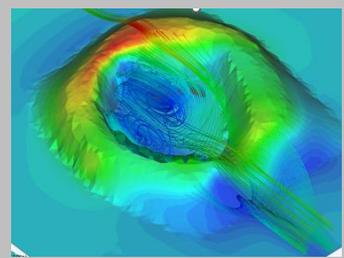


# EXPERTISE AND SOLUTIONS



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## Subsidiaries / Agents

Fluidyn India- Bangalore  
SIMFLUID, Japan  
IUIT, China  
Coreconvergence, S. Korea

## Areas of Expertise

### 3D CFD modelling tools and consultancy services

- Multiphysics simulations for design and optimization of industrial process
- Ventilation studies and internal air quality
- HAZOP- Seveso sites and nuclear plants
- Industrial hazards analysis: explosion, fires, toxic gas dispersion
- Environmental impact studies, climate impact, GHG effect
- Air quality, HSE, wind modeling
- Surface and underground water pollution
- Realtime impact, sensor mapping and source determination studies
- Customized software development

## FLUIDYN

FLUIDYN offers consequence modelling tools and consultancy services in atmospheric dispersion (accidental leaks/chronic releases), fire, explosion modelling and analysis. FLUIDYN tools are based on computational (CFD) model and are the most accurate models available in industry.

FLUIDYN is a European firm established in 1987 with the aim to provide high-quality numerical engineering solutions to complex multi-physics problems, to industries, academic institutions and public bodies through consultancy services and developments.

## Professional Network / Awards - Nominations

- Network: Voice of Nuclear, AXELERA, Pole Risks, WG on 3D Dispersion / Explosion, Plaine Commune Promotion, Rêves de Scènes Urbaines (Dream City Project), ITER Industrial Committee, RAPID Club
- Awards: Flèche d'Or of Sustainable Development-2015, 2<sup>nd</sup> Prize GEP Innovation-2014, Winner PM'UP-2011
- Nominations: GESIP Innovation-2019, VINCI Innovation-2015, Eco-Innovation-2014, Flèches d'Or Innovation -2009, Solvay Innovation- 2006

## References

- Government Regulators and Agencies:** US EPA, INERIS, Ministry of Industries, France, AERB (Atomic Energy Regulatory Board, India)
- Customers:** Air Products, Andra, Antman, BARC, BP, BPCL, BV, British Steel, CEA, CNR, CAPNAVIR, CARDIC, CASST, CHEVRON, CIRP, CNNOC, DRDO, EDF, Engie, EXXON, EURODISNEY, EVERIMPACT, JAXA, JAEA, JINDAL, HPCL, HYUNDAI, IGCAR, ISRO, ITER, GDF Suez, LBC Tank Terminal, L&T, Michelin, MODEC, NPCIL, ORANO, ONGC, PHENIX Conseils, PRIMAGAZ, RELIANCE, SENELEC, SAIPEM, SOLVAY, Sanofi-Aventis, SINOPEC, SNERDI, SIAAP, Total, Thyssenkrupp, Veolia, Vinci, various universities and city councils.



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# MODELING TOOLS

## Process optimization - Multiphysics software platform

**FLUIDYN-MP** - General fluid-structural mechanics and process simulation with coupled heat exchange, stress analysis, electro-/magneto-/chemical phenomena.

-  **NS:** 2 phase flow analysis
-  **CHT:** Heat exchange between structures and fluids
-  **FSI:** Fluid-structure-acoustic interaction
-  **MEHD:** Magneto-Hydrodynamic and electrochemical coupling
-  **ESR:** Explosions and structural response
-  **HSR:** High strain rate structural deformations
-  **BFC:** Battery and Fuel cell simulation

## Atmospheric dispersion and industrial risks

**FLUIDYN-PANACHE** – Atmospheric pollutant dispersion and air quality prediction

-  **PANEPR:** Accidental release of toxic/ flammable/ radioactive gas or aerosols
-  **PANAIR:** Air quality / health impact in urban areas - industries, UDP, heat islands
-  **PANROAD:** Pollutant dispersion from road traffic
-  **PANEIA:** Environmental impact assessment of industrial emissions, GHG effect
-  **PANWIND:** Wind flow modelling in complex urban environment
-  **PANFIRE:** Heat flux and radiation from solid or liquid fires
-  **PANWAVE:** Storage tank accidents on chemical / petrochemical sites

## Air flow, HVAC, and hazard analysis in confined spaces

**FLUIDYN-VENTIL** – Internal air quality, ventilation, explosions / fires

-  **VENTCLIM:** Ventilation and air-conditioning by modelling air / pollutants flow
-  **VENTFIRE :** Fire and smoke propagation with structural damage
-  **VENTEX:** Gas / solid /dust explosions in closed / open spaces with structural ruin
-  **VENTUNNEL:** Risk analysis in underground rail / road tunnels
-  **VENTMINE:** Ventilation in mines

## Surface and groundwater pollution

**FLUIDYN-FLOWSOL:** Transport and diffusion of pollutants in water

-  **FLOWCOAST:** Estuary/ coastal waters pollution
-  **FLOWPOL:** Rivers / inland waters pollution
-  **FLOWOIL:** Oil slick drift
-  **POLLUSOL:** Aquifer and ground water contamination

## Real time management of atmospheric emissions

**FLUIDYN-REALTIME:** 3D simulations for real time impact of accidental leaks

-  **Real Time Module:** Real time monitoring and source recalibration (flow rate by sensors)
-  **Forecast Module (PS):** short-term forecasting from 24h to 48h or 72h for projected emission scenarios
-  **SENSORMAP:** Atmospheric emissions monitoring (accidental toxic / flammable leak detection, localization and analysis) by inverse modelling of sensor data