

# Petrochemical, oil and gas (POG)



## Challenge

A fire or explosion associated with a petrochemical, oil or gas facility would have devastating effects. Space is a critical factor and so there is a need to reduce the footprint of critical safety measures.

## Solution

iFLOW technology.

## Application

Inert gas fire suppression systems have provided a reliable means of fire protection in these facilities for more than 20 years. iFLOW technology takes this protection to a new level.

## Inert gas fire protection of critical infrastructure in the petrochemical, oil and gas industries

Fire risks in petrochemical, oil and gas (POG) facilities are most often associated with the storage and transportation areas, where flammable liquids, hydrocarbons or gases are found. However, the fire hazards in ancillary buildings, data communication rooms, back-up power supplies and emergency facilities are often underestimated. Protecting this critical infrastructure is essential to assuring safety, as well as maximising uptime and securing vital assets. Specifying the most appropriate fire suppression solution is therefore crucial.

Inert gas fire suppression systems have provided an extremely reliable means of fire protection in POG facilities for more than 20 years. Now, in addition to the well-documented environmental advantages of an inert gas system, recent innovations have further increased the benefits of these systems.

Space is a critical factor in POG facilities and reducing the footprint of critical safety measures, such as firefighting systems, gives designers and engineers greater flexibility. Recent developments in systems have led to a reduction in footprint due to increases in container storage pressure from 150 bar and 200 bar to 300 bar.

Unlike halocarbon agents and water-based systems, which are stored as liquids, inert gases are stored under high pressure. This presents a challenge when designing a system as the gases can exhibit certain properties upon discharge that require special consideration to avoid potentially damaging pressurisation effects within the protected enclosure. In conventional systems, these relatively high storage pressures can cause the agent flow rate to reach a peak in the first three to five seconds of the discharge.



This results in the need for pipework to be sized to handle the peak flow rate before it rapidly reduces. This means the piping may be much larger than the piping needed to handle the average flow rate. The peak flow rate is then also used to calculate venting arrangements to reduce the potential for over-pressurisation of the enclosure. Any over-pressurisation can, if not considered, cause structural damage to the enclosure.

GEM Fire Protection Products has introduced its latest development in engineered fire suppression to provide an innovative solution for POG facilities.

iFLOW technology enables engineers to reduce the space requirements, the complexity of the pipework system and other effects such as pressure relief systems, through component innovation. iFLOW features three separate components – the iFLOW valve, the iFLOW check valve, the iFLOW matrix container racking system for 80-litre containers.

- The iFLOW valve regulates the agent discharge flow, eliminating the peak pressure spikes associated with conventional systems.

- The iFLOW check valve enables the connection of multiple containers without the need for a manifold and while maintaining the system's integrity by preventing leakage.
- The final component in the system, the iFLOW matrix container racking design, offers greater flexibility to position the storage containers in conventional rows or around objects, such as structural columns, to fully exploit the space available. Containers are offered in offered in 80 or 140-litre capacities, along with the other features, these give the designer further flexibility in the way the system is designed.

iFLOW systems deliver exceptional environmental credentials when used in conjunction with INERGEN, IG-55 and IG-100 to safely and effectively suppress fires with minimal environmental impact.

GEM inert gas systems carry many international approvals. This provides the user with the confidence that they have been thoroughly and independently tested to ensure the highest standards available in the industry today.

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