



Safeti QRA

Managing your process industry risks safely and responsibly

DNV Software

Understanding your risks

Bringing effective risk based decision support to your desktop



Key challenges

With growing global competition and more stringent legislation and regulation, there is increasing pressure for companies operating hazardous facilities to accurately evaluate the risks associated with their operations, whether from the environmental, financial or safety perspective.

Questions being asked are:

- “What are the major risks I face on my plant?”
- “How can I ensure these are managed most effectively?”
- “How can I improve corporate knowledge retention at a time when industry is continually changing and becoming leaner?”
- “How do we set about achieving excellence in safety without compromising financial performance?”

Some of the key challenges faced by industry include:

- How do I develop the most cost effective methods for managing the risks inherent in my plant?
- Can I determine the activities in my operation that pose the greatest risk?
- How effective are the safeguards I have put in place and how can these be improved to reduce risk?
- What measures should I put in place to mitigate risk and ensure these are ALARP?
- What risks does my operation pose to the environment and how can I minimise these?

Any accident can lead to injuries and fatalities, damage to the environment or destruction of property. The challenge is to ensure these are managed safely and responsibly to improve business performance, minimise downtime and effects on people, property and the environment.

Our innovation

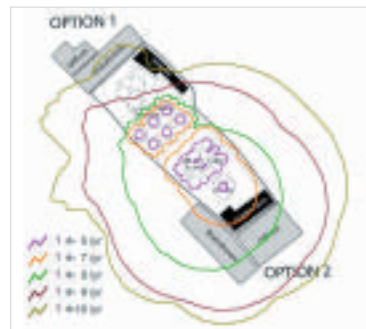
The Safeti QRA package can help you manage risks throughout the life-cycle of your facility. It provides tools to ensure the safe design, construction and operation of your plant. Whether investigating the findings of a HAZOP, screening your plant for the most hazardous processes, or performing a full QRA, the Safeti QRA package provides appropriate tools.

The Safeti QRA package is the complete solution for performing a detailed risk analysis for compliance with legislation or implementing corporate best practices. The package combines the capabilities of PHA-Pro®, the leading HAZOP and PHA software, with those of Phast Risk, the industry standard QRA application.

As organisations develop their Corporate Social Responsibility programmes to ensure a balanced approach to environmental, social and economic performance, the Safeti QRA package can also incorporate our Environmental Performance System to enable reporting on this performance in line with the Global Reporting Initiative.

Manage your risks

Through all stages of the plant life cycle



Beyond compliance

The management of risks from major accident hazard facilities has historically focused on safe operation rather than areas such as improved financial performance or increased productivity. But with major advances in Information and Communication Technology and the maturing of technology in other domains, the emphasis in the process industries has moved beyond straight-forward compliance with safety legislation.

With greater global competition and much more challenging margins, there is now less opportunity to invest in activities that do not contribute directly to the bottom line, or are perceived as such. ICT advances, along with growth in Internet technologies, has brought a highly connected environment where corporations can share information and collaborate globally.

Combined with this is a need for corporations to be more transparent in their corporate governance and demonstrate their performance in relation to the environment and society as well as financially. Applications like Phast and EPS within the Safeti QRA package enable quantitative and qualitative assessment of environmental risks whether for corporate best practice or compliance with regulation or legislation.

Quantify your risks

The Safeti QRA package provides a comprehensive suite of software to help you assess and manage your risks. As risk professionals we know that “Good Safety means Good Business”. The Safeti QRA package provides a unique range of applications and tools supporting best risk management practice.

Whether you are interested in the assessment of individual and societal risk for managing plant safety, or the overall financial risks associated with your plant, from the environmental, social or economic perspective, the Safeti package can help you.

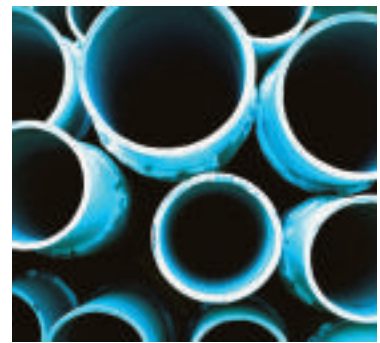
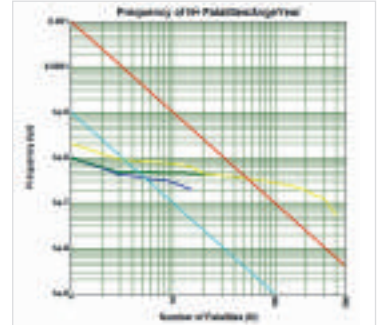
From basic hazard identification, right through to comprehensive risk analysis, the Safeti QRA package provides applications to help you with all of the key processes including hazard identification, frequency analysis, consequence and effects modelling and risk analysis. In addition it provides comprehensive capabilities for carrying out Quantitative Risk Assessment of refineries, process plants, top-sides, chemical and petrochemical facilities.

Hazard Identification

We provide PHA-Pro, the leading HAZOP and PHA package developed by Dyadem and distributed by DNV Software.

The market leader

Supporting all stages of the QRA process



Frequency data and analysis

We provide a number of tools to assess the frequency with which your representative failure cases may occur. DNV's Leak software provides a comprehensive database of leak frequencies for a wide range of equipment types.

This is based largely on the UK Health and Safety Executive's hydrocarbon release database along with proprietary data from DNV from a number of sources, all referenced in the administrator mode. DNV Leak also provides powerful analysis tools to define your isolatable sections when building a QRA model and to quantify the overall frequencies of leaks associated with these.

Advanced fault and event tree technology

For more complex systems where generic information may not be available or human factors may play a role, RiskSpectrum will help you build Fault Trees from which you can estimate failure frequencies for your representative failure cases.

Consequence analysis

The industry standard Phast application is available in a number of configurations to meet your exact requirements. The standard Phast application includes a full range of discharge, dispersion and effects models, for both flammable and toxic outcomes either linked automatically or applied as standalone models, whilst Phast

Micro provides more limited scope for user interaction and model selection for less advanced users.

Risk analysis

The Phast Risk configuration provides additional functionality and modelling allowing you to combine consequence and frequency information, along with additional data about population, transportation routes and sources of ignition, to quantify overall risks from both societal and individual standpoints.

Tools are also provided to drill-down into your risks, identifying main contributing hazards and assessing a range of risk reduction and mitigation measures in order to compare their effectiveness. In addition, if you are interested in upstream risks, for topsides and FPSOs for example, where a less structured approach may be more appropriate, the Neptune application provides an extremely flexible risk workbench containing a wide range of models including most of those available in Phast as well as many others.

Available configured for your exact requirements

The Safeti QRA package is available in a number of configurations with applications available for each stage of your QRA process. The core applications within the package help with each of the key stages of your QRA.

For better business performance

Improving safety and profitability across your operation

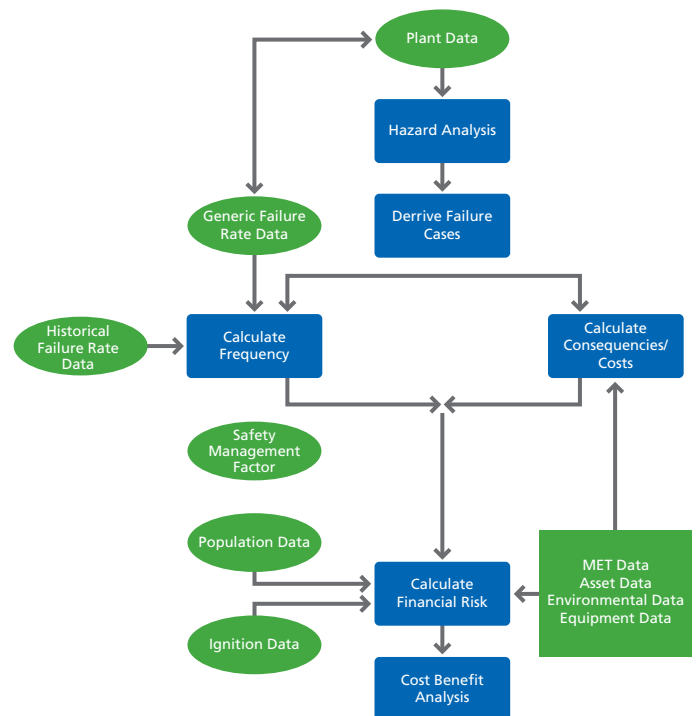


Customisation

For those requiring customisation of the standard applications available within the Safeti QRA package, we are able to offer a complete solution service. A recent customisation of the Safeti QRA package, Safeti NL, was developed for the Dutch government. This configuration of the Safeti QRA package, “The Dutch National QRA model”, provides users in the Netherlands with a precise and controlled modelling environment using centrally prescribed modelling options as required by their local legislation. In addition to customisation of the model we are also able to provide our Dutch user base with regular and specific updates to meet their local legislative requirements.

“Impossible but doable – In just under 25 years Safeti developed from an idea that was thought of as being impossible to realise into the benchmark for Quantified Risk Analysis software and the Official Standard Method of the Netherlands government for support of siting and zoning decisions. A major scientific, technical and IT achievement”

Dr. Ben Ale, Professor of Safety Science, Delft Technical University



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