

Empowering Industries with Process & Design Optimization

Mathematical simulation software tools are the backbone of modern industrial process or equipment design across all sectors- Chemical, Pharmaceutical, Mechanical, Energy, Construction, Aerospace, Defence and more. These tools help:

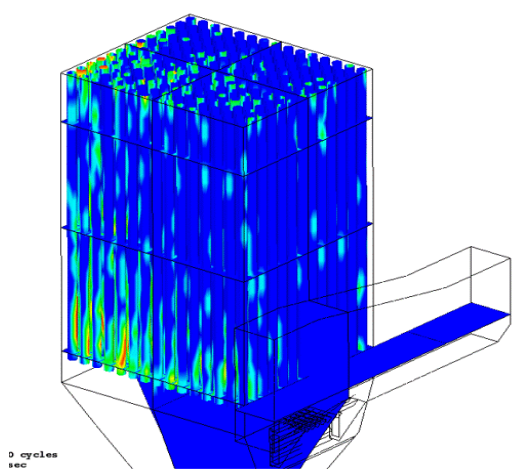
- Validate and optimize designs & foresee accidents before physical prototyping,
- Integrate multiple facets: materials, life cycle, accidents control, environmental impact, energy usage, cost & social acceptance,
- Achieve international standards in safety, efficiency, and sustainability.

By investing in simulation-based optimization, companies can design better, scale faster, and operate smarter. Whether you're troubleshooting an existing process or launching a new product.

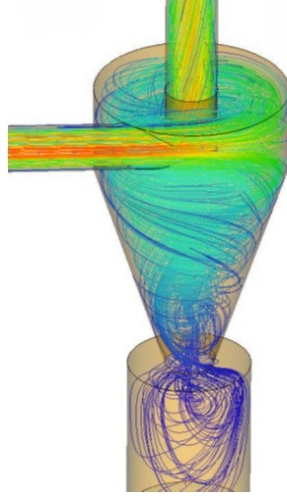
1. Process and design optimization:

Fluidyn has been involved in simulation tool development for over four decades—largely for European clients. Our Indian engagements, including with Government agencies (DRDO, ISRO, DAE) and Private industry (Reliance, Adani, ONGC, Jindal) have focused on simulation for design optimisation & accident prevention.

Fluidyn-MP our multiphysics simulation platform, empowers process engineers to model, analyse, and optimize critical equipment and operations.



Porosity in a Bag filter of Waste Incinerator



Streamlines in a Cyclone Separator

a. Reactors, mixers, agitators, fractionators, pumps, compressors, furnaces, Boilers...

- Optimize the design and operating conditions by analysing the flow, temperature distribution, reaction kinetics, residence time distribution etc.
- Improve efficiency, heat and mass transfer.
- Corrosion, erosion, flow induced vibration, acoustic induced vibration and related studies.
- Incorporate multiphase flow, reactive flow, catalytic reactions, and complex internals.

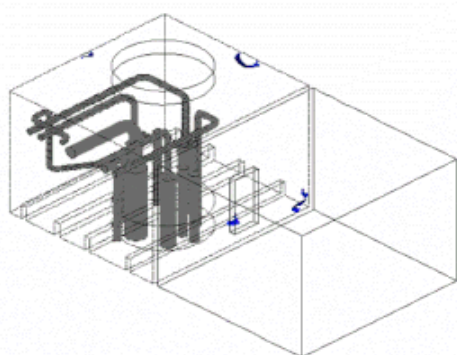
b. Spray Nozzles and spray dryers

- Detailed CFD modelling of atomization, spray behaviour, droplet size distribution.
- Optimize spray systems design, spray patten/sequence and nozzle placement for operations like scrubbing, quenching, drying etc.

c. Heat Exchanger Performance – Multiphysics analysis

- Analyse shell & tube and plate-type heat exchangers
- Improve thermal efficiency, pressure drop, and fouling resistance
- Vibrational analysis of heat exchangers.

2. Process Safety & Realtime Emergency Management



Methane Deflagration - Explosion in a confined space

Process safety ensures the integrity of operations by preventing hazardous leaks, fires, and explosions through robust design and risk controls. It involves rigorous risk assessment, hazard analysis, and system design. Emergency response management ensures rapid containment, evacuation, and coordination during incidents. Together, they safeguard plant personnel, infrastructure, and the surrounding environment.

a. Structural Integrity Under Fire & Blast.

- Coupled fluid-structure simulations to assess the over pressure values and structural integrity of blast walls, critical equipment etc.
- Evaluate vessel and pipe resilience to fire, explosion, or blast loads

b. Fluidyn PANACHE – Leading CFD tool for:

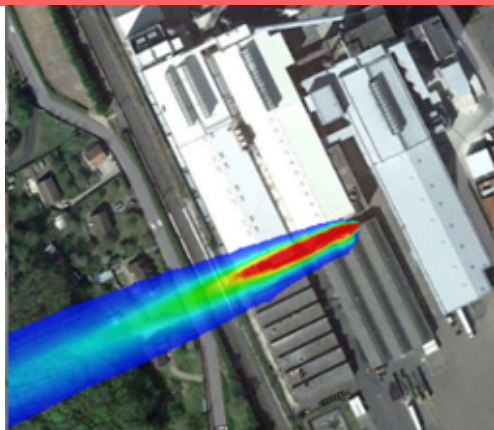
- Toxic and flammable gas dispersion
- Fire and explosion impact zones
- BLEVE, jet/pool fire modelling
- Emergency response and mitigation strategies

d. Fluidyn-Ventil for Ventilation Studies

- Simulate airflow, contaminant dispersion, and HVAC performance.
- Critical for cleanrooms, chemical storage, and hazardous environments.

3. Fluidyn REALTI

Fluidyn-REALTI, a platform for effective emergency response, is the only efficient high-fidelity tool for accidental leak source detection and forecasting pollutants' impact area in real time. It is designed specifically for high-risk, time-sensitive scenarios. It integrates real-time pollutants sensor data with weather information to locate the leak source, even though there maybe multiple buildings and other obstacles, water bodies, and ground T° variation and projects extent of pollutants dispersion inside 10-20 minutes of the leak.



3D Modelling of Accidental Dispersion of HF Cloud

Thus, the emergency response team can take action in time for leak source control and for deactivating any muster areas, evacuation paths ways or any ignition source in the area where the toxic or flammable gas cloud is likely to go. Quasi-certainty of the primary accident control in time ensures that no secondary domino event follows. By delivering high-fidelity visualizations in real or faster-than-real time, Fluidyn-REALTI significantly enhances situational awareness, supports efficient decision-making, and strengthens the overall effectiveness of emergency response operations—ultimately helping to safeguard human life, infrastructure, and the environment. It also cuts down significantly insurance premiums by guarantying that no primary accident will go beyond a few minutes and certainly not in domino events.

Events:

[VivaTech 2025 – Paris](#)

[June 11 – 14, 2025](#)

Fluidyn is at the heart of innovation at [VivaTech 2025!](#) – Paris , June 11 – 14, 2025

We are thrilled to attend VivaTech, the must-see event for startups and global tech, thanks to the invitation graciously extended by Business France.

This unique opportunity allows us to discover the latest trends, engage with experts, and build valuable connections to accelerate our growth.

A big thank you to Business France for this invaluable support that fuels our ambition for innovation and expansion.

[Southern Europe Grow Global Booster](#)

[10th June 2025](#)

Fluidyn had the pleasure of participating in the Southern Europe Bootcamp Boosters – Impact and Grow Global, organized by Business France!

A day rich in exchanges that allowed us to explore in depth the development opportunities in the Italian and Spanish markets through the “Italy Grow Global” and “Italy-Spain Grow Global and Impact sessions.

Thanks to the support of Business France and the insights shared by local experts, we leave with concrete tools to accelerate our impact and growth in Southern Europe!

[ChemProTech, Mumbai India](#)

[International Exhibition on Chemical Processing Technology, Equipment & Supplies](#)

[📅 April 29-30th, 2025](#)

Fluidyn was honored to participate in the 14th edition of [ChemProTech India](#), where the team secured a prestigious 30-minute speaker slot on

"Styrene Runaway Polymerization in Storage Tanks: Heating, Leak, and Dispersion Analysis Using 3D CFD Methodology"

The session offered valuable insights into advanced CFD applications for chemical safety, showcasing Fluidyn's technical leadership in modeling complex industrial scenarios.

News:

[Fluidyn joins the France 2030 Export program](#)

We are proud to announce that **Fluidyn** has joined the **France 2030 Export** program, with the support of **Business France**.

Over the next 30 months, this initiative will help accelerate our international development and bring our innovation to new markets.

[FLUIDYN-BFC selected as a France 2030 Export laureate!](#)

We are proud to announce that our innovation **FLUIDYN-BFC** has been selected as a laureate of the **France 2030 Export** program!

FLUIDYN-BFC is our 3D simulation software dedicated to batteries and fuel cells, supporting the development of e-mobility and temporary energy storage solutions — to better design, secure, and strengthen the technologies of tomorrow.

A big thank you to **Business France** and the **France 2030** ecosystem for their trust!

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