



Effigy

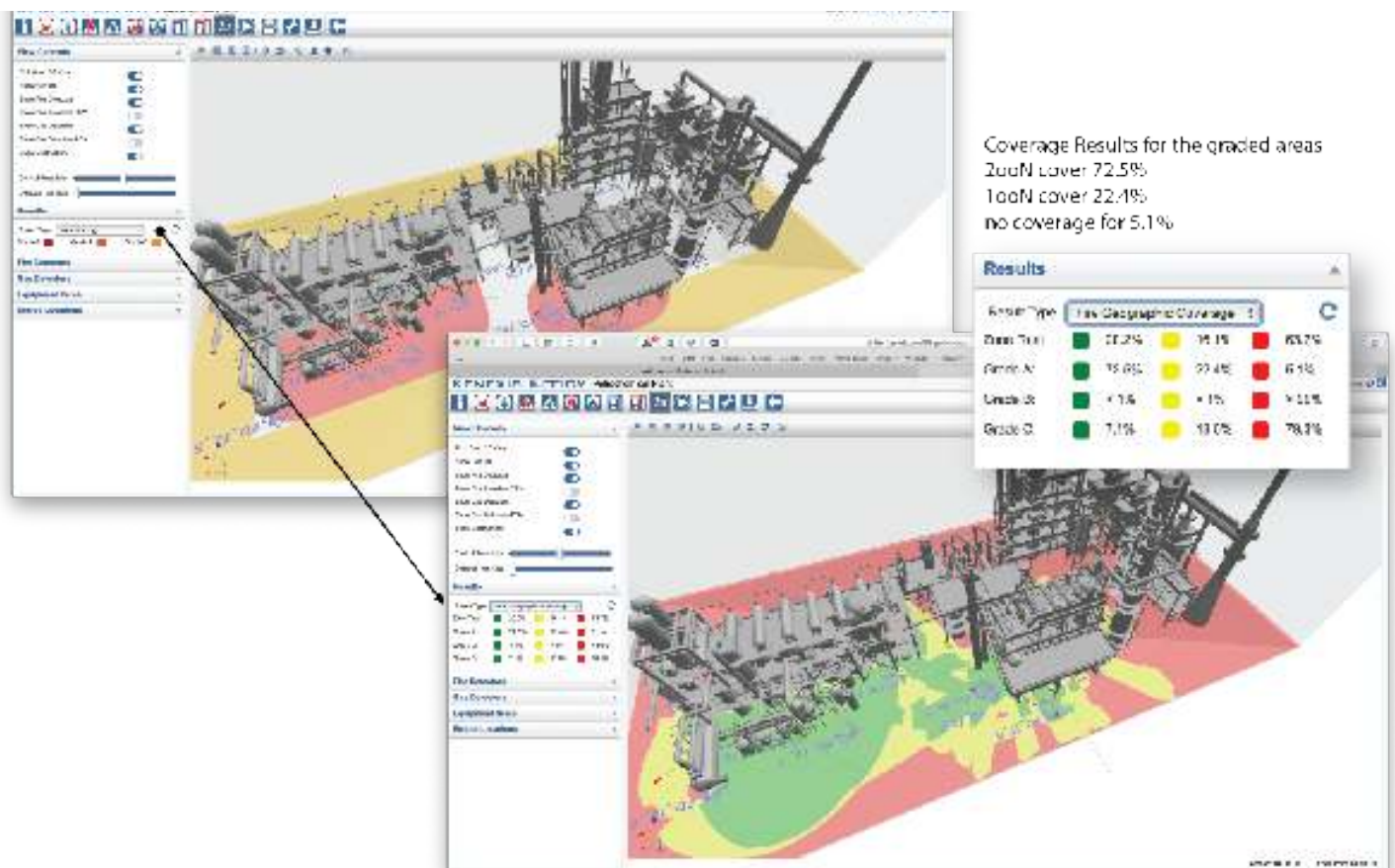
Fire & Gas Mapping Software



Overview Effigy software assist engineers to solve the problem of where to put fire and gas detectors, why they need to be there, and how many detectors are required to achieve an acceptable level of protection. The software verifies the consequence coverage of an array of fire and gas sensors, and validates that the locations and characteristics chosen will provide the coverage desired.

Fire and Gas Systems (FGS) are important tools for safeguarding process plants and production facilities that handle flammable and toxic materials. All such facilities have inherent risk, which in some cases require the installation of FGS to mitigate hazards. Kenexis performs design engineering of Fire and Gas Mapping (FGM) to determine where the detectors should be to sense the consequences and how the FGS should function for our clients. Continuing engineering and research have determined that accuracy of and repeatability of coverage analysis requires quality tools like Effigy

Effigy was developed internally by FGS consulting engineers that perform FGM, risk assessments, and design basis engineering. Their expertise is then enhanced in Effigy - Fire and Gas Mapping software. This combination of engineering and software development provides the most rigorous analysis tool, which results in the safest plant at the lowest cost by optimizing detector placement.



Graded areas allow for segmentation between different types of gas, fire, and exclusion areas. Area Grading results above show the two "A" graded areas.

Plume Modeling

Our patented (U.S. Pat. No. 10,600,057) Plume Model accurately models different fire sizes and materials of interest (e.g., methane, hexane, methanol). This substantially increases to accuracy of detection capabilities.

ISA-TR84.00.07 Compliant

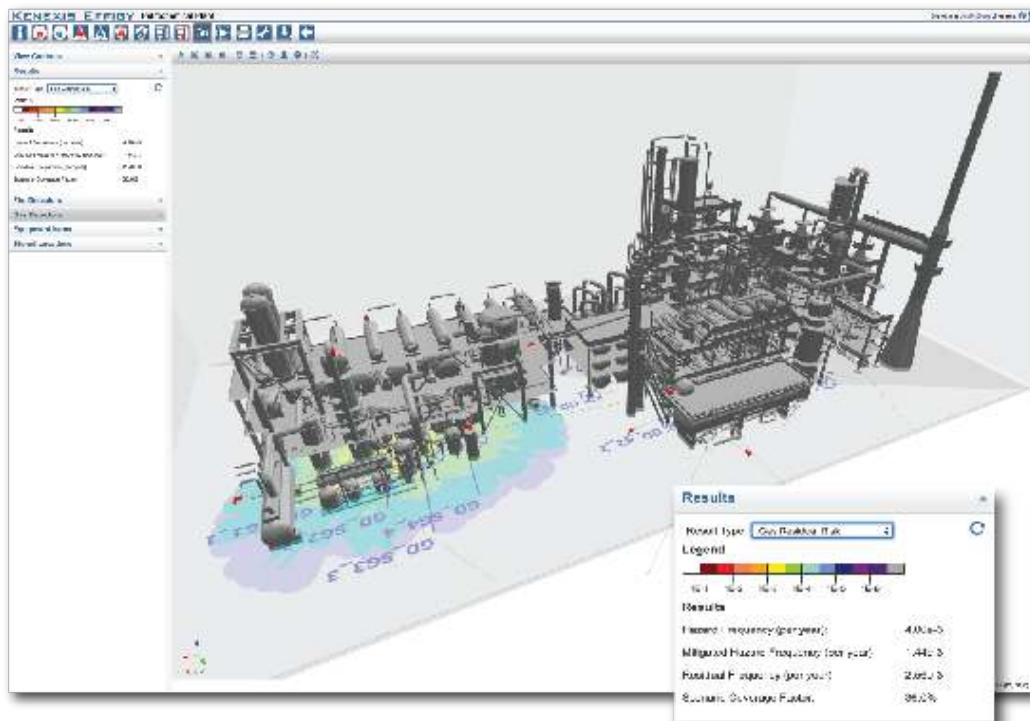
ISA-TR84.07-2010 Guidance on the Evaluation of Fire, Combustible Gas, and Toxic Gas System Effectiveness provides guidance on risk and performance-based FGS design. After years of research, validation, and projects Kenexis developed Effigy to perform sophisticated and accurate coverage calculations based on either geography or consequence modeling to standardize the approach to achieving quantitative coverage targets into their fire and gas design processes.

3D Import & Analysis

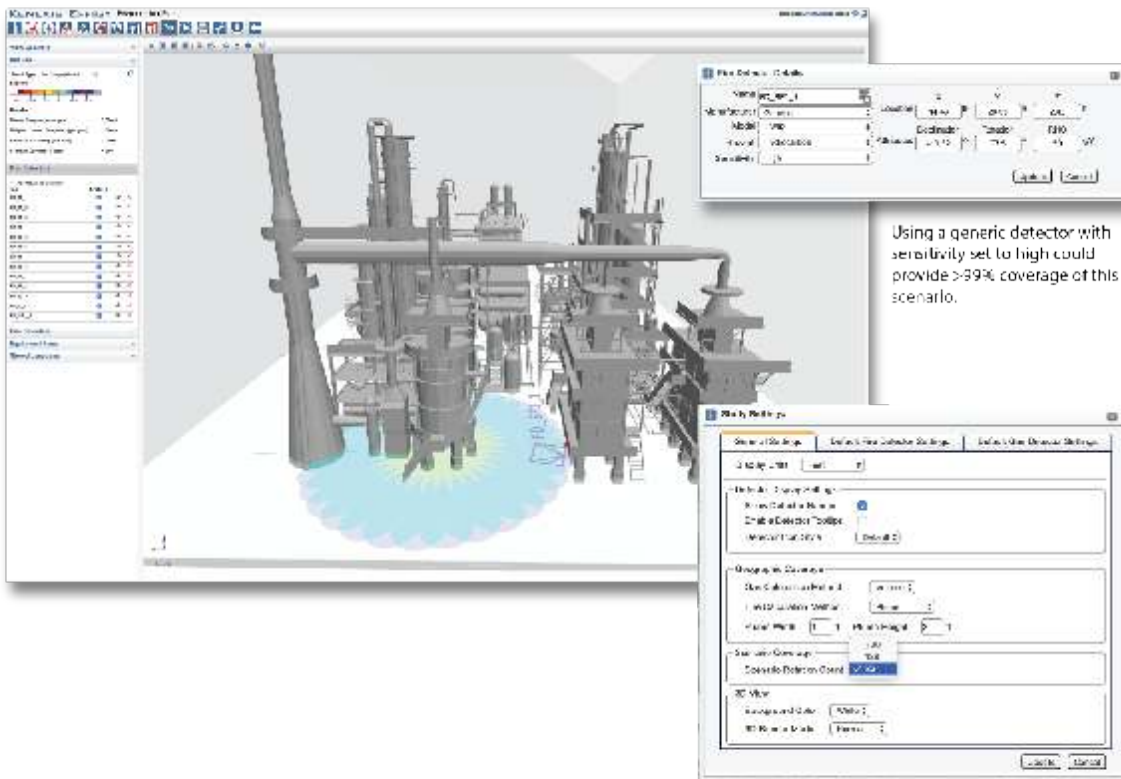
Supports 3D STL import (most 3D CAD packages can export to STL), 3D model creation using basic shapes, and 3D analysis including the detector cone-of-vision, obstructions, and obstruction shadow orientation. Analyzes multiple obstruction geometries, in all orientations. Results are presented in color-coded graphical coverage maps and coverage tables indicating extent of the various coverage areas.

Enterprise, Multi-User Web-Based Platform

Effigy is a module in the Kenexis Instrumented Safeguard Suite that assist in the performance-based design of your FGS detector array and ongoing management of instrumented safeguards, such as safety instrumented systems and fire and gas systems. Kenexis Instrumented Safeguard Suite is software as a service. The entire suite runs in an online web browser,

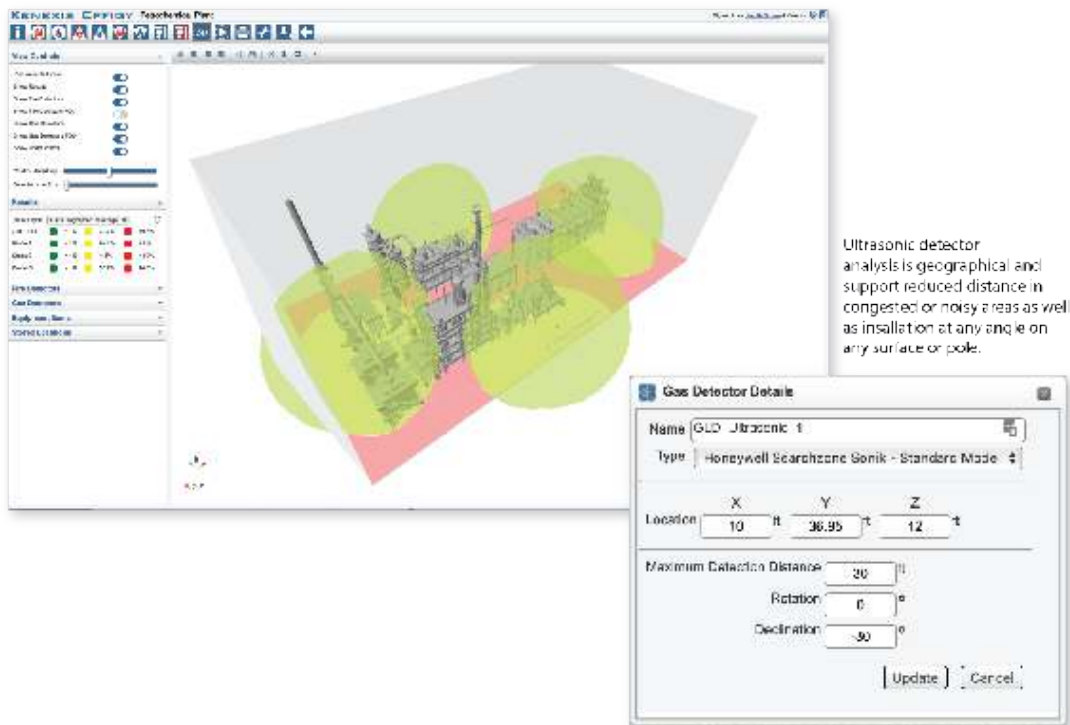


Scenario coverage allows for the analysis of gas and fire scenarios and the likelihood of their occurrence. Results are a heat map as shown including the calculated results in the enlarged window.



Using a generic detector with sensitivity set to high could provide >99% coverage of this scenario.

Scenario coverage allows for the analysis of gas and fire scenarios, in this case a jet fire, and the likelihood of their occurrence. Scenarios can be modeled in 32, 128, or 720 segments around their source.



Ultrasonic detector analysis is geographical and support reduced distance in congested or noisy areas as well as installation at any angle on any surface or pole.

Ultrasonic detector coverage is mapped according to the detectors coverage profile listed for each device. The installation of two detectors shown provided a coverage of Zone A areas at >99% and all Zones at 91.7%.

Transition Kenexis can help with FGM engineering and with the transition from your existing system to Effigy, contact us at info@kenexis.com or call at +1-614-451-7031.

About Kenexis

Kenexis, an independent consulting engineering firm that provides technical safety services for process industries, and other industries that manage risks related to chemicals or stored energy. Kenexis is helping change the way that safety and security are incorporated into industrial business practices by providing best-in-class software tools, associated training, and comprehensive technical support.

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