

Rooftop Unit

New line of high energy efficiency air-air monoblock units (HE)



26 to 270 kW

General

Self-contained, cooling only or heat pump air conditioners with scroll compressors in rooftop version.

New line of High Energy Efficiency monoblock units "HE", specially designed for air conditioning large indoor spaces such as department stores, conference halls, theatres, crowded buildings and service industry buildings in general.

Configurations

HE: high efficiency

HP: Reversible heat pump

LN: Low noise unit

Air handling module set-ups

FC2S: Free Cooling with 2 dampers

FC3S: Free Cooling with 3 dampers

RS4S: Static cross-flow heat recovery unit with by-pass damper and Free Cooling.

GC2S: Gas condensing heat generator and free cooling

GC3S: Gas condensing heat generator and free cooling with 3 dampers.

GS4S: Gas condensing heat generator, static cross-flow heat recovery unit with by-pass and free cooling with 3 dampers.

Strengths

- ▶ Efficient energy performance
- ▶ Integrated free cooling
- ▶ Wide operating limits
- ▶ EC brushless fans
- ▶ Thermodynamic recovery of exhausted heat
- ▶ Easy and quick to install
- ▶ Wide configurability

TAX DEDUCTIBILITY

The new **LAMBDA ECHOS HE** line meets the minimum energy efficiency requirements laid down in annex 1 of Italian Ministerial Decree DM 6 August 2009 published in the Official Gazette GU on 26 September 2009.

This decree amends Italian Ministerial Decree DM 19 February 2007 and provides that the incentivisation also involves the replacement of winter air conditioning systems with systems having heat pumps that have a coefficient of performance (COP) and, if the appliance also provides summer air conditioning, an energy efficiency rating (EER), at least equal to the relevant minimum values, set in annex I (of DM 6 August 2009).

INTEGRATED FREE COOLING

As a result of the ever increasing attention to the insulation of buildings, also in the service industry, and the internal load associated with illumination, in an application in the retail field, the demand for cooling regards, on average, about 3150 hours out of a total of 5040 hours of opening per year.

Considering the thermal profile of the city of Milan, within this interval, it is possible to identify 3 time bands:

1. Hours of possible operation in **total free cooling** mode (free cooling is sufficient to meet the cooling demand)
2. Hours of possible operation in **mixed free cooling** (free cooling is not sufficient to meet the cooling demand but the outside air conditions are in any case favourable compared to recirculation air)
3. Hours of necessary operation in **mechanical cooling** mode

It is therefore clear how the possibility of exploiting free cooling guarantees operation in conditions of reduced energy absorption by up to 35% per year.

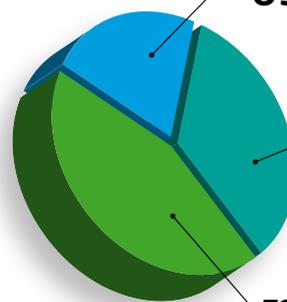
DEMAND FOR YEARLY COOLING

3150 hours/year

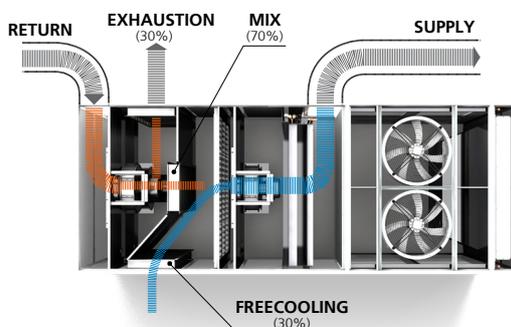
MECHANICAL COOLING
695 hours/year

MIXED FREE COOLING
1,085 hours/year

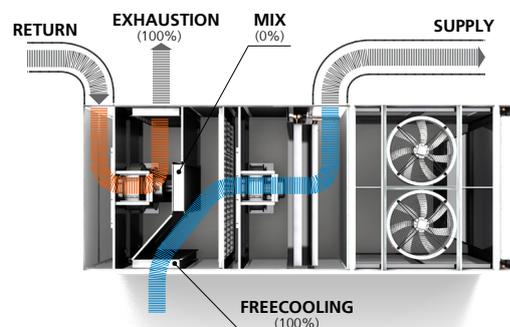
TOTAL FREE COOLING
1,375 hours/year



CONSUMPTION REDUCTION UP TO 35% PER YEAR



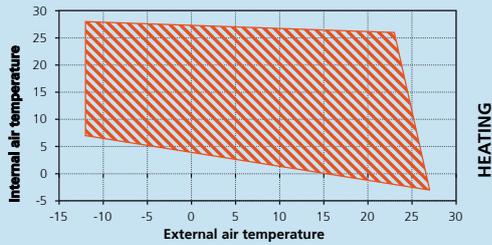
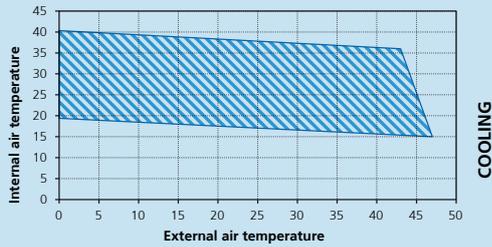
Free cooling OFF



Free cooling ON

All Blue Box Rooftop units equipped with 2-, 3- and 4-damper modules have the possibility of working in free cooling mode, fully managed by the control installed on the machine.

WIDE OPERATING LIMITS



OPERATING LIMITS LAMBDA ECHOS HE SMALL

The operating limits should be understood as average quantities for the line and therefore not generically extensible to each individual unit. They are calculated for standard air flow rates and consider that the units are positioned as per instructions.

PLUG FANS



Fans with electronic commutation
EC-Brushless



Specifically optimized integrated control for fan management.

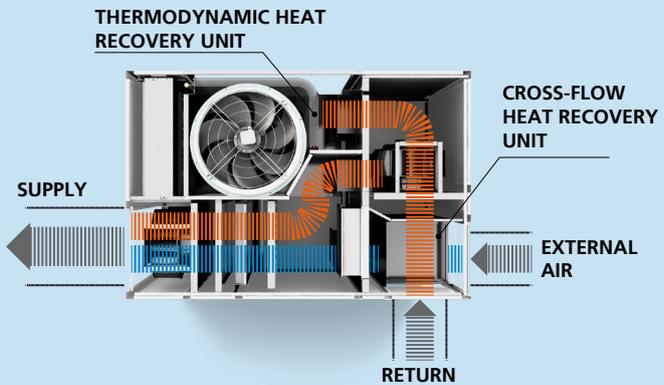
Elimination of head losses of transmissions
Maintenance of air flow rate as the head losses of the system change

HEAT RECOVERY

The need to always work with a certain amount of fresh air (about 30%), to guarantee the salubrity of the occupied spaces, means that treated air must be exhausted, and this air takes with it an energy load that, if not recovered, would be lost.

To prevent this loss, rooftop units are equipped with:

- **THERMODYNAMIC RECOVERY:** exhausted air is conveyed over the source-side exchangers so as to optimise the energy performance of the unit.
- **CROSS FLOW RECOVERY:** the introduction of a real heat recovery unit with aluminium plates allows recovery of up to 65% of the energy that would otherwise be lost to the atmosphere.



Thermodynamic recovery is standard on units with 3-damper module and is combined with the plate recovery unit (double recovery system) on units with 4-damper module.

SANDWICH PANELS OF DOUBLE THICKNESS

To guarantee excellent thermal and acoustic insulation, the surface of all the units is made of sandwich panel insulated with polyurethane foam with density of 40kg/m³. A thickness of 25 or 50 mm can be chosen while keeping the external dimensions of the units unchanged.

Unit size	Rooftop							
	CUBE HE				LAMBDA SMALL HE			
	1.2	2.2	3.2	4.2	5.2	6.2	7.2	8.2
Refrigeration Capacity (kW)	26.5	33.1	39.2	44.1	54.0	61.0	68.3	76.5
Heating Capacity (kW)	26.5	33.8	39.2	45.1	56.2	64.0	73.0	80.5
Air flow Rate (m ³ /h)	4,950	6,050	7,260	8,250	9,500	11,000	12,100	13,200

Unit size	LAMBDA MEDIUM HE						LAMBDA LARGE HE				
	9.2	10.2	12.2	13.2	14.2	16.2	17.4	19.4	20.4	24.4	27.4
Refrigeration Capacity (kW)	90.2	101.2	120.3	132.1	147.6	166.0	178.0	191.1	204.6	249.3	275.0
Heating Capacity (kW)	90.7	102.1	120.9	133.0	153.6	172.8	187.4	208.2	227.3	248.3	278.2
Air flow Rate (m ³ /h)	15,400	17,600	20,900	23,650	25,300	27,500	30,250	33,000	35,970	42,900	47,080

Efficiency performance declared in compliance with standard UNI EN 14511.

Air-Air unit in Heat Pump version operating at full capacity, in the following conditions: exterior environment with dry bulb air temperature of 7°C and wet bulb air temperature of 6°C / interior environment with dry bulb air temperature of 20°C and wet bulb air temperature of 15°C (heating); exterior environment with dry bulb air temperature of 35°C and wet bulb air temperature of 24°C / interior environment with dry bulb air temperature of 27°C and wet bulb air temperature of 19°C (cooling). Basic version (all recirculation) with thermoregulation activated.



Bingo Star
Rome - Italy
Unit -> Lambda Echos
Refrigeration capacity -> 750kW



Esselunga
Prato - Italy
Unit -> Lambda Echos
Refrigeration capacity -> 500 kW



Pam shopping centre
Padua - Italy
Unit -> Lambda Echos
Refrigeration capacity -> 100 kW

Blue Box Rooftop product range

Monoblock air conditioners and air/air heat pumps

Discover the range of Blue Box products on our website and in our catalogues



Cube HE

26 to 44 kW



Lambda Echos Small HE

54 to 76 kW



Lambda Echos Medium HE

85 to 166 kW



Lambda Echos Large HE

168 to 324 kW



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