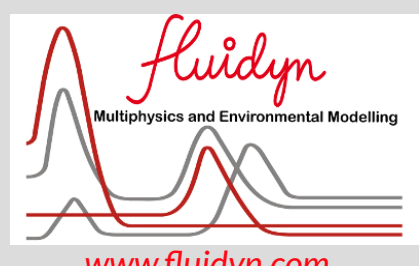


From Smog to Solutions: Pioneering Urban Pollution Mitigation



Upcoming Events:

November 28th -30th

WNE- World Nuclear Exhibition, Paris

We are participating in **WNE 2023**, the world's leading Civil Nuclear Exhibition.

December 3rd Week

Webinar on Explosion Modelling

A Free On-demand Webinar on Reactor Explosion Study and Mitigation. Click [here](#) for Registration.

Past Events:

October 27th

Lecture at Pandit Deendayal Energy University (PDEU)

Mr. Nirav Nagadiya, Manager at Fluidyn delivered a lecture at **National Symposium on Automation & Digital Transformation at PDEU** about importance of CFD & Multiphysics for HVAC & Energy Efficiency.

October 10th-13th

POLLUTEC 2023, LYON

We participated in **Pollutec 2023**, the largest show on solutions for environment.

We presented two innovations, **Fluidyn-SENSORMAP** and **Fluidyn-BFC** on this occasion.

September 21st to 25th

International Trade Show, Greater Noida, India

We exhibited in **UP International Trade Show 2023**, the biggest Sourcing Show in India.

September 20th

DRDO Bhawan (Defence Research & Development Organisation), New Delhi

Fluidyn attended a seminar on DGNAI Integrated QA Architecture organised by Indian Navy.

August 12th

DRDO (Defence Research And Development Organisation) Jodhpur, India

We presented a poster paper in Prof. D S Kothari Memorial Tech Conclave 2023 at DRDO, Jodhpur

Pollution problem in India has created a major social and health stress and we are still struggling from high pollution episodes. Urban pollution episodes, characterized mainly by high concentrations of particles in the air are killing and shortening lives across the country. Although high pollution levels were prevalent in cities in Japan, Europe and China a few years ago, they have succeeded in controlling by working systematically on pollutants emission reduction at source, especially during episodes.



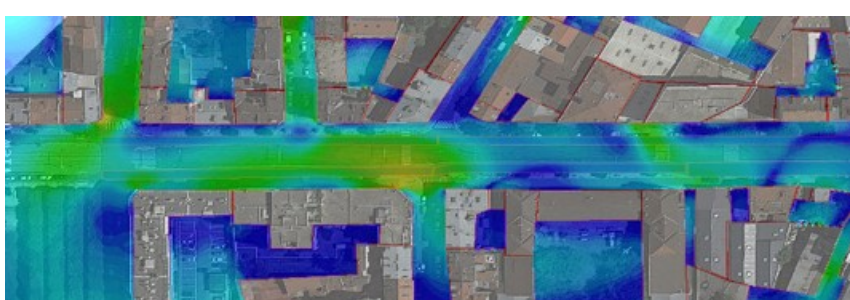
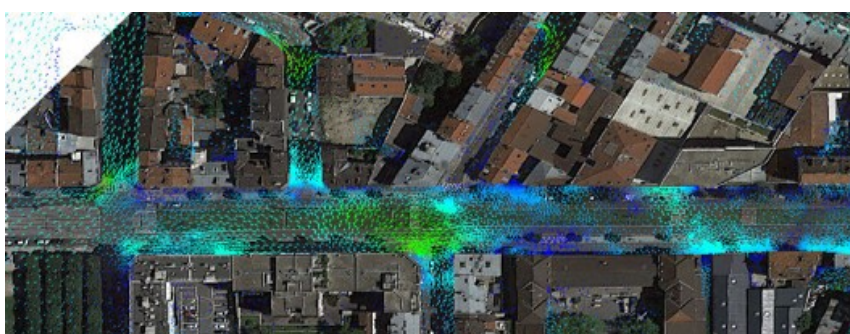
Analysis of of Pollution levels of PM and NOx over a cityscape

Mitigating the impacts of urban pollution requires a comprehensive strategy that addresses various sources of pollution and implements sustainable solutions. While there are mathematical models to figure out where pollution comes from, they are all statistical and based directly on meteorological data on airflow. As in episodic conditions, wind is weak and very low and urban areas have many obstructions- big buildings, large roads, etc., horizontal airflows do not exist and models lose their entire utility.

Fluidyn France and **Fluidyn India** together have developed a 3D Fluid Dynamics (CFD) simulation platform **Fluidyn-PANACHE** for atmospheric pollution which is used since last 25 years in various countries. It has modules for industrial, urban, pollution impact simulation etc. which have proven their value and credibility. In India, they are in use by many organisations, ex: NPCIL, ISRO, DRDO etc.

Simulations are mainly used for testing any proposed mitigation solution numerically before implementation. Thus solutions like smog towers, Acoustic/pollution barriers or pollutants absorbing road surfaces etc. are carefully modelled for specific weather and urban conditions. The simulation includes factors like airflow, movement of pollutants, and atmospheric chemistry transformations, such as the conversion of NOX to O3, before any actual implementation takes place.

Fluidyn-PANAIR for Urban Air Pollution Mitigation



Depolluting Concrete - CO2 removal from sidewalks and building walls

For establishing a pollution impact mitigation in urban areas, **Fluidyn-PANAIR** is in use by various cities in Europe as well as in developing countries. It can simulate pollution dispersion and using **Fluidyn-REALTI**, it can locate emission sources in real time in an urban area of say 50x50km2. A micro-scale level, fine embedded mesh systems having meter size precision is used to evaluate impact of any strategy adapted. It can incorporate effect of all kinds of topographical features (buildings, forests, water bodies etc..) with their obstruction as well as heat contribution and thermal buoyancy (solar albedo, urban heat). Effect of vertical as well as horizontal airflow on pollution movement is simulated using fluid mechanics (CFD) direct simulation, giving results close to the reality. To compensate for the crude input data, the modelled numbers are further correlated with the monitored values. Monitoring sensors are positioned in advance in the wake of the pollution plumes from major sources. For future projections, AI tools can also be deployed.

Free On-demand Webinar on Reactor Explosion Study : Accident-Consequences-Mitigation

An explosion relates to uncontrolled consequences of a fast chemical reaction but they can be foreseen by modelling and their effect minimized. However the devil is in defining the scenario and initial conditions leading to explosion. **A free on-demand webinar on Reactor Explosion study & Mitigation has been scheduled in the 3rd week of December, 2023.** This webinar is designed to bring together an eminent panel of experts who will discuss what and how a simulation exercise should be taken up for various kinds of explosions, especially their effect on the integrity of structural elements around, e.g. walls, tanks, piping systems, etc.. This webinar also will open a peep window on what could be the recommended best practices. Participants point of view may also be conveyed and presented in the ongoing deliberations. A separate invitation will be circulated shortly with all details.

[Click to Register](#)

News :

Fluidyn's client Vibratec will present a paper on **Globe Valve in Single Phase Flow: Experimental and CFD Analysis** at the **7th International Conference on Noise, Vibration and Comfort**, Kuala Lumpur.

The paper is co-authored by Fluidyn and Vibratec.

QRA & Emergency Response Management update:

MoEF (Ministry of Environment and Forests) Expert Appraisal committee has decided to include an emergency response preparatory protocol. In Specific Conditions for Environmental Clearance, two additional Points are added as decreed on Oct 30, 2023. Details on this will follow in our December's Newsletter.

Concerned industries - Offshore and onshore oil and gas exploration development & production, Petroleum Refining Industry, Chlor Alkali Industry, Soda Ash Industry, Chemicals Fertilizers, Pesticide Industry, Petrochemical Complexes, Petrochemical Based Processing, Synthetic Organic Chemical Industry, Distilleries, Man Made Fibre Manufacturing.



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