

## **5.1 AIR CONDITIONING AND MECHANICAL VENTILATION SYSTEMS**

BCA 1990:	F4.5
BCA 1996:	FP4.3, FP 4.4 Part 11 Part 158
Reference:	AS 1668.2 AS/NZS 3666 1 & 2 AS 1668.1 & 2

### **5.1.1. PURPOSE:**

A mechanical air handling system must safeguard occupants from illness or loss of amenity due to lack of air freshness.

### **5.1.2. System and Equipment**

The following systems and equipment are included within the scope of this section:-

- Air conditioning systems including air handling systems and thermal plant systems incorporating condenser water systems. .
- Ventilation systems including carpark ventilation systems, evaporative cooling systems and general exhaust systems.
- Smoke Spill and smoke control systems including stair pressurisation systems.
- Kitchen exhaust systems.
- System components including fire dampers, humidifiers, electric duct heaters, etc.
- Cooling Water Systems.

### **5.1.3. REQUIREMENTS OF THE EQUIPMENT:**

A mechanical air handling system must:-

- a) Be installed in accordance with AS 1668.1, 2 and AS/NZS 3666.1 and 2; and
- b) Deliver adequate amounts of outdoor air and provide sufficient circulation; and
- c) Remove contaminants present in the compartment or building to maintain an acceptable air quality; and
- d) Minimise the incidence and consequences of Legionella outbreaks.

### **5.1.4. METHOD OF OPERATION:**

Air conditioning and mechanical ventilation systems modes of operation are typically classified as Normal and Fire Mode:

Normal Mode

Systems operate in this mode to maintain acceptable indoor air quality when the building is occupied. Controls may be either manual or automatic.

Fire Mode

In the event of a fire being detected or reported via the fire alarm system, air conditioning and mechanical ventilation systems are required to change over to fire mode operation. This mode of operation is explained further in 5.2 of this section.

An automatic air handling system must be provided with manual override operation.

Automatic operation can be accomplished by:-

- Time clock switching
- Thermostat controlled switching
- Atmospheric contaminant monitoring

#### **5.1.5. MAINTENANCE CHECKS:**

To ensure the ongoing efficiency of an air handling system after installation, AS 3666.2 sets out minimum maintenance requirements to ensure health standards are not compromised.

The maintenance of these systems is an ongoing responsibility. This is a requirement of the regulations and AS 3666.2

Maintenance of an air handling system can be carried out by the owner or he or she may delegate this function to another person or body where necessary or appropriate.

To ensure full compliance with this requirement, a maintenance program must be prepared, including:-

- a) All data relevant to the air handling system.
- b) A formal strategy and recording system for effective management of a series of maintenance procedures.

The maintenance program must be implemented in accordance with the information and requirements of the maintenance routines set down in Section 2 of As/NZs 3666.2. A full description of the requirements for the maintenance of air handling systems, heated water systems and cooling water systems is included and involves routines to be carried out on a monthly, quarterly, six monthly and annual basis.

Systems which include devices such as automatic air quality monitoring systems for car park ventilation systems and the like are covered in Appendix M of AS 1668.2.

Operating and maintenance manuals must be available for all equipment in the system.

#### **5.1.6. MAINTENANCE RECORDS**

To ensure proper control of the maintenance program, the following documentation should be provided:-

Operating and maintenance manuals should be provided for all plant, equipment and systems which are the subject of this Standard. Operating and maintenance manuals shall include at least the following:

- (a) Physical details of the plant, equipment and systems.

- (b) Recommendations on maintenance including water treatment maintenance and management.
- (c) Recommended cleaning, disinfection and emergency decontamination procedures.
- (d) Start-up, operating and shut-down procedures.
- (e) Particulars of the maintenance management program.

Maintenance records shall contain at least the following information:

- (a) Date, item of plant, equipment or system and nature of service performed.
- (b) Details of defects found and rectification procedure undertaken.
- (c) The name of the person or company performing the service.

Log sheets to record the completion of the four-level maintenance routines are included in Appendix C of this Manual.

#### **5.1.7. OTHER MATTERS TO CONSIDER**

The *Building Act 1993* requires the registration of all cooling tower systems and the development of a Risk Management Plan ("RMP") for each cooling tower system.

The *Building (Legionella Risk Management) Regulations 2001* specify the risks that an RMP must address.

The Health (*Legionella*) *Regulations 2001* prescribes maintenance, testing procedures and associated record keeping relating to cooling tower and warm water systems that a responsible person must comply with.

"**responsible person**" means the person who owns, manages or controls the cooling tower system or warm water system.