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ENVIRONMENTAL HEALTH SERVICES

Food Hygiene

Fact Sheet 7
Mechanical Ventilation

Exhaust canopies can be a big investment so get it right before you install one!

Mechanical ventilation & extraction units or kitchen exhaust hoods are generally required to be installed for all cooking and dishwashing equipment that heats air (with or without water or grease vapour) in all food business premises. Extraction units are intended to collect heat, fumes & other aerosols arising from cooking appliances as per the requirements listed in *Australian Standards 1668* and associated parts thereof.

WHAT ARE THE TRIGGERS THAT WOULD RESULT IN THE NEED FOR MECHANICAL VENTILATION?

- Maximum input exceeding 8kW for electrical appliances;
- Total gas input of 29MJ/h for gas appliances;
- Any deep fryer appliance; or
- When more than one item of apparatus in a room has a total power input exceeding 0.5kW/m^2 (electrical appliances) or 1.8MJ/m^2 (gas appliances) of floor area of the enclosure (an individual room, space, or part thereof).

COOKING PROCESS TYPES

Type 1	**Non grease producing equipment e.g. dishwashers**
Type 2	Low grease, medium heat producing equipment e.g. griddles, ranges, conventional fryers, tilting skillets, steam kettles & gas ovens
Type 3	High grease, low heat producing equipment e.g. electric deep-fat fryers, grooved griddles, hot tops & jot top ranges
Type 4	High grease, medium heat producing equipment e.g. countertop barbeques and gas-fired deep fat fryers
Type 5	High grease, high heat producing equipment e.g. salamanders & open flame charcoal equipment using solid fuel
Type 6	Oriental cooking tables and/or woks
Type 7	Bread ovens and steam producing combination (combi) ovens

For further information, contact Council:

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MINIMUM OVERHANG FOR EXTRACTION UNITS

Minimum overhangs of extraction unit beyond the edge of the cooking surfaces are:

Cooking Process	Minimum Overhang
Types 1 to 4	150mm
Type 5	300mm
Type 6	600mm
Type 7	450mm

Note:

i. Type 1 hoods shall not exceed a maximum horizontal set back of 300mm from the leading edge of the kitchen appliance.
ii. The length of the hood shall not be less than the length of the kitchen appliance.

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EXTRACTION UNIT HOOD TYPES

Type 1	Low sidewall where the canopy does not extend at least 150mm beyond the edge of the cooking surface
Type 2	Corner mounted, subject to a maximum length to width ratio of 2:1
Type 3	Sidewall
Type 4	Island
Type 5	Ventilated ceiling
Type 6	Eyebrow hood
Type 7	Proprietary equipment (equipment that is provided with its own exhaust spigots that are ready to be connected to an exhaust system, with exhaust flow rate requirements in accordance with manufacturers requirements) Proprietary systems can be built to a standard other than AS1668, as long as this is documented.
See Appendix E of AS1668.2:2012 Mechanical ventilation in buildings for diagrammatic representations of the various hood types	

Note:

i. Hoods serving non grease producing equipment (e.g. dishwashers - cooking process type 1) do not require grease filtration. Hood flow rate velocity is to be not less than 0.3m/s.
ii. Stand-alone cooking devices (e.g. pizza ovens & combi ovens) require hood overhang to extend at least 300mm beyond the opening of the cooking equipment, except where equipment has front mounted doors in which case the overhang must be at least 450mm.

CALCULATING AIRFLOW

AS1668.2:2012 - mechanical ventilation in buildings provides a prescriptive procedure that your hood designer will utilise when calculating the air flow requirements of your mechanical ventilation unit.

When equipment is from more than one cooking process type, calculations are always based on the worst case scenario, e.g. where a cooking process type 4 is located under the same unit as a type 2 process, calculations are based on type 4 cooking process. The calculated airflow rate should never be less than 250L/s/m^2.

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AIR FLOW DISCHARGES

Exhausted air should be discharged in a manner that does not cause a nuisance or pose any danger to the building occupants, occupants of neighbouring buildings or members of the public.

Where discharges are deemed objectionable (e.g. odours from cooking activities), the effluent discharge rate should exceed 1000L/s.

Minimum separation distances from vented air discharges to replenishment air intakes, property boundaries or natural ventilation device (air conditioner)	
Airflow rate within the minimum distance (Litres per second)	Minimum Distance (Metres- m)
<200	1
<400	2
<600	3
<800	4
<1000	5
≥1000	6

Note:

i. The standard allows for air purification possibilities and the requirement for independent testing and demonstration of the functionality of these.

CERTIFICATION

Mechanical ventilation units must be designed, constructed, installed, tested & certified in accordance with the provisions of **AS/NZS 1668.1:1998** & **AS/NZS 1668.2:2012**. A "Form 16" must be provided to you post installation & testing, and you need to make this available to Council as it will form an integral part of the Food Business Licence approval process.

Note:

i. The standard describes the necessity for mandatory testing and maintenance of installed systems to ensure functionality.

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DOMESTIC EXTRACTION UNITS

Generally, domestic grade extraction units do not meet the commercial/technical requirements as stipulated in the Standard. If you think your particular situation does not warrant a certified unit; e.g. a domestic kitchen baking cakes, please contact an Environmental Health Officer to discuss. Each case will be individually assessed.

EXISTING PREMISES

All existing food premises are required to comply with AS1668 and the parts thereof, just like new food premises. Therefore if there is evidence that the current system is not working effectively, such as discolouration or grease on surrounding surfaces you may be directed to by an Environmental Health Officer to provide a system that meets As 1668.

It is important to note that if the premises changes hands and a new food licence application is submitted, the existing premises is required to come up to current standard.

CLEANING & MAINTENANCE

All mechanical ventilation exhaust system require routine cleaning to ensure they remain effective at removing steam, grease and vapours and meet you responsibilities under the Food Act 2006. Additionally, it is also important to maintain these systems from a fire safety perspective.

The frequency of cleaning will depend upon the individual units; the types of foods cooked therein the system and the cooking frequency of the premises. Areas forming a ventilating exhaust system that will require routine attention include but are not limited to;

- internal and external surfaces of the canopy hood
- Gutters and filters
- The flu or internal ductwork of the system
- Adjacent surfaces to the extraction system such as ceilings, power points.

While some of the above can be cleaned by the food premises employees (filters & gutters), some items will require cleaning by specialist trades people (e.g. internal ductwork).

USEFUL RESOURCES

Food Standards Code (www.foodstandards.gov.au/code)
Food Act 2006 (www.legislation.qld.gov.au)
AS 4674 - Fit out guide for a food premises (www.saiglobal.com)
AS1668.1 and AS1668.2 - Mechanical ventilation (www.saiglobal.com)

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