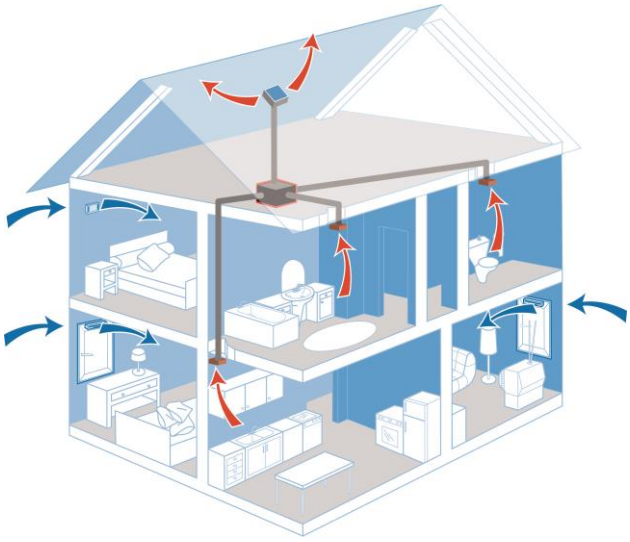
IRISH AGRÉMENT BOARD
CERTIFICATE NO. 21/0425
Aereco Ltd.
Unit 1 Cherrywood Business Park, Courtstown,
Little Island, Co Cork.
Tel: 021 4296030
Email: aereco@aereco.ie
Website: www.aereco.ie

Aereco Demand Controlled Mechanical Extract Ventilation System

NSAI Agrément (Irish Agrément Board) is designated by Government to carry out European Technical Assessments.

NSAI Agrément Certificates establish proof that the certified products are **'proper materials'** suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2019**.



PRODUCT DESCRIPTION

This Certificate relates to the Aereco Demand Control Mechanical Extract Ventilation (DCMEV) system. Each system is comprised of Aereco DCV extract units in wet rooms, continuous constant pressure extract fan/fans, suitable ducting and accessories, exhaust terminal, installation and maintenance manual and a commissioning certificate. Background ventilation, in the form of wall or window inlets, may also be required in habitable rooms.

The Aereco DCMEV System utilises humidity-controlled extract units and inlets that automatically regulates airflow whilst ensuring that Indoor Air Quality (IAQ) is not compromised.

In the opinion of NSAI, the Aereco DCMEV System, as described in this Certificate can be designed and installed to comply with the requirements of the Building Regulations 1997 to 2019.

USE

The Aereco Demand Controlled Ventilation system is suitable for use in domestic dwellings.

The Aereco Demand Controlled Ventilation systems should be designed by competent designers. Systems should be installed, balanced and commissioned by competent installers e.g. Quality and Qualifications Ireland accredited or Education Training Board or equivalent and approved by Aereco Ltd. to install the system.

MANUFACTURE AND MARKETING

The product is manufactured by:

Aereco S.A.
62 rue de Lamirault, Collegien
77090 Marne la Vallee,
France
Tel. +33 1 60 06 26 63 Fax. +33 1 60 06 22 11
Email: contactexport@aereco.com
Website: www.aereco.com

And marketed in Ireland by:
Aereco Ltd.
Unit 1 Cherrywood Business Park, Courtstown,
Little Island, Co. Cork.
Tel: 021 4296030 Fax: 021 4296031
Email: aereco@aereco.ie
Website: www.aereco.ie

1.1 ASSESSMENT

In the opinion of NSAI Agrément, the Aereco DCMEV System, if used in accordance with this certificate, can meet the requirements of the Irish Building Regulations 1997 to 2019 as indicated in Clause 1.2 of this Agrément Certificate.

1.2 BUILDING REGULATIONS 1997 to 2019

REQUIREMENT:

Part B – Fire Safety
Part B Vol 2 – Fire Safety (Dwelling Houses)
B7 – Internal fire spread (Lining)
When used in accordance with this certificate, the Aereco DCMEV System can meet the relevant requirements of TGD Part B7.

Part C – Site Preparation and Resistance to Moisture
C4 – Resistance to Weather and Ground Moisture
The Aereco DCMEV System can meet the relevant requirements of TGD Part C4, when installed in accordance with this Certificate.

Part D - Materials and Workmanship
D1 The Aereco DCMEV System, when used in accordance with this NSAI Agrément Certificate can meet the requirements of TGD Part D1.

D3 – The Aereco DCMEV System, as certified in this NSAI/Agrément Certificate, is manufactured from materials which are 'proper materials' fit for their intended use (see Part 4 of this Certificate).

Part F – Ventilation
F1 – Means of ventilation
When used in accordance with this certificate the Aereco DCMEV System can meet the relevant requirements of Part F of the Building Regulations.

Part J – Heat Producing Appliances
J1 – Air Supply
When used in accordance with this certificate the Aereco DCMEV System can meet the relevant requirements of Part J of the Building Regulations.

Part L – Conservation of Fuel and Energy
L1 – Conservation of Fuel and Energy
When used in accordance with this certificate the Aereco DCMEV System can contribute to meeting the requirements of part L of the building regulations. (see part 4 of this certificate).

2.1 PRODUCT DESCRIPTION

System Components:

- Air inlets to bring fresh air to habitable rooms
- Extract units to transfer moisture or odour intensive air to the outside via ducting and a central extract fan.
- Central electric constant pressure fan to extract moisture and odour intensive air from the dwelling to atmosphere.

Humidity sensors in the fresh air inlets and extract units automatically adjust air flow volume while ensuring that Indoor Air Quality (IAQ) is not compromised.

Aereco Extract Units have been tested in accordance with EN 13141-10[1] and Aereco Inlets have been tested in accordance with EN 13141-9[2].

Control is achieved through use of technologies detecting key pollutants known to affect IAQ, such as humidity, CO_2, VOCs (Volatile Organic Compounds); which can lead to a build-up of condensation, the formation of mould, and some respiratory conditions.

Humidity controlled extract units continuously transport the exhaust air from the wet rooms and WCs to atmosphere, via a constant pressure fan, thus creating a slightly reduced, or negative air pressure in the habitable rooms. Due to pressure differential, fresh air flows into the living and sleeping areas through suitably sized fresh air inlets. Air inlets are humidity controlled and include acoustic and wind pressure protection. The central electric constant pressure fan modulates as required, maintaining a constant pressure leading to a consequent reduction in power consumption at low occupancy.

2.1.1 Extract Units

Aereco offer a range of extract terminals, providing flexibility of control using various integrated sensory equipment including the humidity control sensor.

This sensor utilises the expansion and contraction of nylon when exposed to moisture to enabled energy-free control of the aperture size of air inlets and extract units. This results in a change to the rate of ventilation when combined with a constant pressure / variable volume fan unit.

Other controls are used when humidity is not the primary IAQ indicator. PIR sensors, which detect continuous presence in a room to detect WC odours. Additional sensors can be utilised, for example VOC and CO_2.

Some circumstances may require a nominal amount of manual control. In areas where additional ventilation over the typical detection range is required, models are available that incorporate a switch function. These extract units are connected to a switch, giving occupants the ability to temporarily increase ventilation when required (as in kitchen applications).

Aereco BXC Extract Unit family guidance and specification:

- Operate with an air flow rate of e.g. min. 12m^3/hr to max. of 70m^3/hr (3.3-19.4 l/s) @100Pa for the 125 mm diameter unit.
- Bathrooms and en-suites with WCs shall be humidity sensitive and shall also incorporate a boost function that opens the extract unit to max. on activation of a PIR sensor, which is incorporated into the extract unit (hpd).
- Kitchen and utility rooms shall be humidity sensitive only (h)
- WC extract units being PIR activation only (pd or p).
- Where a manual boost is required, a manually controlled extract unit (hi) and a wall mounted push button switch shall be specified.
- Where system fault indication is required, the hps version contains an audible and visible alarm to denote fault to the occupant.

Figure 1: BXC hpd Extract unit incorporating humidity and PIR sensors

2.1.2 Air Inlets

Aereco air inlets can utilise humidity sensitive technology to control the level of air input and adapt to the occupant's requirements on a room by room basis. Various designs are available to suit both window and wall installation. A variety of accessories are also available to add wind limiting and noise reduction options to the inlets.

The negative pressure generated by the continuous extract system depressurises the dwelling and encourages air in through the inlets. The volume of air entering each room is influenced by how open the inlet is, based on the humidity of the room. The depressurisation also reduces cross ventilation (infiltration or unintended ventilation) and associated heat losses, resulting in energy savings.

Aereco Air Inlet performance criteria:
Offer.

- Offer an air flow rate to provide good indoor air quality, based on relative humidity between 35% RH and 65% RH, with a min. 5m3/hr and max. 40m3/hr at 10 Pa. and a thermal coefficient of less than 0.36. The thermal coefficient value gives an indication of the stable operation of the vent irrespective of incoming air temperatures. Air inlets shall be incorporated within the window frame/sash or be wall mounted
- Can incorporate an optional wind damping device to control draughts in windy conditions by reducing the size of the air passage duct.
- Acoustic attenuation may be incorporated into the air inlet to reduce the impact of sound into the dwelling.
- Includes an internal grille which disperses the air without creating draughts.
- Provided with an external grille or slot with an insect screen.
- Includes a manual closing device.

2.1.3 Extract Fans

Aereco offers a range of constant pressure extract fans to suit any dwelling size. These include the two-wet room V2A, the four-wet room V4A, the five-wet room V5S, up to six wet room VAM. For multi occupancy buildings, the VTZ and VCZ range of centralised internal or external fans are also available. All fans have energy efficient motors with low energy consumption/running costs.

Aereco Extract Fan performance criteria:

- Constant pressure/variable volume central extract fan.
- Uses no more than 0.50 W/l/sec of specific fan power.
- Minimum maintenance requirements.

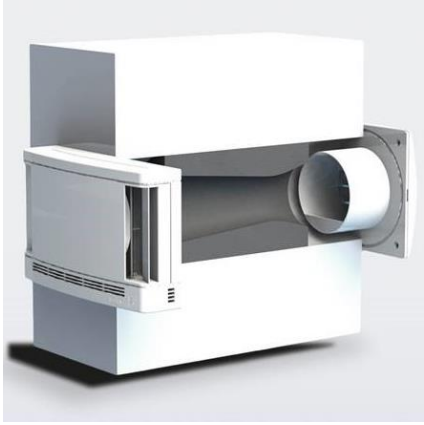


Figure 2: EHT Wall inlet, with airflow controller (up to 52dB noise reduction).

Figure 3: EHA² window inlet (up to 42dB noise reduction).

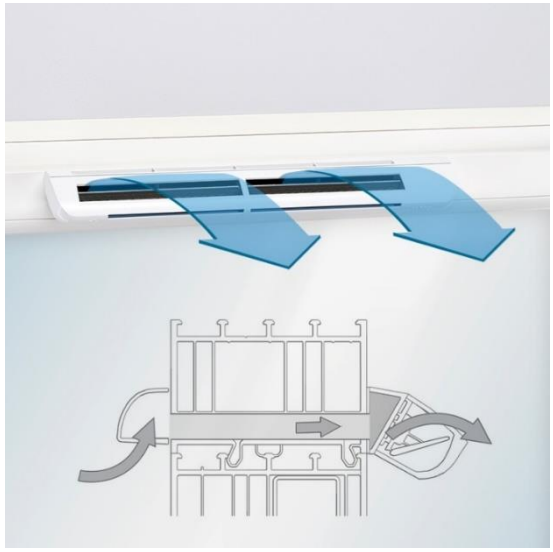


Figure 4: EMM² window inlet

2.2 MANUFACTURE

The management systems of the Aereco manufacturing plant have been assessed and registered as meeting the requirements of ISO 9001[5] by LCIE-Bureau Veritas under reference N° 196 17-5 – Edition 2.

Humidity sensitive sensors are produced and assembled in specialised air-conditioned rooms and are set to respond to the specific requirements of the Aereco's range of products.

Manufacture consists of assembly of the full range Aereco inlet, extract units and fans units with unique serial numbers included to facilitate full traceability.

Products are manufactured according to internal quality plans. Samples are tested to the relevant EN13141[1][2][3][4] standards.

2.3 DELIVERY, STORAGE AND MARKING

Aereco supply a full package of air inlets, extract units and fans, including all necessary connectors and accessories, installation and maintenance instructions.

Aereco recommends the use of Verplas, Polypipe Domus or equivalent ducting and accessories for plastic duct installations. These products are outside the scope of this certificate.

2.4 INSTALLATION PROCEDURE

This Certificate does not contain a complete set of installation instructions, but an overview of the procedures involved. For a full list of these instructions, refer to the Certificate holder's manuals. Reference should also be made to *Installation and Commissioning of Ventilation Systems for Dwellings - Achieving Compliance with Part F*[26].

2.4.1 General

The Aereco Demand Controlled Ventilation system shall only be installed and commissioned by competent persons with suitable training and practical experience of the systems and approved by Aereco Ltd. to install the system.

All components of the system should be fitted in accordance with manufacturer's specifications. The system design installation instructions and drawings provide a practical approach to installations and make reference to obligatory standards and regulations that apply. The installer must fully understand the requirements of the customer and have completed a user installation health and safety risk assessment.

Where system design schematic drawings are not provided, the certificate holder shall be contacted for advice and support as required.

Ductwork installation is critical to an effective ventilation system. Sub-standard installation can lead to increased energy consumption and poor indoor air quality. All ductwork for Aereco DCMEV must be installed to meet the requirements of *Installation and Commissioning of Ventilation Systems for Dwellings - Achieving Compliance with Part F*[26], BESA Standards DW/143[8], DW/154[6] and DW/144[7] .

The ducting and component sizes for individual dwelling systems are 204x60 mm and 125Ømm, using plastic (Verplas, Polypipe Domus or similar) or galvanised metal duct. The use of semi-rigid ducting is also acceptable, but subject to design by the certificate holder.

Before work commences on the installation, a risk assessment must be completed and recorded by the installer. Reference shall be made to the HSA guide to risk assessments and safety statements[27] for all relevant aspects of health and safety during the installation of Aereco DCMEV system.

2.4.2 Position of inlets and extracts

Inlet and extract units must be correctly positioned to establish and maintain a sufficient rate of air transfer within the building envelope, thus ensuring good indoor air quality. To achieve this, air inlets and grilles should be positioned at points away from the door at a typical height of 2.0m above finished floor level (to avoid draughts).

Internal doors should also be undercut by 10mm (where floor finishes are fitted, this clearance should be 10 mm above the finished floor level), in order to ensure good airflow between rooms.

Extract terminals should be installed into, or as close to, the ceiling as possible to ensure that warm, moist air is extracted. They should also be positioned away from internal doors, and not placed directly above a cooker (unless also fitted with a FBE filter) to prevent damage to the unit from condensing fats / oils.

The certificate holder's instructions should be followed regarding the installation of all air inlets. Further information is available from the certificate holder regarding the slot size for window inlets, and wall passage dimensions with the installation instructions for each specific product.

On-site inspections should be carried out to ensure that the proposed location is suitable, and to determine that there are no blockages to the path of the airflow. It is also required that inlets are sealed in a suitable manner, such as silicone sealant, or equivalent.

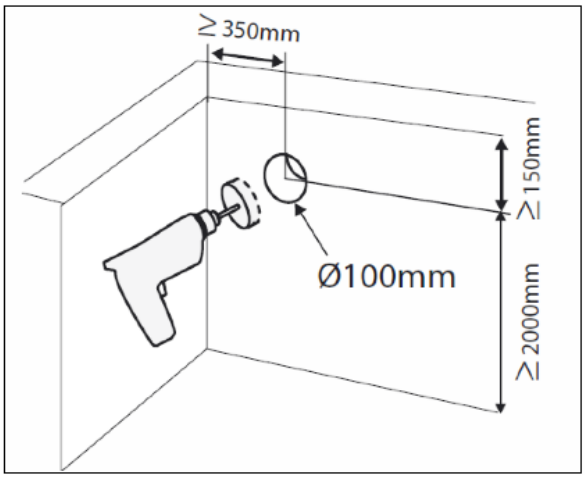


Figure 5: Location of EHT wall inlet.

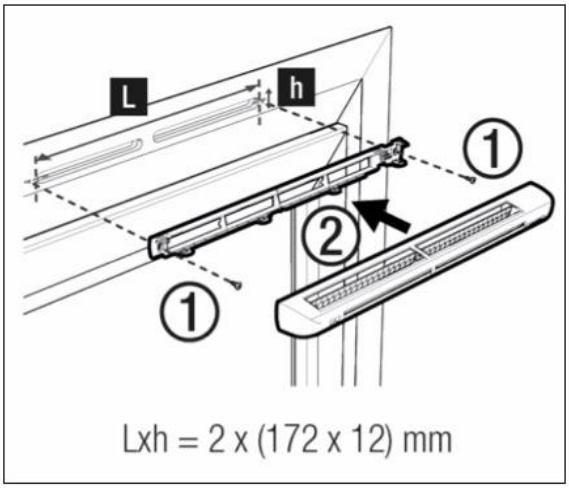


Figure 6: EMM² / EHA² window inlet position

2.4.3 Fan installation

All Aereco fan types must be attached to their support using the recommended / supplied fixing brackets as detailed in the Aereco Operation and Maintenance manual for each fan. In some cases, it may be necessary to install the fan(s) onto acoustic / anti-vibration mats to reduce noise and vibration transmission.

To facilitate servicing as required, there must be reasonable access to the unit. Within loft areas and cupboards, this should be achievable without any alterations. However, when a unit is fitted within a ceiling void, it would be appropriate to install an access hatch directly beneath the fan location, with a surface area large enough for the removal of the casing's front cover.

Aereco's residential ranges of DCMEV units are suitable for connection to 230 V 50 Hz power supply, via a correctly rated fused spur. The fan instruction manual (supplied with fan) should be referenced for full installation instructions.

2.4.4 Power connections

All wiring installations must comply with I.S. 10101[9] and be undertaken by a qualified RECI/ECSSA electrical contractor.

A means of isolating the unit for maintenance purposes must be provided and it is good practice to locate this near to the fan, or in an obvious location. Care must also be taken when choosing a location, to prevent the fan being unintentionally isolated during normal running conditions.

Extract unit terminals with electrical boost may also require a power connection. The PIR, impulse switch boost and status indicator versions can either be powered via a hardwired supply (with rectifier), or 2 x AAA (1.5 V) batteries. CO_2 and VOC type terminals are hardwired only. When hardwired, a rectifier is always required to provide the necessary 3V DC supply.

Audible features on relevant units provide an indication of battery life with extract unit remaining in boost function when batteries are depleted.

2.4.5 Ducting Installation

Ducting must be competently installed to ensure minimum air resistance and leakage within systems. Reference should be made to HVCA DW/143[8] document for guidance on minimizing ductwork leakage.

In order to minimise pressure loss, rigid duct should be used throughout. Where flexible duct is used, only small lengths (500mm max.) should be used for final connections, negotiating obstacles or introducing irregular angles in the duct run. Duct installation must follow the design specified, although unanticipated obstacles may be identified during installation.

Where flexible duct or semi-rigid duct is used, it should be noted that the default value for the specific fan power may have to be used in the DEAP input. This may have a negative impact on the final results of the energy rating of the dwelling.

Where the direction of the duct run changes at a 90° angle, rigid components must be used. It is also appropriate to use rigid components for shallower bends (e.g. 45° bends), however as not all angles can be achieved with the use of standardised rigid components, the use of correctly fitted flexible ducting is acceptable in such circumstances.

Rigid ducting should be correctly supported using either purpose made clips or metal banding. Workable duct lengths should be connected together at floor level before being supported, particularly around obstructions. This ensures that the duct can be suitably sealed. Flexible ducts should be similarly supported, although extra care must be taken when using banding, as it can crush the duct and cause restrictions to airflow. Purpose made clips are therefore recommended.

Lengths of rigid ducting should be connected using duct / straight pipe connectors or components, and sealed appropriately to ensure there is no leakage. Ducts should be sealed using tape, jubilee / speed clamps or sealant. Where connections are going to be inaccessible upon completion, a non- hardening sealant should be used.

The following guidance should also be considered during installation:

- The minimum number of bends should be used.
- All ductwork should be adequately supported.
- Ducting components not suitable for the transfer of air shall not be used.
- Minimize the use of flexible ducting.
- Care shall be taken during the installation of all connections.
- Flexible ducting should not be forced into small areas where they can be crushed.
- Avoid the use of flexible connections as bends.
- Avoid unnecessarily snaking of ductwork.

Where the use of flexible ducting is unavoidable, it should be pulled taut to approximately 90% of its maximum length. Care should be taken not to put any strain on fixings particularly at duct bends if pulled too taut or induce airflow resistance through sagging if not taut enough. The tension applied should seek to strike a balance between these two extremes.

The sealing of connections to flexible ducting should be via the use of jubilee / speed clamps and not sealant alone, as these do not provide sufficient restraint when the ducting is pulled taut.

Insulated ductwork, (flexible or sleeves) should be used where required for the prevention of condensation on or within ductwork. Ducting placed in or passing through unheated voids or loft spaces should be insulated to reduce the possibility of condensation forming. Ducts should be insulated with the equivalent of at least 25 mm of insulating material with a thermal conductivity of 0.04W/mK.

Insulated ducts comes in two formats: standard and acoustic (where the internal bore is perforated). The acoustic variant should not be used outside the insulation barrier of the dwelling as condensation can pass into the fibre-glass material and reduce its effectiveness.

Where an insulated duct has been installed vertically, it may also be necessary to install condensation traps. Any duct passing through a fire barrier must be appropriately fire stopped in accordance with the requirements of TGD Part B Volume 2, I.S. EN 1365-2[10], BS 476[12], BS 4514[13] and BS 8313[14].

The discharge duct and terminal are also of critical importance. As all the air is discharged from this single duct to atmosphere, the pressure losses through these can be high, unless designed and installed correctly. The discharge terminal can be wall or roof mounted. The free area of the terminal must be a minimum of 90% of the cross sectional area of the ducting being used. As the pressure loss through roof tiles or slate vents are higher than louvres, the Certificate holder recommend a min. free area of a roof terminal to be 20,000mm^2.

2.5 MAINTENANCE

2.5.1 Fans

Annual maintenance is required for the centralised extract fan(s). Specific maintenance instructions are relevant for each fan type which should be referenced as required. Maintenance of the fan, which includes removal of dust build-up on the blades of the impeller, should only be performed by personnel with the necessary competency and training, and with all relevant power supply isolated before any maintenance is performed.

2.5.2 Air Inlets and Extract Units

Maintenance of the air inlets and extract units involves periodic visual inspection and cleaning of any dust accumulation. Extract units front covers are removable and along with the shutter case and shutters are washable in warm soapy water.

For air inlets, cleaning with a damp cloth is recommended, as the humidity sensor is located outside of the incoming air.

2.6 COMMISSIONING

2.6.1 General

Commissioning shall only be carried out by competent persons, as defined in TGD to Part F Clause 1.2.1.10, with suitable training and practical experience to commission the system. The use of a low-pressure manometer capable of recording between 0-200Pa is required. This certificate only applies to systems commissioned and registered using the Aereco commissioning certificate available through the Aereco website.

The commissioning, testing and inspection of the system must comply with the requirements of the *Installation and Commissioning of Ventilation Systems for Dwellings - Achieving Compliance with Part F*[26], including:

- Background ventilators (i.e. air inlets) are correctly installed
- Background ventilators are in correct locations.
- Extract units are installed in correct locations.
- Pressure at each extract unit exceeds 60Pa.
- Where pressure is lower or greater flowrates are required, has secondary damper been fixed to correct position to achieve flowrate required.
- Is boost function (where applicable) operating correctly.
- Is control indictor fitted and operating correctly in a prominent and visible location.
- Are undercuts present on relevant doors.
- Is fan(s) operating correctly.
- Is ducting installed correctly.
- Is duct insulated where required.
- Is fan serial number recorded.

2.6.2 Validation of the installation

Systems, when commissioned, should then be validated by an independent third party to ensure that the as installed, balanced and commissioned ventilation system matched the presented Aereco design. The validation should be carried out by a person certified as a "Ventilation Validator" and registered on the NSAI Ventilation Validation Registration Scheme or equivalent.

With DCMEV systems this shall consist of checking design and commissioning pressure and validating these results. Their pressures shall be checked using a calibrated manometer and recorded accordingly. Background ventilators shall be checked to ensure that they are installed as per design.

The systems minimum capacity should be calculated and checked as per TGD to Part F Clause 1.2.2. For further information on commissioning and validation of a constant pressure system, refer to the manufacturer for guidance.

2.6.3 Certification/ Manuals/ Warranty

The installer must complete the Commissioning Certificate, which is contained on the Aereco website.

- The installer shall hand over the User Manual to owners and instruct users on all aspects of the documentation and how to effectively use the ventilation equipment. The user manual includes recommended maintenance schedule, commissioning certificate, full contact details of the installer and guidance on the correct use of the ventilation system.

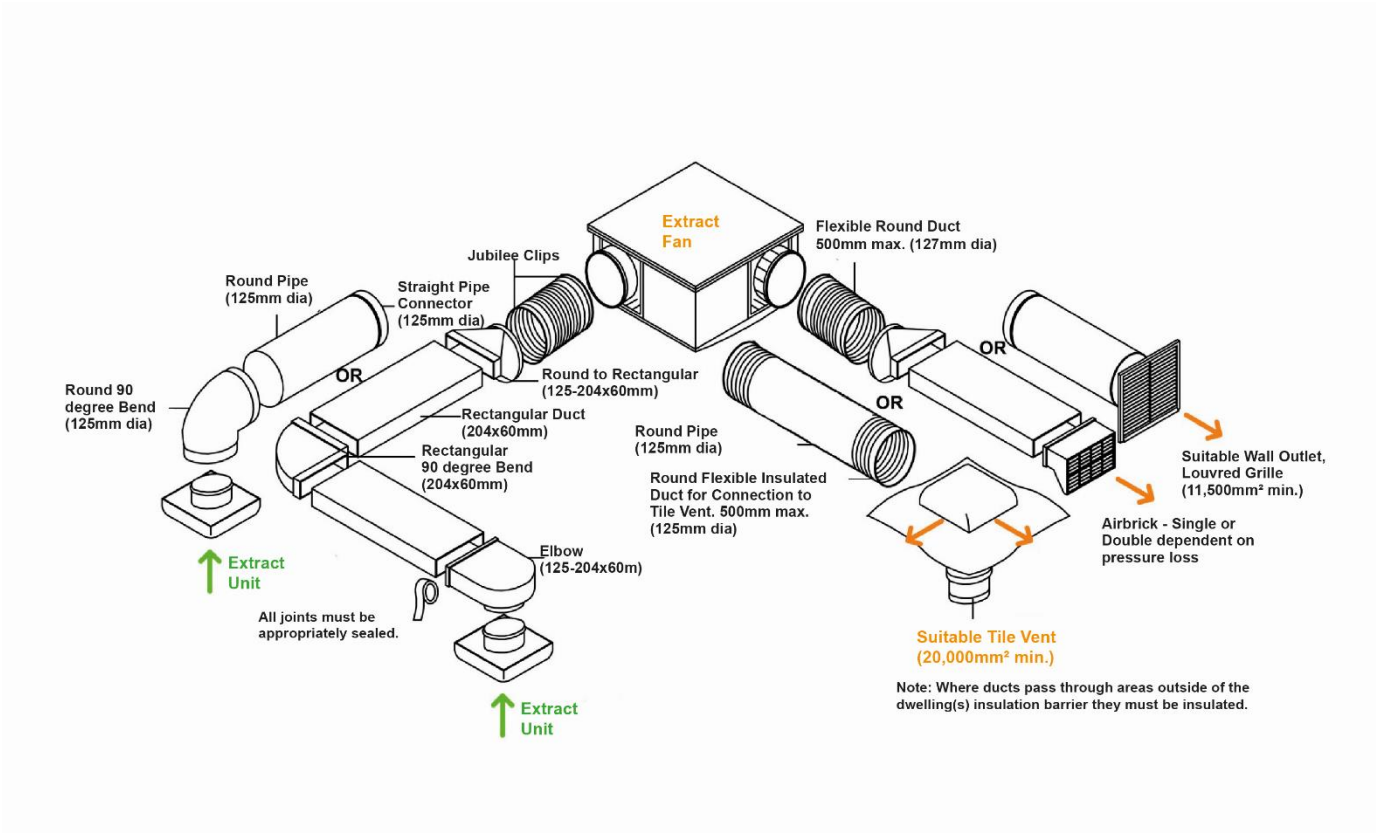


Figure 7: Aereco DCMEV system (extract side).

3.1 AERECO DCMEC SYSTEM DESIGN

The Aereco Demand Controlled Ventilation system shall be designed or approved by Aereco Ltd.

All relevant information shall be submitted to Aereco Ltd. to allow them to produce a compliant ventilation design solution on a project by project basis. A full design with inlet locations, extract location and extract unit references, fan selection and duct installation shall be returned.

Reference should also be made to TGD Part F1, DoHPLG document - Installation and Commissioning of Ventilation Systems for Dwellings - Achieving Compliance with Part F and EN 14134[15], BS 8233[17], BS 5250[18], BRE Digest 398[21], CIBSE Guide A & B[19], SEAI GPG 268[25] and SR 54[20] (for retrofit installations).

When installed in accordance with the design, the systems performance with regard to

- Water vapour using BS5250[18] and I.S. CEN TR 14788[28].
- CO_2 using I.S. CEN TR 14788[28].
- TVOC using 0.3 mg/h/m^2 emission rate.

has been shown through technical investigation described in section 4 to meet the requirements of Part F of the Building Regulations and/or perform at least as well as the reference system already allowed for in the TGD to Part F of the Building Regulations.

3.2 FIRE

Reference should be made to *Installation and Commissioning of Ventilation Systems for Dwellings - Achieving Compliance with Part F*[26] and TGD Part B.

3.3 HEAT PRODUCING APPLIANCES

TGD Part J of the Irish Building Regulations, requires that permanent ventilation is provided for non-room sealed combustion devices. If a room that contains a mechanical extract and a combustion device (e.g. stove, range) as in a kitchen, the combustion device manufacturer/supplier (or their guidance documentation) should be contacted/references for specialist advice. SR54[20] Chapter 10 should be referenced for retrofit installations.

4.1 VENTILATION

As part of the certification process a detailed computer simulation was performed to assess the effects of the Aereco DCMEV system on Indoor Air Quality (IAQ) and heat loss against a standard Continuous Mechanical Extract Ventilation (CMEV) system. This simulation was performed using the Contam, multi-zone airflow modelling, open source software system, developed by the National Institute of Standards and Technology (NIST, USA), to show compliance with Part F1 of the Building Regulations.

Six house types using two occupancy scenarios, three airtightness levels and two ventilation techniques were used in the simulation with input data as follows:

- weather conditions (outdoor temperature and relative humidity, wind speed and direction)
- dwelling configuration
- amounts of water vapour generated by human metabolism and activity
- amounts of CO_2 generated by human metabolism
- amounts of VOC generated by the dwelling
- room occupancy
- dwelling permeability
- ventilation components and their characteristics and airflows

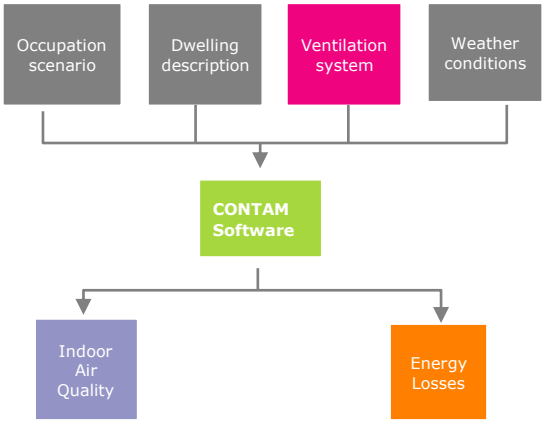


Figure 8: Contam Simulation– Inputs/Outputs

The Contam simulation software computed the indoor air quality (CO_2, relative humidity and VOC amounts), and the energy loss due to ventilation (thermal loss). Several other parameters were also computed.

The Contam output data included the following:

- Time-accumulated CO_2 exposure.
- Hourly ppm of VOCs in each room
- Room dependent airflow rates
- Histogram of indoor relative humidity values
- Air flow rates

The simulations were run, and in all cases, both Aereco extract-only DCV and Aereco Extract and Inlets DCV have shown that they can meet the requirements of the Buildings Regulations and/or perform at least as well as a system already allowed for in the regulations approved documents.

This modelling approach, typical for assessing such systems, was checked against independent studies that have confirmed the efficacy of modelling with real world results from monitoring studies.

Another study was carried that modelled Irish dwellings and used a similar approach to this technical investigation.

4.2 BEHAVIOUR IN FIRE

Technical investigation has shown that the system, when installed in accordance with this certificate and the certificate holder's installation instructions, can meet all relevant fire related requirements of TGD Part B Volume 2, supplementary document Installation and *Installation and Commissioning of Ventilation Systems for Dwellings - Achieving Compliance with Part F*[26], I.S. EN 1329-1[22], I.S. EN 1366[11], and BS 8313[14].

4.3 NOISE

The Aereco DCMEV system has been assessed and shown to be able to meet the requirements of TGD Part F, Cl 1.1.12. Further guidance is available in BS 8233[17].

The acoustic air inlets can and achieve appreciable reductions in airborne sound transmission when compared to non-acoustic components. The results of sound insulation measurements to EN ISO 717-1[23] are shown in Tables 1 – 3. Products referenced in Tables 1- 3 are supplied by Aereco and are included as part of this assessment.

4.4 CONSERVATION OF FUEL AND ENERGY

Technical investigation has shown that the system, when installed in accordance with this certificate and the certificate holder's installation instructions can meet or contribute to meeting the relevant requirements of Table 4 of TGD to Part L. Where applicable, Aereco fan, specific fan powers (SFP) are contained in the PCDB database for use in DEAP. See also Cl 3.2 of this certificate.

4.5 WEATHERTIGHTNESS

Technical investigation has shown that window and wall inlet installations should provide adequate resistance to weather ingress, when installed in accordance with this certificate and the certificate holders installation instructions. Test data reviewed included water tightness testing of air inlets to PB LF-009/1/12[24].

4.6 MAINTENANCE

Regular maintenance is required for all components of the ventilation system. The Aereco DCMEV system and its components have been deigned to accommodate relative ease of maintenance. Reference should be made to section 2.5 of this certificate and to hand over documents provided to the homeowner after installation and commissioning.

4.7 TESTS AND INVESTIGATIONS

Tests and investigation were carried out to determine the following:

- The effects of the Aereco DCMEV system on Indoor Air Quality (IAQ) and heat loss.
- Aeraulic and hygro-dynamic performance testing was performed on the Aereco Extract Units in accordance with EN 13141-10[1] and on the Aereco inlets in accordance with EN 13141-9[2].
- Acoustic attenuation performance testing was performed on the Aereco inlet units per EN ISO 717-1[23].
- Fire test performed on the BXCFS30 fire collar per EN 1365-2[10] - WF Report No. 394530 Issue 4.

4.8 OTHER INVESTIGATIONS

- The manufacturing process of the main component parts were examined including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.
- Site visits were conducted to assess the practicability of installation as well as the history of performance in use of the product.
- Site visits were also performed to assess how installed Aereco DCMEV systems can be validated to meet the requirements of the NSAI Ventilation Validation Registration Scheme.
- An assessment was also performed on all installation control paperwork and well as training and technical support offered to installers of the Aereco DCMEV system.

EMM² Acoustic Air Inlet			
Acoustic Performance (combinations - Comb)	**Comb No. 1**	**Comb No. 2**	**Comb No. 3**
EMM² air inlet max opening=35m³/hr @ 10Pa	•	•	•
Acoustic canopy with insect screen (A-EHA AM)	-	-	•
Acoustic canopy with insect screen (A-EMM AM)		•	-
Canopies (AP, ASAM, or AC)	•	-	-
$D_{n,e,w}$ Acoustic attenuation in dB	**32**	**36**	**37**
Example: Comb 2- EMM² air inlet with a A-EMM AM acoustic canopy will achieve a 36 dB $D_{n,e,w}$ attenuation.			

Table 1: Acoustic attenuation performance of EMM² acoustic air inlets

EHA² Acoustic Air Inlet				
Acoustic Performance (combinations - Comb)	**Comb No. 1**	**Comb No. 2**	**Comb No. 3**	**Comb No. 4**
EHA² air inlet max opening=35m³/hr @ 10Pa	•	•	•	•
Reinforced acoustic base (E-EHA²)	-	•	-	•
Acoustic canopy with insect screen (A-EHA AM)	-	-	•	•
Canopies (AP, ASAM, or AC)	•	•	-	-
$D_{n,e,w}$ Acoustic attenuation in dB	**37**	**39**	**40**	**42**
Example: Comb 3- EHA² air inlet with a A-EHA AM acoustic canopy will achieve a 40 dB $D_{n,e,w}$ attenuation.				

Table 2: Acoustic attenuation performance of EHA² acoustic air inlets

EHT Family Acoustic Air Inlet						
Acoustic Performance (combinations - Comb)	**Comb No. 1**	**Comb No. 2**	**Comb No. 3**	**Comb No. 4**	**Comb No. 5**	**Comb No. 6**
EHT air inlet max opening=40m³/hr @ 10Pa	•	•	•	•	•	•
100Ømm tube	•	•	•	•	-	-
Acoustic foam for 100Ømm tube	-	•	-	•	-	-
125Ømm tube	-	-	-	-	•	•
Acoustic foam for 100Ømm tube	-	-	-	-	•	•
Acoustic foam for A-EHT canopy	-	-	•	•	-	•
Wall canopy A-EHT or A-EHT AM	•	•	•	•	•	•
$D_{n,e,w}$ Acoustic attenuation in dB	**33**	**42**	**40**	**45**	**49**	**52**
Example: Comb 5- ETH air inlet with a 125Ømm tube, acoustic foam for 100Ømm tube and a A-EHT or A-EHT AM wall canopy will achieve a 49 dB $D_{n,e,w}$ attenuation.						

Table 3: Acoustic attenuation performance of EHT acoustic air inlets range

5.0 CONDITIONS OF CERTIFICATION 16.10.20

5.1 National Standards Authority of Ireland ("NSAI") following consultation with NSAI Agrément has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this Certificate and in accordance with the manufacturer's instructions and usual trade practice. This Certificate shall remain valid for five years from date of last revision date so long as:

(a) the specification of the product is unchanged.

(b) the Building Regulations 1997 to 2019 and any other regulation or standard applicable to the product/process, its use or installation remains unchanged.

(c) the product continues to be assessed for the quality of its manufacture and marking by NSAI.

(d) no new information becomes available which in the opinion of the NSAI, would preclude the granting of the Certificate.

(e) the product or process continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.

(f) the registration and/or surveillance fees due to NSAI Agrément are paid.

5.2 The NSAI Agrément mark and certification number may only be used on or in relation to product/processes in respect of which a valid Certificate exists. If the Certificate becomes invalid the Certificate holder must not use the NSAI Agrément mark and certification number and must remove them from the products already marked.

5.3 In granting Certification, the NSAI makes no representation as to;

(a) the absence or presence of patent rights subsisting in the product/process; or

(b) the legal right of the Certificate holder to market, install or maintain the product/process; or

(c) whether individual products have been manufactured or installed by the Certificate holder in accordance with the descriptions and specifications set out in this Certificate.

5.4 This Certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.

5.5 Any recommendations contained in this Certificate relating to the safe use of the certified product/process are preconditions to the validity of the Certificate. However, the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this Certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act 2005, or of any other current or future common law duty of care owed by the manufacturer or by the Certificate holder.

5.6 The NSAI is not responsible to any person or body for loss or damage including personal injury arising as a direct or indirect result of the use of this product or process.

5.7 Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certification.

NSAI Agrément

This Certificate No. **21/0425** is accordingly granted by the NSAI to **Aereco Ltd.** on behalf of NSAI Agrément.

Date of Issue:**22 February 2021**
Signed

Seán Balfe
Director of NSAI Agrément

Readers may check that the status of this Certificate has not changed by contacting NSAI Agrément, NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (01) 807 3800. Fax: (01) 807 3842. www.nsai.ie

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