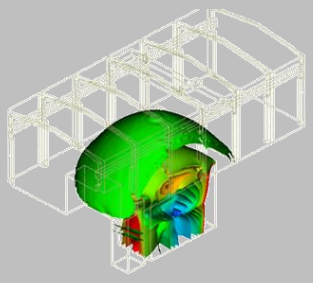
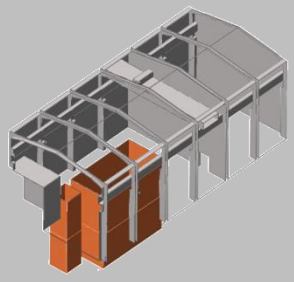


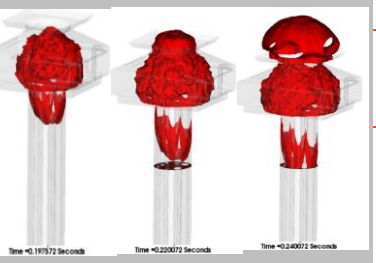
FLUIDYN-VENTEX

Explosions in congested environments



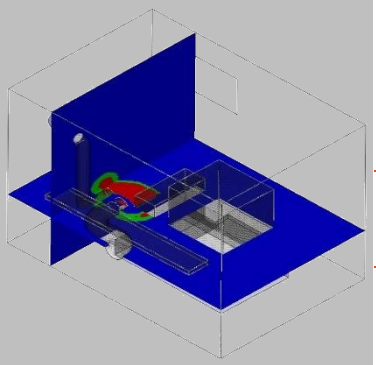
User friendly integrated tool for consultancy firm and industries

- Simulations of external or internal aerial explosions.
- Buildings and equipment with solid loads, gaseous or dust clouds considered.
- Dimensioning and structural resistance of equipment, constructions, and buildings to dynamic loads produced.
- Quantification of accident consequences as a part of hazard studies for classified ICPE, SEVESO… sites.



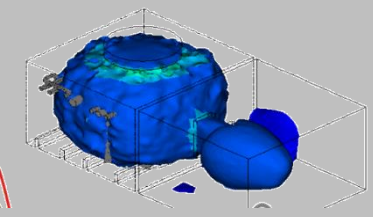
3D Simulations for all types of explosion scenarios

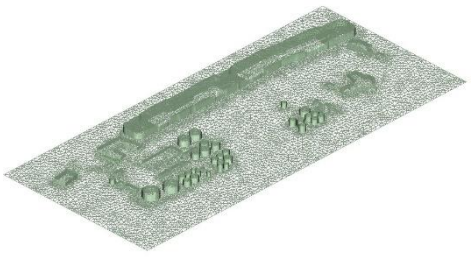
- Evaluation of expected overpressures on sensitive targets.
- Evaluation of the efficiency of mitigation solutions.
- Structural response to pressure and transient load.
- Blast-proof sizing.
- Domino effects and evaluation of secondary explosion.
- Mapping the distance of statutory threshold effects.
- Addition to real time emergency systems.
- Impact evaluation on buildings and structures.

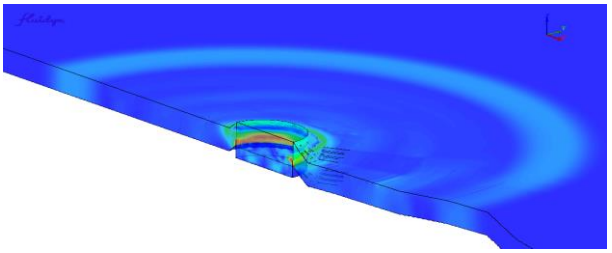


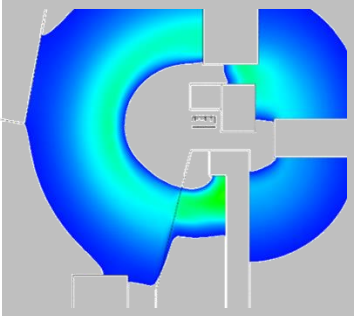
Models

- Deflagration and detonation schemes.
- Explosion de propellants and pressure equipment.
- Gas and dust explosion.
- Hydrogen deflagration and detonation.
- Propagation of pressure waves and combustion in complex and congested environment.
- Explicit solver for estimating the duration of structural resistance.
- Evaluation of explosion risks.

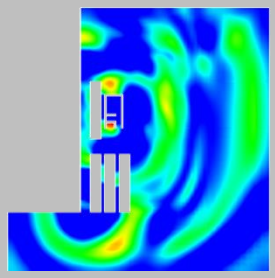






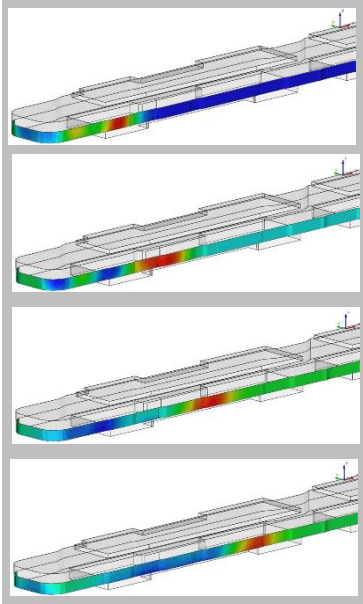


EXPLOSIONS IN CLOSED SPACES



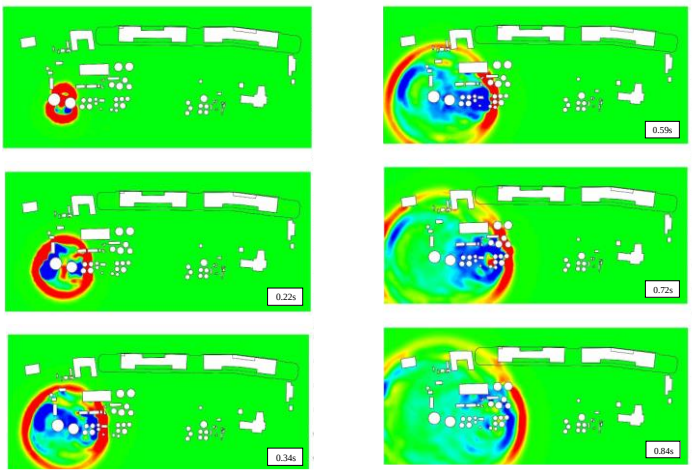
Technical advantages

- Rapid generation of 3D complex geometries.
- Internal data base of primitives in the CAD module.
- Automatic mesh analyzing the model and quality control.
- Import of STEP, STL, IGES, DXF, etc. formats.
- Dynamic display of results for quick analysis.
- Eulerian finite volume solver with implicit, semi-implicit, explicit temporal discretization and 2nd order TVD schemes for pressure and combustion waves propagation.
- Finite elements solver for structural stress analysis (add-on module).
- Material database: more than 400 solids, liquids, and gases.
- Preprocessing with relevant assumptions for missing data.
- Multiple turbulent combustion solution schemes: BML, EDC, EBU, etc. or JWL for detonation.



Integrated tool

- Parallelized solver available on all platforms (Windows and Linux).
- Equipment and object database for internal environments.
- Database of building structures: walls and partitions, doors / windows openings.
- Integration of active equipment: rupture discs and vents, blast-wall etc.
- Physicochemical database for explosive combustion of gas and for detonation of solid loads.
- 3D representation of results and animations, transient history.
- Verification and validation in the INERIS Work Group on Explosion



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