

Lucam HCP, Lucam HRW and Fairtype air handling units with counterflow exchanger and / or indirect evaporation cooling or recovery wheel

Installation, operation and maintenance manual



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1. General

1.1. Applications.

The air handling units are calculated in compliance with the ERP directive for comfort ventilation. Depending on the selected variant, these are used such as offices, schools, nurseries, public spaces, shops, homes, etc.

The air handling units are designed in such a way that the air flows are separated. Also, the air handling units are suitable for indoor and outdoor installation with a standard hygienic execution by using a very smooth surface with a unique rubber seal.

The HCP air handling units with a standard capacity of 600-16,800m³/h and is a compact ventilation system with a thermal efficiency of up to 90%. These units are equipped with fans provided with EC technology motors.

The HRW air handling units with a standard capacity of 1,200-28,000m³/h and is a compact ventilation system with a thermal efficiency of up to 80% and a latent efficiency up to 80%. These units are equipped with fans provided with EC technology motors.

The Fairtype air handling units with a standard capacity of 600-16,800m³/h and it is a compact ventilation system with a thermal efficiency of up to 90% including an indirect evaporation section for cooling with an evaporation efficiency of up to 115%. These units are equipped with fans provided with EC technology motors.

2. Safety instructions

The installation of the air handling unit must be carried out in accordance with the general and locally applicable building, safety and installation regulations of municipality, electricity and water supply company.

Personnel concerned must familiarize themselves with this instruction before starting up this installation. Damage to the air handling unit or parts thereof, as a result of improper handling by the end user or the installer is not covered by the warranty



Warning

Only licensed electrician or service personnel trained by Lucam b.v may do changes to the air handling unit regarding the electrical installation or connections perform external functions.

2.1 Safety switch / main switch

There is a main switch on the air handling unit, which is located on the operating side of the unit. The air handling unit should usually be started and stopped via the terminal, not with safety switch.

Always switch off the main switch when carrying out work on the air handling unit, unless otherwise stated in the appropriate instruction.

2.2 Risk

**Warning**

Before starting the installation / service, it must be ensured that the voltage at the unit is interrupted.

Risks associated with moving parts

The moving parts are rotating fans, closing / opening air valves, heat wheels, pumps.

Inspection doors serve as protection for both the rotating parts and heat recovery part.

If no ducts are connected to the channel connections, they must be provided with a touch protection.

**Warning**

Inspection doors should not be opened when the unit is operating. At normal operation, the unit is stopped with the stop button on the terminal.

Do not open inspection doors until the unit has stopped, fans and/or air valves are in a standing position. If not, there may be pressure on the door, they may be pushed out.

3. Dimensions and weight.

The weight and dimensions of the respective unit is indicated in the technical data sheets of the air handling unit.

4. Transport.

The air handling unit is supplied plug and play. Entirely assembled on legs or foundation frame. This within the applicable legal dimensions 1300-245-250cm (LWH) unless otherwise mention.

Accessories such as air hoods, heaters, coolers, hand terminal, servo motors for external components, etc. are packed and placed in or on the air handling unit

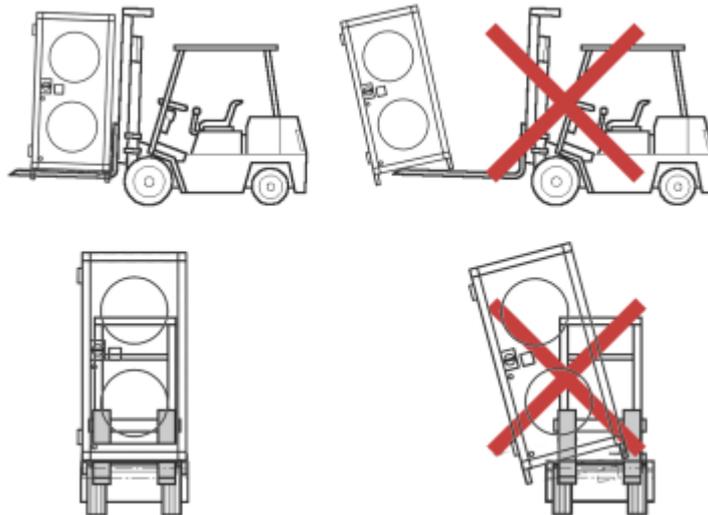
**Warning**

The loose accessories must be removed out or of the air handling unit before start-up of the unit.

4.1 Loading / unloading

When the unit is delivered, we would like to point out that the delivery is complete and undamaged. The unit is only allowed to be transported in the position as they will be installed in the end.

When transporting with a forklift truck or roller blocks, make sure that the spoons or rollers are under the frame and not on the bottom panel.



Warning

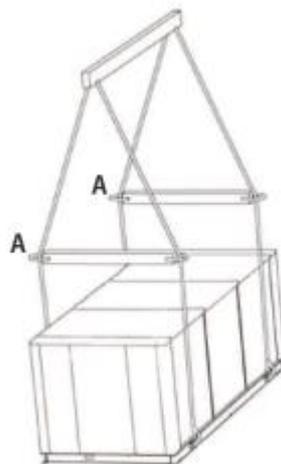
The buyer is liable for damage that occurs during unloading at the destination.

Proper lifting equipment must be taken into account when hoisting the unit!



Warning

Use equalizers (A) to lift the unit. This will keep the sides of the unit free and the lifting cables do not damage the unit.



5. Placement of the unit.

The air handling units are intended for installation on horizontal surfaces, that's why it is important that the unit is placed level. The construction must also be taken into account under the unit to be placed.

Before installation of the unit, the necessary space for inspection and service must be available. It is recommended to keep this space equal to the width of the unit, with a minimum space of 70 cm on the service side.



Safety

The concern for the safety of the unit can be described as safely installed, inspection doors are fitted with lockable hinges, and are locked to prevent unauthorized access to internal components of the unit.

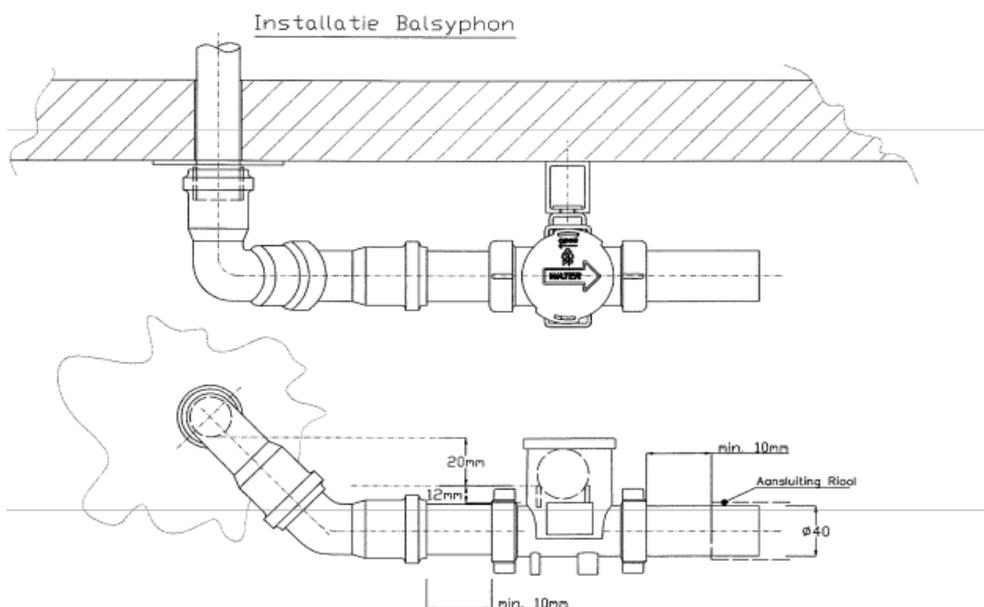
Also note that the unit is connected correctly and duct-technically, by means of ducts and/or air hoods. This is to prevent contact hazard, valves or fans.

5.1 Condensate drain



Pay attention

The condensation drain must be connected. The condensation drain must be fitted with ball siphon or siphon including drop. Specific information regarding application in overpressure or under pressure situation see instruction with the delivered siphon.



Warning

In an outdoor installation, the siphon must be equipped with siphon heating.

5.2 Duct connection

The outside air intake duct and the return duct must be between the roof and/or facade duct and the air handling unit insulated vapor-tight. This to prevent condensation on the outside of the ducts. The indoor supply system must be insulated if it is outside the isolated shell of the building.



Pay attention

It is important that the ducts are connected to the correct connections, outside air intake, exhaust air, return air, supply air.

There are marking stickers at the connections for checking.

To avoid unnecessary noise from the unit, it is recommended to install mufflers in the exhaust and supply duct.

5.3 Connecting cabinet parts

When coupling cabinet parts, they must be placed directly opposite each other and by means of the brackets to be connected. See picture.



Pay attention

It is important to provide the coupling parts to 1 part with a draft belt. E.g. 15-20mm. This clamps as soon as the cabinets are pulled together, this gives a leak-free solution.

6. Electrical connection



Warning

Check the power supply at the main switch according to the connections!



Pay attention

Type A earth leakage circuit breakers are not suitable.

The air handling units are plug and play, this means that if there is a power supply and control device is connected the unit can already run. Depending on the type of unit, the power supply is 230Vac or 400Vac.

The external connections must be connected in accordance with the supplied terminal strip description.

6.1 CE-marking

Lucam b.v. is a company engaged in building air handling units.

To guarantee our quality and to make it clear that Lucam b.v. delivers quality an independent company is switched on. Avan BV has tested the air handling units and they therefore have the CE received approval.

What does a CE inspection entail?

Many industrial products that appear on the market or are in use within the European Union (EU) taken must bear the CE mark. With the mandatory CE marking, the manufacturer of the product indicates that the product meets the minimum requirements regarding the safety of the product.

Based on one or more product guidelines, the product is provided with CE marking. Are there for example, there are moving parts on the product and an energy supply is the Machinery Directive applicable.

Electric driven air handling units clearly fall within the definition of a machine and are based on to be CE marked with the requirements of the Machinery Directive. Avan BV is specialized in the guidance of manufacturers with regard to the CE marking of machines. The guidance exists among others from:

1. Directive (s) and standard setting
2. Assessment of the product against the directive (s)
3. Verification of the documentation against the directive (s)
4. Contact with suppliers on behalf of the customer
5. Purchasing advice
6. Risk inventories
7. Drawing up the user manual
8. Review the electrical installation of the machine in accordance with NEN EN IEC 60204-1
9. Supply of manufacturers declaration of conformity



7. Operation of the unit

7.1 Operation

The units are equipped with the CP1 control. This control controls the entire unit.

The control is extremely easy to adjust using the remote control or laptop / computer. If you choose to operate via computer or laptop, no software is required. The software is completely web-based. So you can connect the controller to your PC / laptop or network with a network cable and get full access via your web browser.

There are two types of controllers to operate the unit.

The basic control is a compact, graphic, touch control panel for the everyday user of central ventilation. The touch control panel is ideal for adjusting the comfort level where ventilation is provided by a central ventilation unit. The color touchscreen is easy and intuitive to use. Both the temperature and the air exchange can be adjusted. There is also a timer setting to activate.



The advanced controller is a user-friendly control panel for installation within an air handling unit or inside on the wall. The color touchscreen is easy and intuitive to use. The menus are logical, easy to navigate and have easily recognizable symbols. This controller is used for the commissioning and everyday operation of the air handling unit and in connection with service. All system values can be seen while the settings are password protected.



For detailed information about the controller, see <https://lucam-air.nl/handleiding/>

7.2 Ease of use and safety

All menus and graphics are specially adapted to this specific version of the unit and the individual user and contain only relevant data.

Operation may only be performed by authorized persons who have access to the system. Alarms of the unit have the highest priority and are visualized by a red-light flashing. Both control units provide a full view in terms of ease of use and safety and focuses on optimal reduced of energy consumption.

7.3 Manual

The operating manual for the respective control center is supplied separately.

7.4 Start-up of the unit

The controller is preprogrammed based on installed components and the basic setting.

The controller is programmed with the following boot order.

The unit is started by clock or manual operation in the following order

- Return / outside air damper opens after delay (adjustable)
- Bypass valve closes 100% (heat recovery)
- Reheater opens 50% (% adjustable)
- Return fan starts (delayed adjustable)
- Supply fan starts (delayed adjustable)

Start-up mode is completed, and the unit is operating.

8. Technical specifications.

The technical specifications are supplied separately for each system.

9. Alarm list

The alarm list is supplied as an attachment, which refers to all types of alarm and texts that may occur during the operation of the unit.

Each alarm has an ID number that is recorded in the alarm log along with the text alarm when an alarm occurs.

10. Service maintenance

Good and proper maintenance is necessary for a for good and long-term functioning of the air handling unit.

10.1 Filters

The filters should be periodically checked for contamination. It is advised to do this at least twice per year, depending on the local pollution. Replace the filters if they are dirty.

Under normal circumstances this will be every six months.

The unit should never be used without filters. In addition to purifying the supplied air, the filters also have the task of protecting the components in the unit. This guarantees a long life of the unit and saves on maintenance costs

10.2 Heat exchanger

During inspection of the filters, the aluminum counterflow plate heat exchanger must also be checked on pollution. A heat wheel must also be checked for pollution, but also whether the wheel is still rotating. Strong pollution can occur due to the timely replacement or absence of the filters. This is possible up to lead to a decrease in capacity and an increase in energy consumption.

If the heat exchanger is very dirty, you must immediately contact the service department of your supplier

10.3 Indirect evaporation section

The indirect adiabatic cooling system must be inspected at least once a year. The nozzles must be checked for a complete spray pattern. The built-in water filter needs to be cleaned. The built-in UV lamp should be replaced once every 2 years. The water collector should be cleaned if necessary. If the water section is heavily polluted, you should immediately contact the service department of your supplier

10.4 Inspection doors

The inspection doors are fitted with plastic hinges. The hinges also serve as a closure.

Before opening and closing the doors, the closures must always be at an angle of 90 degrees be opened.

The door is then opened or closed by using the handle.

Because the hinges / closures can be locked with an Allen key, one of each door can hatch be made. The hinges and door rubbers should be regularly cleaned with Vaseline or silicone spray are being treated. This keeps the doors in good working order and the seals flexible

10.5 Conventional Cooling system

If a conventional cooling system is installed with cooling refrigerant, the cooling system must be maintained in accordance with the logbook. The logbook is supplied to the installer and will be fully accountable afterwards.

11. Warranty

The unit is covered by a factory warranty of 1 year after commissioning, but no later than 6 months after delivery of the unit. The warranty only covers material, but not the services. The warranty only covers if demonstrably completed maintenance has been carried out in accordance with our instructions and by a recognized installer.

Warranty claims can only be exercised for defects in material and production errors. The device should not be disassembled by possible claim without our written permission.

Spare parts warranty is only provided if supplied by us and have been installed by a recognized installer.

Warranty extension is only granted in consultation and recorded in writing. If no maintenance has been performed on the installation the warranty becomes void.

12. Liability

The device is designed and manufactured as a ventilation system with the possibility of temperature change. The unit serves to ventilate by taking contaminated air outside the building and supplying fresh filtered air. Any other use is considered misuse and can lead to damage to the device or persons, Lucam b.v. cannot be held liable for this.

Lucam b.v. accepts no liability for damage that can be traced back to:

1. Violations of the safety, operating and maintenance requirements of these technical documentation.
2. Use of materials not supplied by Lucam b.v. In such cases the responsibility solely by the installation company.
3. Normal wear.

13. Material Statement

Materials that the user or treated air comes into contact with:

- The walls of the unit are made of galvanized sheet steel type magic zinc
- Heat exchanger made of aluminium
- Various power cables with PVC insulation
- Electric motors consisting of galvanized steel, aluminium and copper
- heating register made of steel, copper and aluminium
- air filter made of glass fiber, steel, PVC

Other materials, occurs in small quantities:

- acrylic, silicone sealants
- sealing of the gaskets in EPDM rubber
- various screws, nuts and blind rivets of steel, as well as small amounts of copper and brass.
-

Materials in total as service personnel can get in touch with:

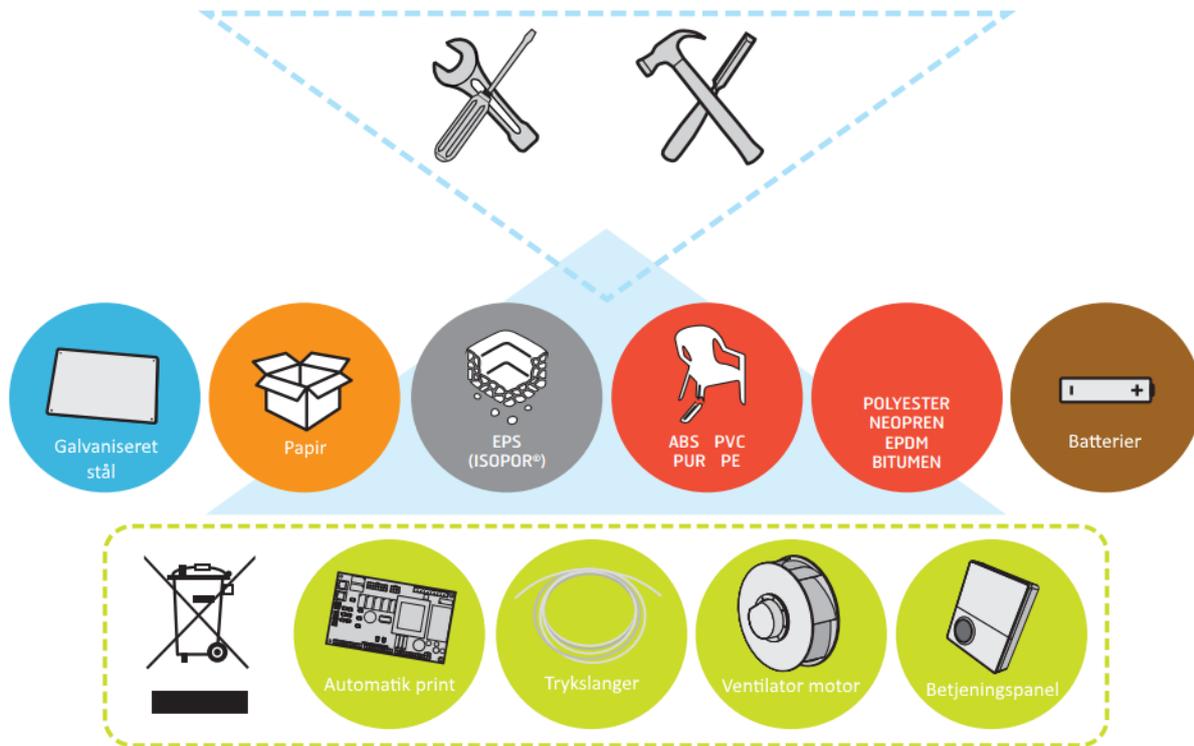
- plastic insulated electrical wires
- various other electrical parts

Safety:

Materials: The materials are considered to be absolutely harmless

Use: The device is an electrical appliance and the power supply must be disconnected for maintenance and inspection. The unit also includes running engines, it must have time to stop before opening the inspection door, as well as surface heating with sometimes high operating temperature.

14. Disassembly



After the period of use, the installation must be dismantled by qualified personnel. Before starting the disassembly, the installation must be de-energized. Live cables must be removed by electricians. All medium-carrying components (coolers, heaters, etc.) must be completely emptied and in accordance with the applicable lines are removed.



Warning

Think in particular of freon-containing installations

After all this, the air handling unit can be disassembled. All metals and plastic parts must be separated after sorting. It should be taken into account that load bearing parts of metal, aluminum and / or plastic may be outdated and therefore the no longer meet the original static load limit. This is due to the constant exposure to the weather and UV rays, especially in outdoor installations. When the bearing parts of metal and plastic are outdated, transport must be done with safe, modern lifting equipment. Metal and plastic parts must be sorted according to local regulations separated and disposed of. Electrical and electronic parts should be treated as electronic waste drained.

When handling dusty parts (such as filters, mineral wool products, etc.), appropriate ones should be used protective clothing, protective gloves and respiratory protection are worn

15. EC declaration of conformity

Manufacturer

Lucam B.V
 Dukaat 19
 8305 BC EMMELOORD
 Tel: 0031 (0) 527-231633
 E-mail: info@lucam-air.nl

Hereby declares that:

Products:

HCP-B 800, HCP-B 1200, HCP-B 1600, HCP-B 2300, HCP-B 800, HCP-B 1200, HCP-B 1600, HCP-B 2300, HCP 1200, HCP 1600, HCP 2300, HCP 3500, HCP 4800, HCP 6200, HCP 8000, HCP 9600, HCP 12000, HCP 14400, HCP 16800, HCP 1200, HCP 1600, HCP 2300, HCP 3500, HCP 4800, HCP 6200, HCP 8000, HCP 9600, HCP 12000, HCP 14400, HCP 16800, HCP-V 800, HCP-V 1600, HCP-V 2400, HCP-V 3200, HCP-S 1150, HCP-S 1600, HCP-S 2400, HCP-S 3600, HCP-P 800, HCP-P 1200, HCP-P 1600, HCP-P 2300, HCP-IC 1200, HCP-IC 1600, HCP-IC 2300, HCP-IC 3500, HCP-IC 4800, HCP-IC 6200, HCP-IC 8000, HCP-IC 9600, HCP-IC 12000, HCP-IC 14400, HCP-IC 16800, HCP-IC 1200, HCP-IC 1600, HCP-IC 2300, HCP-IC 3500, HCP-IC 4800, HCP-IC 6200, HCP-IC 8000, HCP-IC 9600, HCP-IC 12000, HCP-IC 14400, HCP-IC 16800, HRW-IC 3000, HRW-IC 4500, HRW-IC 5600, HRW-IC 9500, HRW-IC 13000, HRW-IC 16000, HRW-IC 20000, HRW-IC 24000, HRW-IC 28000, HRW-IC 3000, HRW-IC 4500, HRW-IC 5600, HRW-IC 9500, HRW-IC 13000, HRW-IC 16000, HRW-IC 20000, HRW-IC 24000, HRW-IC 28000, HRW-V 3000, HRW-V 4500, HCP-WM 600, HCP-WM 800, HCP-B-HP 800, HCP-B-HP 1200, HCP-B-HP 1600, HCP-B-HP 2300, HCP-HP 1200, HCP-HP 1600, HCP-HP 2300, HCP-HP 3500, HCP-HP 4800, HCP-HP 6200, HCP-HP 8000, HCP-HP 9600, HRW-B 800, HRW-B 1200, HRW-B 1600, HRW-B 2300, HRW-B 800, HRW-B 1200, HRW-B 1600, HRW-B 2300, HRW-B-HP 800, HRW-B-HP 1200, HRW-B-HP 1600, HRW-B-HP 2300, HRW 3200, HRW 4100, HRW 5600, HRW 7100, HRW 8800, HRW 11500, HRW 13500, HRW 16500, HRW 20000, HRW 22800, HRW 25000, HRW 30000, HRW 3200, HRW 4100, HRW 5600, HRW 7100, HRW 8800, HRW 11500, HRW 13500, HRW 16500, HRW 20000, HRW 22800, HRW 25000, HRW 30000, HRW-HP 3200, HRW-HP 4100, HRW-HP 5600, HRW-HP 7100, HRW-HP 8800, HRW-HP 13500, HCP-F 1200, HCP-F 1600, HCP-F 2300, HCP-F 3500, HCP-F 4800, HCP-F 1200, HCP-F 1600, HCP-F 2300, HCP-F 3500, HCP-F 4800, HRW-IHP 3200, HRW-IHP 4100, HRW-IHP 5600, HRW-IHP 7100, HRW-IHP 8800, HRW-IHP 11500, HRW-IHP 13500, HRW-IHP 16500, HRW-IHP 20000, HRW-IHP 22800, HRW-IHP 25000, HRW-IHP 30000, HRW-IHP 3200, HRW-IHP 4100, HRW-IHP 5600, HRW-IHP 7100, HRW-IHP 8800, HRW-IHP 11500, HRW-IHP 13500, HRW-IHP 16500, HRW-IHP 20000, HRW-IHP 22800, HRW-IHP 25000, HRW-IHP 30000, Fairtype 600, Fairtype 1200, Fairtype 1600, Fairtype 2300, Fairtype 3500, Fairtype 4800, Fairtype 6200, Fairtype 8000, Fairtype 9600, Fairtype 12000, Fairtype 14400, Fairtype 16800

Is manufactured in accordance with:

EUROPEAN PARLIAMENT and the Council Directive 2006/42 / EC of 17 May 2006. May 2006 on the approximation of the laws of the Member States relating to machinery, with special reference to Annex 1 on essential requirements in the field of health and safety related to the design and construction of machinery and safety components.

European Parliament and the Council of Council Directive 2004/108 / EC of 15. December 2004 on the mutual approximation of the laws of the Member States with regard to electromagnetic capabilities and coordinated after the the aforementioned directive of 17. May 2006

European Parliament and the Council Directive 2006/95 / EC of 12. December 2006 on the approximation of the Member States' laws on electrical equipment designed for use within certain voltage limits

EUROPEAN PARLIAMENT and the Council Directive 2009/125 / EC of 21. October 2009 establishing a framework for the Establish eco-design requirements for energy related products

REGULATION (EU) No 1253/2014 of 7 of the Commission. July 2014 , on the implementation of the European Parliament and Council Directive 2009/125 / EC as regards the ecodesign requirements for ventilation units

And are produced according to European harmonized standards in the following:

DS / EN ISO 12100-2011

The standard specifies the basic terminology, principles and a methodology to ensure safety in the construction of the machines.

DS / EN ISO 13857: 2008

Machine safety safety distances to prevent reaching hands, arms, legs and feet in the danger zones

DS / EN ISO 61000-6-2-2005

Electromagnetic Compatibility (EMC) Part 6-2: Generic Standards Immunity for Industrial Environments

DS / EN ISO 61000-6-3-2007

Electromagnetic Compatibility (EMC) Part 6-3: General Standards Immunity for Household, Commercial and Light Industrial environments

DS / EN 60204-1: 2006

Safety of machinery-electrical equipment of machines-part 1: general requirements

DS / EN 308: 1997

Heat exchangers test methods for determining air to air performance and flue gas heat recovery devices

DS / EN 13141-7: 2010

Building ventilation performance and function testing of parts / products for residential ventilation part 7 **DS /**

EN 1886: 2008

Ventilation for buildings-air treatment plant-mechanical performance

DS / EN-13053

Buildings ventilation-air treatment plant performance characteristics for plants, parts and sections

Lucam B.V



Michel Valkema
directeur