

Title	FABIG Technical Note 2: Explosion Mitigation Systems
Publisher/Author	The Steel Construction Institute
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Scope	<p>Introduction and scope</p> <p>The Interim Guidance Notes for the Design and Protection of Topsides Structures [I] against Explosion and Fire covers the subject of explosion in Section 3. In the two years since that document was prepared a greater understanding of explosions has been developed. This does not invalidate statements made in the Interim Guidance Notes, however it does allow greater guidance to be given as to the applicability of certain explosion mitigation measures. Such additional guidance is considered necessary since:</p> <ol style="list-style-type: none"> 1. Some mitigation measures have been confirmed not to be universally applicable (e.g., water deluge); 2. Other mitigation measures require great care in design to be effective (e.g., blast relief panels); 3. Measures not considered in the Interim Guidance Notes are currently being investigated and may be appropriate for certain applications. <p>The approach taken in this document is to try to explain, in a simplified manner, how a particular mitigation system works. This is then built upon to describe the circumstances in which the mitigation method works and those circumstances where it will not work. Where possible, examples will be used to illustrate the concepts being explained.</p> <p>Predicting the magnitude of gas or vapour explosions accurately is a major problem, therefore the absolute accuracy of the loading is uncertain. It is similarly difficult to determine the effects of mitigating measures on reducing the explosion overpressures in specific modules, usually because the explosion prediction program cannot model the complete detail of the mitigation method being proposed. This creates great problems in determining whether the benefit of a particular mitigating measure is acceptable. With the most flexible explosion prediction tools (e.g. Computational Fluid Dynamics (CFD) program), some realistic inclusion of mitigation measures may be possible. This enables comparisons to be made between problems run with and without the mitigation method. Therefore, in practice acceptance is tied closely to the confidence one has in the methods used to predict the overpressure. This interface between overpressure prediction and its acceptance is discussed further in Section 2.</p> <p>This document is intended to cover measures that may be taken to mitigate an explosion or its consequences. Since a number of these measures are activated on gas detection and prior to ignition, the document includes a qualitative discussion of gas detection. This will be in the context of actions that could be taken when gas is detected. This subject is discussed in Section 3.</p> <p>Sections 4 and 5 consider how various mitigation systems work assuming ignition to have occurred. Section 4 looks at systems that condition the atmosphere to inhibit combustion. Section 5 looks at the performance of various blast relief systems. These sections summarise the principles of operation, outlining how the systems can be used to best effect.</p> <p>Many of the concepts on the market and including some of those systems discussed in this document are proprietary systems covered by patents. Care should be taken by any Operator or Engineering Company to investigate this</p>

	aspect when contemplating the sale or use of such systems.
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