OneAir

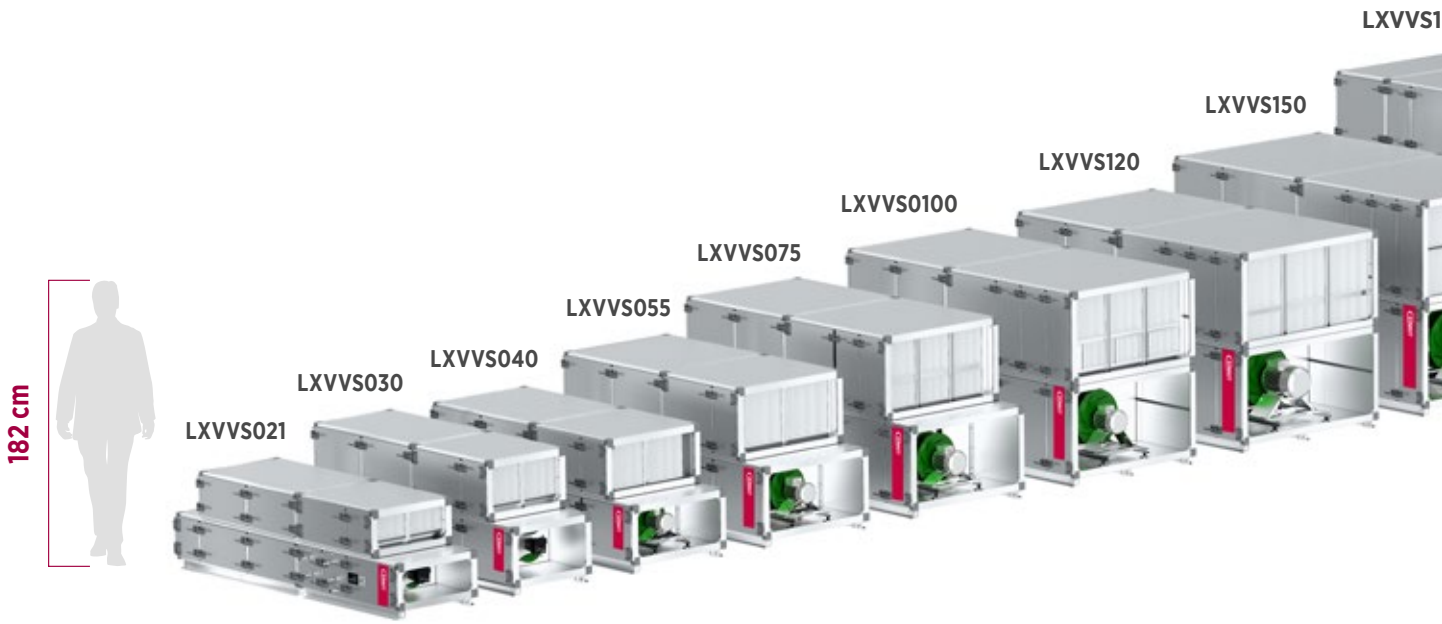
Modular Air-Handling Units

1100 - 100 000 m³/h

UNIT SIZE

Airflow
from **1100** m³/h
from **100 000** m³/h

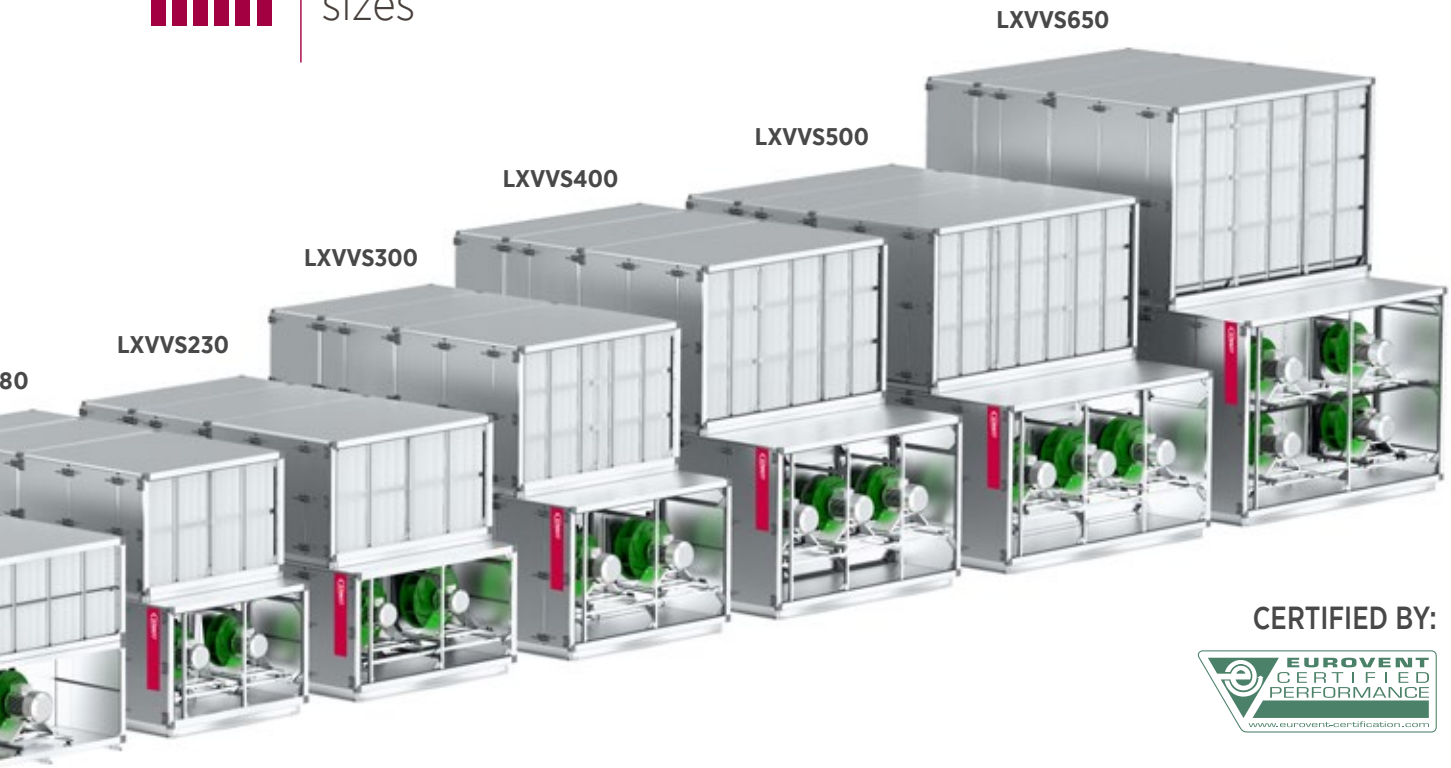
Up to **92%**
of energy recovery efficiency



DURABLE AND
TIGHT STRUCTURE

RELIABLE
COMPONENTS

14
sizes



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www.eurovent-certification.com

DATA EXPORT TO:

PDF | CAD 2D | CAD 3D | SUBMITTAL | QUOTATION | TECH CARD

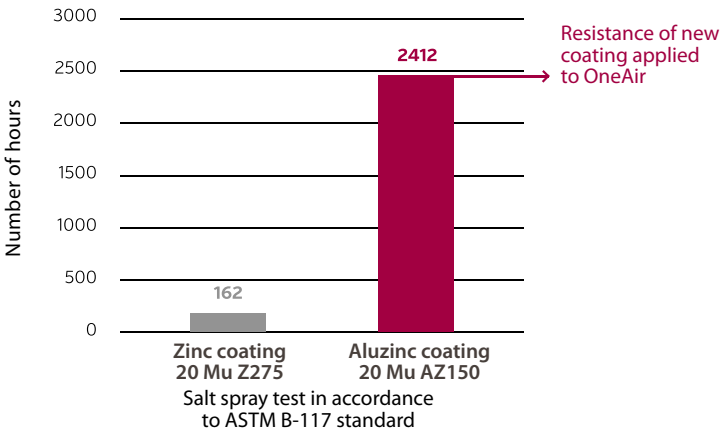
SMART CONTROLS

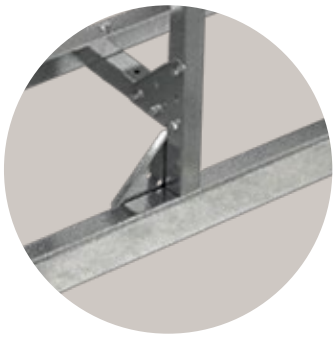
USER SAFETY

STRUCTURE

STEEL SKIN COATED WITH ALUZINC AZ 150

CORROSION RESISTANCE





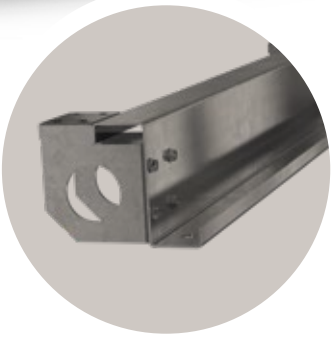
CASING SKIN

- Rigid, durable structure of the casing.
- Low absorption of heat radiation and UV.
- High resistance to weather conditions.

FAN SECTION CAGE

- Improved longitudinal rigidity of the structure.
- Facilitated sections joining.

ALUMINUM POSTS
OF SPECIAL
CONSTRUCTION
IN EACH AHU TYPE



PROFIL Z

LXVVS 021-180

PROFIL C

LXVVS 230-650

STEEL BASE FRAME
AS STANDARD
FOR ANY TYPE OF UNITS

FOUNDATION

- Transport facilitation.
- High resistance of the frame to deflection.

STRUCTURAL POSTS

- Broken thermal bridges as standard.
- High resistance to weather conditions and UV radiation.

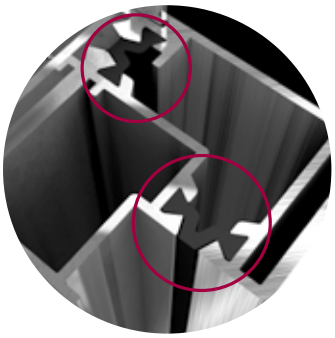
TIGHTNESS

CANOPY

- The canopy is made of 0,5 mm steel sheet, double side coated with 185 um of zinc (DX51D AZ185).
- Canopy is assembled of modules equipped with self-latching grooves securing perfect tightness of the joints. Modular structure of the canopy ensures its easy and safe assembly.

ERGONOMIC INSPECTION PANEL LOCK

- Highly aesthetic and ergonomic handles securing perfect tightness of inspection panels.



THERMAL BREAK

LABIRYNTH TIGHTNENING

ADDITIONAL POST SEALING

ADDITIONAL SEALING BLADE

ALUMINUM STRUCTURAL POSTS WITH ADDITIONAL SEALING BLADE AND THERMAL BREAK

- Broken thermal bridge as standard – eliminates humidity condensation on units structural elements.
- Blade along the inspection window ensures labyrinth tightening between panel and AHU body – currently the most effective solution on the market, mainly applied to laboratory equipment.
- Symmetrical groove in the vertical post's mounting feet secures its 100% tightness with the AHU casing structure.

MANAGEMENT SYSTEM

Lennox supplies control system with a factory-implemented application for remote monitoring and management of the operating parameters of the units in real time via a web browser on any mobile device.

ONEAIR MANAGEMENT SYSTEM

- Remote monitoring and management of units parameters.
- Easy and intuitive change of the devices operating mode.
- Quick setup up of the optimal units operating schedule.
- Visualisations of any devices parameters - current and stored data.
- Reading of consumed and saved energy.
- Accessed to PC, mobile device, web browser.

Graphical operation calendar:

» Changing time intervals using sliders

Faults and alarms handling:

» Clearing alarms

» Alarm logging

Charts of unit's operation:

» Two charts – main and secondary

» Free selection of the set of parameters for monitoring and assigning them to selected ranges

Analysis of savings resulting from the operating scenario used:

» Graphical representation of the use of particular energy media

» Costs and savings shown in any currency.

KEY COMPONENTS

DIRECT DRIVE PLUG FAN SET

Design and application

- Single inlet, radial, backward curved, free running fan.
- Impeller made of SAN (styrene/ acrylonitryle) construction material with 20% glass fiber.
- Direct drive – fan impeller installed directly on motor shaft.
- Fan section consisting of single or multiple fans (fan array) in order to ensure optimum working parameters.

Specification

- Low and medium pressure ventilation systems with fan static pressure not exceeding 2000 Pascals.
- Maximum fan set working temperature: 60°C.

> AC MOTORS

- Fan and motor mounted on common housing, separated from AHU casing by set of rubber vibration absorbing mounts.
- Motors of TEFC type (Totally Enclosed, Fan-Cooled).
- Motors fitted for IEC standard.
- Variable Frequency Drive (VFD) – standard equipment of the fan-set.

- Available Energy classes: IE2, IE3
- Rated voltage: 3x230V AC, 3x400V AC.
- Number of poles: 2 or 4.
- Motor winding insulation class: F (fitted for VFD operations).
- Bearings lifetime: L_{10}= 20000h / L_{50} = 100000h.
- Protection degree: IP55.
- Maximum working ambient temperature: 60°C.

> EC MOTORS

- Set of fan and motor mounted on common rail, fixed to the AHU fan diaphragm.
- EC motors are Permanent Magnet motor, characterised by much higher efficiency vs traditional inductive AC motors.
- EC motors (Electronically Commutated) – where mechanical commutator switching the windings has been replaced with electronic one.
- Change of revolutions is done by means of changing the frequency rate of windings switching (rate or magnetic field rotating).
- Highly inductive permanent magnets have applied in EC motors used by VTS, which enabled to achieve high torque at relatively small dimensions, together with reaching IE4 efficiency class.

- Available Energy classes: IE4.
- Rated voltage: EC motors of nominal capacity exceeding 0,75kW - 3x400V AC.
- Rated voltage: EC motors of nominal capacity equal or less 0,75kW - 1x230V AC.
- Motor widing insulation class: F.
- Protection degree: IP54.
- Maximum working ambient temperature: 55°C.
- Lifespan:
  - 70 000 hours at load not exceeding 70% of nominal capacity at ambient temperature not exceeding 35°C,
  - 30 000 hours at 100% capacity load at ambient temperature not exceeding 55°C.

CASING

Design and application

- Casing structure made of 'sandwich' type panels formed in 'C' shape and reinforced by system of internal frames.
- "Sandwich"" double skin panels made of rigid polyurethane foam.
- Indoor and outdoor application.
- Inspection panels mounted on AHU side.
- Casing supported on steel base rails.

Specification

- Working temperature: (-40)°C ÷ (+90)°C.
- Panel thickness: 40mm.
- Thermal conductivity PPU = 0,022 W/mK.
- Casing fire resistance: non-flamable, non fire spreading (NRO).
- Moisture absorption: 0,04%.
- PPU density: = 42kg/m^3.
- Eurovent certification
  - Mechanical strength of casing: -1000 Pa ÷ 1000 Pa < 2mm (D_1 - PN EN 1886: 2008),
  - Casing tightness: (MB): (-400) Pa - 0,05 l/sm^2, (+700) Pa - 0,13 l/sm^2 (L_1 -PN EN 1886: 2008); (RU): (+400) Pa - 0,93 l/sm^2,
  - Casing heat transfer coefficient: K= 0,6 W/m^{2}K (T2 - PN EN 1886: 2008),
  - Thermal bridges coefficient: K_b =0,52 (TB_3 - PN EN 1886: 2008).

PANEL FILTERS

Design and application

- Pleated filtration fabric shielded by steel net, installed in 50 mm thick frame.
- Filtration fabric made of polyester fibres.
- Applied as initial air filtration stage.

Specification

- Working temperature: max (+70)°C, 100% RH.

Filtration classes available

- ISO Coarse 75% (ISO 16890) - G4 (EN779).

BAG FILTERS

Design and application

- Filtration fabric made of polyester fibres.
- Bags fixed to to 25 mm thick frame.
- Filters of class M5 - bags length: 300 mm, Filters of class F7 & F9 - bags length: 600 mm.
- Applied as initial, secondary of final air filtration stage.

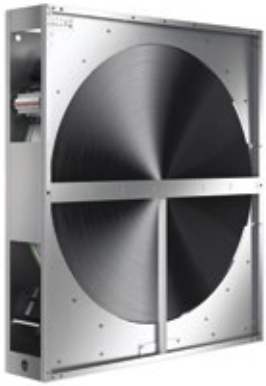
Specification

- Working temperature: max (+70)°C, 100% RH.

Filtration classes available

- ISO ePM10 50% (ISO 16890) - M5 (EN779).
- ISO ePM2,5 65% (ISO 16890) - F7 (EN779).
- ISO ePM1 70% (ISO 16890) - F9 (EN779).

ROTARY HEAT WHEEL



Design and application

- Rotor made of aluminum with shaft suspended on bearings, installed in steel housing.
- Rotor filling – two layers of alternately winded aluminium foil – one flat, the other – corrugated – making small ducts for the air.
- Rotor drive system with smooth revolutions control enabling to maintain highest recovery efficiency and to adjust degree of recovery performance.
- Purge zone reducing the cross-contamination effect of contaminated exhaust air to supply to absolute minimum.
- Set of gaskets installed both on the wheel outer edge and bar separating supply from exhaust air being an additional protection against cross-contamination.
- Rotary heat wheel recovers sensible heat from return air to supply, which passes the unit in opposite direction. The process enables heat recovery in winter time, same as cool recovery in summer.
- Humidity recovery from return to supply in case the rotor pad temperature is lower than dew point of return air – typically during winter season.

Specification

- Up to 86% of energy recovery, depending on airflow rate and its velocity in the heat wheel window.

COUNTERFLOW HEXAGONAL RECUPERATOR

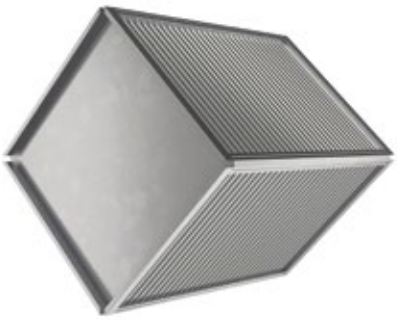
Design and application

- Hexagonal heat recovery recuperator made of crosswise stamped aluminum plates, between which supply and exhaust air passes alternately in counterflow arrangement.
- As standard, the recuperator is equipped with by-pass damper, enabling its securing against frosting and heat recovery capacity regulation.
- Optionally, the recuperator can be equipped with integrated mixing box.
- The recuperator provides sensible heat recovery for warmer air to the colder one. For winter season – recovery of heat from return air to supply. For summer – recovery of chill from return air to supply.

Specification

- Energy recovery at very high supply and exhaust air stream separation (reaching 99,9%).
- Heat recovery reaching up to 93% depending on flow rate face velocity of the air passing the recuperator.

CROSSFLOW PLATE HEAT RECUPERATOR



Design and application

- Recuperator made of crosswise stamped aluminum plates, between which supply and exhaust air passes alternately in counterflow arrangement.
- As standard, the recuperator is equipped with by-pass damper, enabling its securing against frosting and heat recovery capacity regulation.
- Optionally, the recuperator can be equipped with integrated mixing box.
- The recuperator provides sensible heat recovery for warmer air to the colder one. For winter season – recovery of heat from return air to supply. For summer – recovery of chill from return air to supply.

Specification

- Energy recovery at very high supply and exhaust air stream separation (reaching 99,9%)
- Heat recovery reaching up to 80% depending on flow rate face velocity of the air passing the recuperator.

RUN-AROUND COIL

Design and application

- Set of two water coils – one in supply, the other one in exhaust airstream.
- The coil in return airstream recovers the heat (cooler) and passes it to the coil in the supply air (heater) by means of heat-transfer fluid (water-glycol mixture). In case of chill recovery, entire process is reversed.
- System applied for supply and exhaust air handling units installed remotely to each other."

Specification

- Indirect Energy recovery (sensible heat) at 100% supply and exhaust airstreams separation.
- Max heat-transfer fluid operation pressure: 1,6MPa=16bar (tested 21 bar).
- Max glycol concentration: 50%.

MIXIN SECTION

Design and application

- Section equipped with two air inlets/ outlets aided with dampers, enabling regulation of fresh and recirculation air share (recirculation).

Specification

- Direct Energy recovery (sensible and latent heat) resulting from partial mixing of fresh air with return one.
- Control of fresh air share in entire airflow supplied to handled spaces.
- Working temperature range: -40 ÷ +70°C.

WATER HEATER

Design and application

- Block of copper pipes integrated with another block of aluminum fins, creating expanded heat exchange surface. Pipes are bonded to the collectors, equipped with headers (for connecting entire coil to the medium supply system).
- Heating of the air supplied to the handled spaces.
- Re-heating of the air as a part of air dehumidifying process.
- The coil can be applied if heating medium is available (local boiler or district heating system).
- Coil headers are equipped with medium damping valve and air vent.
- Connecting the coil in parallel medium flow vs air, will result in its capacity reduction by over a dozen percent.

Specification

- Max glycol concentration: 50%.
- Max medium temperature: 150°C.
- Max medium working pressure: 1,6MPa = 16bar (test: 21bar).
- Heating capacity: parameter resulting from individual performance calculaation of selected unit (CCOL).
- Medium side pressure drop – parameter resulting from individual performance calculation of selected unit (CCOL).

ELECTRIC HEATER

Design and application

- Set of resistive heating elements made of CR-Ni-Fe alloy, 6 kW/400V each.
- Coils mounted on hot-dip galvanized steel frame.
- Heater is equipped with power terminals and thermostat protecting against overheating.
- In case of AHU with complete controls, heater is equipped with integrated capacity control module.
- Heating capacity can be modified by means of smooth regulation module (HE module, set of Solid State Relays as optional parts of AHU controls) or by means of automatic engaging of next heating sections.

Specification

- Max permissible ambient temperature around heating elements: 65°C.

DIRECT EXPANSION COIL AS CONDENSER IN HEAT PUMP CIRCUIT

Design and application

- Block of copper pipes integrated with another block of aluminum fins, creating expanded heat exchange surface. Pipes are bonded to the collectors, equipped with headers (for connecting entire coil to the cooling system circuit).
- Heating of the air supplied to the handled spaces.
- Re-heating of the air as a part of air dehumidifying process.

Specification

- Max medium temperature: 60°C.
- Max medium working pressure: 3,84MPa = 38,4bar (test: 50bar).
- Heating capacity: parameter resulting from individual performance calculaation of selected unit (CCOL).

WATER COOLER

Design and application

- Block of copper pipes integrated with another block of aluminum fins, creating expanded heat exchange surface. Pipes are bonded to the collectors, equipped with headers (for connecting entire coil to the medium supply system).
- Cooling of the air supplied to handled spaces.
- Cooling and dehumidifying of the air as a part of air complex dehumidifying process in summer season.
- Coil can be applied in complex air conditioning systems consisting of few or over a dozen of units supplied from common chilling source (chiller) or in case of single unit of relatively high cooling capacity.

Specification

- Max glyccol concentration: 50%.
- Min supplying medium temperature: +2°C.
- max medium working pressure: 1,6MPa = 16bar (test: 21bar).
- Cooling capacity: parameter resulting from individual parameters of selected unit (CCOL).
- Medium pressure drop / flow rate: parameter resulting from individual performance calculation of selected unit (CCOL).
- For reversed operationg mode (heating) max medium working temperature: 140°C.

DX COOLING COIL

Design and application

- Block of copper pipes integrated with another block of aluminum fins, creating expanded heat exchange surface. Pipes are bonded to the collectors, equipped with headers (for connecting entire coil to the cooling system circuit).
- DX cooler is also available as heater execusion (so calleed Condenser).
- Cooling and dehumidifying of the air as a part of air complex dehumidifying process in summer season.
- Coil usually applied for smallerd cooling capacity systems vs water coolers or for individual air conditioning systems.

Specification

- Min. Refrigerant evaporation temperature: +3°C.
- Max refrigerant working pressure: 2,2MPa=22bar (test: 29 bar).
- Cooling capacity - parameter resulting from individual performance calculation of selected unit (CCOL).

EVAPORATIVE HUMIDIFIER

Design and application

- Humidifying process based on water adiabatic evaporation from the humidifier pad.
- Humidifying pad made of CELDEK II material.
- Humidifier housing made of stainless steel.
- System of direct water dropping (LXVVS021-LXVVS055).
- System of water recirculation aided by pump (LXVVS075-LXVVS650).
- Droplet eliminator integrated with humidifier filling (LXVVS075-LXVVS650).
- System is equipped with water drainage system preventing against high water level in the pan and floating valve controlling its refilling (LXVVS075-LXVVS 650).

Specification

- Max air face velocity across the humidifier pad: 3,00 m/s (VS 21-VS 55); 4,00 m/s (VS 75-VS 650).
- Water pressure range: 0,15 ÷ 0,75 MPa.
- Requirements regarding water quality – standard tap water.

SOUND ATTENUATING SECTION

Design and application

- Sound attenuator consists of noise attenuating bars installed in the AHU casing.
- Attenuating bars of 140 mm width filled with sound-absorbing, inflammable mineral wool (density: 60 and 80 kg/m^3).
- Attenuating bar housing: frame made of hot-dip galvanized steel.
- Bar outer surface: thin veil preventing against bar filling migration to the air.
- Number of attenuating bars: 2÷13, depending on block size.

Specification

- Max air face velocity: v=5m/s.
- Working conditions: -40 ÷ +70°C.".

INTERNAL LIGHT

Design and application

- Energy saving lamp with securing shade.
- Facilitation of AHU inspection actions: filter, fan and humidifier compartment.

Specification

- Working conditions: -40 ÷ +70°C.

AIR DAMPER

Design and application

- Blades made of aluminium with rubber gasket on the edges.
- Aluminum frame.
- Blades drive realized by means of gears made of composite material, installed on frame internal side.
- Damper is equipped with square pivot, fitted for actuator (dampers of cross section greater than 4 m^2 have 2 linked pivots).

Specification

- Air leakage at closted damper: 50 $m^3/h*m^2$ - at 100 Pascals of pressure difference.
- Workint temperature range: -40 ÷ +70°C.

FLEXIBLE CONNECTION

Design and application

- Flexible connection made of 1 mm thick and 30 mm wide hot-dip galvanized steel profiles and polyester fabric coated with PVC.
- Flame resistance: UL94 - HB [ISO 1210].
- Flexible connection resistant to UV radiation.
- Working temperature range: -30°C do +70°C.
- Max connection length (fully spread position): 110 mm.
- Flexible connection installed on each AHU/Duct joint eliminates transfer of possible AHU vibrations to the ventilation ductwork.

Specification

- Max air face velocity: 5m/s.
- Working conditions: -40 ÷ +70°C.

AIR INTAKE AND DISCHARGE LOUVERS

Design and application

- Air intake louver made of aluminum profile, blades made of ABS material.
- Air outlet louver made of aluminum profile, blades made of ABS material.
- Protection of air handling unit installed outdoor against meteorological conditions (precipitation, sand).

Specification

- Max air face velocity: 5m/s.
- Working conditions: -40 ÷ +70°C.

LENNOX brand of **LENNOX EMEA**

LENNOX EMEA (Europe, Middle East, Africa), a division of Lennox International Incorporated (LII), designs and manufactures heating, air conditioning, air handling and refrigeration equipment.

Our reputation as a leading player in the market is based on simple principles that guide our actions: always listening to you, knowing your business areas and understanding your needs, while ensuring that our employees grow within the group.

Fully aware of the importance of environmental issues, we also support you in the context of regulatory changes and develop solutions that comply with all applicable environmental directives (F-Gas & EcoDesign).

OUR KEY FIGURES

900 people in Europe

3 European production sites: Genas, Longvic and Burgos

Quality certification: ISO 9001 - 14001 - OHSAS 18001

1 European training centre

1 HVAC&R European development center

9 subsidiaries and representative offices

Commercial presence in 46 countries

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