AIRZONE

Solution for **Retrofitted Hotels**

SOLUTION FOR RETROFITTED HOTELS

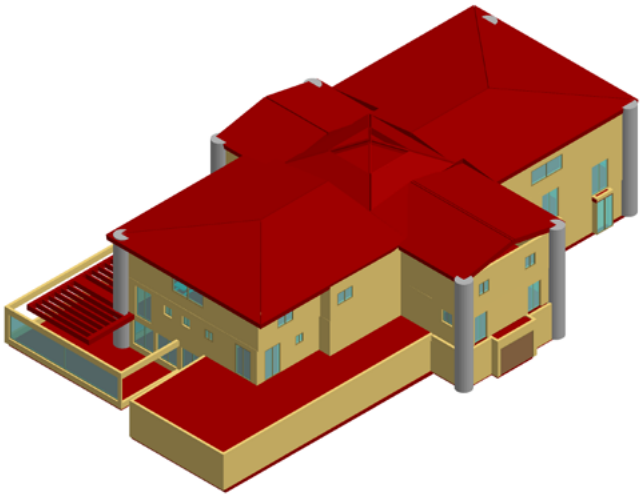
Energy management has emerged as a significant challenge for the hotel industry, affecting both environmental concerns and economic regulations. Now more than ever, it is essential for hotels to enhance the energy efficiency of their facilities to meet the goal of a 40% reduction in energy consumption by 2030.

Solution for Retrofitted Hotels

Description of the installation

The Airzone Projects Department has conducted an analysis of the HVAC system for a 3-star hotel featuring the following characteristics:

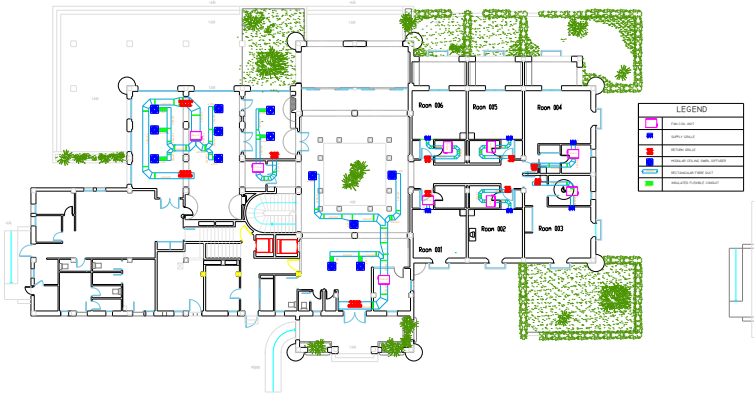
- **Altitude:** 348 meters
- **Use:** Hotel
- **Surface area in accordance with thermal regulation:** 980 m^2



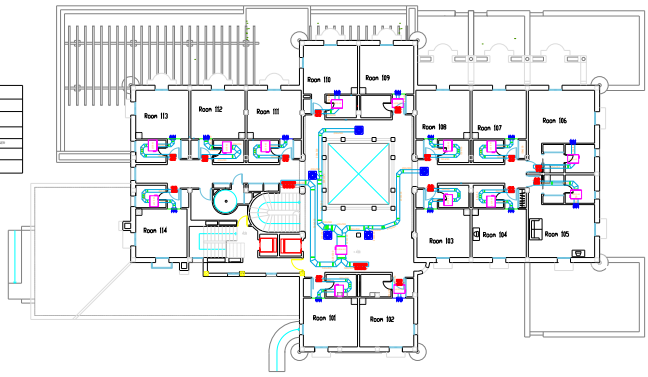
The hotel has three floors, with a total of 20 rooms on the ground and first floors, along with a restaurant and a bar.

Each zone of the hotel needs to be heated or cooled independently, so, in this case, the installation will consist of an outdoor group of water-cooled condensing units and individual indoor fan coil units for each of the zones.

In order to carry out the energy study of the hotel, a 3D model was generated using the EnergyPlus calculation software, which enables the calculation of thermal losses, thermal demand, comfort rate, etc., through simulations.



GROUND FLOOR



FIRST FLOOR

The hotel layout, as depicted in the plans above, incorporates individual fan coil units. Additionally, the installation features secondary pumps and a dual set-point mixing valve for both cooling and heating. These systems function independently, leading to considerable challenges in energy efficiency and thermal comfort, particularly when simultaneous heating and cooling are required..

Disadvantages of the solution without Airzone:

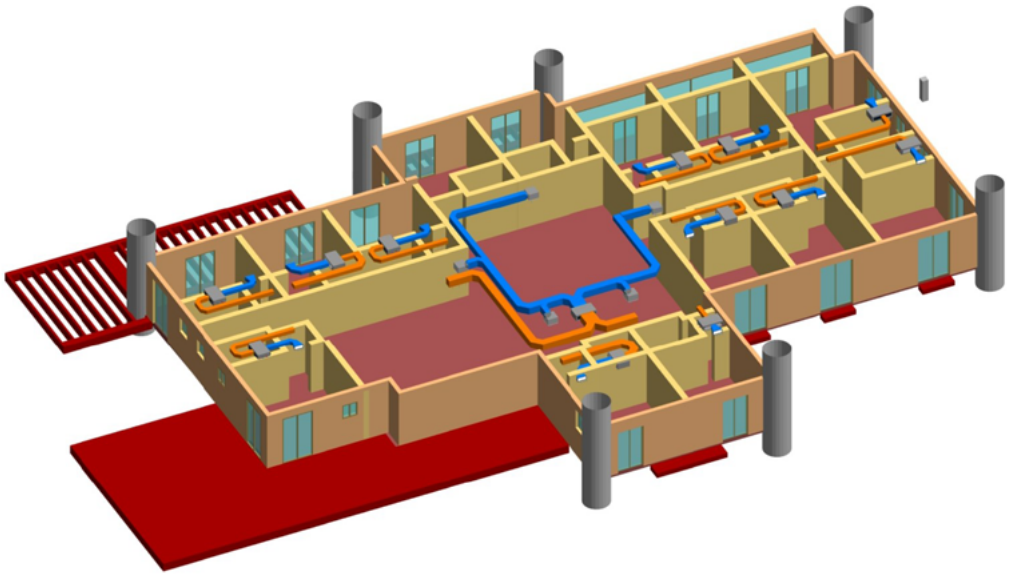
- **Energy efficiency:** The lack of centralised integration can result in higher energy consumption due to the suboptimal operation of the systems.
- **Thermal comfort:** The lack of precise and centralized temperature control can result in differing levels of comfort in each zone.

Solution for Retrofitted Hotels

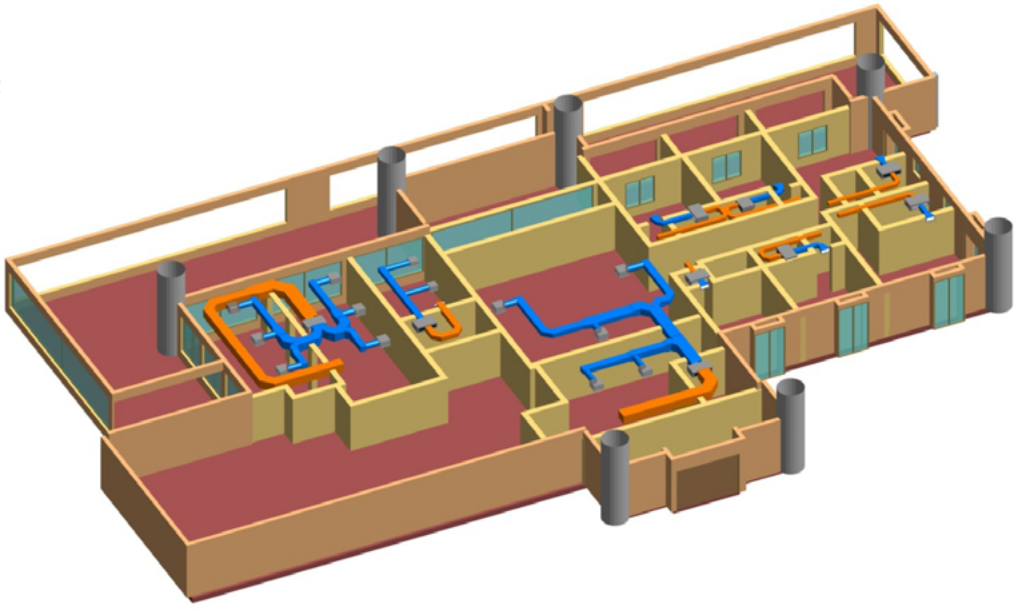
Solution proposed by Airzone

For this installation, Airzone provides a tailored control solution designed to meet user requirements by enabling independent control of each fan coil unit. We recommend the Aidoo Pro Wi-Fi controller system, which allows for individual management of each fan coil unit, enhancing energy efficiency and optimizing thermal comfort. This system is particularly well-suited for this type of building, as it is simple to install and offers the convenience of remote control for each room, either through the Airzone thermostats or via mobile devices.

FIRST FLOOR



GROUND FLOOR



1. Features of the Aidoo system

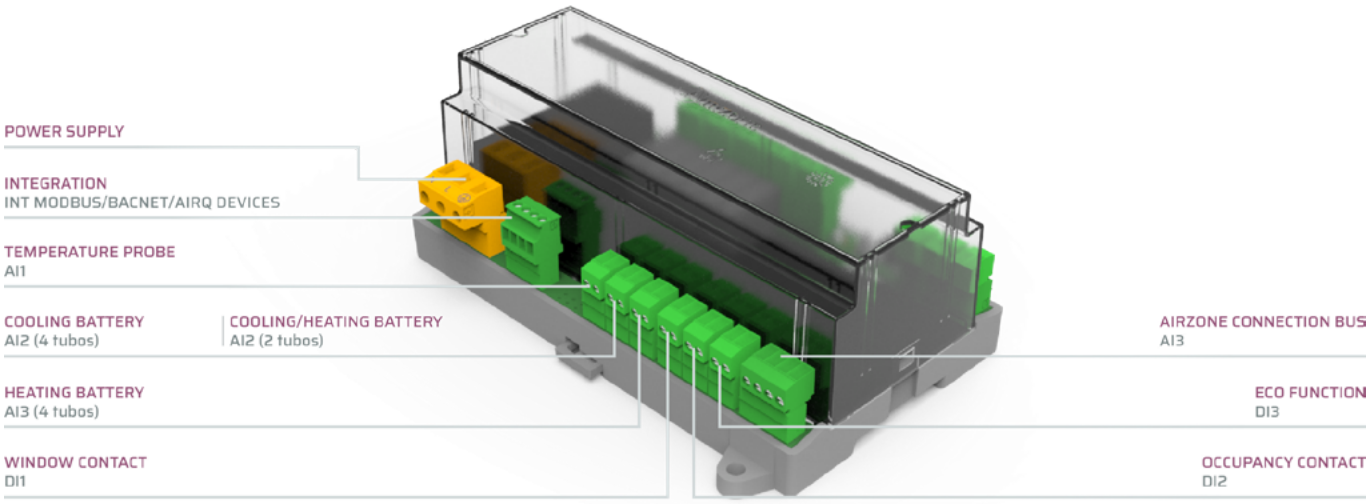
AIDOO PRO FAN COIL WI-FI CONTROLLER

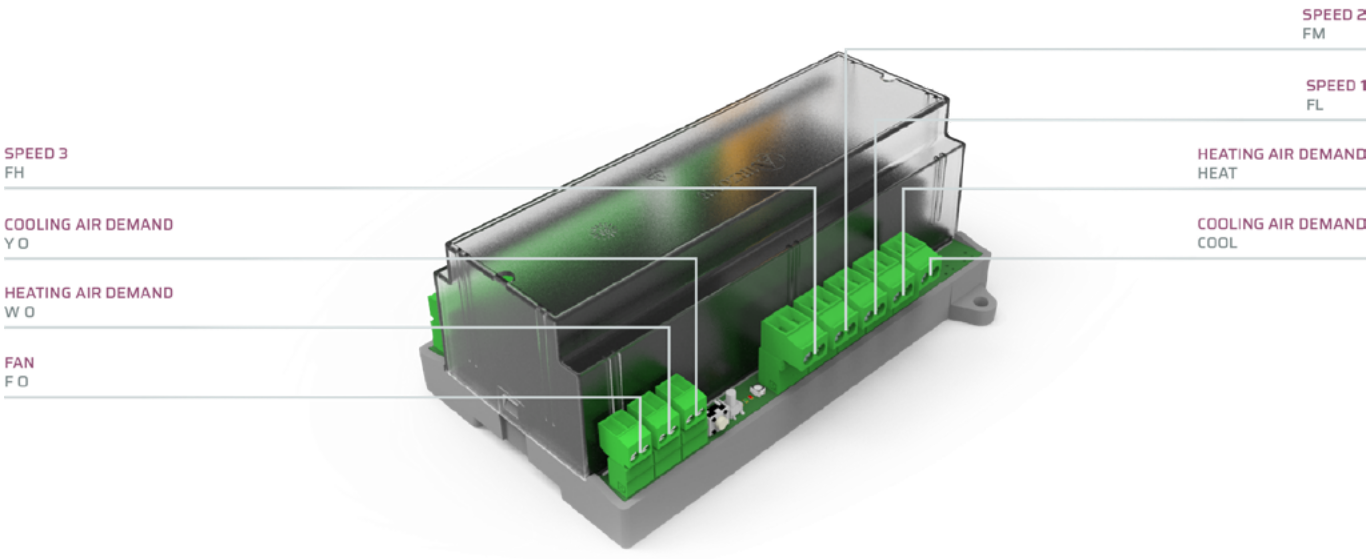
Connectivity and home automation integration for both new and old AC units.

Allows the management of individual fan coil units, through fan and valve control for both 0-10 V units and units with up to 3 speeds.

Aidoo Pro is the new alternative to smart thermostats that allows you to control your unit.

Specifications





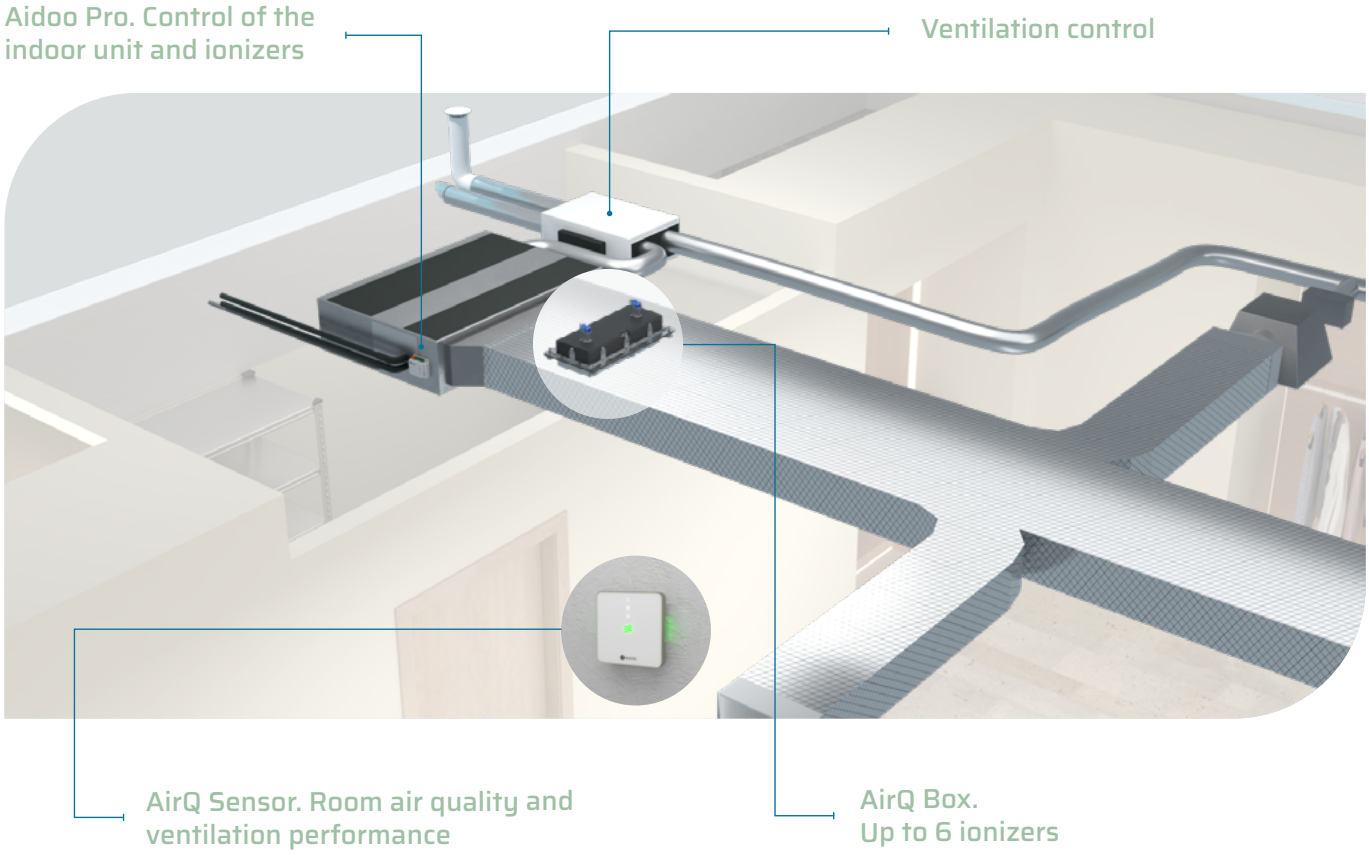
Solution for Retrofitted Hotels

Solution proposed by Airzone

2. Components of the Aidoo system

Indoor air quality (IAQ) reflects the amount of pollutants present in the air. Low air quality can lead to allergies, headaches and eye, nose and throat irritation, among other health problems.

Airzone has developed a solution that combines temperature control in the zone with air purification using ionization technology.



Air purification is a process used to eliminate pollutants and harmful particles that are suspended in the air, caused by a range of factors, from the materials that make up a building to the people who live in it. Purification acts on volatile organic compounds, bacteria, viruses and even eliminates odors.

With the **AirQ Box devices**, the time in suspension of PM2.5 particles, the most harmful to organisms, is decreased by 55% and the maximum peak particle concentration is reduced by 40%.

3. Components of the Aidoo system

PACK AIRQ BOX IN-DUCT IAQ MONITORING AND CONTROLLING DEVICE -AIDOO PRO FAN COIL - AZAIQPBMWSPFAN

Device for air purification by ionization.

Pack include:

- AZX6AIQBOXM - AirQ Box in-duct IAQ monitoring and controlling device.
- AZAI6WSPFAN - Aidoo Pro Fancoil.
- AZAI6BLUEZEROC - Airzone Aidoo Pro Fan coil Blueface Zero thermostat.
- AZX6CABLEBUS15 - Airzone bus cable (2x0,5+2x0,22) 15 m

Functionalities AZX6AIQBOXM:

- Designed for assembly in rigid ducted installations.
- Includes 2 ionizers.
- Optical detection of floating particles (PM 2.5) in the air, similar to smoke, dust, etc.
- Control via Airzone Cloud.
- Compatible with units up to 10kW capacity. Expandable with AZX6AIQBOXS expansion module.

Functionalities AZAI6WSPFAN:

- Control of the parameters of the unit.
- Dual Wi-FI communications (2.4/5 GHz).
- Possibility of integration via Local API and Cloud API.
- Communication errors detection.
- Temperature and operating mode time schedules.
- Multi-user and multi-session.
- 2 relays for control of solenoid valves on demand.
- 3 relays for control of up to 3 speeds.
- 3 0-10 V outputs for control of cooling valve, heating valve and fan.
- 3 digital inputs for open window detection, occupancy detection and Eco mode.
- 3 analogue probe inputs for measuring room temperature, heating battery temperature and cooling battery temperature.

Functionalities AZAI6BLUEZEROC:

- Available in Spanish, English, French, Italian, German and Portuguese.
- Control of temperature, operating mode and system speed.
- Room temperature
- Sleep function.

AIRQ INDOOR AIR QUALITY SENSOR - AZX6AIQSNSB

Interface for controlling and monitoring air quality in a zone in an Airzone system. Finished in steel and glass.

- Air quality status indicator: Good (green), Medium (yellow), and Low (red).
- Readings of relative humidity, CO2, PM 2.5 and 10, and TVOC in the zone.
- Management of controlled mechanical ventilation through 0-10V signal or remote on/off.
- Can operate with Aidoo Pro and the Airzone Cloud app (Android / iOS).

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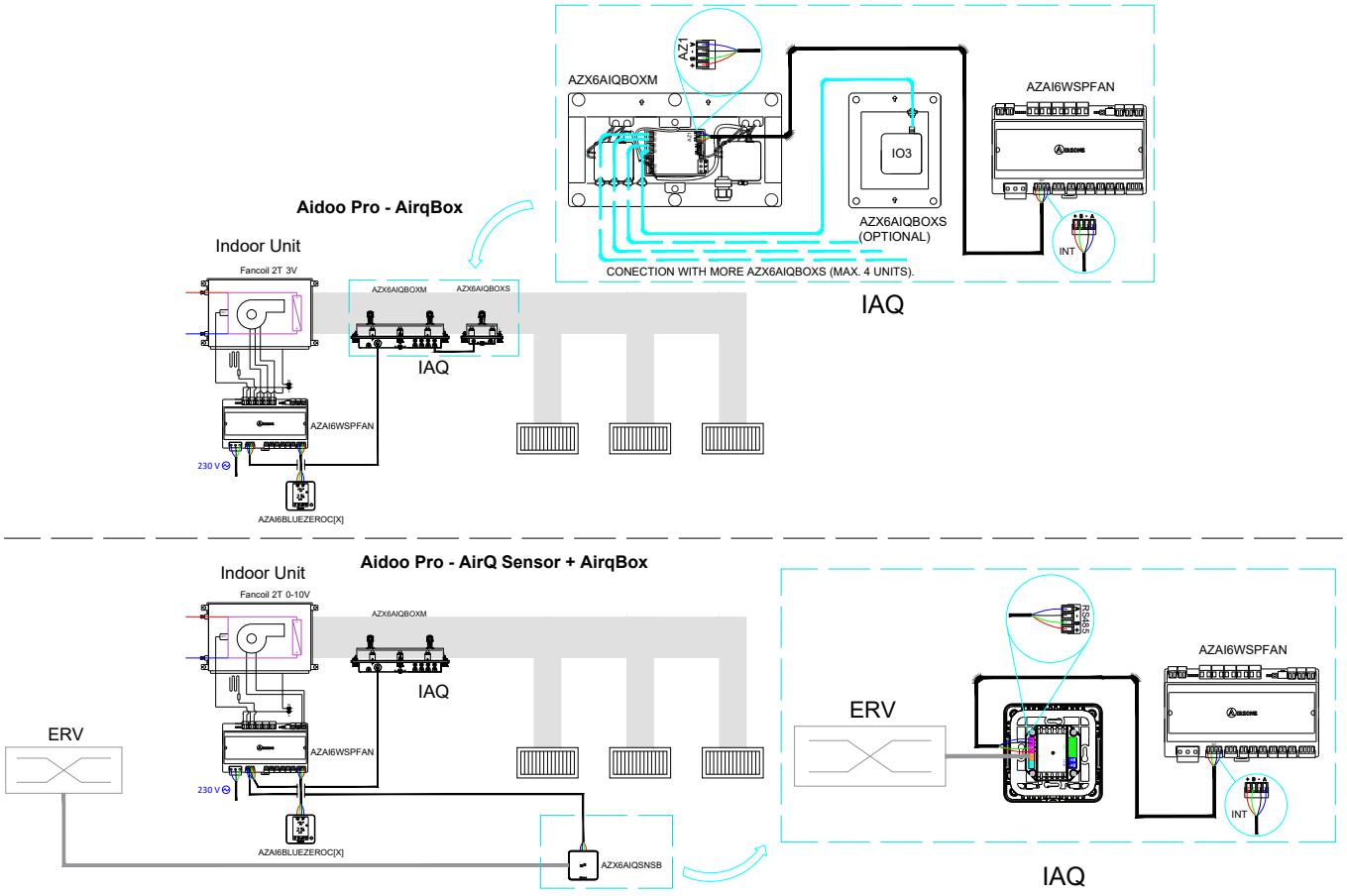
Solution proposed by Airzone

4. Bill of materials (BOM)

Full information on all the components necessary for Aidoo installation, specifying the corresponding units for this installation.

MODEL NAME	DESCRIPTION	QUANTITY
AZAIQPBMWSPFAN	Pack AirQ Box in-duct IAQ monitoring and controlling device -Aidoo Pro Fan coil	25
AZX6AIQSNSB	AirQ Indoor Air Quality Sensor	4

5. Airzone connection scheme

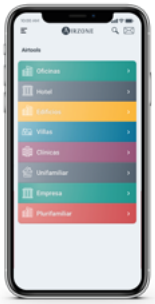


Connection diagram for multiple individual fan coil units with Aidoo Pro FC - See diagrams

6. BMS/IoT Integration

Simplified BMS integration for the most common HVAC solution in new and existing tertiary installations.

- Integration of fan coil units in BMS systems.
- Airzone thermostat.
- Control of all types of fan coil units (ducted/cassette/console/wall).
- Centralised management without additional automation integration using the Airzone Cloud app.



Airzone Cloud

BMS control

Complete control of the installation
from the hotel reception

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AIRZONE BLUEFACE TOUCHSCREEN THERMOSTAT

Aidoo Pro Fan coil replaces individual fan coil units with a new, more ergonomic touchscreen interface designed with the end user in mind. The control options are listed below:

- On/Off.
- Control of set-point temperature.
- Control of fan speed.
- Management of the operation mode and automatic change probe.

INTEGRATION OPTIONS

Aidoo Pro Fan coil allows integration with home and building automation systems:

- Compatibility with the main BMS/home automation and IoT technologies.
- It is also compatible with voice assistants such as Amazon Alexa, Google Assistant and SmartThings.
- Modbus protocol.
- BACnet, Lutron and KNX integration gateways.
- Drivers and plugins: Control4, Crestron, Nice, DeltaCore, IFTTT, Home Assistant, Schneider, Legrand, Hager, etc.
- Cloud API and REST API

BMS AND HOME AUTOMATION

alfredsmart · CHERUBINI · Control4 · CRESTRON · DELTA DORE · eedomus · energeasyconnect · ELAN · FERMAX · fhe · Home Assistant · EEDOM · legrand · LOXONE · LUTRON · Nice · RTI · SAVANT · Schneider Electric · SMART & CONNECTIVE · URC

STANDARD PROTOCOLS

BACnet · Modbus · KNX · zigbee · Z-WAVE

IOT

amazon alexa · works with the Google Assistant · Works with SmartThings · Works with IFTTT

Compatible with almost **all fancoil units** on the market

AERMEC · AIRCALO · ATAG · Atrea · atisa · AIRLAN · BAXI · biniclima · Carrier · CIAT · CLIMAVENETA · CLIVET · daitsu · DAIKIN · DencoHappel · EMMETI · fanDeck · France Air · Galletti · giatsu · GREE · HITECSA · HITACHI · HTA · innova · KAMPMANN · kosner · Midea · MUNDOCLIMA · OLIMPIA SPLENDID · Panasonic · RHOSS · RIELLO · ROCA · SABIANA · SAMSUNG · Saunier Duval · systemair · Tango · TECCONTROL · TRANE · Vaillant · ventilclima

Advantages of the proposed solution

1. Technical criteria

From a technical and control point of view, the Airzone Aidoo Pro Fancoil system provides added value to this installation.

- **Simplicity of installation.** Aidoo Pro Fan coil is connected directly to the indoor unit thanks to the Plug and Play system.
- **Energy savings.** Reduced energy consumption thanks to time schedules, the possibility of detecting open windows, occupancy management and the activation of Eco mode.
- **Aesthetic solution.** Incorporation of Airzone thermostats with a modern and elegant design that blends in perfectly with any decorative style.
- **Thermal comfort.** Occupancy and Eco mode.
- **Total management of the installation.** Remote access to all the installation's devices and rooms, making it possible to configure them in real time and set the maximum and minimum comfort temperatures of the rooms and spaces reserved for guests.
- Advanced air quality monitoring and control. Compatible with AirQ Sensor and AirQ Box, enabling real-time monitoring of indoor air quality parameters and automatic adjustments to improve comfort and health.

2. Compliance with regulations and standards

The use of control and monitoring systems in HVAC applications, such as Aidoo systems, is in line with various regulations, standards and certifications that have emerged in recent years. Thus, Directive (EU) 2024/1275 of the European Parliament and of the Council reinforces the obligation to install them in tertiary and residential buildings, establishing different requirements for each of them.

Furthermore, the integration of Airzone systems contributes to the achievement of A/B classifications in the HVAC control section of standard EN ISO 52120-1:2022 “Energy performance of buildings. Contribution of building automation, controls and building management. Part 1: General framework and procedures”.

This regulatory compliance entails a number of benefits, including: energy savings, reduced operating costs, increased market value of the property, access to voluntary certification programs (LEED or BREEAM) and tax and financial incentives.

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International references

Cuber Suites

Cuber Suites is a luxury hotel located in a natural complex in the Netherlands that has won the Best New Vacation Concept Award for creating a fully automated accommodation model.

Airzone solutions are well suited to this project, in which it is the guests themselves can change the tone of the lights or the temperature of their room, or request lunch through a smartphone app.

Technology plays a key role and gives users maximum autonomy, ensuring a high level of comfort during their stay in the building.

See project video

AIRZONE

Designed and manufactured in Europe

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