Property Insurance Beyond Statements of Fact

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Aims

To explain some common risk control matters typically raised by property insurers during pre-contract negotiations and in their policy wordings.

This session builds on the topics covered during previous session entitled "Property Insurance Statements of Fact – The Jargon Explained".

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Objectives

By the end of this session, attendees will be able to:

- Explain what is meant by "Modern Methods of Construction" (MMC) and associated terminology including "modular", "cross-laminated timber", "insulated render system" and "Aluminium Composite Material".
- Show an understanding of insurers' concerns relating to MMC.
- List the key items that should be checked on an Electrical Installation Condition Report.
- Identify common heating systems that use renewable energy and the key control measures that insurers look for.
- Describe the property insurance issues relating to waste storage and removal, kitchen extraction system maintenance and gas bottle storage.
- Explain why insurers may ask for kitchen fire suppression systems in some catering risks and in simple terms how these systems work.

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Q1: Over what period of time have we seen "Modern Methods of Construction" buildings emerging?

a) Since ~2000
b) Since ~2010
c) Since ~2012

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What does the term 'Modern Methods of Construction' mean?

- The term "Modern Methods of Construction" (MMC) is frequently used to describe various construction types introduced over the past approx. 20 years.
- These buildings frequently include pre-fabrication of individual components, the use of build systems and sometimes the off-site manufacture of entire buildings in 'kit form'.
- Traditional methods and trades may be partly or completely replaced by these modern techniques on MMC sites.
- Many MMC structures also feature 'sustainable materials' (such as timber, hemp, straw etc.) and materials providing good thermal insulation (e.g. foamed plastics).

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What are insurers' concerns about MMC?

- Use of combustible materials has become prevalent in MMC buildings.
- There's frequently a reliance on plasterboard and 'fire stopping' to achieve required fire performance.
- The fire stopping is often poorly installed and has sometimes been omitted.
- These buildings often include shafts and voids, which may:
  - Allow fires to track through buildings
  - Make fires difficult to detect and fight
- 'On-paper' Building Regulation compliance may be easy to demonstrate but
  - High standards of installation required are virtually impossible to guarantee.
  - It is very difficult for inspectors, insurers etc to make compliance checks.

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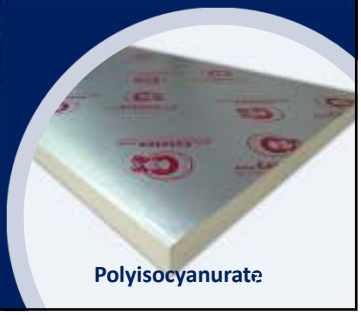
Insulation Types

- Mineral wool
- Glass Fibre Wool
- Phenolic foam
- Polyisocyanurate
- Polyurethane foam
- Extruded polystyrene
- Expanded polystyrene



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Material	Combustible	Comments
Mineral wool	Non-Combustible	Insurers' preferred insulation. Can provide fire resistance. 'Rockwool' is biggest brand.
Glass Fibre Wool	Non-combustible	Formed from fibres of glass. Often used to insulate internal partitions & lofts in homes.
Phenolic foam	Combustible	Difficult to ignite. It chars, gives off fumes and burns with black smoke, but flame spread, smoke and toxic fume generation are moderate.
Polyisocyanurate (PIR)	Combustible	Variant of PUR with improved fire properties. Difficult to ignite & exhibits a pronounced charring which enables it to withstand fire for longer, but is ultimately combustible.
Polyurethane foam (PUR)	Combustible	PUR is combustible. However, it forms a char layer which tends to inhibit further combustion. The char layer is relatively fragile. It may break off to expose fresh combustible foam. PUR also contributes to fire growth in a fully-developed fire, giving off black smoke and toxic fumes, including hydrogen cyanide above 850°C.
Extruded polystyrene (XPS)	Combustible	Extruded polystyrene (XPS) foam is similar in appearance but more dense than EPS is often coloured (e.g. pink, green or blue). It is combustible and behaves similarly to EPS in fire conditions.
Expanded polystyrene (EPS)	Combustible	Expanded polystyrene (EPS) foam insulation board is made from same material that we are familiar with in our daily lives – i.e. for packaging, disposable cups etc. Normally white, sometimes grey. EPS will initially soften and shrink away from a small flame, but will then melt and burn. Voids created by melting admit oxygen, which intensifies the fire. Molten flaming droplets can spread the fire.

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Common types of MMC building

- Modular Buildings & Pods
- Insulated render systems
- Cross-laminated timber
- Innovative cladding systems

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What are modular buildings?

- Modular buildings are assembled on site using sections that have been pre-manufactured in factories.
- The modules can comprise 'complete' prefabricated units or individual parts of the building such as walls, roof sections, ceilings, etc.

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What are pods?

- Pods are small sections of a building that have been pre-manufactured in factories.
- Typically pods are used for hotel bathrooms but they may also used for kitchens and plant rooms.
- The pods are fully fitted-out, wired and plumbed in the factory.
- The pods are then delivered to site and are simply connected to mechanical, electrical and plumbing systems as necessary.

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What are insurers' concerns about modular buildings & pods?

- Use of combustible materials in insulation and cladding.
- Potential for shafts and voids that may allow fires to track through buildings and make fires difficult to detect and fight.
- Possible problems replacing modules or repairing them in the event of a partial loss?
- Uncertainty how resilient the buildings be, for example, in the event of a fire or weather incident.

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Q2: Which of these insulation materials that may be found in modular buildings and pods are combustible?

a) Phenolic foam
b) Glass fibre wool
c) Mineral wool

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Insulated render systems

- Systems are used to improve thermal performance of walls.
- May be used on the walls of new buildings or added to existing buildings.
- Comprises:
  - Insulation layer (typically EPS sheets) fixed to wall.
  - Thin layer of render.

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Insulated render systems

Typically…

1. Substrate (main wall construction)
2. Adhesive coat
3. Expanded polystyrene insulation board
4. Cement-free reinforcing coat
5. Reinforcing mesh
6. Decorative render finish

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What are insurers' concerns about insulated render systems?

- Typically the insulation is expanded polystyrene which is highly combustible.
- Any combustible insulation may assist rapid vertical spread in the event of a fire.
- Mineral fibre insulation is available but it is more expensive and less effective for heat insulation, so rarely used.
- The substrate (main wall construction) may be lightweight (e.g. sheet steel) and would offer little inherent fire separation (plasterboard +/or cement sheet used to achieve regulatory compliance).

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Q3: Which of these materials found in insulated render systems are combustible?

a) Expanded polystyrene
b) Mineral wool

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What is Cross-Laminated Timber?

- A method of construction using timber to form load-bearing solid timber wall, floor and roof panels.
- Frames not normally needed.
- CLT sections are produced by first using adhesive to create softwood panels which are then glued into layers.
- Strength comes from grain for each layer being at 90 degree angle to previous layer.

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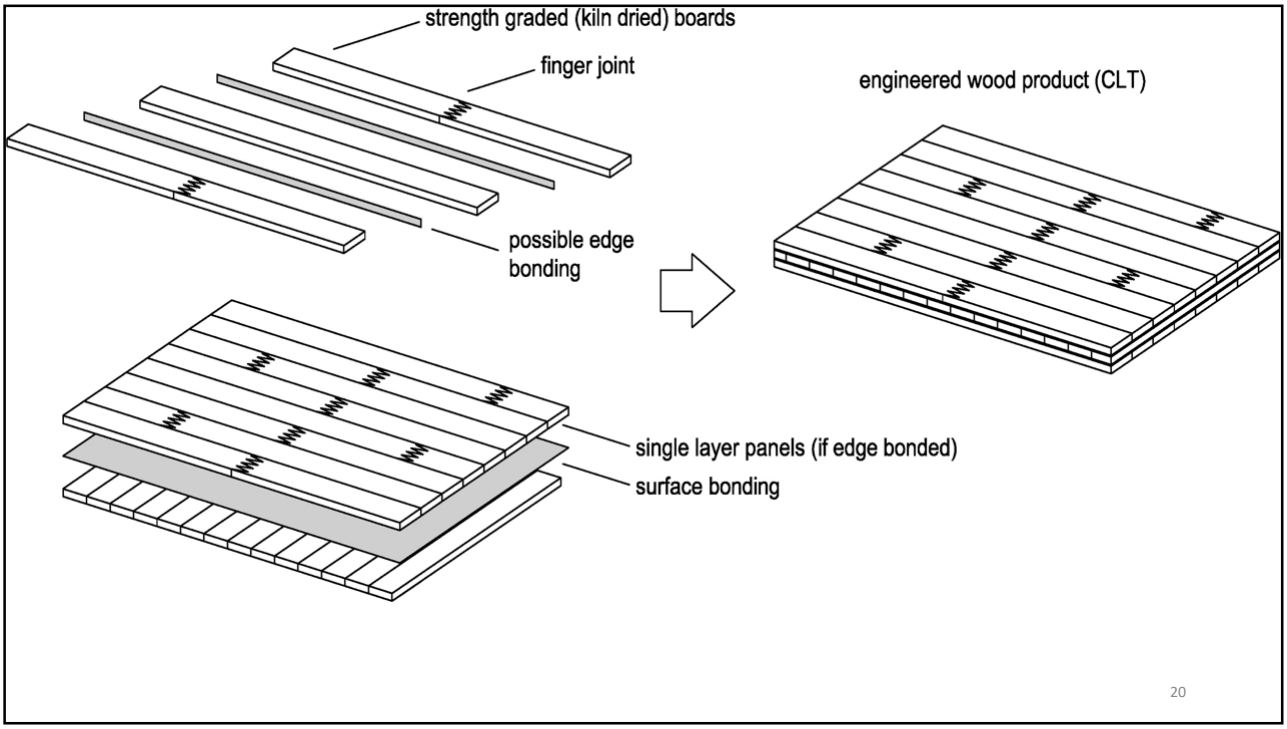

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Q4: What do you think insurers' view of cross laminated timber buildings is likely to be?

a) Being entirely combustible, these are the worst MMC buildings I could imagine.

b) Not so bad, as long as the buildings aren't too big. At least there's no foam plastics or hidden shafts and voids.

c) Pretty good, solid timber like this doesn't burn easily, it just tends to char.

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Cross-laminated timber

- Although the main structure is entirely combustible, CLT buildings have some advantages over other MMC buildings.
- They tend not to feature the voids and cavities seen with some MMC.
- They do not generally need additional insulation – so no foam plastics.
- CLT itself, being dense, may char rather than burn readily.
- However, insurers would have concerns about the use of CLT for larger and taller buildings – e.g. large sum insured and / or 4 storeys +

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Innovative cladding systems

- Cladding is fixed to the exterior of a building, giving it protection from weather and allowing drainage of rain.
- Originally these systems were used to 'modernise' older buildings.
- But now frequently also used in "new builds" as part of a system with multiple layers.

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- External cladding
- Cavity
- Rail system – e.g. Metsec
- Rigid Insulation Board e.g. 60mm Kingspan Kooltherm K15 (Phenolic foam)
- 12mm board e.g. cement particle board.
- Plasterboard stud walling – with glass fibre insulation.

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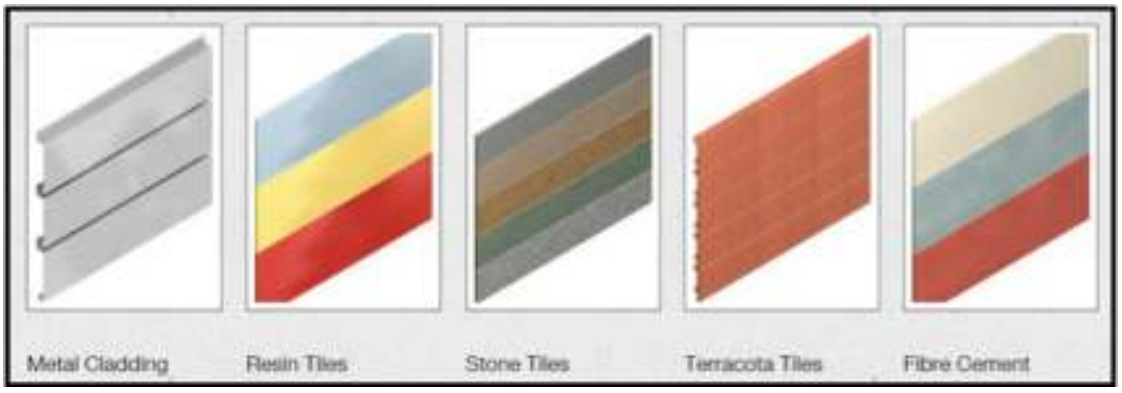
Examples of cladding



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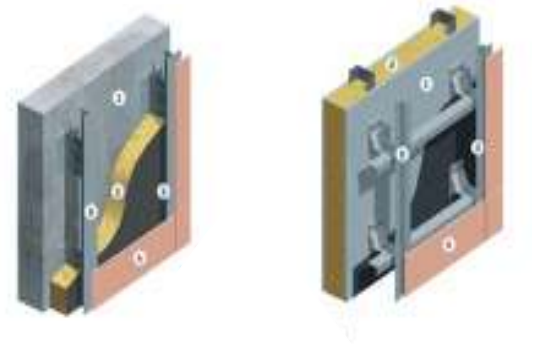
What will insurers want to know about cladding systems?

Insurers will want to know the full make up of the wall, including:

- Substrate
- Insulation
- Cladding



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What are insurers' views of combustible cladding systems?

Existing Buildings

Following the Grenfell Tower fire, insurers are likely to be particularly concerned if either the cladding or insulation on an existing building is combustible …especially if the property is high rise.

For new buildings

A snap ban on using combustible materials in cladding systems was introduced in England in November 2018. It applies to high rise properties (18 metres / 6 storeys).

Further changes to the 'Building Regulations' are expected.

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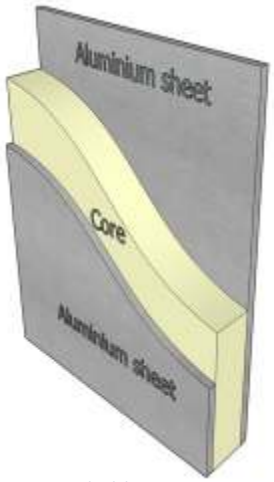
Aluminium Composite Material (ACM) Cladding

- The cladding at Grenfell Tower was Aluminium Composite Material (ACM).
- ACM cladding is only ~ 5mm thick and made up of two thin aluminium sheets with a polyethylene core.
- Most ACM manufacturers have products with 3 core types:
  - Polyethylene (PE)
  - Fire retardant core 60 -70% mineral (FR)
  - A2/ limited combustibility core. 90% mineral



ACM cladding

Note: If a client says that the cladding on their building is aluminium, check that they do not mean ACM.

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ACM – Insurers' views

- Polyethylene (PE)
  Unlikely to be acceptable to most insurers particularly for high rise properties.
- Fire retardant core (FR)
  May be acceptable if insulation is non-combustible (i.e. mineral wool)
- A2
  Is likely to be acceptable to insurers as it is classified as non-combustible under EN 1305 due to high mineral content.

NB Insurer attitude continues to evolve, 3 years after the Grenfell Tower Fire.

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Electrical Installation Condition Report

- Most insurers will expect electrical installations to be inspected and tested by a competent electrician at regular intervals – normally every 3 or 5 years.
- Sometimes this is written into policy wordings as a Warranty or Condition.
- Following a periodic inspection and test, electricians will issue an "Electrical Installation Condition Report" (EICR).
- If insurers ask for an "Electrical Certificate" for an existing electrical installation, they will probably mean an EICR.

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Things to check on an EICR

- Is the electrician used competent and acceptable to insurers? e.g. for commercial premises needs to be NICEIC, ECA or SELECT (sometimes NAPIT will also be acceptable).
- Does the report relate to the right premises and the whole premises?
- Is the date acceptable?
- Are there limitations to the test? If so, are these acceptable to the insurer?
- Does the report indicate that the installation is satisfactory (or unsatisfactory)?
- Were there any observations or recommendations coded C1, C2 or FI?
  - C1: Dangerous Condition observed – Urgent Action Required
  - C2: Potentially Dangerous item observed – Action ASAP
  - C3: Non-Compliance –Improvement recommended – Recommendation only
  - FI : which stands for 'Further Investigation' is required – should normally be acted upon ASAP.

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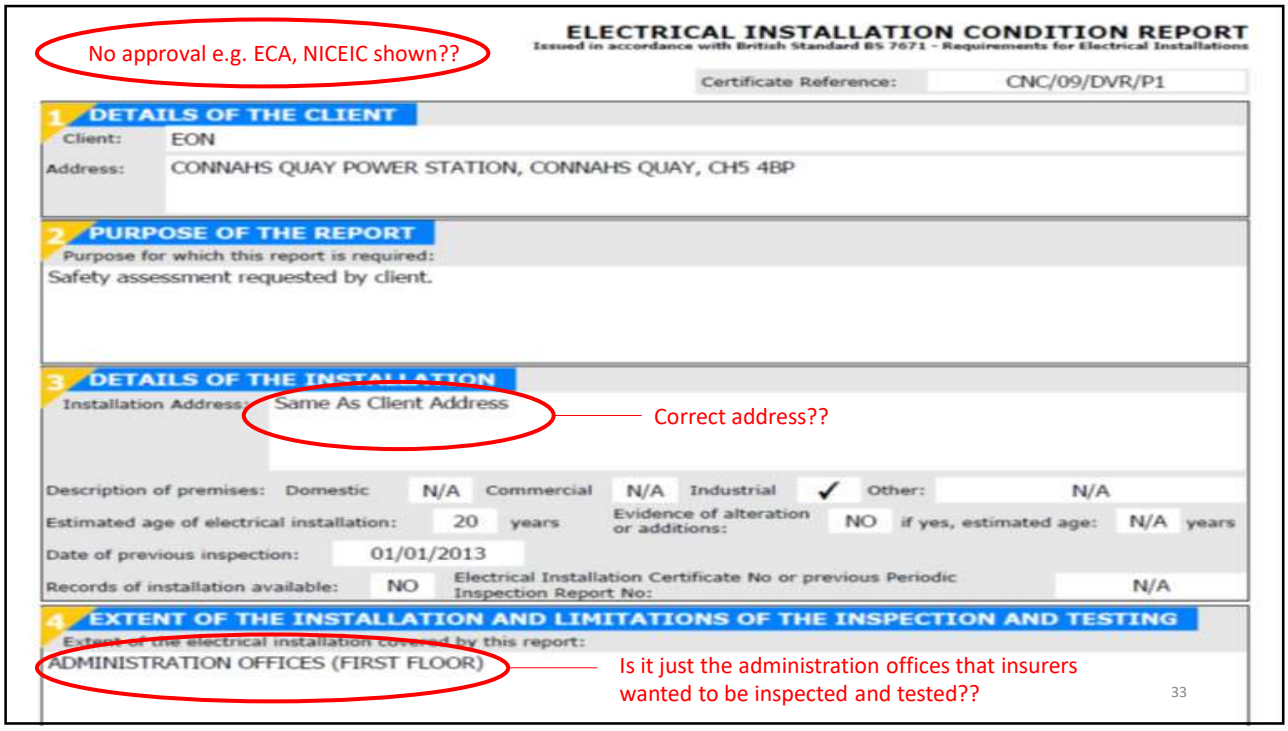
No approval e.g. ECA, NICEIC shown??
ELECTRICAL INSTALLATION CONDITION REPORT
Issued in accordance with British Standard BS 7671 - Requirements for Electrical Installations
Certificate Reference: CNC/09/DVR/P1
1 DETAILS OF THE CLIENT
Client: EON
Address: CONNAHS QUAY POWER STATION, CONNAHS QUAY, CH5 4BP
2 PURPOSE OF THE REPORT
Purpose for which this report is required:
Safety assessment requested by client.
3 DETAILS OF THE INSTALLATION
Installation Address: Same As Client Address
Correct address??
Description of premises: Domestic N/A Commercial N/A Industrial ✓ Other: N/A
Estimated age of electrical installation: 20 years
Evidence of alteration or additions: NO if yes, estimated age: N/A years
Date of previous inspection: 01/01/2013
Records of installation available: NO
Electrical Installation Certificate No or previous Periodic Inspection Report No: N/A
4 EXTENT OF THE INSTALLATION AND LIMITATIONS OF THE INSPECTION AND TESTING
Extent of the electrical installation covered by this report:
ADMINISTRATION OFFICES (FIRST FLOOR)
Is it just the administration offices that insurers wanted to be inspected and tested??
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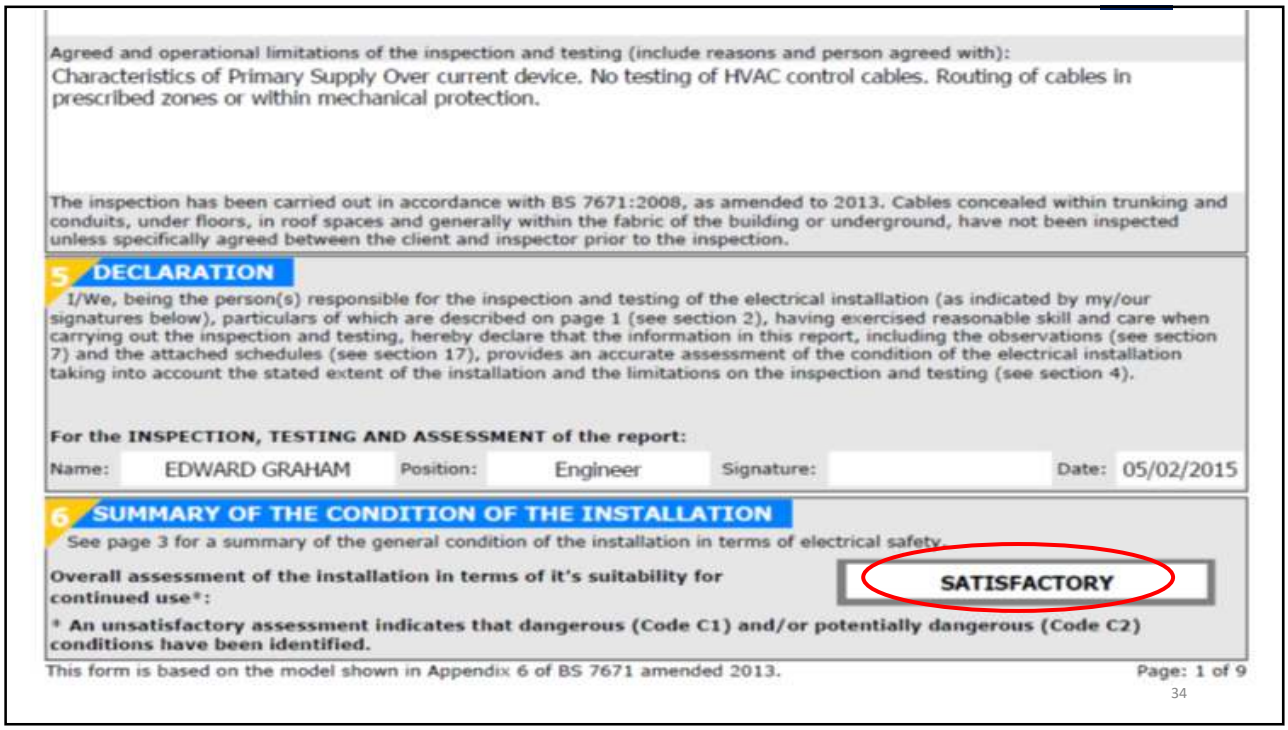
Agreed and operational limitations of the inspection and testing (include reasons and person agreed with):
Characteristics of Primary Supply Over current device. No testing of HVAC control cables. Routing of cables in prescribed zones or within mechanical protection.
The inspection has been carried out in accordance with BS 7671:2008, as amended to 2013. Cables concealed within trunking and conduits, under floors, in roof spaces and generally within the fabric of the building or underground, have not been inspected unless specifically agreed between the client and inspector prior to the inspection.
5 DECLARATION
I/We, being the person(s) responsible for the inspection and testing of the electrical installation (as indicated by my/our signatures below), particulars of which are described on page 1 (see section 2), having exercised reasonable skill and care when carrying out the inspection and testing, hereby declare that the information in this report, including the observations (see section 7) and the attached schedules (see section 17), provides an accurate assessment of the condition of the electrical installation taking into account the stated extent of the installation and the limitations on the inspection and testing (see section 4).
For the INSPECTION, TESTING AND ASSESSMENT of the report:
Name: EDWARD GRAHAM Position: Engineer Signature: Date: 05/02/2015
6 SUMMARY OF THE CONDITION OF THE INSTALLATION
See page 3 for a summary of the general condition of the installation in terms of electrical safety.
Overall assessment of the installation in terms of it's suitability for continued use*:
SATISFACTORY
* An unsatisfactory assessment indicates that dangerous (Code C1) and/or potentially dangerous (Code C2) conditions have been identified.
This form is based on the model shown in Appendix 6 of BS 7671 amended 2013.
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7 OBSERVATIONS AND RECOMMENDATIONS FOR ACTIONS TO BE TAKEN

Referring to the attached Schedule(s) of Inspections and Test Results, and subject to the limitations specified on page 1 of this report under 'Extent of the Installation and Limitations of Inspection and Testing':

N/A There are no items adversely affecting electrical safety

or

✓ The following observations and recommendations are made

Item No	Observations	Classification Code	Further Investigation Required
1	Inspection Schedule Item 5.17: Presence of diagrams, charts or schedules at or near equipment where required (514.9.1) is recommended for improvement.	C3	N/A
2	Inspection Schedule Item 5.18: Presence of non-standard (mixed) cable colour warning notice at or near equipment where required (514.14) is recommended for improvement.	C3	N/A
3	Inspection Schedule Item 5.21: Presence of other required labelling (please specify) (Section 514) is recommended for improvement.	C3	N/A
4	Inspection Schedule Item 7.1.6: Warning label posted in situations where live parts cannot be isolated by the operation of a single device (514.11.1; 537.2.1.3) is recommended for improvement.	C3	N/A

Note that there are no….C1s (Dangerous Condition), C2s (Potentially Dangerous item) observed and no FI (Further Investigation) required?

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Q5: Which of these electrical contractor approval schemes are unlikely to be acceptable to insurers for a commercial premises?

a) NICEIC Approved Contractor
b) ECA
c) ELECSA
d) NAPIT

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Common sources of heating using renewable energy

- Biomass
- Ground Source
- Air Source
- Solar water heating

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Type	Description
Biomass	Biomass systems are wood-fuelled heating systems which burn logs, chips or pellets in order to power central heating systems or stoves in single rooms.
Ground Source heat pumps	Ground source heat pumps use pipes in the ground to absorb heat which can then be used to heat radiators, underfloor or warm air heating systems.
Air Source heat pumps	Air source heat pumps absorb warmth from the outside air which is then used to heat a property. They heat up properties over several hours, compared to around half an hour for a gas-fired heating system. Larger (oversize) radiators are usually required to heat a property effectively. Underfloor systems can also be used. In addition, air source heat pumps can be used to heat water.
Solar water heating	Solar water heating systems use free sunlight to heat water systems and can be paired with a boiler or immersion heater to increase water temperature.

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General control measures

- **Proprietary systems** - DIY systems and systems with ad-hoc modifications are unlikely to be acceptable.
- **Manufacturer's recommendations followed** – installed, maintained and serviced in accordance with manufacturer's recommendations by a competent person.
- **Flues Maintained** – in accordance with manufacturer's or installer's recommendations.

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Biomass

- Stand heater on a non combustible base
- Only burn dry, seasoned wood
- Keep area around appliance clear of fuel and store bulk supplies in a separated area.
- Ensure flue pipe is made of metal, double skinned / insulated and with appropriate protection if it passes through combustible roofs / ceiling
- Use competent person to clean flues at regularly (at least annually)
- Where auger screws are used for feeding the fuel to the boiler – install suitable fire suppression system

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Waste storage and removal

- Many insurance policies include policy conditions that put the onus on the policyholder to:
  - Remove waste from their premises regularly (normally daily)
  - Store waste at least 10 metres from any building.
- …but what are insurers' concerns?

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Q6: True or false?

We need to be concerned about bottled gas like acetylene and propane as these are flammable but cylinders of Oxygen are not a hazard because Oxygen is in the air around us.

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Gas bottle storage

- Because of high pressures involved, a small leak of liquified gas from a cylinder can result in a large volume of gas at normal temperature and atmospheric pressure.
- Where leak involves a flammable gas, an extremely large volume of hazardous gas and air mixture can form in a short period of time, which may explode in contact with an ignition source as small as the spark from an electric switch.
- Oxygen has particularly dangerous characteristics in relation to fire by supporting and accelerating combustion. Materials not normally considered combustible may easily ignite in an oxygen-enriched atmosphere.

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Gas Bottle Storage in open

- Cylinders should be enclosed within a compound or cage, which is as far from buildings as possible.
- There should be no ignition sources nearby.
- Compound base should be concrete / non-porous with no drains nearby.
- The gate / door should be secured by a good quality chain and padlock.

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Fire Hazards - Kitchens

- Main hazard arises from the overheating of fats and oils.
- Frying is carried out safely at temperatures of up to 205°C but flammable vapours are given off at only slightly higher temperatures (approx. 230°C).
- Extraction systems directly above cooking appliances catch grease from cooking and pose a serious fire risk if not properly cleaned and maintained.
- Sparks and flames are of course common in normal kitchen operations, so these may ignite vapours coming from fryers and fat & oil deposits.

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Fire Hazards - Kitchens

- Fires involving deep fat fryers develop rapidly and produce very high levels of heat energy.
- These fires are extremely difficult to fight.
- Fires in extraction systems may spread rapidly throughout the complete ducting system and may spread to other parts of the building.

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Case Study – Heathrow Airport Terminal 1 Fire (1997)

- Started in ducting above Burger King
- Confined to 200 metres of ducting
- Roof and about 20% of roof plantroom damaged plus smoke damage.
- Took 60 firefighters 5 hours to contain
- 180,000 pass through building each day, but only 100 overnight staff were present.
- More than 300 flights were cancelled
- An estimated 45,000 passengers had their journeys disrupted or cancelled

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Basic Fire Precautions – Commercial kitchens

- Deep fat fryers should be fitted with thermostats set to prevent the temperature of the fat rising above 205°C.
- Fryers should also have a high temperature limit control to shut off the fryer if the temperature of the fat exceeds 230°C.
- At least one class F fire extinguisher and a fire blanket should also be provided.

NB These requirements may be written into insurance policies as conditions.

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Filter & Duct Cleaning

- Filters must be cleaned at least weekly.
- Ductwork, extraction motors etc. need to be cleaned by specialist contractors at least annually.
- Insurers may want BESA (Building Engineering Services Association) approved contractors to be used.
- Insurers may make reference to the standard TR19 - the recognised standard in UK for ductwork cleaning.

It is likely that these requirements will be covered by policy conditions. Clients should obtain and carefully check cleaning reports to ensure system has been fully cleaned with no issues highlighted by contractor.

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Fire suppression in commercial kitchens

- Due to the significant fire risks arising from cooking processes, some insurers will require suitable fixed fire suppressions systems in commercial kitchens.
- Requirement for fire suppression will normally be triggered by
  - Type of cooking undertaken (e.g. deep fat frying) and / or
  - The sums insured at risk but other risk factors such as construction may also be a factor in the decision.
- Normally insurers will expect systems to protect all equipment (fryers, grilles, hobs, bratt pans etc.) plus the overhead canopy / ducting system.
- Most insurers will look for compliance with the Fire Suppression Standard LPS 1223 but there are systems installed to different standards (e.g. US standards) that may be acceptable.
- Ongoing servicing and maintenance is also required.
- The Ansul R-102 system is the most commonly seen system.

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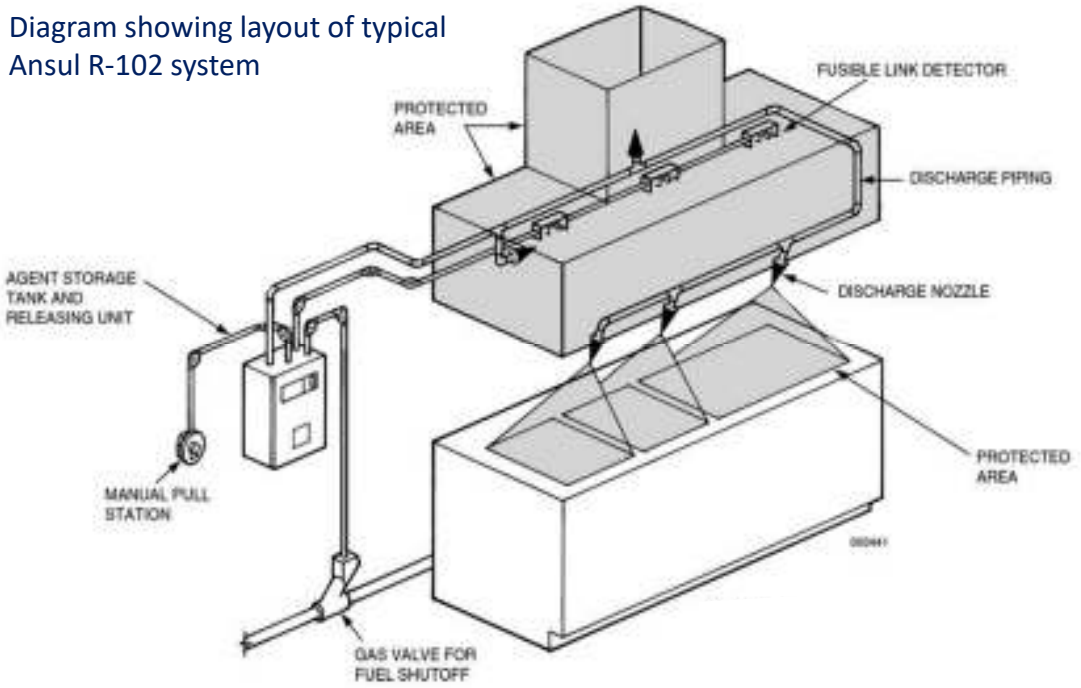
Diagram showing layout of typical Ansul R-102 system



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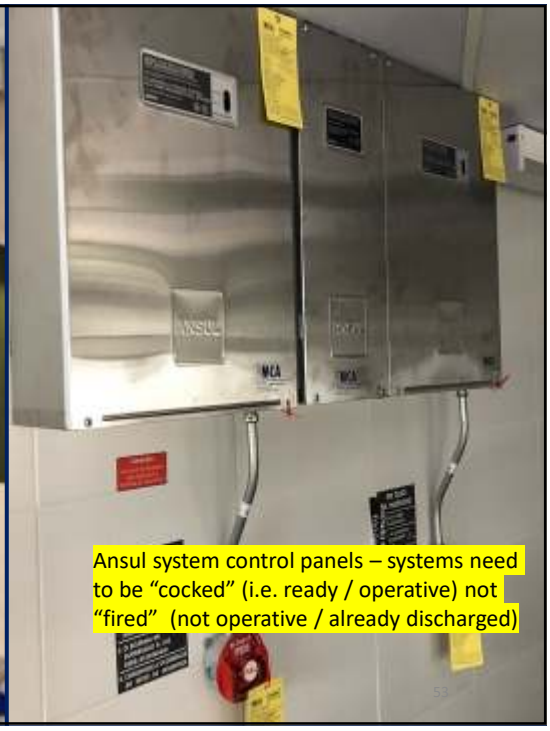
Ansul system protecting commercial kitchen – note nozzles.



Ansul system control panels – systems need to be "cocked" (i.e. ready / operative) not "fired" (not operative / already discharged)

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Objectives

By the end of this session, attendees will be able to:

- Explain what is meant by "Modern Methods of Construction" (MMC) and associated terminology including "modular", "cross-laminated timber", "insulated render system" and "Aluminium Composite Materials".
- Show an understanding of insurers' concerns relating to MMC.
- List the key items that should be checked on an Electrical Installation Condition Report.
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Information sources:
RISC Aithority - www.riscauthority.co.uk
HSE: www.hse.gov.uk
The IET: www.theiet.org
DJT Electrical Training: https://www.djtelectricaltraining.co.uk
AXA: https://www.axaconnect.co.uk/resources/risk-management/

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