Certification of a fire safety design using verified calculation methods

Monideep Dey, PhD

23276 Southdown Manor Ter., Unit 105, Ashburn, VA 20148, USA

Nuclear safety regulation and building fire codes require that fire safety devices such as sprinklers and fire barriers be certified for performance by independent laboratories in accordance with ISO standards. The number and location of the devices are generally prescribed in the regulation or fire code. Presently fire safety engineering (FSE) is used to specify or replace the devices required in the regulation. This FSE process should also be certified by an independent and impartial body since it is used to substitute requirements in regulation.

An ISO standard, ISO/IEC TR 17032:2019[1], *Guidelines and examples of a scheme for the certification of processes*, has been developed and available for the certification of processes such as fire safety engineering. A specific annex (A.8) in ISO/IEC TR 17032 specifies its use for certifying alternate fire safety designs based on fire safety engineering. The annex references ISO 23932-1:2018[2], *Fire safety engineering — General principles — Part 1: General*, which specifies requirements of the FSE process.

[1] Monideep Dey served as a US expert from the American National Standards Institute (ANSI) to the ISO working group which developed ISO/IEC TR 17032:2019.

[2] Monideep Dey as a project leader in the ISO fire safety committee initiated the revision of ISO 23932:2009 that led to the current ISO 23932-1:2018.

The above schematic is taken from The ISO website, ISO training resources. See specific training slides for ISO/IEC TR 17032:2019.

A critical element of the fire safety engineering process is the verification and validation of fire calculation methods. Requirements for verification and validation of fire calculation methods are specified in ISO 16730-1:2015[3]: *Fire safety engineering — Procedures and requirements for verification and validation of calculation methods*. ISO 16730-1:2015 is critical in the certification process of a fire safety design since fire calculations are a center piece of the process. Prevention of faulty safety designs can be assured through the use of calculation methods that are certified by an independent and impartial 3rd party as specified by the ISO standard. Faulty designs increase the risk to public safety and damage to property.

The videos available below illustrate the importance of the verification and validation of fire safety calculation methods, and also the benefits of using certification methods developed by ISO.

https://youtu.be/21oQI6x0Ino

https://youtu.be/QmO2HU9jgkI

https://youtu.be/hmKBSEAIIXc

Author Information:

Email: deytec@frontiernet.net
LinkedIn: www.linkedin.com/in/dr-monideep-dey-a130941b
Website: www.deytecinc.com

[3] Dr. Dey was the Convenor in the ISO technical committee for fire safety which developed ISO 16730-1:2015.