



WHAT IS FIRE ENGINEERING?

Prescriptive solutions

Building solutions for fire safety are generally prescribed by the relevant building codes. These use a cookbook approach to give an acceptable level of safety. This approach of 'Deemed-to-Satisfy' (DTS), however, is often not appropriate; due to building age, existing nature, use, architectural design, requirement for flexibility, requirement for higher level of safety, requirement for greater property protection and high cost.

Performance based fire safety engineering

This is the application of knowledge in fire science and human behaviour, technology, and performance of materials and systems to develop alternative solutions from the prescriptive answers given in the building codes. The designs are developed specifically for the building or project under consideration and hence can be more appropriate than the generic code solutions. The developed designs are shown through calculations, modelling, statistical data and research information to provide levels of safety acceptable to the community. This is done in consultation with the fire safety team (who are identified early in the project as the main stakeholders for the fire strategy) and usually involves the client, the fire safety manager, the approval authority, third party reviewers and all members of the design team where necessary. This produces a clear fire strategy that has a good audit trail.

Compliance

Many building codes have performance requirements that have to be achieved. The options to meet these are by either following the prescriptive DTS approach, or by developing alternative solutions and demonstrating that the design satisfies the performance requirements, or is equivalent to the DTS. The Building Code of Australia (BCA) has allowed performance-based design since 1997 and specifies the required performance standards.

Advantages of fire and safety engineering

While prescriptive provisions generally give only one suitable means of compliance, a performance-based solution offers several avenues of compliance. The end result being that a performance-based fire engineered solution often provides more flexibility in design, opportunity for innovative solutions, improved functionality, equivalent or better levels of life safety, and significantly more cost-effective solutions. Performance-based fire engineering is value-added engineering enabling the development of 'tailor-made designs' to cater to specific requirements of the building owner.

