

Awareness on Applying Performance-Based Design/Fire Engineering Approach

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The Taipei Dome (台北大巨蛋) project in Taiwan was suspended [1,2] in April 2015 due to many reasons. There are several points related to applying Performance-Based Design (PBD) or Fire Engineering Approach (FEA) to determine the fire safety provisions:

1. Occupied area increased from 46% as stated in the initial plan put forward in 2004 to 54.5% [2].
2. Construction of an adjacent large shopping mall would affect evacuation of people out of the Dome within 15 minutes [2].
3. As the underground parking spaces are connected to different buildings, fire and smoke spread is a concern [2].
4. Space limitation would affect fire engines reaching the disaster site [2].
5. Open space surrounding the Dome complex can only accommodate 60,000 people during an emergency, far behind the estimated 140,000 people that will be stayed inside the buildings [2].

The above are just concerns raised without clear argument nor scientific supporting articles. However, these points are always challenged by the public. Quantitative analysis has to be carried out to justify the validity of those design data under agreed scenarios.

Anyway, this sounds an alarm to all those PBD/FEA projects [3] in justifying the design concept, assessing whether the assumptions made will be held, and more importantly, how to provide appropriate fire safety management in daily operation of the building. No doubt, accidents after big disasters [4] would be vigorously investigated. In addition, those projects with fire safety provisions determined by PBD/FEA would certainly lead to in-depth investigation as raised before [5]. All parties concerned in the PBD/FEA process must carry out their jobs in design, evaluation and approval seriously, particularly in those crowded areas such as very deep underground stations [6].

References

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