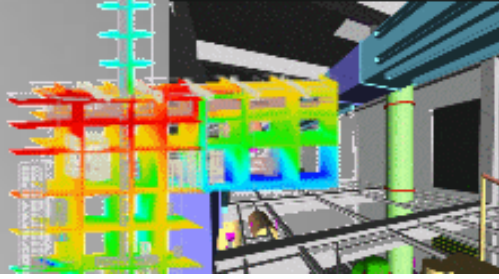
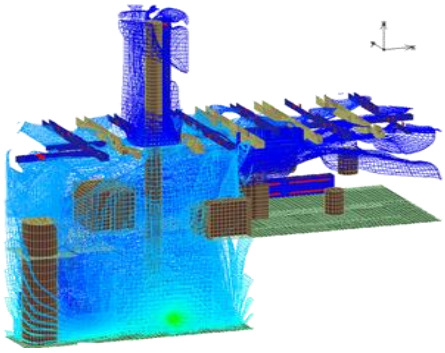
fluidyn-VENTCLIM



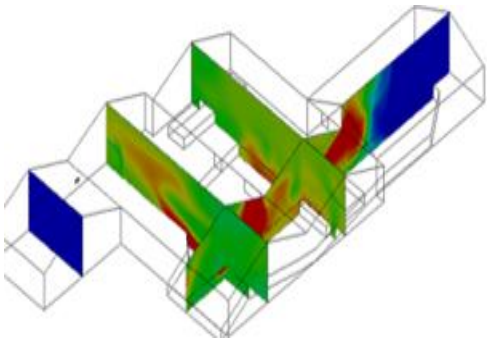


VENTILATION, THERMAL & AIR QUALITY IN BUILDINGS AND PARTIALLY CONFINED AREAS

fluidyn-**VENTCLIM** uses 3D fluid mechanics for HVAC simulation of air flow and temperature variations along with pollution content.

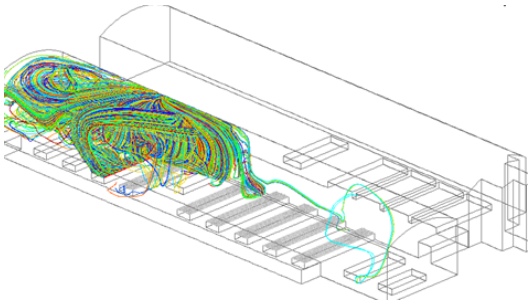
A non-expert user can model efficiently & easily .public buildings, clean rooms for pharmaceuticals or electronic industries & hospitals, ware houses, data centres, car parking etc. Air conditioning &flow patterns, thermal stratification, dispersion of contaminants such as flammable/toxic gas/particles/droplets can be modelled.

When used with *fluidyn*-**REALTI,** it can also do sensor network optimization for quick detection of pollutant sources besides forecasting pollutants movement in a real time accident situation.



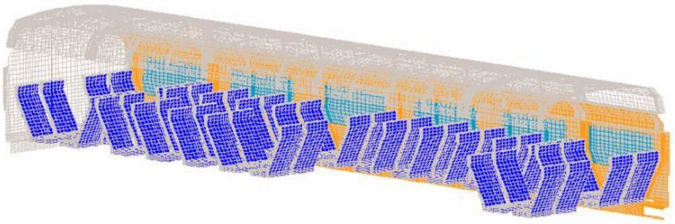
fluidyn-**VENTCLIM** uses a Graphical User Interface (GUI) with a fully integrated CAD library with primitives for quick model creation with partition walls &openings, customized primitives library for equipments/ exhausts/ process and default data for human or vegetation presence.

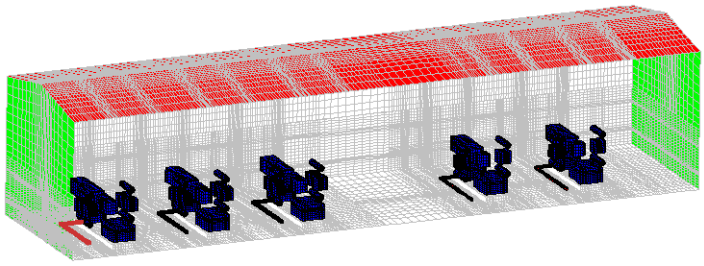
A Contaminants Library- chemical, radioactive, and reactive- is available and can be modified. External air flow around the buildings can be simulated using *fluidyn*-**Panache** using weather data for boundary and initial conditions of the simulation inside the building.



It generates an optimal simulation mesh automatically for quality results, keeping in mind objects, physics and sources of air flow, heat and pollutants and the simulation time available. Solvers used are full Navier-Stokes or Lagrangian puff for flow & dispersion. Contaminant source detection is done by inverse methods.

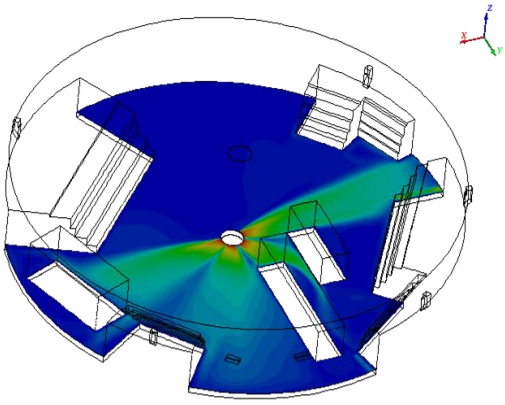
Software works even on hand-held devices using Windows, Linux or Unix.

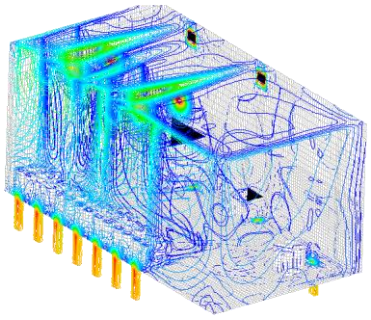


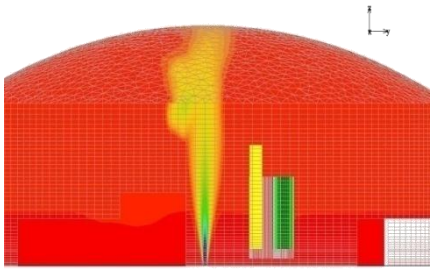


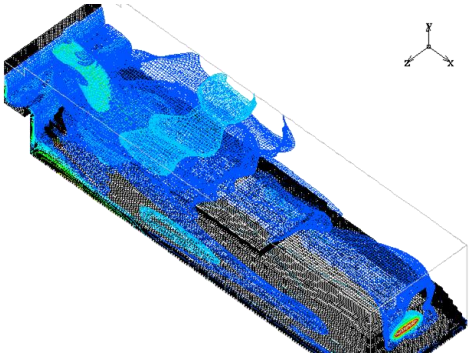
Physical models

- **Thermal**: Heat and humidity generated by human activity and transpiration are estimated. Solar radiation through windows and heat of electrical/ electronic equipments is also accounted for.
- **Air conditioning**: Humidity, condensation, evaporation with pressure and saturation curves (water-air or pollutants-air).
- **Fire &Explosion**: Automatic identification of flammable clouds.









BOUNDARY CONDITIONS

- Openings: pressure, flow velocity, temperature at each opening by the software Fluidyn-Panache
- Ventilation: head loss, curves flux/pressure
- Wall conditions: heat inertia thermal properties estimated

TWO PHASE FLOWS

- Particles, aerosols and gas
- Takes into account mass, heat and momentum exchange, interaction with turbulence and atomization, coalescence and liquid droplets.

INTEGRATED MODELS

- **Cad library**: A cad library of primitives is available with the software which can be customized for user specific designs and equipments.
- **Sensor mapping & Real time leak source detection by** *fluidyn*-**REALTI:** Optimal position of contaminant of fire sensors can be determined according to the likely sources.
- **Customisation of** *fluidyn*-**VENTCLIM** is designed for easy customization for repetitive applications

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