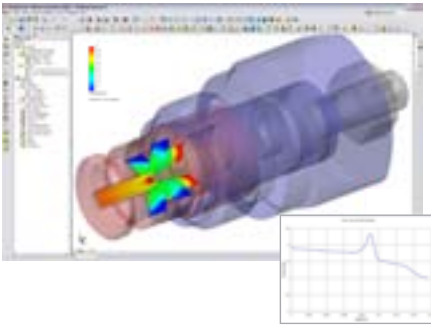


COSMOSFloWorks Overview

EASILY SIMULATE LIQUID AND GAS FLOWS WITHIN SOLIDWORKS®

COSMOSFloWorks™ is the first easy-to-use fluid-flow simulation and thermal analysis program that is fully embedded inside SolidWorks. Designers are free to innovate, secure in the knowledge that they won't pass costly mistakes down the line.



Visualize the variation of pressure along the length of a piston valve and automatically graph the results in Excel.

The original fluid-flow simulation tool developed exclusively for SolidWorks users, COSMOSFloWorks gives you insight into your designs related to fluid flow, heat transfer, and forces on immersed or surrounding components.

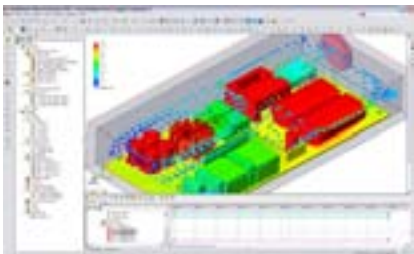
The only fluid-flow simulation product fully integrated with SolidWorks.

COSMOSFloWorks is easy to use; you simply tell the software what you're interested in instead of having to translate analysis design goals into numerical criteria and iteration numbers.

- Engineering goal-based flow analysis.
- Compare different designs based on flow analysis using SolidWorks configurations and choose the optimal design for final production.
- A wizard-based approach to set up flow problems.
- Automatic generation of fluid volume based on your SolidWorks assembly. No need to create fluid volume as a separate component.
- All flow parameters are associative with your SolidWorks geometry and automatically update with changes in your design.

Physical models for engineering applications. COSMOSFloWorks can analyze a wide range of real fluids such as air, water, juice, ice cream, honey, plastic melts, toothpaste, and blood, which makes it ideal for engineers in nearly every industry.

- Internal flow: Flow of liquids and gases through valves, regulators, and ducts.
- External flow: Flow of liquids and gases around solid bodies like flow of air over an airplane or flow of water around a submarine.
- Transient flow: Simulate unsteady flow over a short period of time.
- Turbulent flow: K-E model to understand turbulence in the flow domain, for example, the flow of gases from an aircraft engine nozzle.
- Incompressible viscous flow.
- Compressible flow: Analyze gas flows in subsonic, transonic, and supersonic speed zones like flow around an aircraft engine moving at the speed of Mach 1.
- Heat transfer: conduction, convection (natural and forced convection).
- Radiation: Study heat transfer exchange between high temperature surfaces and also radiation from the sun (solar radiation).
- Wall roughness: Calculate pressure drop on pipes based on its surface roughness value.
- CFD-based design optimization: Optimize your design based on model dimensions and flow parameters.
- Porous media: Simulate components like industrial filters or catalytic converters to understand how they affect your designs.
- Non-Newtonian liquids: Solve flow problems involving liquids like blood, toothpaste, and plastic melt.
- Moving wall: Study flows relative to a moving reference frame.
- Rotating reference frame: Understand complex rotational flow inside turbo machinery (like pumps and impellers).
- Cavitation: Identify areas in the model where cavitation will occur.
- Humidity: Calculate relative humidity inside enclosures for climate control applications.



Study the effectiveness of electronic cooling and easily integrate the results SolidWorks into Animator to create high quality animations.

Primary industries served

- Aerospace
- Automotive
- Biomedical
- Consumer Products
- Fans
- Food Processing
- Glass and Ceramics
- HVAC/Refrigeration
- Industrial Hygiene
- Machinery
- MEMS
- Plastic Extrusions
- Power Plant
- Process
- Pumps
- Valves and Regulators

Supported languages

- English
- Japanese

System requirements

- SolidWorks 2007 or higher
- Microsoft® Windows XP Professional (32-bit and 64-bit)
- Intel® Pentium®, Intel Xeon™, Intel EM64T, AMD Athlon™, or AMD Opteron™ - based processor
- 512 MB RAM or greater
- Pointing device
- CD-ROM drive

Simulate real-world operating conditions. COSMOSFloWorks includes several types of boundary conditions to represent real-life situations.

- Apply inlet velocities, pressures, mass or volume flow rates, and fans.
- Apply mass or volume fraction if multiple gas types are involved.
- Simulate the effect of heat generation by applying surface or volume heat source.
- Simulate the effect of cooling by applying natural or forced convection.
- Simulate rotating parts by applying one or more rotating frames of reference.
- Study the effect of heat sinks on electronic components with heat sink emulation.
- Simulate the effect of solar radiation.
- Track the behavior of particles suspended in a flow.
- Apply time-and-coordinate dependent boundary conditions and heat sources.

Automate fluid-flow tasks. COSMOSFloWorks utilizes a number of automation tools to simplify the analysis process and help you to work more efficiently.

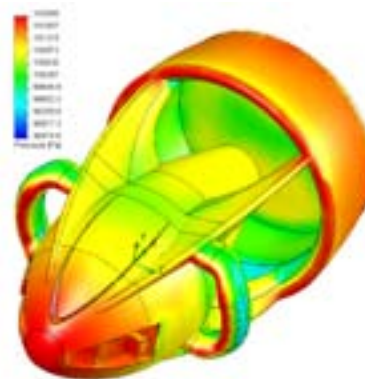
- Detect fluid volume automatically from SolidWorks geometry, thereby distinguishing between solid and fluid regions.
- Mesh both fluid and solid regions automatically.
- Improve accuracy with solution adaptive mesh generation.
- Automatically create goal plots to evaluate pressure drop and temperature distribution once the analysis is complete.
- Save time with a built-in engineering database of commonly used liquids, gases, solid materials, fans, and units, or customize it with your own materials.

Interpret results with powerful and intuitive visualization tools. Once you have completed your analysis, COSMOSFloWorks offers a variety of results visualization tools that allow you to gain valuable insight into the performance of your models.

- Study the distribution of result quantities with section plots (including velocity, pressure, vorticity, temperature, mass fraction, and others). The section plots can be moved dynamically.
- Measure results at any location with the Point Parameter tool.
- Graph result variation along any SolidWorks sketch.
- List results and automatically export data to Microsoft Excel.
- Examine the flow trajectory inside or around the model with animated bands, 3D arrows, pipes, or spheres.

Collaborate and share analysis results. COSMOSFloWorks makes it easy to collaborate and share analysis results effectively with everyone involved in the product development process.

- Generate customized engineering reports in Microsoft Word format.
- Save result plots in several standard formats, such as BMP and JPEG.
- Create animations of results using SolidWorks Animator and save as an AVI.
- Publish eDrawings® files with analysis information.



Plot the variation of pressure on a moving body to determine the drag forces and improve the designs of moving objects.

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