

Swimming pool *Ventilation*

- f Design assistance for new installations
- f High efficiency custom designed air handling system for energy savings through reduced heating demand
- f Intelligent controls for maximum flexibility and performance
- f Energy saving evaluations and problem solving for existing installations
- f Refurbish and upgrade existing equipment in-situ
- f Comprehensive installation assistance package



**DUTIES UP TO
32 m³/s**



Swimming pool ventilation

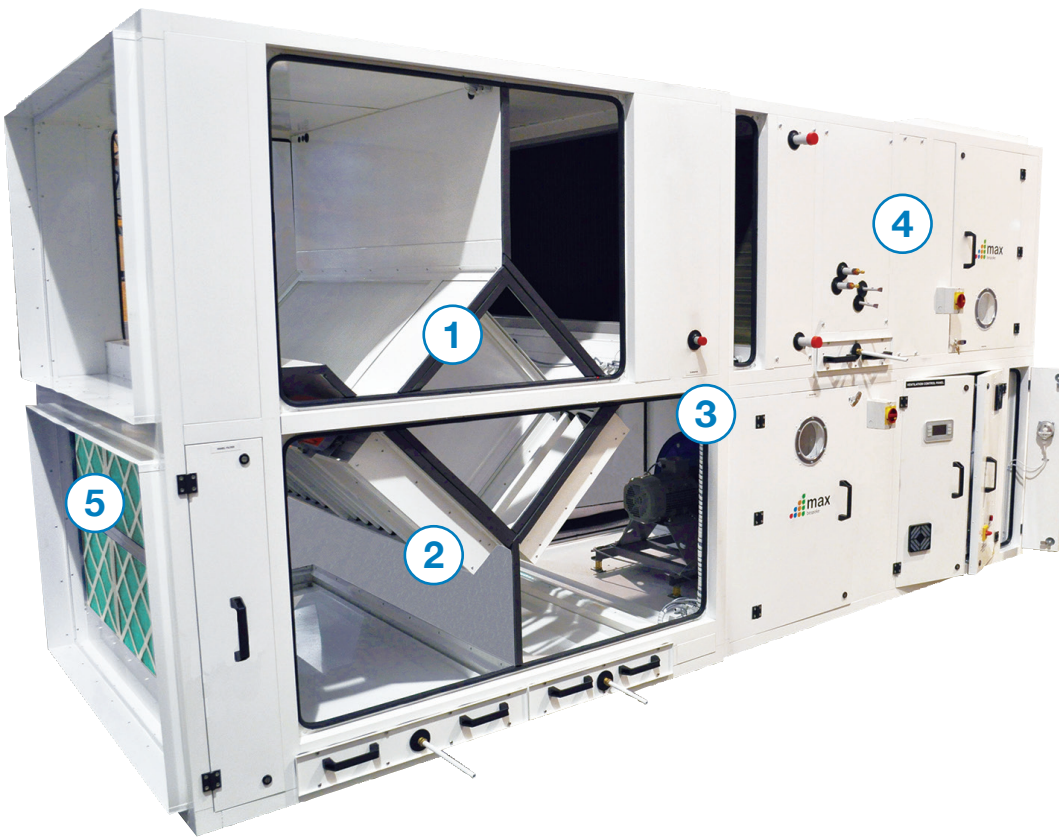
Solving swimming pool ventilation issues and providing energy saving solutions

Swimming pool ventilation

Swimming pool air handling units

A high efficiency air handling unit lies at the heart of every VES pool ventilation system. The VES range is designed specifically to meet the unique demands of a swimming pool environment.

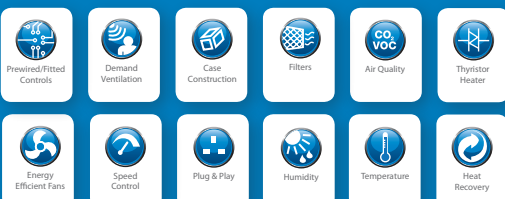
Designed and manufactured in the UK, VES AHUs conform to the latest manufacturing standards including L2 building regulations and are tested in accordance with BS EN ISO 5801:2017 for air side performance and DIN 45635-38 for acoustic performance. What's more, the high efficiency VES pool AHU is designed to reduce heating demand, minimising the need for supplementary heating.



Swimming pool Air handling units Features and benefits

Key components

Key components of the air handling unit have been carefully selected and come with the following features as stand



Energy Saving

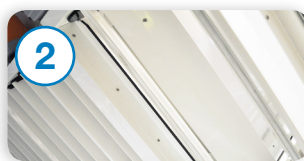
Intelligent controls enhance performance whilst saving energy and money.

Premium efficiency, low energy swimming pool solutions



Heat recovery

- ▶ Plate heat exchanger is generously sized to achieve a minimum efficiency of 70%
- ▶ Plate heat exchanger heat recovery section with integrated air mixing facility to optimise energy savings
- ▶ Virgin plastic or anodised matrix resistant to the aggressive chlorinated air
- ▶ Fully integrated mixing section with by-pass
- ▶ Powder coated drain trays



Face and by-pass dampers

- ▶ The plate heat exchanger section incorporates four independently controlled face and by-pass dampers to facilitate accurate temperature and humidity control
- ▶ Powder coated damper blade
- ▶ Polyurethane intermeshing gears
- ▶ IP66 damper actuators



High performance fans

- ▶ Direct driven centrifugal plug fans
- ▶ Fan speed automatically regulates in accordance with humidity and temperature demand
- ▶ Polycarbonate resin or epoxy powder coated steel impellers
- ▶ Epoxy powder coated frame
- ▶ Speed controlled by a frequency inverter
- ▶ Pressure differential switch
- ▶ Spring anti-vibration mounts



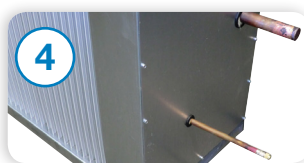
Construction

- ▶ 50 mm insulated double skinned panels for improved thermal and acoustic performance
- ▶ Compressible synthetic rubber door seals to eliminate panel air leakage
- ▶ Wax treated moisture resistant frame
- ▶ Fitted eliminators to prevent moisture carry over into air stream
- ▶ Glands fitted to cable entry and exit points to prevent moisture ingress



Filtration

- ▶ Filters are fitted to both supply and extract sections of the AHU
- ▶ 100mm deep ARP rigid pleat panel
- ▶ Wax treated moisture resistant frame
- ▶ Grade M6 as standard



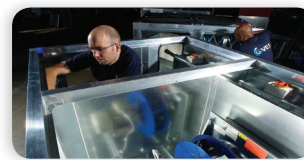
Heating coil

- ▶ Heating provided by an LPHW coil
- ▶ Copper tube with poly coated fins
- ▶ Epoxy powder coated steel casework
- ▶ Matched three port control valve and actuator



Panels

- ▶ Fixed and access panels are constructed from high grade galvanised sheet steel
- ▶ Epoxy powder coated paint finish to RAL 7004
- ▶ High density mineral wool infill for greater thermal performance



Options

- ▶ Built in or duct mounted attenuators
- ▶ DX or chilled water cooling
- ▶ Choice of colour
- ▶ Weatherproofed pitched roof on external models

BlueSense energy saving package



Swimming pool unit with integral controls



EC fan with full control



Sensor options



The sign of energy saving products, services and expertise

Swimming pool ventilation

design.. create.. leisure environments

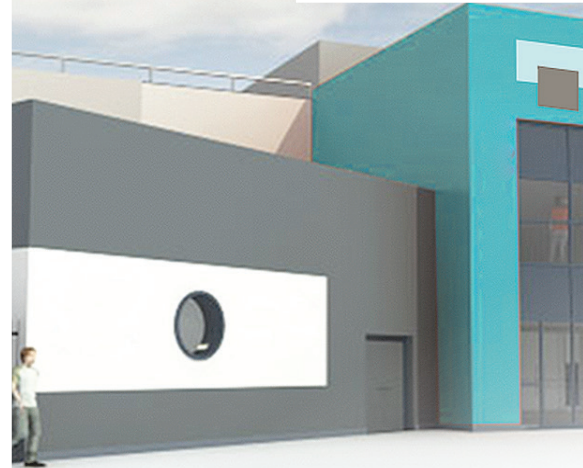
Leisure centres

Swimming pool environment

Correct swimming pool ventilation is one of the most critical elements in the successful and economic running of a leisure centre. Poorly designed systems will cost operators thousands of pounds unnecessarily. VES can assist designers to prevent this with new installations or offer solutions to existing installations, substantially reducing running costs and energy consumption.

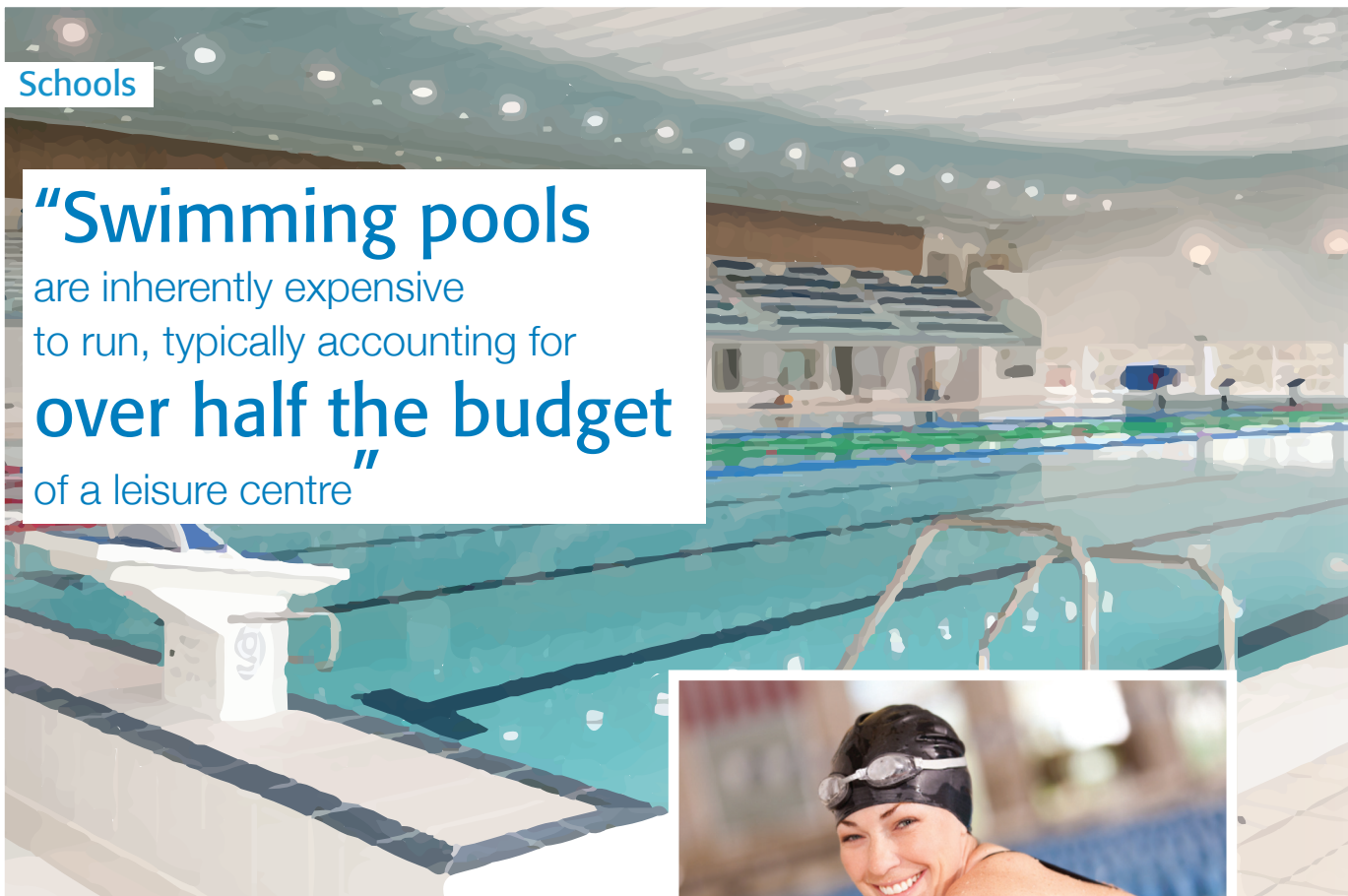
Water evaporation from a pool is inevitable and can cause poor air quality and building damage if it isn't properly managed. Relative humidity needs to be controlled to create the right conditions for both users and operators of a pool.

VES will investigate and then tailor a package that gives the best conditions and the most economic budget requirements.



Schools

"Swimming pools
are inherently expensive
to run, typically accounting for
over half the budget
of a leisure centre"



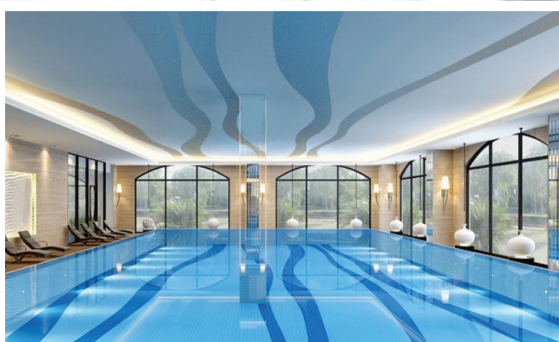


Ventilation process

To maintain optimum, comfortable conditions, a swimming pool requires a ventilation process that can control temperature and humidity.

To maximise energy savings, VES pool air handling units use a heat recovery plate heat exchanger and integrated mixing selection to recovery up to 85% of energy that would otherwise be lost.

VES swimming pool packages are ideal for leisure centres, schools and other commercial establishments. Our portfolio of projects is extensive - see the case studies on the inside back cover. **More can be found at ves.co.uk.**



Swimming pool ventilation

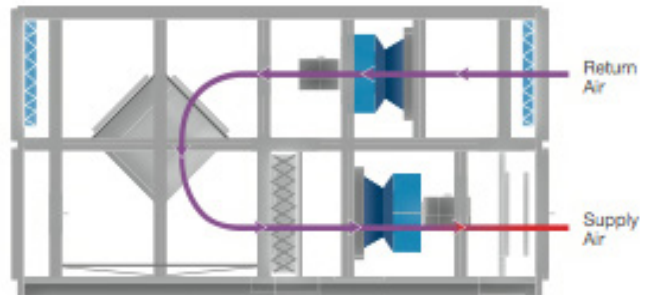
Modes of operation

All modes are automatic with no input required from the end user. Sensors constantly monitor humidity and temperature, sending signals to the control system to adjust internal dampers and fan speed to meet the individual demands of the pool.

Each mode is seamless and configured to maintain optimum conditions quietly and efficiently.

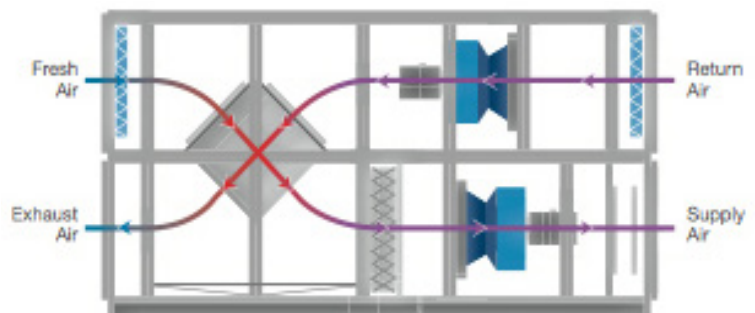
Recirculation mode

When the pool is not in use, typically night time, fans automatically adjust to a lower speed and the AHU adopts full recirculation mode with a normal amount of fresh air input to maintain conditions.



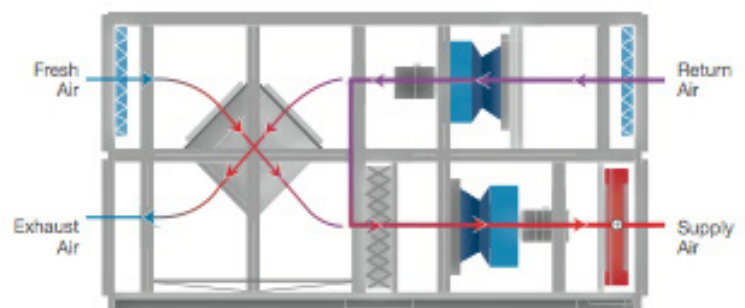
Full fresh air mode

Higher bather numbers during the summer months naturally increases humidity. Dampers on the face of the plate heat exchanger close while by-pass dampers open to adopt a full fresh air mode.



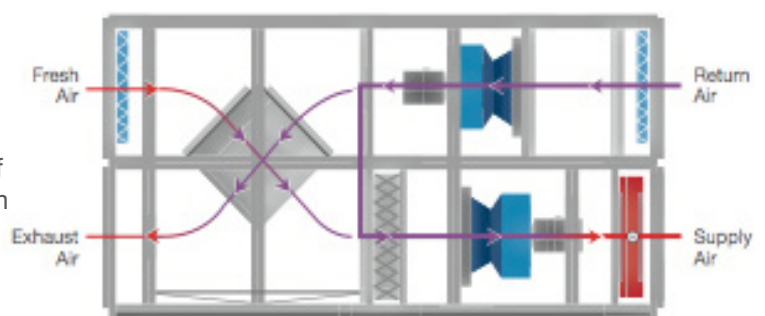
Winter mode

A smaller proportion of fresh air passes through the heat exchanger and mixes with a higher proportion of recirculated air from the pool. This is heated by LPHW heating coil when additional demand for heating is required.



Normal mode

Heat is recovered from the pool by passing air over the plate heat exchanger. This heat is transferred to incoming fresh air. A proportion of air is recirculated back into the supply air stream to prevent unnecessary evaporated from the pool.



The VES pools package for new equipment

We are experienced designers of pool hall systems and have developed a design programme to maximise energy savings which shows payback times that are **often less than 18 months**.

New build or an existing pool hall?

For new build projects we can provide full design assistance including unit selection, ductwork layout and air distribution.

On existing systems, pool hall units present an entirely different set of challenges:

- ▶ The pool will already be operational and disruption or any shutdown periods need to be kept to an absolute minimum.
- ▶ Our experience shows that AHUs are normally located within tight plantrooms that include boilers, water treatment and other associated plant leaving little room for any air-handling works, be that replacement or refurbishment.



The example picture here shows a very restricted plantroom at the famous Hurlingham Club where we carried out extensive works on the swimming pool plant.

To help overcome all these issues we can offer the VES pools package

This includes the following works and services to help ensure a smooth and trouble free project is delivered.

- ▶ We will work with the project team to produce a programme of works that will ensure down time and disruption are kept to an absolute minimum. We may be able to keep the pool open with the use of temporary ventilation or working out of hours, **meaning no loss of revenue**
- ▶ We will undertake full on-site technical measurements and then design a unit that perfectly fits the available space, taking full responsibility for correct fit and handings
- ▶ Rip-out the old unit
- ▶ New site flatpack or sectional installation
- ▶ Commissioning of the unit and controls once installed

All this adds up to a successful, trouble free installation.

Swimming pool ventilation

Or refurbish your existing AHU for a cost effective solution

VES pioneered and is the market leader in on-site refurbishment of existing air-handling equipment regardless of make or model.



Unit condition before



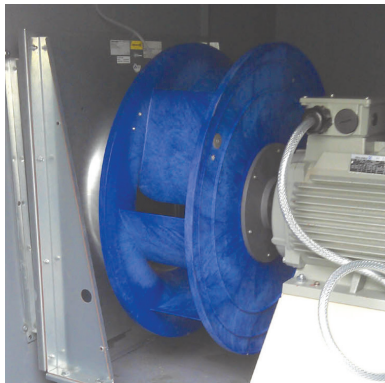
Before - inefficient belt driven fans



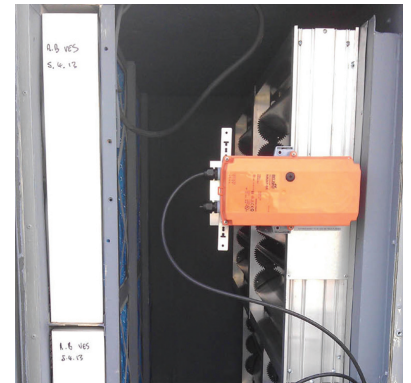
Before - dampers seized



Completed refurbished unit



After - new energy efficient plug fan



After - replacement dampers and actuators

- ▶ We can often upgrade a unit, increasing its duty and performance
- ▶ We will undertake a free survey and produce a fully detailed and costed quotation detailing the works that we can offer
- ▶ We will also highlight any **energy saving measures** that can be included in our refurbishment works

Typically, the cost of refurbishment is far lower than replacing with new. Refurbishment is often a quicker and more flexible approach to replacing. The works can also be undertaken out of hours meaning less potential down time, which is absolutely essential for a leisure centre.

Areas with potential for refurbishment

- ▶ Casework
- ▶ Gas burners
- ▶ Filters
- ▶ Roof
- ▶ Dampers
- ▶ Fans
- ▶ Heating and controls

VES pool ventilation in action

Case study - energy saving, fast payback

Situation

The facilities maintenance contractor asked VES to review the state of the existing equipment and installation and make recommendations to improve the conditions and for energy savings. The swimming pool supply and extract air-handling equipment was in poor condition, with no heat recovery at all. We also found un-lagged heating ductwork.



Solution

VES engineers assisted the contractor with site works, including:

- ▶ Installing a brand new supply and extract AHU with a high-efficiency crossflow heat exchanger
- ▶ Manufacturing and fitting new controls with inverters that automatically reduce the fan speed out of hours
- ▶ Aluclad lagging heating ductwork to minimise heat loss
- ▶ Replacing another unit serving the gym with a heat recovery AHU located on the same platform
- ▶ All craneage plus cutting up and removing the old equipment



Outcome

The addition of heat recovery and other energy saving measures made such a substantial impact on heating demand that the main pool direct gas fired heater could be downrated from 250 kW to a 100kW heater - a huge 60% reduction.



Overall, the project resulted in substantial energy savings and a payback period of just 3 years.

A range of other case studies can be found on our website, showing how VES helped saved energy, money and optimised existing units' performance. Read more at ves.co.uk.

Other products and services from the complete range of VES HVAC solutions

Air Handling Units

- ▶ Supply and extract, combined or separate
- ▶ Heat recovery including crossflow plate heat exchangers, thermal wheels and run-around coils
- ▶ Plantroom or weatherproof, flat or stacked
- ▶ Fitted silencers, inverters and controls
- ▶ Matching DX condensing units
- ▶ Various case constructions including EN 1886 certified units

Duct Fans

- ▶ In-line centrifugal, with forward or backward curved impellers
- ▶ Round, axial and mixed flow fans
- ▶ Fitted silencers available on all units
- ▶ Manual and automatic speed controllers available

Twin Fans

- ▶ For ceiling void, plantroom and weatherproof
- ▶ Many models and configurations
- ▶ Fitted auto-changeover system

Hybrid Units

- ▶ Natural ventilation enhanced by a low power fan
- ▶ Utilises a combination of automatic mechanical ventilation and manually operated windows to achieve classroom comfort conditions
- ▶ Simple user interface with indication of operating mode
- ▶ Slimline, lightweight construction, saving space and easing installation
- ▶ Available in a range of sizes with the ability to add heating coils when required

Roof Extract Units

- ▶ Three ranges for volume and pressure
- ▶ Curb and soaker sheet bases

Wall and Ceiling Fans

- ▶ All types for commercial, industrial and domestic premises

Kitchen Hood Extract Fans

- ▶ Heavy duty high temperature fans for hot greasy air
- ▶ Motors out of airstream
- ▶ Single inlet fans, in-line and vertical jet roof units

Control Panels

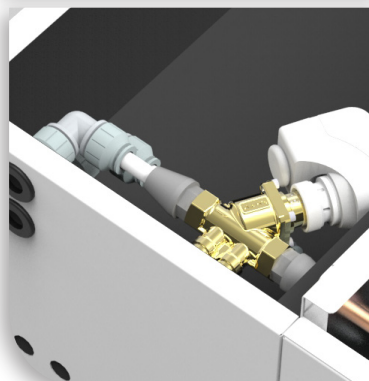
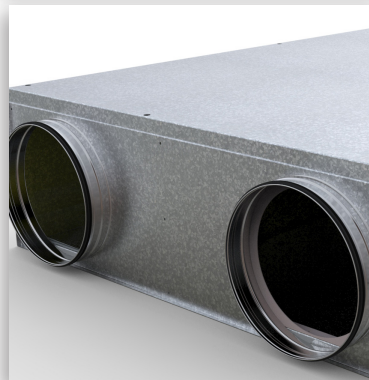
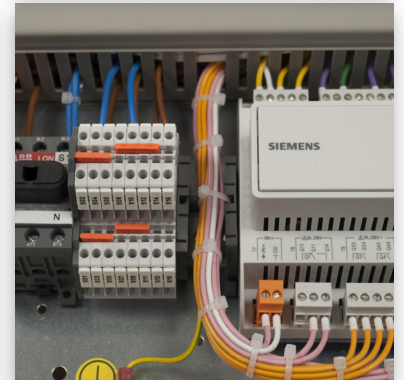
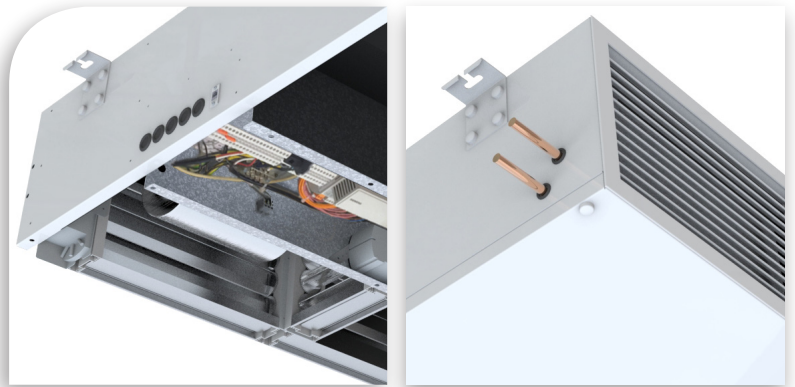
- ▶ Off the shelf and built to order panels
- ▶ Air quality sensors and energy savers
- ▶ Intelligent control software
- ▶ A range of remotes including touch screen

Noise Control

- ▶ Matching silencers available for all ventilation products
- ▶ Silencers designed to meet noise criteria
- ▶ Cleanable silencers
- ▶ Weatherproof silencers

Specialist Site Services

- ▶ Plant refurbishment
- ▶ Energy saving upgrades
- ▶ Noise reduction
- ▶ Site surveys
- ▶ Kitchen ventilation
- ▶ AHU flat pack installation
- ▶ Maintenance
- ▶ Spares



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VES reserves the right to amend product specifications and details without notice.