

1. Kitchen Ventilation Systems Description

1.1 Extract Ventilation System No 1 ground floor venue

The ground floor venue will have 21 off, table top charcoal burning hot plates, so a stainless steel 'hood' at high level over the plate position, will capture any smoke and fume

The EMA Survey and report/RA for the extract ventilation systems, have indicated a very high level of odour control required, so 4 x Purified Air ESP3000 modules, in a stacked (2 x high) and double pass configuration, and 2 x Purified Air MFU1800 modules (stacked 2 x high) with 9 x site safe carbon filters, have been designed into then system, as indicated on drawing number C886/1

The extract fan would be a NFANS CBF/120C-43 model high temperature rated with the motor out of the airstream, and with an external pressure availability of 850pa, however, once the final ductwork route has been established/confirmed, the system pressure should be recalculated, if different from the design drawing layout,

The fan should have a high temperature rated sound attenuator in the duct run through the pant room, and before exhaust at the wall louvre.

The fan should have a speed controller.

Extract ventilation ductwork, would be manufactured and installed in accordance with the HVCA DW172 specification for commercial kitchens, with sufficient access and cleaning doors, and would be 2 hour fire rated, where indicated on the drawing, by the application of FireMac FM120, with all suitable flange cleats and supports.

The main extract ductwork would be 700mm x 500mm giving an extract velocity of approx. 7.5m/s

The exhaust louvre would be 1200 x 500mm giving an exhaust velocity of approx. 3.5 - 4 m/s

1.2 Fresh Air Ventilation System No 1

As the kitchen cookline includes 21 x charcoal cooking items, replacement fresh air has been calculated to cover the 2.38m³/s extract volume, ie operatives, ie 1.9m³/s rounded up to 2.0m³/s of filtered and tempered fresh air.

The fresh air fan would be a NFAN CBF 560-43 box fan, with a speed controller, and an external pressure of 450pa, however, once the final ductwork route has been established/confirmed, the system pressure should be recalculated, if different from the design drawing layout,

Fresh air would be drawn from a roof mounted cowl module, allowing for an intake velocity of approx. 4.0m/s

Fresh air ductwork would be designed, manufactured and installed in accordance with the HVCA DW144 specification and the main duct size is 700mm x 400mm giving a duct velocity of approx. 6.5 - 7m/s

A standard filter module, with replaceable 600mm x 600mm filter panels followed by an in-duct electric heater battery, with fully integral and automatic controls, ensuring that the incoming fresh air is filtered, and at a minimum of +18°C with outside ambient as low as -5°C

Where the fresh air duct passes from the ground floor venue to the basement, or through any fire barriers, a 2 hour rated fire damper would be installed, with access door for testing/resetting.

The system would have a standard silencer, between the fan and dropper duct, and the inlet ductwork would be acoustically lined with.

The ductwork from the intake cowl to the duct mounted heater would be thermally insulated, with 25mm foil backed mineral fibre, with taper joints to provide a full vapour seal, in order to prevent condensation.

1.3 Extract Ventilation System No 2 basement & ground floor kitchens

The basement and ground floor kitchens will have canopies manufactured from 20swg 304 grade stainless steel, with a bank of standard baffle type grease filters along the rear, and integral LED lights.

The EMA Survey and report/RA for the extract ventilation systems, have indicated a very high level of odour control required, so 4 x Purified Air ESP4500 modules, in a stacked (2 x high) and double pass configuration, and 2 x Purified Air MFU1800 modules (stacked 2 x high) with 9 x site safe carbon filters, have been designed into the system, as indicated on drawing number C886/1

The extract fan would be a Helios GBD 710/4T 120 model, high temperature rated with the motor out of the airstream, and with an external pressure availability of 1010pa, however, once the final ductwork route has been established/confirmed, the system pressure should be recalculated, if different from the design drawing layout,

The fan should have a high temperature rated sound attenuator in the duct run through the plant room, and before exhaust at the wall louvre.

The fan should have a speed controller.

Extract ventilation ductwork, would be manufactured and installed in accordance with the HVCA DW172 specification for commercial kitchens, with sufficient access and cleaning doors, and would be 2 hour fire rated, where indicated on the drawing, by the application of FireMac FM120, with all suitable flange cleats and supports.

The main ductwork would be 650mm x 500mm giving an extract velocity of approx. 8.5m/s

The exhaust louvre would be 1200 x 500mm giving an exhaust velocity of approx. 4.0 – 4.5 m/s

1.4 Fresh Air Ventilation System No 2

As the kitchen cooklines include gas powered equipment, and including an allowance for operatives in the basement kitchen, replacement fresh air has been calculated to cover the 2.98m³/s extract volume, ie operatives, ie 2.3m³/s of filtered and tempered fresh air.

The fresh air fan would be a NFAN CBF 560-43 box fan, with a speed controller, and an external pressure of 500pa, however, once the final ductwork route has been established/confirmed, the system pressure should be recalculated, if different from the design drawing layout,

Fresh air would be drawn from a roof mounted cowl module, allowing for an intake velocity of approx. 4.0m/s

Fresh air ductwork would be designed, manufactured and installed in accordance with the HVCA DW144 specification and the main duct size is 700mm x 400mm giving a duct velocity of approx. 7 – 7.5m/s

A standard filter module, with replaceable 600mm x 600mm filter panels followed by an in-duct electric heater battery, with fully integral and automatic controls, ensuring that the incoming fresh air is filtered, and at a minimum of +18°C with outside ambient as low as -5°C

Where the fresh air duct passes from the ground floor venue to the basement kitchen, a 2 hour rated fire damper would be installed, with access door for testing/resetting.

The system would have a standard silencer, between the fan and inlet louvre, and air would be dispersed into the basement kitchen via a high level double deflection diffuser.

The ductwork from the intake louvre to the fire damper would be thermally insulated, with 25mm foil backed mineral fibre, with taper joints to provide a full vapour seal, in order to prevent condensation.

The ductwork will be 'boxed-in' following installation, within the ground floor for aesthetics.

1.5 Carbon Monoxide safety system

As the cookline includes items of charcoal cooking equipment, a Carbon Monoxide (CO) safety system would be installed, electrically connected to the extract fan.

The system would comprise a wall mounted panel, with a CO sniffer modules, located in the basement kitchen and ground floor venue. If the system detects a high or unsafe level of CO, then it activates the extract fan, until the CO level is reduced to safe levels.

This is important should the charcoal system be allowed to 'burn down' at close of service.

If the system detects a high or unsafe level of CO, and the extract fan is already operating, then the panel activates an audio and visual alarm, alerting kitchen staff to investigate the cause of the high CO level.

1.6 Gas Safety Interlock Systems

As the kitchens utilise gas powered cooking equipment, it is a legal requirement to have a gas safety interlock system

Each system will have a wall mounted panel, with an emergency OFF button, along with ancillary emergency OFF buttons at the exits to the kitchen.

The panel would be connected to the extract and fresh air fans, using current sensing technology, and also connected to the gas solenoid valve, located in the main gas pipe supplying the cookline.

In the event that either fan is switched off, or is in fault, the system will prohibit gas flow to the cookline, and close the solenoid valve.

The gas flow will not be permitted until both fans are operating and proved.