

APPLICATIONS



DESIGN

Applications

PREMI-AIRE air handling units have evolved and been developed for over 30 years becoming the benchmark for low temperature and process air conditioning applications. These applications include principally food and pharmaceutical industry projects, but also special test chambers for the petrochemical, automotive and agricultural industries. The Coolers & Condensers' PREMI-AIRE air handling unit is chosen above other manufacturers' equipment because of its proven ability to perform successfully against the most demanding air processing requirements.

PREMI-AIRE air handling units may be used for any application from simple ventilation through to the most complicated of systems, the design and specification always undertaken to meet the customer's optimum requirements.

Design/Support Technical Services

With well over forty years experience in the refrigeration and process air conditioning industries and a further 30 years experience in manufacturing the PREMI-AIRE air handling unit, Coolers & Condensers are able to offer on site support at every level, from initial plant/system design through to installation and commissioning.

TECHNICAL SPECIFICATION

Coolers & Condensers', PREMI-AIRE Air-Handling Units – The BENCHMARK for air handling in the Food, Pharmaceutical and Process Industries.

- Modular design for maximum flexibility
- Fully welded, stainless steel (304 or 316 grade) pentapost frame – robust and corrosion resistant
- Real cold-bridge free construction for safe low temperature operation.
- Bonded laminated Styrofoam panels – structurally strong and rigid with excellent insulation properties
- Clean internal lines designed for easy hygienic cleaning
- Maximum access for cleaning and maintenance
- Air volumes available from 0.5 m³/s up to 40+ m³/s
- Alternative finishes available – Food safe white stelvatite inner and outer finished panels as standard with other options possible
- Ultra low temperature applications – units available down to -50°C and below
- Sizes adjusted to suit the available space (knockdown-site build service available)
- Special applications – call the office
- Over 30 years experience manufacturing air-handling units for food, pharmaceutical and process industries.

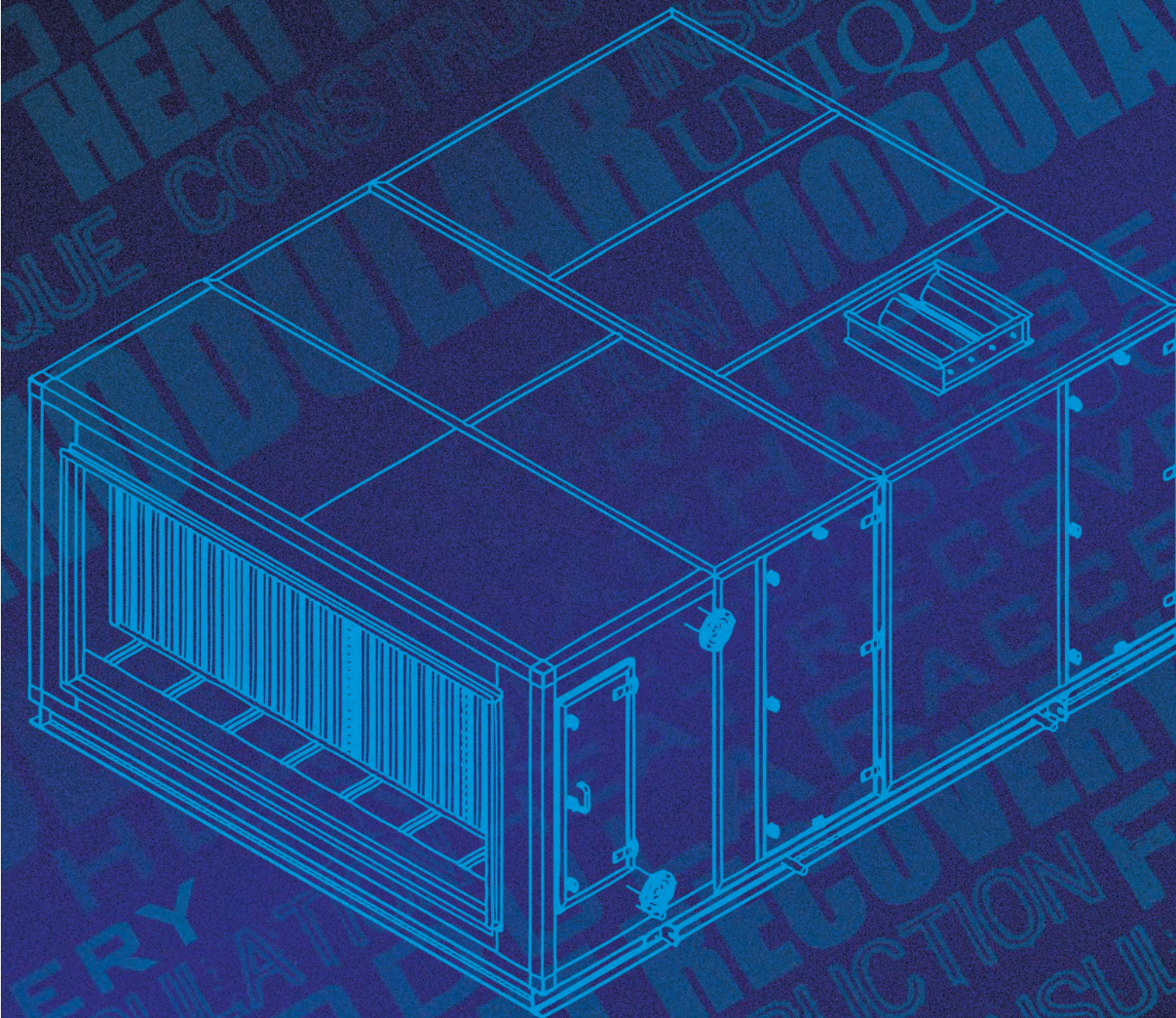
Coolers and Condensers Ltd

PREMI-AIRE



PREMI-AIRE

air-handling units



Coolers and Condensers Ltd

PREMI-AIRE



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UNIQUE



CONSTRUCTION

The PREMI-AIRE air handling unit has unique and total cold-bridge free construction, incorporating, on medium to low temperature applications a specially insulated, capped and sealed stainless steel pentapost frame. On very low temperature applications (down to and below -50.0°C) the units incorporate an internal frame. Great care is taken to ensure and maintain cold-bridge free integrity according to the specific application.

Modular

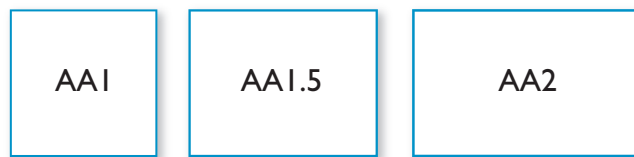
The PREMI-AIRE air handling unit is modular in concept. Each section can stand alone or be coupled to adjoining sections in a variety of different ways thus providing the most effective and flexible installation features possible. Composite construction is an alternative cost effective option on smaller models.

Accessibility & Hygiene

All sections provide maximum access for general and major maintenance. Each section can also (as standard) be provided with base drainage to facilitate total cleaning and customer hygiene regimes.

Range

The PREMI-AIRE 'AA' series of air-handling units provides maximum flexibility of selection within the standard* model range. The reference suffix ...AA1, or AA1.5 and AA2 relate to the unit overall cross-section aspect ratio. For example ...AA1 is as wide as high and ...AA1.5 is one and a half times wide as high etc. The prefix numbers broadly relate to the unit nominal air volume (dependant upon coil velocity). Therefore with the exception of the beginning and end of the model range it should be possible to select at least two, if not three alternative aspect ratios from the standard series*, allowing the best option to be selected for the application and location. The standard* range covers air volumes from 0.5 m³/s through to 25.0 m³/s. However, very much larger and to a limited extent smaller air volumes can be accommodated.



*Standard models may be modified to suit space limitations etc., without the penalty of 'special unit' costing. Despite there being a standard range all PREMI-AIRE air-handling units are bespoke, designed and built to the customer's specific requirement.

Units may be manufactured for external location, provided in a fully weatherproof format including a separate, naturally ventilated roof designed to reduce solar gain impact.

Insulation

The standard panel and framework core insulation is Styrofoam, expanded polystyrene, which is light, yet rigid and structurally strong. It has been safely used within the building industry for over 40 years. The air-handling unit panels are laminated on inner and outer faces with food safe Stelvatite, but other facing materials may be substituted. Styrofoam has excellent thermal performance, being far superior to mineral wool or fibreglass alternatives.

Alternative insulation materials are available to suit the application. The most common for lower or higher temperature projects is PIR, a rigid foam insulation based upon phenolic resin.

Core insulation	Styrofoam	PIR
Density	30 kg/m ³	35 kg/m ³
Thermal Conductivity	0.027 W/mK	0.021 W/mK
Operating Temperature Range	-50°C > +75°C	-200°C > +120°C
Fire Properties	BS3837: Pt2: 1990	BS476 part 6 Class 'O' BS476 part 7 Class I

Filtration

Any form of filtration can be incorporated from the basic G4 disposable panel filter through to the highest efficiency HEPA. Stainless steel washable mesh filters are also available to collect grease or to provide foundation filtration in dusty/dirty conditions where disposable filters would be changed too frequently. Odour control may be achieved using activated carbon filters and air sanitization by a suitable UV system.

Heat Exchangers

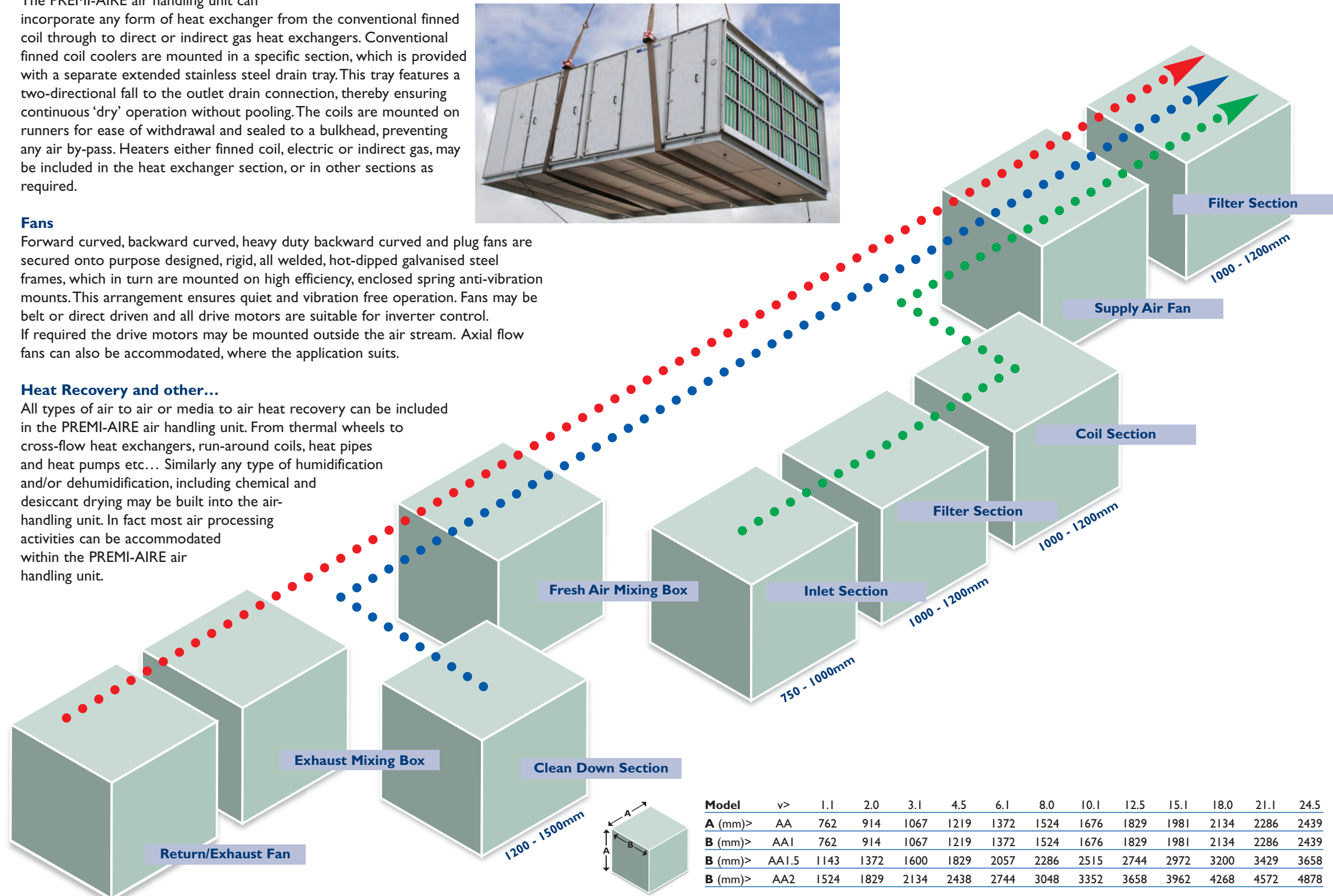
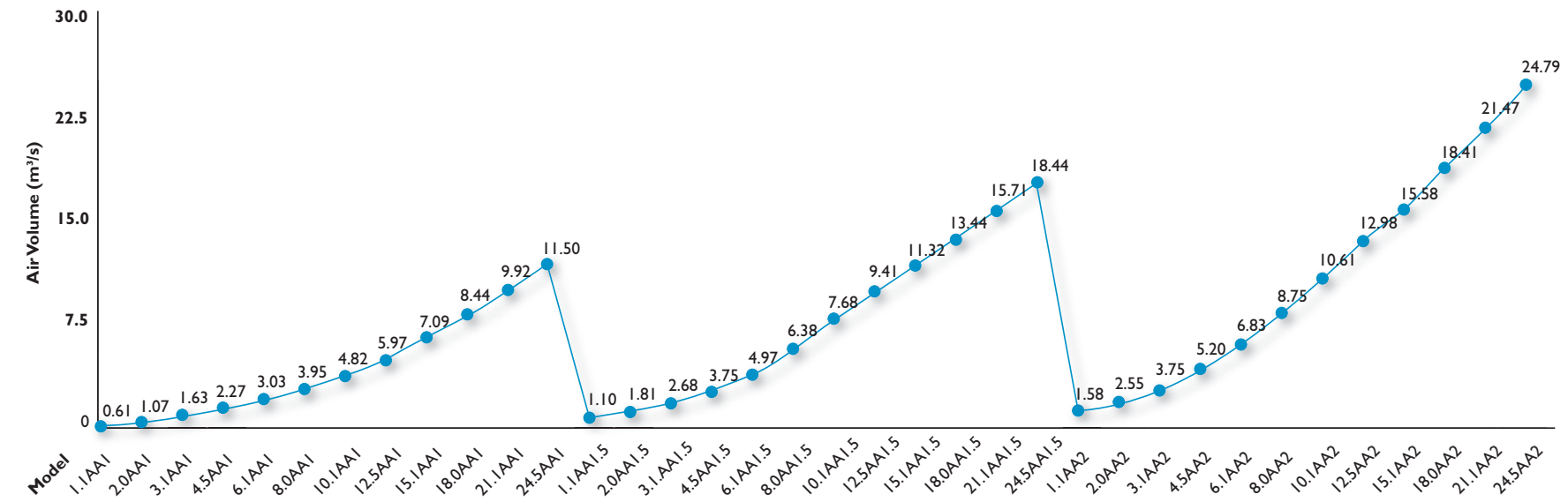
The PREMI-AIRE air handling unit can incorporate any form of heat exchanger from the conventional finned coil through to direct or indirect gas heat exchangers. Conventional finned coil coolers are mounted in a specific section, which is provided with a separate extended stainless steel drain tray. This tray features a two-directional fall to the outlet drain connection, thereby ensuring continuous 'dry' operation without pooling. The coils are mounted on runners for ease of withdrawal and sealed to a bulkhead, preventing any air by-pass. Heaters either finned coil, electric or indirect gas, may be included in the heat exchanger section, or in other sections as required.

Fans

Forward curved, backward curved, heavy duty backward curved and plug fans are secured onto purpose designed, rigid, all welded, hot-dipped galvanised steel frames, which in turn are mounted on high efficiency, enclosed spring anti-vibration mounts. This arrangement ensures quiet and vibration free operation. Fans may be belt or direct driven and all drive motors are suitable for inverter control. If required the drive motors may be mounted outside the air stream. Axial flow fans can also be accommodated, where the application suits.

Heat Recovery and other...

All types of air to air or media to air heat recovery can be included in the PREMI-AIRE air handling unit. From thermal wheels to cross-flow heat exchangers, run-around coils, heat pipes and heat pumps etc... Similarly any type of humidification and/or dehumidification, including chemical and desiccant drying may be built into the air-handling unit. In fact most air processing activities can be accommodated within the PREMI-AIRE air handling unit.



Model	v>	1.1	2.0	3.1	4.5	6.1	8.0	10.1	12.5	15.1	18.0	21.1	24.5
A (mm)>	AA	762	914	1067	1219	1372	1524	1676	1829	1981	2134	2286	2439
B (mm)>	AA1	762	914	1067	1219	1372	1524	1676	1829	1981	2134	2286	2439
B (mm)>	AA1.5	1143	1372	1600	1829	2057	2286	2515	2744	2972	3200	3429	3658
B (mm)>	AA2	1524	1829	2134	2438	2744	3048	3352	3658	3962	4268	4572	4878