

ventilation **solutions**



for schools, academies,
colleges and universities

ventilation **solutions**

Creating environments that inspire learning



"We eliminate the risk and high cost of ventilation by designing and manufacturing innovative products for homes and buildings which optimise air quality and energy consumption for your application and which work right first time and every time, anywhere in the world, on the day you require them at the lowest installed cost."

Nuaire has become one of the largest, most successful and respected fan manufacturers in the world and its products are now available in over 40 countries.

Modern ventilation is all about people and providing a good level of indoor air quality whilst ensuring an effective building performance.

With issues such as air quality, energy efficiency and noise pollution becoming increasingly important, delivering a ventilation system which creates a fresh, healthy and comfortable environment is paramount in the choice of an optimum energy saving ventilation solution.

With over 5 decades of experience, Nuaire is the market leader in the design and manufacture of energy efficient domestic, commercial and renewable ventilation solutions.

Nuaire fans are used in all types of commercial and residential buildings, infrastructure projects and numerous applications by original equipment manufacturers in the UK and around the world.

Application & Product selection guide

To help you select the appropriate ventilation solution for your application, simply refer to one of the application options alongside.

For further technical details, please visit www.nuairegroup.com



Page Number

	Squif Twin	Ecosmart Xtractor	Squif	Ecosmart Airmover	Ecosmart Boxer	XS Roof	XS	Ecosmart Scurbo	Opus 40	Opus 60	Opus 95	ES Opus dc	Opus plus	Ecosmart Twins	Constant Pressure	Axus	Terminator	EZPlate	Mark 10	ScurboXbox	mrXbox 90 (s)	mrXbox 90 (m)	mrXbox 90 (l)	mrXbox 70	SquirboXbox twin fan	AirepodXbox	OpusXbox	Ecosmart MEV	MEV-SVS	Ecostrat
	11	10	10	16	12	12	14	12	16	16	17	16	16	12	14	12	16	12	10	10	10	10	10	10	12	14	16	14	14	12
Sports Halls					●	●	●	●								●	●	●			●									●
Schoolrooms/Classrooms		●			●	●	●	●													●	●	●	●	●		●			
Changing Rooms					●	●	●	●				●		●							●									
Swimming Pools					●																									
Drama Studios		●						●													●									
Offices (Small and Large)		●			●	●	●	●		●	●						●				●									
Toilets (multiples)					●			●	●	●	●	●		●	●						●									
Toilets (individual)							●		●	●	●	●	●								●				●	●	●			
Boiler Rooms				●		●										●		●												
Workshops			●	●		●	●									●	●													
Science Labs		●	●	●	●																●									
Libraries		●			●			●				●									●									
IT Suites		●			●			●													●									
Food Technology Suite						●	●	●													●									
Canteen					●	●	●																							
Kitchen	●		●		●			●								●														
Residential Block						●	●								●						●	●	●	●	●	●	●	●	●	●
Study Area		●						●	●	●	●	●									●									
Stairwells																●	●													
Drama Theatre/Auditorium		●		●	●												●	●		●	●									
Assembly Hall				●	●												●			●	●									

In Partnership with you...

Nuaire has a reputation in the industry for working closely with our customers to offer the right fan solution to meet their specific needs.

As a result we have created a new team, specifically to support the ever increasing number of large and special projects that require variations to our standard product range.

Our Applications Engineering team provides a dedicated resource to our customers to ensure the best possible solution for a project.

Nuaire works in partnership with our customers to deliver client focused solutions.

By working closely with you we are able to deliver a fast response to the many specification changes that a complex project demands, ensuring that each one runs as smoothly as possible.

Innovation... Ventilation... Education

With issues concerning indoor air quality within schools becoming increasingly important, it is necessary to create fresh, healthy and comfortable learning environments for both teachers and pupils.

In keeping with a project's aim to offer affordable, sustainable facilities, Nuaire's specialist in-house Application Engineers design the best solutions for the building, combining conventional ventilation solutions but also creating bespoke specialist products to provide the most energy efficient solution possible. In line with our customer requirements, the heat recovery range has been expanded to meet desired performance criteria.

Working closely with contractors, Nuaire has developed a bespoke vertical room heat recovery unit with CO₂ control and electric space heating. These new units fit under working space, a work bench for example, and draw and discharge air through the wall. They have been designed to meet stringent noise requirements and power consumption criteria and were designed for ICT classrooms and Science rooms.

Due to the sporadic occupancy of areas such as classrooms, Ecosmart controls can be provided which automatically adjust the systems to allow varying fan speeds, matching the output of the systems to the demand, to minimise energy usage.

Controls can be linked to business management systems providing on demand ventilation, minimising carbon emissions and also prolonging the life of the equipment. Specific controls are modified to suit the on site conditions, with Nuaire working closely with the customer and the contractor to interface the equipment.



Nuaire - in a class of their own



Environments that inspire learning

ventilation **solutions**

Inspiring Schools

"Schools are there to give children the knowledge and skills they need to become active members of society. Many children are rightly worried about climate change, global poverty and the impact of our lifestyles. Schools can demonstrate ways of living that are models of good practice for children and their communities. They can build sustainable development into the learning experience of every child to encourage innovation and improvement."

Alan Johnson, Secretary for Education and Skills - September 2006



City Academy - Bristol
Ventilation: Ecosmart Scurbo, Terminator,
Ecosmart twin fan



Penderyn Community School
Ventilation: Axus, Bifurcated axial, Squif,
Ecosmart controls



Beechwood School - Slough
Ventilation: ScurboXbox twin fan, Squif,
Ecosmart Xtractor



Bristol Brunel Academy
Ventilation: ScurboXbox, Ecosmart twin fan, Squif,
Scurbo, Opus



Walthamstow Academy
Ventilation: Ecosmart Xtractor, XS, Opus 30,
Opus 60 , Scurbo, Squif



Dwr-y-Felin Upper School
Ventilation: Ecosmart twin fan, Ecosmart Boxer,
Scurbo, Axus

Classrooms and dining area

Mechanical Extract and Heat Recovery



NEW Scurbo Xbox

Energy efficient, high performance extract with heat recovery (up to 2.5m³/s)

- Easy to install & commission with inbuilt Ecosmart "plug and go" controls
- Low profile is ideal for ceiling void installation (external option available)
- Easy maintenance with side access panels
- Wide range of vertical, horizontal or twin fan options to suit most applications
- Optional weather cowls for horizontal and stacked configuration



OpusXbox

Energy efficient, low profile extract with heat recovery (up to 80l/s)

- Easy to install with "one fix" bracket
- Simple to commission with inbuilt Ecosmart "plug and go" controls
- Ideal for restricted space due to low profile (185mm)
- Lift off top panels make for easy maintenance



NEW mrXbox90

High efficiency extract with heat recovery (up to 300m³/hr)

- Market's most efficient extract unit with 90% efficiency
- Simple to commission with choice of controls
- "Wireless" option for the "ultimate" control
- Ideal for cupboard or wall mounting
- Lift off front panel makes for easy maintenance



mrXbox70

Multipoint extract with heat recovery (up to 67l/s)

- Ideal for cupboard or wall mounting as it is only 340mm deep
- Automatic controls suitable for all applications
- Easy to commission with integral balancing dampers



XS range

Wall, window, ceiling and roof extract fans (up to 530 l/s)

- Ideal for noise sensitive areas as provides high performance and low noise
- Flexible solutions in 6, 9, & 12" models reversible for extract or supply
- Save costs and control up to 5 fans with one speed control
- Inbuilt sensors help reduce wiring costs



Ecosmart Xtractor

High efficiency centrifugal fan (up to 5.9m³/s)

- Flexible solution, wide range of 27 fans to suit most applications
- Quiet fan ideal for "noise sensitive" areas
- Powerful extract fan for multi-room system
- Easy to install and commission with Ecosmart "plug & go" controls
- Requires very low maintenance



Ecosmart Scurbo

Energy efficient make up air supply & extract units (up to 0.5m³/s)

- Exceptionally quiet fans ideal for above ceiling applications
- Ecosmart "plug & go" controls are quick to install and commission
- Quick & easy commission with easily adjustable fan and heater duty
- Wide range of complimentary sensors and controls suitable for most applications
- Reduce installation time with "one box" containing filter, fan, heater & controls



Squif

Inline with motor "out of airstream" (up to 6.5m³/s)

- Safety first with smoke extract as standard (400°C for 2 hours)
- Ideal for commercial kitchens as units have high temperature as standard (90°C)
- Cost effective system with low maintenance requirements
- Flexible solution with over 13 models to choose from
- Easy to install & commission reduces time on site
- Suitable for external mounting

High Performance Kitchen Supply and Extract



NEW Squif Twin

Inline with motor "out of airstream" (up to 6.2m³/s)

- Ideal for commercial kitchens as built-in duty and stand by fan guarantees 24/7 in the event of fan failure
- High temperature as standard, can run continuously at 90°C
- Flexible solution which can be mounted internally, externally, vertically or horizontally
- "Out of airstream" motor allows quick and easy maintenance
- For simple installation and commissioning include Ecosmart energy efficient controls



Ecosmart boxer

High performance, packaged supply AHU (up to 4.5m³/s)

- Easy to install & commission with Ecosmart energy efficient "plug & go" controls
- High performance but very quiet for "noise sensitive" areas
- Reduce time on site with packaged solution
- Electric heater or LPHW options
- External version available



Axis

Duct mounted axial extract fans (up to 95m³/s)

- Widest range of standard axials available ensure maximum efficiency
- Added strength and durability as units are manufactured using heavy gauge galvanised steel
- Advanced production methods give consistent superior performance at low costs
- Air performance to BS848 and ISO5801 with acoustic performance to AMCA300
- Comprehensive range of ancillaries available



Bifurcated Axial

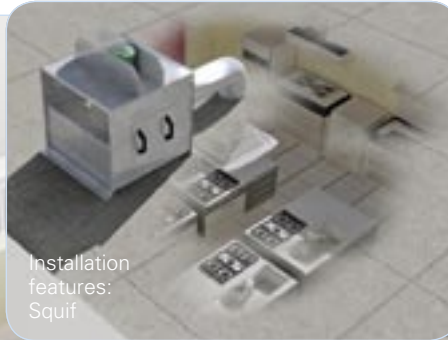
Duct mounted axial, motor out of airstream (up to 23m³/s)

- Widest range of "standard" bifurcated axials available
- Standard range is suitable for temperatures up to 90°C
- High temperature options available up to 230°C
- For ease of application a "stock range" is available. Please contact Nuair.
- Choice of matched ancillaries

Installation features: ScurboXbox inline version



Installation features: Squif



Installation features: Mark 10



Installation features: ScurboXbox roof mounted

General Extract



Ecosmart Airmover

High performance backward curved centrif (up to 10.6m³/s)

- Easy to install & commission with Ecosmart energy efficient "plug & go" controls
- Exceptionally quiet with double skinned panels
- Low maintenance requirements help reduce costs
- Flexible solution with over 12 models to choose from
- Suitable for external mounting



Mark 10

Vertical discharge roof extract fan (up to 8.2m³/s)

- For simple installation & commissioning include Ecosmart energy efficient "plug & go" controls
- Discreet design with low profile
- Low maintenance requirements help reduce costs
- Flexible solution with over 22 models to choose from
- Suitable for external mounting



XS Roof

Roof extract fan up to 530l/s

- Ideal for noise sensitive areas as provides high performance and low noise
- Flexible solutions in 6, 9, & 12" models reversible for extract or supply
- Save costs and control up to 5 fans with one speed control
- Inbuilt sensors help reduce wiring costs

Multiple toilets, changing rooms, sports hall and boiler room

High Performance Supply and Extract



NEW Scurbo Xbox Energy efficient, high performance extract with heat recovery (up to 2.5m³/s)

- Easy to install & commission with inbuilt Ecosmart "plug and go" controls
- Low profile is ideal for ceiling void installation (external option available)
- Easy maintenance with side access panels
- Wide range of vertical, horizontal or twin fan options to suit most applications
- Optional weather cowls for horizontal and stacked configuration



Ecosmart boxer High performance, packaged supply AHU (up to 4.5m³/s)

- Easy to install & commission with Ecosmart energy efficient "plug & go" controls
- High performance but very quiet for "noise sensitive" areas
- Reduce time on site with packaged solution
- Electric heater or LPHW options
- External version available



XS range Wall, window, ceiling and roof extract fans (up to 530 l/s)

- Ideal for noise sensitive areas as provides high performance and low noise
- Flexible solutions in 6, 9, & 12" models reversible for extract or supply
- Save costs and control up to 5 fans with one speed control
- Inbuilt sensors help reduce wiring costs



Ecosmart Twins Energy efficient internal & external twin fan (up to 5.8m³/s)

- Quietest twin fans available so ideal for noise sensitive areas
- Demand ventilation means maximum savings achieved
- Trickle function keeps environment fresh while still saving energy
- Easy to install & commission
- Ecosmart "plug & go" controls reduce overall installation costs



Opus DC Single or twin duct fans (up to 115l/s)

- Quiet fans ideal for above ceiling applications
- Simple to install with self locating bracket
- Added safety of auto changeover and duty share on twin model
- Hard wearing and robust, flame retardant casing
- Choice of on board or remote controls
- For simple installation and commissioning include the Ecosmart energy efficient "plug and go" controls



Destratification



Ecostrat High performance, energy efficient destratification unit

- Exceptional performance achieving destratification to within 1°C
- Energy efficient, minimising energy usage by redistributing high level warm air
- Cost effective achieving up to 20% saving in fabric related heat loss
- Easy installation due to simple mounting arrangement and no requirement for ductwork
- Easy maintenance due to low level mounting

Installation features: Axis



General Extract



Axis Duct mounted axial extract fans (up to 95m³/s)

- Widest range of standard axials available ensure maximum efficiency
- Added strength and durability as units are manufactured using heavy gauge galvanised steel
- Advanced production methods give consistent superior performance at low costs
- Air performance to BS848 and ISO5801 with acoustic performance to AMCA300
- Comprehensive range of ancillaries available



Ecosmart Boxer High performance, packaged supply AHU (up to 4.5m³/s)

- Easy to install & commission with Ecosmart energy efficient "plug & go" controls
- High performance but very quiet for "noise sensitive" areas
- Reduce time on site with packaged solution
- Electric heater or LPHW options
- External version available



Terminator Horizontal discharge roof extract fan

- Flexible solution with choice of axial, centrifugal or mixed flow impellers
- On site flexibility allows unit to be mounted vertically or horizontally
- Low profile weather cowl provides unobtrusive roof top option
- Reduce energy costs by selecting Ecosmart efficient controls

Plant Room Extraction



EZ Plate Wall mounted axial plate fans (up to 9.3m³/s)

- Adaptable solution can be fixed in any altitude on site
- For safety, motors are fitted with "heat seeker" thermal overload protection
- Flexible range controllers and ancillaries available
- Fans are rated IP44 and IP54



Ecosmart Airmover High performance backward curved centrif (up to 10.6m³/s)

- Easy to install & commission with Ecosmart energy efficient "plug & go" controls
- Exceptionally quiet with double skinned panels
- Low maintenance requirements help reduce costs
- Flexible solution with over 12 models to choose from
- Suitable for external mounting



XS Roof Roof extract fan up to 530l/s

- Ideal for noise sensitive areas as provides high performance and low noise
- Flexible solutions in 6, 9, & 12" models reversible for extract or supply
- Save costs and control up to 5 fans with one speed control
- Inbuilt sensors help reduce wiring costs

Installation features: EZ Plate



Multiple Toilet Extract



NEW Scurbo Xbox Energy efficient, high performance extract with heat recovery (up to 2.5m³/s)

- Easy to install & commission with inbuilt Ecosmart "plug and go" controls
- Low profile is ideal for ceiling void installation (external option available)
- Easy maintenance with side access panels
- Wide range of vertical, horizontal or twin fan options to suit most applications
- Optional weather cowls for horizontal and stacked configuration



Ecosmart Scurbo Energy efficient make up air supply & extract units (up to 0.5m³/s)

- Exceptionally quiet fans ideal for above ceiling applications
- Ecosmart "plug & go" controls are quick to install and commission
- Quick & easy commissioning with easily adjustable fan and heater duty
- Wide range of complimentary sensors and controls suitable for most applications
- Reduce installation time with "one box" containing filter, fan, heater & controls



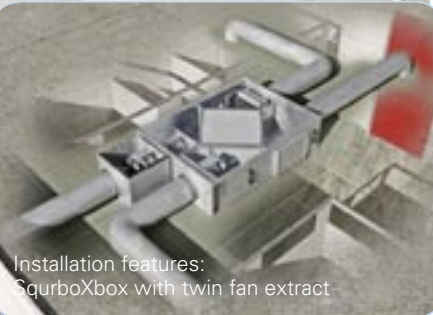
Constant Pressure Quiet Scroll Twin Fan Energy efficient, high performance central extract (up to 2.65m³/s)

- Easy to install & commission
- Ecosmart "plug & go" controls reduce overall installation costs
- Saves costs by only ventilating when required, but trickle mode keeps environment continually fresh
- Extremely quiet for use in multi occupied areas
- System reduces energy costs by up to 70%
- Ease of control with inbuilt auto change over and speed control



NEW Constant pressure volume damper Energy efficient, variable volume damper for use with twin fan

- Maintain correct ventilation levels with energy efficient dampers
- Flexible design solution with optional trickle & boost settings
- Easily adjustable controls make commissioning simple
- Quick to install & maintain helps reduce overall system costs



Installation features: ScurboXbox with twin fan extract

Offices and residential areas

Mechanical Extract for Offices and Communal Areas



XS range

Wall, window, ceiling and roof extract fans (up to 530 l/s)

- Ideal for noise sensitive areas as provides high performance and low noise
- Flexible solutions in 6, 9, & 12" models reversible for extract or supply
- Save costs and control up to 5 fans with one speed control
- Inbuilt sensors help reduce wiring costs



Ecosmart boxer

High performance, packaged supply AHU (up to 4.5m³/s)

- Easy to install & commission with Ecosmart energy efficient "plug & go" controls
- High performance but very quiet for "noise sensitive" areas
- Reduce time on site with packaged solution
- Electric heater or LPHW options
- External version available



Terminator

Horizontal discharge roof extract fan

- Flexible solution with choice of axial, centrifugal or mixed flow impellers
- On site flexibility allows unit to be mounted vertically or horizontally
- Low profile weather cowl provides unobtrusive roof top option
- Reduce energy costs by selecting Ecosmart efficient controls



Ecosmart Scurbo

Energy efficient make up air supply & extract units (up to 0.5m³/s)

- Exceptionally quiet fans ideal for above ceiling applications
- Ecosmart "plug & go" controls are quick to install and commission
- Quick & easy commission with easily adjustable fan and heater duty
- Wide range of complimentary sensors and controls suitable for most applications
- Reduce installation time with "one box" containing filter, fan, heater & controls



NEW Scurbo Xbox

Energy efficient, high performance extract with heat recovery (up to 2.5m³/s)

- Easy to install & commission with inbuilt Ecosmart "plug and go" controls
- Low profile is ideal for ceiling void installation (external option available)
- Easy maintenance with side access panels
- Wide range of vertical, horizontal or twin fan options to suit most applications
- Optional weather cowls for horizontal and stacked configuration



Ecosmart Xtractor

High efficiency centrifugal fan (up to 5.9m³/s)

- Flexible solution, wide range of 27 fans to suit most applications
- Quiet fan ideal for "noise sensitive" areas
- Powerful extract fan for multi-room system
- Easy to install and commission with Ecosmart "plug & go" controls
- Requires very low maintenance



Installation features: Ecosmart MEV



Multi-room Ventilation



NEW Ecosmart MEV

Energy efficient multipoint continuous extract (up to 110l/s)

- Very quick to install with energy efficient "plug & go" Ecosmart controls
- Shallow depth makes it ideal for restricted spaces
- Ultra quiet with typical dBA of 30
- Simple commissioning with "dial a duty"
- Complies with new Building regulations



NEW MEV SVS

Multipoint continuous extract for "noise sensitive environments" (up to 110l/s)

- Features as Ecosmart MEV
- Designed specifically for noise sensitive or poor quality air applications, such as city centres or brown field sites) contact Nuaire for details.
- Acoustic airbricks available



Constant Pressure Quiet Scroll Twin Fan

Energy efficient, high performance central extract (up to 2.65m³/s)

- Easy to install & commission
- Ecosmart "plug & go" controls reduce overall installation costs
- Saves costs by only ventilating when required, but trickle mode keeps environment continually fresh
- Extremely quiet for use in multi occupied areas
- System reduces energy costs by up to 70%
- Ease of control with inbuilt auto change over and speed control



NEW Constant pressure volume damper

Energy efficient, variable volume damper for use with twin fan

- Maintain correct ventilation levels with energy efficient dampers
- Flexible design solution with optional trickle & boost settings
- Easily adjustable controls make commissioning simple
- Quick to install & maintain helps reduce overall system costs

Installation features: XS Roof



Installation features: XS Wall



Installation features: XS Window



Mechanical Extract with Heat Recovery



OpusXbox

Energy efficient, low profile extract with heat recovery (up to 80l/s)

- Easy to install with "one fix" bracket
- Simple to commission with inbuilt Ecosmart "plug and go" controls
- Ideal for restricted space due to low profile (185mm)
- Lift off top panels make for easy maintenance



mrXbox70

Multipoint extract with heat recovery (up to 67l/s)

- Ideal for cupboard or wall mounting as it is only 340mm deep
- Automatic controls suitable for all applications
- Easy to commission with integral balancing dampers



NEW mrXbox90

High efficiency extract with heat recovery (up to 300m³/hr)

- Market's most efficient extract unit with 90% efficiency
- Simple to commission with choice of controls
- "Wireless" option for the "ultimate" control
- Ideal for cupboard or wall mounting
- Lift off front panel makes for easy maintenance



NEW airepodXbox

Supply & extract heat recovery plus warm air heating

- Extremely efficient system helps lower utility costs
- Warm air and fresh environment all year round
- Flexible mounting configuration ideally suited for ceiling

IT Suite, Assembly area and Library

Ventilation for noise sensitive areas



NEW Sqrbo Xbox

Energy efficient, high performance extract with heat recovery (up to 2.5m³/s)

- Easy to install & commission with inbuilt Ecosmart "plug and go" controls
- Low profile is ideal for ceiling void installation (external option available)
- Easy maintenance with side access panels
- Wide range of vertical, horizontal or twin fan options to suit most applications
- Optional weather cowls for horizontal and stacked configuration



Ecosmart Xtractor

High efficiency centrifugal fan (up to 5.9m³/s)

- Flexible solution, wide range of 27 fans to suit most applications
- Quiet fan ideal for "noise sensitive" areas
- Powerful extract fan for multi-room system
- Easy to install and commission with Ecosmart "plug & go" controls
- Requires very low maintenance



Opus DC

Single or twin duct fans (up to 115l/s)

- Quiet fans ideal for above ceiling applications
- Simple to install with self locating bracket
- Added safety of auto changeover and duty share on twin model
- Hard wearing and robust, flame retardant casing
- Choice of on board or remote controls
- For simple installation and commissioning include the Ecosmart energy efficient "plug and go" controls

Mechanical Extract for large open areas



Ecosmart Airmover

High performance backward curved centrif (up to 10.6m³/s)

- Easy to install & commission with Ecosmart energy efficient "plug & go" controls
- Exceptionally quiet with double skinned panels
- Low maintenance requirements help reduce costs
- Flexible solution with over 12 models to choose from
- Suitable for external mounting



Terminator

Horizontal discharge roof extract fan

- Flexible solution with choice of axial, centrifugal or mixed flow impellers
- On site flexibility allows unit to be mounted vertically or horizontally
- Low profile weather cowl provides unobtrusive roof top option
- Reduce energy costs by selecting Ecosmart efficient controls



Mark 10

Vertical discharge roof extract fan (up to 8.2m³/s)

- For simple installation & commissioning include Ecosmart energy efficient "plug & go" controls
- Discreet design with low profile
- Low maintenance requirements help reduce costs
- Flexible solution with over 22 models to choose from
- Suitable for external mounting



Mechanical Extract and Heat Recovery



NEW Sqrbo Xbox

Energy efficient, high performance extract with heat recovery (up to 2.5m³/s)

- Easy to install & commission with inbuilt Ecosmart "plug and go" controls
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- Wide range of vertical, horizontal or twin fan options to suit most applications
- Optional weather cowls for horizontal and stacked configuration



OpusXbox

Energy efficient, low profile extract with heat recovery (up to 80l/s)

- Easy to install with "one fix" bracket
- Simple to commission with inbuilt Ecosmart "plug and go" controls
- Ideal for restricted space due to low profile (185mm)
- Lift off top panels make for easy maintenance

Individual Toilet Extract



Opus

Surface, semi-recessed, window & duct mounted (up to 95l/s)

- Exceptionally quiet
- Easy to operate range of controls
- Extra safe with flame retardant construction
- Simple to install reduces time on site
- Low maintenance filters are quick to change



XS range

Wall, window, ceiling and roof extract fans (up to 530 l/s)

- Ideal for noise sensitive areas as provides high performance and low noise
- Flexible solutions in 6, 9, & 12" models reversible for extract or supply
- Save costs and control up to 5 fans with one speed control
- Inbuilt sensors help reduce wiring costs



NEW airepodXbox

Supply & extract heat recovery plus warm air heating

- Extremely efficient system helps lower utility costs
- Warm air and fresh environment all year round
- Flexible mounting configuration ideally suited for ceiling

AHU Extract



Ecosmart boxer

High performance, packaged supply AHU (up to 4.5m³/s)

- Easy to install & commission with Ecosmart energy efficient "plug & go" controls
- High performance but very quiet for "noise sensitive" areas
- Reduce time on site with packaged solution
- Electric heater or LPHW options
- External version available



Ecosmart Sqrbo

Energy efficient make up air supply & extract units (up to 0.5m³/s)

- Exceptionally quiet fans ideal for above ceiling applications
- Ecosmart "plug & go" controls are quick to install and commission
- Quick & easy commission with easily adjustable fan and heater duty
- Wide range of complimentary sensors and controls suitable for most applications
- Reduce installation time with "one box" containing filter, fan, heater & controls

Air Quality

Our awareness of the spaces in which we live and work has never been more evident. But what about Britain's schools? The design of learning environments can have a significant impact on its users: the attainment and behaviour of the pupils, staff can feel more valued and motivated and people who live locally are more likely to use the facilities available to them.

Compared to most other types of building, schools are extreme environments. They have high and sporadic occupancy levels, often boisterous use of circulation space and house many competing activities and functions within them. There are teachers, parents, pupils, classrooms, canteens and timetables - a great mix and more varied than most buildings.

Part F of the Building Regulations applies to schools. Table 2.3 details specific approaches for a range of building types:

Ventilation provisions in schools can be made in accordance with the guidance in DfES Building Bulletin 101. Ventilation of School Buildings and in the Education (School Premises) regulations. BB101 exists as a complete design guide to ventilation in schools, covering design rules for natural and mechanical ventilation systems and the concepts involved. Building Bulletin 101 can be used as a guide to the ventilation required in other education buildings such as further education establishments, also for children's centres and other early years settings, including day nurseries, playgroups etc.

The School Premises Regulations (SPR) currently have the following requirements:

- 1 All occupied areas in school building shall have controllable ventilation at a minimum of 3 litres of fresh air per second for each of the maximum number of persons the area will accommodate.
- 2 All teaching accommodation, medical examination or treatment rooms, sick rooms, isolation rooms, sleeping and living accommodation shall also be capable of being ventilated at a minimum rate of 8 litres of fresh air per second for each of the usual number of people in those areas when such areas are occupied.

- 3 All washrooms shall also be capable of being ventilated at a rate of at least six air changes an hour.
- 4 Adequate measure shall be taken to prevent condensation in, and remove noxious fumes from, every kitchen and other room in which there may be steam or fumes.

Such limits are intended to deal with the worst case conditions.

Just as approved document F 2006 has introduced the concept of performance based ventilation for the control of important pollutants, BB101 makes a specific recommendation for the control of carbon Dioxide (CO₂), that has been proven by recent research to affect concentration and performance levels of pupils.

Performance Standard

Ventilation should be provided to limit the concentration of carbon dioxide in all teaching and learning spaces. When measured at seated head height, during the continuous period between the start and finish of teaching on any day, the average concentration of carbon dioxide should not exceed 1500 parts per million (ppm).

Ventilation for actual ventilation for natural and mechanical systems is a 'minimum' daily average supply rate of 5 l/s per person and a 'capability' of 8 l/s per person during periods of occupation. These ventilation levels refer to general classrooms and similar areas. Where the educational process involves the production of fumes, vapours etc, normal risk assessment procedures should be adopted to determine ventilation needs.

Energy Efficiency - including heating and cooling

New school building must comply with the various requirements of Approved Document L2A (conservation of fuel and power, new buildings and other dwellings) 2006 edition. Specifically with request to ventilation, limits on specific fan power exist for several categories of ventilation.

ADL 2A refers to BB101 specifically in terms of overheating in the summer. Standard ventilation levels for the provision of fresh air and control of pollutant levels will generally be inadequate to control overheating due to solar and thermal gains.

The performance standards for summertime heating in compliance with ADL2 for teaching and learning areas are:

- a There should be no more than 120 hours when the air temperature in the classroom rises above 28°C
- b The average internal to external temperature difference should not exceed 5°C (i.e. the internal air temperature should be no more than 5°C above the external air temperature on average)
- c The internal air temperature when the space is occupied should not exceed 32°C

Heat Recovery

Heat Recovery is referred to in BB101 as being suitable for several specific application types within the educational framework.

It would be inappropriate to supply air directly to a warm classroom at very low external ambient temperatures during the heating season. Heat recovery systems avoid this condition and minimize the fresh air tempering heat requirement. The energy required to condition the outdoor air in winter can be a significant portion of the total space-conditioning load and increasingly so as fabric insulation increases. Air exchange typically represents 20% to 50% of a building's thermal load.

The use of heat recovery, particularly where the unit is used to provide the heating function for the room is a worthwhile solution.

Controls

Effective controls and control strategies are key to obtaining the lowest levels of energy use in a ventilation system.

Basic strategies such as the use of Timelocks or Occupancy detection can provide significant benefits. BB101 refers

to the use of Building Management Systems or similar control and the use of "demand controlled ventilation" as being appropriate.

The fans used should be designed for optimized duty control via speed reduction, as this will provide the triple benefit of: reduction of ventilation heat loss, reduction of motor input power and the reduction in system noise levels.

Acoustics

Acoustic design requirements in schools are extensively dealt with in Building Bulletin 93 (Acoustic Design of Schools). The essential requirement for maximum noise levels to be maintained in teaching areas is readily understood. This translates into a data table covering not only the maximum levels acceptable in the various types of room, but also the classification of the room in terms of its potential to create noise that could affect the other areas, and its level of tolerance to external noise sources.

This Table (1.1) is cross referenced in BB101, and is the basic criteria that applies to ventilation systems.

The maximum noise level, defined in terms of L A eq (Equivalent continuous sound level) 30 mins (dB) is presented, and ranges from levels of 30 for very sensitive areas such as musical performance to 45 for general circulation areas.

There is no generalised direct relationship between the room noise level and the sound level generation of the ventilation system. In each case, acoustic analysis is required to establish an acceptable design.

Typically the acoustic design issues are the external noise sources. For Mechanical systems, the value quoted must be maintained at all times. The system generated noise is generally the dominant source in this case - which of course may be dealt with by suitable levels of attenuation designed to have a low resistance to airflow. Breakout noise from unit casing and duct work may also be relevant, and although various grades of acoustic enclosure are available, the most effective solution is the careful positioning of the equipment itself.



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