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# ROOFTOP UNIT Cube

heating, cooling, ventilation





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# ROOFTOP UNITS

## Ducted installation

Cube 20 – 160






Cube R8



## Cube ROOFTOP- WHAT IS IT?

Cube are devices that provide comprehensive thermal air treatment. One housing contains all the components. Well thought-out design solutions facilitate the transport and assembly of devices. Rooftop Cube units are READY TO WORK.

-  Cooling
-  Heating
-  ventilation with heat recovery



## Ductless ventilation

### Cube 20 – 40 / NW



### Cube R8 / NW



### 3-IN-1 COMPACT

One housing contains all the components necessary for complete thermal air treatment and heat recovery. Simplify installation with no need for additional modules or accessories.

### DECENTRALIZATION

Decentralized operation means that the devices can be adjusted independently and that the entire ventilation system is highly reliable. Even load on the roof the lack of a duct system guarantees simplified design, execution and maintenance works.

### WE PROVIDE SUPPORT

We support our clients at every investment stage. We place particular emphasis on assistance in selecting devices and designing ventilation systems. Thanks to the on-line monitoring of devices, we can offer continuous care for the proper operation of devices.

### ECODESIGN

The device meets the ecodesign requirements of EU ventilation systems No. 1253/2014, EU cooling products No. 2016/2281 and is equipped with components with the highest degree of efficiency.

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# SUPPORT AT EVERY STAGE OF COOPERATION

Good product is not the the end of the road for us. We make every effort to ensure that the process of product selection is quick and efficient. We tailor the solution to the user's needs. Below are the types of support we offer our clients.



**Project support**



**Sales support**



**Technical support**



**Logistics support**



**Aftersales support**



**Warranty Claims support**



**Training support**



## PROJECT SUPPORT

A group of qualified engineers that provide full support for a project. The team analyses the project demands and helps with the appropriate selection and placement of devices. Finally, the customer receives a ready selection offer along with a set of drawings and technical documentation.



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# POLISH PRODUCTION

Cube RTU's, from the initial concept, the design all the way to the final implementation, are designed and meticulously made in Poland. Cube units are characterized by highest quality and compliance with all European standards. We ensure quick delivery and full sales and after-sales support.





## SALES SUPPORT

The team of technical and commercial advisors looks after the client comprehensively. They monitor the status of the order, supervise the selection of devices, prepare the price calculation and set the schedule of delivery to the customer. The team is also able to answer technical questions related to products.



## AFTER-SALES SUPPORT

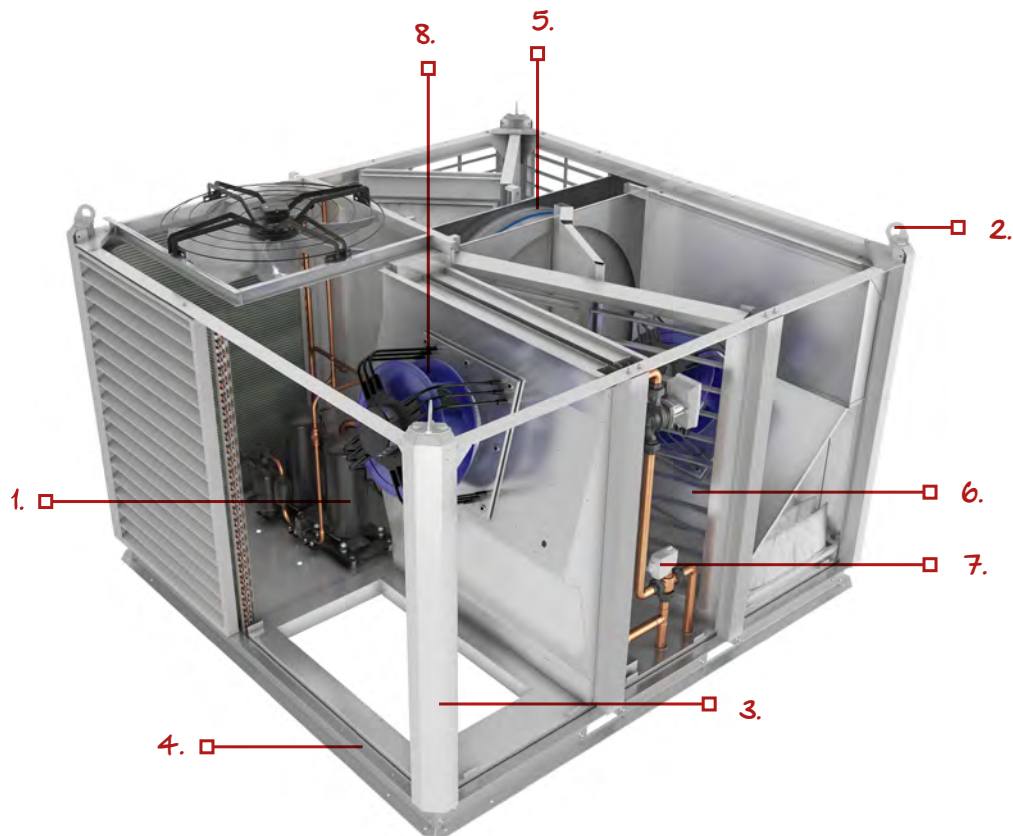
FLOWAIR support does not end at the stage of selling the equipment or at the delivery to the customer. We continue to support our clients at other investment stages as well. Experienced staff not only supervise the first start-ups and provide on site trainings for our solutions. What is more they support the end customer and complete all necessary warranty formalities.



# CONSTRUCTION

## I Cube RTU's

Cube RTU's are characterized by a compact design that contains all necessary components for effective cooling, heating and ventilation with heat recovery. It means that with one device it is possible to meet the building's sanitary requirements without the need for any complicated installations, external modules or additional devices.



**1. Cooling system**  
inverter compressor or tandem compressor set

**2. Lifting lugs**  
fast assembly without the need for a traverse

**3. Housing**  
construction with additional 50 mm mineral wool insulation that eliminates thermal bridges

**4. The self-supporting base**  
for direct mounting of the device on the substructure

**5. Rotary heat exchanger**  
inside the device, no need to add any external heat recovery modules

**6. Recirculation damper**  
smooth regulation of fresh and recirculating air

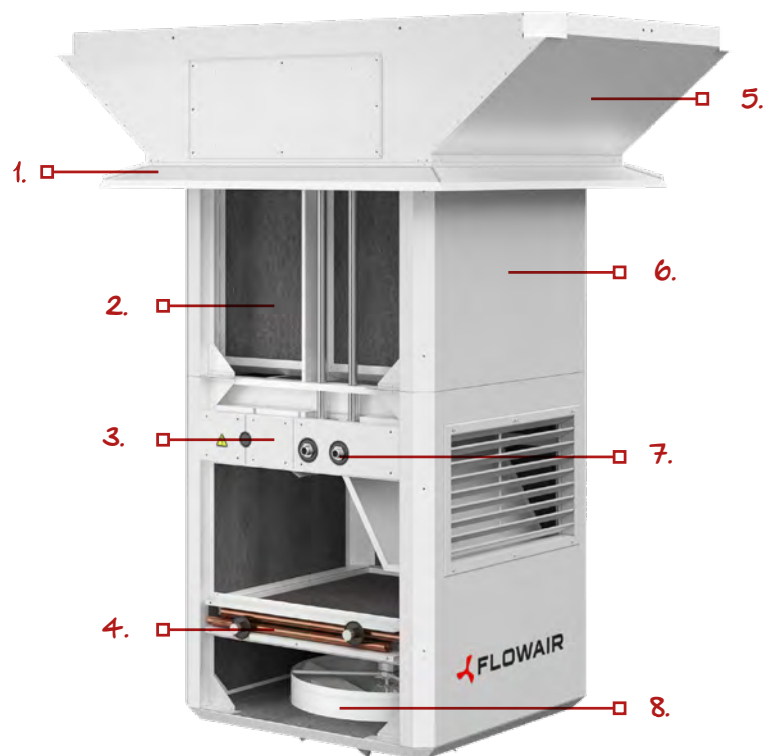
**7. 3-way valve+ circulation pump**  
version with water exchanger equipped with built-in circulation pump with 3-way valve

**8. EC fans**  
smooth regulation of air flow



## I Air supply module NW

The use of the NW air-supply module adapts Cube RTU's for ductless operation. The lack of a traditional duct installation simplifies the project and allows for faster investment implementation. Furthermore, in the case of decentralized solutions, the user gains the possibility of independent regulation and greater security.



**1. Planking/ empennage**  
additional protection  
against atmospheric  
precipitation

**2. Silencers**  
lowering the noise level for  
both supply and exhaust  
sections

**3. Connections in the  
ceiling area**  
for fast hydraulic and  
electric installation

**4. NW W heater**  
water powered heat  
exchanger in the supply  
part

**5. Roof base**  
Easy device placement

**6. Isolation**  
thermal and acoustic  
insulation of the housing  
guarantees reduction of the  
noise level and reduction of  
thermal losses

**7. Cube heater W**  
Water heater connections  
with secondary/auxilliary  
mixing circuit located  
on the Cube

**8. Configurable supply ele-  
ment - swirl diffuser**  
with actuator (NW  
D version) or duct  
connections  
(NW V version)

# MOUNTING OF UNITS

## – DUCTED INSTALLATION

The foundation of Cube rooftops on the roof must be made on a previously prepared substructure. It is attached to the structural points of the building. The weight of the device is evenly distributed around the circumference of the self-supporting base. It is possible to place it on a substructure supporting two opposite edges of the device.

### I Duct connections

#### ■ METHOD 1

Ducts connected to the bottom of the device. The mounting method applies to all Cube devices.



#### ■ METHOD 2\*

Exhaust air duct connected at the bottom, supply air duct connected at the side. The mounting method applies to Cube 40-160 devices.



#### ■ METHOD 3\*

Ventilation ducts connected to the sides of the device. Applies to the Cube 40 device.



#### ■ METHOD 4\*

Installation next to the building. Possibility to connect ducts from the bottom and side.



\* Connection of the air supply duct from the side is NOT possible in case of unit equipped with a gas burner.

# MOUNTING OF UNITS

## – DUCTLESS INSTALLATION

Cube units with NW air supply bases are delivered in two parts. Installation, on a previously prepared substructure, consists of lifting and setting the NW modules and the Cube device. Connections located in the ceiling section enable quick connection of power supply and heating medium and simplify installation.

### I Installation

#### ■ STEP 1

Prepare an opening in the roof structure and the substructure.




#### ■ STEP 2

The placement of the base with diffuser and the unit.





### I Product benefits

  
Easy  
installation

  
Self supporting  
base

  
Transport  
lugs

  
Module with  
swirl diffuser

  
Heater in the roof section or in the  
supply air module

# CONFIGURATION OF UNITS WITH AIR-SUPPLY MODULE

*Cube units with a air-supply module can be freely configured as required*



## CHOOSING THE UNIT

Cube R8 – compact heating and ventilation rooftop  
Cube 20/40 – compact cooling, heating -ventilating rooftop

## CHOOSING THE HEATER IN THE UNIT

N – version without a heater in the device  
W – water heater with secondary circulation and circulation pump  
E – electric heater  
G – gas heater with a modulated burner or two-stage  
HP – heat pump (reversible compressor unit)

**ROOF BASE** – enabling direct placement

**ACOUSTIC SILENCERS** – reducing noise level EX S / L

**EXTENSION MODULE** EX S/L (option)

## CHOOSING THE HEATER IN THE AIR SUPPLY MODULE NW

N – version without a heat exchanger in the supply air module  
W2 – version with a 2-row heat exchanger  
W3 – version with 3-row heat exchanger

## AIR SUPPLY MODULE

D – swirl diffuser with actuator for regulation of air supply  
V – duct connection module

# AUTOMATION

Cube devices are equipped with a complete power supply and control automation system. The built-in Climatix controller enables wide possibilities of communication with the device. Proprietary work algorithms adapted to the design of the devices guarantee energy-saving operation, regardless of the conditions. It is also possible to integrate Cube devices into the FLOWAIR SYSTEM and thus the cooperation of up to 31 different types of devices connected to the intelligent T-box controller



The function of automatic adjustment of the swirl diffuser blades, depending on the operating mode of the device, translates into an even distribution of air in the room, regardless of the season.



Possibility to work in constant supply air temperature mode \*, relative to the extract air temperature or the room air temperature.



The devices are under the supervision of an authorized service center. In case of any problems, quick help is possible.



The automatic speed control of the rotary exchanger means the highest possible heat recovery efficiency at any given time.



Smooth regulation of EC fans guarantees adjustment of performance to the design assumptions and minimum electricity consumption.



Zone temperature control for facilities where at least two zones differing in the way of use can be distinguished (applies to the T-box Zone for zone operation).



Cooperation with gas detection sensors and fire alarms \*\*



It is possible to connect devices to external control systems. In the event of a failure or an alarm, the operating characteristics of the device are changed.



The option of automatic recirculation damper regulation enables economic maintenance of the required conditions in the room.



Automatic fan speed control guarantees constant air flow irrespective of filter contamination or the degree of damper opening.

\* requires the use of a water supplied heat exchanger in the Cube or a modulated gas heater depending on the configuration, an extension module may be required

\*\* depending on the configuration, an expansion module may be required

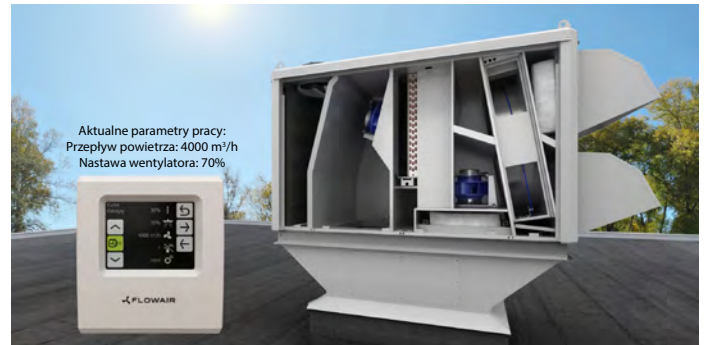
# FUNCTIONS OF T-BOX

## I AUTOMATIC FAN SPEED REGULATIO

Cube devices are equipped with pressure measurement systems. Regardless of the filter contamination degree or the setting of the recirculation damper, the performance of the fans is automatically altered so that the air flow is always the same. Readings of the current air flow adjusts the operating settings to be in line with the design assumptions.

### ■ SITUATION 1

The design airflow setting is 4,000 m<sup>3</sup> / h.  
Device with clean filters to achieve this performance sets the fans to 70% speed.



### ■ SITUATION 2

During operation, the filters become dirty and generate additional resistance for the flowing air. On the basis of the varying pressure of the Cube device increases the fan speed to 80%.  
Automatic fan speed control provides a constant flow throughout the service life devices.

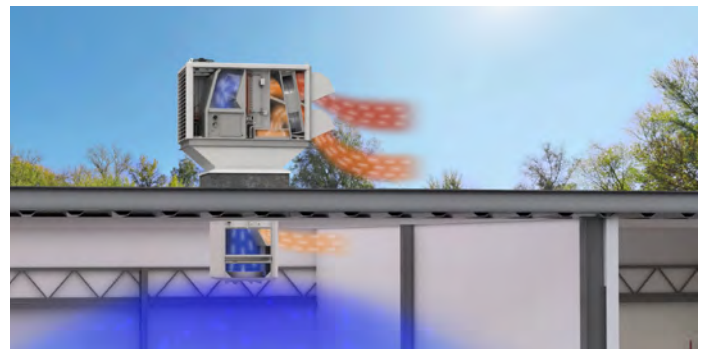


## I AUTOMATIC ADJUSTMENT OF THE AIRFLOW DIRECTION

Ensuring an appropriate distribution of the supplied air is the key to obtaining comfortable conditions in the zone where people stay. It is particularly important in devices equipped with systems enabling year-round operation. Depending on the operating mode of the device and external conditions, the airflow direction is automatically optimized. The client can adjust the algorithm to the individual characteristics and size of the building.

### ■ SUMMER SEASON

Cube automatically moves the diffuser blades swirl to a horizontal position. Cooler air cools the room by convection.



### ■ WINTER SEASON

In the winter season, to obtain adequate coverage supply air, vertical position is optimal.



## CONTINUOUS / THERMOSTATIC MODE

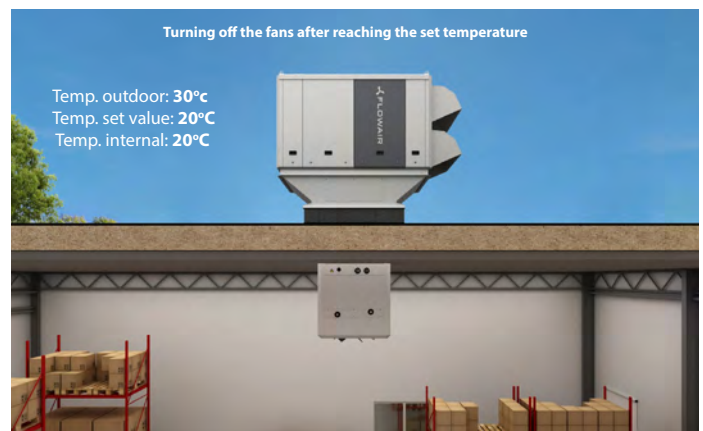
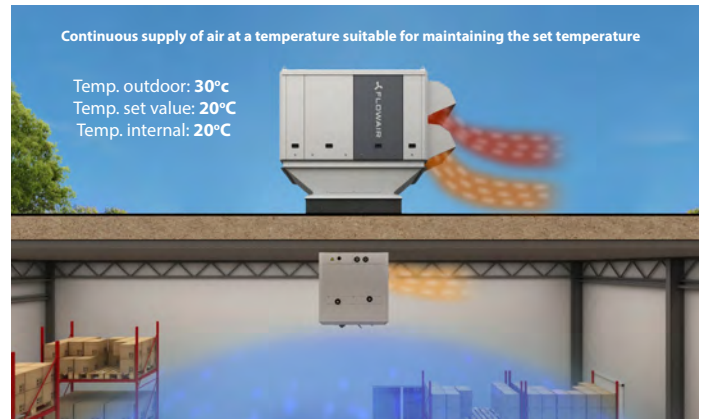
It is possible to choose the mode of operation of the device after reaching the set temperature. The client can independently regulate the operation to their requirements.

### CONTINUOUS MODE,

In the continuous mode, the operation of the device is regulated on the basis of the PID controller. The device will initially blow high temperature air into the room, which will allow for quick upheat. Along with reaching the preset temperature in the room, the air supply temperature will drop to such a degree that will guarantee covering both the ventilation loss and the heat loss resulting from the penetration through the partitions.

### THERMOSTATIC MODE

In thermostatic mode after reaching the temperature the set value in the room, the fans will stop and the device will stop blowing air. If the temperature in the room starts to deviate from the value again setpoint, the fans will turn on.

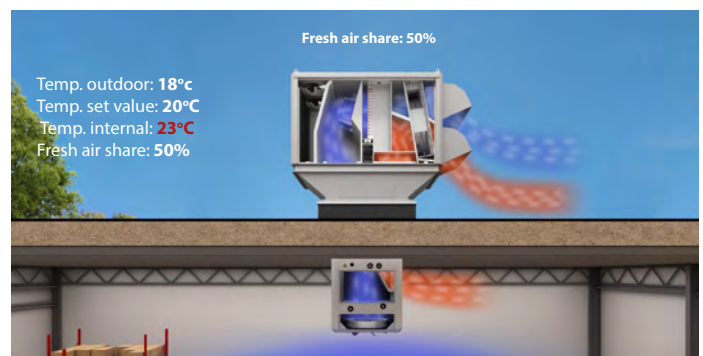


## AUTOMATIC THROTTLE ADJUSTMENT

When the automatic recirculation damper control mode is activated, the Cube aims to achieve the desired room temperature in the most economical way. The air that requires less energy will always be used to heat or cool the room. Additionally, this algorithm enables faster achievement of the desired temperature.

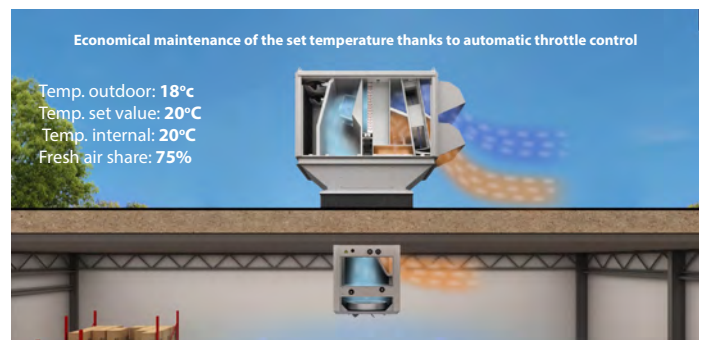
### SITUATION 1

With the ventilation air priority, the device will work with a constant fresh air capacity, regardless of the temperatures. Recirculation damper setting: 50%



### SITUATION 2

In the automatic adjustment mode the device for the given situation, it will switch the throttle to 100% air share fresh to reach the set temperature without having to unnecessary energy consumption. If the throttle work will not make it possible to reach the temperature until the next compressors or heaters will start.



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# ON-LINE MONITORING SERVICE

## I SERVICE MONITORING



### IMMEDIATE REACTION OF SERVICE

Many problems with operating the devices can be solved remotely. One call to the FLOWAIR service center is enough and the situation can be remotely resolved without waiting for a personal visit from the service. Additionally, the risk of unnecessary costs as a result of an unjustified service trip is minimized.



### DEVICES UNDER CONTINUOUS SUPERVISION

The monitoring service enables the FLOWAIR service to remotely access the device's operating parameters. Service technicians constantly monitor the condition of the device in terms of its correctness and efficiency.



### REMOTE UPDATE

If it is developed improved software version is possible upgrade the system remotely so that the client always had access to the latest version of the algorithms.

## I REMOTE COMMUNICATION SERVICE



### BUIL-IN COMMUNICATION MODULE

When purchasing the on-line monitoring service, Cube devices are additionally equipped with GSM router modules. The customer does not have to worry about additional costs as the communication modules ensure completely wireless data transfer. Moreover, there is no need to run additional cables and complicate the installation



### ACCESS TO SETTINGS AND OPERATING PARAMETERS OF DEVICES

The customer obtains on-line access to readings and device settings. It is possible to manage the device via a web browser or a mobile phone from anywhere in the world.

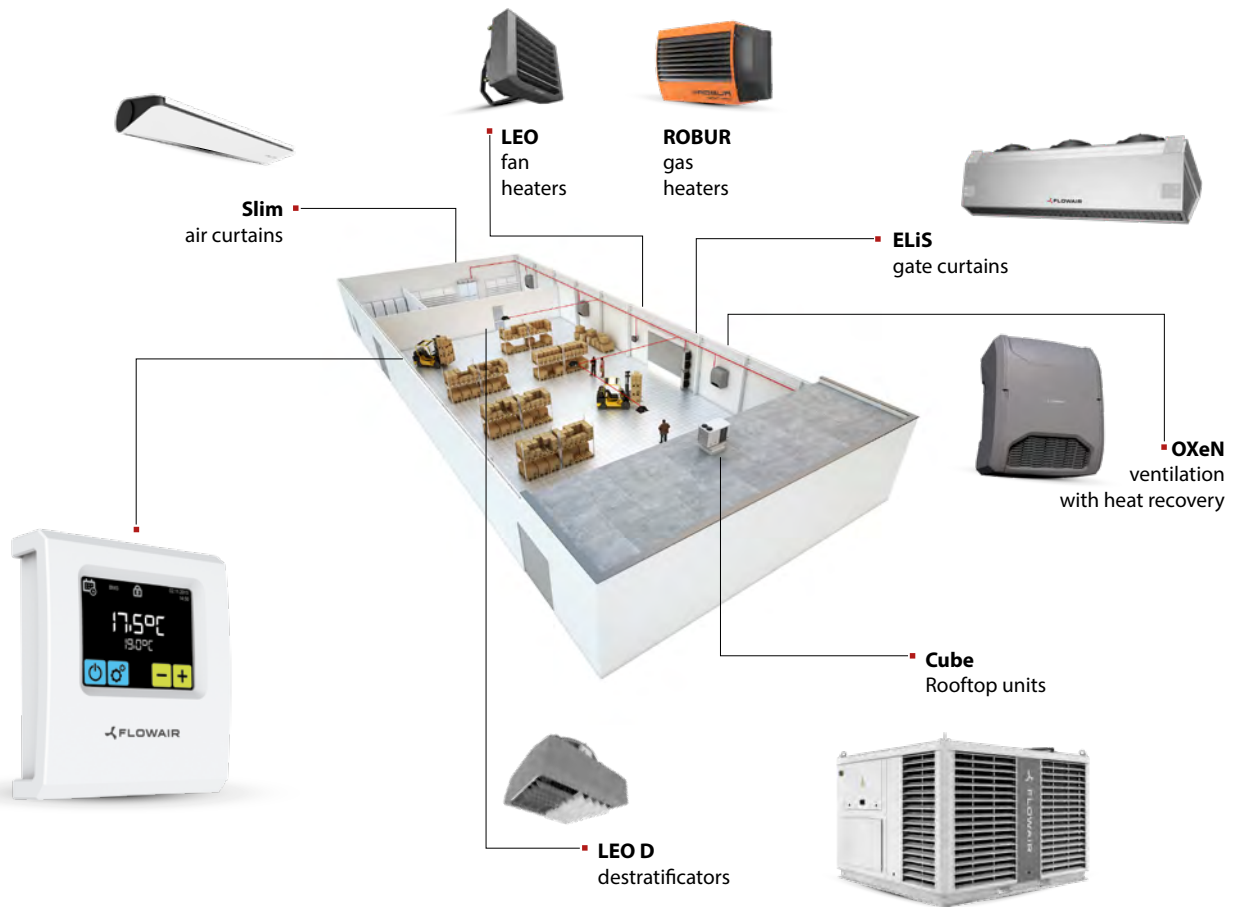


### AFTER-SALE SERVICES

The customer by contacting the Support Department The service technician can be extended warranty period, additional agreements inspections, signing a contract service or purchase of consumables.



# SYSTEM FLOWAIR



## EASY OPERATION

Easy operation thanks to the control unit with an intuitive interface and touch display.



## EASY CONNECTION

The controller automatically detects and recognizes connected devices and adjusts the menu accordingly.



## REGULATION WITH ONE CONTROLLER

support for up to 31 devices with only 1 T-box controller. Control tailored to individual needs - personalization of the SYSTEM.



## BMS

BMS compatibility



## AUTOMATED SYSTEM

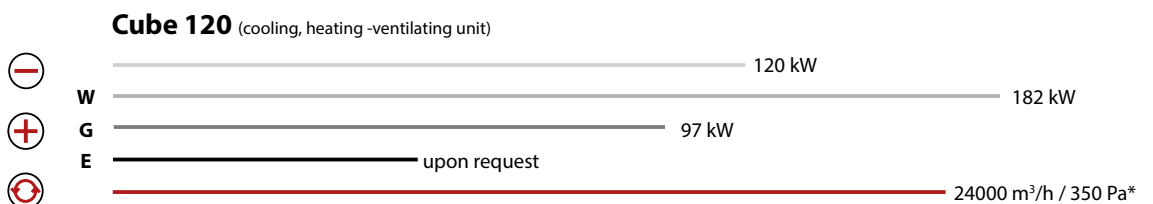
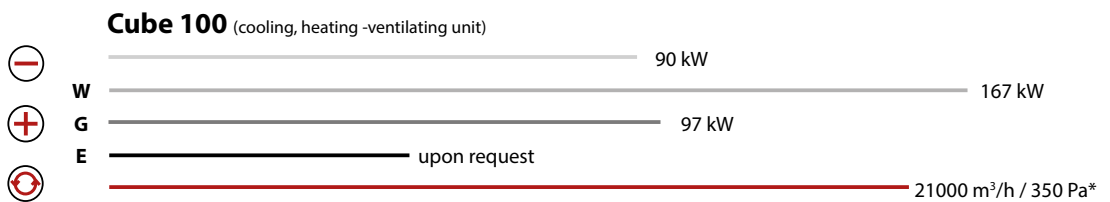
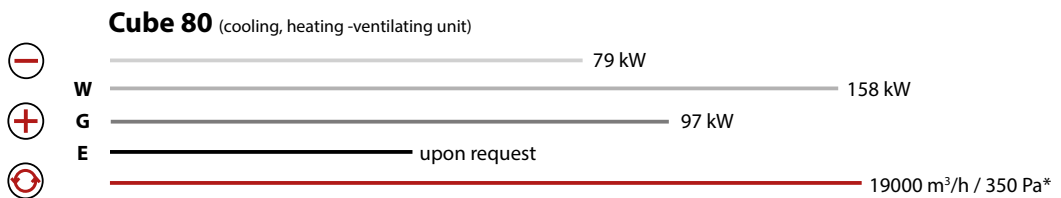
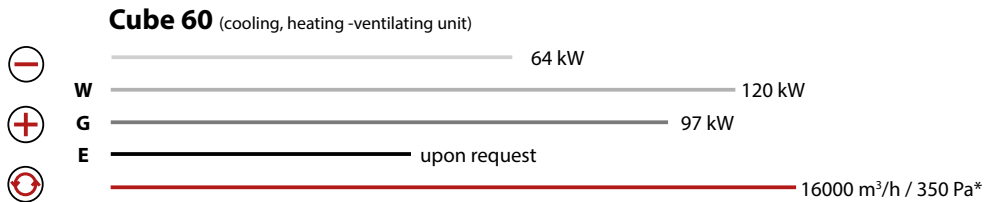
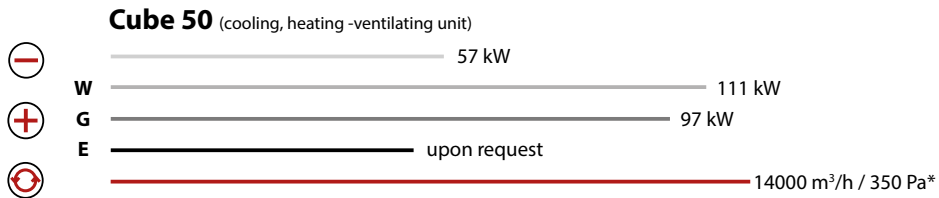
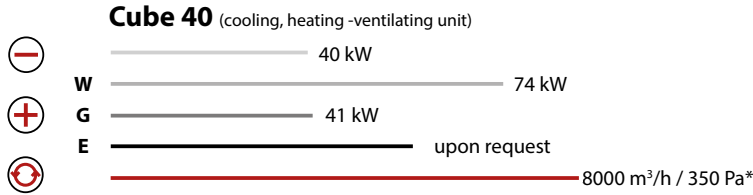
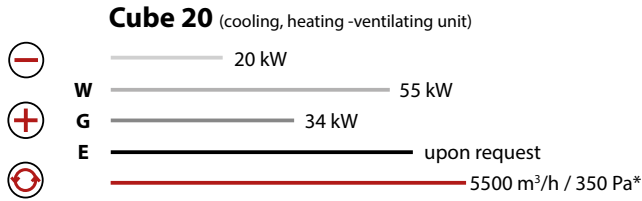
Automation of equipment operation - depending on the conditions in the facility or the time of day.



## ENERGY - EFFICIENCY

Advanced WORK algorithms increase heating, cooling and ventilation energy efficiency.

# DEVICES FOR DUCTED INSTALLATIONS



— cooling    + heating    ⌚ ventilation

W - water supplied heater (heater power for the heating medium 70 / 50°C and air temperature in front of the exchanger 8°C)

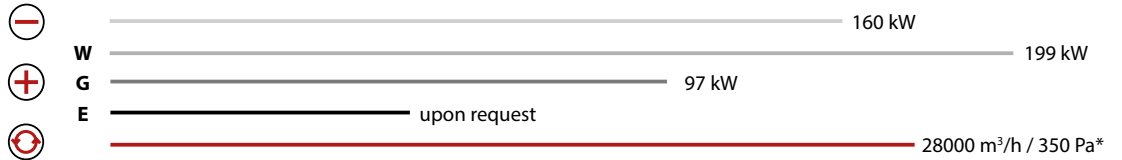
G - gas heater

E - electric heater

\* external static pressure depends on the capacity setting



### Cube 160 (cooling, heating -ventilating unit)



### Cube R8 (Heating and ventilation unit)

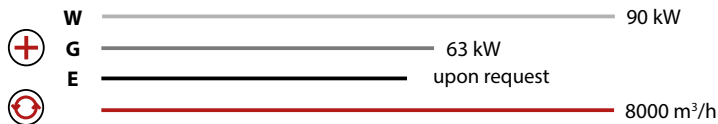


# DEVICES FOR DUCTLESS INSTALLTION

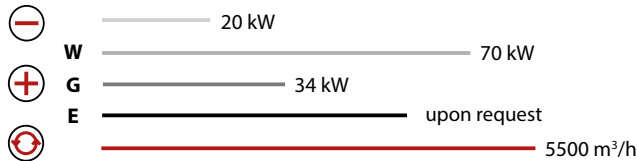
with air supply module



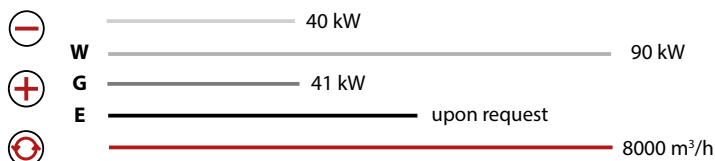
### Cube R8 NW (Heating and ventilation unit)



### Cube 20 NW (cooling, heating -ventilating unit)



### Cube 40 NW (cooling, heating -ventilating unit)



⊖ cooling   ⊕ heating   ⌚ ventilation

W - water supplied heater (heater power for the heating medium 70 / 50°C and air temperature in front of the exchanger 8°C)

G - gas heater

E - electric heater

\* external static pressure depends on the capacity setting

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# SHOPPING MALLS

## I Leroy Merlin – Katowice

Cube 80-RW x 5 pcs.

Cube R8-W x 1 pcs.

In large-scale facilities, the possibility is important obtaining comfortable working conditions at low inertia and the simplest possible installation of the heating and cooling system ventilation. Compact device design Cube meets these requirements, which is why they are common used on this type of investment.



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### FEATURES:

- Cooling, Heating and ventilation of the shop hall
- Heating and ventilation of the social area

**LEROY MERLIN**



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# SHOPPING MALLS

## I Jysk – Zawiercie

Cube 60-RW x 1 pcs.

Cube devices are also widely used in all kinds of shopping malls. A wide series of types together with configuration options make Cube units ideally suited to the standards of a given facility. In addition, the freedom of regulation makes it possible to adjust the operating parameters to the diverse requirements of tenants.



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### FEATURES:

- removal of heat gains
- heating i transitional periods
- ductless ventilation



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# PRODUCTION SECTOR

## Production facility- Oleśnica

Cube R8/NW x 24 pcs.

Large production plants of the automotive industry often require an individual approach in the implementation of the heating, cooling and ventilation system. In the production hall located in Oleśnica, we used 4-row high-power water exchangers for heating and cooling in a 2-pipe system. An additional requirement of the investor was the use of handles for putting away the inspection panels during inspections



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### SPECIAL FEATURES:

- high power heat exchange
- Heating and cooling with water supplied heat exchanger
- special service handles





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# LOGISTICS CENTERS AND WAREHOUSES

## I High bay warehouse Wrocław

Cube R8/NW x 5 pcs.

High-bay warehouses, especially in the pharmaceutical industry, place particular demands on the equipment. In the case of the warehouse in Błonie near Wrocław, the lower edge of the device is 17 meters above the floor. With such a mounting height, the non-isothermal range of the supply air is important. To meet the design requirements, we used special water exchangers with a supply air temperature control system and long-range swirl diffusers.



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### SPECIAL FEATURES:

- heating and ventilation with heat recovery
- air supply module with silencers and swirl diffuser
- Non isothermal range 17 meters





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## I Project support

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- device series
- custom solutions

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