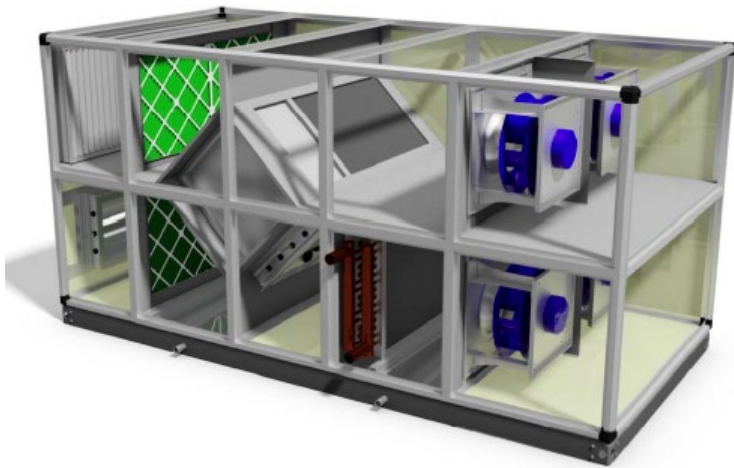


# Clever AHU's



Fully Customized NZ Made Air Handling Unit

clever  
AIR HANDLING

aquatherm

## HISTORY / SALES

Originated from “Clever srl”, an AHU manufacturer from Milan, Italy.

RCR Energy Products commenced building “Aquatherm Clever AHU’s” in April 1996

7,000 AHU’s sold to date

Value to date excess of \$70 million dollars

Production capable of 30 – 50 AHU’s per month

## MARKETS

Hospitals & Health Care

Universities & Schools

Recreation Facilities, Swimming Pools

Data Centers

Commercial Offices

Process & Food Industry

Agriculture

## STANDARD RANGE

### Series SB “Large Fan Coil Unit”

Panel filter, Water Coils [3 row / 1 row], Electric Heating Elements, EC Fans...

Quick Delivery

Economical

Specialised



### Series MC “Standard Range”

Typically Inlet Plenum, Filters, Water & DX Coils, Heat Recovery, Plenum Fans EC & AC Motors...

High Quality

4 – 6 Week Delivery

Full range completely customised

Air Volume < 25,000 l/s

Pressure < 2000 Pa



# PROFILES

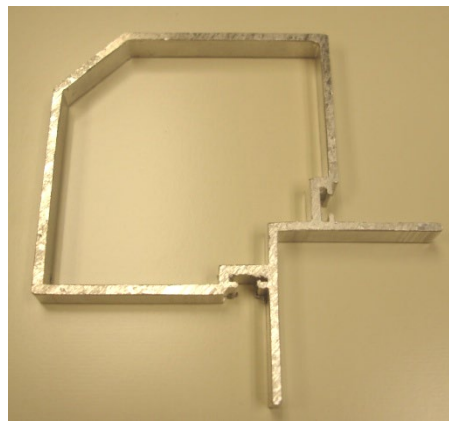
## 40X23

Small Aluminum Profile  
 < 9000 l/s MC300  
 40 mm Profile  
 23 mm Panels  
 Nylon Corner Node  
 Mech. Fixed Door Rubber



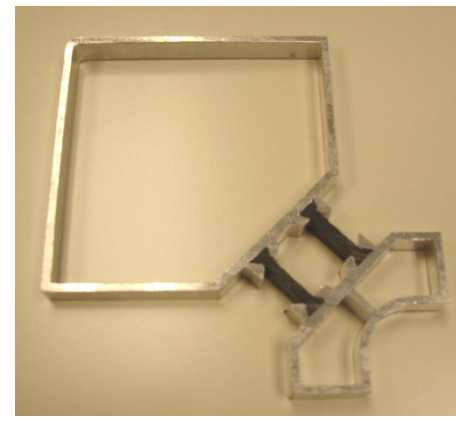
## 60X43

Large Aluminium Profile  
 > 9000 l/s MC360  
 60 mm Profile  
 43 mm Panels  
 Nylon Corner Node  
 Mech. Fixed Door Rubber



## 60X45 Tropical

Thermal Break Profile  
 All Range  
 60 mm Profile  
 45 mm Panels  
 Nylon Corner Node  
 Foam Gasket Door Rubber



## BASE CHANNEL

100 mm

Anodized Aluminum  
100 x 36 mm Channel

Aluminum Corner Nodes  
Painted



140 mm

Anodized Aluminum  
140 x 37 mm Channel



Assembly &  
Transport Brackets



# PANELS

## Panel Types

### Standard

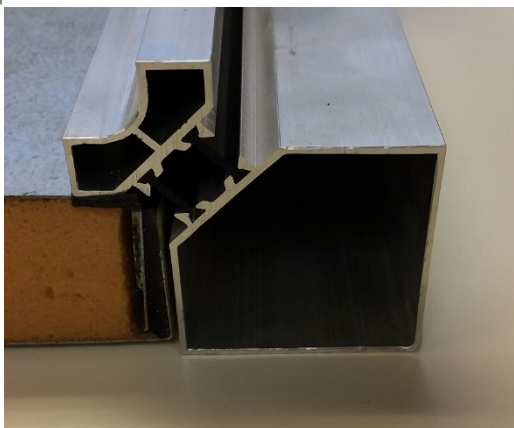
Double Skin Sandwich Hot Pressed Panels

23mm “U” Value 0.75 W/m<sup>2</sup>K

43mm “U” Value 0.43 W/m<sup>2</sup>K

### Tropical

Thermal Break Panel with Insulated Spacer



## Outer & Inner Linings

### Standard

Marine Grade Aluminium Powder Coated “Titania”  
0.9 & 1.2 mm

### Options

“Colorsteel” Powder Coated “Titania”

Galvanised Mild Steel

Stainless Steel

Wet Painted Finish [Any colour]

Powder Coated [M/G Alum or G.M.S.]

Epoxy Coated [Pools, High Corrosion]

Perforated Acoustic Lining [M/G Alum or G.M.S.]

## Insulation

Rigid Polyurethane Foam Insulation

Density - 40 kg/m<sup>3</sup>. Conductivity - 0.02 W/m<sup>2</sup>°C



## PLENUM FANS – AC Motors

### Ziehl-Abegg Type ER

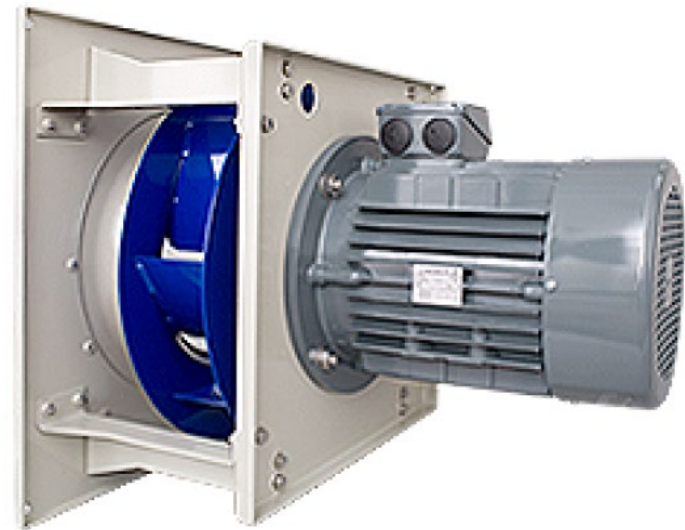
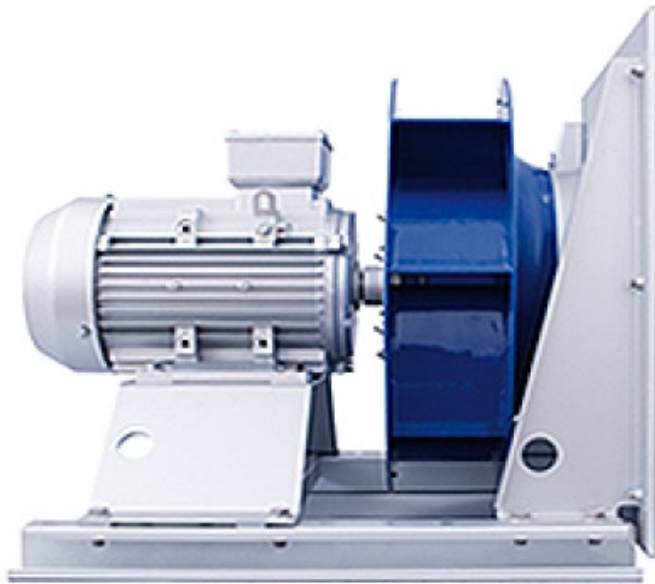
Backward Curve Centrifugal

0.55 to 55 kW AC Motor

[2, 4, 6 & 8 pole]

220 ø to 1100ø Steel & Composite Impellor

Must be Operated via VSD



## PLENUM FANS – EC Motors

### Ziehl-Abegg Type GR, RH

Backward Curve Centrifugal

Operated via 0-10 VDC Signal

0-10 Ohm Potentiometer

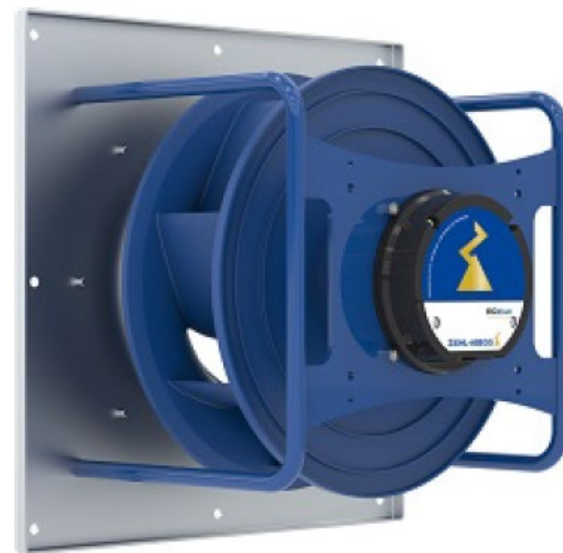
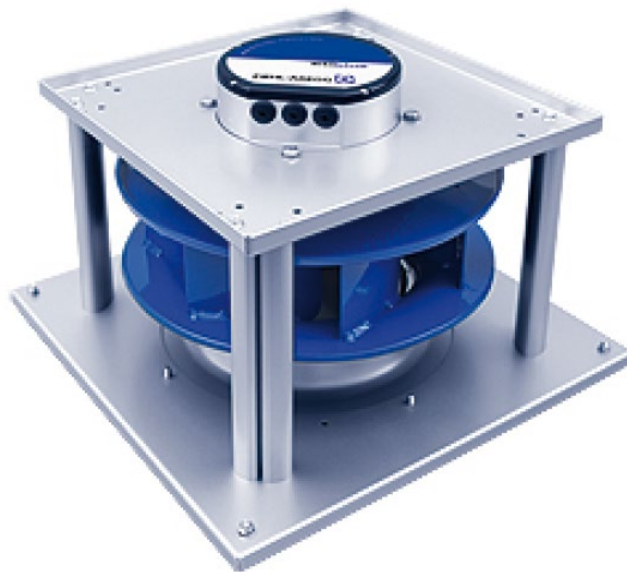
On / Off Relay Facility

220 ø to 630ø Aluminium & Composite Impellor

0.49 kW 1 Phase to 5.6 kW 3 Phase

All Fans Wired to External Terminal Block

Alarm Fault Relay



## DIDW CENTRIFUGAL FAN

Nicotra / Gebhardt

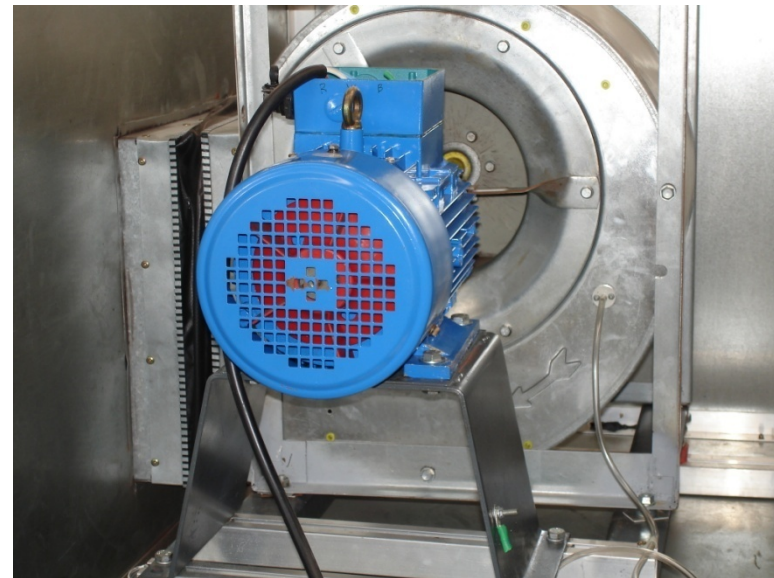
Type AT ADH, RDH, RZR & DD/FD2

Forward Curve Centrifugal

Drive Belt Transmission

Backward Curve [Laminar & 3D impellor]

Direct Coupled



# COILS

## Coil Types

Chilled water, LTHW, Glycol Solution Mixture  
DX Refrigerant, R410A, Evaporator & Condenser  
Steam [M&I Certified]

## Standard

3/8" & 5/8" Copper Tube & Headers  
BSP Nipples  
Pre-coated Aluminium Fins  
Aluminium Framework

## Options

Stainless Steel Tube & Framework  
Blygold / Heresite Spray & Dip Coated Coils  
NZ / Overseas Coil Suppliers  
Easi-flo Solder for H2S Environments





## FILTERS

### Depth

22, 44, 96 mm Panels

96 & 292 mm Rigid Cartridges

380 & 600 mm Bag Filters

### Media

Insect Screens

G2, G3, G4 Course Filters

M5 & M6 Medium Filters

F7, F8 & F9 Final Filters

H10 - H14 Hepa Filters

### Frames

Stainless Steel Holding Frame W97

M8 Retaining Bolts / Clips

Factory Poured Seal



# FILTERS

## Carbon Filters

Purafil

Camcarb

## Sizes

PK-18 = 144 x 440 x 599 mm

PK-12 = 298 x 298 x 599 mm

## Media

Range of PURAFIL Media to suit  
Airports, Museums, Art Galleries,  
Archival Storage, Commercial  
Building, etc.

Proven experience with Hydrogen  
Sulphide locations, i.e. Rotorua



## WEATHER LOUVERS

### TWS Triple Weather Stop

Energy Products Won Design

45 mm Blade Spacing x 100 mm Deep

Flange Frame

Drainable

Anodised Aluminium

Independently Tested to AMC500



### Large Low Pressure Louver



## DAMPERS

### EL100 Opposed Blade Dampers

Manual Quadrant

Motorized with Shaft for Actuator

Standard Sizes 124, 226, 328, 430 . . . .

Rubber Blade Seals

Heat Exchanger Face & By-pass Dampers





## HEAT RECOVERY

PLATE HEAT EXCHANGERS

HYGROSCOPIC HEAT WHEELS

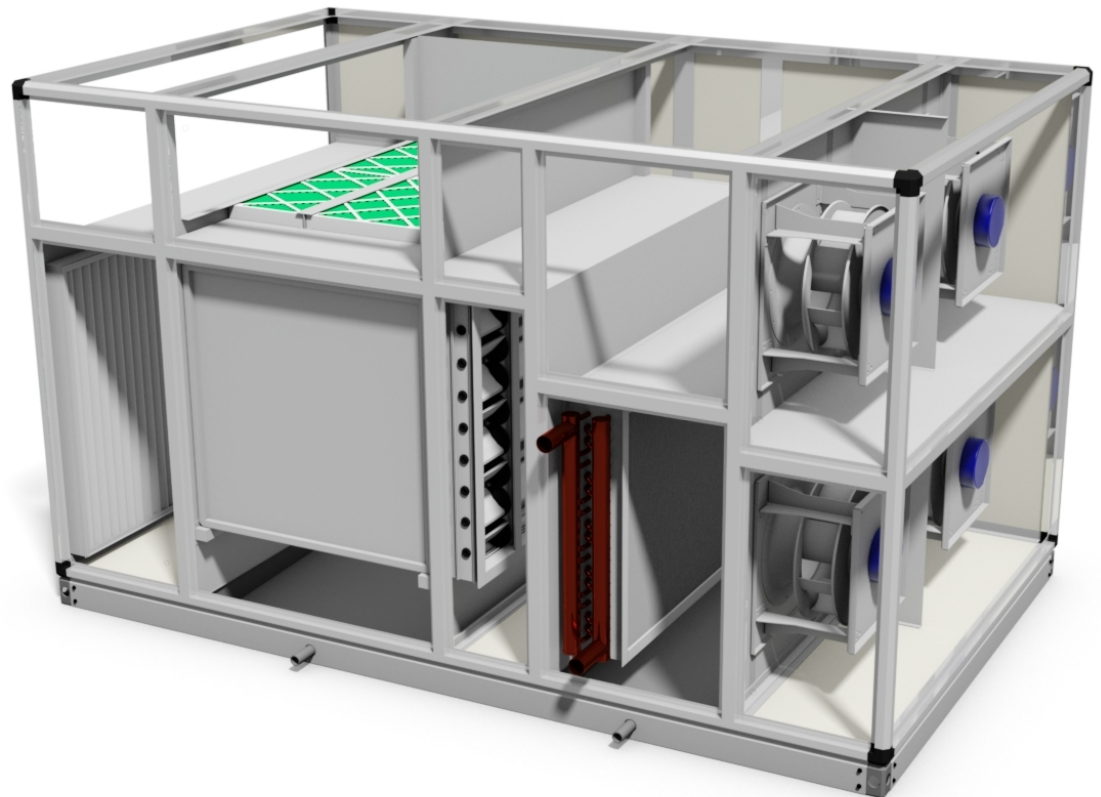
Recuperator - Italy

Eurovent Certified

Importing HXR's since 2003

Face & By-pass Damper

MXR European style AHU's



# HARDWARE

## Clever AHU Door Handles & Hinges

Arosio Lever



Clever "D" Nylon  
[Screw Tighten]



Aluminium Hinge



# HARDWARE

## Clever AHU Accessories

External Switches



LED Bulkhead lights



Filter Gauges



Windows



## HARDWARE

### Ziehl-Abegg Fan Controllers

#### Potentiometer

EC Fan Motor Manual Speed Setting  
0-10 Ohm



#### CPG-AV Controller - Pressure & Volume

#### CTG-AV Controller - Temperature

10-24V DC Powered from EC Fan Motor



## ADDITIONAL FEATURES

**Sloping Roofs** – Centrally Pitched for Water Run Off



**Sloping Drain Trays** – Zero Water Collection



## ADDITIONAL FEATURES

Door Guard – Mechanically Fixed  
Aluminum Mesh Door Guard

? – ?





## ADDITIONAL FEATURES

**Internal Doors** - Inwards Opening  
Door against Fan Pressure



**Internal Cabinets** - Internal cabinet for  
V.S.D's, Digital controllers, etc.  
Weather Proof



## OPTIONS

Variable Speed Drive [VSD]

Electric Heating Elements

Acoustic Silencers

Indirect Gas heating  
[N/G only]

Full Plug-N-Play controls and  
wiring

Partial or complete KITSET for Site  
Assembly





# LITERATURE

## Installation, Operation & Maintenance Manual

Important Note [Page 7]

### PANEL CLEAR PROTECTIVE FILM

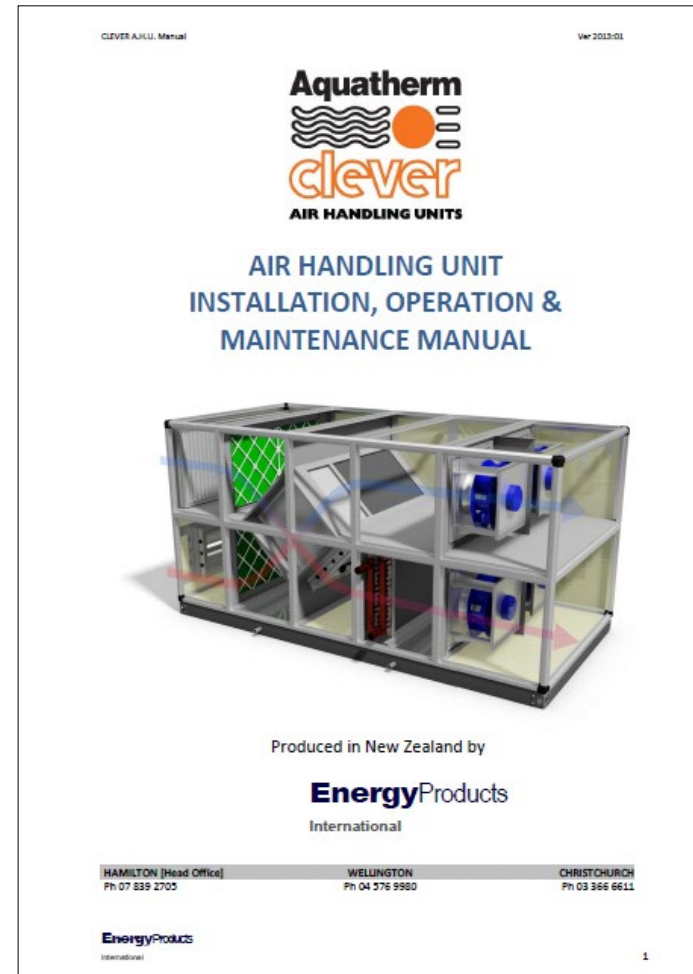
The external clear protection film on the external panels **MUST BE REMOVED WITHIN 30 DAYS OF DELIVERY**

### EC Plenum Fan Wiring Diagram

Wiring Diagram and Terminal Block Numbers

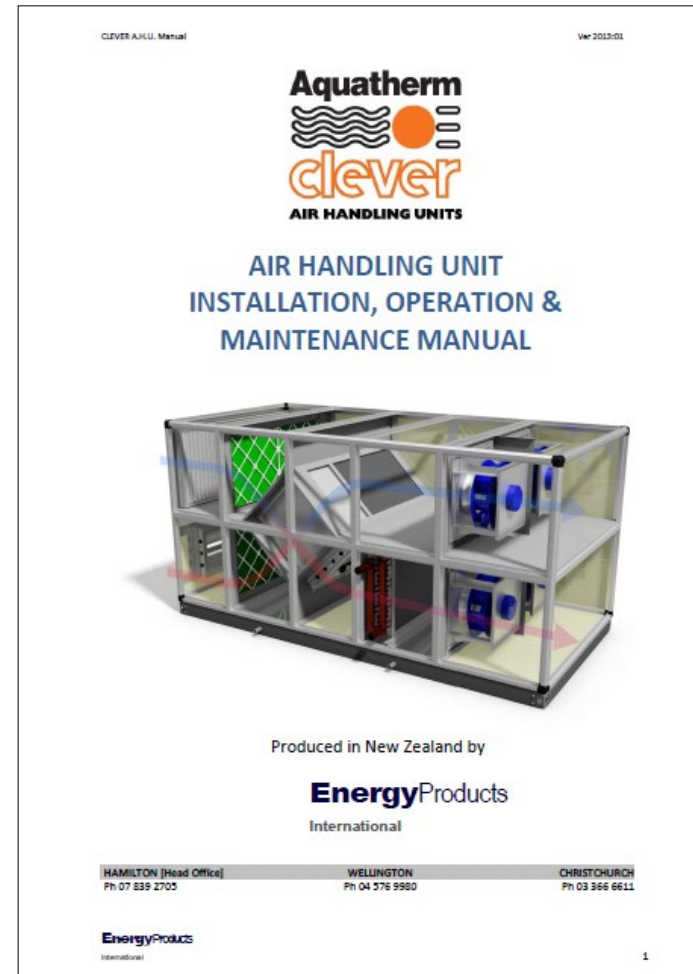
### Factory Pre-Dispatch Inspection & Quality Check

Commissioning Check Sheets



# CONSULTANT DESIGN

Clever Tick Selection Sheet



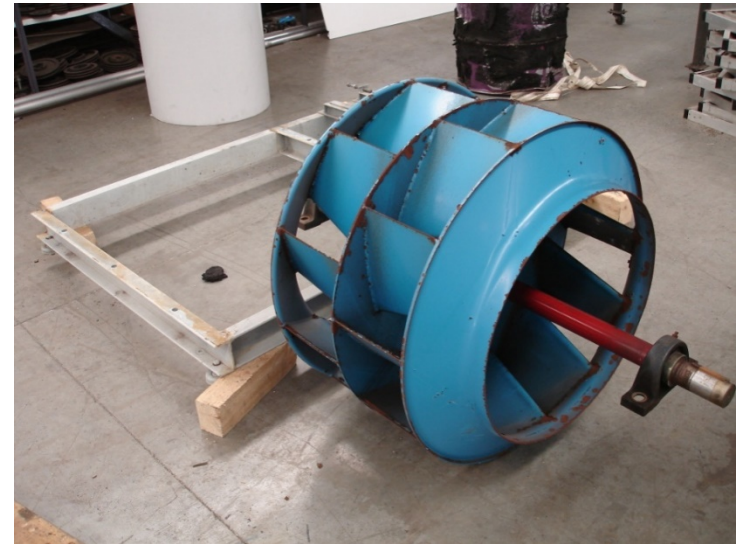


# REFURBISHMENT

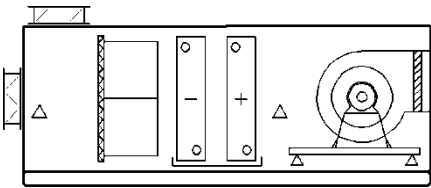
## Refurbishment of Old AHU's, Fans

Un-assemble, Clean, Repaint, Replace Parts, etc.

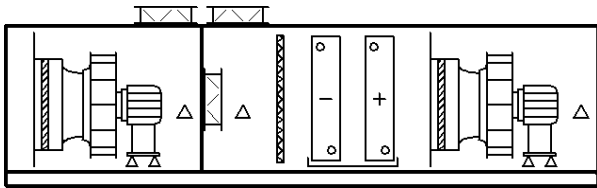
New Panels, Upgrade Fans DIDW to EC Plenum



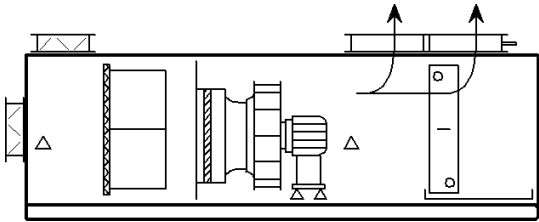
# AHU CONFIGURATIONS - Examples



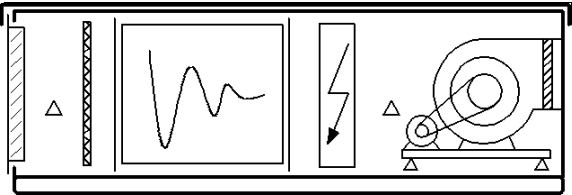
Standard DIDW



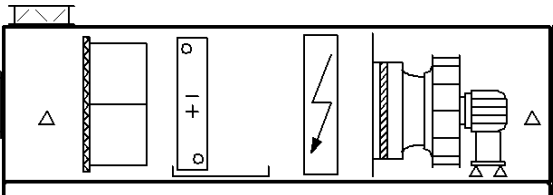
RAF & SAF PLENUM



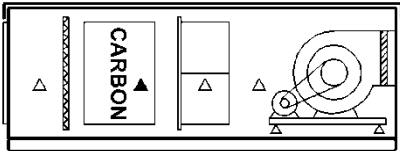
Multi-Zone



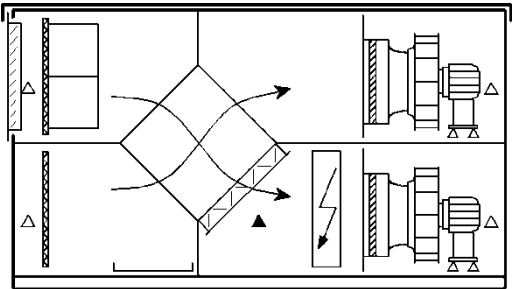
TWS Louvre & Roof



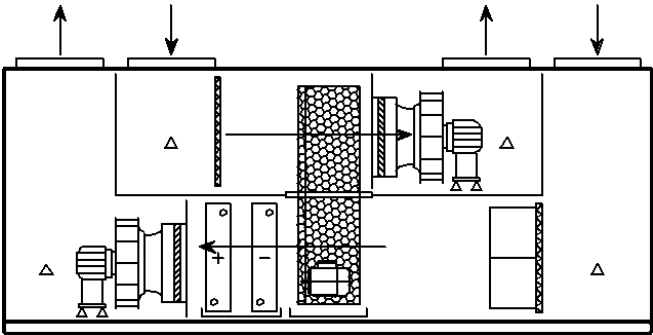
DX cooling / Heating



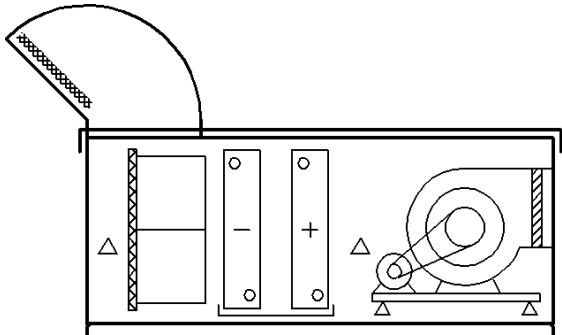
Carbon Filters



Heat Recovery



Heat Recovery



External C/ Cowl

## CLEVER AHU - Examples

Sky City Casino & Hotel - Anodised aluminium profile & panels





## CLEVER AHU - Examples

Wellington Hospital - Large Plenum Fans



## CLEVER AHU - Examples

Whakatane Hospital –  
Project Waka Multi-zone AHU's



Waikato Hospital – Bone Marrow  
AHU with Controls & Piping





## CLEVER AHU - Examples

Kapua Data Centre - Hamilton



Albany Pool, North Harbour –  
Swimming Pool Complex



## CLEVER AHU's – Proudly NZ Made & NZ Sourced

