter flow testing, the following specifications shall be respected:

- The test section shall be 1.8 m x 1.8 m (6' x 6') fill media plan dimensions. If the test cell is larger, then a box must be built inside the cell walls extending from the bottom of the fill to the bottom of the drift eliminator.
- Water loading shall be 20 m³/hr/m² ($\pm 5\%$).
- Bete nozzles, model IS88, shall be installed according to sketch (see Appendix) in a linear pattern; the pressure shall be defined at 40 kPa (0.4 bar).
- 1.2 m fill height, using 12 mm spacing cross-corrugated fill model (cf. 1200 AT or equivalent) shall be respected.
- The test shall be conducted with a spray height above the fill media of 0.3 m (1') from the bottom of the nozzle to the top of the fill.
- The height from spray nozzle discharge to eliminators shall be equal to 0.7 m.
- The drift eliminator support shall have maximum 25 mm width, located in the centre of the test section (see Appendix B.I).
- 5 points shall be tested, following the sequence of 3.5, 3, 2.5, 2, and 3.5 m/s air speed at the eliminator discharge gross area.
- Velocities will be rounded with 3 digits.

b. Cross flow Testing Laboratory for Splash-type fill with Drift Eliminators

For cross flow testing of splash-type fill with drift eliminators, the following specifications shall be respected:

- For a splash-type fill, the drift eliminator face area shall be minimum 0.8 m width x 1.7 m height.
- The fill media shall be the same or slightly less than the drift eliminator size, with approximately 1 m air travel.
- Water loading shall be 50 m³/hr/m² ($\pm 5\%$).
- 9 nozzles SPX/Marley, model P/N 71-3462-084, shall be installed according to sketch (see Appendix B.II); the pressure shall be defined at 90 mm of basin head ($\pm 20\%$). Top of hot water basin floor to top of first splash bar shall be 300 mm.
- Fill media shall be V bars on 4 in vertical x 8 in horizontal centres in a staggered arrangement, parallel to airflow. A 300 mm space between fill bars and eliminators shall be used. The fill faces shall be placed at approximately a 12-degree slope. The slope of the fill may be increased in case of water flooding the bottom of the eliminator.
- The minimum distance between the centreline of the last distribution points and the closest eliminator face shall be 550 mm.
- The eliminator slope shall be specified by the Participant.
- Sampling time correction for the discharge angle as described in ATC-140 shall not be applied.
- 5 points shall be tested, following the sequence of 3, 2.5, 2, 1.5 and 3 m/s air speed at the eliminator discharge gross area.

c. Cross flow Testing Laboratory for Film-type fill with Drift Eliminators

For cross flow testing of film-type fill with drift eliminators, the following specifications shall be respected:

- Drift eliminator face area shall be minimum 0.6 m width x 1.2 m height.
- The fill media shall be the same or slightly less than the drift eliminator size, with approximately 1 m of functional air travel (between eliminator and louver).
- Water loading shall be 70 m³/hr/m² (\pm 5 %).
- 18 nozzles SPX/Marley, model P/N 68-3738-060, shall be installed according to sketch (see Appendix); the pressure shall be defined at 125 mm of basin head (+/- 20%). Top of hot water basin floor to top of film-type fill shall be 140 mm.
- For air travels less than or greater than 1 m, add or subtract rows of nozzles as necessary starting from louver side. Nozzle quantity may change with the actual air travel used.
- Combined fill and eliminator installation shall be as used in the relevant product.
- For installation with non-integral eliminators the space between film-type fill and eliminators shall be 150 mm.
- For integrated cross flow products, the eliminator slope shall be specified by the Participant to adjust the exhaust box to the same angle. Sampling time correction for the discharge angle as described in ATC-140 shall not be applied.
- The minimum distance between the centre-line of the last distribution points and the closest eliminator face shall be 254 mm for integral eliminators, and 404 mm for non-integral eliminators.
- 5 points shall be tested, following the sequence of 3.5, 3, 2.5, 2 and 3.5 m/s air speed at the eliminator discharge gross area.

d. Break-through Velocity Measurement

For Break-through velocity measurement, the following specifications shall be respected:

- If needed, the effective area of the drift eliminators may be reduced to be able to reach the break-through air velocity with the existing fan.
- The blockage must be done symmetrically along all the walls of the test cell on both sides of the drift eliminator.
- Enough light (minimum 1000 W halogen lamps) must be installed in the test cell about 1 m downstream of the drift eliminators.
- Two video cameras are installed across the two axes of the test cell just above the top edge of the drift eliminator.
- The test is done with the same water flow as for the drift losses test without heat load to avoid plume.
- The air velocity is increased slowly until the operator notices a large number of visible droplets passing through the drift eliminators. This average test cell air velocity is recorded. For a subsequent test, the air velocity is reduced to about 50% of the previously measured break-through velocity.
- The procedure is repeated 5 times or more if large (more than 25%) discrepancies are observed in the measurements. It is recommended to have several operators making the measurement independently.
- The break-through air velocity is the average of the 5 valid tests.

II.2. Specific Requirements and Quality Management

Production Requirements

Inspection during Manufacturing Process (when, auditing at factory facilities)

Inspections, and corresponding result recording, can be required for key manufacturing points in technical certification rules.

The requirements include the minimum frequency, acceptance criteria and reference Standard if applicable.

The goal of these verifications is to ensure a good level of reliability, reproducibility, and quality of certified products.

Each type of inspection shall be adequate to the product and to each manufacturing process.

Examples of inspections:

- Dimensional measurement

These inspections can be conducted directly on the production line or in the internal laboratory of the manufacturer.

Inspections of the Final Product (when, auditing at factory facilities)

Each manufactured product must be operated at the end of the production line to check that it works properly. Periodic inspections must be carried out to ensure the compliance and presence of the marking on the certified product, as defined in the Technical Certification Rules.

Visual inspections shall be carried out before the product is packaged. All the inspections and tests carried out throughout the assembly process shall be validated and recorded.

Declaration Consistency (when auditing at factory or identified site location)

The components and materials shall comply with the declared data (Declaration / DWG's provided in original submission or at initial audit). The products shall be manufactured in production sites declared according article 85.

Sampling on Site

The products in the sales record and/or production line and/or stock shall be compliant with the declaration file. In the case of an audit of series production, a sampling can be conducted from the production line or the stock. The sampled products shall be identified and sealed so that they can be authenticated at their reception by the laboratory personnel.

Use of Mark Logo

The participant shall respect the marking requirements of the present certification manual and of the Technical certification rules if the logo is used on its products and/or services on all the relative documentations

Management of Customer Claims

Customer claim and their treatment related to certified products shall be done, recorded and maintained available.

II.3. Marking

It is highly recommended that the participating company indicates participation in the EUROVENT CERTIFIED PERFORMANCE (ECP) programme for Drift Eliminators by the following means.

In addition to the provisions laid down in the Certification Manual, the following requirements apply:

The mark shall include the mentions indicated in the logo below:



Figure 1: ECP mark for Drift Eliminators

II.3.1 Display of Eurovent Certified Performance Mark on Production Units

The provisions of the Certification Manual apply.

II.3.2 Display of Eurovent Certified Performance Mark on Sheets, Literature, Software and Advertising

The provisions of the Certification Manual apply.

Publications

The test data are the property of Eurovent Certita Certification and of the Participant. The manufacturer of the drift eliminator is then allowed to use the actual measured values for his own literature, but he cannot mention Eurovent Certita Certification in connection with these data.

The Participant may state in his publications that a specified drift eliminator design has been qualified under test by the Eurovent Certita Certification. He may furthermore state that tests were carried out by an independent testing agency according to the isokinetic test method. He may state that the breakthrough velocity has been measured. He may however NOT state that all performance information he publishes has been certified by Eurovent Certita Certification.

Non-certified Models

If any of the above literature contains references to non-certified models outside of the applied Certification Programme, these may be included providing that they are clearly footnoted and the footnote states:

"Models marked are not ECP Certified".

III. CERTIFICATION PROCESS

III.1. Admission Procedure

III.1.1. Declaration of Data

In addition to the provisions laid down in the Certification Manual, the following requirements apply: The Applicant, after signing the Certification Agreement, shall send to EUROVENT CERTITA CERTIFICATION all information required for the qualification.

All characteristics shall be expressed in SI Units. On counter flow test results, velocities will be rounded with 3 significant digits (3.32 m/s).

All drift measured values will be rounded with 4 digits after the decimal point for the display, while the average will be calculated on the non-rounded value, and then it will be also rounded to 4 digits after the decimal point.

Original Equipment Manufacturer: For models submitted by an original equipment manufacturer Form DE-1 will be used, specifying:

- The name of the company
- The name of the model
- The material of the drift eliminator
- One photo of the drift eliminator

Technical form: Submittal for certification of drift eliminator models shall be made in writing and sent by email to Eurovent Certita Certification as an Excel file, Form DE-3, specifying as a minimum:

- Material of the drift eliminator
- Photographs from each side of the drift
- Detailed drawings of the drift eliminator with the following key dimensions:
 - Air travel dimension
 - Thickness
 - Pitch
 - Other dimensions critical for the design

Copies of the forms are part of this manual (See APPENDIX D. FORMS).

Confidentiality of Certification Data: All data submitted to Eurovent Certita Certification shall be held confidential except for information authorised to be published on the website.

III.1.2. Admissibility of the Application

The provisions of the certification Manual apply.

III.1.3. Implementation of Checking Operations

The provisions of the certification Manual apply.

III.1.3.1. Initial Admission Audit

In addition to the provisions laid down in the Certification Manual, the following requirements apply:

a. General

Audits shall be conducted at one of the declared audit locations provided by the manufacturer see Form DE-3 Manufacturer & Audit Location declaration form (see APPENDIX D). To determine this, Eurovent Certita Certification will contact the manufacturer requesting information about:

- All certified products to be available from any one production of the declared factories, note during each 3-year audit if the product has been declared from several manufacturing locations then in the following audit this product facility shall not be provided (rotation of factory facilities to be respected). **Note, for clarification only one sample is required from each certified product per audit.**

Based on that, Eurovent Certita Certification (auditor agency) will determine together with the participant the site(s) for each audit and advise the audit agency.

Note: for the auditor's safety prior to factory or site audits the participant must provide in advance safety provisions to the auditor i.e. Safety Risk Assessment, Safety Needs including Equipment, etc. If these are not provided or confirmed, then the audit will not take place until they have been provided.

The audits shall be arranged by the manufacturer upon notice by Eurovent Certita Certification. The audit costs shall be paid by the manufacturer to Eurovent Certita Certification

b. Factory / Site Audit Purpose

Purpose of the audit is to:

- verify that the manufacturer builds the product to the design intent to that what has been tested and provided in the technical form DE-4 and support documentation as described in III.1.1
- identify the manufacturing traceability of the key drift component i.e. Blade, Sheet (integrated or non-integrated) or Block
- verify that the participant is not using the ECP mark inappropriately to that of the certification manual or declaring another drift rating other than that which can be found on the Eurovent Certita Certification website.

c. Verification of Physical Data

- note model number and location from where Blade, Sheet or Block was invoiced;
- check material of the drift as per declared in the Technical form;
- review existing photographs from each side of the drift, if no photographs are available then auditor will take relevant pictures for the next audit evaluation.
- check air travel dimensions
- check thickness of material
- check pitch
- check any recognized profile characteristics on the face of the drift that could have an impact on drift performance; Blade; Sheet or Block.
- check other dimensions or features critical for the design, should the auditor not have this information available during the first audit then key dimensions and features shall be recorded and used during future audits.

Note, should an outside agency undertake the audit on behalf of Eurovent Certita Certification, then they will send any photograph, dimension & feature records together with the audit report / results.

Within the audit report a section is allocated to comparing the declared information to that as seen by the auditor. Should the comparison between the declared & actual drift sample not be considered acceptable by the auditor, then the auditor will report their conclusion.

Traceability

To ensure the traceability of the drift manufacturer; sheet, block or blade (key performance part of the drift eliminator) during the design intent audit process the auditor shall check each drift samples invoice / shipping admin. documentation thus determining the location of manufacturer. Participants may have more than one location of manufacturer for their certified product; therefore, each certified product origin of manufacturer shall be listed on the product listing indicating the factory city and factory country.

d. Audit Report and Audit Conclusions

After evaluation, a non-conformity is classified 'critical' when the following cases are identified:

- there is a significant risk regarding the product conformity with respect to applicable design requirements;
 - a specific non-conformity already pointed out during a previous audit is observed again;
- Otherwise the non-conformity is non-critical.

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

Failure Treatment

In case of non-conformity, Eurovent Certita Certification shall initiate the appropriate failure treatment procedures. The outcome of the failure treatment procedures may be that the product range is suspended from certification for a minimum period of one year or longer until the non-conformity has been corrected.

The Audit failure treatment consists of the following:

- In the case of non-critical non-conformity, the manufacturer shall send Eurovent Certita Certification the corrective action plan within 1 month of the audit with an indication date for when the corrective action(s) will be resolved. Any corrected documentation shall be required within 1 year of the audit for the auditor to close the non-conformity.
- In case of critical non-conformity, the manufacturer shall send Eurovent Certita Certification the corrective action plan within 1 month of the audit with an indication date for when the corrective action(s) will be resolved. Any corrected documentation or supporting technical evidence shall be required within 1 month following the corrective action plan.
- Should the critical non-conformity find that the certified performance is no longer valid and that the supporting evidence cannot justify the change in design, then the participant will be notified that the product will be immediately suspended from certification and removed from the ECC website.
- For any suspended product to be re-established on the ECC website it will have to undertake new certification test.

Acceptance of the solved corrective action/s will be acknowledged by the auditor and passed back to the participant.

III.1.3.2. Selection of Units to be Tested

In addition to the provisions laid down in the Certification Manual, the following requirements apply:

Each drift eliminator model submitted shall be tested. Drift eliminators of different material family (such as PVC, PP, steel, FRP, etc) and design shall be considered as a new drift eliminator.

III.1.3.3. Tests at the Independent Laboratory

In addition to the provisions laid down in the Certification Manual, the following requirements apply:

General for External Independent Laboratory

Scheduled tests shall be performed at designated laboratories by an independent testing agency selected by Eurovent Certita Certification. Products shall be installed in the test facility in accordance with the set-up description provided by the Participant.

The Participant shall bear the cost for un-crating, handling, installing, testing and re-crating of the product for shipment.

The independent test agency personnel shall install and check out test products.

If the facility allows it, the Participant may review the installation prior to the test. If the facility doesn't allow Participant's personnel, then video monitoring of the installation in real time shall be made available through a webcam. In any case, the participants must formally approve the installation. Participant may review its own test results given with the conductivity methodology. In any case, the participant may not attend the data collection.

General for Participants Laboratory

Scheduled tests shall be performed at designated participants laboratory by an independent testing agency selected by Eurovent Certita Certification. The independent test agency personnel shall

install and check out test products in accordance with the set-up description provided by the participant. The participant may review the installation prior to the test. The participant may review its own test results given with the conductivity methodology; however, the participant must not receive the data collection during the complete testing process.

a. Time Limitation of Acquisition of Product

Deadline for delivery of products to the laboratory together with the technical form completed and the purchase order shall be decided by Eurovent Certita Certification in accordance with the Programme Committee and the laboratory.

The Participant shall place a purchase order with Eurovent Certita Certification to execute a test and participation to the repetition procedure.

If products, technical form, and order are not delivered within the time limits (specified in the notification received from Eurovent Certita Certification), it is considered as violation of rules, the provision in the certification manual shall apply.

b. Test Conditions

The tests shall be conducted at the conditions stated in Appendix A

c. Report of Tests Results

Upon completion of the tests on each product, the independent test agency will send to Eurovent Certita Certification the complete report as a PDF file. Eurovent Certita Certification will forward a copy of the report together with the reporting and test result Form DE-4-5 and eventual re-rate Form DE-6 to the participating company (See APPENDIX D).

When testing at the external laboratory the participant must recover its products one month after receiving the test report. If the products are not recovered after this delay, the laboratory will destroy the units and invoice the manufacturer.

d. Failure treatment

The tests shall be conducted at the conditions stated in Appendix A.

General

In case of test failure, the Participant will have four working weeks from the notification of the failure to ask for a second test on the same product scheduled as per availability of the laboratory and the test agency.

If this second test is successful, the drift eliminator design shall be listed on the ECP Website. When the second test is unsuccessful, the drift eliminator design is not qualified and will not carry the ECP mark.

Initial Test Failure

If the drift eliminator is damaged and cannot be repaired or replaced at the laboratory, then this is considered as "initial test failure". Replacements shall then be delivered for a subsequent test; timing to be agreed with the laboratory and the test agency

III.1.4. Evaluation and Decision

In addition to the to the provisions laid down in the Certification Manual, the following requirements apply;

The certification is granted on condition that:

- The aforementioned checks prove compliance with the requirements specified in Appendix A
- All other requirements from this Technical Certification Rules (TCR) are fulfilled,
- All fees have been settled.

III.2. Surveillance Procedure

The provisions of the Certification Manual apply.

III.2.1. Implementation of Surveillance Operations

The Participant must ensure that there is conformity between design of the drift eliminator he manufactures and sells, and the design described in the application form and then tested. Conformity is verified on an annual basis by the collection of a declaration of conformity from the Participant, and a conformity audit conducted every 3 years, starting from the same year as that of the performance test.

Upon decision of Eurovent Certita Certification, an independent agency could perform at random checking of either the manufacturing facility or sites where the drift eliminators are installed. In case of inspection on site, the site must not be older than 3 months.

If the requirements of the surveillance procedure are fulfilled, then the certificate could be renewed for another year.

If the manufacturer makes changes to his design, this will require a new application file and a new test as per the admission procedure (III.1).

Furthermore, if manufacturer 'A' wants to certify new references, he contacts Eurovent Certita Certification. Eurovent Certita Certification calls for references from other manufacturers to be certified, with an answer to be given within the time period defined with manufacturer 'A'. After that period, Eurovent Certita Certification calls for tender regarding the test facility and the test agency with the number and type of DE to be tested. Fixed costs will be shared by all the manufacturers of the new testing campaign. Alternatively, if the manufacturer has their own testing facilities which matches the minimum requirements of this TCR and validated by an independent test agency assigned by Eurovent Certita Certification, then this facility could be used.

III.2.1.1. Surveillance Audit

In addition to the provisions laid down in the Certification Manual, the following requirements apply: For the surveillance procedure, the surveillance audit follows the same rules than the admission audit and will be conducted on an N+3 year cycle.

- All certified products to be available from any one production of the declared factories, note during each 3-year audit if the product has been declared from several manufacturing locations then in the following audit this product facility shall not be provided (rotation of factory facilities to be respected). **Note, for clarification only one sample is required from each certified product per audit.**

Failure Treatment

Same failure treatment will apply as outlined in III.1.3.1 – Initial Admission Audit.

III.2.1.2. Technical and Commercial Documentation Check

In addition to the provisions laid down in the Certification Manual apply and following the same rules than the admission documentation check.

III.2.2. Evaluation and Decision

The provisions of the Certification Manual apply.

III.3. Declaration of Modifications

The provisions of the Certification Manual apply.

In addition, the participant shall notify design changes that he has been made to the certified drift eliminator to the Eurovent Certita Certification, be it a physical design change or production process change. Should it be considered a design change affecting performance of the drift eliminator then the certification will be removed from the Eurovent website and the product shall not be considered certified, until a new drift test has been successfully performed and a new certificate granted, should the change be in the production process and be considered as not affecting the drift performance then the existing certification will be maintained.

In addition, the participant shall inform Eurovent Certita Certification of any declaration modifications using the correct FORM's as outlined in the data application, admission procedure (see APPENDIX D).

III.3.1. Changes Concerning the Participant

The provisions of the Certification Manual apply.

In addition, the participant shall inform Eurovent Certita Certification of any declaration modifications using the correct FORM's as outlined in the data application, admission procedure (see APPENDIX D).

III.3.2. Changes Concerning Production Entities

The provisions of the Certification Manual apply.

In addition, the participant shall inform Eurovent Certita Certification of any declaration modifications using the correct FORM's as outlined in the data application, admission procedure (See APPENDIX D).

III.3.3. Changes Concerning the Quality Organisation of the Manufacturing and/or Marketing Process

The provisions of the Certification Manual apply.

III.3.4. Additional Admission for a New Model and/or New Range

The provisions of the Certification Manual apply.

In addition, the participant shall inform Eurovent Certita Certification of any declaration modifications using the correct FORM's as outlined in the data application, admission procedure (See APPENDIX D).

III.3.5. Changes Concerning the Certified Product

In addition to the provisions laid down in the Certification Manual, the following requirements apply:

Participant shall inform Eurovent Certita Certification of any modification of the product portfolio as outlined in II.2.1. Non-compliance of the applicant/participant is considered as non-application of procedure as outlined in this TCR.

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 a new test for the product as outlined in the admission procedure III.1.

III.3.6. Temporary or Permanent Cessation of Production of a Certified Product

In addition to the provisions laid down in the Certification Manual apply,

III.4. Suspension / Cessation Conditions

The provisions of the Certification Manual apply.

APPENDIX A. TECHNICAL APPENDIXES

A.1 Purpose

The purpose of this document is to establish definitions and specifications for testing and rating of the Drift Eliminator for the related Programme.

A.2 Testing Requirements

Note: Specific reference to test standards ATC140. It is to be noted that standards or field documents are usually intellectual property of their author organisation but can always be purchased on its website: www.coolingtechnology.org/

Public reference documents shall be available on certification website www.eurovent-certification.com

A.3 Rating Requirements

Rating requirements are in accordance with the Cooling Technology Institute test code ATC-140.

A.4 Certified Performance Items

The following information pertaining to each model certified shall be published on the ECP web-page for Drift Eliminators:

- Name of Company
- Trade or brand name of model
- Model number(s) or designation(s)
- The certified drift eliminator has produced a drift rate less than or equal to 0.01% when tested according to this TCR document.
- The value over time of this certification is subject to proper installation and maintenance of the drift eliminator and to the respect of adequate manufacturer's recommendations.
- Breakthrough velocity (not certified, for information only).

A.5 Acceptance Criteria

- *For counter-flow and cross-flow film fill, the average drift losses of the two tests at 3.5 m.s-1 are less than:*
 - a. *0.002% of the circulating water flow rate*
 - b. *0.01%, of the circulating water flow rate*

Note: Should the tested values be above the 0.01% acceptance criteria then the result will be considered non-certified.

- *For cross-flow splash fill, the average drift losses of the two tests at 3 m.s-1 are less than:*
 - c. *0.002% of the circulating water flow rate*
 - d. *0.01%, of the circulating water flow rate*

Note: Should the tested values be above the 0.01% acceptance criteria then the result will be considered non-certified.

All characteristics shall be expressed in SI Units. On counter flow test results, velocities will be rounded with 3 significant digits (3.32 m/s).

All drift measured values will be rounded with 4 digits after the decimal point for the display, while the average will be calculated on the non-rounded value, and then it will be also rounded to 4 digits after the decimal point (*for 0.002% threshold*), and then it will be also rounded to 3 digits after the decimal point (*for 0.01% threshold*).



Note: No acceptance criteria will be applied on the average drift losses (example 0.0024 passed, however, 0.0025 will result into a 0.01% threshold declaration) and 0.015 will result in a failure, with no certification declaration.

Consistency of conductivity measurement points: If one of measured conductivity measurement points differs more than 50% from the apparent trend, then the testing point should be repeated once before the drift eliminator has been removed from the test cell. Only one repeated point will be accepted in order to maintain the schedule.

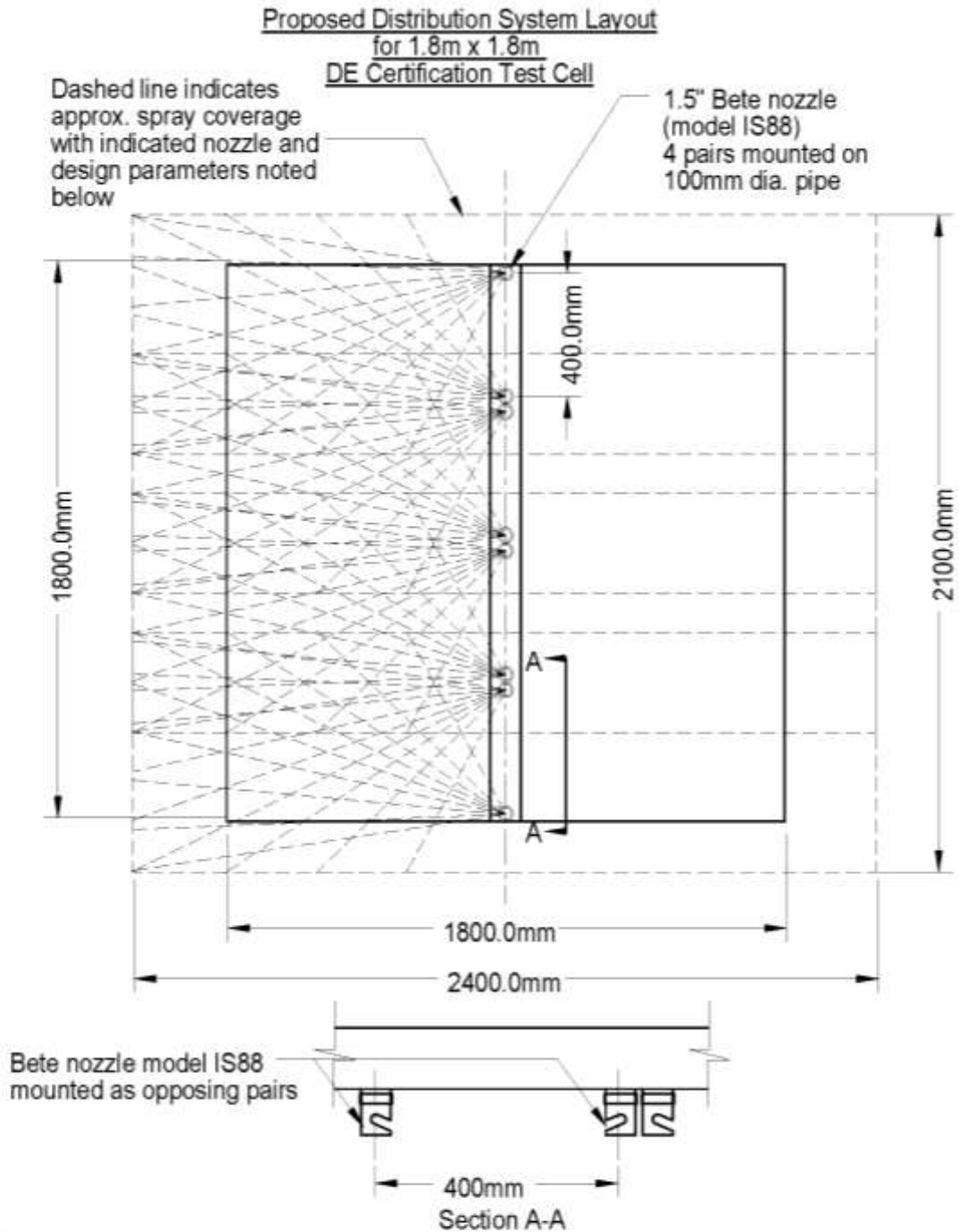
Final results of drift rate: Final average drift rate is to be based on the average of the two test points of the Li tracer only (neither resistivity nor Na tracer). If one of the two Li points is out of 50 % of the trend, then it will not be considered for the final result of drift rate.

A.6 Exclusion Clause

In no event shall Eurovent Certita Certification be responsible for any damage or adverse consequences resulting from the use by a Participant or its clients of drift eliminators similar to the ones submitted by the Participant to Eurovent Certita Certification for certification purposes.

APPENDIX B. DISTRIBUTION SYSTEM LAYOUTS

B.I. For Counter flow testing

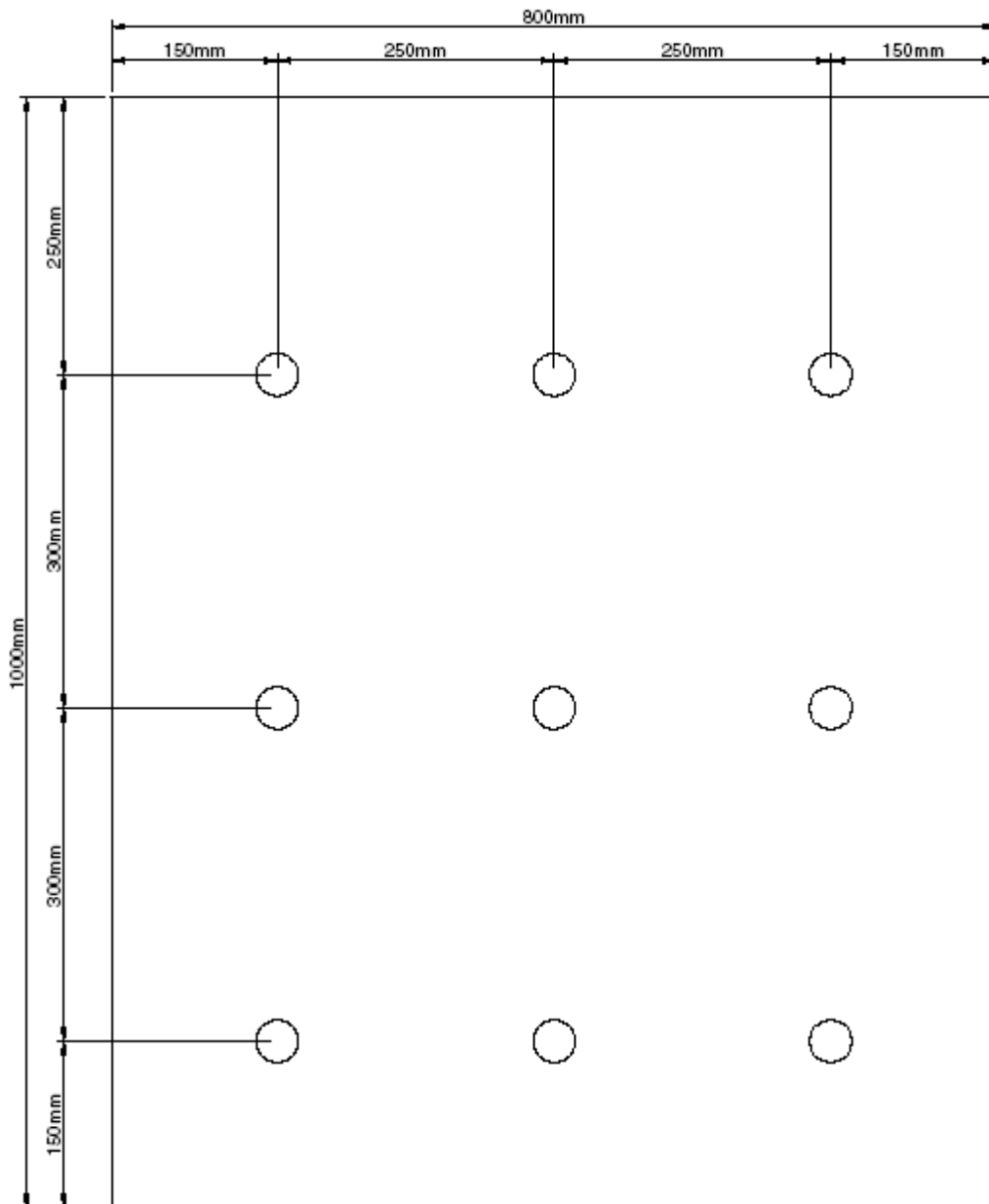


Notes:

- System designed for 20 m³/hr/m² over 3.24m²
- Total flow rate 64.8 m³/hr (16.2 m³/hr per nozzle pair)
- Design nozzle pressure: 0.4 bar
- Nozzle discharge to top of fill: 300mm
- Spray pattern omitted on right half of cell for clarity

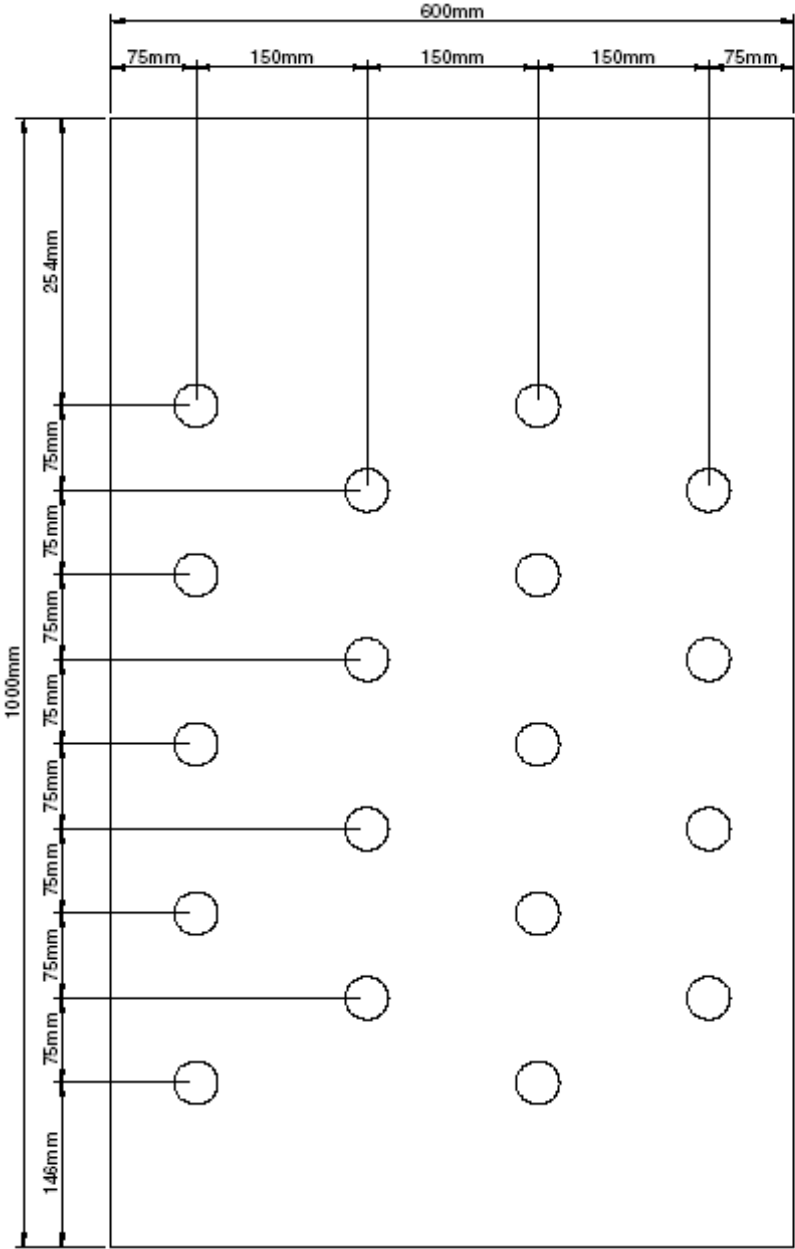
SK-050608 Rev1 RA

B.II. For Cross flow Testing of Splash-type Fill with Drift Eliminators
Eliminator Face



Louver Face

B.III. For Cross flow Testing of Film-type Fill with Drift Eliminators
Eliminator Face



Louver Face

APPENDIX C. CAMPAIGN SCHEDULE

Process Description	Item No.	First Year	Follow up years
Manufacturer sends license registration to ECC (Introduction to Programme)	1	n-date	
Entrance Fee (EF) - invoiced by ECC	2	Once license received and approved by ECC	
Fixed Annual Fee (FAF) invoice by ECC	3 or 20	Included at time of (EF)	Mid Oct (annual basis)
Declaration of data provided by applicant; Form DE-1, DE-2, DE-3, DE-4,5 & 6	4	+2 months	
ECC Client Manager sends out Product listing for approval + request for any declaration form updates: DE1 to DE-6	21		30/11/(n year)-1
Participant provides Product listing approval + declaration form updates (as necessary): DE1 to DE-6 + Declaration of no design	22		31/12/(n year)-1
ECC certification committee: Renewal of certification date	23		31/03/(n year)
Variable Annual Fee (VAF) invoiced by ECC	24		April (n) year
ECC puts data into ECC database	5 or 25	+2 weeks	As necessary
Test agency + identified Lab (factory or external lab)	6	Dependant on Lab Facility	
Drift test/s conducted as per RS9C/003 by test agency	7	& Test Agency availability	
Test result passed to ECC, Client manager evaluates result	8	+2 weeks	
If necessary re-rate form issued, 'IF' result not successful	9	+1 week	
Re-test if necessary and repeat steps above to validate test result	10	Dependant on Lab Facility & Test Agency availability	
ECC sent factory audit invoice	11 or 26	Issued 3 months before audit	
Factory Audit to be completed	12 or 27	Audit to arrange with applicant Prior to certification	Conducted on a 3 year annual basis
If factory audit not successful then applicant must follow the critical non-conformity procedure & re-test product and conduct another factory audit	13	See timescales identified above	See timescales identified for first year
If factory audit successful, then recommendation to certify product made to Certification Committee	14 or 28	+1 Month Certification granted	31/03/(n year)

APPENDIX D. FORMS


D.I. Form DE-1: Declaration File for Certification by Original Equipment Manufacturer

<i>ECP</i> article n°	<i>ECP</i> Classification	Participant	Trade Name	Distributor	Master article n°	Design Model	Material	Drift rate (%)	Breakthrough velocity (m/s)	Status (DEL/OBS)	Testing year	Update date	Note
	DE/CO												
	DE/CR/NI												
	DE/CR/I												

D.II. Form DE-2: Declaration File for Certification by Brand Names

<i>ECP</i> article n°	<i>ECP</i> Classification	Participant	Trade Name	Distributor	Master article n°	Design Model	Material	Drift rate (%)	Breakthrough velocity (m/s)	Status (DEL/OBS)	Testing year	Update date	Note
	DE/CO												
	DE/CR/NI												
	DE/CR/I												

D.III. Form DE-3: DE Manufacturer & Audit Location Declaration Form



Eurovent Certita Certification
48-50 Rue de la Victoire
75009 Paris
Tel : 01 75 42 80 54 15
www.eurovent-certification.com

Declaration Form Drift Eliminators
Manufacturer & Audit Location
Rev0

FORM DE-3: MANUFACTURER & AUDIT LOCATION DECLARATION FORM

We undersigned:

- Applicant or Participant to the ECC Programme for Drift Eliminator (DE)

Authorize the use of any 2009 support documentation supplied by us to Eurovent Certita Certification as reference to any future audit to validate the product design intent of the certified Drift Eliminator. The applicant / participant shall declare each Certified Product & Production factory & Audit location by indicating a (X) in each relevant column to declared drift, then complete the factory / audit location address.

ECC Certified Drift	ECC Diploma No.	PRODUCTION FACTORY					Audit Location		
		1	2	3	4	5	6	7	8

Factory / Audit Location

	Address	Country
1		
2		
3		
4		
5		
6		
7		
8		

OEM Drift Eliminator Company Name:

Authorized Signature:

Title of Signer:

(To be filled in and signed in 3 original copies)

Date: _____

EUROVENT CERTITA CERTIFICATION SAS au capital de 100 000 € - 48-50 rue de la Victoire 75009 Paris - FRANCE - Tel. : 33 (0)1 75 44 71 71 - 513 133 637
 RCS PARIS - SIRET 513 133 637 000 35- TVA FR 59513133637
 www.eurovent-certification.com / www.certita.fr

D.IV. Form DE-4-5-6: Technical Form for Unit to be Tested, Reporting Form and Result Form

3

EUROVENT CERTIFIED PERFORMANCE PROGRAMME FOR EVAPORATIVE COOLING EQUIPMENT DRIFT ELIMINATORS

Selected design, sample to be tested, summary of test results and conclusions

REFERENCES ¹	Company	Example Company	ECP Participant n°	100
	Model name	MyModel	Drift eliminator type	Counter Flow
	Model number	10	Test Facility	BestCell
	Material Family	PVC	Test Agency	BestTest
	ECP Article n°	12345	ECP Test n°	3210
	Production place name	Example Factory	ECP Factory n°	213

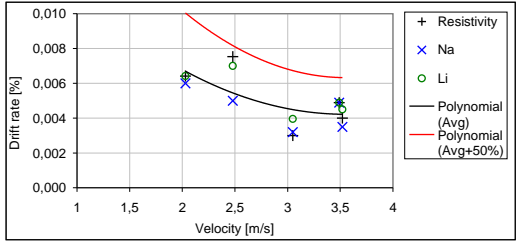
PICTURES AND DRAWINGS (SEE ANNEX) File Names ²	
General Picture	DE MyModel 10 GP.jpg
Picture side 1	DE MyModel 10 pic1.jpg
Picture side 2	DE MyModel 10 pic2.jpg
Picture side 3	DE MyModel 10 pic2.jpg
Drawing 1	DE MyModel 10 draw1.jpg
Drawing 2	DE MyModel 10 draw2.jpg
Drawing 3	DE MyModel 10 draw3.jpg
Other	-

DESIGN	Material	Declared ²	Measured ³	Conclusion ⁴
	Air travel dimension [mm]	HPVC	as declared	Passed
	Thickness [mm]		as declared	
	Pitch [mm]			
	Other dimensions			
	Dimension A [mm]			Drawing Reference ²
	Dimension B [mm]			draw2
	Dimension C [mm]			draw1
	Dimension D [mm]			draw1
	Dimension E [mm]			draw2
Dimension F [mm]			draw3	

BREAKTHROUGH VELOCITY	
Breakthrough velocity [m/s]	
Declared ⁵	Measured ³
4,5	
Average	5,16
Test 1	5,1
Test 2	4,9
Test 3	5,4
Test 4	5,5
Test 5	4,9

DRIFT RATE	Declared Drift Rate [%] ⁵	Measured Specific Water Flow [m³/hm²] ³	Measured Velocity [m/s] ³	Measured Drift Rate Resistivity [%] ³	Measured Drift Rate Tracer Na [%] ³	Measured Drift Rate Tracer Li [%] ³	Target Drift Rate [%]
	Single Drift rate						≤ < 0.002 or > 0.01
	Velocity 4 4 A		3,52	0,00400	0,00350	0,00450	CONCLUSION ⁴
	Velocity 1 1	0,0084	2,03	0,00642	0,00600	0,00642	PASSED / FAILED
	Velocity 2 2	0,0062	2,48	0,00754	0,00500	0,00700	
	Velocity 3 3	0,0046	3,05	0,00300	0,00320	0,00395	
	Velocity 4 4 B		3,49	0,00489	0,00489	0,00489	
	Additional test						Drift rate avg (%)
	Velocity 4 4 (Average)	0,0042	3,51	0,00445	0,00420	0,00470	0,00445
	Drift rate (rounded at 3 digits) [%]	0,004		0,004	0,004	0,005	0,004

TESTING CONDITIONS	Air Velocities 1 / 2 / 3 / 4 [m/s]	Specific Water Flow [m³/hm²]	
	Counter Flow	2.0/ 2.5/ 3.0/ 3.5	20
	Cross Flow Non Integrated	1.5/ 2.0/ 2.5/ 3.0	50
	Cross Flow Integrated	2.0/ 2.5/ 3.0/ 3.5	70
	Tolerance	-	+/- 5%



Applicant/Participant comments and additional information²

No additional comment

Test Agency comments and additional information³

No additional comment

EUROVENT CERTITA CERTIFICATION comments and additional information⁴

No additional comment

GENERAL CONCLUSION⁴
PASSED

Date	For the APPLICANT/ PARTICIPANT	For the TEST AGENCY	For EUROVENT CERTITA CERTIFICATION
	15/03/2009	10/04/2009	25/04/2009
	Mr Dupont	Mr Smith	Mr Martin
Title	R&D Manager	Test Engineer	Certification Engineer
	Signature		

¹ to be completed by EUROVENT CERTITA CERTIFICATION according to declaration form DE-1
² to be completed by the APPLICANT/PARTICIPANT
³ to be completed by the TEST AGENCY
⁴ to be completed by EUROVENT CERTITA CERTIFICATION
⁵ not mandatory to be declared

D.V. Form DE-7: Re-rate Form

CERTIFICATION PROGRAMME FOR DRIFT ELIMINATORS

RESPONSE FORM AFTER FAILURE ON TESTED UNIT

This response form shall be sent back by *email* to *EUROVENT CERTITA CERTIFICATION* within one month maximum.
 Without news from you after this delay, we will re-rate performances and our Website will be automatically updated with re-rated performances.
Our email: technical@eurovent-certification.com

Date : _____ Your name : _____ Signature :

According to this document **TCR ECP-14-Year**, you are asked to select one of the following alternatives :

- Ask for a second test on the sample already tested.**
- Ask for a second test on another unit of the same model selected by *EUROVENT CERTITA CERTIFICATION*.**
- Re-rate your performance according to the test results, as follows :**

Re-rated data:

<i>ECP</i> article n°	<i>ECP</i> Classification	Participant	Trade Name	Distributor	Master article n°	Design Model	Material	Drift rate (%)	Breakthrough velocity (m/s)	Status (DEL/OBS)	Testing year	Update date	Note

Declared data:

<i>ECP</i> article n°	<i>ECP</i> Classification	Participant	Trade Name	Distributor	Master article n°	Design Model	Material	Drift rate (%)	Breakthrough velocity (m/s)	Status (DEL/OBS)	Testing year	Update date	Note



Performances on line
www.eurovent-certification.com

EUROVENT CERTITA CERTIFICATION
48-50 Rue de la Victoire, 75009 Paris, FRANCE
Phone: +33 (0)1 7544 7171
www.eurovent-certification.com



© 2015 – Eurovent Certita Certification SAS – All rights reserved