



# KLIMARC<sup>TM</sup>

AIR CONDITIONING SOLUTIONS

# Advanced Air Handling Systems





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# Corporate Overview



# Precision Engineering. Customized Solutions.

**Bridging the gap between high-quality manufacturing and the demand for rapid, site-specific HVAC solutions.**

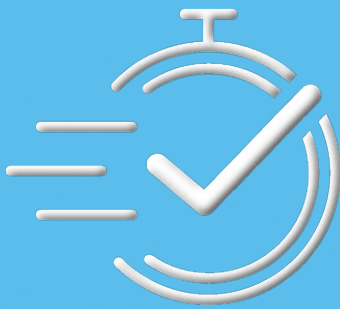
In today's fast-paced commercial and industrial sectors, standard HVAC solutions often fall short of unique architectural and environmental demands. The **KLIMARC**® range was developed to provide an agile, uncompromising alternative.

Manufactured entirely by **Klima Air Conditioning Machines Manufacturing LLC**, our products are born from a deep understanding of complex air management. Because every building presents a unique challenge, every KLIMARC® unit is individually engineered. From dimensional constraints to specialized filtration, we design, manufacture, and deliver custom air movement and treatment systems that fit your project precisely—without the long lead times of traditional imported units.

- ◆ **ISO Certified Facility:** Manufactured under strict, internationally recognized quality control standards.
- ◆ **100% Customization:** Dimensions, configurations, and components tailored to exact site constraints.
- ◆ **Climate Resilient:** Engineered specifically to handle the demanding, high-ambient climates of the Middle East, Africa, and South Asia.



## Agility & Speed of Delivery



Operating a state-of-the-art regional manufacturing facility allows us to bypass global supply chain delays. We offer rapid prototyping, fast-tracked fabrication, and expedited delivery to ensure your project stays on schedule, from initial submittal to final site commissioning.

## 100% Custom Engineering



Operating a state-of-the-art regional manufacturing facility allows us to bypass global supply chain delays. We offer rapid prototyping, fast-tracked fabrication, and expedited delivery to ensure your project stays on schedule, from initial submittal to final site commissioning.

## Unwavering Reliability



Operating a state-of-the-art regional manufacturing facility allows us to bypass global supply chain delays. We offer rapid prototyping, fast-tracked fabrication, and expedited delivery to ensure your project stays on schedule, from initial submittal to final site commissioning.

# The KLIMARC Advantage: Built for Your Building

## Agility, Custom Engineering, and Unwavering Reliability.

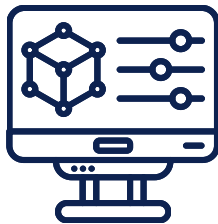
In the commercial HVAC industry, rigid standard sizes and extended import lead times can derail project schedules. KLIMARC<sup>®</sup> eliminates these bottlenecks. By bringing advanced manufacturing in-house at **Klima Air Conditioning Machines Manufacturing LLC**, we give our clients absolute control over their environmental systems. We do not just supply equipment; we engineer solutions that adapt to your site, your schedule, and your specific air quality requirements.

## Agile Process Timeline



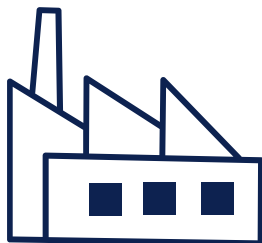
### Step 1: Site Assessment

Evaluating spatial constraints and unique environmental load requirements.



### Step 2: Custom Engineering

Precise component sizing and modular casing configuration to fit your project.



### Step 3: Local Manufacturing

Rapid, ISO-certified fabrication utilizing heavy-gauge premium materials.



### Step 4: Rapid Deployment

Fast-tracked delivery from our regional facility directly to your site, bypassing import delays.



# Global Standards. Local Execution.

## Rigorous Factory Testing

Every KLIMARC® unit is built to withstand the unique environmental demands of the Middle East, Africa, and South Asia. Our in-house testing protocols include:

### Coil Integrity Testing

All hydronic and DX coils are factory-tested underwater at high pressure with dry nitrogen to guarantee zero leaks and absolute structural integrity before installation.

### Dynamic Fan Balancing

Every centrifugal and plug fan undergoes precise static and dynamic balancing. This eliminates operational vibration, reduces acoustic signatures, and significantly extends the lifespan of the motor and bearings.

### Casing & Insulation Checks

Our double-skin panels and specialized gaskets are meticulously inspected to ensure tight seals. This prevents air leakage, eliminates thermal bridging, and protects the internal airstream from external contaminants.

# Uncompromising Quality. Certified Excellence.

## Precision manufacturing backed by rigorous global standards.

At Klima Air Conditioning Machines Manufacturing LLC, quality is not a final step—it is the foundation of our entire fabrication process. Our regional manufacturing facility operates under strict, internationally recognized management systems. Every KLIMARC<sup>®</sup> unit is subjected to rigorous factory acceptance testing before it ever leaves our floor, ensuring that your customized solution delivers peak performance, ultimate safety, and lasting durability in the harshest climates.

### The Certifications



Our manufacturing facility strictly adheres to comprehensive ISO standards, guaranteeing consistency, reliability, and continuous improvement across all operations:

- ◆ ISO 9001 (Quality Management): Ensuring zero-defect manufacturing and consistent product excellence.
- ◆ ISO 14001 (Environmental Management): Minimizing our ecological footprint through responsible fabrication processes.
- ◆ ISO 45001 (Occupational Health & Safety): Maintaining a secure, hazard-free environment for our engineering and assembly teams.





**KLIMARC<sup>TM</sup>**

AIR CONDITIONING SOLUTIONS

# Air Handling Units



# Air Handling Units

## Superior Comfort, Absolute Control.

KLIMARC® Air Handling Units are engineered to deliver uncompromising indoor air quality, thermal comfort, and acoustic performance. Designed with a modular, custom-sized footprint, our AHUs seamlessly adapt to the exact cooling, heating, and ventilation requirements of your commercial or industrial facility. Built rugged for high-ambient climates, they offer the perfect balance of energy efficiency and heavy-duty reliability.

## Core Components & Engineering

### Structural Framework

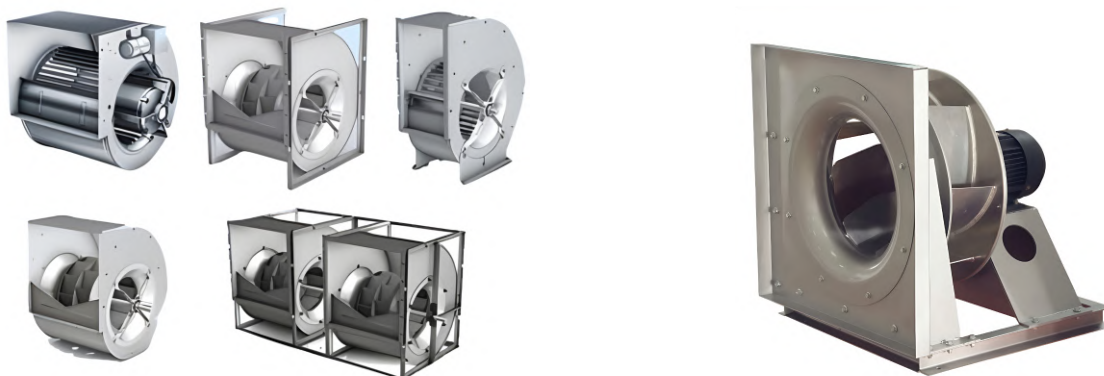
Constructed from specially rolled aluminum or steel profiles to provide exceptional rigidity. The interior surfaces of the framework are engineered to be entirely smooth—completely free of recesses and protrusions—to minimize pressure loss and prevent any internal contaminant buildup.

### Double-Skin Panels

Constructed with heavy-duty, double-layer panels featuring electrostatic painted galvanized inner sheets with customizable thicknesses ranging from 0.8mm to 2mm. To guarantee maximum thermal resistance and superior acoustic attenuation, the panels are core-insulated with injected high-density rockwool or polyurethane, available in robust 50mm and 75mm profiles.

### Radial & Plug Fans

Driven by statically and dynamically balanced radial or direct-driven plug fans. The motor is directly coupled to the rotor, eliminating transmission power loss and the risk of belt contamination. Motors feature IP55 protection and F isolation class, mounted on rubber or spring vibration absorbers to guarantee whisper-quiet operation.





### EC Plug fans

Our advanced EC plug fans utilize direct-drive, electronically commutated motors with backward-curved blades. Purpose-built for high-performance Air Handling Units, they deliver 50–70% energy savings over traditional belt-driven systems. Experience precise variable speed control, ultra-quiet operation, and exceptional airflow capacity.



### High-Efficiency Electric Motors

Powered by premium IEC-standard, TEFC squirrel-cage motors available in IE2 and IE3 efficiency classes. Engineered for seamless VFD operation, they feature vacuum-impregnated insulation to minimize harmonic distortion and ensure uncompromised longevity under constant torque, guaranteeing stable, reliable performance across 40% to 100% speed variations.



### Volumetric Air Dampers

Engineered with self-sealing aluminum flaps driven by hidden plastic gear mechanisms. This ensures seamless airflow adjustment from 0 to 100% while maintaining minimal edge leakage.



### Multi-Stage Filters

Filtration ranges from ISO Coarse (G3, G4) pre-filters arranged in a V-form to minimize air velocity, up to high-efficiency ISO ePM synthetic bag filters. Cartridges are secured within specialized galvanized frames fitted with tight rubber gaskets to prevent unwanted air bypass.



### Acoustic Silencers

Integrated sound attenuation sections feature a robust galvanized framework. The acoustic baffles are filled with high-density glass wool and covered by specialized fabric to drastically reduce aerodynamic noise levels.



### Horseshoe Heat Pipes

Engineered for highly efficient energy recovery, our compact horseshoe heat pipes utilize passive phase-change technology. By effectively pre-cooling air, they optimize dehumidification and ensure reliable, zero-maintenance operation with no moving parts.





### Heat Recovery Units

Designed to drastically reduce operational energy costs, these units feature advanced Eurovent-certified heat recovery wheels. This high-efficiency rotary technology maximizes both sensible and latent heat transfer between incoming fresh air and exhausted stale air, significantly lowering overall HVAC loads.

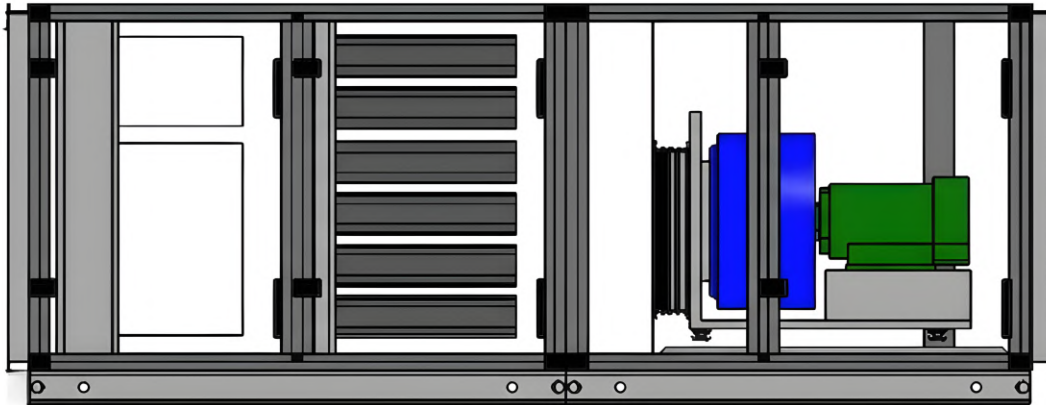


### Heating & Cooling Coils

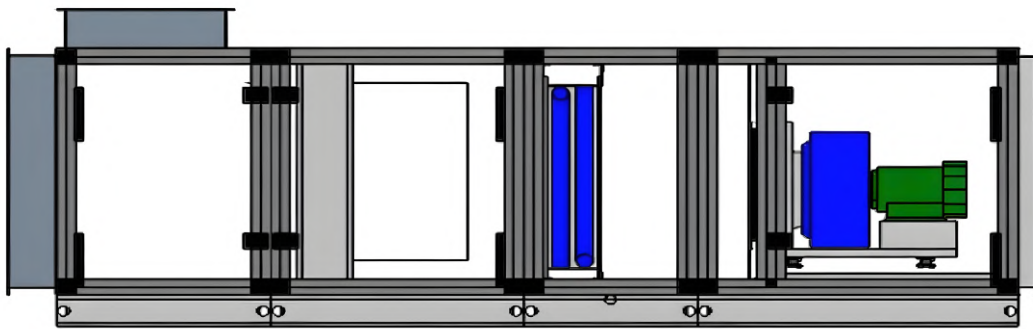
Manufactured from premium copper pipes with aluminum fins or fully steel configurations, our AHRI-certified coils guarantee verified thermal performance. All undergo rigorous hydrostatic testing, while cooling sections are equipped with stainless steel trays or PVC droplet catchers to efficiently manage condensation.



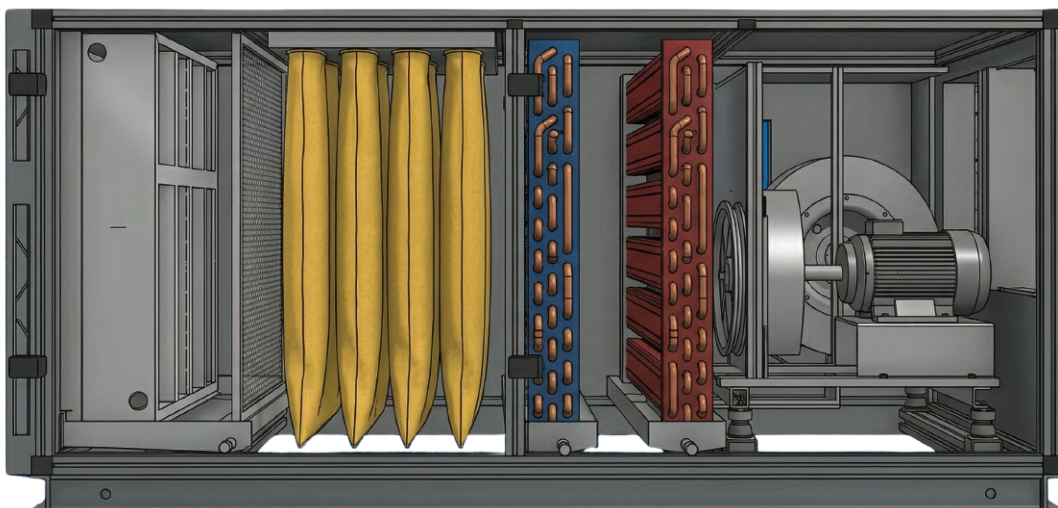
### ECOLOGY UNIT



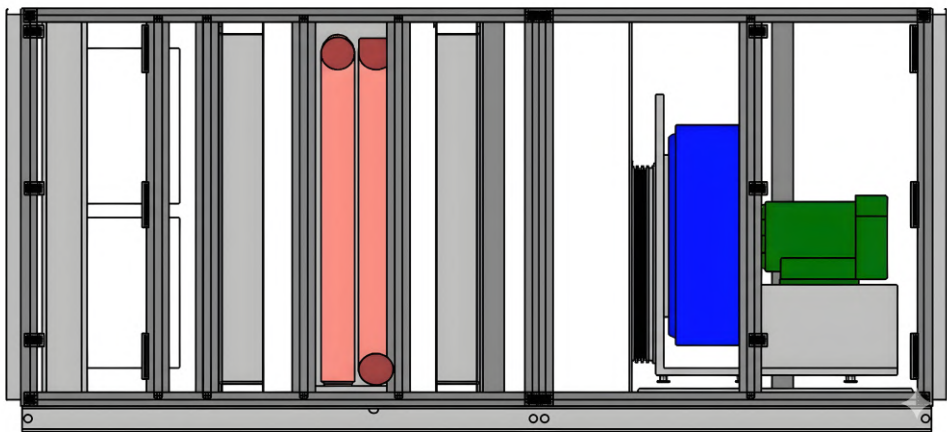
### AIR HANDLING UNIT



### FRESH AIR HANDLING UNIT



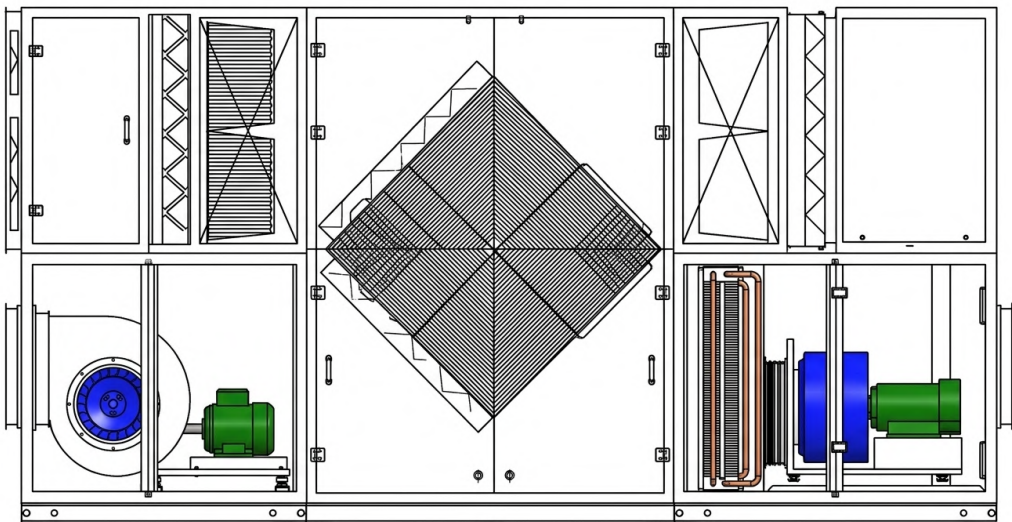
**FRESH AIR HANDLING UNIT WITH HORSE SHOE HEAT PIPE**



**FAHU WITH WITH HEAT RECOVERY WHEEL & HORSE SHOE HEAT PIPE**

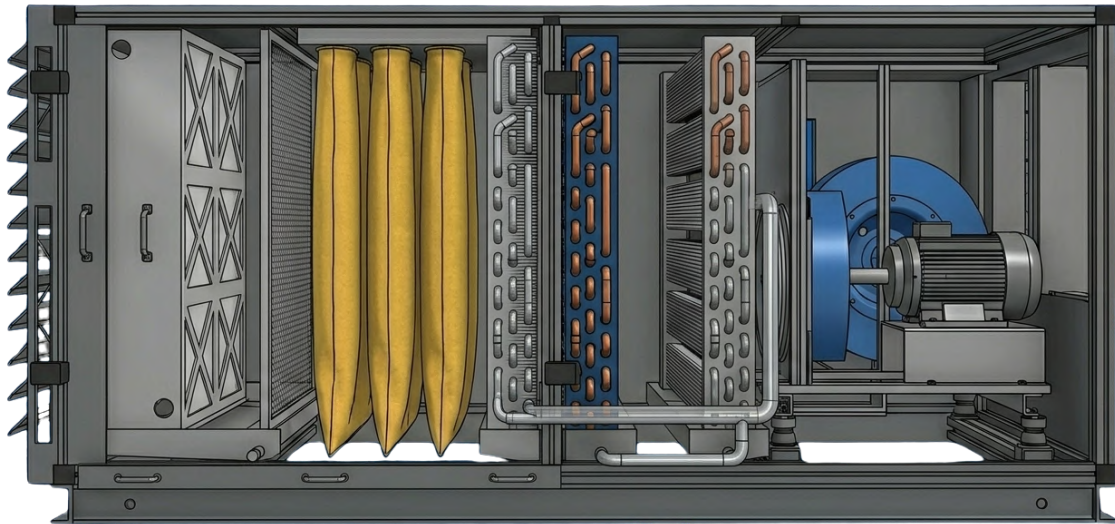


**FRESH AIR HANDLING UNIT WITH PLATE HEAT EXCHANGER**

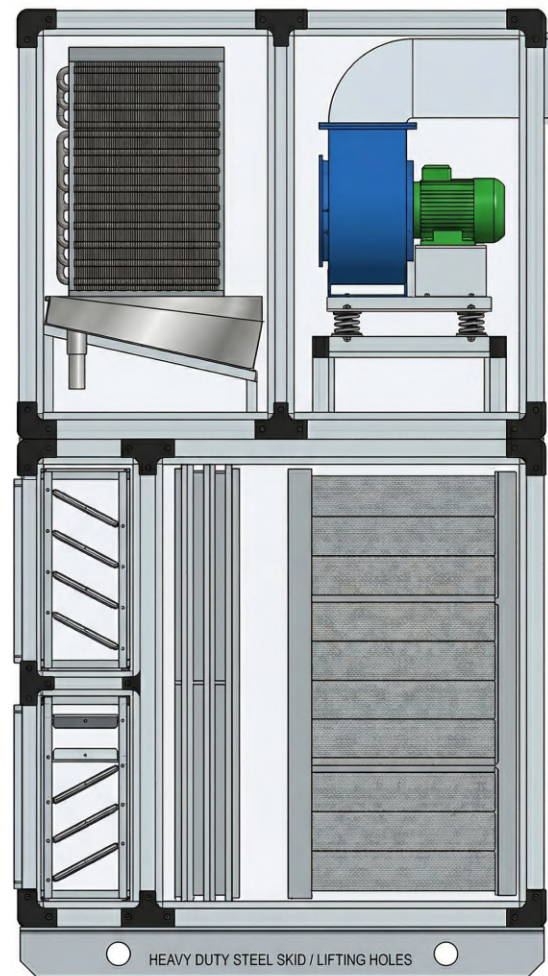




## FRESH AIR HANDLING UNIT WITH HEAT PIPE & HEAT RECOVERY



## MIXED-AIR AHU IN VERTICAL CONFIGURATION





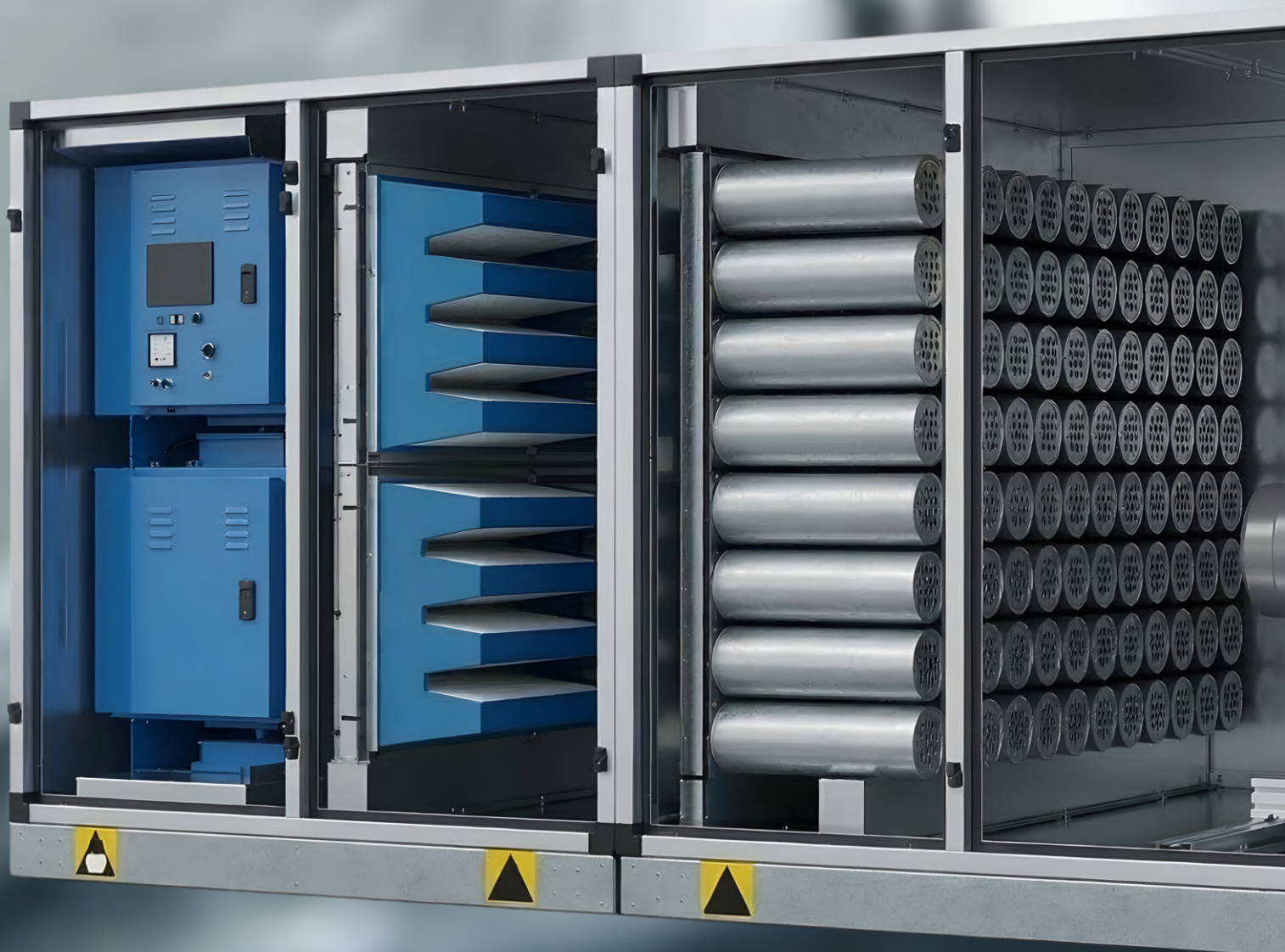




**KLIMARC<sup>TM</sup>**

AIR CONDITIONING SOLUTIONS

# Ecology Units





# Ecology Units

## Advanced Exhaust Filtration. Pristine Environments.

Designed to tackle the most demanding commercial kitchen exhaust applications, KLIMARC® Ecology Units provide the ultimate defense against grease, smoke, and airborne odors. Engineered to meet and exceed stringent municipal environmental codes, our multi-stage filtration systems ensure clean air discharge, eliminate neighborhood nuisance complaints, and drastically reduce ductwork fire hazards. Built with heavy-duty construction, they deliver continuous, reliable performance in high-volume culinary environments.

## Core Components & Engineering

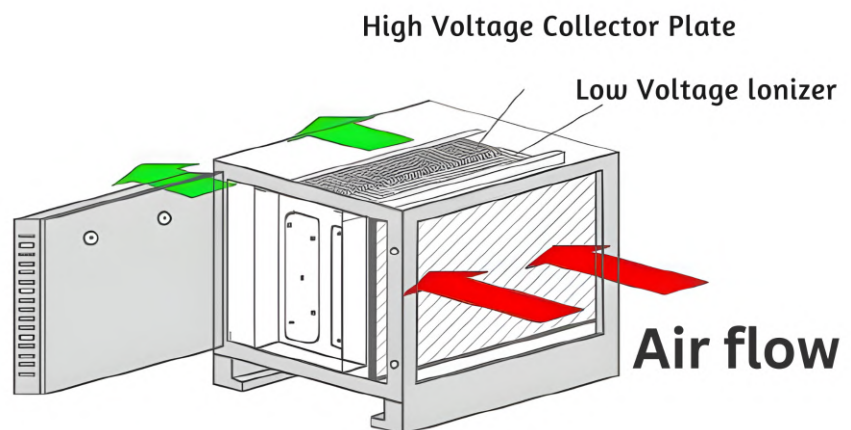
### Grease-Tight Casing Construction

Built with heavy-duty double-skin panels and high-density insulation. The interior features smooth, galvanized or stainless-steel surfaces with specialized sealant to ensure the casing is entirely grease-tight and easy to pressure-wash, preventing leakage and maintaining hygiene.

### Stage 1: Electrostatic Precipitator (ESP)

The core of our smoke removal system. The ESP utilizes high-voltage ionization to charge sub-micron particles (smoke and fine grease), which are then magnetically trapped on grounded collection plates.

This stage achieves up to 98% efficiency with minimal pressure drop. For exceptionally high-volume or heavy-grease culinary applications, an optional Double ESP configuration is available to maximize collection capacity and extend maintenance intervals.



### Stage 2: Primary Grease Extractors

The first line of defense utilizes washable, multi-layered aluminum mesh or stainless-steel baffle filters. These highly efficient pre-filters capture the largest grease droplets and solid particulates, protecting the downstream components.

### **Stage 3: Fine Particulate Filtration**

Following the ESP, high-efficiency synthetic bag filters or rigid V-bank filters (ISO ePM class) capture any remaining micro-particles, ensuring absolute clarity in the exhausted air stream.

### **Stage 4: Gas-Phase Odor Neutralization**

To eliminate strong culinary odors, the final filtration stage employs heavy-duty Activated Carbon cylinders or V-bank bonded carbon panels. The high-porosity carbon chemically adsorbs volatile organic compounds (VOCs) and pungent smells before discharge. For ultra-demanding odor control, a Double Carbon Filter option is available, featuring a second stage impregnated with Potassium Permanganate (KMnO<sub>4</sub>) for targeted oxidation of the most stubborn and complex exhaust gases.

### **Absolute HEPA Filtration (Optional)**

For projects requiring the highest possible level of particulate arrestance—an optional HEPA (H13 or H14) filtration stage can be integrated. This absolute filter captures up to 99.99% of ultra-fine smoke and aerosolized contaminants down to 0.3 microns, guaranteeing zero visible emissions and ensuring compliance with the most rigorous municipal environmental codes.

### **UV-C Ozone Technology (Optional)**

For ultra-demanding applications, integrated UV-C lamps produce ozone that reacts directly with grease molecules in the airstream, breaking them down into harmless compounds through cold combustion. This keeps ductwork exceptionally clean and further neutralizes odors.

### **F400 Fire-Rated Exhaust Fans**

Engineered for the demanding environments of heavy-duty Ecology Units, our F400 extraction fans deliver uncompromising, certified performance during severe grease fires. Rigorously rated to withstand 400°C for two continuous hours, they ensure critical emergency smoke ventilation, prevent dangerous duct auto-ignition, and guarantee absolute compliance with the strictest fire safety regulations.

### **Intelligent Control & Safety Panels**

Fully integrated control systems monitor the pressure drop across filter banks, ESP high-voltage status, and fan performance. Systems include automated fault alarms and can be integrated with standard Building Management Systems (BMS).

**Note:** To meet the most rigorous fire safety and environmental compliance standards, strictly UL-listed filters are available as an option across all applicable filtration stages.







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# Fresh Air Handling Units



# Fresh Air Handling Units

## 100% Outdoor Air. Uncompromised Indoor Quality.

Processing 100% raw, unconditioned outdoor air in high-ambient, high-humidity climates requires specialized engineering. KLIMARC® Fresh Air Handling Units are explicitly designed to tackle extreme latent cooling loads while recovering maximum exhaust energy, ensuring optimal indoor air quality without inflating your operational expenditures.

### Engineered Features

#### Advanced Energy Recovery

Integrated with highly efficient enthalpy thermal wheels, sensible plate heat exchangers, or run-around coil loops. This recovers up to 80% of the energy from exhausted indoor air, drastically reducing the required mechanical cooling capacity and overall CapEx.

#### Deep Dehumidification

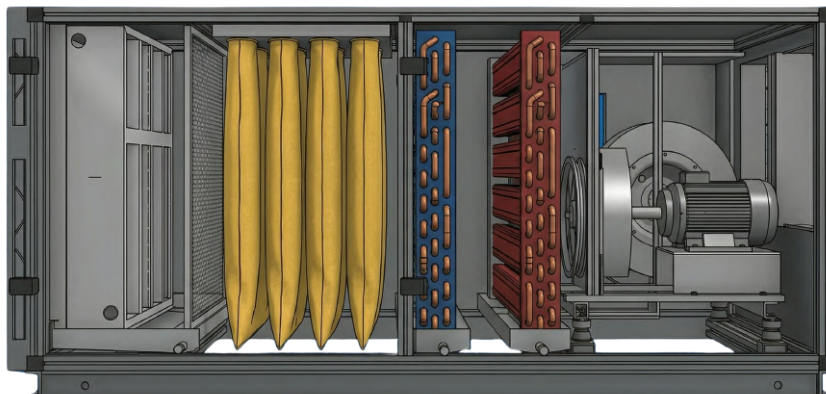
Engineered with specialized multi-row cooling coils and precise reheat capabilities (electric or hot water) to strip heavy moisture from the incoming airstream, preventing indoor mold growth and maintaining strict humidity parameters.

#### Heavy-Duty Pre-Filtration

Equipped with sand-trap louvers and multi-stage ISO Coarse filters specifically designed to capture heavy desert dust and particulate matter before it ever reaches the primary cooling components.

#### Condensation-Free Casing

Utilizing our signature thermal-break aluminum framework and heavy-duty double-skin panels insulated with high-density rockwool. This completely eliminates thermal bridging to prevent exterior condensation even when handling highly humid outside air, while simultaneously providing superior acoustic attenuation and fire resistance.





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AIR CONDITIONING SOLUTIONS

# Fresh Air Handling Units with Heat Recovery





# Fresh Air Handling Units with Heat Recovery

## Maximize Efficiency. Minimize Operational Costs.

Continuously exhausting conditioned indoor air is a massive drain on building energy resources. KLIMARC® Heat Recovery Fresh Air Handling Units are engineered to intercept outgoing exhaust air and seamlessly transfer its thermal energy to the incoming fresh air stream. This drastically reduces the mechanical load on your primary cooling and heating plants, significantly lowering your overall energy consumption while maintaining exceptional indoor air quality.

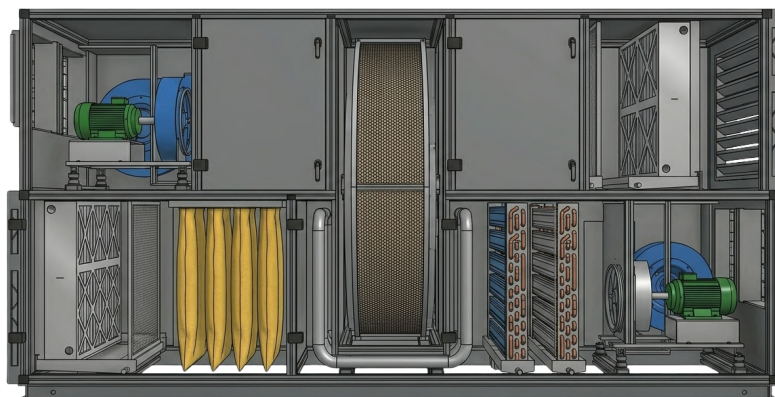
## Engineered Features

### Air-to-Air Heat Recovery

In our Air-to-Air systems, the thermal energy of the outgoing exhaust air is transferred directly to the incoming fresh air via high-efficiency heat converters. These converters utilize precisely engineered aluminum profile plates to maximize heat transfer while ensuring the two airstreams remain completely separated. Because every building has unique architectural and ventilation demands, these units can be custom-designed with varying dimensions and profiles to perfectly match the specific airflow and pressure requirements of your project.

### Water-to-Air Heat Recovery

For projects requiring absolute isolation between airflows, our Water-to-Air (Run-Around Coil) systems utilize two entirely separate heat exchangers. One coil is installed in the exhaust airstream, while the other is placed in the fresh air intake, connected by a highly secure closed-circuit hydronic loop. A dedicated water recirculation pump actively transfers fluid between the coils, capturing thermal energy from the exhaust and delivering it to the fresh air. This versatile system operates year-round, providing highly effective pre-heating in the winter and pre-cooling in the summer.



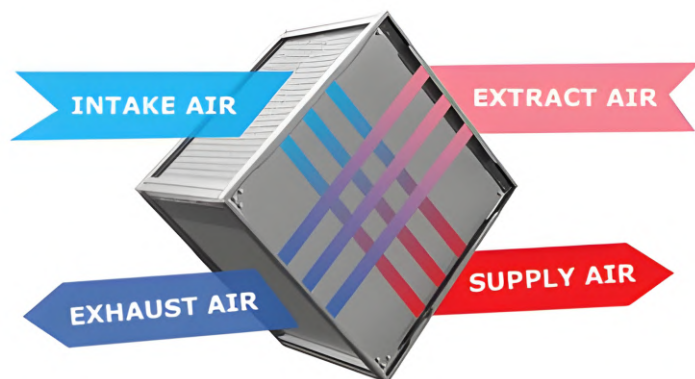
### Heat Pipe Heat Recovery

Engineered for ultimate reliability and zero cross-contamination, our Heat Pipe recovery systems utilize a series of sealed, refrigerant-filled copper tubes. As warm exhaust air passes over one end of the pipe, the internal refrigerant absorbs the thermal energy and vaporizes. This vapor naturally travels to the cooler fresh air side, where it condenses and releases the captured heat into the incoming airstream. Because this phase-change process is entirely passive and operates with zero moving parts, it delivers highly efficient sensible heat transfer with absolute airflow separation and virtually no maintenance requirements.



### Plate Heat Exchanger

Constructed from precisely spaced, premium aluminum or epoxy-coated plates, our static Plate Heat Exchangers provide highly effective sensible energy reclaim. The fresh supply air and the stale exhaust air flow through alternating, completely sealed channels in a cross-flow or counter-flow configuration. This static matrix design ensures absolute physical isolation between the two airstreams, completely eliminating the risk of odor, moisture, or particulate transfer. Highly durable and free of mechanical wear, these exchangers are the ideal, low-maintenance solution for commercial and industrial applications demanding strict hygienic standards.

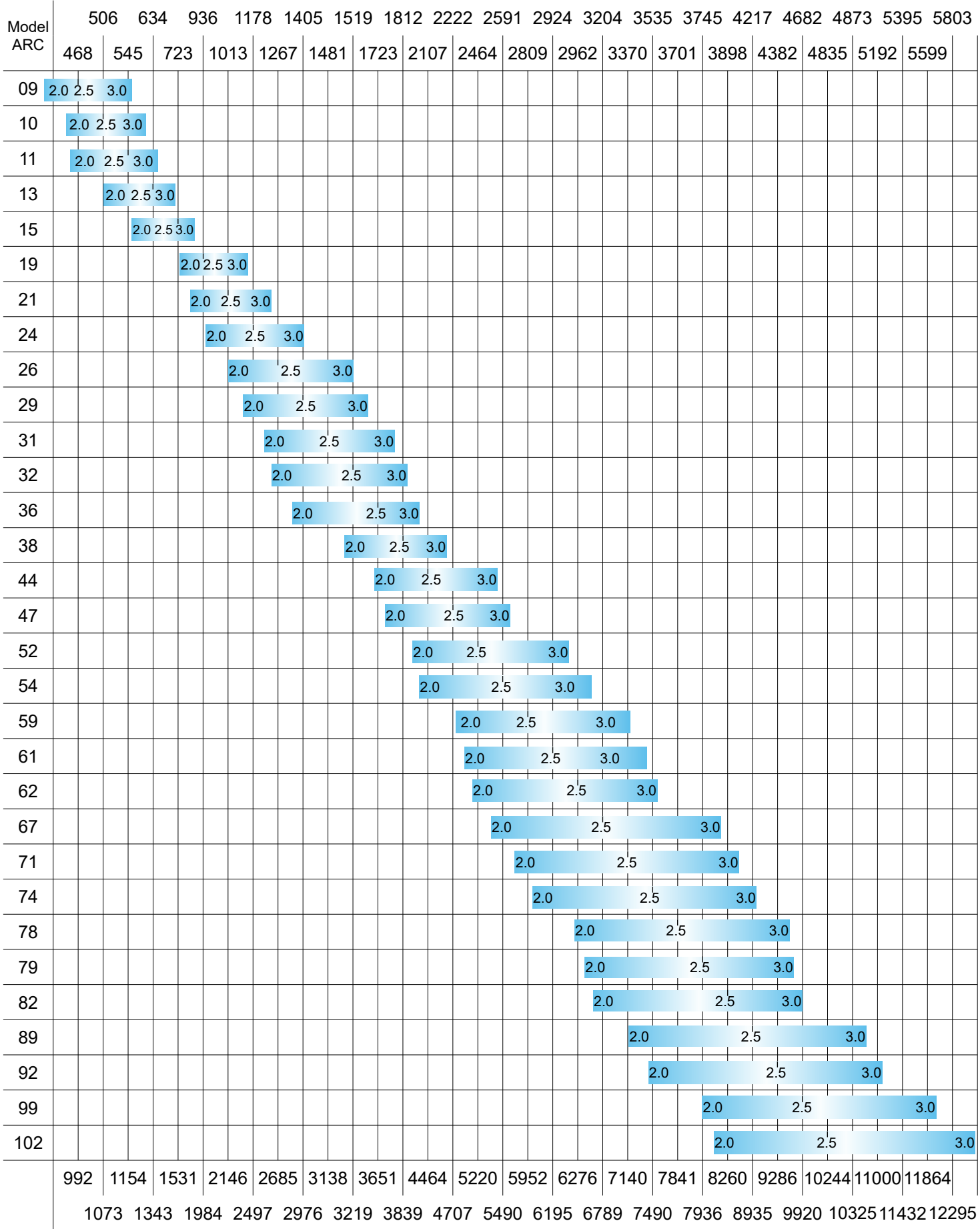






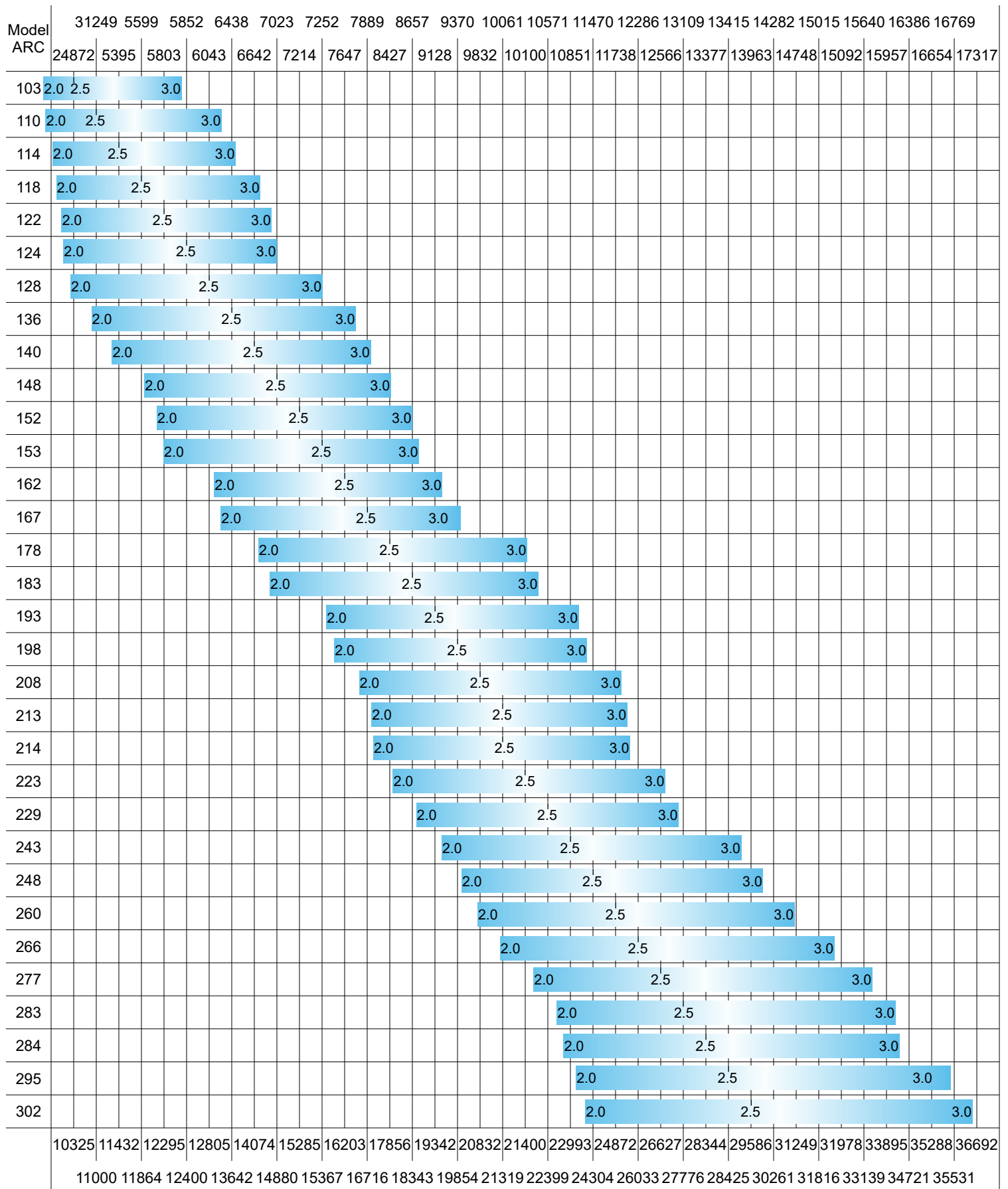
Quick Selection Chart

Air Flow Rate ( L/s )



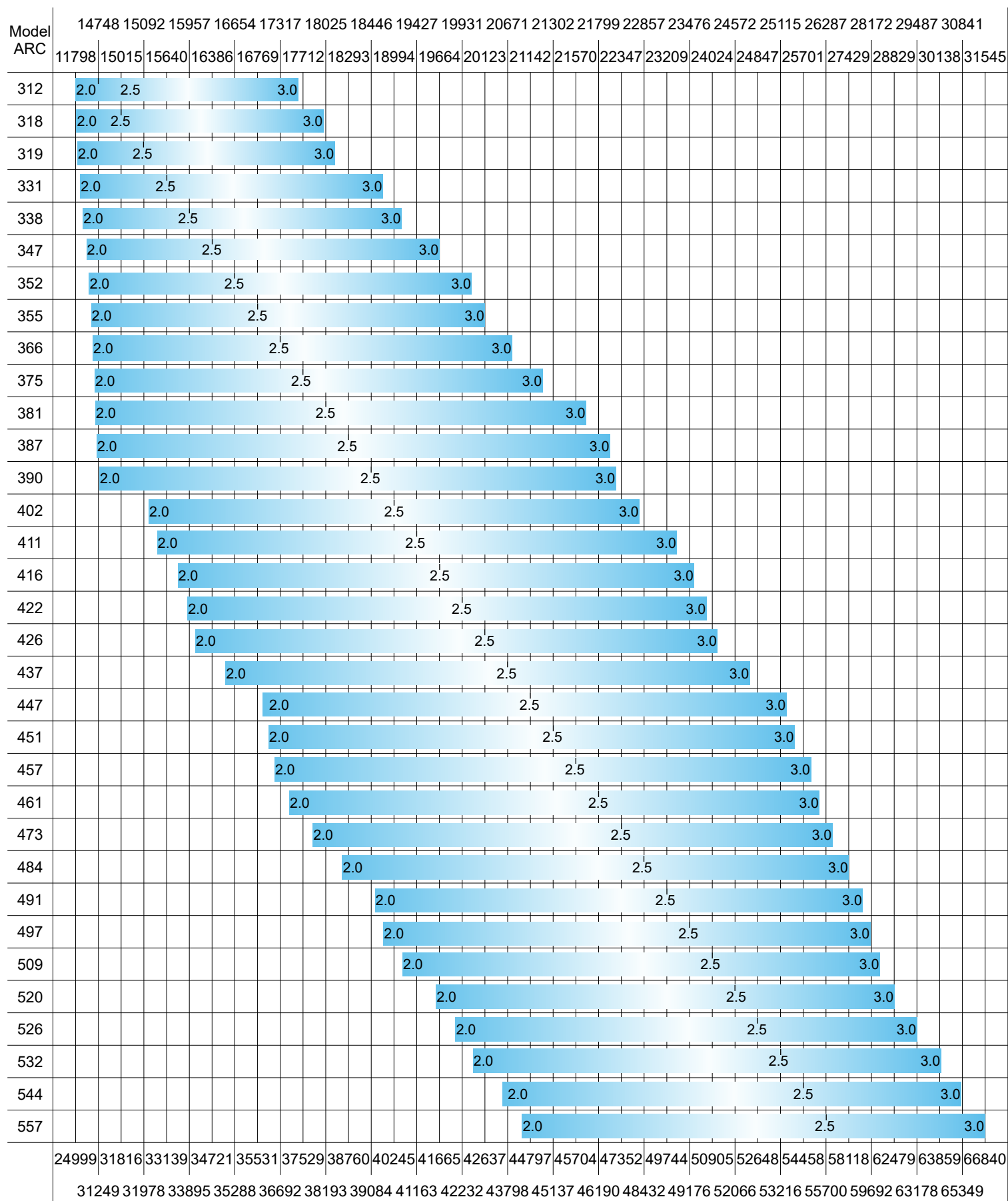
Air Flow Rate ( cfm )

Air Flow Rate ( L/s )



Air Flow Rate ( cfm )

Air Flow Rate ( L/s )



Air Flow Rate ( cfm )



GUIDE SPECIFICATIONS: KLIMARC® AIR HANDLING UNITS

| Specification Category     | Component           | Technical Specification                                                                                                                                             |
|----------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PART 1: GENERAL SCOPE      | Scope               | Supply, custom engineering, factory testing, and delivery of double-skin, modular Air Handling Units (AHU) and Fresh Air Handling Units (FAHU).                     |
|                            | Quality Assurance   | Local manufacturing adhering to ISO 9001, ISO 14001, and ISO 45001 certifications.                                                                                  |
|                            | Climatic Design     | Engineered specifically for high-ambient and high-humidity climates.                                                                                                |
| PART 2: CASING & STRUCTURE | Framework           | Rolled aluminum or steel profiles. Completely smooth interior surfaces to prevent contaminant buildup.                                                              |
|                            | Panels & Insulation | Heavy-duty, double-skin. Inner sheets: 0.8mm–2.0mm electrostatic painted galvanized steel. Insulation: 50mm or 75mm injected high-density rockwool or polyurethane. |
|                            | Airtightness        | Extruded rubber gaskets with internal air cushions at all framework/panel seams to eliminate thermal bridging.                                                      |

| <b>Specification Category</b>    | <b>Component</b>      | <b>Technical Specification</b>                                                                                                      |
|----------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>PART 3: FANS &amp; MOTORS</b> | Fan Assemblies        | Statically and dynamically balanced direct-driven AC/EC plug fans or radial fans. EC plug fans to feature backward-curved blades.   |
|                                  | Motors                | Premium IEC-standard, TEFC squirrel-cage (IE2/IE3). IP55 protection, F isolation class, vacuum-impregnated insulation.              |
|                                  | Vibration Isolation   | Motor and fan assemblies mounted on rubber or spring vibration absorbers.                                                           |
| <b>PART 4: COILS</b>             | Construction          | AHRI-certified, premium copper tubes with aluminum fins or stainless steel configurations.                                          |
|                                  | Condensate Management | Stainless steel (304-316) drain trays.                                                                                              |
| <b>PART 5: HEAT RECOVERY</b>     | Efficiency            | FAHU systems to recover up to 80% of thermal energy.                                                                                |
|                                  | Technology Types      | Eurovent-certified Rotary Thermal Wheels; Cross-flow/Counter-flow Plate Heat Exchangers; Passive phase-change Horseshoe Heat Pipes. |
| <b>PART 6: FILTRATION</b>        | Pre-Filtration        | ISO Coarse (G2,G3, G4) pre-filters in V-form. Optional sand-trap louvers for FAHUs.                                                 |

| <b>Specification Category</b>                   | <b>Component</b>  | <b>Technical Specification</b>                                                                                                                                          |
|-------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PART 6: FILTRATION</b>                       | Fine Filtration   | ISO ePM (F7-F9) synthetic bag filters in galvanized frames with tight rubber gaskets.                                                                                   |
| <b>PART 7: ECOLOGY UNITS</b>                    | Casing            | Smooth galvanized/stainless-steel, grease-tight, and pressure-washable.                                                                                                 |
|                                                 | Filtration Stages | ESP (up to 98% efficiency), bag filters, and Activated Carbon/KMnO <sub>4</sub> for odor neutralization, HEPA as an option. UL-listed ESP can be provided as an option. |
|                                                 | Exhaust Fans      | F400 fire-rated (withstands 400°C for two hours).                                                                                                                       |
| <b>PART 8: DAMPERS &amp; ATTENUATION</b>        | Dampers           | Volumetric air dampers with self-sealing aluminum flaps and hidden gears (0-100% adjustment).                                                                           |
|                                                 | Acoustics         | Galvanized framework, high-density glass wool baffles, specialized fabric cover.                                                                                        |
| <b>PART 9: FACTORY ACCEPTANCE &amp; TESTING</b> | Testing Protocol  | Whole unit performance and ratings tested in accordance to BS EN 13053.                                                                                                 |



| <b>Specification Category</b>                   | <b>Component</b>                    | <b>Technical Specification</b>                                                                              |
|-------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>PART 9: FACTORY ACCEPTANCE &amp; TESTING</b> | <b>Air Leakage &amp; Deflection</b> | Casing leakage and deflection tested in accordance to BS EN 1886.                                           |
|                                                 | <b>Filter Bypass Leakage</b>        | Filter bypass leakage tested in accordance to BS EN 1886.                                                   |
|                                                 | <b>Coil Integrity</b>               | Chilled water (CHW) coils pressure tested at 350 psi. DX coils pressure tested at 400–450 psi.              |
|                                                 | <b>Fan &amp; Motor Performance</b>  | Static and dynamic balancing. Running tests for rotation, vibration, motor currents, and power consumption. |

## KLIMARC® REFERENCES



**Papa John's, Dubai Investment Park**

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**Warehouse Showroom, Al Quoz**

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AIR CONDITIONING SOLUTIONS COMMERCIAL KITCHEN VENTILATION HOODS

## KLIMA AIR CONDITIONING MACHINES MANUFACTURING LLC

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