

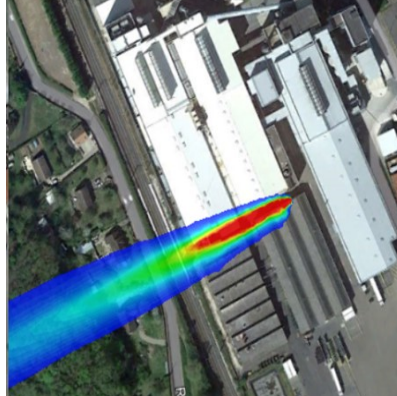
Stay Ahead of Risks—Adopt 3D QRA Today!

In today’s industrial landscape, safety is paramount. As industries grow more complex, so do the risks associated with operations. With the complexity of processes and the inherent risks in industries such as oil & gas, chemical plants, and energy production, the potential for hazardous incidents—such as toxic leaks, fires, and explosions demands a sophisticated approach to risk management. Quantitative Risk Assessment (QRA) plays a key role in understanding, quantifying, and mitigating these risks. Fluidyn, with its expertise in computational fluid dynamics (CFD) and risk assessment, provides advanced **2D and 3D QRA tools** to help industries ensure their operations remain safe and compliant.

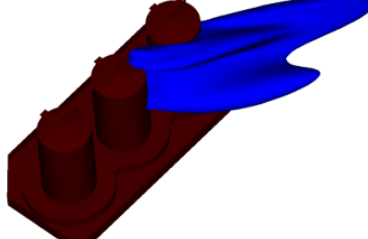
Detailed Hazard and Consequence Modelling:

QRAs help identify hazards, estimate their likelihood, and assess the impact of incidents like gas leaks, fires, or explosions. Tools such as [fluidyn-PANACHE](#), [fluidyn-PANEPR](#) allow for the modelling of toxic or flammable gas dispersion and toxic exposure scenarios with real-world precision. [fluidyn-VENTIL](#) can model the consequences of fire and explosion of the dispersed flammable vapour cloud. [fluidyn-PANFIRE](#) predicts the thermal radiation intensity of accidental liquid or solid fires taking into account the relevant elements, such as firewalls, water curtains or sprinklers.

3D QRA considers structural obstacles, terrain features, and building layouts, providing a complete picture of how incidents might unfold. For example, [fluidyn-PANACHE](#) models the spread of hazardous gases in 3D, showing how wind patterns and obstructions impact dispersion. [fluidyn-VENTIL](#) can simulate fire spread & explosion dynamics within complex structures, helping identify high-risk zones.



Modelling of Accidental Dispersion of HF



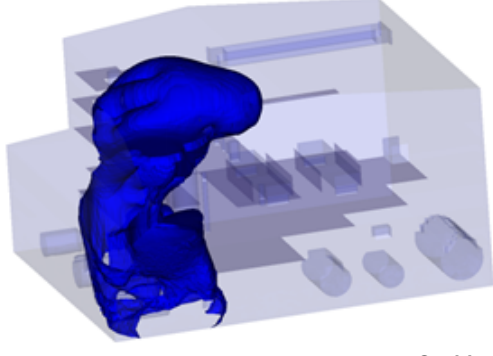
Modelling of the loss of containment for a tank

F&G Mapping for Source Detection and Mitigation Strategies:

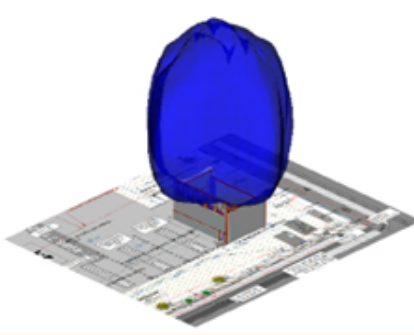
Fire & Gas (F&G) Mapping entails the careful positioning of detection devices within industrial environments to facilitate the quick and efficient identification of fires and gas leaks in real-time, allowing for immediate remedial action to reduce safety hazards.

In accidental events such as the **styrene gas leak at a polymer plant in Visakhapatnam**, QRA and Fire & Gas (F&G) Mapping could have played a crucial role in identifying potential hazards and mitigating risks. A real-time emergency modelling system could have helped to send out warnings to people in affected areas and evacuate them to safe zones. QRA could systematically assess risks related to hazardous materials like styrene by analysing potential accident scenarios associated with their storage tanks, their probabilities, and the consequences of gas leaks or fires. F&G Mapping would have ensured the optimal placement of gas detectors and fire suppression systems to quickly detect leaks, trigger alarms, and automatically activate emergency responses, minimizing the impact on both plant workers and nearby communities.

Using inverse Modelling methodology, [fluidyn-REALTI](#), in conjunction with the data gathered from the sensors and the weather, can identify the source of emission, wherever it may be located, provide an estimation of the leaked quantity, and identify affected zones by performing a dispersion model in real-time.



Gas Mapping in a Process Building



Upcoming events:

22nd October, 2024

**Faculty Development Program
IIT Gandhinagar.**

Fluidyn is organizing a full-day Faculty Development Program at IIT Gandhinagar to showcase the advanced capabilities of Fluidyn software in CFD, Multiphysics, and R&D applications. The event will feature live demonstrations, hands-on practice sessions, and provide trial software licenses to all participants.

Faculty members from various departments, the Director, Dean of R&D, department heads from ISTF, as well as PhD scholars are expected to attend this event.

26th-27th November, 2024

**Jio World Center,
BKC Mumbai.**

The Center for Chemical Process Safety (CCPS) has arranged the 8th Global Summit on Process Safety in the month of November 2024 in Mumbai, India. Click on the link to know more - [8th Global Summit on Process Safety \(8th GSPS\)](#).



We're Hiring !

GUI/CAD Developer

Education - B.Tech/ M. Tech in Mechanical Engineering
Software's - C++, QT, Windows, LINUX
Location - Bangalore
Experience - 0 - 5 Years

- Writing C++ code for GUI, CAD processing, CFD meshing.
- Good programming knowledge
- Good analytical skills
- Aptitude in scientific software development.

QRA and Process Engineer

Education : Degree in Environmental / Chemical Engineering / Safety Engineering (or Equivalent).
Location - Bangalore
Experience - 1 - 3 Years

- Experience of 1-3 years in Qualitative / Quantitative Risk Analysis, Safety Audits.
- Should facilitate Chemical / Petrochemical Industries to fulfil Regulatory Requisites, Statutory Clearances mainly on Risk and Safety Management.
- Should be able to drive projects on QRA studies for Refineries, Pipeline Projects, E&P Terminals etc.

Interested, please write to careers@fluidyn.com



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