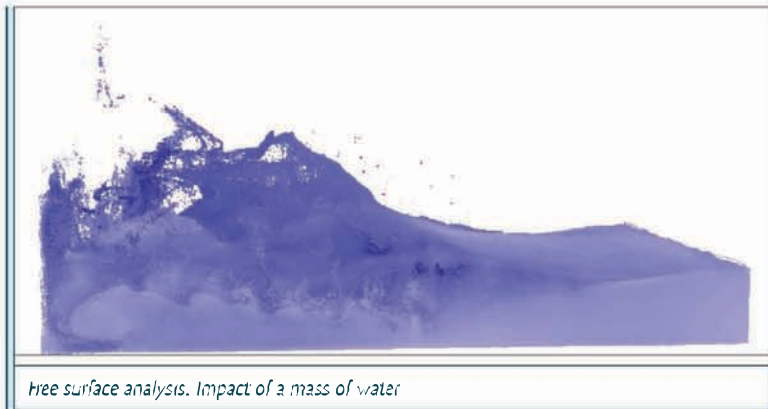


Xflow is a powerful multi-physics package designed specifically for engineering and scientific simulations.

It provides a technology that enables you to study the mechanics of solids and fluids. Xflow gives you the ability to simulate the flow of gases and liquids, heat and mass transfer, moving bodies, multiphase physics, acoustics, and fluid structure interaction through computer modeling.

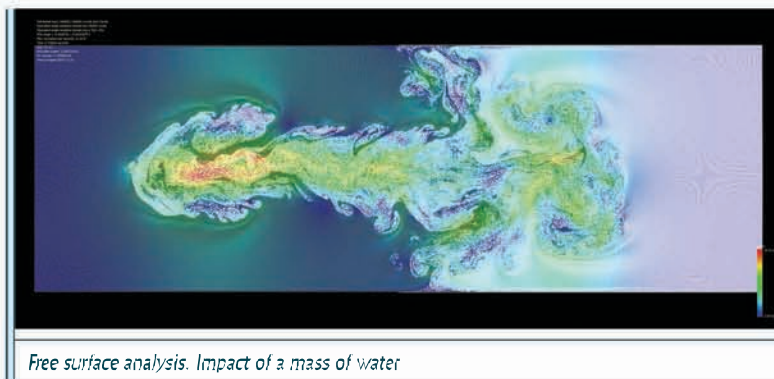
Using Xflow you can build up a 'virtual prototype' of an environment, system or device that you want to analyze, and then apply real-world physics. Xflow technology is a powerful tool, specifically in the design stage where preliminary analysis may save costs and time.



What makes Xflow different?

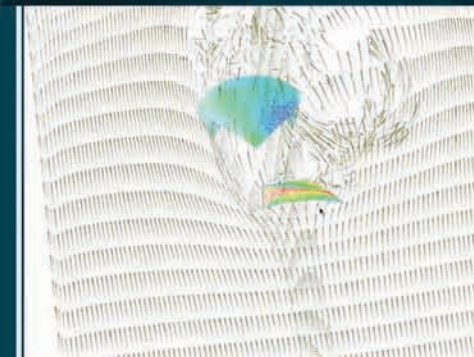
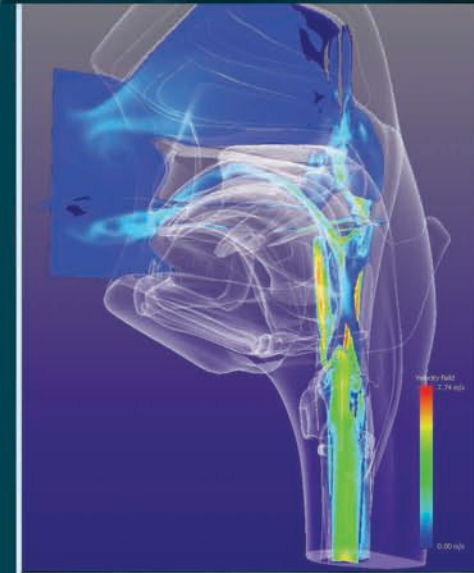
Xflow's revolutionary fluid-particle technology avoids the time consuming meshing process. While traditional computational fluid dynamics packages focus mainly on steady processes, Xflow is specifically designed to resolve transient problems.

There are very few available technologies equipped to deal with moving boundaries, and most require of continuous interpolation and remeshing processes, introducing further errors in the solution.

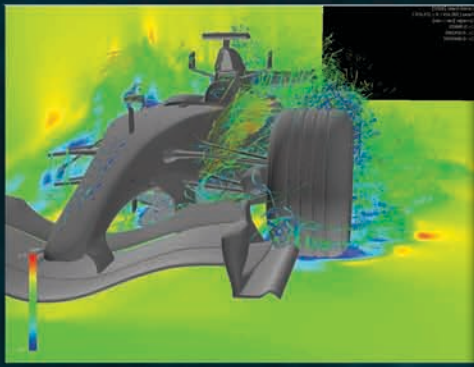


Most commercially available technologies for fluid modeling are traditionally mesh-based, but mesh-based technologies undergo severe difficulties when dealing with problems involving constant changes in the topology of the domain, particularly those arising in free-surface hydrodynamics, multiphase flows, aero-elasticity, problems involving moving boundaries, and fluid-structure interaction.

In mesh-based spatial domain discretizations, the reliability of the solution depends highly on the quality of the mesh. Building up a good mesh for this kind of technology usually requires a large amount of engineering time in CFD analysis.



APPLICATION FIELDS



- Aerospace & Defense
- Automotive
- Biomedical - Bioengineering
- Buildings
- Civil Engineering
- Chemical
- Electronics
- Environmental
- Homeland Security
- Marine & Offshore
- Oil and Gas
- Power Generation
- Turbomachinery

The Xflow mesh-less particle approach offers new computational possibilities to problems previously unsolvable with existing commercially available packages, across a wide range of applications, specifically those involving transient dynamics, free surface analysis, moving boundaries

Turbulence Modelling

Large Eddy Simulation adheres closely to the mathematics of turbulence, preserving the wider possible range of fluctuating structures and therefore is the preferred approach for turbulence modeling within Xflow.

Xflow's particle algorithm only requires the actual physical constants for the simulation setup and no arbitrary calibration parameters are needed, even for turbulence modeling.

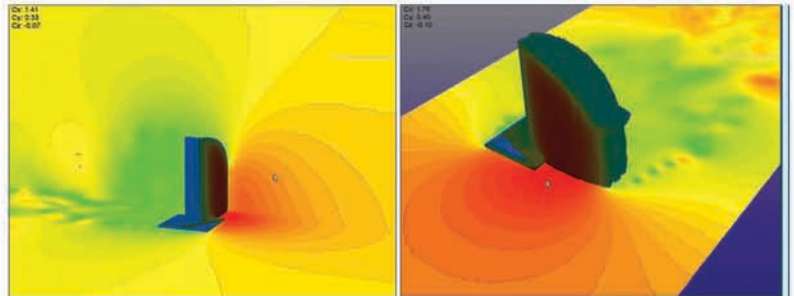
Aerodynamic Analysis

Xflow's virtual wind tunnel technology allows accurate computation of pressure distributions and aerodynamic coefficients.

Wind loads over buildings, drag analysis or wake prediction for vehicles, civil structures, or urban environments can be computed easily.

The complexity of the geometry is not a limiting factor for the technology. The memory limits are imposed by the selected particle resolution.

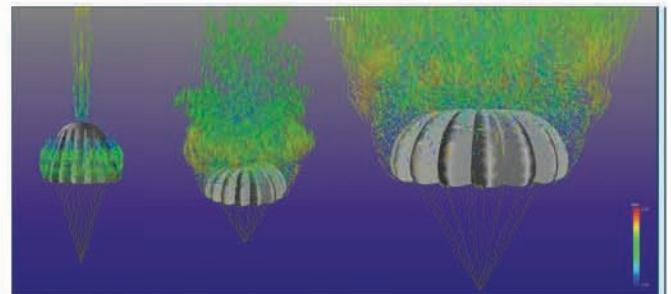
Simulations up to forty million particles have been performed in simple 32 bits architecture.



Airflow study around a modern building.
Validation against wind tunnel section: Reference(1.78) Xflow average Cd(1.77)

Fluid-structure Interaction

Fluid – structure interaction capabilities are one of the strongest points of the technology. Both the fluid and the solid equations are solved simultaneously allowing the modeling of arbitrarily complex phenomena.



Fully coupled FSI (Fluid-Structure Interaction). Deployment of a parachute.

Xflow™ is software under development. The first prototype will be available in 2008. Right now our consultant engineers are available for collaboration in specific projects. If you are interested in consultancy services, you can contact us at the following email address: xflow@nextlimit.com

