



Zone Smarter, Not Harder: Unlocking Energy Efficiency with Heat Pump Automation

Content



**Background &
Introduction to
zoning in HVAC**



**HVAC Control
Systems & benefits**

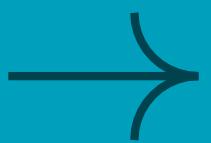


**Compliance with A2L
refrigerants**



**Flexible
Applications**

Background & Introduction to zoning



Zoning concept

Traditional Ducted
HVAC



- Too-hot or too-cold zones
- Energy wasted

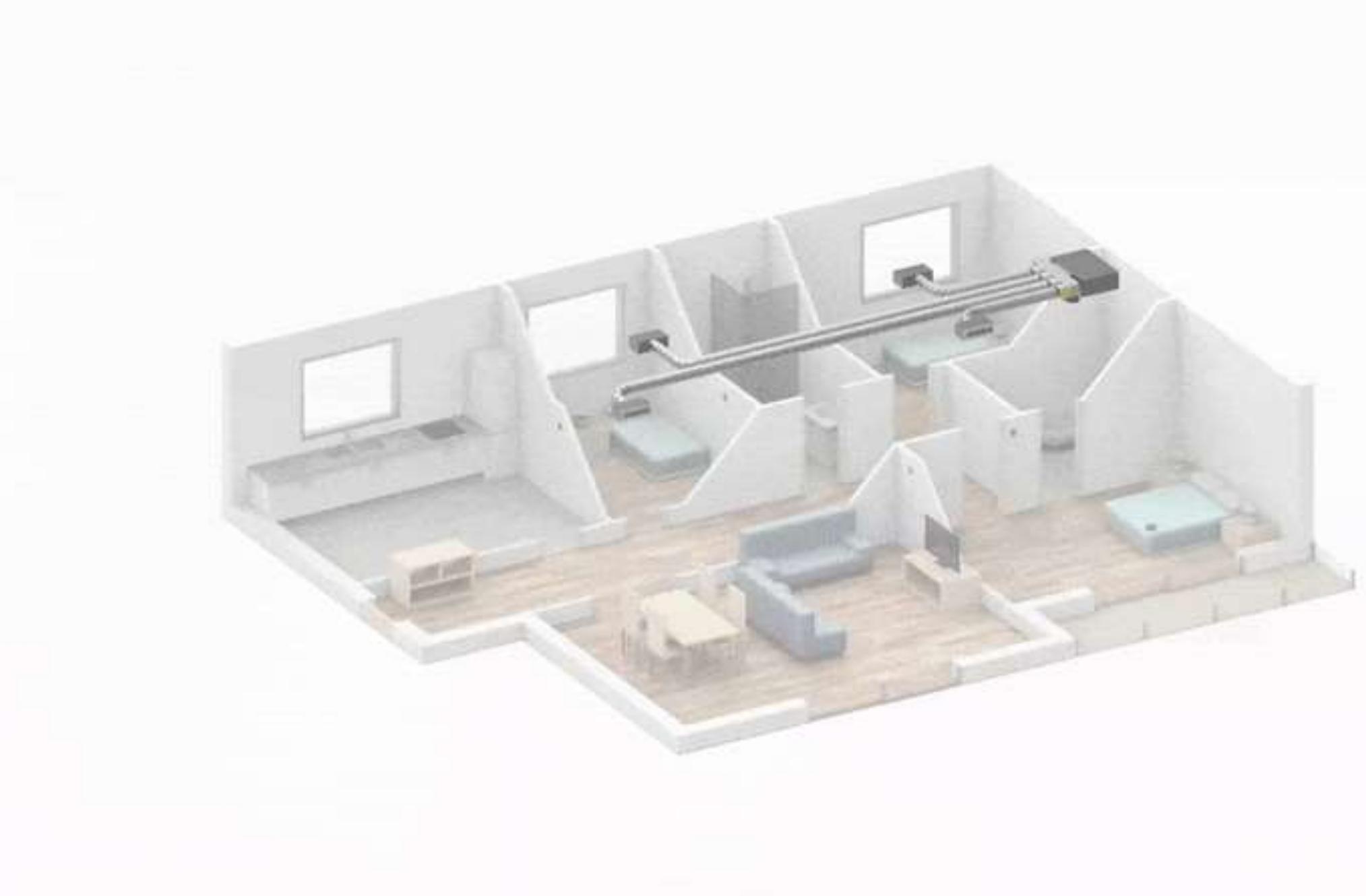
Airzone Integrated
Zoning System



- Individual temperature control
- Turn zones off

Why zoning?

- ✓ Zoning means designating separate areas in a building and controlling the Inverter/VRF unit in each of these areas independently.
- ✓ By combining zoning systems with a Inverter/VRF unit end users can **maximize thermal comfort** in every zone at the same time.
- ✓ This **flexible control** allows the use of the zones only when there is demand.
- ✓ This translates into **energy efficiency** and savings in installation and maintenance costs.



User needs and motivations



Increase in
comfort
and **well-being**.



Ease in adopting
new
technologies



Return on
investment
in new technologies



Climate anxiety and
the need for practical
and affordable
solutions to **reduce**
the carbon footprint.

Electrification for decarbonization



HVAC

Heating, ventilation, air conditioning systems, and domestic hot water are the primary expenses and energy consumers in a building.



Consumption Monitoring

Smart meters track energy usage in real time, enhancing energy efficiency and simplifying demand management.



Solar energy

The growing prominence of renewable energy sources presents the challenge of ensuring a stable supply.



Automation and Control Systems

Building control systems and algorithms serve as mechanisms to flexibly manage demand by responding to price signals and network limitations.



Electric vehicles

Decarbonization involves an increase in the demand for electrical energy, which can cause stress for energy grids and their capacity.



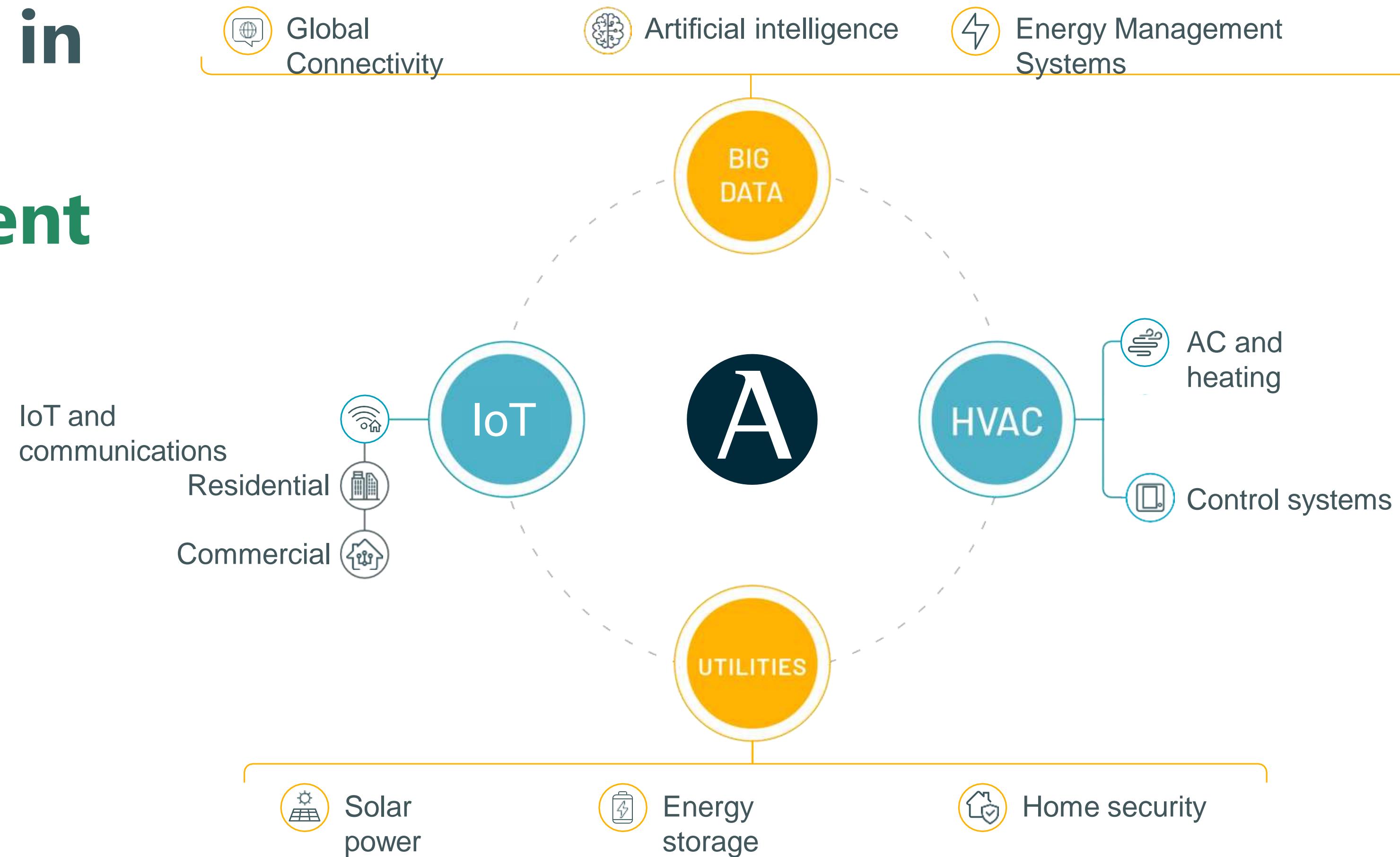
What is Airzone ?



Airzone designs, manufactures, and markets **HVAC control systems** to enhance comfort in homes, offices, and businesses, while reducing energy consumption.

- World leader in Integrated HVAC Control Solutions
- 27+ years of Global Operations
- Industry Benchmark

New paradigms in energy management



HVAC Control Zoning & System benefits



What can be controlled with Airzone?

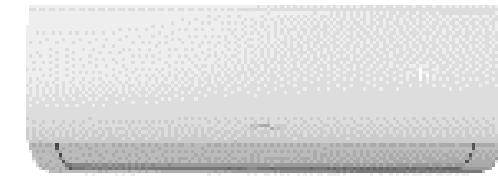
Direct expansion VRF/VRV & Inverter Heat pump units (Ducted & Ductless Mini-splits)
of the biggest brands in the industry of HVAC



VRV/VRF



Ceiling



Wall



Cassette



DX



**INDOOR
UNITS**



Ducted units or split

Advanced integration capabilities with HVAC and BMS/IT systems

+190

COMPATIBLE
BRANDS



+40

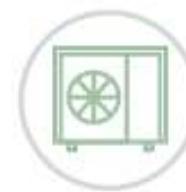
INTEGRATION
OPTIONS

How is controlled? Certified gateways

Communication protocols certified by manufacturers

180+

COMPATIBLE
HVAC BRANDS



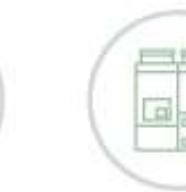
Inverter
/ VRF



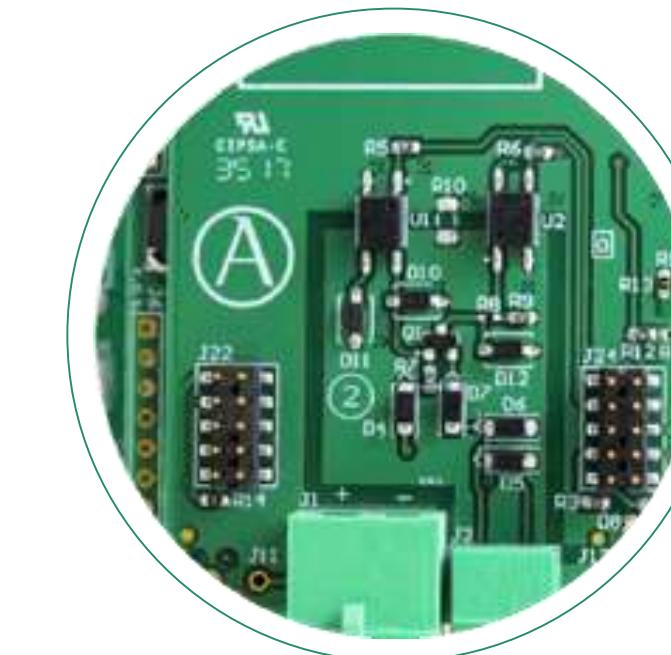
Direct
Expansion



Heat
Pumps



Chilled Water
Fan Coils



Operation mode control.

Zone temperature control.

Working Temperature injection.

Two-way communication with the indoor unit: set point, fan speed, reading of operating temperature.

Reading of warnings for remote support.



Dynamic HVAC and Heat Pump Control

- At Airzone, we develop technological solutions focused on improving **comfort, efficiency and sustainability** in today's homes.
- Our control systems provide verifiable results that facilitate the creation of **more efficient and attractive homes** for today's buyers.
- Our vision is reflected in the idea of **High-performance buildings**.



What is a **high-performance building**?



01 **REDUCES ENERGY CONSUMPTION**



02 **IMPROVES COMFORT**



03 **PROMOTES HEALTH**



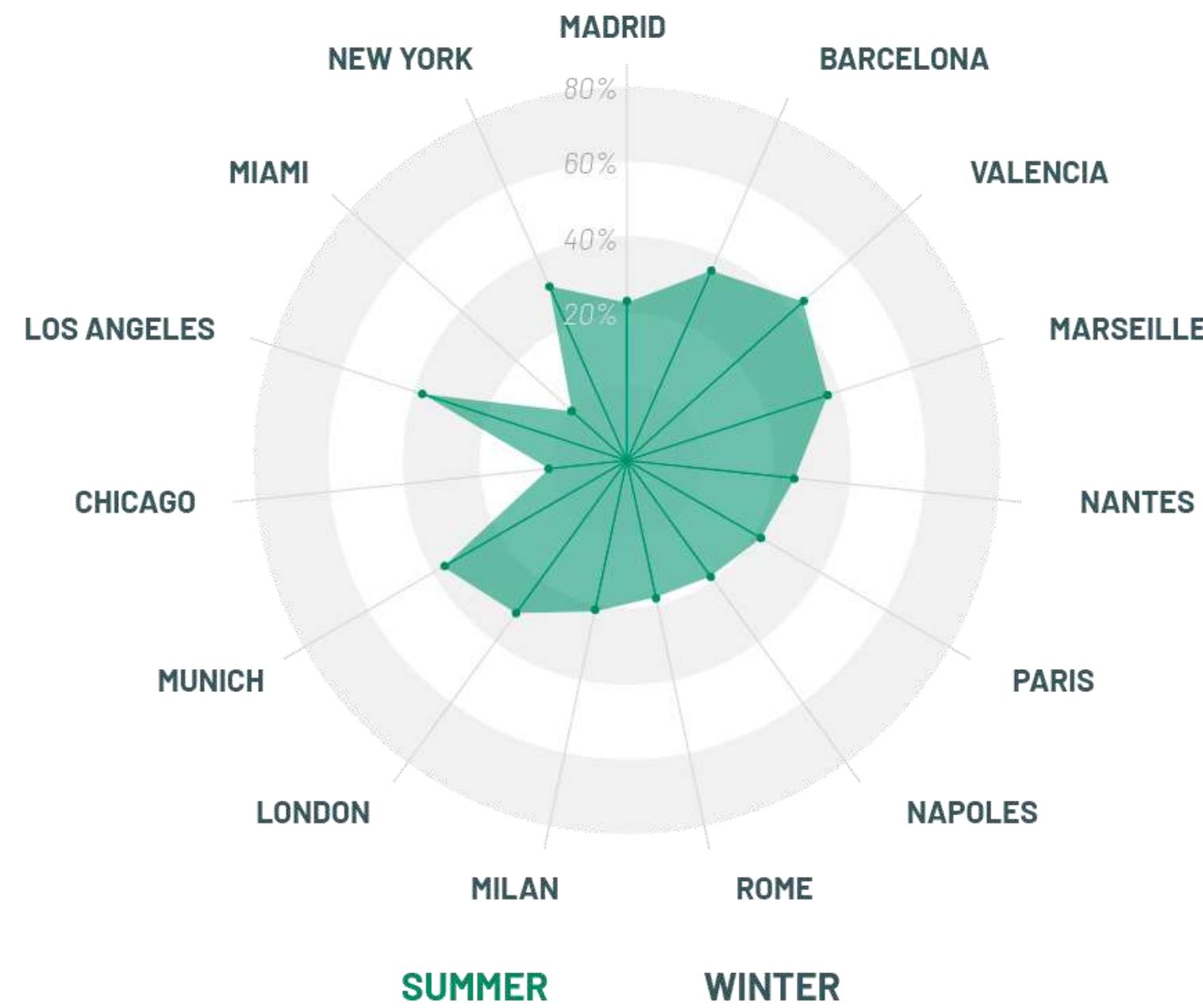
04 **ACHIEVES SUSTAINABILITY**

Smart Home technology

HVAC systems are often the most difficult appliances to integrate into Smart Home systems. These same HVAC systems are also often the principal source of **energy consumption in** a building.

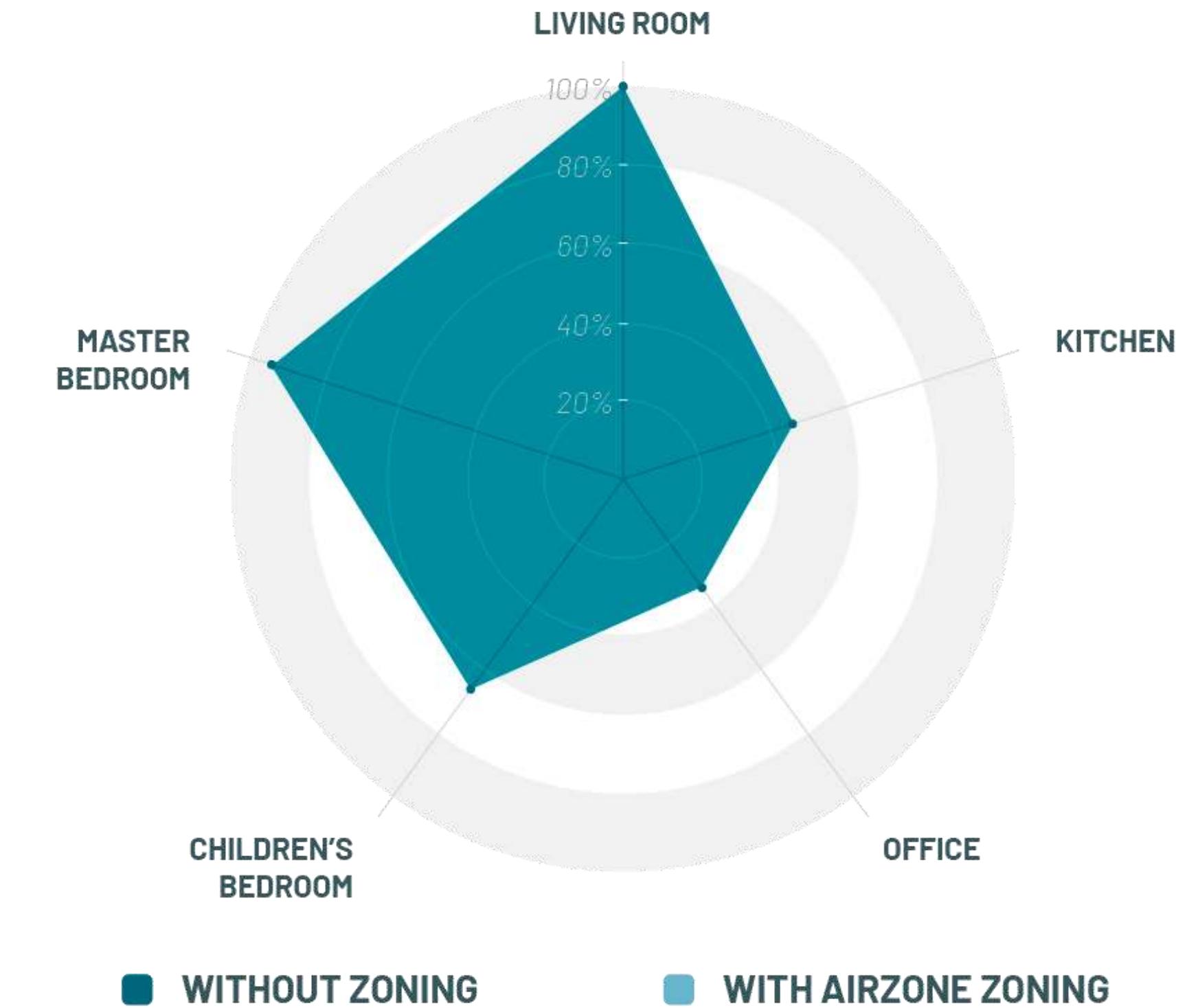


Energy Efficiency



Savings per season (%)

Airzone zone control systems reduce energy consumption while increasing user comfort.



Comfort time by room (%)

Sustainability Certifications and Energy Efficiency

HVAC zoning

Independent temperature control by zone results in **savings** for the overall consumption of the building, **a reduction in the number of units and less installed power**.

This facilitates compliance with the **Energy Performance of Buildings Directive (EPBD)** and environmental and safety standards **ASHRAE 15 and 34**.

Sustainability certifications

Improves the rating obtained for well-being and sustainability certifications, such as **BREEAM, LEED, WELL, etc**, by optimizing air quality and reducing energy consumption, which guarantees optimal thermal comfort.



Zoning Systems



VAF Zoning System
Loose damper solution
for vertical and multiposition AHU



Easyzone Plug & Play Zoning
System for concealed horizontal &
multi-position AHU

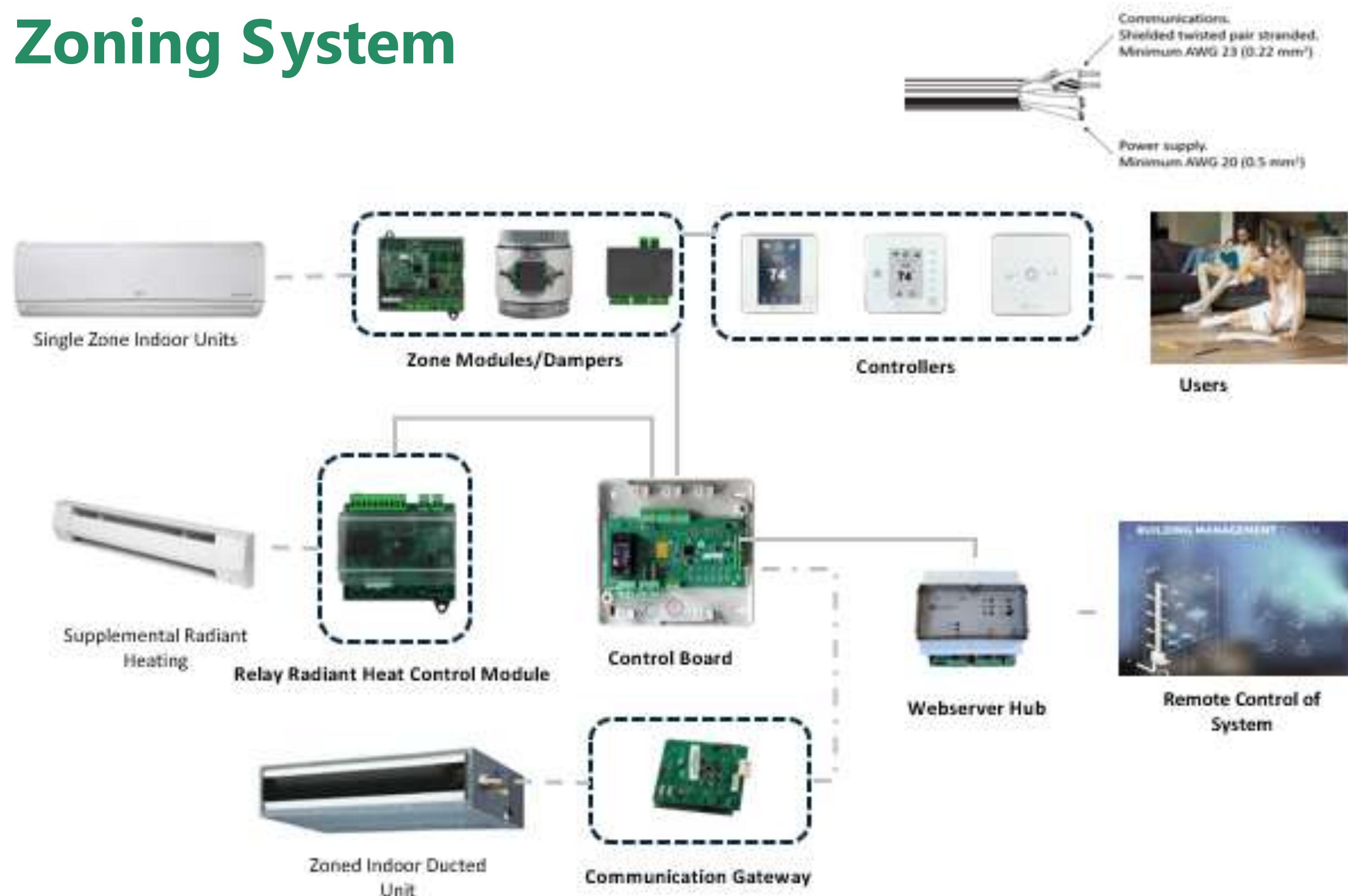
VAF Zoning System

Loose damper solution

Up to 10 zones
per control board

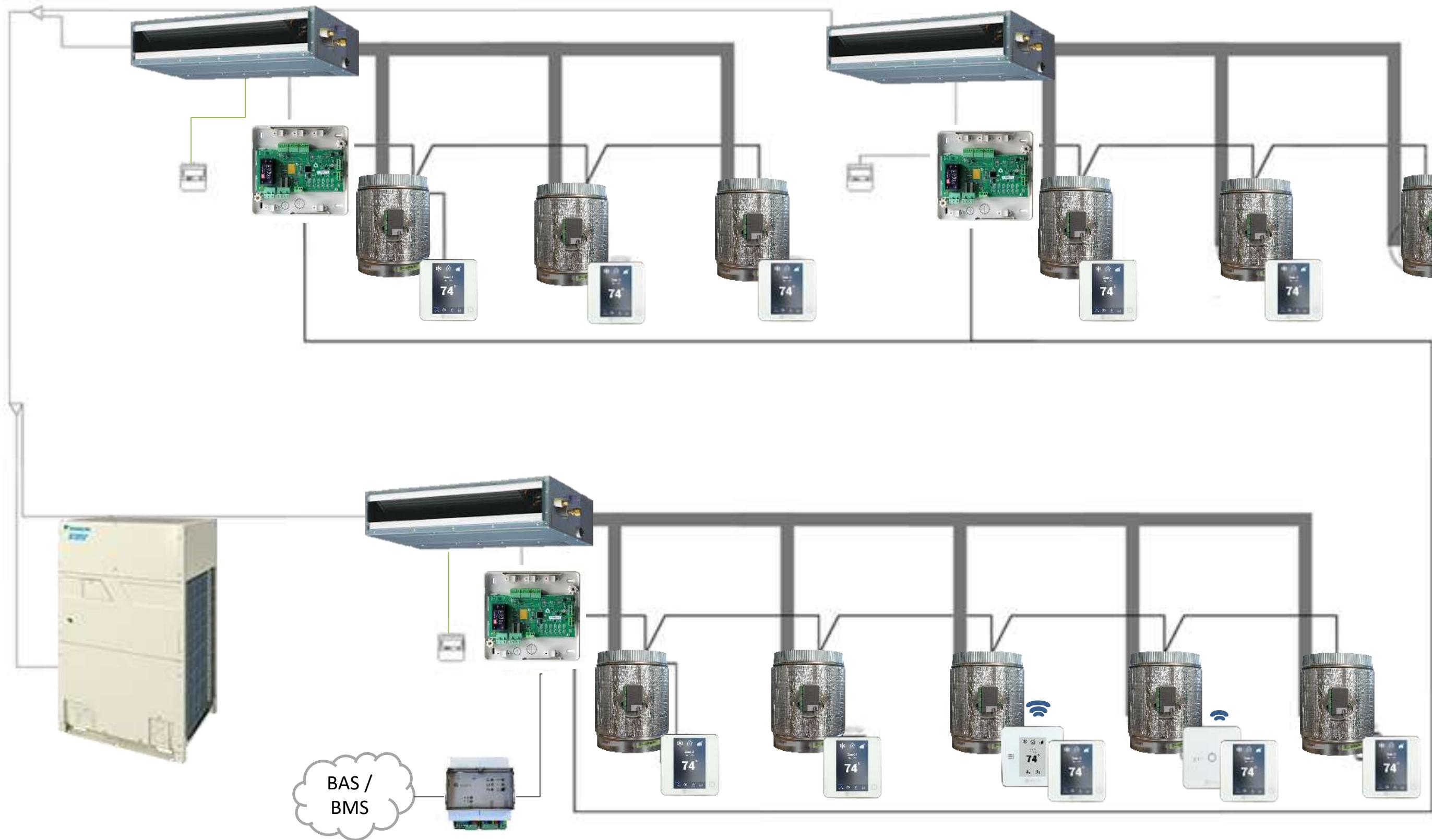


VAF Zoning System

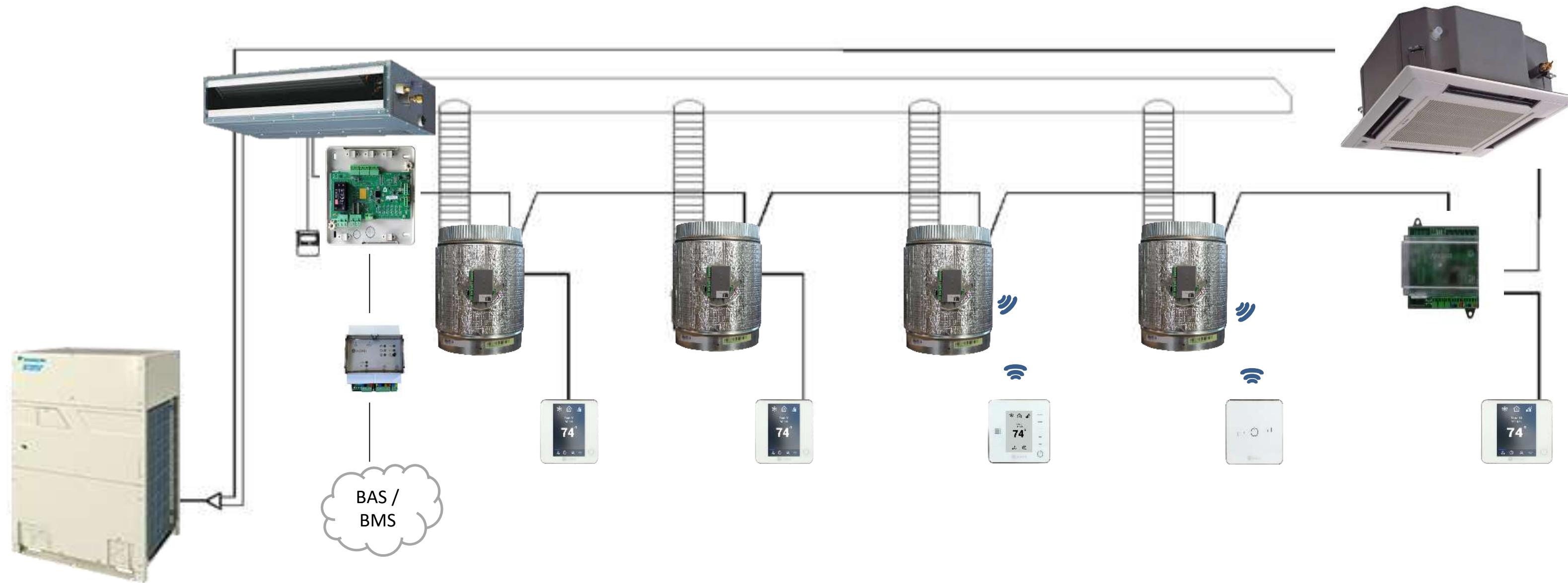


Airzone Systems: VAF System

Commercial
VRF/Multisplit System



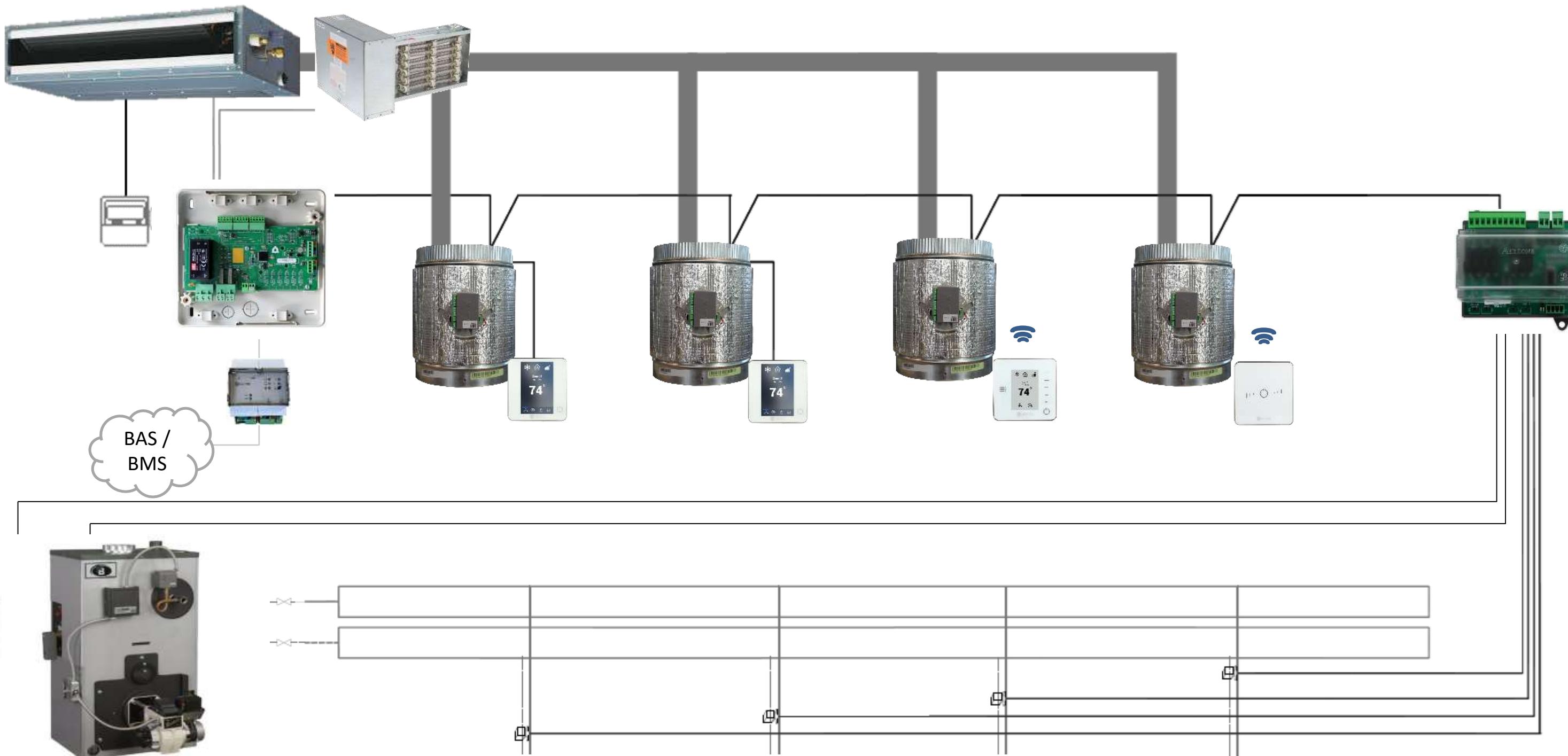
Airzone Systems: VAF System



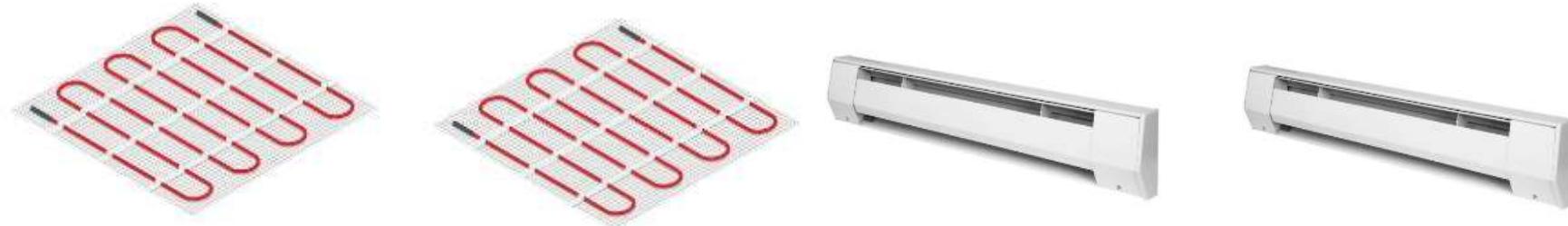
Airzone Systems: VAF System



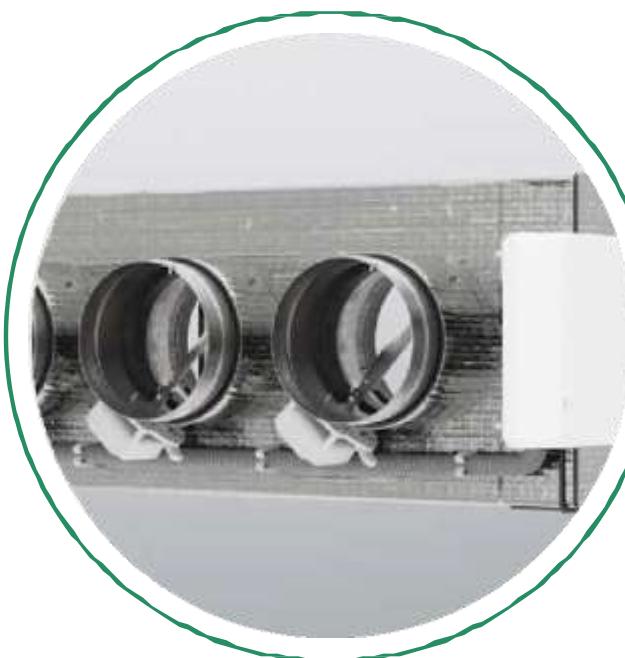
Residential
HP with auxiliary heat and zone supplemental heat



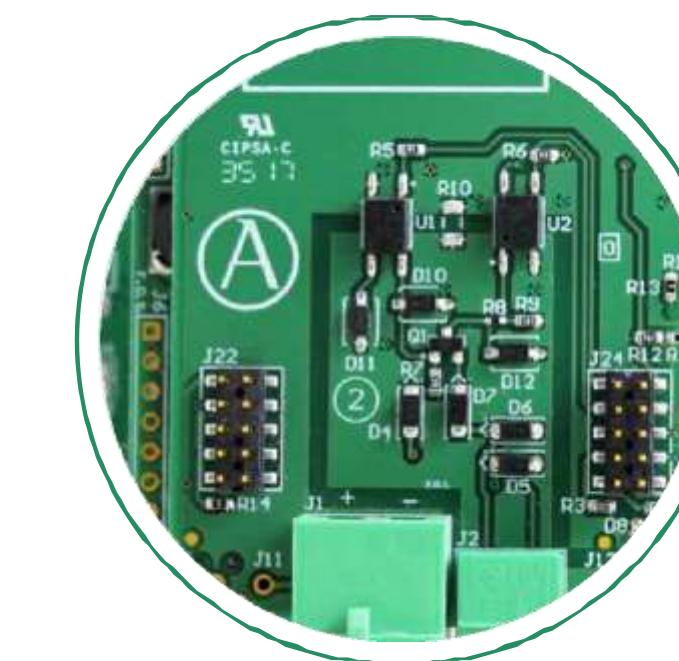
- Can be used with hydronic and baseboard heating systems (Relay Module)



Easyzone: Customizable Control & Comfort for your AC



Insulated plenum with manufacturer-customized neck, factory wired.



Zone-based temperature control.
Two-way communication with the indoor unit.



Up to 6 motorized dampers with maximum and minimum flow regulation.



Remote control with Airzone Cloud APP for iOS and Android
Multi-user and multi session

System's Components



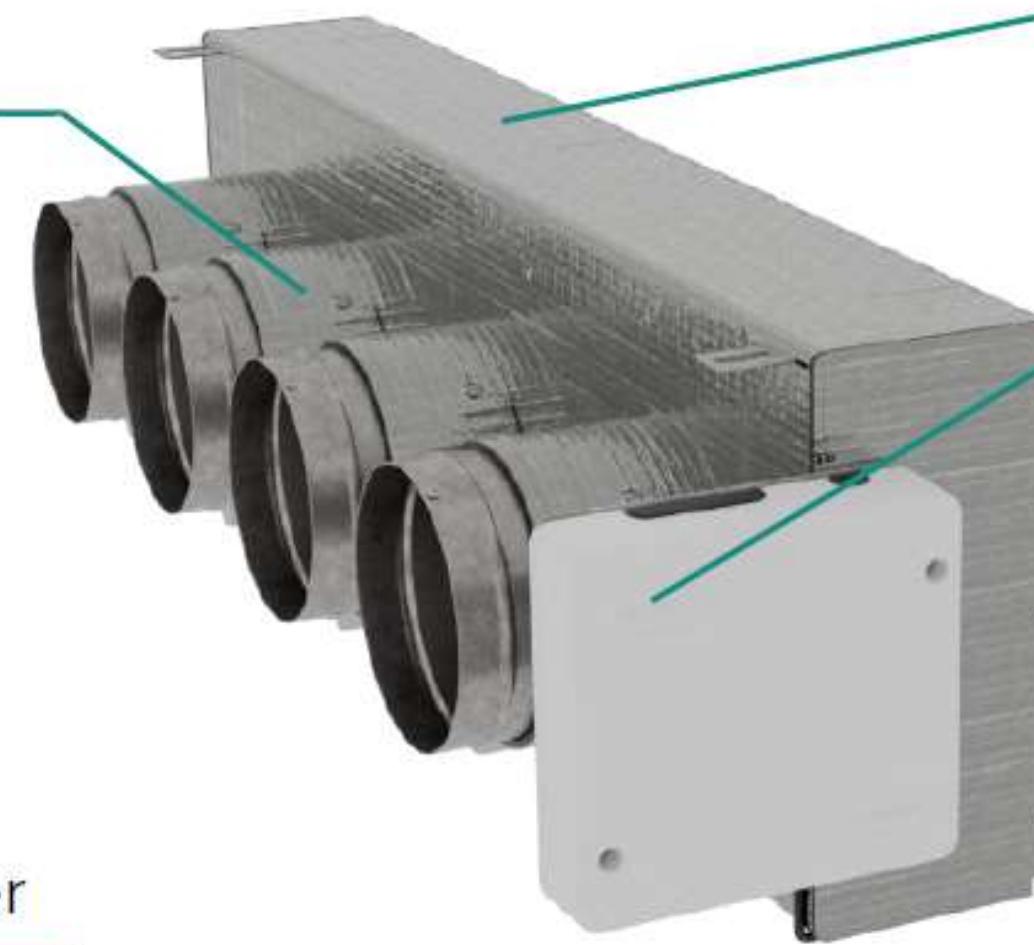
For perfect integration with the HVAC unit of leading manufacturers, Easyzone features a custom neck that is perfectly adapted to the IU model.

6" and 8" dampers available



Motorized dampers

Easyzone includes up to 6 motorized dampers with a diameter of 6 or 8 inches depending on the Easyzone model.



Insulated Plenum Box

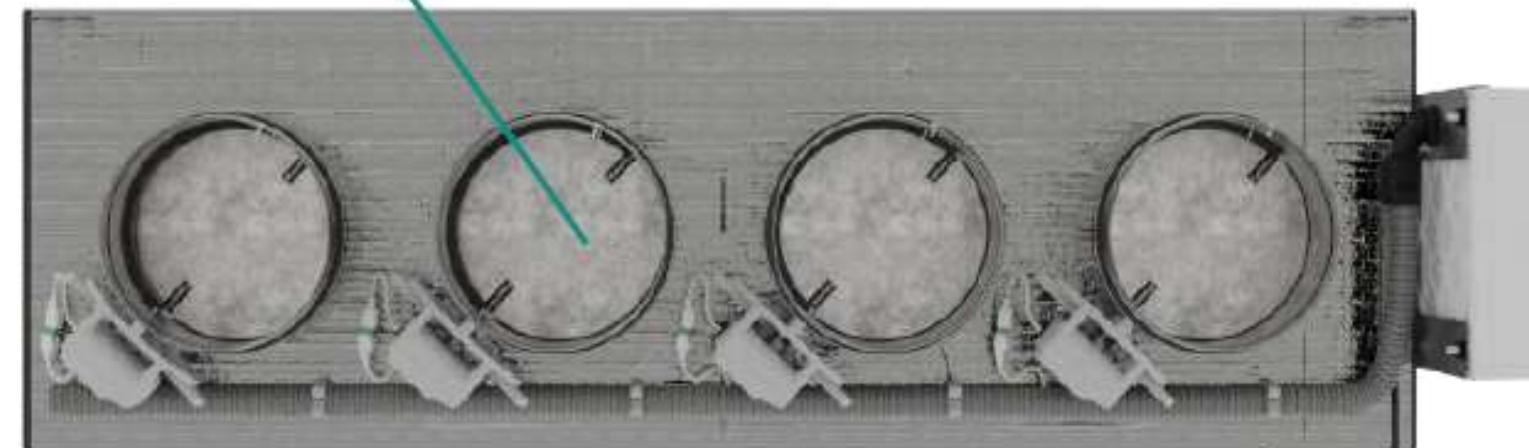
System main control board included

System control unit

The main control board is the core of Easyzone. It is the most recent Airzone controller for ducted units. Compatible with horizontal concealed fan coil units.



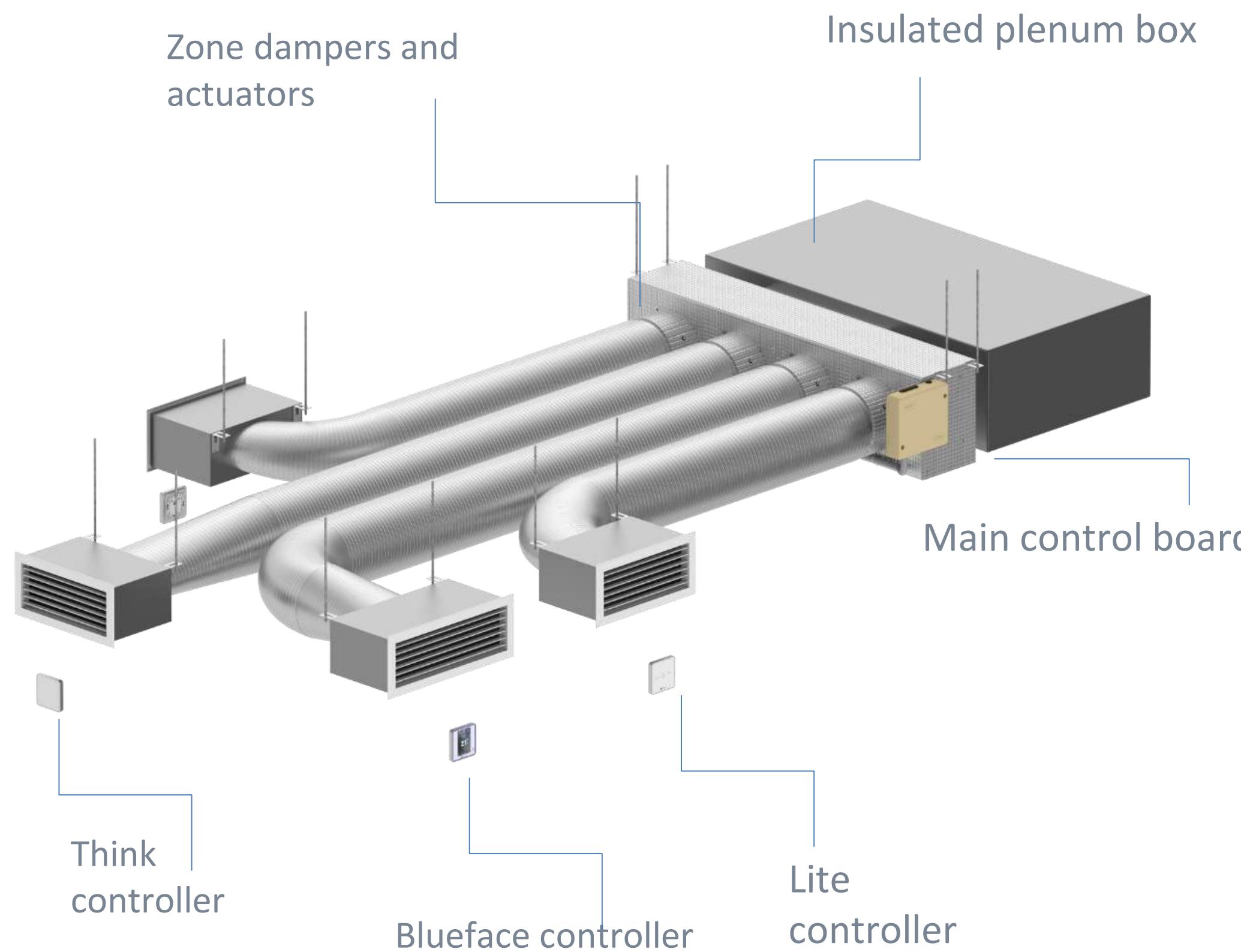
Possibility of overriding 1 damper



Factory-wired

Easyzone is a totally finished product; all its parts are factory-wired.

Easyzone Plug & Play Zoning System



System control unit

The main control board is the core of Easyzone. It is the most recent Airzone controller for ducted units. Compatible with horizontal concealed fan coil units.



Motorized dampers

Easyzone includes up to 6 motorized dampers with a diameter of 6 or 8 inches depending on the Easyzone model.



NEW



Expanding our Plug & Play Zoning Control option for an even wider range of control

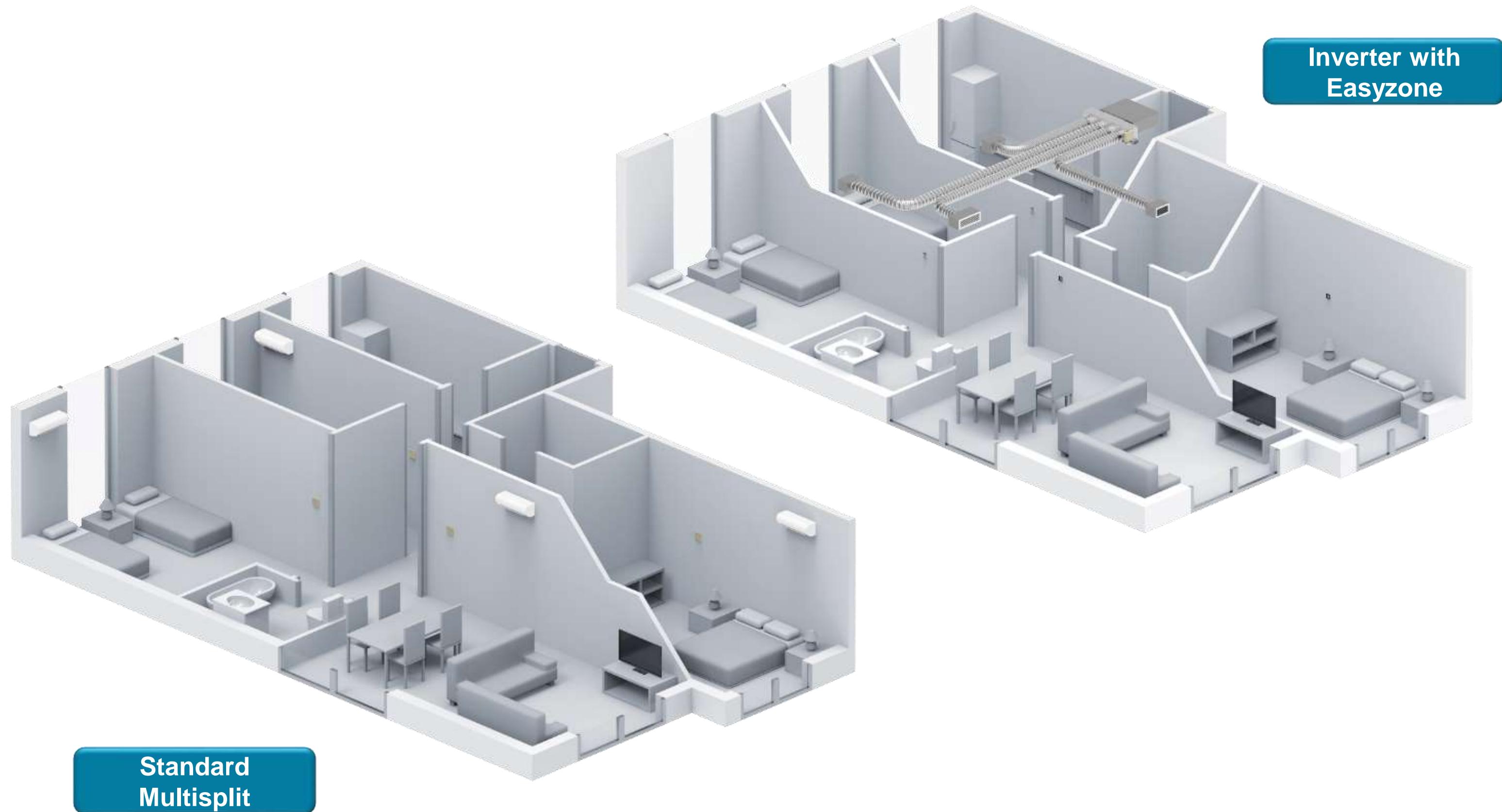
Easyzone: The New Generation of HVAC zoning



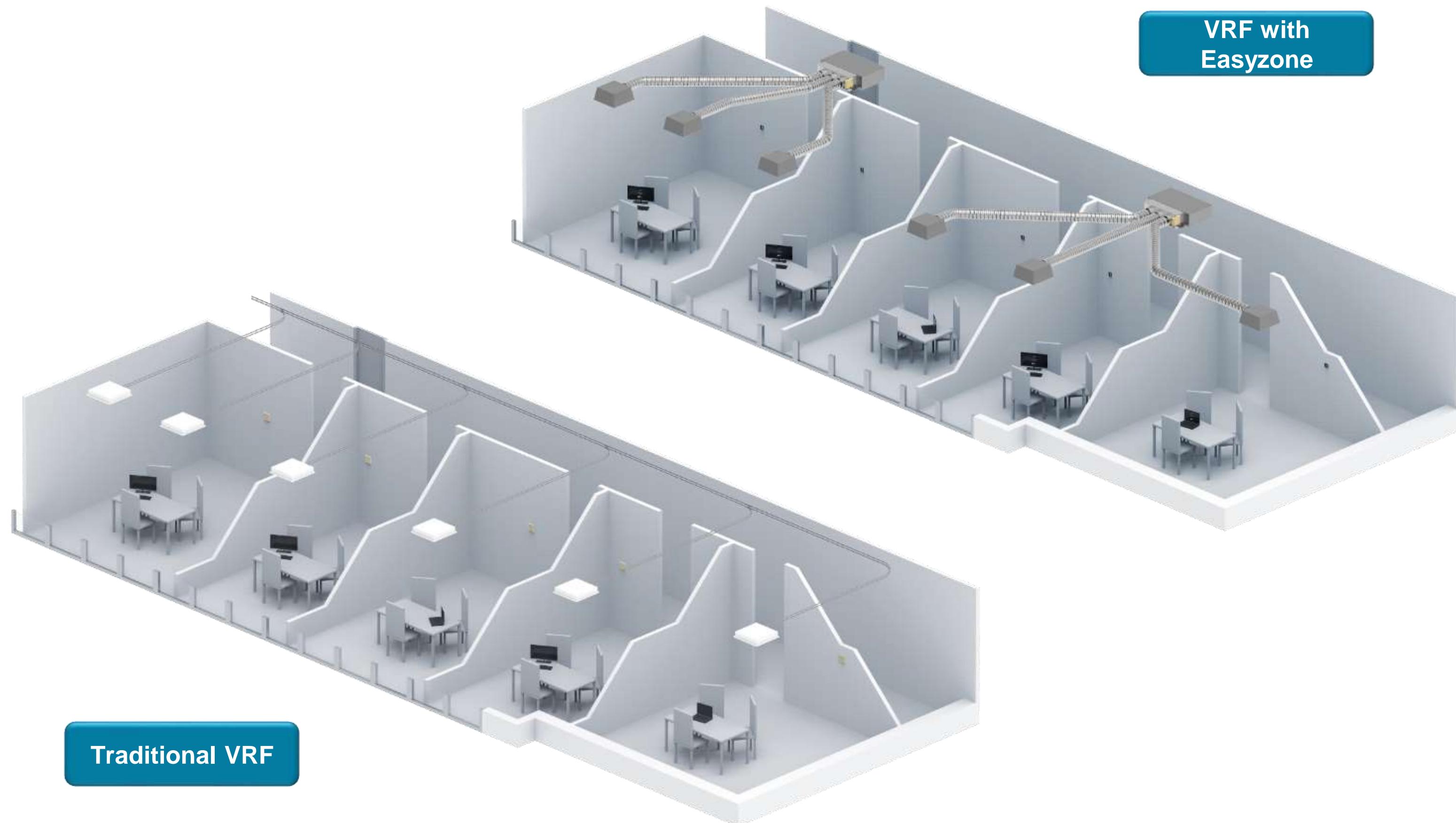
- Custom neck adapted for horizontal, vertical, and multipositional indoor units.
- Independent zone control.
- Airflow regulation and control.
- Increased energy efficiency.
- Control from anywhere, anytime through the Airzone Cloud App.
- Cloud and Voice control through the Airzone Webserver.

- ✓ All-in-one plug & play zoning solution for ducted VRF & Inverter AHUs (vertical, multiposition & horizontal)
- ✓ Temperature control of **up to 6 zones independently**
- ✓ Thermal comfort improved
- ✓ Energy efficiency improved

Applications - Residential



Applications - Commercial

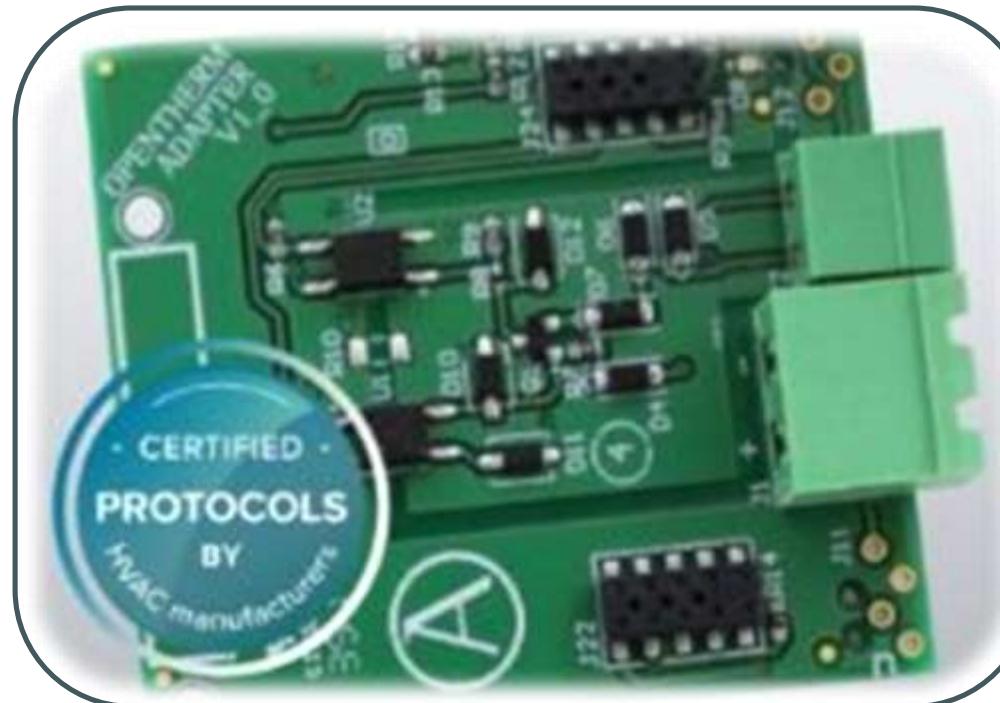


Applications - Commercial

- One thermostat per zone.
- Reduced initial cost.
- Not oversized units.
- **Reduction of refrigerant charge and concentration in small zones.**
- **Complying with new A2L refrigerant safety standards**



Aidoo Pro: The most versatile control with seamless integration



Easy to install – Plug & Play

Compact package with the simplest directions to install. Easily connected to the **Heat Pump** units.

Retains original Inverter features

No DIP switches configuration, Aidoo maximizes comfort and efficiency by communicating with manufacturers' certified protocols.

Full BMS integration

Airzone is committed to bringing the latest **IT technology** to its control solutions.

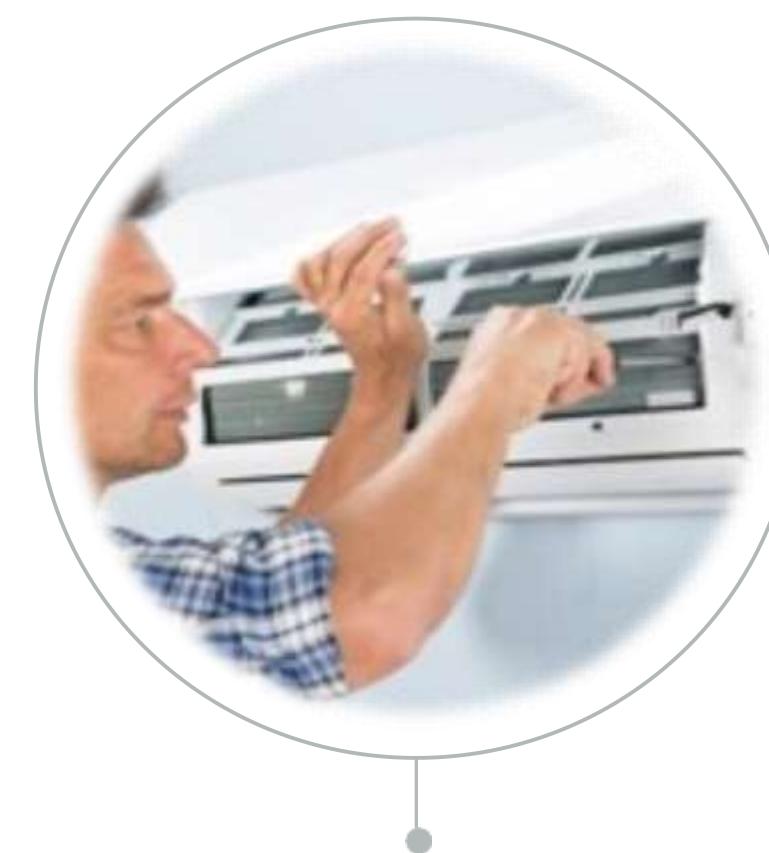
Why Aidoo Pro?



Add advanced functions to new and existing installations



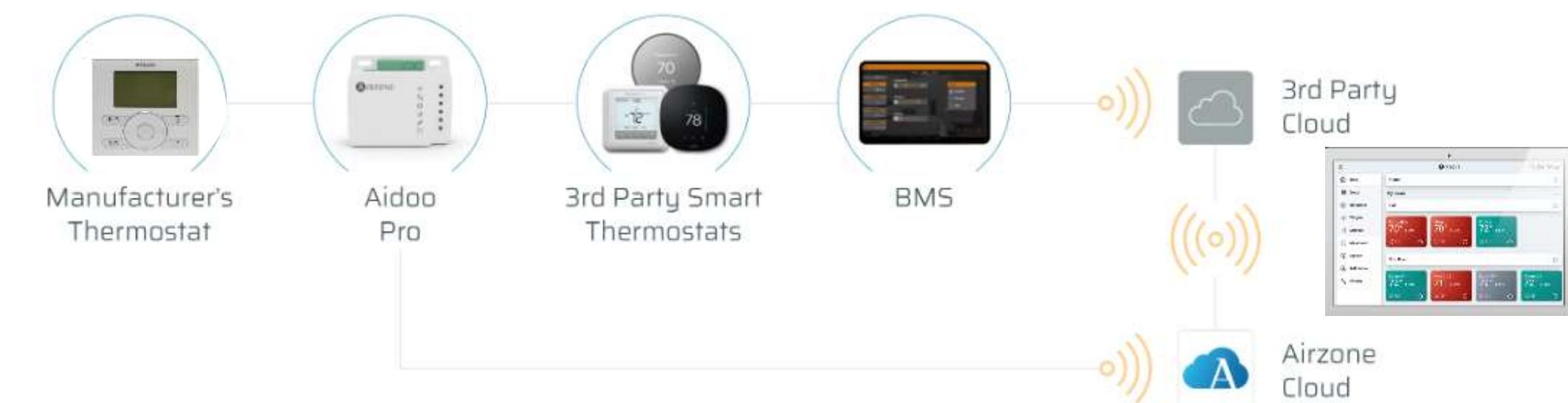
Compatible with both ducted and ductless HVAC units, for Residential and Commercial application.



24/7 Smart remote diagnostics with Airtools

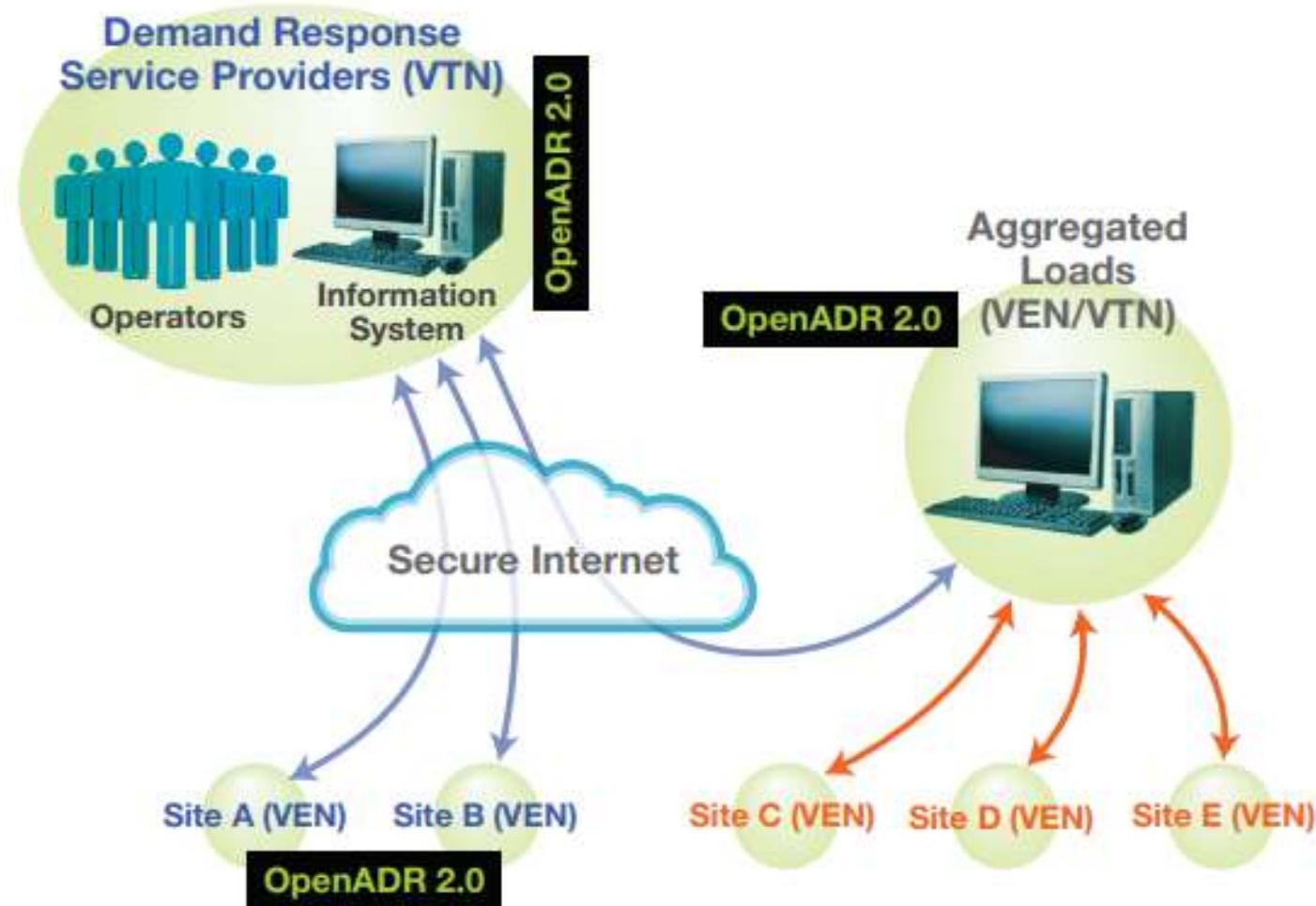
Aidoo PRO Inverter/VRF

- Switching on/off, remote limitation of set-point temperature, time scheduling and operation mode, automatic mode change, fan speed selection and control of different AC unit parameters
- Wi-Fi Dual (2.4/5 GHz) / Ethernet communication
- Occupancy or window opening sensor (via configurable digital input)
- Detection of communication errors and Reading of AC warnings and errors
- Voice control via IFTTT, Amazon Alexa, Google Home and Samsung Smart Things
- Standard protocols: BACnet MS/TP and BACnet IP, Modbus RTU and Modbus TCP
- Integration with third-party thermostats:

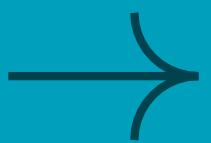


AIDOO PRO: Open ADR certified

- Open Automated Demand Response (OpenADR) provides a non-proprietary, open, standardized and secure demand response (DR) interface that allows electricity providers to communicate DR signals directly to existing customers using a common language and existing communications such as the Internet.



Compliance with A2L refrigerants



A2L Refrigerants

What are these and what are their benefits?

Refrigerant	GWP	Toxicity	Flammability
R-410A	2,088	A	1
R-134A	1,430	A	1
A2L (R-32)	675	A	2L
R-290	N/A (< 5)	A	3

✓ A2L refrigerants are mildly flammable refrigerants with a lower GWP (Global Warming Potential) than traditional refrigerants.

✓ The “A2L” designation is part of a classification system used to categorize refrigerants based on their flammability and toxicity:

✓ A: low toxicity.

✓ 2L: mild flammability.



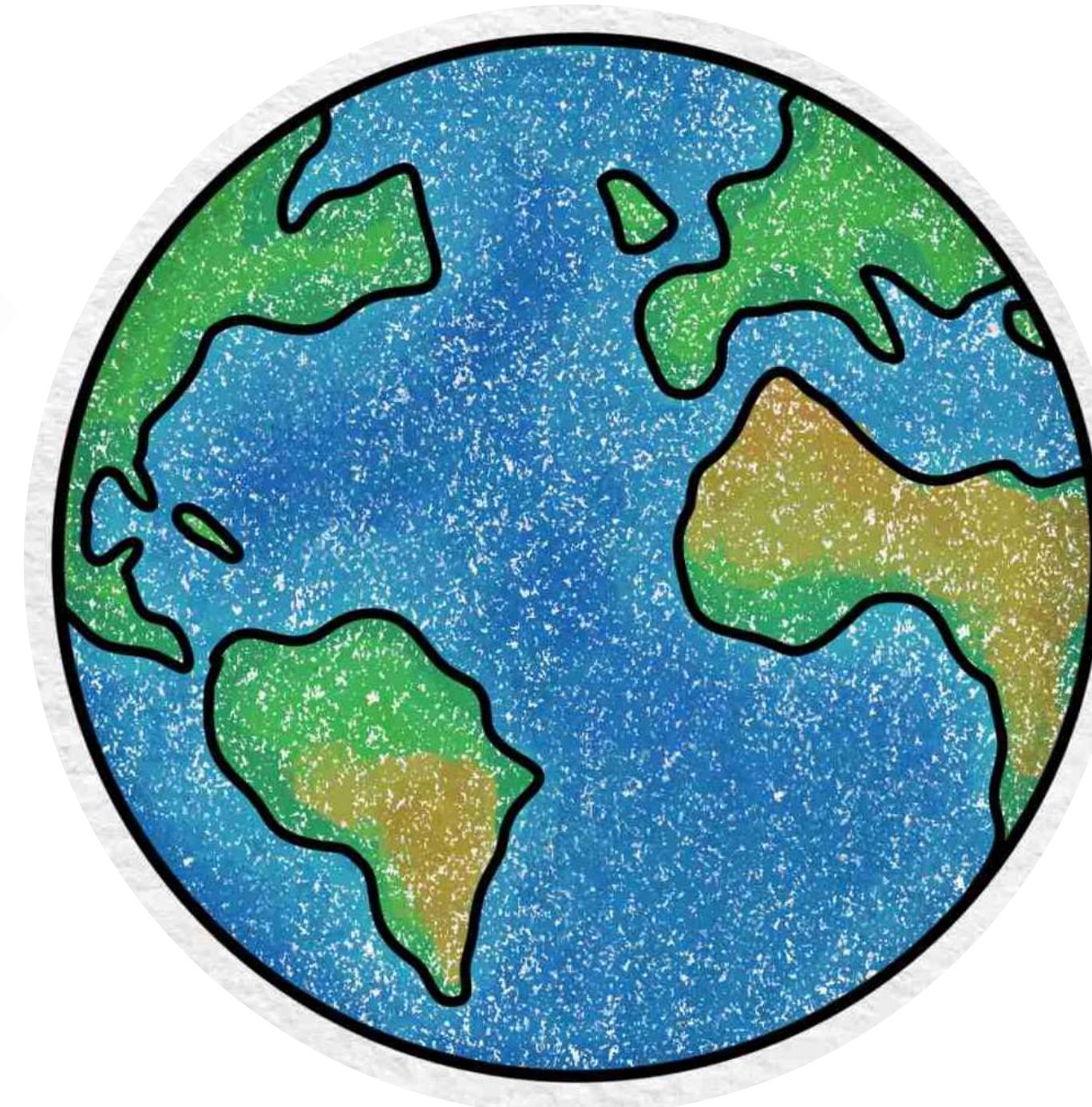
A2L Refrigerants

Why are we transitioning into these refrigerants?

ODP

Ozone Depletion Potential

Potential of a substance to reduce the amount of ozone in the atmosphere which blocks harmful radiation



GWP

Global Warming Potential

Potential for a gas to trap heat in the atmosphere - contributing to climate change

This is why managing refrigerant leaks is crucial to minimize environmental impact.

A2L Refrigerants

What are these and what are their benefits?

- Efficiency: R32 is more efficient than other refrigerants, increasing air conditioning efficiency.
- Cost: R32 is cheaper than other refrigerants, around 20% cheaper than R410A.
- Ease of use: R32 is easier to source, recycle, and reuse.
- Reduced dimensions: R32's higher operating pressure content allows for a 30% lower filling, which reduces the dimensions of cooling devices while maintaining performance.



A2L Refrigerants

The safety requirements for refrigerants specifies requirements for the safe design, construction, installation, and operation of refrigeration systems.

It tells us how to design and install systems so that refrigerant leaks or pressure failures don't put people at risk.

In simple terms — it covers how to vent pressure, where equipment can go, how to detect leaks, and how to make sure the room is safe to work in. Think of it as the safety rulebook for refrigeration systems.

Limits for A2L will be a **1/5** of current limits.

≈ 5Lbs of R32 per
1,000 Ft³

→ Lower inflammability



Applications and Designs with New Refrigerants

Higher Stakes in Every Project



Delivering the same quality

You're now tasked with meeting strict new refrigerant limits while delivering the same high-quality HVAC applications your clients expect.



Balancing performance and safety

This means every installation must carefully balance performance and safety, ensuring that even in the event of a leak, refrigerant concentration stays within the set limits.



Increased complexity

Navigating these restrictions adds complexity to your designs and installations, increasing the risk of delays, compliance issues, and costly mistakes.

Easy compliance

Airzone's advanced zoning systems for Inverter/VRF AHUs offer a smarter, more efficient way to navigate the challenges of new refrigerant regulations.



Optimized Applications Design

Airzone systems optimize the design of HVAC applications to match the building's **real demand**. This ensures only the necessary refrigerant is used, lowering the refrigerant charge.



Fewer Units, Less Piping

By enabling precise zoning, Airzone allows the same space to be air conditioned with fewer AC units. This reduces the amount of piping required, minimizing potential leakage points and installation complexity.



Reduced Refrigerant Concentration

Airzone's solution uses ducted units to air condition multiple zones from a single system. In the event of a refrigerant leak, the volume of the ceiling plenum is factored into the calculations for refrigerant concentration, effectively increasing the total volume considered. This, combined with the **lower refrigerant charge** of a zoned system, helps to ensure that refrigerant concentrations remain within the permitted limits under ASHRAE Standard 15.

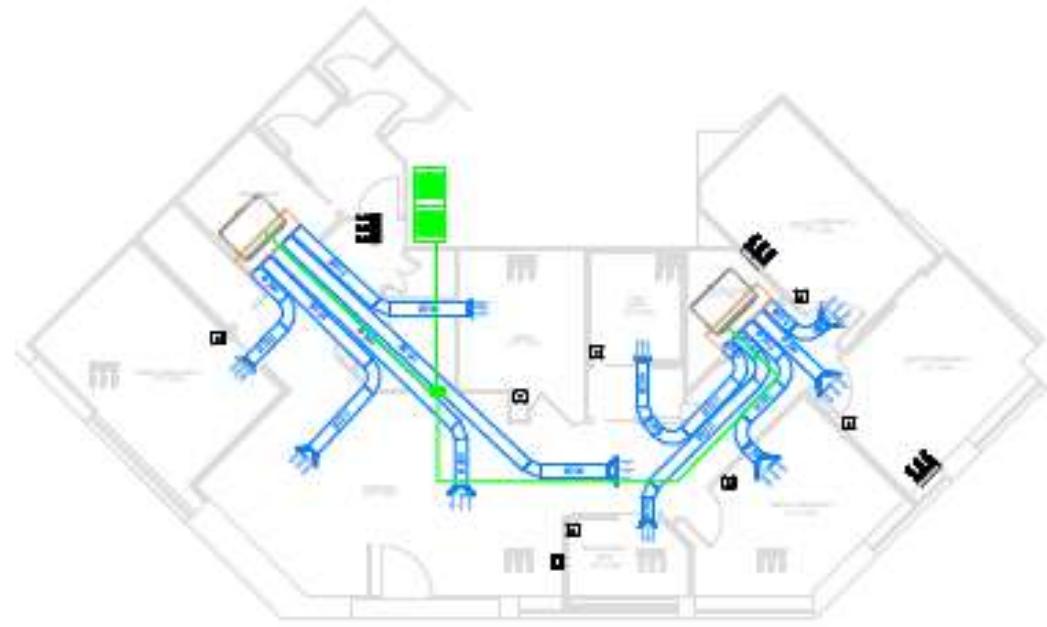
Why zoning with Airzone?

Given the current refrigerant limits, doing ducted units will be a better solution, reducing the refrigerant piping, charge and concentration:



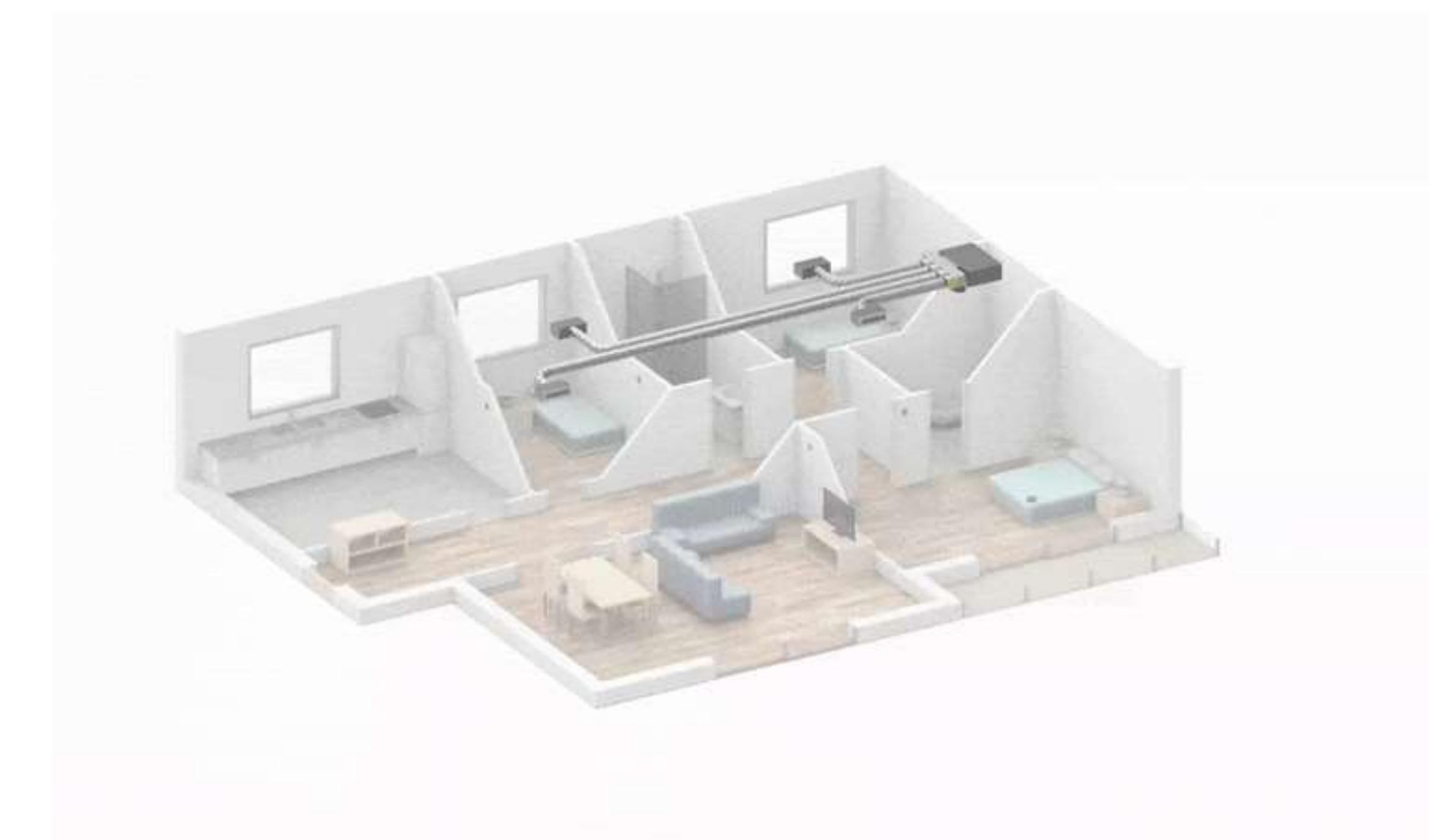
STANDARD VRF APPLICATION

- 8 cassette units
- 70,500 BTU/h*
- 169.61 ft of piping
- 16.03 lbs of R-32



VRF APPLICATION WITH EASYZONE

- 2 ducted units
- 60,000 BTU/h*
- 110.52 ft of piping
- 10.29 lbs of R-32



(* Total Capacity of All Indoor Units)

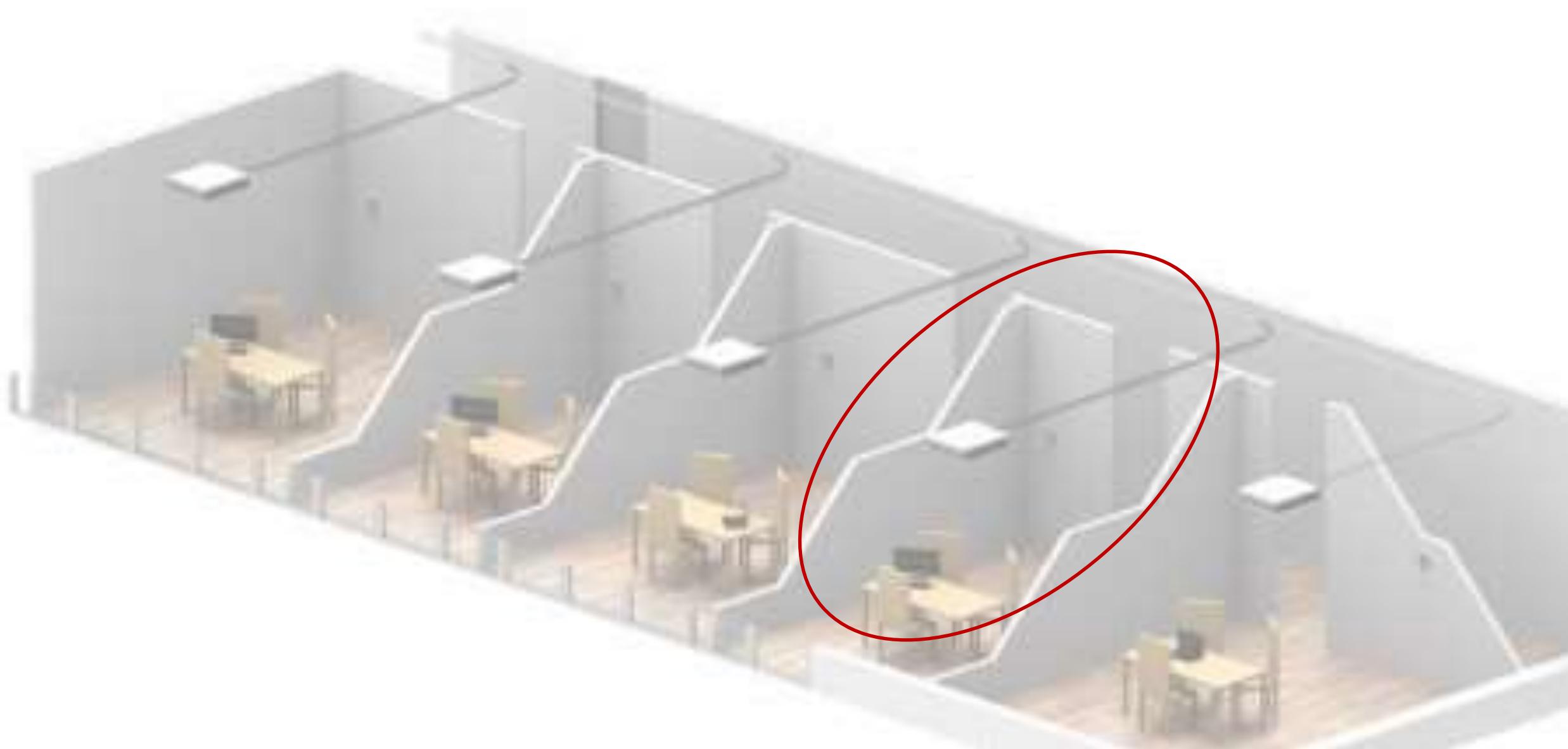
Traditional VRF Applications with longer refrigerant piping and charge

- Long refrigerant lines
- Multiple indoor units
- More refrigerant concentration

Analysis of smallest zone refrigerant concentration

One Outdoor unit: 12 Ton VRF

- Zone is 10x10ft
- 10 ft ceiling height
- Releasable refrigerant charge is greater than effective dispersal volume charge



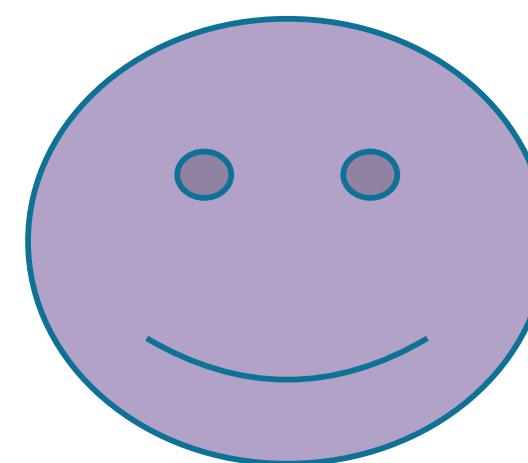
How zoning can reduce refrigerant risks and improve the install

- Still using and designing with VRF technology
- Less energy usage
- One controller per zone
- Reduction of initial costs
- Releasable refrigerant charge is smaller than effective dispersal volume charge



A2L Ready!

Compliance with new refrigerants safety requirements on concentration and flammability



Flexible Applications



Portfolio

Airzone Solutions - Applications

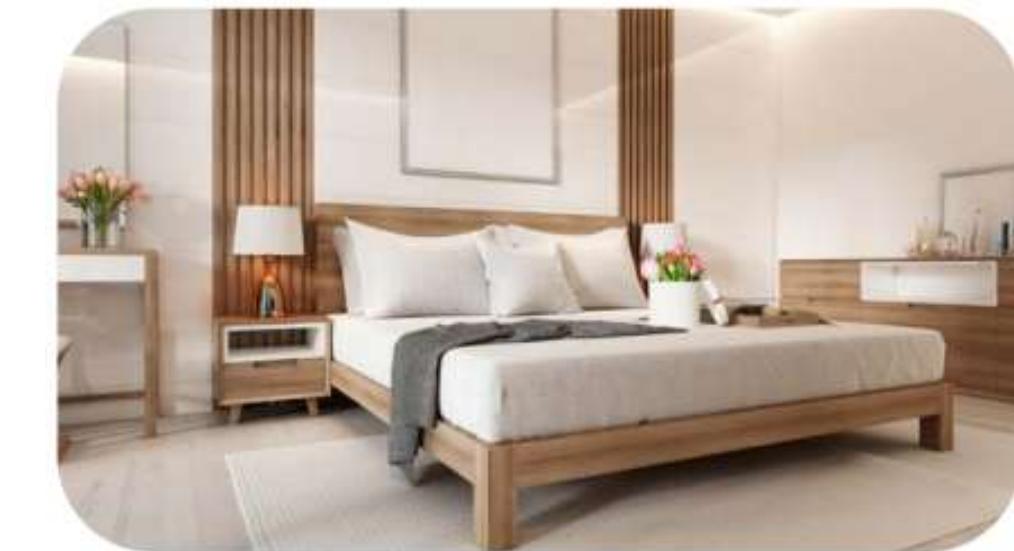
Retail



Office building



Hotel



public buildings



Single Family



Multifamily

Office Building

Airzone Zoning Solution:
VAF

Zones:
25 VAFs managing up to 10 zones each



25 STORY OFFICE BUILDING



11TH FLOOR
LAWYER OFFICES



Meeting Room 1
AC (Cooling / Heating)



Meeting Room 2
AC (Cooling / Heating)



Kitchen
AC (Cooling / Heating)



Offices
AC (Cooling / Heating)



Lobby
AC (Cooling / Heating)



22ND FLOOR
MARKETING FIRM



Reception
AC (Cooling / Heating)



Kitchen
AC (Cooling / Heating)



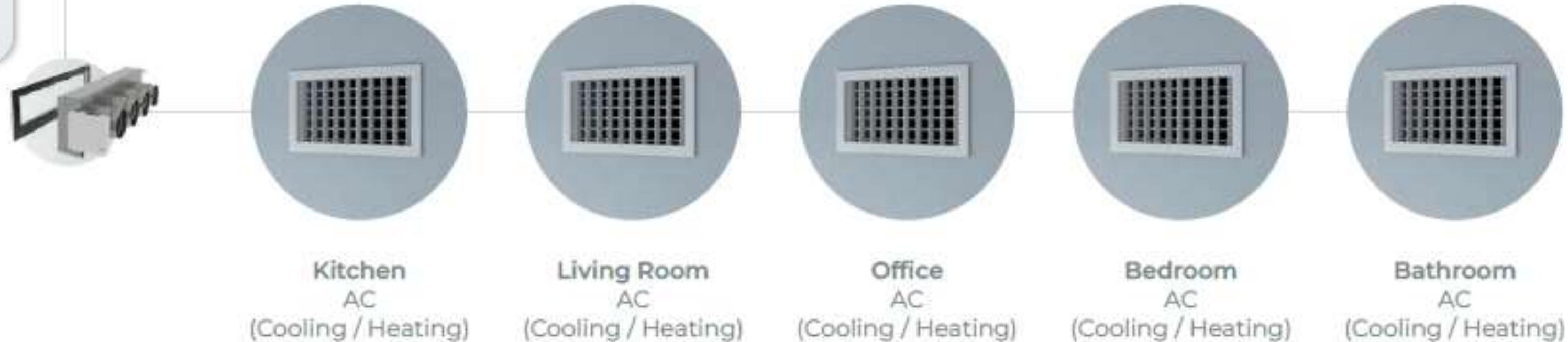
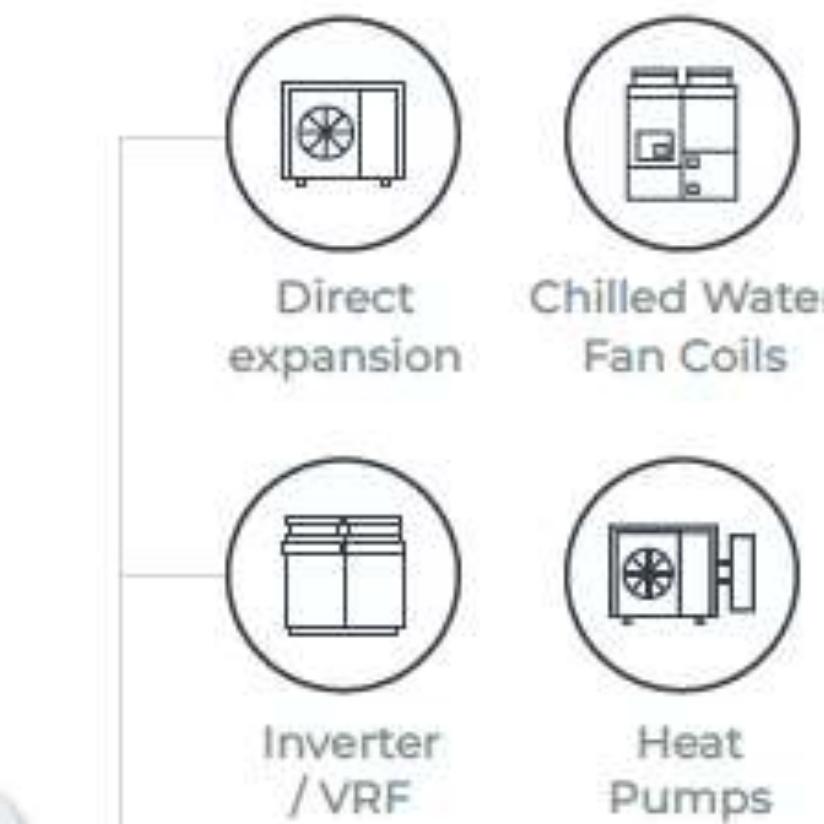
Different size Offices
AC (Cooling / Heating)

Residential Single Family Home

Airzone Zoning Solution:
New Easyzone for Multi-position AHUs

Zones:

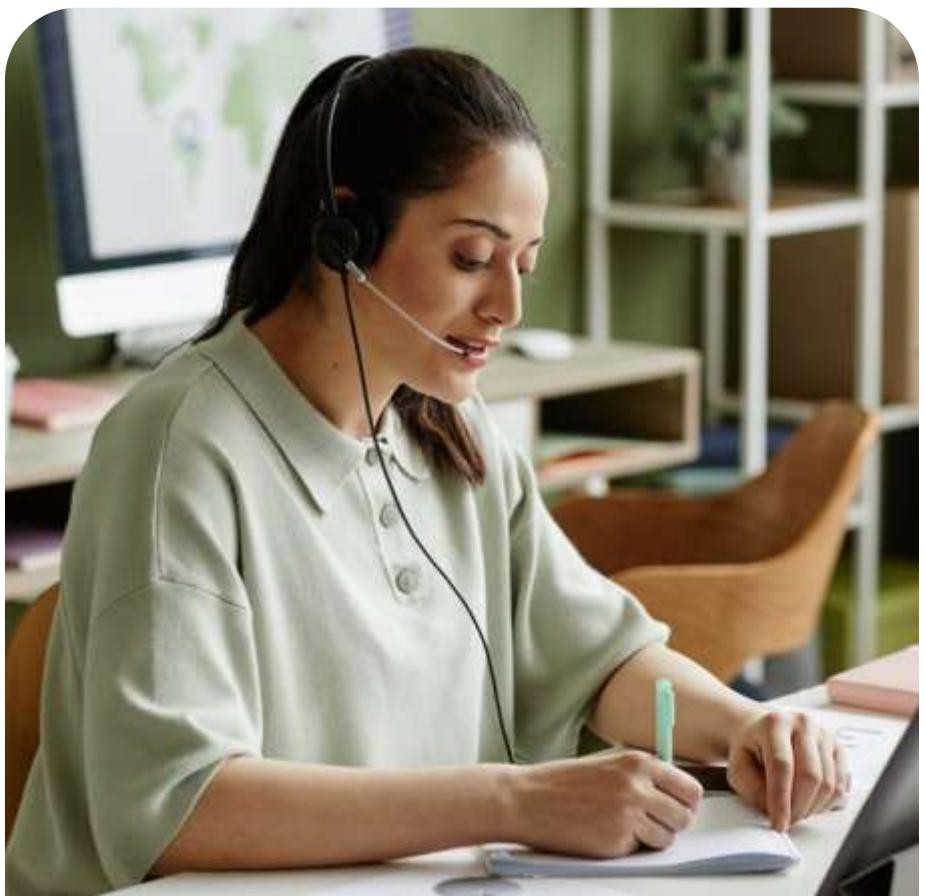
1 Easyzone managing 5 zones



Tools and services for project specification



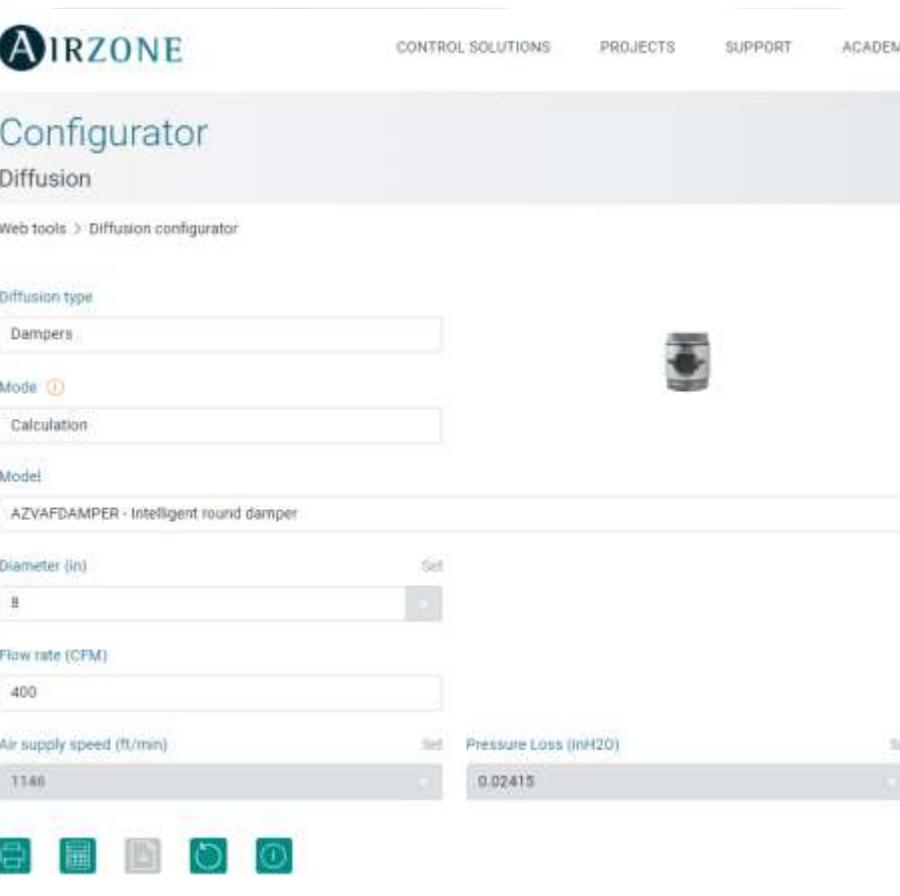
**YOUTUBE CHANNEL
WITH TUTORIALS FOR
USE**



**MULTI CHANNEL USER
SUPPORT
(Projects, Tech
support)**



**DUCTZONE HVAC
CALCULATION
SOFTWARE**



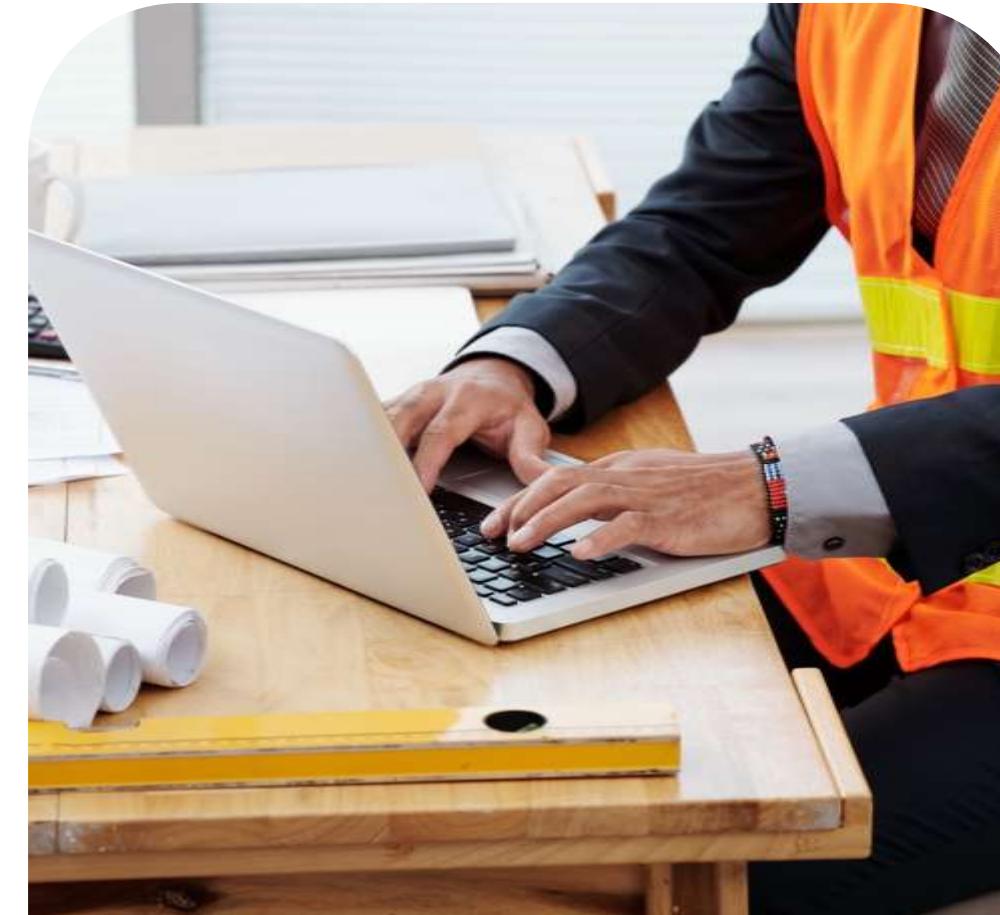
**DAMPER
DIMENSIONING TOOL**

Tools & services

Assistance to carry out the project and justification of the energy improvement of the building



ASSISTANCE TO CARRY
OUT THE PROJECT

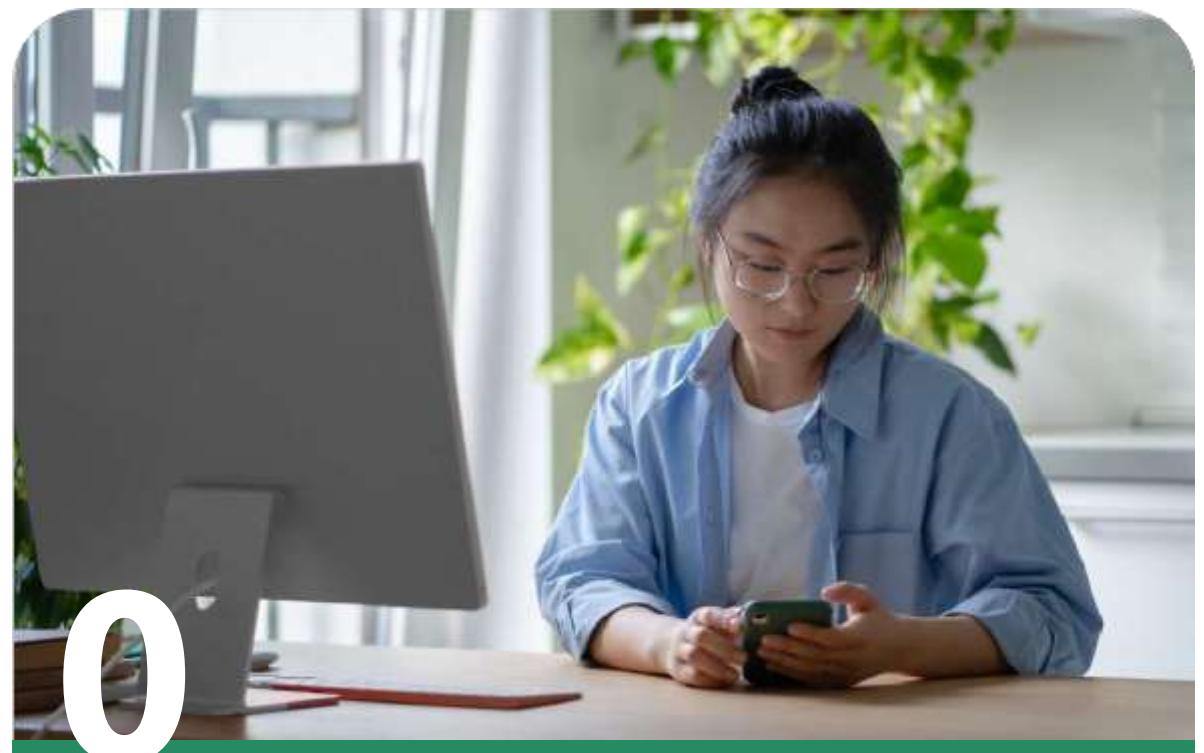


MEASUREMEN
T TOOLS



CALCULATION FOR
IMPROVEMENT IN
ENERGY RATING -
PERATES

5 Reasons to choose Airzone for your projects



0

Airzone solutions
enhance user comfort.



0

With Airzone HVAC control
solutions, systems significantly
**reduce their energy
consumption.**



0

Airzone provides **support and
assistance** throughout all
phases of a project.

5 Reasons to choose Airzone for your projects



04

Our solutions are designed
to **facilitate compliance**
with applicable regulations.



0

Controlling HVAC with Airzone
solutions is a way to contribute to
the **fight against climate change**.

AIRZONE TEAM CONTACTS



Victoria Garcia Massimo

Operations Manager
Southeast & National Sales

vgarciam@airzonecontrol.com

954-940-2137



Daniel Carrillo

Technical Sales & Training

dcarrillo@airzonecontrol.com

213-543-7617



Christopher Rystedt

Technical Sales & Training

cristedt@airzonecontrol.com

814-780-2255



Thank you!

Tech Support

techsupport_na@airzonecontrol.com

PH 866-521-0263

Mon-Thurs-8:30am – 8:00pm EST

Fri-8:30am – 5:00pm EST

Projects & Training

Projects_na@airzonecontrol.com

training@airzonecontrol.com



Day 1, 9:30 AM | Session 2, Room 3

SESSION ID: 25B3



SM

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Continuing Education Units

1. Scan The QR Code
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 **US Heat Pump Summit**