fluidyn PANWIND

WIND FLOWS IN URBAN AREAS

fluidyn-**PANWIND** is a CFD software dedicated to the 3D air flow modeling in complex urban environment.

fluidyn-**PANWIND** is a module of *fluidyn*-**PANACHE** family which includes its main characteristics and allows a quick and accurate simulation of wind flows around buildings or on a regional scale by taking into account:

- all kinds of **obstacles and architectures**,

- the **topography**,

- the influence of terrain and **vegetation**,

- the **local meteorological conditions.**

APPLICATIONS :

fluidyn-**PANWIND** provides the urban project managers, the sustainable development, the architects and the HVAC specialists, quick and accurate answers to the air flows problems around buildings. The software can be used for:

- 🔴 **The flows (wind speed acceleration, wind direction deviation) and turbulence simulations around buildings** and on complex terrain (wind shear, small velocity wind…),

- 🔴 **The pedestrian comfort** in the development of districts,

- 🔴 The **wind energy resource assessment** in urban and industrial areas and the optimization of the wind power production,

- 🔴 **The natural ventilation of buildings** in a district (air inflows and outflows, air renewal rate, thermal balance,…) to improve the thermal and health comfort.
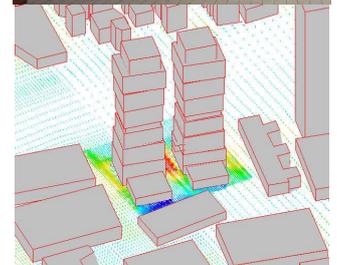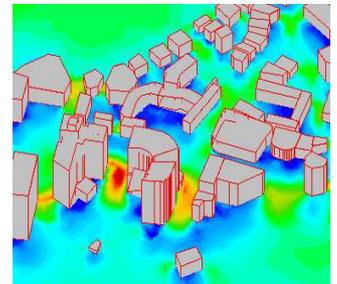
TECHNICAL DESCRIPTION:

For the wind flow modeling in urban environment, *fluidyn*-**PANWIND** uses a fast and powerful solver for the **3D fluid mechanics equation computation**. The modeling includes all the important phenomena and parameters which influence the air flows:

- 3D complex topography,
- outdoor spaces specificity,
- the different buildings and obstacles,
- the local meteorology (steady or transient),
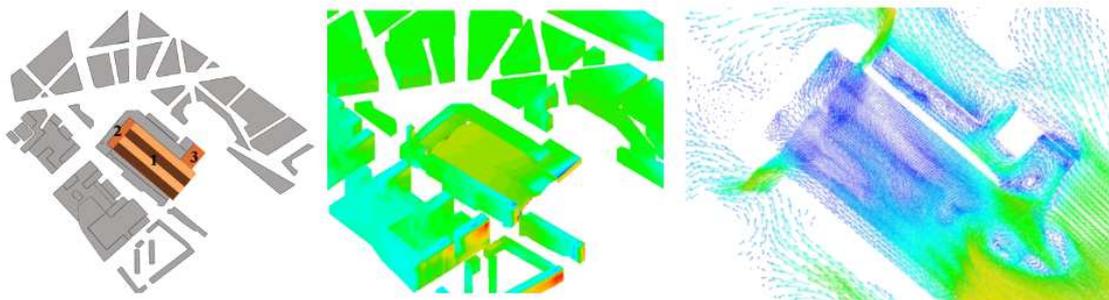
The wind flows are computed by taking into account all the local effects (thermal, wind, Venturi effect...) at the building front and district scale. *fluidyn*- **PANWIND** automatically includes the atmospheric boundary layer definition and several turbulence models.

The software uses **automatic and quality grid techniques** for meshing the terrain and all kind of obstacles for accurate air flow computation.
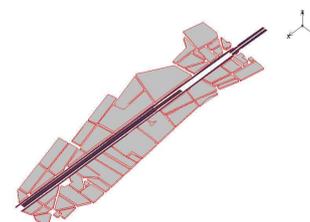
SYSTEM CONFIGURATION:

fluidyn- **PANWIND** can be run on Windows Linux or UNIX operating systems.

fluidyn- **PANWIND** includes a user-friendly graphic interface with a **preprocessor, solvers and postprocessor**. The interface has been developed for a **simple and quick case definition and results analysis**. The software can be modified as required by our development team with a specific interface or input/output data integration.

USERS :

Architects, HVAC companies, Sustainable development experts, Urban project managers, council technical services…

By its characteristics, *fluidyn*-**PANWIND** can be used without any specific technical knowledge in numerical analysis or fluid mechanics.

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