



Diagrams of the aims and implementation of the alternative solution with no fire safety curtain.

**Fire-Engineered Alternative?**

A fire-engineered solution takes a holistic view of the design requirements for any building. It considers the requirements associated with ensuring that each of the prime drivers for design are achieved as required. At the minimum, life safety and fire fighter protection should not be compromised by not having a fire safety curtain in a building. Typically in the UK we design a space to be evacuated in a notional flow time of 2½ minutes from the time people begin to move.

The basic aim of an alternative solution is to design out both the fire safety curtain and the potential fire separation lines between the stage and side stages and auditorium.

It is worth noting that the principles embedded within a code-based fire safety design is that the space in which a fire starts will fill with smoke. This will soon become life-threatening to the occupants and will make the fire-fighting more difficult as smoke fills the room. An alternative solution could provide a mechanism whereby these criteria are less onerous. This would not only aid means of escape but also the fire-fighting operations.

Such a design could:

1. Create a single-volume space, which consists of the auditorium, main stage and side stages.
2. Utilize a designed mechanical smoke-extract system, located at high level in the space to control the spread of smoke and to create safer conditions in the space.

3. Require sprinklers on the side stages to reduce fire-spread potential. Sprinklers on the main stage could be impractical due to the height and nature of use of space.
4. Provide a level of safety equivalent to or better than the code-compliant solution.
5. Remove the design issues relating to the demountable (or other such solution) wall sections relating to variable-width proscenium openings.
6. Utilize the building services mechanical extract systems and not use stand-alone, never otherwise used, systems.
7. Improve the negotiation position with licensing authorities for flexibility of performance use of normally banned items such as smoke or naked flames.
8. Be bench-marked against the cost (and flexibility issues) of the fire performance of the code-compliant spaces.

After a review of the history of theatre fires and their causes both in the UK and US, a fire safety engineer puts forward the arguments for a fire engineering approach in modern theatre design.

Some relevant Life Safety and Fire Precaution literature.

