GEXCON
For a safer world

Reliable consequence and risk analysis software tools to support safe energy transition initiatives



EFFECTS and RISKCURVES for new energy carriers

Safety and risk management for the world's leading industries

Gexcon.com

GEXCON

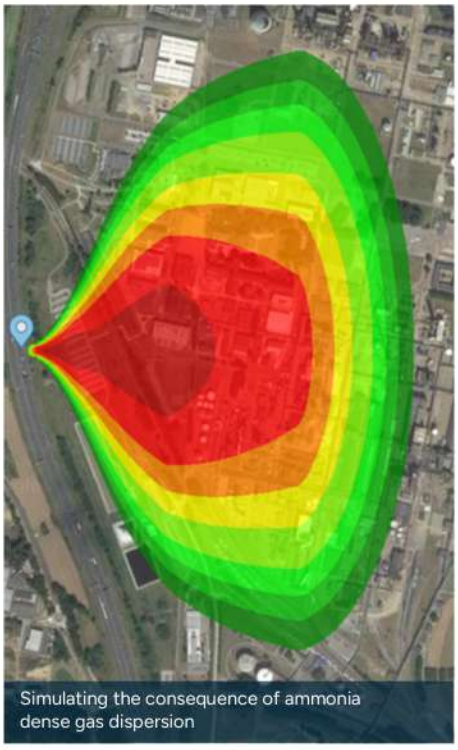
Introduction

EFFECTS and RISKCURVES software tools offer functionalities for new energy carrier applications

EFFECTS and RISKCURVES were originally developed based on TNO's Coloured Books and have been continuously expanded and improved for more than 35 years to ensure it is kept up to date with the most recent research and scientific data, including for new energy carrier applications.



Analysing societal risk map of ammonia incident


Simulating the consequence of ammonia dense gas dispersion

EFFECTS

EFFECTS is an advanced yet user-friendly software tool to analyse the effects and consequences of the accidental release of flammable and toxic chemicals in process facilities.

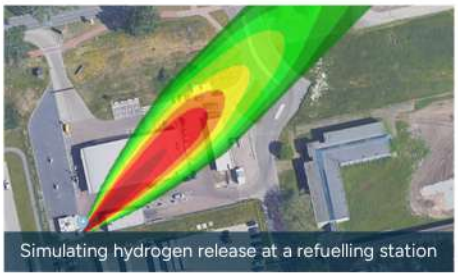
It calculates heat radiation from fires, overpressure from explosions, toxic concentrations, and dose from dispersion clouds, and much more.

RISKCURVES

RISKCURVES is a comprehensive software tool to perform Quantitative Risk Assessment (QRA) to assess the total risk of storing, handling, and transporting dangerous substances in process facilities.

The software presents calculation results in a range of ways, including location-specific individual risk contours (LSIR), Individual Risk Per Annum (IRPA), fN curves, societal risk maps, and risk ranking reports.

GEXCON

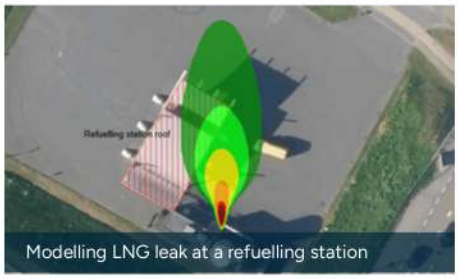


Simulating hydrogen release at a refuelling station

Dispersion model with automatic behaviour detection

Ability to simulate all possible dispersion behaviour, including:

- Dense gas dispersions (e.g. cryogenic LNG releases, liquefied ammonia releases, LPG releases).
- Neutral gas dispersions (e.g. for chemical with similar density to air).
- Lighter than air gas dispersions (e.g. hydrogen and ammonia).



Modelling LNG leak at a refuelling station

High-speed and vertical jet releases and ground effects

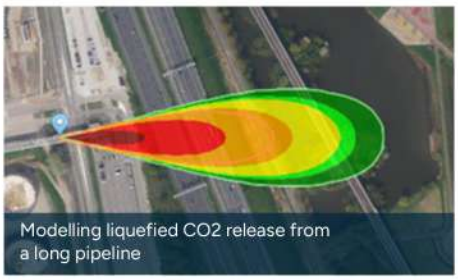
- More accurate simulation of high-speed jet releases, to better simulate highly pressurised hydrogen releases (commonly stored and transported at very high pressures – up to 900 bar).
- Improved modelling to account for plume reflection against the ground and enhanced turbulence, e.g. simulating natural gas releases.
- Improved modelling for vertical jet releases in crosswind conditions.



Analysing the consequence of hydrogen gas fireball

Authoritative fire and explosion calculations for hydrogen safety applications

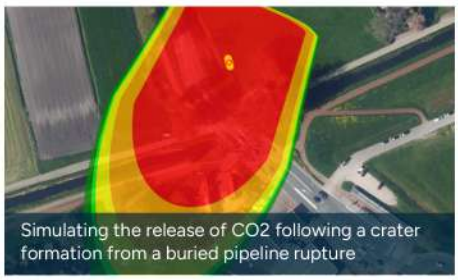
- The fire models account for hydrogen's very low surface emissive power.
- A gas fireball model to calculate the instantaneous release of gas hydrogen (as it should not be modelled as a BLEVE).
- The Multi-Energy model is used to simulate explosions and considers hydrogen's high reactivity and fast laminar burning velocity.



Modelling liquefied CO2 release from a long pipeline

Improved long pipeline model

- Modelling approach for simulating releases from long pipelines, especially those transporting pressurised liquefied gases.
- Suitable to simulate different leak scenarios (full bore ruptures and smaller leaks).
- Highly relevant for many applications, including LPG transport and CCUS.



Simulating the release of CO2 following a crater formation from a buried pipeline rupture

Crater formation model

- This model analyses the crater formation after buried pipeline ruptures which is integrated within the improved long pipeline model.
- The results from this model can be used by the dispersion and jet fire models to assess the subsequent dispersion and possible direct and delayed ignition situations.
- Extensively validated for CCUS application.

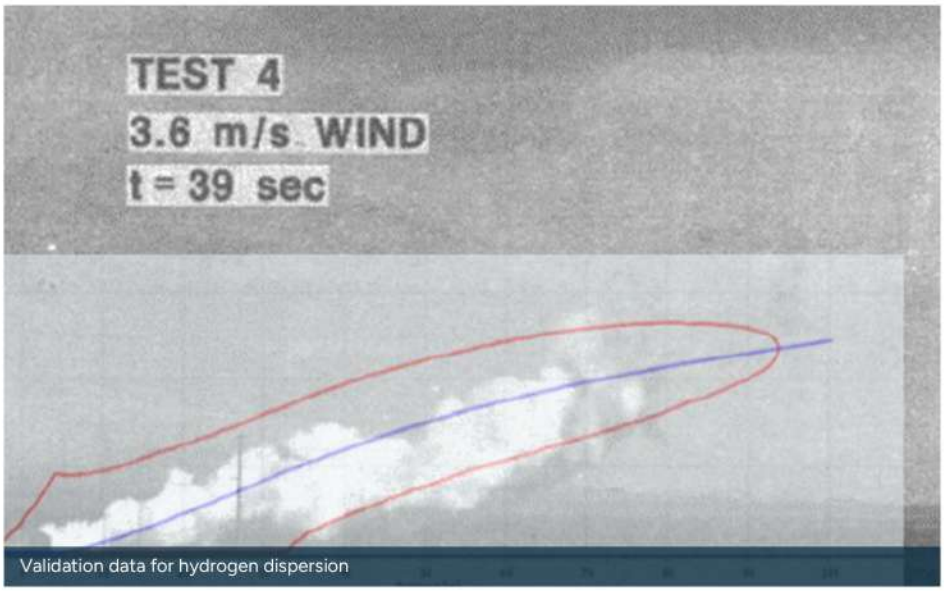


Modelling toxic releases from a battery thermal runaway

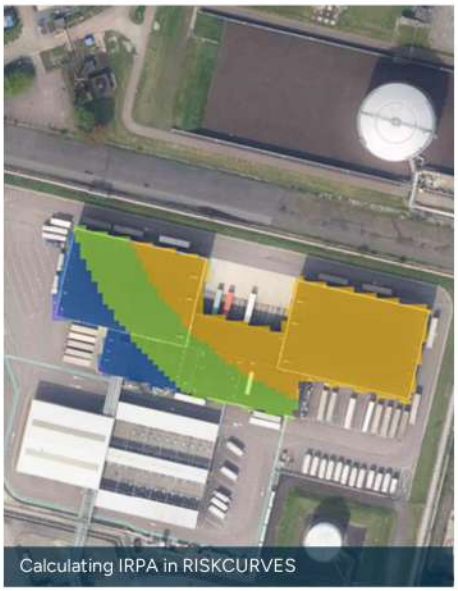
Battery thermal runaway model

- Ability to simulate toxic releases from battery energy storage systems (BESS) thermal runaway incidents.
- The result from this model can be applied in passive dispersion calculations to assess the spread of toxic gas.

GEXCON



Validation data for hydrogen dispersion


Calculating IRPA in RISKCURVES

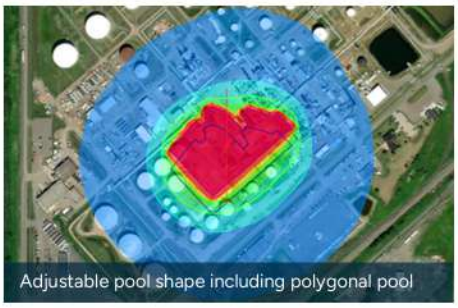
Reliable results
The software is extensively validated for simulating hydrogen hazards, such as hydrogen jet fires, gas fireballs, buoyant rising plumes, CO2 releases and crater formation.

Streamlined consequence and risk analysis
Use the functionality to import the new energy carriers' consequence and lethality footprints from various consequence modelling tools to calculate risk in RISKCURVES.

Intuitive user interface
Modern and intuitive look with features that make the software easy and straightforward to use both by expert and occasional users.

Improved results visualisation
Easily export results into Google Earth® with just few clicks. This improves results visualisation which makes them easy to understand by both technical and non-technical professionals.

Cost-effective with flexible licensing options
The pricing allows you to use professional software regardless of if you are a large multinational company or a small engineering firm. Save considerable on license costs and have full flexibility to use your license wherever you work, worldwide.


Adjustable pool shape including polygonal pool


Viewing consequence calculation in Google Earth®

Connect with us

For more information and product enquiries email effects@gexcon.com

Europe
Norway
Sweden
United Kingdom
France
Netherlands

North America
United States

Asia Pacific
Australia
China
India
Indonesia
Malaysia
Singapore

Safety and risk management for the world's leading industries

Gexcon.com