phoenix
fluid dynamics

Image courtesy of Chaos Group

Phoenix FD Key Features

SIMULATION

Streamlined Physically-Based Simulation Core
Phoenix FD's unique simulation core optimizes computation time while maintaining physical accuracy.

Multithreaded Simulation
In Phoenix FD, the advanced simulation core has been updated for multithreaded calculations.

Background Simulation
Phoenix FD's processes run in the background, allowing the user to continue working while computing a simulation. Adjusting the parametersof a simulation during calculation will directly affect the results.

Liquid Simulations
Phoenix FD offers a complete toolset to create liquid simulations of all types.

Foam and Splash Simulation
Phoenix FD is capable of generating particles for foam and splashes, significantly increasing the realism of liquid simulations.

phoenix
fluid dynamics

Phoenix FD for 3ds Max is a powerful fluid-dynamics plug-in, providing exceptional speed and flexibility for simulating realistic fire, smoke, and explosions as well as liquids, foam, and splashes.

Phoenix FD's adaptive grid technology, multi-threaded core, detailed displacement, and GPU-accelerated preview, make it an outstanding solution for physically-based fluid simulations.

The full feature set of Phoenix FD, including global illumination support, is specially designed to work with Chaos Group's flagship rendering software – V-Ray® for 3ds Max.

Particle-Based Sources
Particle systems can be defined as source objects for simulations, and their parameters can be animated relative to particle age.

Thinking Particles Systems As Sources
Phoenix FD supports Thinking Particle systems as sources for simulations.

Fluid Source from Pre-Simulated Surface
Implicit surfaces created by Phoenix FD objects can be used as the source for additional simulations, making it possible to achieve complex effects such as burning liquids and water vapor.

Space Warp Modifier Support
All standard 3ds Max Space warps are supported, enhancing control over the movement of fluids.

Maxscript Support
Maxscript support is available for a number Phoenix FD functions, providing the capacity to create a variety of customizations, such as procedural sources, volumetric textures, and complex simulation conditions beyond those generated using conventional techniques.

Movement-based Wind
Linear and angular winds can be simulated directly for moving fluid objects, such as torches and fireballs.

Turbulence Helper
Random turbulence can be added to a simulation using the new Turbulence helper.

Analytic Scattering Mode
In Phoenix FD, the scattering of light entering a fluid is generated with improved speed and efficiency.

Particle Export
In Phoenix FD, the updated simulation core traces particles more efficiently, allowing finer details without needing to increase resolution.

RENDERING

Displacement
Phoenix FD introduces multi-threaded displacement, allowing details smaller than the grid's cell size to be generated at render time.

Particle Shader for Splashes and Foam
Phoenix FD introduces a new particle shader, allowing users complete control when creating foam and splashes.

Particles as Smoke
In Phoenix FD, an innovative shading technique renders densely packed particles as volumetric smoke, adding greater detail to simulations without increasing render times.

Efficient Shader Memory
The volumetric shader has been fine-tuned to maximize memory efficiency, resulting in a 2X improvement for the atmospheric model and up to 8X for the solid model.

Geometry Gizmo
In Phoenix FD, a geometric object can be specified as the gizmo, defining the portion of the simulation to be rendered.

Atmospheric Blending
In Phoenix FD, overlapping atmospheric effects are blended correctly and rendered properly.

Global Illumination*
Phoenix FD is fully compatible and optimized for global illumination in V-Ray, enhancing the realism of the rendered result.

Solid Mode*
Solid mode treats content as procedural geometry, making it possible to render realistic liquids quickly using V-Ray.

Heat Haze*
With Phoenix FD, it is possible to raytrace the change in the refraction of light through a temperature gradient, making it possible to render effects such as a mirage and heat haze.

* feature requires V-Ray.

ADDITIONAL FEATURES

GPU-Accelerated Preview
Phoenix FD includes an enhanced GPU preview, supporting diffuse color shading and lighting directly in the viewport. GPU-based renderings can be saved automatically as PNG files, allowing the user to preview simulations without the need to rerender on the CPU.

Playback Time Scale
Implementing a special algorithm to generate intermediate frames, Phoenix FD allows variable speed playback for the simulation result.

ParticleFlow Operators
A variety of particle-based effects can be achieved using ParticleFlow operators to move particles along a fluid or modify their events.

Particle Texture Tool
Displacement textures can be generated based on particles dragged by the fluid, resulting in finer details along the fluid.

Procedural Texture Export
Phoenix FD includes a 3D texture format, allowing the simulation result to be exported and rendered with any general purpose volumetric shader, such as VRayEnvironmentFog. This 3D texture can be used to create special effects, like a lava surface, by using displaced transparency channel combined with non-displaced emissive channel.

CHAOS GROUP is a leading provider of innovative rendering and simulation technologies for the media, entertainment, and design industries.

"A mixture of speed, ease-of-use and a comprehensive toolset makes Phoenix FD a serious contender for explosive VFX work."

Allan McKay
VFX supervisor

"Phoenix FD is a key tool in my production pipeline. Its flexibility in creating outstanding smoke and fire fx, as well as producing liquids directly in 3ds Max makes it invaluable for fast paced broadcast shots and detailed film work."

Michael McCarthy
Super Symmetric Studio

V·ray

For 3ds Max
Maya
Rhino
SketchUp
Softimage

PDPLAYER

CHAOSGROUP
www.chaosgroup.com

t: +359 2 422 422 1
e: vray@chaosgroup.com