SFPE EUROPE MAGAZINE — AUTHOR GUIDELINES

Firstly, thank you for your interest in writing for *SFPE Europe* magazine.

You have been contacted by a member of the Editorial Board who has asked you to prepare an article.

We are looking for relatively short and direct articles, it is very important to have a good reference list so that readers can find additional information if they want to.

The editor reserves the right to decline an article at any time; however, every effort will be made to work with authors on any content concerns before the decision is made to remove an article from the publication.

The following author guidelines will help you in preparing your article.

- The Editorial Board member must have approved your topic.
- Upon acceptance, you will be given a deadline. Please make every effort to meet the deadline. Late articles cannot be guaranteed publication.
- Keep in mind that you are writing for a global audience of readers, some of whom are new to the field and others who are industry experts on fire protection engineering.
- Do not include any commercial content, promoting a company's products or services.
- If the article already has been published in Fire Technology or any other publication, the article must clearly state that that is the case, and that this is the "short version / compressed version" of that article.
- Average article length: 1,000-1,800 words
- Charts, figures, graphs, and photos are welcomed and encouraged. Please make sure all images are easily readable. Poor quality images will not be published.
- Include a list of references and/or footnotes at the end of the article.
- When submitting your article make sure to include information about all authors (Name, Institution/Company, Country).

- *SFPE Europe* editors reserve the right to edit articles for grammar, style, and clarity.

- Article format (see example on the next page).

    - Article title: Times New Roman, 14pt, Bold

    - Heading: Times New Roman, 11pt, Bold

    - Sub-heading: Times New Roman, 11pt, underlined

    - Paragraph: Times New Roman 11pt

    - Tables and Images: Centered

<u>Article Format</u>

Article title (Times New Roman 14 Bold)

By: Author name, Author organization, Country (Times New Roman 11)

Article body text. (Times New Roman 11)

Automatic water-based sprinkler systems have successfully been used to protect properties for over 100 years and are considered a fundamental aspect of building fire protection strategies, especially in commercial occupancies. According to the NFPA US Experience with Sprinklers Study [1], sprinklers operated in 92% of the fires where sprinklers were present and the fire was large enough to activate them. Sprinklers were effective at controlling the fire in 96% of fires in which they operated.

Heading 1 (Times New Roman 11 Bold)

Obstructions (continuous or non-continuous) can be classified as single or multiple objects at or below the level of sprinkler deflectors that affect the discharge patterns of one or more adjacent sprinklers [2].

<u>*Sub-heading (Times New Roman 11 underlined)*</u>

This future work will aim to develop a fundamental understanding of the dynamics between sprinklers and obstructions through spatially resolved spray characterization, CFD modelling, cold flow testing and full-scale fire tests. The knowledge gaps to be filled through these next phases of work, include [6,7]:

- How variations in sprinkler pressure and k-factor influence spray development
- How multiple, small, adjacent objects can obstruct sprinkler sprays when placed near each other.
- How obstructions impact blockage ratios and shadowing
- How various obstruction scenarios impact sprinkler performance, on a scale of significance
- How obstructions can influence activation times and the potential for sprinkler skipping
- How the porosity of the elevated walkway impacts plume development, sprinkler activation, sprinkler spray development and pre-wetting of adjacent combustibles;
- How the grate geometry impacts plume development, sprinkler activation, spray development and water delivery
- How floor coverings can impact sprinkler activation times, spray coverage, and pre-wetting

Theory of Post Flashover Fires (Times New Roman 11 BOLD)

Due to limitation in space the analysis is only shown here in detail for post-flashover ventilation-controlled compartment fires. For pre-flashover fires a very similar analysis can be made.

The heat balance of compartment fires as shown in Figure 1 can be written as:

$$\dot{q}_c = \dot{q}_l + \dot{q}_w + \dot{q}_r \qquad \text{Eq. 1}$$

where $\dot{q}_c$ is the heat release rate, $\dot{q}_l$ the heat of hot gases flowing (convection) out through openings, $\dot{q}_w$ the heat going into to the boundaries and $\dot{q}_r$ the heat radiating out through the openings.

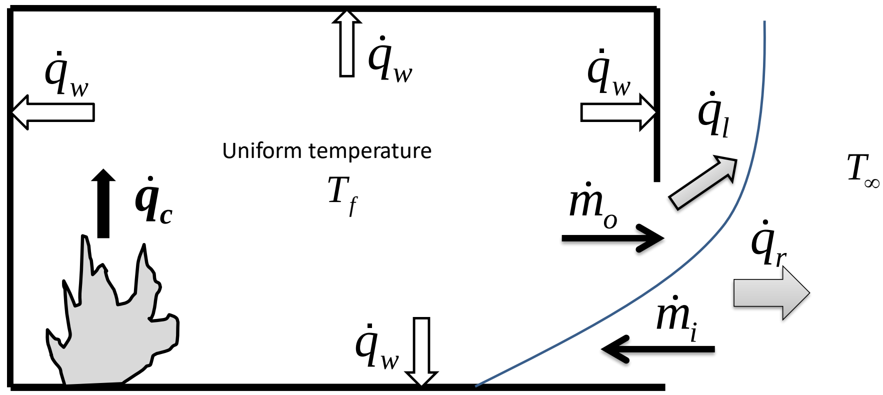

Figure 1. Heat fluxes in a fully developed ventilation-controlled compartment fire. (Times New Roman 10)

Comparisons of the measured temperatures in the post-flashover tests with those four different enclosure structures are presented in the SP-report (Sjöström, Wickström and Byström, 2016) [8].

Note that the same final temperatures were reached in the insulated cases (A5 – LWC (light weighted concrete), B2 – steel with insulation inside and D2 – steel with insulation outside). However, the time taken to reach the highest temperature is very different, see Figure 2. With uninsulated steel, however, the final temperature is several hundred degrees lower.

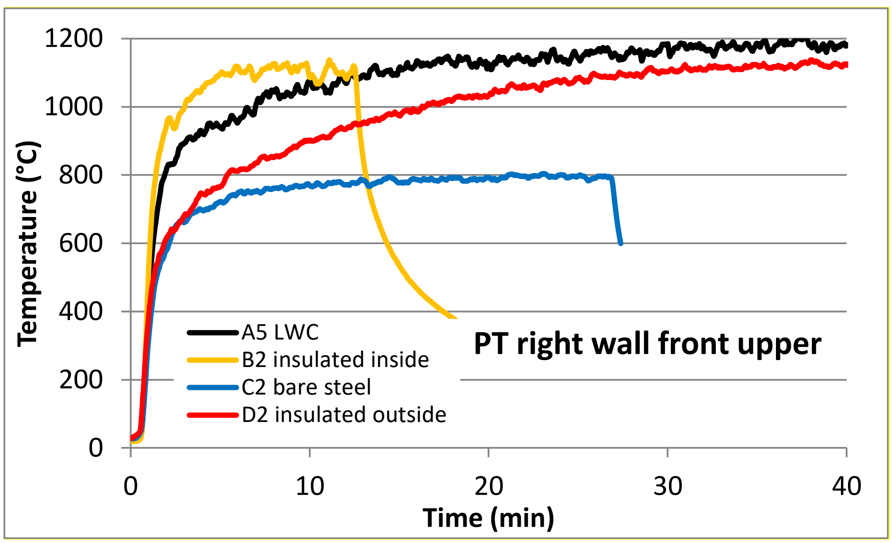

Figure 2. Measured temperature post-flashover tests with different surrounding structures (Sjöström, Wickström and Byström, 2016) [8]. (Times New Roman 10)

References (Times New Roman 11 Bold)

[1] Ahrens, M. (2017). *US Experience with Sprinklers.* Quincy: NFPA.

[2] National Fire Protection Association. (2019). *NFPA 13: Standard for the Installation of Sprinkler Systems.* Quincy: NFPA.

[3] Palenske, G. A., & Fletcher, W. N. (2014). *Obstructions and ESFR Sprinklers - Phase I.* Quincy: Fire Protection Research Foundation.

[4] Palenske, G. A., & Fletcher, W. N. (2015). *Obstructions and ESFR Sprinklers - Phase 2.* Quincy: Fire Protection Research Foundation.

[5] Palenske, G. A., & Fletcher, W. N. (2016). *Obstructions and ESFR Sprinklers - Phase 3.* Quincy: Fire Protection Research Foundation.

[6] Ryder, N., & Jordan, S. (2019). *Impact of Elevated Walkways in Storage on Sprinkler Protection.* Quincy: Fire Protection Research Foundation. (not yet published)

[7] Ryder, N., Jordan, S., & Strege, S. (2019). *Impact of Obstructions on Spray Sprinklers - Phase I.* Quincy: Fire Protection Research Foundation.

[8] Sjöström, J., Wickström, U. and Byström, A. (2016) *Validation data for room fire models : Experimental background Validation data for room fire models : Experimental background*. Borås, Sweden.