



Unit 17  
Milland Road Industrial Estate  
Neath  
SA11 1NJ

209 New Road

Skewen

1<sup>st</sup> July 2025

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209 – New Road - Skewen

Commercial Kitchen Canopy, Ventilation, Noise and Odour Assessment Report

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Dear Phil Johnson

The HVAC specification DW172 shall be used as the basis for Kitchen ventilation Systems design and installation.

**Extraction** – The calculations for the extract volume flow rate for each canopy shall be determined by the equipment beneath the canopy and its location. The procedure for design shall be the ‘thermal convection’ method as detailed in DW172. The calculation as follows:-

**Plan size of appliance (m<sup>2</sup>) x Thermal convection coefficient (m<sup>3</sup>/s/m<sup>2</sup>) = Flow Rate (m<sup>3</sup>/s) per appliance.**

**Fresh Supply Air** – The calculations used to provide sufficient fresh air to ensure complete combustion of fuel and provide safe operation for gas equipment (BS6173:2009) will be based on a maximum of 85% of the extract volume of air to ensure the kitchen is kept under a negative pressure.

**Fresh Air Temperature** – An air supply temperature of 12deg C is considered a minimum for comfort directly below the supply terminals (BSRIA Study Feb 2013). This will be gained by using an Electric Heater Battery or Low Pressure, Hot Water Coil and offered as a separate item.

**Noise Generating Equipment** – By virtue the plant is noise generating and measures shall be taken to reduce & mitigate plant noise break out to local residential receptors/premises. We will design the acoustic measures to comply with criterion as indicated within a noise report

These can be controlled using measures such as:-

- Acoustic Silencers
- Low Velocity Ductwork Sizing
- Acoustic Fan Jackets
- Anti-Vibration Ancillaries

**Odour Abatement** – To counteract and control emissions, residual and spillage nuisance odours we recommend that the following measures are taken to control this.

- Primary Baffle Filters
- Pre Filtration (Mesh and Bag G4)
- Extra Duty Carbon Filters
- OC1 Ozone Neutralising Unit
- Electro Static Precipitators
- UV Light

#### Conclusion

| <u>Specification</u>    | <u>Type</u>                   | <u>Size/Flow Rate/Required Y/N</u> |  |
|-------------------------|-------------------------------|------------------------------------|--|
| <u>Canopy Type/Size</u> | <u>4000 x 1500 x 500</u>      | <u>1.6m<sup>3</sup>/s</u>          |  |
| <u>Extract Fan</u>      | <u>MUB500</u>                 | <u>1.8m<sup>3</sup>/s</u>          |  |
| <u>Supply Fan</u>       | <u>AR450</u>                  | <u>1.2m<sup>3</sup>/s</u>          |  |
| <u>Heating Element</u>  | <u>N/A</u>                    | <u>N/A</u>                         |  |
| <u>Noise Measures</u>   | <u>LDK Silencer – Extract</u> |                                    |  |
| <u>Odour Measures</u>   | <u>UVO1000</u>                | <u>Purified Air Unit</u>           |  |

I hope the above information is acceptable and contains sufficient information with the proposed development and if any other information is required, please do not hesitate to contact us on the numbers below.

Yours Sincerely

Ashley Daniels

Managing Director

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## **Risk Assessment for Odour Control**

Odour control must be designed to prevent nuisance in a given situation. The following score methodology is suggested as a means of determining odour control requirements require at the aforementioned site.

| <u>Measure</u> | <u>Score</u> | <u>Details</u> |
|----------------|--------------|----------------|
|----------------|--------------|----------------|

### **Dispersion**

|                  |           |                                                         |
|------------------|-----------|---------------------------------------------------------|
| <u>Very poor</u> | <u>40</u> | <u>Low Level Discharge into courtyard/public access</u> |
| <u>Poor</u>      | <u>30</u> | <u>Below eaves @ 10m/s</u>                              |
| <u>Moderate</u>  | <u>20</u> | <u>1mtr above eaves but low velocity</u>                |
| <u>Good</u>      | <u>10</u> | <u>1mtr above eaves with high velocity cowl</u>         |

### **Proximity of dwellings**

|               |           |                                             |
|---------------|-----------|---------------------------------------------|
| <u>Close</u>  | <u>30</u> | <u>Within 10mtrs from kitchen discharge</u> |
| <u>Medium</u> | <u>20</u> | <u>Within 20mtrs from kitchen discharge</u> |
| <u>Fair</u>   | <u>10</u> | <u>Over 20mtrs from kitchen discharge</u>   |

### **Size of Kitchen**

|               |           |                                                 |
|---------------|-----------|-------------------------------------------------|
| <u>Large</u>  | <u>30</u> | <u>More than 100covers or large Takeaway</u>    |
| <u>Medium</u> | <u>20</u> | <u>Between 50-100 covers or medium Takeaway</u> |
| <u>Small</u>  | <u>10</u> | <u>Less than 30 covers or small Takeaway</u>    |

### **Cooking Type (Odour and Grease)**

|                  |           |                                                             |
|------------------|-----------|-------------------------------------------------------------|
| <u>Very High</u> | <u>40</u> | <u>Pub with high level of fried food/chargrill/charcoal</u> |
| <u>High</u>      | <u>30</u> | <u>Kebab, Thai, Indian</u>                                  |
| <u>Medium</u>    | <u>20</u> | <u>Chinese, Japanese, Small Pub</u>                         |
| <u>Low</u>       | <u>10</u> | <u>Carvery, Italian, French</u>                             |

|                           |                  |
|---------------------------|------------------|
| <u><b>Total Score</b></u> | <u><b>90</b></u> |
|---------------------------|------------------|

### **Impact Risk**

|                             |                                              |                              |
|-----------------------------|----------------------------------------------|------------------------------|
| <u><b>Low to Medium</b></u> | <u><b>Low Level Odour Control if any</b></u> | <u><b>Lower than 60</b></u>  |
| <u><b>High</b></u>          | <u><b>High Level Odour Control</b></u>       | <u><b>Between 60-100</b></u> |
| <u><b>Very High</b></u>     | <u><b>Very High Level Odour Control</b></u>  | <u><b>Over 100</b></u>       |

### **Discharge Stack**

**The discharge stack shall:-**

1. Discharge the extracted air not less than 1mtr above the eaves of any building within 10mtrs of the closest property housing the commercial kitchen.
2. If 1 cannot be complied for planning reasons, then the extracted air shall be discharged 1mtr above eaves or window of the building housing the commercial kitchen. Additional odour reduction methods maybe required
3. If 1 or 2 cannot be complied with for planning reasons, exceptionally high level of odour control will be required. See Impact Risk – Very High

### Odour neutralising performance

#### Low to Medium level control may include:-

- i. Baffle Filters / Veritech Filters within Canopy
- ii. Odour Control Neutraliser or Carbon Filters with Dwell time of 0.3

#### High level of odour/smoke control may include:-

- i. Baffle Filters / Veritech Filters within Canopy
- ii. Odour Control Neutraliser and Carbon Filters with Dwell time of 0.3
- iii. Electro Static Precipitators to suit air volume
- iv. UV System for smoke

#### Very high level of odour/smoke control may include:-

- i. Veritech Filters within Canopy
- ii. Odour Control Neutraliser and Carbon Filters with Dwell time of 0.5 – 0.6
- iii. Double Pass Electro Static Precipitators to suit air volume
- iv. UV System for smoke

### Maintenance

Proprietors of commercial kitchens have a duty to ensure that the ventilation system has regular maintenance checks and servicing. Good maintenance ensures the designed system works effectively and efficiently and conforms to the local planning authorities guidelines given at the redevelopment stage.

|                     |                            |                    |
|---------------------|----------------------------|--------------------|
| <u>Light Use</u>    | <u>12-16 Hours per Day</u> | <u>6-12 months</u> |
| <u>Moderate Use</u> | <u>6-12 Hours per Day</u>  | <u>3-6 months</u>  |
| <u>Heavy Use</u>    | <u>2-6 Hours per Day</u>   | <u>1-3 months</u>  |

## Baffle Grease Filters

### Applications

It is recognised that there is an increasing need to maintain and improve hygiene standards in kitchens and to reduce the fire hazards above the heat source.

The Airclean baffle filter reduces this fire hazard with their unique design concept of non-grease loading (negligible grease accumulation), and interlocking baffle walls which restrict the passage of flames into the ductwork.



### Construction

Housed in a stainless steel channel framework are a series of vertical stainless steel air baffles which are strategically aligned to change the direction of the grease-laden air. This action causes the deposition of the grease quickly, without re-entrainment onto the baffles whilst the grease-free air passes through the filter. The baffle's smooth surface enables deposited grease to run off via the drainage holes to collecting trays in the housing, minimising grease build-up.

The retractable handle facilitates easy removal from the housing.

### Materials available:

Aluminium  
Stainless steel Grade 304  
Stainless steel Grade 430 - ECO.

### Capacity Chart

Data based on Face Velocity of 1.5 m/s (300 fpm)

| SIZE<br>OT Inches | SIZE<br>Actual mm | Flow Rate         |     |
|-------------------|-------------------|-------------------|-----|
|                   |                   | m <sup>3</sup> /s | Pa  |
| 16 x 16           | 394 x 394         | 0.25              | 125 |
| 20 x 10           | 495 x 242         | 0.19              | 110 |
| 20 x 16           | 495 x 394         | 0.31              | 125 |
| 20 x 20           | 495 x 495         | 0.39              | 125 |
| 18 x 18           | 445 x 445         | 0.31              | 125 |
| 24 x 24           | 594 x 594         | 0.54              | 110 |

Actual Face Size = Nominal Size less 12mm (0.5")

Actual thickness = Nominal thickness less 3mm (0.125")

Code AC3/3a Ref 01/13



## MUB Insulated duct fans

### Efficient fans for supply or exhaust ventilation systems

- Acoustic and thermal insulation 30 mm
- Flexible airflow direction due to removable panels
- Indoor and outdoor installation
- Modular system of accessories
- Available with AC and EC motors for 50 and 60Hz

[Find more details in our online catalogue.](#)

#### Flexibility

The MUB fans are intended to use for **supply** or **extract** air, designed to be installed in **any position**.

The MUB fans are designed for straight through airflow but can easily be rebuilt due to **removable panels** for 90° air discharge. The construction of the casing and thermal insulation permits **outdoor** and **indoor** use.

#### Modularity

Thanks to variety types of **accessories** as flexible connections, dampers, roof, base frame, etc. it is easy to design any ventilation system according to your demand.

By using special **modular systems**, where some accessories as **heaters, coolers, silencers, filters** or **carbon filters** are built-in in **the same type of casing**, you can even design a simple supply or exhaust **air handling unit**.

#### Performance

**High-performance** impeller together with **highly efficient** motors are designed to ensure high-level performance to **minimise power consumption** and **maximise efficiency**.

#### Noise

The **casing** of **MUB** fans have a perfect **acoustic** and **thermal** insulation capacity.

### Certifications



Eco Platform: EPD Verified



Ecodesign (ErP) compliant

## Technical parameters

### Nominal data

|                                                           |          |      |
|-----------------------------------------------------------|----------|------|
| Voltage (nominal)                                         | 230      | V    |
| Frequency                                                 | 50       | Hz   |
| Phases                                                    | 1~       |      |
| Input power                                               | 1,137    | W    |
| Input power kW                                            | 1.137    | kW   |
| Input current                                             | 5.32     | A    |
| Impeller speed                                            | 1,386    | rpm  |
| Air flow                                                  | max 2.08 | m³/s |
| Capacitance of capacitor                                  | 30       | µF   |
| Temperature of transported air                            | max 60   | °C   |
| Max temperature of transported air, when speed controlled | 60       | °C   |

### Protection/Classification

|                        |      |
|------------------------|------|
| Enclosure class, motor | IP54 |
| Insulation class       | F    |

### Data according to ErP

|           |          |
|-----------|----------|
| ErP ready | ErP 2018 |
|-----------|----------|

### Dimensions and weights

|        |    |    |
|--------|----|----|
| Weight | 61 | kg |
|--------|----|----|

### Others

|            |    |
|------------|----|
| Motor type | AC |
|------------|----|



## Supply Air Fan

 systemair **AR 450E4 sileo Axial fan**

Item Number: #37385 Operating Mode: 230V 1~ 50Hz



## AR Axial Fans

### Low-pressure axial duct fan

- Available with AC motors for 50 and 60Hz
- Installation in any position
- Noise and energy-optimised impeller

[Find more details in our online catalogue](#)

### Flexible

The AR fans are **designed** for extracting air in **low pressure systems**. They can be installed in any position and way according to your demands.

This ensures that the fans can be used in a variety of **commercial** and **industrial** applications.

### Performance

The **noise-optimised** axial impellers together with the **highly efficient** external rotor motors are designed to ensure high-level performance to **minimise power consumption** and **maximise efficiency**.

## Features

### Construction

The round casing is made of galvanised steel with powder coating in RAL9005. The **complete** range is provided **with inlet protection grid**. An **outlet protection grid** is **available as accessory**.

Depending on type, the fans are equipped with an external **terminal box**, protection class **IP44** or **IP54**.

### Impeller

The AR fans use **axial impellers**. These are made of **coated steel**, **composite** material or **aluminium**, are dynamically **balanced** and are paired with corresponding external rotor motors.

### Motor

AR fans are equipped with an **AC external rotor motor**. The motors are suitable for **50Hz** and **60Hz**.

### Motor protection

The **AC** motors are equipped with prewired integral **thermal contact** with leads to be connected to a **motor protection unit**.

### Control

The **AC motor** can be controlled by **5-step**, **stepless** speed regulator or **frequency inverter**.

### Installation

The AR fans can be installed in **any position** in the **duct** in **indoor** environments.

## Technical parameters

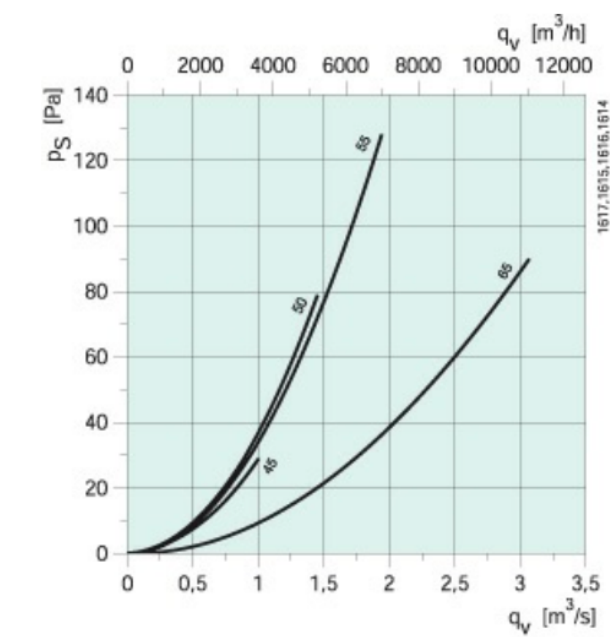
| Nominal data                                              |           |                            |
|-----------------------------------------------------------|-----------|----------------------------|
| Voltage (nominal)                                         | 230       | V                          |
| Frequency                                                 | 50        | Hz                         |
| Phases                                                    | 1~        |                            |
| Input power                                               | 600       | W                          |
| Input power kW                                            | 0.6       | kW                         |
| Input current                                             | 2.9       | A                          |
| Impeller speed                                            | 1,390     | rpm                        |
| Air flow                                                  | max 2.028 | m³/s                       |
| Air flow at max. efficiency                               | 1.39      | m³/s                       |
| Specific ratio                                            | 1         |                            |
| Capacitance of capacitor                                  | 14        | µF                         |
| Temperature of transported air                            | max 70    | °C                         |
| Max temperature of transported air, when speed controlled | 70        | °C                         |
| Protection/Classification                                 |           |                            |
| Enclosure class, motor                                    | IP54      |                            |
| Insulation class                                          | F         |                            |
| Data according to ErP                                     |           |                            |
| ErP ready                                                 | ErP 2018  |                            |
| Measurement category                                      | A         |                            |
| Efficiency grade                                          | 41.8      | $\eta_{\text{actual}}$     |
| Efficiency, static                                        | 34        | $\eta_{\text{statA}}$      |
| Target efficiency grade ErP2013                           | 36        | $\eta_{\text{target2013}}$ |
| Target efficiency grade ErP2015                           | 40        | $\eta_{\text{target2015}}$ |
| Dimensions and weights                                    |           |                            |
| Duct dimension; Circular, inlet                           | 450       | mm                         |
| Duct dimension; Circular, outlet                          | 450       | mm                         |
| Weight                                                    | 17        | kg                         |
| Others                                                    |           |                            |
| Duct connection type                                      | Circular  |                            |
| Color name, casing                                        | Black     |                            |
| Motor type                                                | AC        |                            |



Extract

Silencer

Performances



Noise suppression dB frequency band Hz

|        | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
|--------|-----|-----|-----|----|----|----|----|
| LDK 45 | 5   | 8   | 13  | 12 | 8  | 7  | 7  |
| LDK 50 | 7   | 8   | 13  | 12 | 9  | 8  | 7  |
| LDK 55 | 9   | 9   | 13  | 12 | 10 | 9  | 8  |
| LDK 65 | 6   | 7   | 14  | 13 | 9  | 8  | 7  |
| LDK 70 | 5   | 7   | 19  | 24 | 23 | 15 | 10 |

Dimension



|        | b   | B   | C  | D   | E  | F   |
|--------|-----|-----|----|-----|----|-----|
| LDK 65 | 661 | 703 | 50 | 100 | 93 | 175 |