

The ceiling in the new HMP low kitchen

The working environment in the new kitchen is described as excellent and like all new kitchens there are no windows in the structure. The working atmosphere is brought about almost entirely by the extensive ventilation system built into the ceiling and roof space. This was a custom job for a custom kitchen and it is worth explaining how it was brought about.

The amount of air that needs to be processed in this kitchen is huge, and it isn't just a case of volume. Each piece of cooking equipment will produce differing amounts of air, heat, steam and grease laden air. This air needs to be rapidly removed, cleaned, its heat has to be extracted and then it is vented to the atmosphere. New air drawn from outside the building has to be heated to a comfortable temperature and then introduced back into the kitchen around the outside of the room without creating any draughts; all without creating positive air pressure inside the building that would make the doors hard to open!

In the process, the water vapour has to be removed as does any grease. The water condenses out as the temperature drops when the air accelerates through the ducts; it also condenses out when the heat is extracted from it by a heat pump. 100's of litres of water have to be collected, processed and disposed of. The system has been designed so the water cannot collect in the ceiling or ducts where germs can breed (lessons from the past have been put into practise). The grease is extracted in the filters above the fryers. This is achieved when the air is forced into a series of rapid changes of direction that results in the grease collecting in traps. These traps are then emptied during a 6 monthly kitchen deep clean.

It's a similar process as used in the venturi vacuum cleaners.

All visible surfaces of the ceiling have been manufactured from catering grade stainless steel, and to prevent condensation dripping onto the floor, staff and equipment, a layer of fire resistant foil backed foam insulation is installed on the top of all horizontal surfaces. As the ceiling is manufactured entirely from stainless steel, this provides a fire barrier within the kitchen space.

One of the major installation problems that need to be overcome was the lack of holes into the roof void. This caused problems with the differing velocity and volumes of air from the equipment. To solve this, it required the construction of plenum chambers to balance the flow of air through the system and to facilitate connection of the extract and supply ductwork.

The system is designed to replace 85% of the extracted air. The rest is made up by air being



The air return vents

drawn in through doors. In a restaurant this prevents cooking smells from escaping into the dining area; in this kitchen it stops the doors from blowing open!

There are no moving parts in the ceiling. All the pumps and fans are in the huge roof void. The total installation time was 15 days and the only problems to overcome were on site adjustments to work around existing services. These were trimmed around and sealed to prevent air, insect and vermin from gaining access. The design ensures that extracted air never comes into contact with the structure of the building. It's a fully sealed system. This prevents any contaminant from getting into the bricks and mortar and becoming a problem - or a fire hazard.

The integral lighting was designed so that the light at the work surface was 500 lux. It uses standard light fittings in a custom built housing.

The fluorescent lights are the type that provides a very white light to improve the working environment.

The grease filters can be removed and put in a dishwasher if required and all removable panels are fitted with a comprehensive lock down facility that requires a key to remove them. This is not usual in a kitchen however, as inmate labour is used, the specifications included it.

All this was designed, built and installed in 8 weeks from the contract being awarded by Britannia Kitchen Ventilation of Leamington Spa. Quite some achievement!

The Publisher asks that for any more information you please contact Britannia Kitchen Ventilation directly on 01926 463540 or visit their website www.kitchen-ventilation.co.uk