

Old Tres Bien Building

Neath

10th August 2021

New Thai Takeaway

Commercial Kitchen Canopy, Ventilation, Noise and Odour Assessment Report

Dear Steffan Thomas

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 (m²) x Thermal convection coefficient (m³/s/m²) = Flow Rate (m³/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 with noise reports

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>2450mm x 1200mm</u>	<u>1.0m3/s</u>	
<u>Extract Fan</u>	<u>New – SDA450</u>	<u>1.2m3/s</u>	
<u>Supply Fan</u>	<u>Passive Ventilation</u>		
<u>Heating Element</u>	<u>N/A</u>		
<u>Noise Measures</u>	<u>Enlarge ductwork to reduce input noise and use acoustic fans on extract</u>		
<u>Odour Measures</u>	<u>N/A</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

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>
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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>Total Score</u>	<u>60</u>
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Impact Risk

<u>Low to Medium</u>	<u>Low Level Odour Control if any</u>	<u>Lower than 60</u>
<u>High</u>	<u>High Level Odour Control</u>	<u>Between 60-100</u>
<u>Very High</u>	<u>Very High Level Odour Control</u>	<u>Over 100</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	SIZE	Flow Rate	
OT Inches	Actual mm	m ³ /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

Extraction Fan

SDA450/4-1AC	1323	m³/s	1.98	1.87	1.76	1.62	1.47			30.1	N38	2.45	6.3	0.55
		W/(L/s)	0.24	0.27	0.29	0.33	0.37							

Raptor SDA

Case Mounted Axial Flow Fan

axial



OVERVIEW

The Raptor SDA incorporates the BAT (Best Available Technology) FE2owlet sickle bladed aerofoil profiled impeller, with serrated trailing edges and winglets powered by the ultra reliable Ziehl-Abegg external rotor motor. The fan design, construction and finish provides a strong, durable and weatherproofed range, that boasts low noise and increased efficiency.

NEW PRODUCT

QUICK FACTS

- ✓ 8 standard sizes from 250mm to 630mm.
- ✓ Air volume flow rates of up to 4.60 m³/s.
- ✓ Static pressures of up to 290 Pa.
- ✓ Suitable for operating temperatures up to +70°C.
- ✓ Extensive stock range available.

CASING

The all metal fan casing and guard provide a long lasting and robust construction.

The units have been constructed from mild steel and suitably treated to ensure full corrosion protection. The guard is powder coated polyester epoxy paint finish in black (RAL 9005).

Fan casings are powder coated polyester epoxy paint finish in pastel beige (RAL 7032).

MOTORS

Motors are highly efficient, lightweight external rotor motors, insulated to Class F, with integral thermal overload protection.

Sizes 250-350 weatherproofed to IP44
Sizes 400-630 weatherproofed to IP54

All fans are suitable for use with a speed controller. Electrical connection to the motor shall be provided by an IP55 terminal box.

TYPICAL APPLICATIONS



IMPELLER

Impellers are high quality Ziehl-Abegg Sickle Blade or FE2owlet in pressure die cast aluminium or high performance composite material providing enhanced aerodynamic properties, low noise and reliability, dynamically balanced to ISO 14694 Grade G6.3 and finished in black (RAL 9005).

Ziehl-Abegg Sickle Blade and FE2owlet impellers provide significant noise reduction.

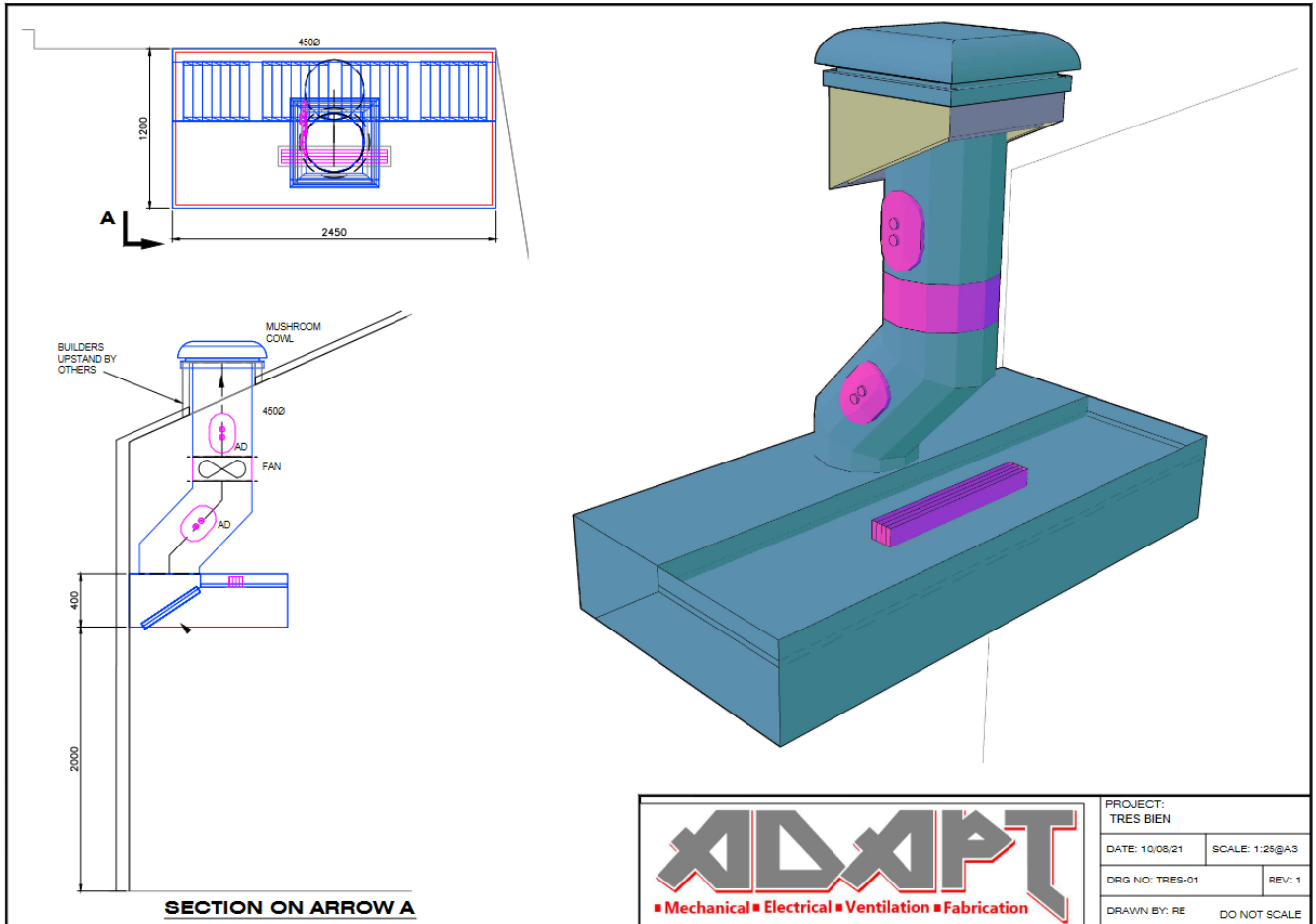
QUALITY MANAGEMENT

Units are to be designed and manufactured with procedures as defined in BS EN ISO 9001:2008.

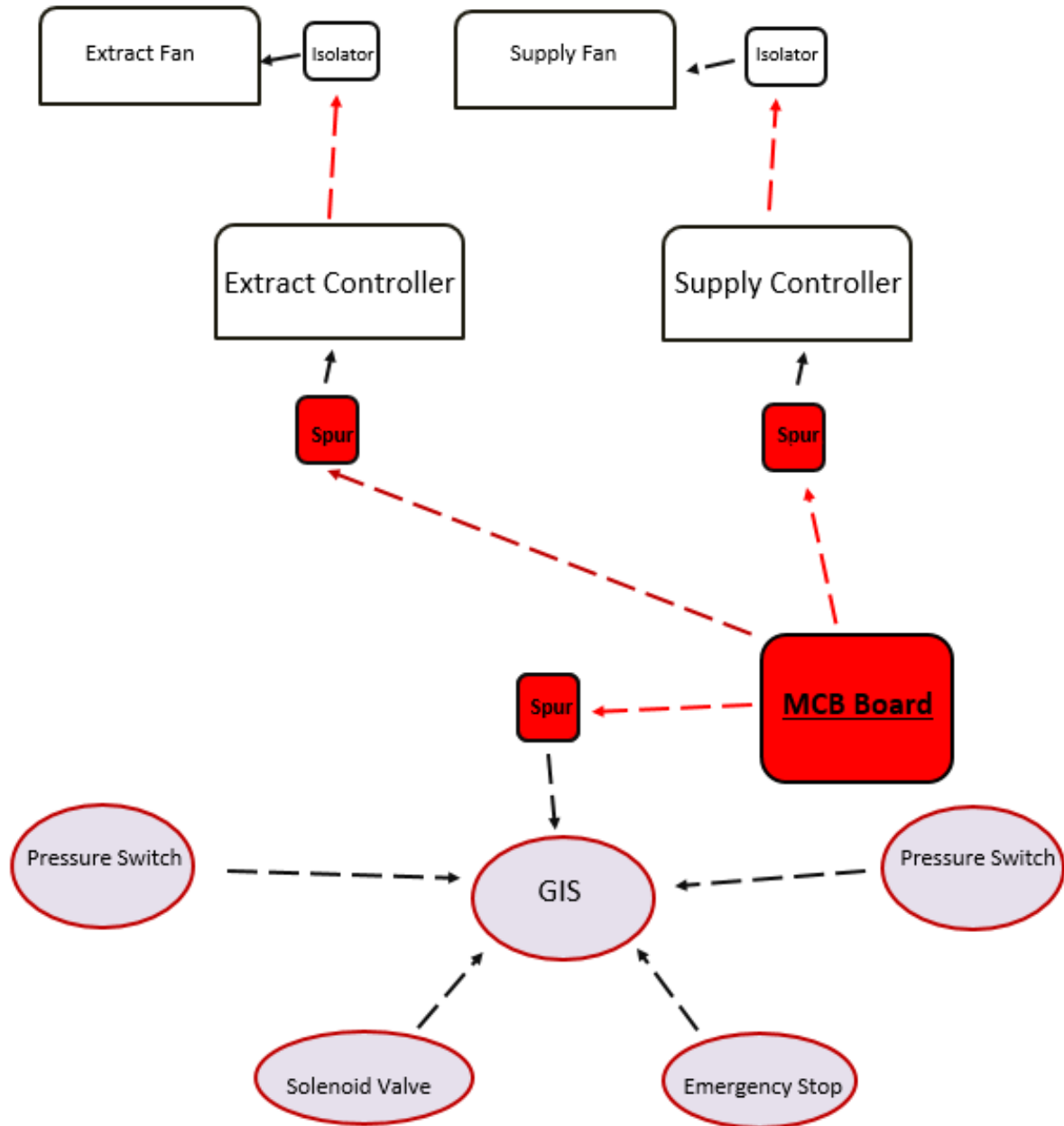
All SDA units are to be tested to ISO 5801:2007 (airside performance) and BS 848 Part 2:1985 (sound performance).

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Proposed layout drawing of revised system



Basic Schematic for Electrical Layout



Red Box – By Others
 Red Arrow – By Others