Your Fire Alarm Panel Is Capable of Much More Than Detecting Smoke

When most people think about a fire alarm system, they think about smoke detectors and warning alarms.

That is understandable. Smoke detection is often the most visible part of the system.

However, in many strata buildings, the fire alarm panel can do much more than simply receive signals from smoke detectors. Depending on the building, it may also interact with doors, lifts, ventilation systems, warning systems, alarm monitoring equipment and other fire safety services.

This is one reason why replacing an ageing fire alarm panel can be more complex than many owners corporations first expect. In some buildings, the panel is connected to a range of other systems that also need to be understood when replacement works are being planned.

What Is the Fire Alarm Panel?

The fire alarm panel, often called the Fire Indicator Panel (FIP), is the main control point for the building's fire detection and alarm system.

It receives signals from devices such as:

- Smoke detectors
- Heat detectors
- Manual call points
- Sprinkler flow switches
- Other monitored fire safety equipment

The panel then displays information about alarms, faults or isolations so that building management, fire contractors and emergency responders can understand what is happening in the building.

In a simple building, the panel may have a relatively limited role.

In a larger or more complex building, it may act as the central point that connects several life safety systems together.

It May Be Connected to Fire Doors

Some buildings have fire or smoke doors that are held open by magnetic door holders during normal operation.

During a fire alarm, the fire alarm panel may release those doors so they close automatically.

This can help limit the spread of smoke and fire through common areas, corridors or other parts of the building.

For a strata committee member, this is an important point. Replacing the fire alarm panel may not only involve smoke detectors. It may also involve checking that door release functions still operate correctly after the replacement works.

It May Be Connected to Lifts

In some buildings, the fire alarm panel may interface with the lift system.

During a fire event, the panel may send a signal to recall lifts to a designated floor or remove them from normal operation.

This is designed to support safer building operation during an emergency.

If the fire panel is being replaced, the lift interface may need to be reviewed, tested and recommissioned as part of the project.

It May Be Connected to Air Conditioning or Ventilation Systems

Fire alarm panels may also interact with mechanical air handling systems.

Depending on the building design, the panel may:

- Shut down certain air-conditioning systems
- Stop air from being recirculated
- Activate or interface with smoke control equipment (like stair pressurisation or exhaust systems)
- Send signals to mechanical control systems

This is one of the reasons fire alarm replacement projects sometimes involve mechanical contractors as well as fire contractors.

The panel is not always operating in isolation. It may be part of a wider building response strategy.

It May Activate Occupant Warning Systems

The fire alarm panel may also be connected to equipment that warns occupants during a fire event.

This may include as part of both Occupant Warning Systems (OWS) and Emergency Warning and Intercommunication Systems (EWIS):

- Sounders
- Speakers
- Warning tones

In some buildings, the panel simply activates local alarms.

In others, it may trigger more sophisticated warning equipment.

When replacing a panel, it is important to understand what warning systems are connected and how they are supposed to operate.

It May Receive Signals From Sprinkler Systems

Where a building has sprinklers, the fire alarm panel may receive signals from parts of the sprinkler system.

For example, the panel may monitor:

- Sprinkler flow switches
- Valve status
- Pump alarms
- Fault conditions

In many cases, the fire alarm panel is not controlling the sprinkler system. Instead, it is receiving and displaying information from it.

This distinction matters because panel replacement may involve confirming that these monitoring signals are correctly connected and operating.

It May Receive Signals From Fire Pumps and Hydrant Systems

Some fire alarm panels monitor signals from fire pumps, hydrant systems or associated equipment.

These signals may indicate things such as:

- Pump running
- Pump fault
- Power supply issue
- System fault
- Valve status

Again, the panel may not control these systems directly, but it may provide important visibility when something occurs.

For building managers and emergency responders, this information can be very useful during an incident.

It May Interface With Security or Access Control Systems

In some buildings, fire alarm systems may interface with security or access control systems.

This can include:

- Releasing electronically locked doors
- Sending signals to access control systems
- Allowing evacuation paths to operate as intended

- Integrating with building management systems

These interfaces need to be carefully considered when panel replacement works are being planned.

A fire alarm replacement project is not just about whether the new panel can detect smoke. It is also about whether the connected building systems continue to respond correctly.

It May Communicate With a Monitoring Centre

If the building has a monitored fire alarm system, the panel may communicate alarm and fault conditions to an external monitoring centre.

In NSW, this often involves Alarm Signalling Equipment (ASE), which was discussed in our previous article.

If your building has monitoring, the ASE and monitoring connection should be considered as part of any panel replacement project.

A simplified sequence may look like this:

Detector activates

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Fire alarm panel receives the signal

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Alarm Signalling Equipment transmits the signal

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Monitoring centre receives the alarm

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Emergency response procedures are followed

Not every building has this arrangement. Some buildings are monitored, and others are not.

What Is a Cause and Effect Matrix?

In larger or more complex buildings, the fire alarm system may operate according to a programmed sequence.

This is often referred to as a Cause and Effect Matrix.

Many buildings contain programmed responses that occupants never notice during normal operation. The Cause and Effect Matrix is the document that records those programmed responses.

In plain English, this means:

If this happens, then the system must do that. i.e. The Cause and Effect Matrix helps define how the building should respond during an alarm or fault condition.

For illustrative purposes a simple cause and effect matrix is shown below

Alarm/Fault Condition	Output / FUNCTIONS									
	FIP Buzzer Activates	FIP Zone Indicator - Alarm	External Strobe Activates	ASE (Call Fire Brigade)	ASE (Call Monitoring Tamper/Fault)	Ground Level Occupant Warning Activates	Level 1 Occupant Warning Activates	Level 2 Occupant Warning Activates	Lift Recalled to Ground Level	Air Conditioning turned off
Power Supply - FIP fault	X				X					
Ground Level Detection Activates	X	X	X	X		X	X	X	X	X
Level 1 Detection Activates	X	X	X	X		X	X	X	X	X
Level 2 Detection Activates	X	X	X	X		X	X	X	X	X
Sprinkler Pressure Switch Activates	X	X	X	X		X	X	X	X	X

This example has been simplified for illustration purposes. Real Cause and Effect Matrices can contain hundreds of programmed responses covering fire detection, warning systems, lifts, doors, ventilation systems, monitoring equipment and other building services. In this example you can see:

- If a smoke detector (or the sprinkler system) activates on any level:
    - The fire panel buzzes
    - The external strobe activates
    - The fire brigade is called
    - The lift is recalled to ground level
    - The air conditioning is shut down
- If there is a fault on the panel:
    - The fire panel buzzes
    - The monitoring centre is notified

For strata committees, the important point is not the technical programming. The important point is that these responses must be understood, documented, tested and recommissioned when a panel is replaced.

Why This Matters When Replacing a Fire Panel

When a fire alarm panel reaches end of life, it can be tempting to think of the project as a simple equipment swap.

Old panel out. New panel in.

In some smaller buildings, the replacement may be relatively straightforward.

However, in many strata buildings, the fire panel may be connected to multiple other systems.

Two buildings may appear to have similar fire alarm panels, but the systems connected to those panels can be very different. One building may have only detectors and warning devices connected, while another may include lift interfaces, smoke doors, mechanical services, monitoring equipment and access control systems. This is one reason replacement quotations can vary significantly between buildings.

This means the contractor needs to understand:

- What devices report back to the panel
- What systems the panel controls or triggers
- What warning systems are connected
- Whether monitoring equipment is installed
- Whether lift, door, ventilation or security interfaces exist
- What the original Cause and Effect requirements were
- Whether existing documentation is available

This is one reason why replacing a fire alarm panel can be more involved than simply replacing a box on the wall.

Why Documentation Matters

Good documentation is extremely important.

Before a panel replacement, the owners corporation should try to locate:

- Fire Safety Schedule
- Fire alarm drawings
- Cause and Effect documentation
- As-built drawings
- Maintenance records
- Previous defect reports
- Fire engineering reports, if any
- Monitoring information

- Records of previous modifications

The better the documentation, the easier it is to understand what the existing panel is supposed to do. Poor documentation can increase uncertainty, cost and project risk.

Questions Strata Committees Should Ask

If your building is considering a fire panel replacement, ask:

1. What systems are currently connected to the fire panel?
2. Does the panel only monitor detectors, or does it also interface with other building systems?
3. Are fire doors, lifts, ventilation systems or access control systems connected?
4. Is the system monitored through ASE?
5. Is there a Cause and Effect Matrix?
6. Are current drawings available?
7. Are there undocumented changes to the system?
8. Will interfaces need to be tested after replacement?
9. Will other contractors be required?
10. What additional works or stakeholders may be involved beyond replacing the panel itself?

These questions can help the committee understand the true scope of the project before approving works.

Final Thoughts

A fire alarm panel is capable of much more than detecting smoke.

Depending on the building, it may form part of a much wider fire safety response involving doors, lifts, ventilation systems, warning systems, monitoring equipment and other building services.

That does not mean every building has every interface.

But it does mean that owners corporations should understand what their panel actually does before replacing it.

A well-planned fire panel replacement considers not only the panel itself, but also the systems connected to it and the way the building is intended to respond during a fire event.

Full Circle Fire specialises in fire detection and alarm systems, including the maintenance, repair and replacement of ageing and obsolete equipment, as well as fire detection system works arising from Fire Safety Orders.