



# VENTILATION PRODUCTS & CONTROLS FOR COMMERCIAL KITCHENS



## A COMPLETE VENTILATION SERVICE FROM DESIGN TO CUSTOMER SERVICE



### A COMPLETE SOLUTION

At Nuair we offer more than just the leading fans on the market. Whether the requirement is for a small chip shop or an award winning Michelin star restaurant Nuair have an extensive portfolio of supply & extract fans to suit.

Nuair understand the importance of ventilation systems for a safe and comfortable kitchen environment and in January 2015 joined forces with Quintex the UK's leading manufacturer of Demand Based Ventilation control systems. Quintex have installed over 6,000 energy management systems though out the UK and Europe saving their clients over 312,838,248 kWh.

Energy efficient demand control ventilation maintains comfort and indoor air quality by varying the speed of the exhaust and supply fans based on the space cooking activity. Variable frequency drives or inverters are used to automatically adjust the amount of exhaust and ventilation airflow to meet the actual requirements.



#### ECOSMART UK'S NO.1 ENERGY EFFICIENT CONTROL

Ecosmart Energy Saving Control launched in 2002, has been the UK's No.1 control gaining huge recognition and becoming the most flexible energy saving control system on the market with full BMS interface.



#### CHEETAH – UK'S NO.1 DEMAND CONTROL VENTILATION

Utilising the Cheetah Demand Based control system Nuair are now able to offer their customer base typical energy savings of up to 80%. Exclusive to Nuair the 'Cheetah' control system can be delivered to site with the Nuair extract & supply fan.



**CHEETAH & ECOSMART CAN NOW BE USED TOGETHER.**

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FAN TYPE	FAN LOCATION	MAX PERFORMANCE	PAGE
SQUIF SINGLE FANS	ROOF	6.5m <sup>3</sup> /s	16
SQUIF TWIN FANS	ROOF	6.2m <sup>3</sup> /s	17
AIRMOVER SINGLE FANS	ROOF	10.6m <sup>3</sup> /s	18
DAVE SUPPLY FANS	ROOF/CEILING	1.1m <sup>3</sup> /s	19
BOXER PACKAGED AHU'S	ROOF	20m <sup>3</sup> /s	20
BOXER CUSTOM MADE AHU'S	ROOF	20m <sup>3</sup> /s	21
LONG CASED AXIAL FANS	ROOF	92m <sup>3</sup> /s	22
BIFUCATED AXIAL FANS	ROOF	23m <sup>3</sup> /s	23
MARK TEN	ROOF	8.2m <sup>3</sup> /s	24
XS	ROOF	0.55m <sup>3</sup> /s	25
OPUS 40/60/95	WALL/CEILING	95l/s	26
ES OPUS-DC	ROOF	115l/s	27
CASE STUDIES			28 - 35

## WHY CHEETAH CONTROL?

DEMAND BASED VENTILATION  
CONTROL FOR COMMERCIAL  
KITCHENS

Cheetah   
Energy Control

BY

Quintex   
Energy Management Systems

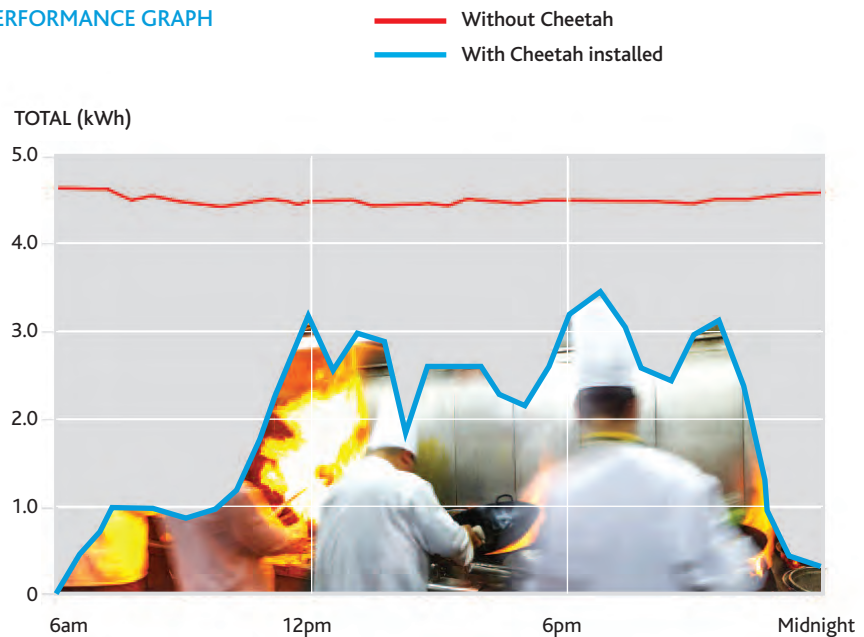
Cheetah - is an energy saving control system for commercial kitchens. It controls the extract and air supply fans to ensure that at all times they run at the lowest speed possible to minimise energy use whilst maintaining comfortable and safe conditions.

To achieve this, the Cheetah system monitors the hood with laser optic sensors which detect smoke and steam. At the same time, it also measures the temperature within the extract ductwork.

The data is then used to control the extract and supply fan speeds. In simple terms, when cooking demand is low, the fan speeds are lowered, hence saving energy. Large energy savings accrue as a fan running at 50% of maximum speed will only consume 13% of the energy resulting in large cost reductions. As such, payback periods are short - typically 1 to 2 years.

“ Cheetah saves energy by controlling the extract and air supply fans in line with demand. Energy savings of up to 80% are typically achieved. ”

### PERFORMANCE GRAPH



### PROVIDING A COMFORTABLE & SAFE KITCHEN ENVIRONMENT

Noise in the kitchen is greatly reduced from the use of Cheetah, along with better controlled working temperatures. Carbon dioxide sensors, if fitted, will also improve the working environment by ramping up the extract fans when excess carbon dioxide is detected, hence bringing the level back to a pre-determined range.

### REDUCTION IN MAINTENANCE COSTS

Running fans at lower average speeds increases the life of the fan motor and will result in fewer failures so reducing maintenance costs.

## WHY ECOSMART CONTROLLED VENTILATION?

THE UK'S NO.1 ENERGY  
EFFICIENT CONTROL



**A Complete Solution** - Ecosmart Energy Saving Control is available on almost every Nuaire product range including fans and packaged heat recovery units.

### SIMPLE TO INSTALL

The compact Ecosmart control module comes complete with a factory fitted Ecosmart PCB which will control the fan unit within the desired design parameters and provide the interface between all external control devices detailed on these pages.

### PRE-ASSEMBLED SOLUTION

Ecosmart controls are pre-assembled, configured and installed directly into the fan at the Nuaire factory helping to significantly reduce site install time.

### DEMAND VENTILATION

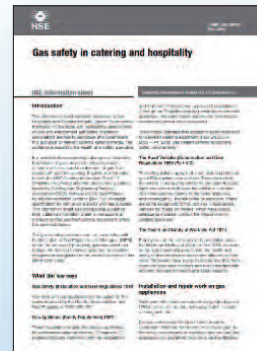
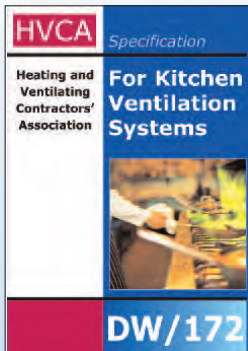
Only ventilates the area when you want it to- why ventilate an empty space when not occupied achieving maximum savings possible.



Nuaire Extract unit installed on roof above kitchen and controlled by Ecosmart.

Nuaire Supply unit installed on roof above kitchen and controlled by Ecosmart.

# COMPLYING WITH REGULATIONS FOR COMMERCIAL KITCHENS-DW/172



Source: HSE Guidance:- <http://www.hse.gov.uk/pubns>.

DW/172, Ventilation in catering kitchens & Gas safety in catering and hospitality.

## DW/172 SPECIFICATION FOR KITCHEN VENTILATION SYSTEMS

The importance of suitable ventilation within a commercial kitchen environment should never be underestimated. The following information has been extracted from DW/172. For further details please refer to [www.hse.gov.uk/pubns](http://www.hse.gov.uk/pubns).

### SECTION 3 - DESIGN CRITERIA

The specification states that the "Methodology has been found to provide a satisfactory outcome and is proposed as a suitable procedure to adopt to achieve a satisfactory design". The document also states that time of publication of specification there was no other legislation (within the UK) with regards to the maximum temperatures in the workplace. It also recognises that even with the most efficient ventilation systems, air temperatures within the kitchen environment could exceed 28 deg C.

#### Point 3.1 goes further and states:

- Internal noise level should be NR40 to NR50
- Dedicated make up air systems to be 85% of maximum, of the extract flow rate
- Minimum air change rate of 40 per hour
- CO exposed levels to which kitchen staff are exposed do not exceed the COSHH limits of 300 parts per million (ppm) for 10 minutes

The following are the recommended Air change rates per hour (ACH) relating to commercial kitchens.

Area	Air change rate per hour
Dry store	10
Servery	12
Chef's office	6
Refuse store	15
Preparation Areas	20
Toilet Area's	10
Kitchen	40
Dishwash Areas	30

### SECTION 17 - FANS

When selecting supply and extract ventilation the following should be considered:

- **Maintenance access** – location and sufficient space are major factors to ensure that regular maintenance/cleaning can be carried out.
- Fan performance requirements – kitchen ventilation systems have relatively high resistances for the fan to operate in. When selecting a fan ensure that can handle the designed resistance plus an additional 10% pressure margin.
- **Fan types** – backward curved centrifugal, mixed flow or axial flow impellers are the preferred as they are less prone to unbalance are easier to maintain. Fixed or adjustable metal impellers are the preferred types. Plastic bladed fans can be used in kitchens where

canopy extracts non-grease producing, low temperature fumes.

- **Fan operation within kitchen** – The fan will have to operate normally between 40 and 60 deg C at 95% humidity. Most motors are rated at IP55 and are capable of operating within these conditions without the necessity to mount the motor out of air stream. For fans that have the motor within the airstream shall be upgraded to withstand more onerous conditions.
- **Fan failure** – an audible and/or visual indicator should be included.
- **Variable and two speed regulation** – both are common features but it is essential that when grease is being produced the system operates at its design duty.
- **Make up air** – when selected the supply and extract fans shall be electrically interlocked to maintain a balanced system.
- **Gas Interlock** – BS6173 states that an interlock of the ventilation system to the gas supply serving the cooking equipment shall be installed. In the event of an air flow failure, the gas supply is switched off.
- **Flexible connections** – should be suitable for grease laden atmosphere positively fixed to prevent leakage.

The tables on pages 8 and 9 compares the advantages/disadvantages of the various types of fans.

## COMPLYING WITH REGULATIONS FOR COMMERCIAL KITCHENS-DW/172

TABLE 17 - TYPES OF FANS

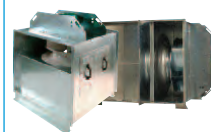
FAN TYPES	ADVANTAGES	DISADVANTAGES
<b>1. Centrifugal Fan Sets</b>	<ol style="list-style-type: none"> <li>1) Large range of pressure and volume characteristics</li> <li>2) No temperature limitations</li> <li>3) Robust and easily maintained</li> <li>4) Adaptable changes in system requirements with pulley/ motor changes</li> <li>5) Standby motors can be more readily fitted</li> </ol>	<ol style="list-style-type: none"> <li>1) An expensive option</li> <li>2) Requires more space than is usually available in the kitchen</li> <li>3) Requires regular maintenance to check drive belt wear unless direct driven fans are used</li> <li>4) Forward curved fans should only be used for supply systems</li> </ol>
<b>2. Bifucated Fan Sets</b>	<ol style="list-style-type: none"> <li>1) Robust with no temperature limitations</li> <li>2) With motor out of airstream this fan is still considered one of the safest options with high temperatures</li> <li>3) Easily installed into a ductwork system</li> <li>4) Robust and easily maintained</li> </ol>	<ol style="list-style-type: none"> <li>1) Less expensive than the centrifugal fan but not a cheap option</li> <li>2) Heavy in construction and therefore not always easy to support</li> <li>3) This fan is best situated within a plantroom since on large duties, the fan can be bulky in size and too noisy for siting within a working environment</li> <li>4) In-duct noise - will probably need attenuation</li> <li>5) Restricted range of resistance capability</li> <li>6) Standard unit not readily available with speed regulation</li> </ol>
<b>3. Belt Driven Axial Fans</b>	<ol style="list-style-type: none"> <li>1) Compact with an extensive duty range especially when operating in contra-rotation</li> <li>2) Few temperature limitations</li> <li>3) Easily installed into a ductwork system</li> <li>4) A less expensive option</li> </ol>	<ol style="list-style-type: none"> <li>1) This fan needs regular maintenance - in hot environments the drive belts are likely to fail more regularly (visual or audible alarm for fan failure is an option)</li> <li>2) Not as robust as items 1 and 2 but still suitable for most kitchen applications</li> </ol>
<b>4. Axial Fans (Metal Impellers)</b>	<ol style="list-style-type: none"> <li>1) Compact with an extensive duty range especially when operating in series</li> <li>2) Easily removed for maintenance and cleaning</li> <li>3) A cheaper option than the above unless dual fans are necessary</li> </ol>	<ol style="list-style-type: none"> <li>1) High temperature limitations but will serve for most general kitchen ventilation systems</li> <li>2) Not as robust as items 1 and 2 but still suitable for most kitchen applications</li> </ol>
<b>5. 'In-Line' Centrifugal and Mixed Flow Impellers</b>	<ol style="list-style-type: none"> <li>1) Compact with a good duty range which can serve many kitchen ventilation systems</li> <li>2) Generally less expensive than the above options</li> <li>3) Easily removed for maintenance and cleaning</li> </ol>	<ol style="list-style-type: none"> <li>1) High temperature limitations but will serve for most general kitchen ventilation systems</li> <li>2) Not as robust as items 1 and 2 but still suitable for most kitchen applications</li> <li>3) Forward curved fans should only be used for supply systems</li> </ol>
<b>6. Roof Extract Fans (Vertical Jet Discharge with Centrifugal Impellers)</b>	<ol style="list-style-type: none"> <li>1) Compact and, where the motor is encased outside the airstream, has a good temperature range</li> <li>2) Easily removed for maintenance and cleaning</li> <li>3) No space restrictions</li> <li>4) Good external appearance</li> </ol>	<ol style="list-style-type: none"> <li>1) High temperature limitations but will serve for most general kitchen ventilation systems</li> <li>2) With poor roof access this fan can be a problem to maintain</li> <li>3) More expensive than in-line/axial fans but dispenses with the necessity of discharge ductwork</li> </ol>

### SECTION 18 - ATTENUATION

Kitchens tend to operate at sensitive times such as late at night and early mornings, therefore consideration should be given to the surrounding area's. Noise and vibration from the plant should be kept to a minimum. Noise levels within the conditioned space should be kept to a level of between NR40 and NR50. Local Authorities will usually advise on their specific requirements although they tend to refer to BS 4142 "Rating of Industrial Noise Affecting Mixed Residential and Industrial Areas.

# DW/172 & NUAIRE PRODUCT RANGES

SQUIF & TWIN SQUIF



AIRMOVER



Clause Ref.	CLAUSE DETAIL	COMMENT	COMMENT
17.1	Care shall always be taken with the location of the supply and extract fans to ensure that there is sufficient space for regular cleaning and maintenance. Limited space shall not restrict selection of the correct fan.	System designer must observe I&M guidelines on unit access.	System designer must observe I&M guidelines on unit access.
17.2	Kitchen ventilation systems have relatively high resistances against which a fan has to operate. The fan should be selected to handle the design resistance with up to an additional 10% pressure margin allowed to suit possible extensions to the original kitchen plan. Regulation of the air flow should be achieved by either variable speed control if the selected fan is suitable, or by the use of balancing dampers.	Client spec. should include 10% pressure margin. Variable speed control via Ecosmart option (or inverter only).	Client spec. should include 10% pressure margin. Variable speed control via third party control company.
17.3	Backward curved centrifugal, mixed flow or axial flow impellers are preferred as they are less prone to unbalance and are more easily maintained and cleaned due to their open construction. Fixed or adjustable metal impellers with a robust and open construction shall be used, as lightweight multi-vane or plastic-type impellers can warp and are prone to collecting concentrations of grease. Plastic bladed fans can however be used where the canopy extracts non-grease producing, low temperature fans.	Squif & Twin Squif have Steel backward curved impellers and are IP54 rated.	Airmover has steel backward curved impellers.
17.4	Conditions within the kitchen in which the fan has to operate are normally between 40 & 60 deg C at 95% relative humidity. Most motors are rated to IP55 and are capable of operating within these conditions without the necessity to mount the motor out of the airstream.	Squif & Twin Squif motors suitable for conditions stated.	Airmover motors suitable for conditions stated.
17.5	For fans that have the motor within the airstream and are ventilating from cooking equipment that produces higher levels of temperature and humidity indicated in 17.4 then the specification for the motor shall be upgraded to withstand more onerous conditions.	Upgrade available for higher temp & humidity if specified - BUT motor is out of airstream.	Upgrade available for higher temp & humidity if specified.
17.6	An audible and/or visual indicator should be included to warn of fan failure. This should operate on pressure difference rather than air movement because of the possibility of grease build-up on the vanes.	Pressure operated fan failure detection available, but typically via third party control. Ecosmart versions available as standard. Twin Squif recommended for high revenue establishments. Also see 17.10.	Pressure operated fan failure detection available, but typically via third party control. Ecosmart versions available as standard. Also see 17.10.
17.7	The provision of drain holes at the lowest point of the motor to allow condensation to drain freely is recommended, these shall be of the porous type to avoid downgrading the Index of the Protection (IP) of the motor.	Motor drain holes available if specified - BUT motor is out of airstream.	Motor drain holes available if specified.
17.8	Both variable and two speed regulation are now common features, but it is essential that when grease is being produced, the system shall operate at its design duty. A minimum extract level shall be set at low speeds, an acceptable ventilation rate is maintained as reduced speeds may cause the carry-over of grease through the filter. This facility is a standard feature of the controller with proprietary speed regulators.	Required range of duty to be established by system designer.	Required range of duty to be established by system designer.
17.9	Where a make-up air system is selected, the speed regulators for both the supply and extract fans shall be interlocked to ensure that the desired balance is maintained.	Interlocking of supply and extract available via Ecosmart.	Interlocking of supply and extract available via Ecosmart.
17.10	BS6173 states that an interlock of the ventilation system to the gas supply serving the cooking equipment shall be installed so that, in the event of air flow failure, the gas supply is switched off. The supply fan shall also be isolated when a fire suppression system is activated in fire mode. This will involve the fitting of an automatic solenoid valve in the gas supply pipe work and an airflow-sensing device such as a pressure switch, vane switch or torque switch. The inclusion of this interlock is a requirement for all new powered extract systems. For existing installations where cooking equipment replacement is like for like, no action is required. However, the contractor shall quote for the inclusion at all times: failure to do so could lead to legal issues. If an existing kitchen has any form of upgrade then the contractor shall quote for the inclusion. The Client's insurance company may have a requirement that this work is done; this may reduce the premium paid.	Gas interlocking control available (MEDEMPACK1). Contact Nuaire for details.	Gas interlocking control available (MEDEMPACK1). Contact Nuaire for details.
17.11	Fans selected for use with dishwasher systems shall be fitted with 'tropicalised' motors that are capable of operating in the saturated atmosphere, or a fan with a motor out of the air stream. The fan should be electrically linked to start with the washer and include an automatic run-on timer to disperse residual moisture as the system cools down. Another option is to specify anti-condensation heaters for larger motors, or for smaller motors to connect a single phase 24 volt supply to a winding when the motor is idle to provide a little heat and thus prevent condensation build up.	Tropicalised motors for dishwasher extract available if specified - BUT motor is out of airstream.	Tropicalised motors for dishwasher extract available if specified.
17.12	Flexible connections shall be suitable for use with a grease laden atmosphere, positively fixed by clamps or bonding to prevent air leakage. Under fire conditions the material must have a minimum integrity of at least 15 minutes and be selected to suit the temperature of the fumes being exhausted. Refer to Table 16 lists material with the maximum temperatures at which they are suitable for continuous operation.	High temperature Flexible connectors available (ancillary item).	High temperature Flexible connectors available (ancillary item).
17.13	Types of Fan: Table 17 1. Centrifugal fan sets 2. Bifurcated fans 3. Belt Driven Axials Fans 4. Axials Fans (metal impellers) 5. 'In-line' Centrifugal and Mixed flow impellers 6. Roof Extract Fans (vertical jet discharge) with centrifugal impellers	In-line centrifugal fan type.	In-line centrifugal fan type.



## DW/172 & NUAIRE PRODUCT RANGES

DAVE SUPPLY	BOXER BESPOKE AHU	BOXER PACKAGED AHU	AXIAL LONG CASED	BIFUCATED FANS	MARK TEN
					
COMMENT	COMMENT	COMMENT	COMMENT	COMMENT	COMMENT
System designer must observe I&M guidelines on unit access.	System designer must observe I&M guidelines on unit access.	System designer must observe I&M guidelines on unit access.	System designer must observe I&M guidelines on unit access.	System designer must observe I&M guidelines on unit access.	System designer must observe I&M guidelines on unit access.
Client spec. should include 10% pressure margin. Variable speed control via Ecosmart option (or inverter only).	Client spec. should include 10% pressure margin. Variable speed control via third party control company.	Client spec. should include 10% pressure margin. Variable speed control via Ecosmart option (or inverter only).	Client spec. should include 10% pressure margin. Variable speed control via Ecosmart option (or inverter only).	Client spec. should include 10% pressure margin. Variable speed control via Ecosmart option (or inverter only).	Client spec. should include 10% pressure margin. Variable speed control via Ecosmart option (or inverter only).
DAVE supply fans have Polymide or Polypropylene backward curved impellers and are IP54 rated.	Boxer Bespoke has steel backward curved impellers.	Boxer packaged has steel backward curved impellers.	Axus impellers are available in Aluminium (300/2), Steel impellers (400/2) and Aluminium (90 deg. C continuous operation).	Axus bifucated impellers are Aluminium (90 & 230 deg. C continuous operation).	Mark Ten has steel backward curved impellers.
Clause not applicable.	Boxer Bespoke motors suitable for conditions stated.	Boxer Packaged motors suitable for conditions stated.	Axus motors suitable for conditions stated.	Bifucated motors suitable for conditions stated.	Mark Ten motors suitable for conditions stated.
Clause not applicable.	Upgrade available for higher temp & humidity if specified.	Upgrade available for higher temp & humidity if specified.	Upgrade available for higher temp & humidity if specified.	Upgrade available for higher temp & humidity if specified - BUT motor is out of airstream.	Upgrade available for higher temp & humidity if specified.
Ecosmart as standard. Recommended for high revenue establishments. Also see 17.10.	Pressure operated fan failure detection available, but typically via third party control. Also see 17.10.	Pressure operated fan failure detection available, but typically via third party control. Ecosmart versions available as standard. Also see 17.10.	Pressure operated fan failure detection available, but typically via third party control. Ecosmart versions available as standard. Also see 17.10.	Pressure operated fan failure detection available, but typically via third party control. Ecosmart versions available as standard. Also see 17.10.	Pressure operated fan failure detection available, but typically via third party control. Ecosmart versions available as standard. Also see 17.10.
Motor drain holes not applicable.	Motor drain holes available if specified.	Motor drain holes available if specified.	Motor drain holes available if specified.	Motor drain holes available if specified.	Motor drain holes available if specified.
Required range of duty to be established by system designer.	Required range of duty to be established by system designer.	Required range of duty to be established by system designer.	Required range of duty to be established by system designer.	Required range of duty to be established by system designer.	Required range of duty to be established by system designer.
Interlocking of supply and extract available via Ecosmart.	Interlocking of supply and extract available by Third Party.	Interlocking of supply and extract available via Ecosmart.	Interlocking of supply and extract available via Ecosmart.	Interlocking of supply and extract available via Ecosmart.	Interlocking of supply and extract available via Ecosmart.
Gas interlocking control available (MEDEMPACK1). Contact Nuairre for details.	Gas interlocking control available (MEDEMPACK1). Contact Nuairre for details.	Gas interlocking control available (MEDEMPACK1). Contact Nuairre for details.	Gas interlocking control available (MEDEMPACK1). Contact Nuairre for details.	Gas interlocking control available (MEDEMPACK1). Contact Nuairre for details.	Gas interlocking control available (MEDEMPACK1). Contact Nuairre for details.
Not applicable.	Tropicalised motors for dishwasher extract available if specified.	Tropicalised motors for dishwasher extract available if specified.	Tropicalised motors for dishwasher extract available if specified.	Tropicalised motors for dishwasher extract available if specified - BUT motor is out of airstream.	Tropicalised motors for dishwasher extract available if specified.
			High temperature Flexible connectors available (ancillary item).	High temperature Flexible connectors available (ancillary item) if specified.	
		Centrifugal fan set.		Bifucated fans.	Mixed flow fan.
In-line centrifugal fan type.	In-line centrifugal fan type.		Axial fans (metal impellers)		

# EXTRACT AND SUPPLY SOLUTIONS OPTIMISING VENTILATION FOR COMMERCIAL KITCHEN APPLICATIONS

Nuair has a wealth of experience in ventilation for commercial kitchens, manufacturing a full range of solutions which include:

- Make-up air supply units such as Boxer AHU which offers - filters, heating, cooling and attenuation designed to suit project specific requirements
- Maintaining the correct balance of supply air between restaurant and kitchen, helping to eliminate draughts and reduce noise
- Gas interlock system with emergency shut off button
- Melinex silencers designed to help prevent the grease impregnation into the acoustic media
- Kitchen extract fans for higher temperature polluted air (motor out of air stream)

## High performance supply & extract for kitchen areas: (SQF, Twin SQF and XBOXER).

Nuair produces a range of high performance supply & extract fans suitable for larger commercial kitchens incorporating some of the following features:

- Optional out of air stream motors
- High temperature operation ideal for kitchen canopy applications
- Removing day to day smells and smoke extract

## Mechanical Extract toilets and kitchens: (XS, DAVE, AVS & AVT).

Nuair offers a wide range of extract fans for wall, window, roof and ceiling/void applications. Fans can be located in kitchens, utility areas and roof, extracting from kitchens and dining area's whilst providing continuous fresh air via trickle ventilators.

## Mechanical extract with heat recovery for communal areas: (XBC & BOXER PACKAGED AHU).

Heat recovery systems offer efficiency and control over the air quality and volume within the space. Heat recovery is ideal at providing tempered air into 'communal' areas such as school classrooms, canteens and dining areas.

## Section 23 (DW/172) - heat recovery

This section recognises that although the initial capital cost may be high, the use of heat recovery for its energy efficiency and conservation value is becoming an increasingly important design feature.

## High performance extract for communal areas: (Boxer Bespoke, Ecosmart Boxer, Airevolve AVS and DAVE).

Nuair has a wide portfolio of extract fans including high performance fans suitable for ceiling void, plant, storage room or roof top applications.



(Model: BOXER) Typical roof installation of this powerful Air Handling Unit.



## ZONAL & CENTRALISED UNITS



### BOXER BESPOKE UNITS (up to 20m<sup>3</sup>/s)

Designed to meet project specific applications. Includes rotary wheels, plate heat exchangers & run around coils.



### MARK TEN FANS (up to 8.2m<sup>3</sup>/s)

High performance extract units. Aluminium manufacture, easily accommodated on all building profiles.



### XBOXER XBC (up to 1.5m<sup>3</sup>/s)

Market leading heat recovery units, up to 96% efficient. Installation internal or external. Control options including Bacnet.



(Model: XB55) Typical installation of ceiling mounted unit in a classroom.

**LOCAL UNITS**



**SQUIF FANS (up to 6.5m<sup>3</sup>/s)**  
 Inline unit with motor out of air stream. Cost effective low maintenance. Easy to install and suitable for external mounting. Ambient and High temperature ranges.



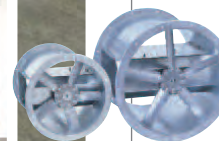
**TWIN SQUIF FANS (up to 6.2m<sup>3</sup>/s)**  
 Run and standby units for all 'motor out of airstream' applications. Recommended for high revenue establishments.



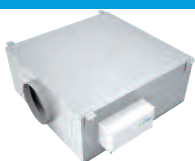
**AIRMOVER (up to 10.6m<sup>3</sup>/s)**  
 High performance backward curved centrifugal, exceptionally quiet, low maintenance, easy to install and suitable for external mounting.



**AXIAL FANS (up to 92m<sup>3</sup>/s)**  
 High performance multi-purpose wall, ceiling, panel and roof extract fans.



**BIFUCATED FANS (up to 23m<sup>3</sup>/s)**  
 High performance, low maintenance 'motor out of airstream'.



**DAVE SUPPLY FANS (up to 1.1m<sup>3</sup>/s)**  
 Supply range of single fans. Ideal for ceiling void, plant room or roof top applications. Can be installed internally or externally as standard.



**AVTCP & AVSCP (up to 1.8m<sup>3</sup>/s)**  
 Market leading low profile single and twin fans. Very low energy consumption and SFP's. Twin fans are recommended for high revenue establishments.



**BOXER PACKAGED AHU'S (up to 20m<sup>3</sup>/s)**  
 High performance packaged Air handling units (Sizes 1 - 7).

Cheetah consists of a number of intelligent modules which are interconnected by a data communications network. A typical configuration is shown below and opposite.

### THE STANDARD MODULES ARE:

- Display processor with system power supply and override facility
- Sensor processor
- Data logger with GPRS remote access system
- Temperature sensors (located in ducting)
- Optic sensors detecting smoke and steam (located in extract hood)
- Carbon dioxide sensors (optional)

With Cheetah operating in normal mode, the system's sensors control the fans. The fans are set to a minimum speed by default but automatically increase in the event of smoke, high temperatures in ducts and high levels of carbon dioxide.

In times of low activity in the kitchen the extract fan will typically be reduced to 40% of its normal operating speed which only consumes 6% of the energy. Cheetah can be timer controlled, minimising energy usage further by shutting fans off to predefined occupation schedules or holiday modes.

The system is configured and operating parameters are set at installation. Cheetah is completely configurable and has various operating modes and settings which are installed to suit the particular conditions at each location. The Cheetah data logger stores key operating data (e.g. fan speeds, temperatures, smoke sensor operation etc) and, via the GPRS remote access system, allows us to remotely monitor and report system activity and performance.

The remote feature also allows system configuration changes to optimise performance and identify and correct faults without attending site.

### THIRD PARTY BMS INTEGRATION

Cheetah can interface with your existing Building Management System, ensuring that all the key data you need about your site can be accessed in one place.

### REMOTE MONITORING

Without visiting site, remote access means we can monitor key system KPI's such as fan speeds and temperature. Faults can be quickly identified and often fixed remotely, maintenance needs can be identified and performance optimised, all without attending site.

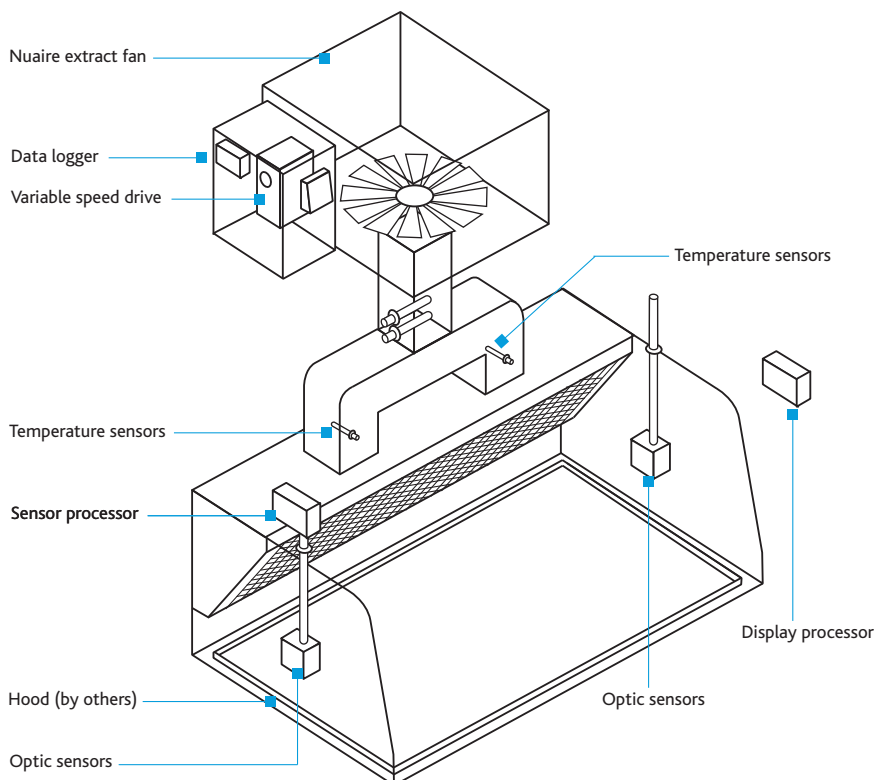
### ENERGY MONITORING (OPTIONAL)

Cheetah's energy monitoring unit can meter energy usage. The data is downloaded remotely and presented to the customer. This verifies the savings from Cheetah and identifies where further optimisation could enhance performance.

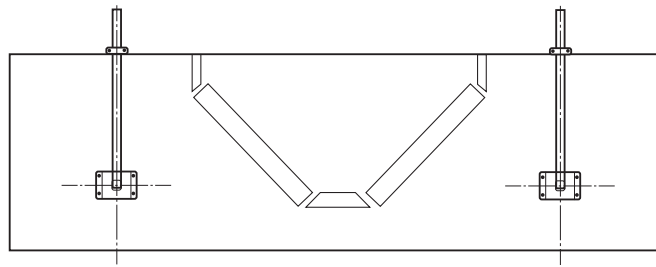
### FIRE SAFETY

The temperature in the extract ducts is measured continuously and if high temperatures are detected, action is taken to alert the operators of a possible fire risk.

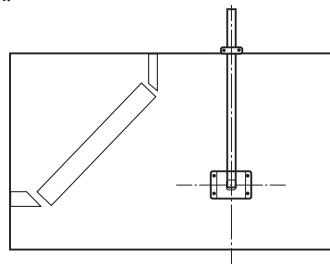
Typical Extract system configuration with Cheetah 1 Hood system energy control.



(Double Canopy) Cheetah 2 Hood system.



(Single Canopy) Cheetah 1 Hood system.



Note: if your kitchen system includes an Ecosmart fan, please include a Cheetah GPIO input/output control.

## CHEETAH 1 HOOD SYSTEM

System requirement	Quantity
Temperature sensor	2
Optic sensor kit	1
Display (inc Power supply)	1
Sensor Processor	1
Data Logger	1
Cables (Network cables - metres)	Various
Cables (Temperature cables - metres)	Various
Sim 36 month contract	1

## CHEETAH 4 HOOD SYSTEM

System requirement	Quantity
Temperature sensor	8
Optic sensor kit	4
Display (inc Power supply)	1
Sensor Processor	2
Data Logger	1
Cables (Network cables - metres)	Various
Cables (Temperature cables - metres)	Various
Sim 36 month contract	1

## CHEETAH 2 HOOD SYSTEM

System requirement	Quantity
Temperature sensor	4
Optic sensor kit	2
Display (inc Power supply)	1
Sensor Processor	1
Data Logger	1
Cables (Network cables - metres)	Various
Cables (Temperature cables - metres)	Various
Sim 36 month contract	1

In addition to the above a Drive Pack is required:

## CHEETAH DRIVE PACK

kW rating	Code*	Code**	Code***
1.1	CDRIVEIP21-1	CDRIVEIP54-1	CDRIVEIP-1
1.5	CDRIVEIP21-2	CDRIVEIP54-2	n/a
2.2	CDRIVEIP21-3	CDRIVEIP54-3	n/a
3	CDRIVEIP21-4	CDRIVEIP54-4	n/a
4	CDRIVEIP21-5	CDRIVEIP54-5	n/a
5.5	CDRIVEIP21-6	CDRIVEIP54-6	n/a
7.5	CDRIVEIP21-7	CDRIVEIP54-7	n/a
11	CDRIVEIP21-8	CDRIVEIP54-8	n/a
15	CDRIVEIP21-9	CDRIVEIP54-9	n/a
18.5	CDRIVEIP21-10	CDRIVEIP54-10	n/a
22	CDRIVEIP21-11	CDRIVEIP54-11	n/a
30	CDRIVEIP21-12	CDRIVEIP54-12	n/a

\*3 Phase/IP21+enclosure+lonworks card,

\*\*3 Phase/IP54+lonworks card,

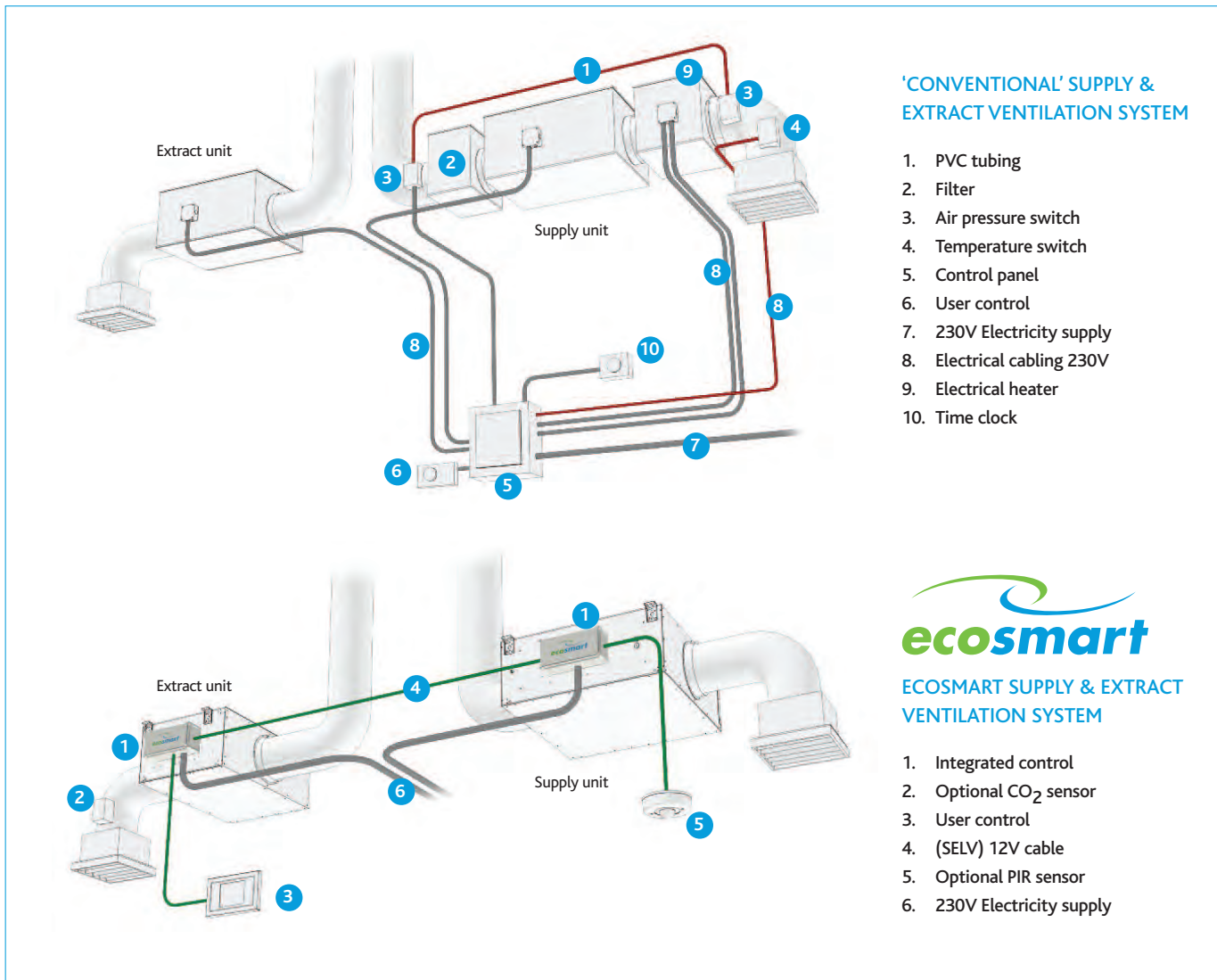
\*\*\*1 Phase+enclosure

## CHEETAH 3 HOOD SYSTEM

System requirement	Quantity
Temperature sensor	6
Optic sensor kit	3
Display (inc Power supply)	1
Sensor Processor	2
Data Logger	1
Cables (Network cables - metres)	Various
Cables (Temperature cables - metres)	Various
Sim 36 month contract	1

Note: the hood systems do not include an extract or supply fan.

Note: Systems do not include Hoods.



### SIMPLE TO INSTALL

All controls are pre-assembled, configured and installed directly into the fan. Site time kept to a minimum, quality and efficiency maintained.

### SIMPLER SYSTEMS

No need for main VCD, no wasted energy or noise generation because the air volume can be precisely set via the integrated speed control, minimum and maximum speeds easily adjusted via Ecosmart commissioning panel.

### SIMPLE, PRECISE COMMISSIONING

As recommended in Part L, Ecosmart enables the system to be accurately commissioned via an integrated speed control, minimum and maximum speeds easily adjusted via commissioning panel integral to the control.

### QUIETER SYSTEMS

With Ecosmart your system is only at maximum design duty when absolutely necessary. The noise levels within your systems are lower because the fans are rarely at full speed.

### IMPROVED LIFECYCLE

Ecosmart enables the fan or air handling unit to be run at lower speeds. This reduces the maximum load and wear and therefore increases the overall working life of the units.

### DEMAND VENTILATION

Only ventilates the area when you want it to - why fully ventilate a room when it's not occupied - maximum savings possible achieved.

### HEALTHY ATMOSPHERE

Ecosmart has a trickle function as standard which when activated, via a simple switch, enables you to set a background ventilation rate, keeping the rooms fresh when unoccupied, whilst still saving

energy. System will boost or ramp to maximum design duty when triggered by an Ecosmart or other external device.

### PLUG IN CONTROLS

Simple low voltage sensors complete with pre-plugged cable means that any control function is easily achieved. You decide which conditions to monitor and the system will operate at the optimum speed.

### BMS INTERFACE

Integrated BMS features enable any central system to control and monitor the fan or air handling unit via 0-10V signal. This enables full speed control and heating or cooling enable if installed and volt free status indication as standard.

### PEACE OF MIND

Ecosmart has a 5 year warranty. 1st year Parts and Labour with remaining years parts only. For further details contact Nuaira.

Simple SELV wired, plug-in 'enablers' start and stop the fan, when activated from either start-up or trickle ventilation mode. These 'enablers' include time clocks, infra-red detectors, switch live contacts, humidistats, thermostats and BMS contacts.

All systems must include at least one enabler. (NB. When used, BMS control and time clocks take over all other enablers).

Integrated speed control (inverter or electronic) is included with all Ecosmart controlled fans. ES-ISC are external to some fans and need to be hard wired.

Once the fan is activated by the enabler the sensor takes over. They will maintain comfort/ design conditions by automatically adjusting fan speed up and down. The sensors include temperature, relative humidity, CO<sub>2</sub> or as determined by the BMS.

Stylish and simple to operate user control facilitates manual operation where desired.

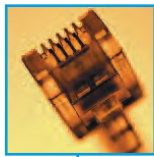


**BMS**

0-10V dc signal to activate the system and modulate fan speed. Select/Deselect H&C.  
Note: this will override any other devices (eg. ES-UCF) fitted (except in Constant Pressure fans).

**ECOSMART ENABLERS & DETECTORS**

**Simple Plug-in System**



**ES-PIR2 (Passive Infra-Red)**

Detects movement and activates system. Incorporates a system status LED, overrun timer and timer adjustment.



**ES-LCD**

Touch screen user control in white incorporating time clock facility. This can control the function of the fan by manual setting or using a set of timed programs.



**ES-HUMIDISTAT2**

Activates the system when the RH level is above set point. Incorporates two system status LEDs (Green = OK, Red = Failure) and RH set point level adjustment.



**ES-THERMOSTAT2**

Activates the system when the temperature is above set point. Incorporates two system status LEDs (Green = OK, Red = Failure) and temperature set point level adjustment.



**ES-AVI2**

When fan failure occurs the AVI will flash a warning. Supplied with pre-plugged 10m length of communication cable.



**ES-CO2RM  
ES-CO2RMPP**

Surface mounted room carbon dioxide (CO<sub>2</sub>) sensors which incorporate a temperature sensor. RM = SELV option, RMPP complete with SELV AC powers supply.



**ES-HTCSIG**

Signal conditioning circuit for humidity, temperature and CO<sub>2</sub> sensors.

**ECOSMART SPEED CONTROLLING SENSORS**



**ES-TEMP2 Temperature Sensor**

Modulate fan speed based on room temperature. Incorporates two system status LEDs (Green = OK, Red = Failure) and temperature set point level adjustment.



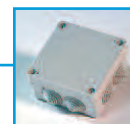
**ES-RH2 Relative Humidity Sensor**

Modulate fan speed based on RH level. Incorporates two system status LEDs (Green = OK, Red = Failure) and RH set point level adjustment.



**ES-UCF Manual user control**

Manual 'on' and 'off' system user/speed control. Incorporates two system status LEDs (Green = OK, Red = Failure).



**\*ES-CI Semi-automatic user control**

Fan, heating & cooling selected by external volt free switch, speed selected by 0-10V signal.



**ES-JB Junction box**

Designed to be compatible with Ecosmart System this unit is supplied with a pre-plugged 10 metre length of communications cable and has 8 further ports.



**ES-CO2 Sensor**

Duct mounted sensor to modulate fan speed based on CO<sub>2</sub> levels. Connect to fan directly. Pre-wired with 2m cable (not adjustable).



**Switched Live by others**

Any mains voltage signal connected to the switched live terminal (S/L) in the unit. This affects the connected fan only.

**Note:** For your Ecosmart products to work with a Cheetah control, please order a **\*ES-CI Semi-automatic user control** (shown above) along with a **Cheetah GPIO input/output control**.

# SQUIF SINGLE FANS HIGH PRESSURE & VOLUME EXTRACT FANS

Suitable for operation in airstream temperatures up to 90°C. Ideal for kitchen canopy applications.



Scan for details.

**AMBIENT  
& HIGH TEMP.  
(400°C/2hrs)  
OPTIONS**

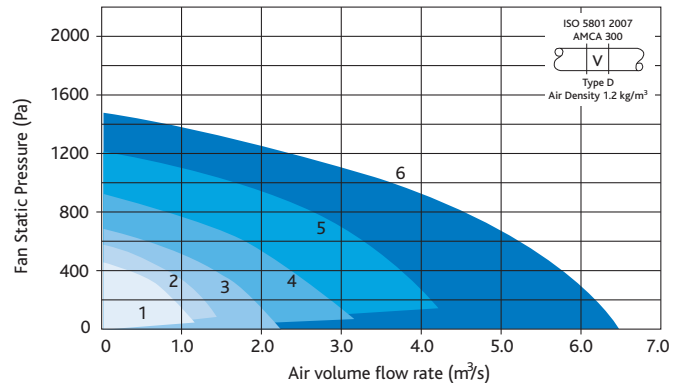
## BENEFITS

- **High performance** - one of the leading solutions for motor unit 'Out of air stream' applications. The units shall be suitable for operation in airstream temperatures up to 90°C.
- **Cleaner 'Out of air stream' motors** - are ideal for dirty extract and greasy environments. Cleaner motor improves cooling and extends motor life.
- **Easy maintenance 'Out of air stream' motors** - allow for quick and easy access and lower maintenance costs.
- **Ideal for high resistances** - high efficiency centrifugal impellers provide high pressure development suitable for ducted systems and kitchen canopy with extreme filtration.
- **Backward curved centrifugal impellers** - provide high pressure development suitable for ducted systems and kitchen canopy with extreme filtration.
- **Flexible solution** - can be mounted internally, externally, vertically or horizontally. Mounting facilities included.
- **Acoustic enclosure** - available for project specific requirements.
- **Inspection panels** - allow for easy access.
- Can be supplied with Ecosmart controls, easy to commission, energy efficient solution.
- **Warranty** - SQUIF has 5 years with Ecosmart & 3 years with No Control.

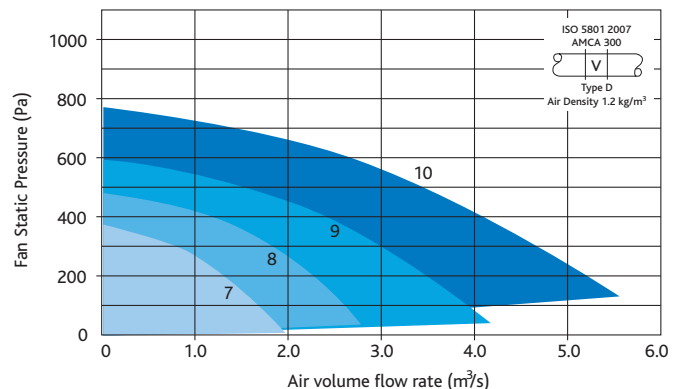
## PERFORMANCE

Maximum performance 6.5m<sup>3</sup>/s.

### Squif Single Fans - 4 Pole



### Squif Single Fans - 6 Pole



### UNIT CODE DESCRIPTION

**SQFA 4 3-ES**

| | | | |  
1 2 3 4 5

1. Squif Range
2. A = Ambient  
No 'A' = 400/2 option
3. Pole (4 or 6)
4. Phase (3)
5. Ecosmart controls

With

**NO CONTROL**

### UNIT CODE DESCRIPTION

**SQFA 4 3**

| | | |  
1 2 3 4

1. Squif Range
2. A = Ambient  
No 'A' = 400/2 option
3. Pole (4 or 6)
4. Phase (3)

Curve No.	Unit*	Curve No.	Unit*
1.	SQF41	6.	SQF46
2.	SQF42	7.	SQF61
3.	SQF43	8.	SQF62
4.	SQF44	9.	SQF63
5.	SQF45	10.	SQF64

\*Add relevant phase/control to above code.



## TWIN SQUIF FANS QUIET & POWERFUL VOLUME EXTRACT FANS

Run and standby solution for all 'motor out of airstream' applications.

Recommended for high revenue establishments.



### BENEFITS

- **Quiet and powerful solutions** - high performance centrifugal motor/impeller combination providing a low noise solution. The units shall be suitable for operation in airstream temperatures up to 90°C.
- **Cleaner 'Out of air stream' motors** - are ideal for dirty extract and greasy environments. Cleaner motor improves cooling and extends motor life.
- **Easy maintenance 'Out of air stream' motors** - allow for quick and easy access. Inspection hatches allow the internals to be easily checked/cleaned.
- **Ideal for high resistances** - high efficiency centrifugal impellers provide high pressure development suitable for ducted systems and kitchen canopy with extreme filtration.
- **Prevents internal recirculation** - backdraft dampers inbuilt.
- **Flexible solution** - can be mounted internally, externally, vertically\* or horizontally. Mounting facilities included.
- **Failure detection** - inverter detects fan failure and Ecosmart control sends signal to 2nd fan. Recommended for high revenue establishments.
- **Control-ability as standard** - all 3 phase units have the flexibility to be speed controlled utilising Ecosmart or Cheetah controls.
- **Fan to suit all applications** - Ecosmart can have 2 speed motors for day to day extract and smoke extract.
- **Warranty** - TWIN SQUIF has 5 years with Ecosmart & 3 years with No Control.

\* Please refer to installation & maintenance instructions.

With **ecosmart**  
UNIT CODE DESCRIPTION

**SQFTA 4 3-ES**

| | | | |  
1 2 3 4 5

1. Twin Squif Range
2. A = Ambient  
No 'A' = 400/2 option
3. Pole (4 or 6)
4. Phase (3)
5. Ecosmart control

With **NO CONTROL**  
UNIT CODE DESCRIPTION

**SQFTA 4 3**

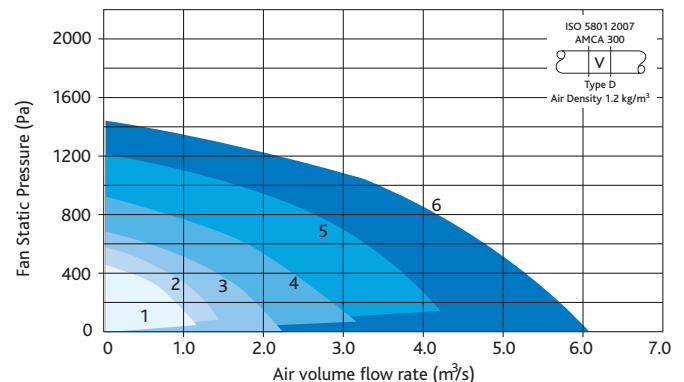
| | | |  
1 2 3 4

1. Twin Squif Range
2. A = Ambient  
No 'A' = 400/2 option
3. Pole (4 or 6)
4. Phase (3)

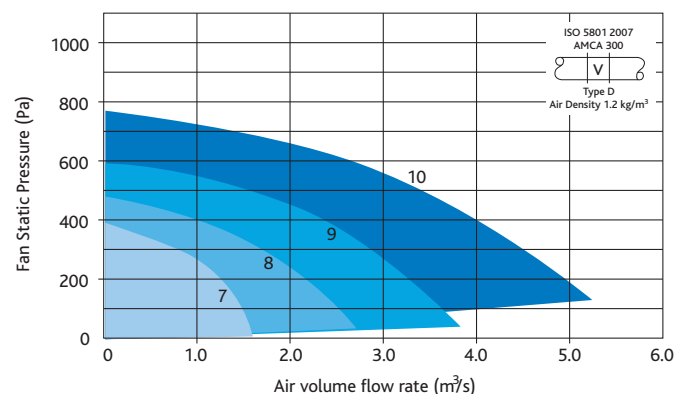
### PERFORMANCE

Maximum performance 6.2 m<sup>3</sup>/s.

Squif Twin Fans - 4 Pole



Squif Twin Fans - 6 Pole



Curve No.	Unit*	Curve No.	Unit*
1.	SQFTA41	6.	SQFTA46
2.	SQFTA42	7.	SQFTA61
3.	SQFTA43	8.	SQFTA62
4.	SQFTA44	9.	SQFTA63
5.	SQFTA45	10.	SQFTA64

\*Add relevant phase/control to above code.

# AIRMOVER SINGLE FANS QUIETEST NOISE TO DUTY RATIO VOLUME EXTRACT FANS

Low noise fan, for high performance applications.



Scan for details.

## BENEFITS

- **Quiet solution** - the high rigidity, double skinned construction produces the quietest noise to duty ratio unit in the industry, ensuring that your system requirements are easily met.
- **Suits ducted applications** - units are constructed with a square case and mezz flange.
- **Provides long life** - strong aluzinc and pentapost construction and helps minimise onsite installation damage.
- **Flexible** - ideal for either internal or external applications.
- **Reduces maintenance costs** - a panel provides quick and easy access.
- **Control-ability as standard** - all models have the flexibility to be speed controlled utilising a Nuair Ecosmart control.
- **2-speed options available** - Ecosmart has Class 'H' insulated motors.
- **Ease of installation** - motors are pre-wired to external IP55 rated terminal box.
- **Assists in meeting design criteria** - wide range of attenuators available.
- **Warranty** - AIRMOVER has 5 years with Ecosmart & 3 years with No Control.



## UNIT CODE DESCRIPTION

**AM 4 2 T - ES**

| | | | |  
1 2 3 4 5

1. Airmover
2. Pole (2, 4 or 6)
3. Size
4. Options T = Two speed
5. ES = Full Ecosmart controls – BMS interfaces and commissioning controls below) full compatibility with Ecosmart sensors.

With

**NO CONTROL**

## UNIT CODE DESCRIPTION

**AM 4 2**

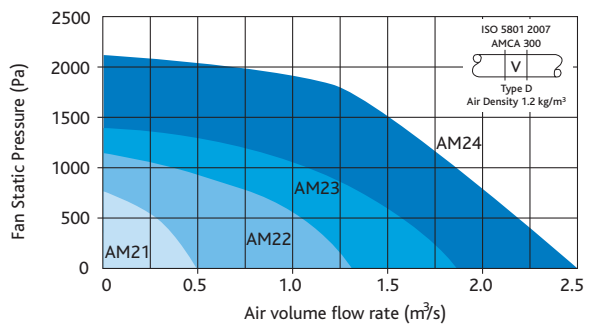
| | |  
1 2 3

1. Airmover
2. Pole (2, 4 or 6)
3. Size

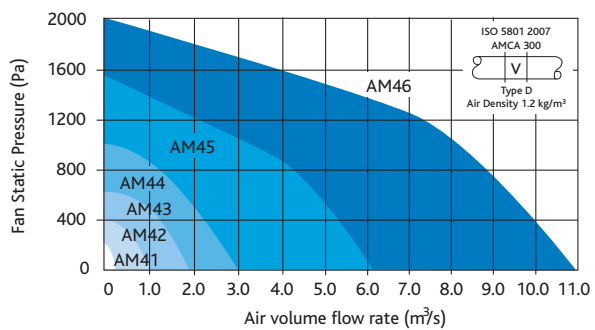
## PERFORMANCE

Maximum performance 10.6m<sup>3</sup>/s

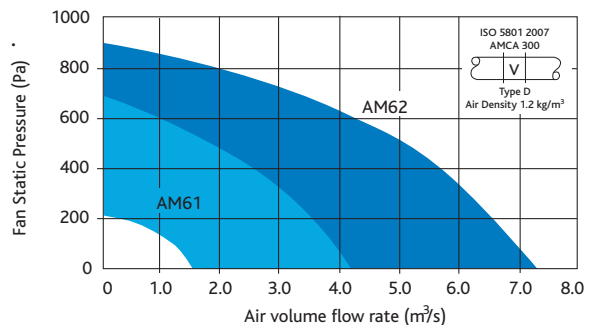
Airmover - 2 Pole



Airmover - 4 Pole

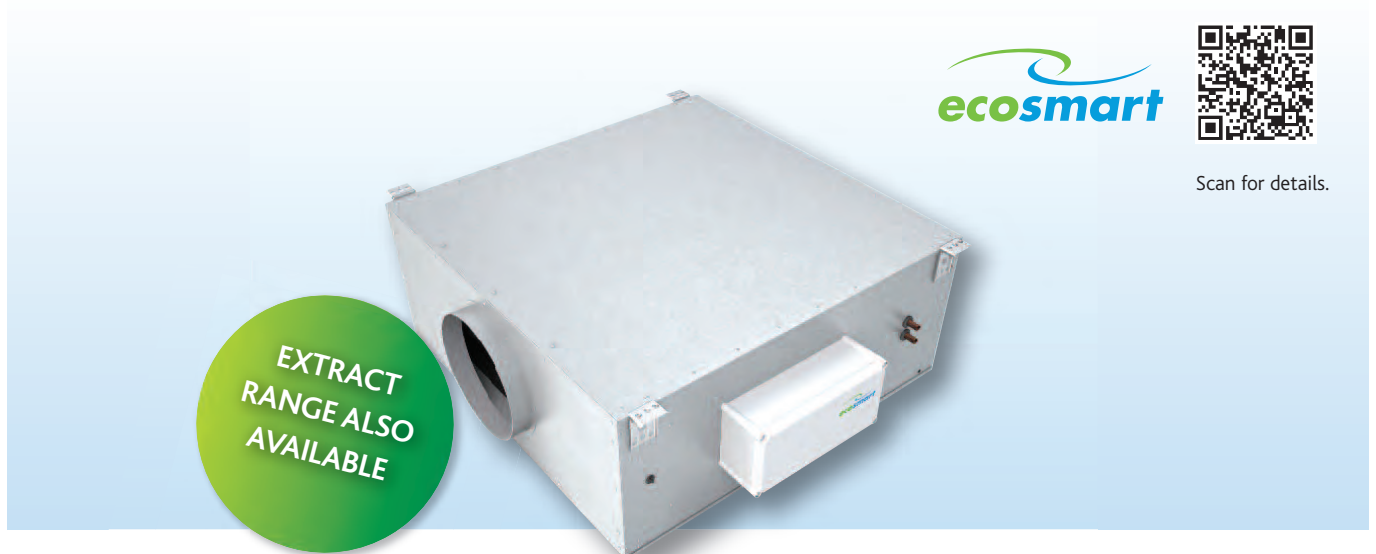


Airmover - 6 Pole



## DAVE SUPPLY FANS HIGH PERFORMANCE FANS IN 7 CASE SIZES WITH OPTIONAL HEATER BATTERIES

Can be installed internally or externally without additional weather protection.



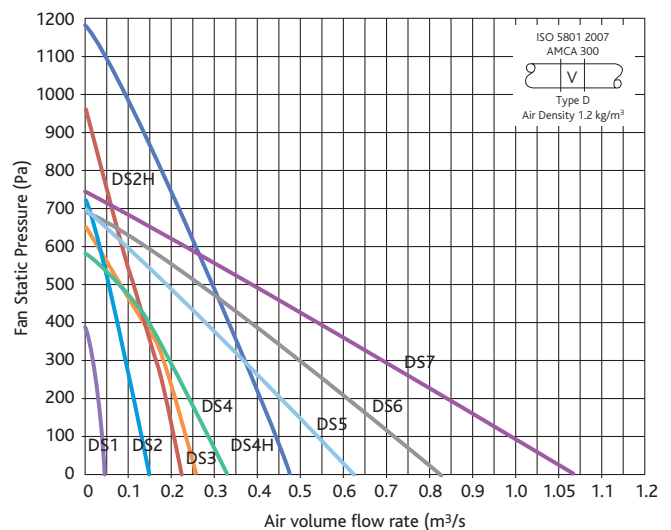
### BENEFITS

- **All models feature the Nuair patented 'Floating fan design'** - negating the requirement for further AV mounts.
- **Fans are single skinned construction** - manufactured from aluzinc which lasts 5 times longer than galvanised steel and provides higher wear resistance.
- **No requirement for additional weather protection** - all supply fans can be installed internally or externally and are supplied with removable weather proof control cover (if required).
- **Latest EC Technology** - performance optimised backward curved impellers and IP54 EC motors provide low specific fan powers and stepless speed control without tonal noise generation.
- **Multi access** - compact range ideal for space restricted applications such as ceiling voids. Units have top or bottom access as standard allowing for quick install and easy access to fans for maintenance.
- **Attenuation Pods** - all supply fans are lined with high density acoustic lining and fitted with attenuated pods to ensure low breakout noise levels.
- **Quick installation** - fans are supplied complete with a set of support brackets for easy installation or inclusion into an existing drop rod system.
- **Coil options** - LPHW coils with 2 port pressure independent valve (PICV), Electric heater with thyristor control or no heater.
- **Warranty** - DAVE has 5 years with Ecosmart.

### PERFORMANCE

Maximum performance 1.1m<sup>3</sup>/s

DAVE Supply fans units 1 - 7



### UNIT CODE DESCRIPTION

#### DS7A-LES

||| |  
1 2 3 4 5 6

1. DAVE Range
2. Supply fan
3. Case size (1-7)
4. Case type:  
A = Extended
5. L = LPHW Coil/valve  
E = Electric heater,  
N = No heater
6. ES = Ecosmart control

### RANGE MODELS

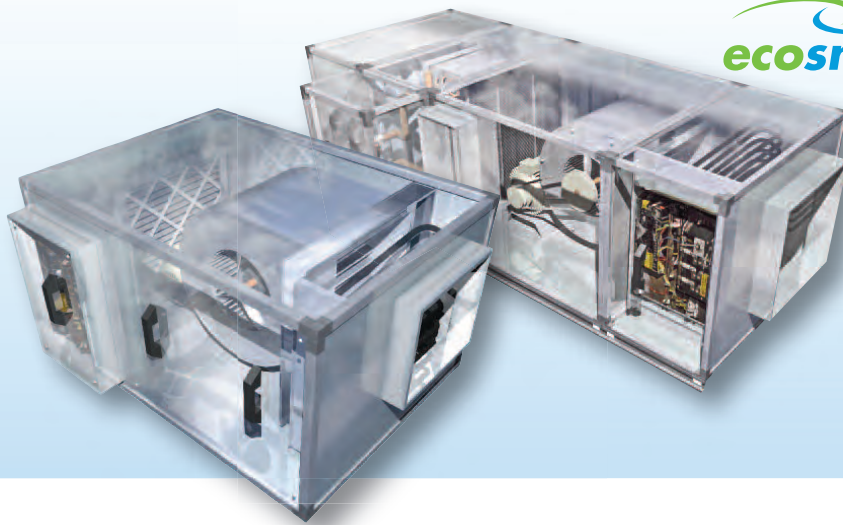
**DAVE Supply Plus No Heater:** Extended lined case Type 'A', G4 filter, attenuation pods, Energy efficient Ecosmart control. Circular spigots.

**DAVE Supply Plus LPHW:** Extended lined case Type 'A', LPHW coil with 2 port pressure independent valve (PICV), G4 filter, attenuation pods, Energy efficient Ecosmart control. Circular spigots.

**DAVE Supply Plus Electric heater:** Electric heater (up to 9kW maximum), Extended lined case, Type 'A', Electric heater & thyristor control, G4 filter, attenuation pods, Energy efficient Ecosmart control. Circular spigots.

# BOXER STANDARD PRE-PACKAGED SUPPLY AHU'S WITH OPTIONAL HEATING OR COOLING

For high performance applications ensuring that your system requirements are easily met.



Scan for details.

## BENEFITS

- **Very quiet** - 25mm double skinned panels provide better acoustics.
- **Reduced installation time** - all components are pre-assembled, wired and tested at the Nuair manufacturing facility. Units are delivered conveniently in sections for easy site assembly.
- **Simple precise commissioning** - Ecosmart models can have minimum and maximum ventilation rates precisely set and limited at AHU requiring no throttling dampers.
- **Part L and energy efficient** - fan impellers are selected for optimum efficiency and noise characteristics. Motors are IE2 to BS5000 direct drive and high efficiency belt drive.
- **Improved life cycle/no system overloads** - Ecosmart models are pre-programmed to automatically give a soft start function which prevents electrical overloading and minimises mechanical wear.
- **Warranty** – BOXER has 5 years with Ecosmart & 3 years with No Control.

## With UNIT CODE DESCRIPTION

### ESBH S 2-LC

1 | 2 | 3 | 4

1. Ecosmart Boxer range
2. S = Supply EX = Extract
3. Size 1 - 7
4. L = Low Pressure hot water heater battery  
LC = Low Pressure hot water heater battery & CHCW chilled water cooling coil  
LD = Low Pressure hot water heater battery & DX cooling coil  
ED = Electric heater battery & DX = Direct expansion (refrigerant type coil)  
E = Electric heater battery

## With UNIT CODE DESCRIPTION

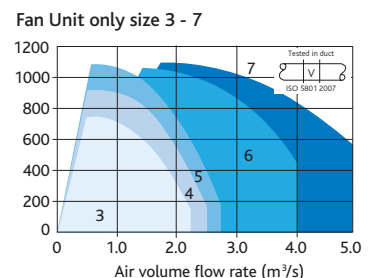
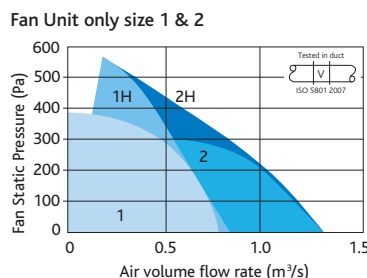
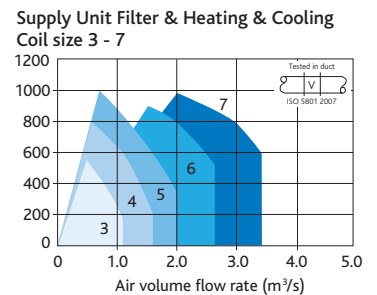
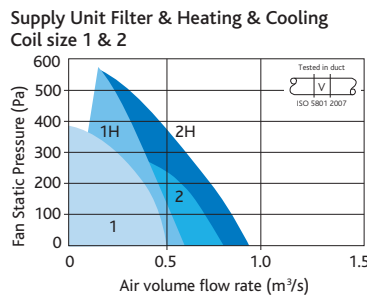
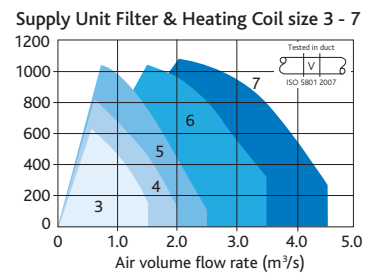
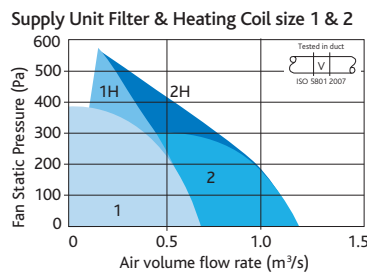
### BH S 2 NC-LC

1 | 2 | 3 | 4 | 5

1. Boxer range
2. S = Supply EX = Extract
3. Size 1 - 7
4. NC = No control
5. L = Low Pressure hot water heater battery  
LC = Low Pressure hot water heater battery & CHCW chilled water cooling coil  
LD = Low Pressure hot water heater battery & DX cooling coil  
ED = Electric heater battery & DX = Direct expansion (refrigerant type coil)  
E = Electric heater battery

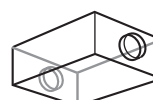
## PERFORMANCE

Maximum performance 20m<sup>3</sup>/s.

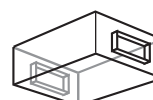


## CONFIGURATIONS

Circular duct connections size 1 & 2



Rectangular duct connections size 3 to 7



## BOXER CUSTOM MADE SUPPLY AHU's OPTIMISING AIR QUALITY WITH OPTIONAL HEATING AND COOLING

For applications with special demands: energy efficiency, high performance & fast commissioning.



Scan for details.



### BENEFITS

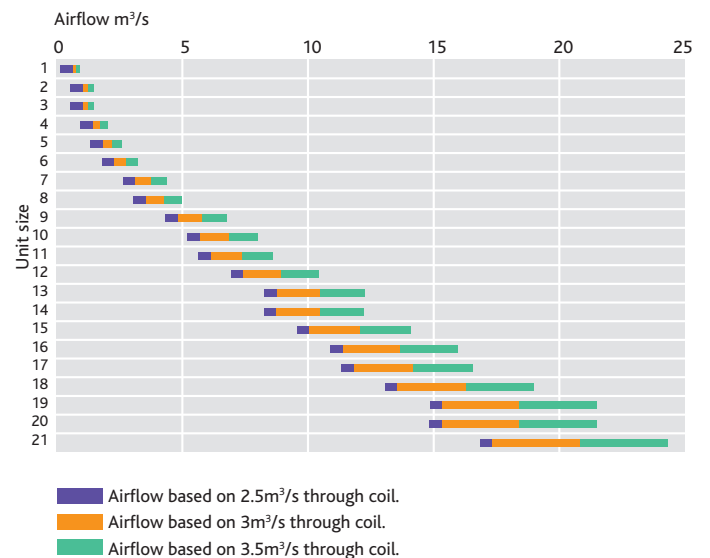
- **Customer defined** - customers have the flexibility to combine modules to build tailor-made AHUs up to 20m<sup>3</sup>/s (Single deck only).
- **Special demands** - for installations that demand functionality BOXER can always offer a solution. For instance, the installation might require a humidifier in order to achieve a specific humidity level. The application environment might also require components in a specific finish, BOXER can meet this requirement.
- **Flexibility** - the possibility to combine single and double deck units has been increased in combinations and sizes within this range. Installations with high demands might need one or a few functions outside the standard range. The pre-configured and tailored solution ranges can be combined to offer the best solution. The unit platform could be standardised, whereas a selection of the functions are customised making BOXER the most flexible AHU range available.
- **Project specific controls** - AHUs are sent to site control free allowing them to be integrated with control systems supplied by others.
- **Energy solutions** - Nuair also offers a number of world class solutions for energy efficiency.
- **Warranty** – BOXER AHU has 3 years.

### CODE DESCRIPTION

#### PROJECT SPECIFIC

### PERFORMANCE

Maximum performance 20m<sup>3</sup>/s supply as single deck.



This graph is to be used as a guide only – Nuair will be happy to size your unit for you based on your projects individual requirements.

At Nuair, our wealth of design experience is harnessed to deliver unique design features that will significantly enhance the customer experience:

- Maximum corrosion protection by galvanised and optional powder-coated casing panels
- 50mm construction providing high standards of heat and noise insulation
- Building material class A1 mineral wool heat and noise insulation
- Thermal transmittance minimised by optimised casing covers
- Unit construction can be dismantled into component sections
- Class B leakage classification

# AXUS LONG CASED AXIAL FANS OPTIMISING AIR QUALITY

A massive range available to suit every application.

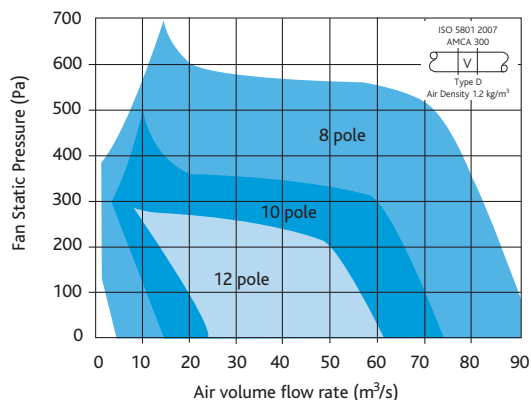
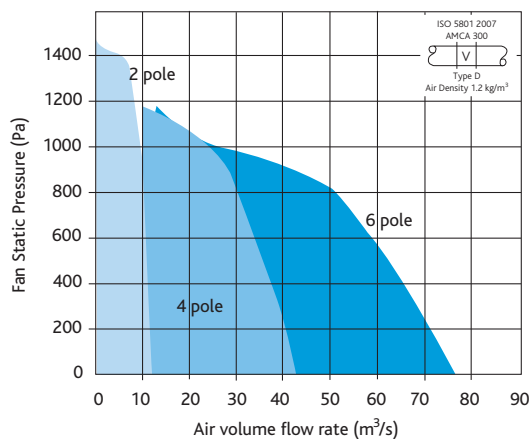


## BENEFITS

- **Wide range** - the widest range of 'standard' axials available. A fan to match every application ensures maximum efficiency saving costly energy.
- **Energy efficient** - the fan impeller and EFF2 motors provide the most efficient solution.
- **Long life heavy gauge galvanised steel construction** - ensures strength, durability and protection from damage during installation and will be corrosion resistant.
- **Controls** - wide range available including energy efficient Ecosmart.
- **Tested to the highest standards** - air performance to BS848 (part 1) 2007 and ISO5801 (part 1) 2007 with acoustic performance to AMCA300. All carried out at Nuaire's test facilities to ensure the most accurate performance figures and noise data is provided, constantly monitored to give you up to date information you can rely on.
- **Comprehensive ancillaries** - including attenuators, speed controls and mounting ancillaries all pre-selected for the individual fan to ensure a perfect match and eliminate any on-site fitting problems.
- **Warranty** - AXUS has 5 years with Ecosmart & 3 years with No Control.

## PERFORMANCE

**Maximum performance 92m<sup>3</sup>/s.** Indication of the overall duty range shown below. Please contact Nuaire for any duty outside the range indicated.



### UNIT CODE DESCRIPTION

**AX100 Z - 4 1 3 A**

1 2 3 4 5 6 7

1. AXUS Long cased axial
  2. Case diameter in cms
  3. Impeller specification reference
  4. Motor speed in poles
  5. Impeller blade angle reference
  6. Electrical supply in Phases  
1 = 230V, 50Hz, 3 = 400V, 50Hz
  7. Impeller material  
Without letter = standard GRP  
A = Optional aluminium alloy
- In addition an ES-ISC inverter will be required, contact Nuaire for details.

With

**NO CONTROL**

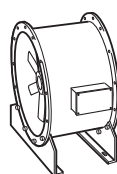
### UNIT CODE DESCRIPTION

**AX100 Z - 4 1 3 A**

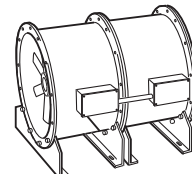
1 2 3 4 5 6 7

1. AXUS Long cased axial
2. Case diameter in cms
3. Impeller specification reference
4. Motor speed in poles
5. Impeller blade angle reference
6. Electrical supply in Phases  
1 = 230V, 50Hz, 3 = 400V, 50Hz
7. Impeller material  
Without letter = standard GRP  
A = Optional aluminium alloy

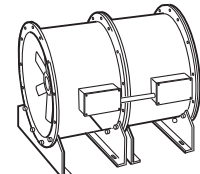
## CASE OPTIONS



AXUS Circular Axial.



AXUS Contra-Rotating.



AXUS Run & Standby.

# AXUS BIFUCATED AXIAL FANS OPTIMISING AIR QUALITY

High performance 'Motor out of airstream' unit.



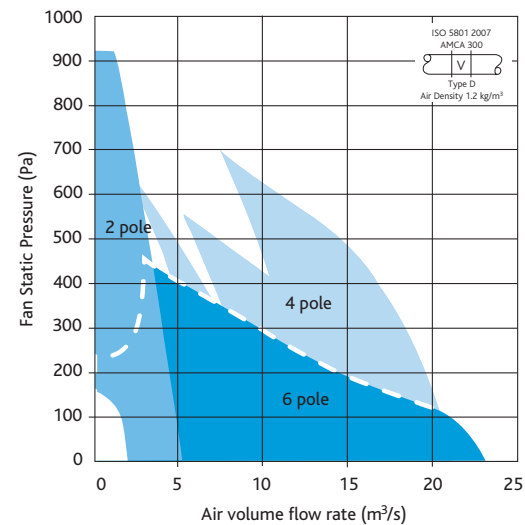

Scan for details.

## BENEFITS

- **High temperature performance** - the standard bifurcated unit is suitable for temperatures up 90°C. High temperature options available up to 230°C.
- **Wide range** - the widest range of 'standard' bifurcated axials available. A fan to match every application ensures maximum efficiency.
- **Low maintenance** - motor out of airstream ensures the unit is not affected by contaminants yet is easily accessible.
- **Long life heavy gauge galvanised steel construction** - ensures strength, durability and protection from damage during installation and will be corrosion resistant.
- **Tested to the highest standards** - air performance to BS848 (part 1) 2007 and ISO5801 (part1) 2007 with acoustic performance to AMCA300.
- **Comprehensive ancillaries** - including attenuators, frequency inverters, Ecosmart controls and mounting ancillaries all pre-selected.
- **Bifurcated fan options** - (2 speed operation half and full). Flameproof motors to EExd IIBT4 for operation in systems with in duct. Ambient temperature up to 230°C.
- **Warranty** – AXUS Bif has 5 years with Ecosmart & 3 years with No Control.

## PERFORMANCE

**Maximum performance 23m³/s.** Indication of the overall duty range shown below. Please contact Nuair for any duty outside the range indicated.



## UNIT CODE DESCRIPTION

**AXB100Z-4 1 3 A T ES**

1 2 3 4 5 6 7 8 9

1. Bifurcated AXUS Long cased axial
2. Case diameter in cms
3. Impeller specification reference
4. Motor speed in poles
5. Impeller blade angle reference
6. Electrical supply in Phases  
1 = 230V, 50Hz, 3 = 400V, 50Hz
7. Impeller material  
No letter = standard GRP  
A = Optional aluminium alloy
8. Other options (combinations)  
T = Two speed (full and half)

- F = Flameproof (EExd 11BT4)  
2 = 90°C operation  
Z = Access door
9. ES = Full Ecosmart controls. BMS interfaces and commissioning controls full compatibility with Ecosmart sensors.

In addition an ES-ISC inverter will be required, contact Nuair for details.  
All the above control options are pre programmed with a soft start function.

With

**NO CONTROL**

## CODE DESCRIPTION

**AXB100Z-4 1 3 A Z**

1 2 3 4 5 6 7 8

1. Bifurcated AXUS Long cased axial
2. Case diameter in cms
3. Impeller specification reference
4. Motor speed in poles
5. Impeller blade angle reference
6. Electrical supply in Phases  
1 = 230V, 50Hz, 3 = 400V, 50Hz
7. Impeller material  
No letter = standard GRP  
A = Optional aluminium alloy
8. Other options (combinations)  
F = Flameproof (EExd 11BT4)  
2 = 90°C operation  
Z = Access door

# MARK TEN ROOF FANS LOW HEIGHT EXTRACT FANS

For vertical discharge high performance applications. Ideal for kitchen canopies.



Scan for details.

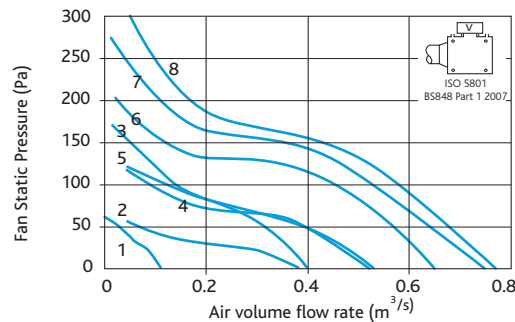
## BENEFITS

- **Unobtrusive design** - extremely rigid low profile Aluminium manufacture easily accommodated on all building profiles.
- **Effective fume removal** - high efficiency vertical discharge guarantees that fumes are quickly and efficiently removed from source.
- **Simple precise commissioning** - all 3 phase models are compatible with Ecosmart controls providing the most energy efficient and cost effective solution.
- **Quietest system** - low noise, high performance mixed flow impeller together with matching silencers provide the perfect acoustic solution.
- **Avoids heat loss** - integrated backdraught shutters, retained by magnetic latches, limits heat loss from the building when unit is off.
- **Performance options** - high performance mixed flow impeller with direct or belt drive options cater for all your systems pressure and sound requirements.
- **Guaranteed ventilation** - standby motor option on belt drive version ensures ventilation in the event of fan failure. Note: standby motor is unbelted.
- **Ancillaries** - full range of attenuators, mounting curbs, etc are available to complete your installation.
- **Warranty** - MARK TEN has 5 years with Ecosmart & 3 years with No Control.

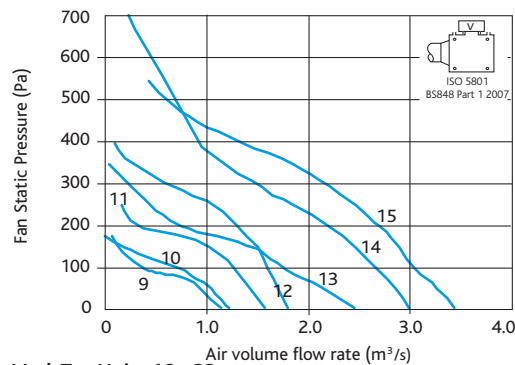
## PERFORMANCE

Maximum performance 8.2m<sup>3</sup>/s.

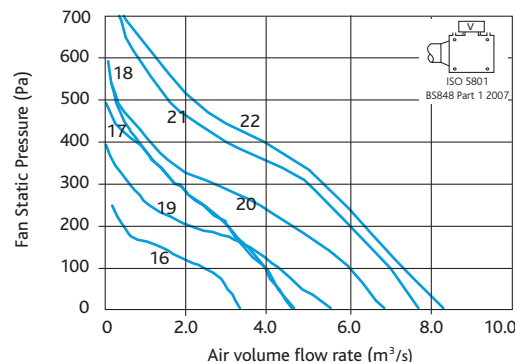
### Mark Ten Units 1 - 8



### Mark Ten Units 9 - 15



### Mark Ten Units 16 - 22



### UNIT CODE DESCRIPTION

#### 315 MTD 1/2 ES

1 2 3 4 5

1. Fan size
2. MTD = Direct drive  
MT = Belt drive  
Performance reference
3. 1 =Curb No./type
4. Phase  
1 = Single phase  
2 = Three phase
5. ES = Ecosmart control

In addition an ES-ISC inverter will be required, contact Nuair for details.

With

NO CONTROL

### UNIT CODE DESCRIPTION

#### 315 MTD 1/2

1 2 3 4

1. Fan size
2. MTD = Direct drive  
MT = Belt drive  
Performance reference
3. 1 =Curb No./type
4. Phase  
1 = Single phase  
2 = Three phase



## XS HIGH PERFORMANCE EXTRACT AND SUPPLY FANS

For window, wall and roof applications, with optional integrated controls.



Scan for details.



### BENEFITS

- **Market leading design** - Wide range to suit most applications including wall, window, roof and ceiling (6, 9 & 12").
- **Quietest operation** - ultra quiet wax thermo actuator, together with market leading motor and impeller technology combine to produce one of the quietest wall fans available.
- **'Multi' fan speed control** - allows up to 5 fans to be connected to one speed control.
- **Flexible controls** - a wide range of sensors including PIR, humidity, air quality, run on timer and thermostat can be integral within the unit or mounted separately.
- **High performance** - high efficiency impeller and external rotor motor out performs (up to 530l/s / 1908m<sup>3</sup>/hr) its competitors at much lower noise levels (from 31dBA)
- **Flexible solution** - reversible for extract and input with infinitely variable speed control.
- **Save energy & money** - economy speed setting that will maximise performance at the lowest energy use.
- **Complete user safety** - robust construction, manufactured from flame retardant ABS polymer IP44 rated for long life.
- **Easy refurbishment** - XS refurb kits are quick to install and can be used to replace most existing systems.
- **Easy to specify and order** - Fans are supplied complete with kit ensuring no missing components on-site.
- **Warranty** - XS has 3 years.

### UNIT CODE DESCRIPTION

#### XS 6 GL

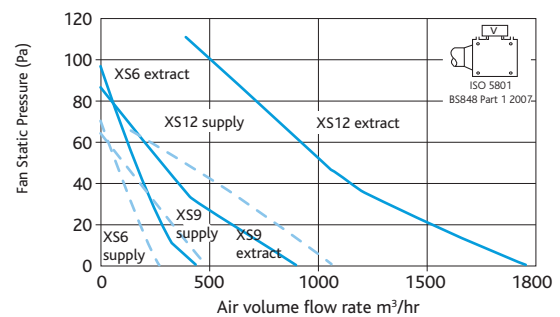
| | |  
1 2 3

1. XS range
2. Fan size
3. GL = Window model  
PR/FR = Roof extract models  
WA = Wall model  
CL = Roof/ceiling models

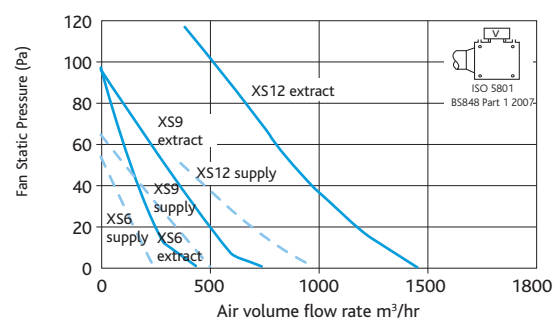
### PERFORMANCE

Maximum performance 8.2m<sup>3</sup>/s.

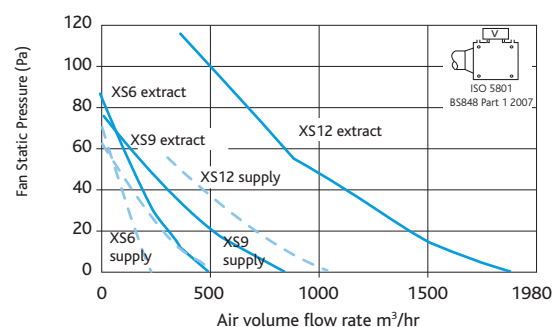
#### XS (GL) Window Extract Fans



#### XS (PR/FR) Roof Extract Fans



#### XS (WA) Wall Extract Fans



## OPUS 40 / 60 / 95 SINGLE & TWIN EXTRACT FANS

Low depth wall, and ceiling fans for high performance applications.



**ecosmart**



Scan for details.

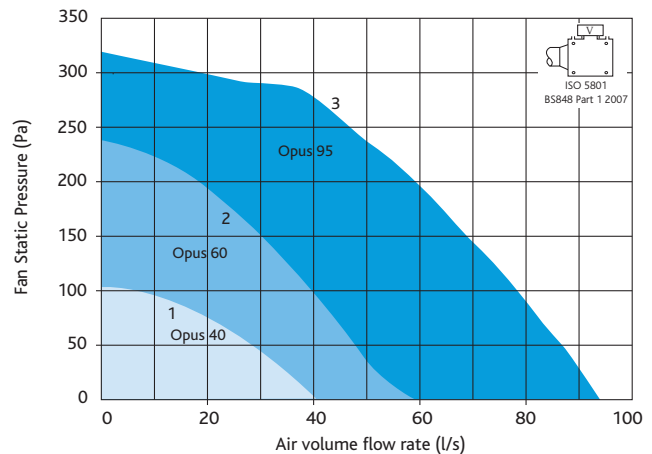
### BENEFITS

- **Very quiet operation** - units offer high performance with low noise levels.
- **Most efficient systems** - latest DC motor design providing high performance with the lowest possible Specific Fan Power available in its class. Will conform to Part L2.
- **Guaranteed ventilation** - the most compact cost effective single and twin fan available for the duty range.
- **Quick & easy to install** - unit can be installed as recessed or surface mounted on site.
- **Simple to commission** - Integral control facility enables the duty to be precisely set without the need for additional controls.
- **Controls** - a choice of 'on-board' and 'remote' control options are available, including Ecosmart energy efficient controls.
- **Flexible solution - side discharge** - unit can be installed horizontally or vertically. Range offers surface, recessed or duct mounted options.
- **Continuous ventilation** - twin fans allow for automatic changeover to standby fan in event of fan failure.
- **Specialist option** - vandal proof grille available for extra security and protection.
- **Warranty** - OPUS has 5 years with Ecosmart.

### PERFORMANCE

Maximum performance 95l/s.

Opus 40/60/95



With **ecosmart**

### UNIT CODE DESCRIPTION

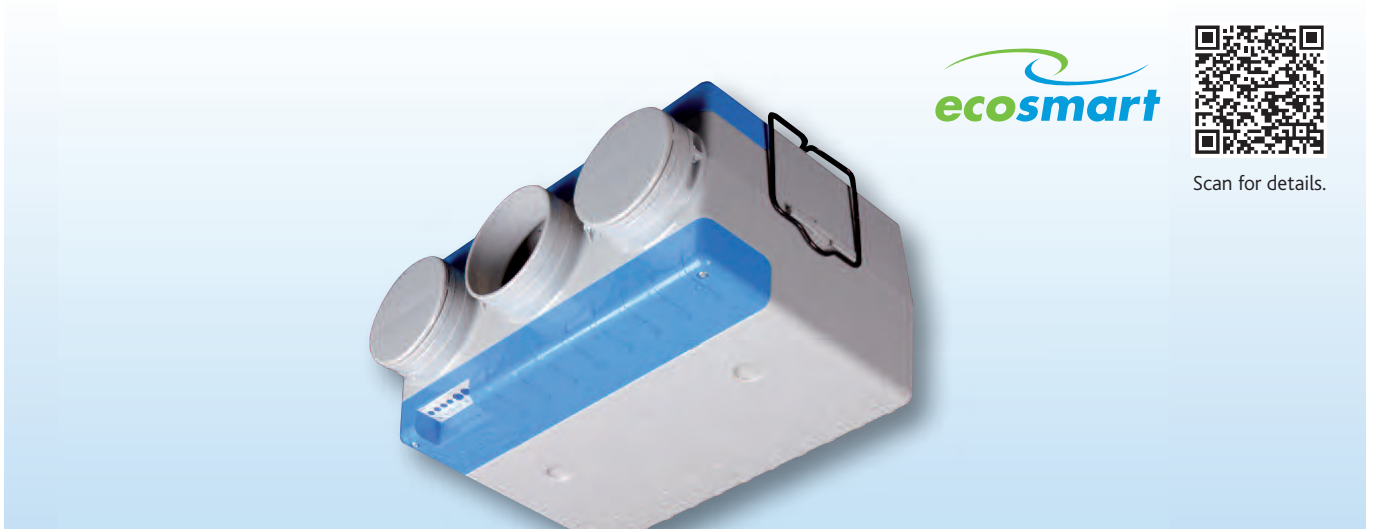
#### OPUS 40S - ESP

|   |   |  
 1   23   45

1. Opus range
2. 40 60 or 95l/s
3. Single fan
4. Ecosmart speed control
5. P.I.R. or run on timer

## ES-OPUSDC ENERGY EFFICIENT, FLEXIBLE EXTRACT SOLUTION

For low noise, high performance applications.



Scan for details.

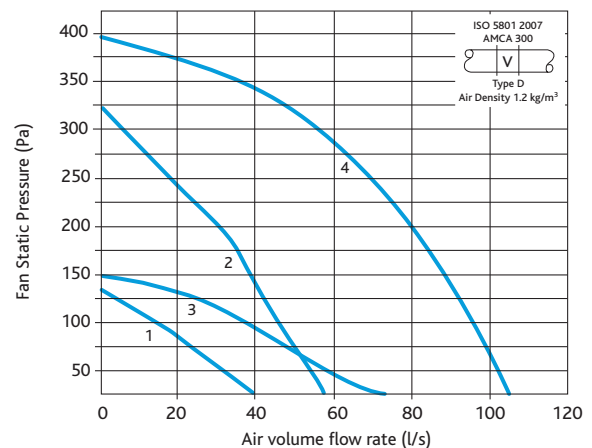
### BENEFITS

- **Quietest solutions** - advanced fan motor and impeller technology providing the quietest unit available.
- **Continuous ventilation** - twin fans allow for automatic changeover to stand by fan in the event of fan failure.
- **Most efficient systems** - latest DC motor design providing high performance with the lowest possible Specific Fan Power available in its class.
- **Simple commissioning** - integrated speed control enabling minimum and maximum fan speed to be easily adjusted.
- **Quick & easy Installation** - unique self locating mounting bracket enables the unit to be quickly and efficiently installed.
- **Healthy atmosphere** - Ecosmart sensors accurately control the ventilation levels.
- **Controllability** - a choice of 'on-board' and 'remote' control options are available.
- **Ecosmart Speed control** - Ecosmart control included as standard.
- **Remote failure indicator** - visual and audible failure indicator  
Code: OPUS-AVI.
- **Warranty** - OPUS has 5 years with Ecosmart.

### PERFORMANCE

Maximum performance 115l/s.

#### ES-OPUSDC



Curve No.	Unit*
1.	ES-OPUSDC 40*
2.	ES-OPUSDC 60*
3.	ES-OPUSDC 75*
4.	ES-OPUSDC 110*

\*Single or twin fan.



### UNIT CODE DESCRIPTION

#### ES-OPUSDC 40-2M

1	2	3	4	5	6

1. Ecosmart control
2. Opus range
3. DC = Direct current
4. 40, 60, 75, 110 = unit size
5. 2 = Twin fan model,  
No number = Single fan
6. M = Duct mounted

# Cheetah CASE STUDY - HIGH STREET TESCO UK

## PAYBACK IN 2.60 YEARS

### Project Highlights based on 1250 Cheetah Systems installed

25,418 MWh saved per annum

13,976 tonnes carbon saved per annum

Reduced energy consumption – 60%

Annual saving in pounds – £2.41m approx

Pay back of initial investment – 2.60 years

With energy prices continuously increasing and the growing pressure for large business to reduce and report on carbon emissions, Tesco, one of the UK's leading retailers set high targets to achieving reductions in their energy consumption. With a large estate covering new build to historic conversions Tesco found innovative ways to reduce energy in every facet of their stores.

Tesco is achieving a pay back in less than 2.6 years on its energy saving investment by installing Cheetah and is continuing to roll out across the whole estate.

Driven by a strong sustainability policy addressing both carbon and energy reduction Tesco have been installing Cheetah across their estate since 2004. To date Quintex have installed over 1,250 systems across the UK estate resulting in the reduction of 25,418 Mwh per annum and 13,734 tonnes carbon.

The Cheetah system has, and continues to be installed, in in-store bakeries and customer and staff restaurants. Using intelligent controls and sensors to detect when cooking activity is taking place, Cheetah is able to control the kitchen extract and supply fans to vary its speed and so reduce energy consumption accordingly.

*"The Cheetah system has proven to be one of the most successful energy saving ideas we have found over the recent years"* commented Tesco's Energy Manager, Jeremy Waters. The management team and the operational staff have been delighted with the results.

Cheetah is also included on the Energy Technology List for Enhanced Capital Allowances, a tax relief that permits businesses to deduct 100% of capital expenditure against taxable profits.

With so many installations across the estate, Cheetah is regularly monitored to allow savings to be calculated and reported. In an average store Tesco have been experiencing a saving of 116kwh per day showing a payback in 2.6 years. With energy prices rising paybacks are set to look even more attractive.

Tesco continue to announce energy savings and carbon reductions across their estate and Quintex are proud to be part of such a large energy reduction campaign.

Cheetah has been successful in reducing the carbon footprint of the estate to date by over 70,600 tones – a significant contribution to the corporate targets. With climate change becomes more prevalent in our society and corporate pressure mounting to reduce carbon and energy use we should all adopt Tesco motto *"Every little helps!"*.

We continue to install the Cheetah system across the entire UK estate of Tesco and target completion in 2014/15.



## PAYBACK IN 1.51 YEARS

### Project Highlights based on 123 Cheetah Systems installed

3,046 MWh saved per annum

1,537 tonnes carbon saved per annum

Reduced energy consumption – 70%

Annual saving in pounds – £374,701

Pay back of initial investment – 1.51 years

Tesco Ireland has joined Tesco UK in the roll out the Cheetah system in a pledge to reduce their energy consumption and reduce energy costs alongside their parent company.

Tesco Ireland is one of the largest food retailers in Ireland operating 142 multi-format stores nationwide and has received extensive investment from the Plc. to expand and deliver exceptional stores.



Tesco Ireland installed its first Cheetah system in Clonmel, Co. Tipperary and has continued to roll out installations since this first trial and is now installed in all sites in Ireland.

Tesco Plc take energy saving very seriously pledging they will reduce the carbon footprint of their existing stores and distribution centres around the world by 50% by 2020.

The energy control system controls the ventilation fan speed depending on the conditions in the kitchen hoods.

Temperature and optic sensors are used to detect heat and steam and will change the fan accordingly. This saves, in the case of Tesco Ireland, 70% of ventilation fan energy consumption and contributes to the carbon strategy of the store and group.

With electricity price increases when installed this represented a payback of 1.51 years in addition to the carbon reduction and lower noise in the areas where Cheetah was placed creating a better working environment and experience for visitors to the store.

In reducing the speed of the fan Tesco have also acknowledged the extended life of the fan adding to the financial benefits of the system.

Cheetah measures duct flow and assists in preventative maintenance if flow rates drop below expected levels.

We have installed the Cheetah system in all of the Tesco Ireland stores.

Tesco Ireland continues to announce energy savings and carbon reductions across their estate and Quintex are proud to be part of such a large energy reduction campaign. Cheetah has been successful in reducing the carbon footprint of the estate to date by 1,287 tonnes per year – a large contribution to the corporate targets.

With Climate Change becoming more prevalent in our society and corporate pressure mounting to reduce carbon and energy use we should all adopt Tesco motto *"Every little helps!"*.

## PAYBACK IN 2.30 YEARS

### Project Highlights

15,805 kWh saved per annum

8.3 tonnes carbon saved per annum

Reduced energy consumption – 71%

Annual saving in pounds – £2,306

Pay back of initial investment – 2.30 yrs

Mitchells & Butlers is the leading operator of managed pubs and pub restaurants in the UK. They have around 1,600 locations offering food, drink, entertainment and accommodation across the country.

### Project Details – Toby Carvery, Banbury



Mitchells & Butlers take environmental responsibilities seriously and have introduced Cheetah at the Toby Carvery, Banbury.

Mitchells & Butlers have built up an impressive range of high-street, suburban and rural brands such as All Bar One, Vintage Inns, Toby Carvery, Ember Inns, O'Neill's, Sizzling Pub Co., Metropolitan Professionals and Scream, as well as successful acquisitions such as Harvester Restaurants and Browns. Mitchells & Butlers believe that responsible environmental activity is in the interest of both their business and the community they operate in.

Their policy is to seek continuous improvements in environmental matters to minimise their impact on the environment. This includes installing Cheetah ventilation control system into the Toby Carvery, Banbury.

The Cheetah system controls the extract and supply fans within commercial kitchens keeping the fan at the desired speed, depending on cooking activity, rather than full speed all day.

Using temperature and optic sensors it intelligently detects the cooking activity under the hood and ramps the fan speed up or down accordingly. Cheetah not only saves energy and money on fan energy consumption but it also saves heating and cooling losses. This is all done whilst improving the kitchen conditions for the staff.

The Toby Carvery, Banbury is part of a company-wide project to improve energy efficiency and monitor energy usage. Cheetah will save the Toby Carvery, Banbury 15,805kWh per year on fan energy alone. This is giving them a good pay back as well as a big step towards their overall desired energy reduction.

*"Mitchells & Butlers has the opportunity, through the Banbury site, to better understand how energy saving technology solutions, such as Cheetah, work in a busy pub environment. We are keen to continue to roll out the system across our other businesses."*

- Simon Cocks, Cost Manager

We continue to install the Cheetah system over the entire estate and have currently installed in 521 M&B sites.

## PAYBACK IN 1.88 YEARS

### Project Highlights

36,167 kWh saved per annum

18.9 tonnes carbon saved per annum

Reduced energy consumption –69 %

Annual saving in pounds – £2,729

Pay back of initial investment – 1.88yrs

Since opening their first pub in 1979, J D Wetherspoon has become one of the UK's most popular and successful high street free houses and currently has 886 pubs in the UK.

Preservation and protection of the environment is key to J D Wetherspoon and The Jack Fairman, Horley.

Their emphasis on creating a positive impact on society means J D Wetherspoon consider how they can interact positively with the environment and those around them. J D Wetherspoon is committed to continuously updating their environmental policy.

Along with other policies, they have introduced processes to minimise energy consumption:  
*"We have set ourselves a target to reduce business wide usage of energy and water consumption tangibly year on year"*

Source: J D Wetherspoon website

Quintex's Cheetah Energy Control System has been introduced into The Jack Fairman, Horley to reduce ventilation energy consumption in its commercial kitchen. The system controls the extract and supply fans which only allows the fans to run when necessary.

Using temperature, smoke/steam and flow sensors it detects the heat, steam and smoke created by cooking and reacts accordingly by altering the fan speed up and down when required.

This is a great benefit to The Jack Fairman as the Cheetah Energy Control System not only reduces energy consumption from the extract and supply fans but also reduces heating and cooling losses. It also helps save money and time for the restaurant by reducing maintenance costs resulting in equipment having a longer life span and needing fewer repairs.  
The Jack Fairman will be saving 36,167 kWh per year giving them a great monetary pay back and a 69% reduction in their ventilation energy consumption too.

We are continuing to install the Cheetah system across their UK estate and have currently installed in 656 JDW sites.



**wetherspoon**

### PAYBACK IN 2.0 YEARS

#### Project Highlights

1,149,717 kWh Saved per annum

358 tonnes carbon saved per annum

Reduced energy consumption – 65%

Annual saving in pounds – £63,000

Pay back of initial investment – 2.00 yrs

Since its inception in the UK in 1987, Center Parcs has always aimed to create a tranquil place where families could get away from the hustle and bustle of everyday life and get back to nature. This desire holds true today. Its villages are built deep within the forest, enabling its guests to enjoy acres of unspoilt woodland where it can interact directly with nature.



When reducing the speed of the fans you reduce the load on the motors, therefore increasing its life and reducing the need for maintenance, so maintenance costs will be reduced.

To prove the effectiveness and efficiency of the Cheetah Energy Controls Center Parcs UK installed a trial system in the Sports Café Kitchen at Sherwood Forest. The actual metered savings were in excess of £3,511 per annum which will give the group a payback of under 2 years.

Installed in all sites across the UK.

The company have recently installed the system in 23 restaurants across all four of its UK sites. The predicted annual saving across the estate is in the region of £63,000 giving a Return on Investment of under 2 years, estimated energy savings of 1,149,717 kWh per annum and saving an impressive 358 tonnes of carbon each year.

Center Parcs UK are not only helping families get back to nature but are doing their part to save nature for the future too!!

Center Parcs UK has achieved a pay back in under 2 years on its energy saving investment by converting to Cheetah.

This close link with the natural environment means it has always been committed to the protection of its surroundings. But its responsibilities go far beyond this. It seeks to minimise its environmental impact in many other ways – through encouraging water conservation, tackling climate change and reducing waste.

The Cheetah system was installed and using intelligent controls and sensors to detect when cooking activity is taking place, we were able to control the kitchen extract and supply fans to vary its speed and so reduce energy consumption accordingly.

The system was programmed so the fans ran at a speed sufficient to remove the heat and contaminants being produced by the cooking process, the fans only run at maximum speed when needed, whilst still maintaining comfortable and safe working conditions.





## PAYBACK IN 1.45 YEARS

### Project Highlights

38,308kWh saved per annum

20.1 tonnes carbon saved per annum

Reduced energy consumption – 56%

Annual saving in pounds – £3,524

Pay back of initial investment – 1.45 yrs

As part of HMP's Waste Management Strategy Cheetah is now part of the New Kitchen Design Specification. Her Majesty's Prison Service serves the public by keeping in custody those committed by the courts. Their duty is to look after them with humanity and help them lead law-abiding and useful lives in custody and after release.

HM Prison, as all public sectors, has a statement of purpose, as well as a sustainable development and environmental policy.

They are committed to reducing its impact on the environment by continuously improving the environmental performance of its operations and its estate. Some of their major achievements include a programme of audits and setting up of waste management units at prisons. Waste management units bring many benefits including reduced waste and costs savings.

The aim of their Waste Management Strategy is to:

- Comply with relevant legislative requirements
- Minimise and recover waste
- Use recycled and recyclable products
- Ensure continuous improvement by setting realistic targets and goals
- Educate, train and motivate staff and prisoners to work in an environmentally responsible manner

The Cheetah system reduces the energy used by industrial kitchen hood supply and extract fans. Based on The Laws of Affinity, fans consume power in proportion to their speed cubed. So the less the fan is used, the less energy wasted.

Cheetah controls the speed of the fan by using optic and temperature sensors. The sensors detects heat, smoke and steam coming from the cooking activity and changes the fan speed as conditions demand.

HMP Risley installed Cheetah into their kitchens as part of their waste management strategy. Before Cheetah was installed the combined energy consumption for all of the motors was 69,288kWh/year. After the installation this was reduced to 30,980kWh/year giving a saving of 38,308kWh/year, a 56% reduction.

Due to the success of the trial at HMP Risley the Cheetah system has been included in the New Kitchen Design Specification.

HMP Risley was already taking steps to reduce their energy consumption by turning off the fans for 10 hours over night while they weren't in use. Previously the fans were running flat out from 5am-7pm. Even at peak times the fan never reaches the maximum speed prior to the installation of Cheetah. In fact it is now using only 44% of the original energy consumed



### PAYBACK IN 1.80 YEARS

#### Project Highlights

49,275 kWh saved per annum

24.8 tonnes carbon saved per annum

Reduced energy consumption – 30%

Annual saving in pounds – £10,178

Pay back of initial investment – 1.80 years

Luxury hotel Claridges, is benefiting from a 30 per cent reduction in kitchen ventilation energy costs after the installation of two Cheetah systems on their 11kW supply and extraction fans. Owned by the Maybourne Hotel Group, who owns and manage Claridges, the Connaught and the Berkeley, three of the world's most renowned luxury London hotels they are committed to delivering authentic and unique guest experiences.



Claridges have installed an energy saving product as unique as its hotels, custom made for the hotel and the demands of its busy kitchens.

Quintex supplied the Cheetah system that automatically reacts to conditions in the kitchen, ramping up extraction during busy times and reducing it in quieter times. By controlling the extraction and supply fans to match the needs of the application, significant energy savings are achieved.

Previously the kitchen ventilation system was consuming over 450 kWh per day, but after the installation of Cheetah energy consumption fell to 315 kWh per day. The installation has achieved a return on investment in 1.8 years.

The fans were running at 100 percent at all times prior to the installation. However this method wastes energy, but using Cheetah to control fan speed brings more accurate control and uses less energy. Cheetah matches the speed of the fan to the demands of the application.

Claridges kitchen has two 11 kW fans. Cheetah incorporates a range of sensors measuring temperature, smoke, steam and airflow in the extract and supply ducts in order to determine the fans optimum flow rates, enabling conditions in the kitchen to remain constant at all times.

To enhance safety the system also incorporates a gas isolation module for cutting off the gas supply in case of emergencies.

Claridges are environmentally Five Star and contributing to the reduction in carbon activities protecting future generations.

We have installed the Cheetah system in all of the kitchens at Claridges.



## CLARIDGE'S

## PAYBACK IN 1.39 YEARS

### Project Highlights

159,966.66 kWh saved per annum

84 tonnes carbon saved per annum

Reduced energy consumption – 62%

Annual saving in pounds – £14,118

Pay back of initial investment – 1.39 years

Blu Edwardian Hotels are a collection of 14 deluxe hotels located in central London, Heathrow and Manchester. Each of the hotels is carefully designed to provide stylish accommodation combined with a high level of service and includes individually designed rooms, the latest technology, meeting spaces and chic restaurants and bars.

As a luxury brand Radisson clients demand more than just good rooms and food. A strong environmental and sustainability policy is important in retaining and attracting new clients.

As part of Radisson Edwardian's development and growth they are looking at the cost of energy. A significant contribution to their energy saving objectives was made by their decision to install Cheetah at one of their largest hotels, The Radisson Edwardian Heathrow.

The extract system from their main kitchen previously consumed a constant 18 kW, 24 hours per day and exhausted over 7m<sup>3</sup>/sec of conditioned air continuously into the atmosphere. The air conditioning system in the main kitchen incorporates a 17.5 kW supply fan.

The extract and air supply is now automatically controlled by Cheetah as conditions demand. The system continuously monitors cooking activity in two kitchens and adjusts the speed of both the extract and supply fan to match these conditions.

This has resulted in a reduction in the power consumed by the extract fan of over 50% and a reduction in the loss of conditioned air to atmosphere of approximately 50%, a 62% reduction in energy consumption. The supply air fan is controlled to slave the extract fan down to a preset speed thereby increasing the energy savings.

Radisson Edwardian were so delighted with the saving that they have now installed Cheetah in a further 10 of their properties and are achieving similar results across the estate.

Radisson Edwardian continues to improve their environmental policies and reduce energy whilst offering a world class service which is good for its customers and the planet.

**Radisson** BLU  
EDWARDIAN, HEATHROW



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