

第 133 回機械システムセミナー

第 124 回広大 ACE セミナー

Experimental and Analytical Examinations into Large-Scale Gas Explosion Venting

日 時 2023 年 7 月 13 日 (木) 21:00-22:00 (日本標準時)

場 所 オンライン (Teams)

URL https://teams.microsoft.com/l/meetup-join/19%3ameeting_YTA1NzFkYjctY2U3Yy00NzcwLTg3ZGMtN2JlZTlwNTA0YWE0%40thread.v2/0?context=%7b%22Tid%22%3a%22c40454dd-b263-4926-868d-8e12640d3750%22%2c%22Oid%22%3a%22cf96655f-f8c7-4843-a921-345c3ed72aa6%22%7d

講演者 C. REGIS L. BAUWENS

Regis Bauwens is a Senior Lead Research Scientist and Technical Team Leader of the Explosion and Blast Research group at FM Global, with extensive experience in explosion venting and industrial safety. He holds a Ph.D. in Mechanical Engineering from McGill University. Regis has made numerous contributions to the field of explosion venting, developing new models and analytical methods for large-scale gas explosions. He has been recognized with awards for his research, including the Bill Doyle award from the AIChE and the Robert Schefer award from International Conference on Hydrogen Safety. Regis is also an active member of several professional committees, including the NFPA Technical Committee on Explosion Protection Systems and is on the board of directors of the Institute on the Dynamics of Explosions and Reactive System.



講演概要 次ページの Abstract をご参照下さい。

申請方法 <https://forms.gle/pRg5dNDmX9YFohKx9>

参加費 無料

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Abstract

Explosion venting is a widely employed technique for reducing damage to enclosures caused by accidental explosions. Accurately determining the venting requirements, however, can be highly challenging due to the complex interplay between combustion and venting. Consequently, existing correlations, such as those in NFPA 68 and EN 14994 standards, may substantially under or overestimate the necessary vent area.

This presentation will both summarize existing vented explosion studies from the literature as well as provide an overview of FM Global's research on large-scale gas explosion venting, highlighting the intriguing combustion phenomena observed. It will discuss:

- The influence of various parameters, such as ignition location, mixture composition, venting configuration, vent deployment pressure, and the presence of obstacles, on the pressures that develop.
- Additionally, it will address the development of flame instabilities, including Darrius-Landau, Rayleigh-Taylor, and flame acoustic interactions during vented explosions.
- The talk will also cover the development of numerical models for simulating vented explosions and the creation of a physics-based explosion vent sizing correlations, which are compared to the FM test data and experimental data from existing literature.

