Vectorworks: The Parasolid Advantage

A Long History of 3D Modeling Excellence

Since its inception twenty-four years ago, Nemetschek North America's Vectorworks has outpaced the competition with its exceptional 3D modeling capabilities. From the creation of planar surfaces, to solid modeling functionality, to free-form modeling features, Vectorworks enables design professionals worldwide to design anything they can imagine.

With its robust modeling capabilities, Vectorworks has been used to design the building and everything in it. Designers need formal freedom not only for the basic elements of walls, doors, windows, roofs, and slabs, but also to serve as the basis for furnishings and fittings in the building. In the building shell itself, this could mean a free-form roof shell, or a custom window with an unusually-shaped border cut into a curved wall. In the finer details, this could mean compound-curved furniture elements or plumbing fixtures, accurate portrayal of accent lighting fixtures or door hardware, or the integration of a commissioned sculpture in the building model.

Now, Vectorworks is prepared to step into the future with the integration of its new advanced solid modeling kernel, Parasolid®.

Parasolid: At the Heart of Vectorworks

With more than half of Vectorworks users incorporating 3D into their daily workflow, providing an improved, accurate, and comprehensive modeling kernel was of the utmost importance. Nemetschek N.A. elected to build for the future with the most advanced 3D technology available, by incorporating Parasolid at the heart of Vectorworks.

Parasolid is, simply put, the best 3D modeling kernel available today. Built by Siemens PLM software, Parasolid includes unsurpassed 3D modeling capabilities—it can handle larger and more complex models, support higher levels of modeling automation, manage data accurately and consistently, and provide the interoperability necessary to facilitate the seamless exchange of data through all phases of design. Over 2.5 million end user seats of Parasolid-enabled applications are in use today.

Vectorworks: Best in Class

The embedded Parasolid kernel provides Vectorworks users with high performing, extremely stable, accurate modeling capabilities applied across the design lifecycle, establishing Vectorworks as a best-in-class application.

In real world numbers, Vectorworks is up to 12 times faster for Boolean operations, including surface addition, subtraction, and intersection. Viewport renderings are two to four times faster than they were in Vectorworks 2008. And, 3D modeling operations are four to five times faster.

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While you design, modeling calculations and error handling are managed by the most accurate 3D kernel technology in the world. Design efficiencies inherent in the Parasolid kernel, as well as its sophisticated multiprocessor techniques, makes Vectorworks the application of choice for any size project.

For Building Information Modeling (BIM) applications to have a positive impact on the A/E/C industry, they must be able to model, manage, and exchange complex design information. Now with the best modeling kernel available, Vectorworks leads the BIM marketplace in key technology. Integrating Parasolid into Vectorworks expands our 3D technical strengths, including the ability to do it all within one application.

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The Parasolid advantages now available in Vectorworks include:

- Solid modeling: With Vectorworks, modeling accuracy is extremely high, resulting in successful 3D modeling operations
- Feature modeling: Vectorworks with Parasolid provides robust feature modeling; protrusions, filleting, chamfering, and shellings are speedy and bullet-proof
- NURBS surfaces: projections, lofting, interpolated and draped surfaces, as well as contouring, are all improved by the robust Parasolid engine and provide resolution-independent smooth curved surfaces
- Combined NURBS and solids: Solid geometry can be decomposed into its surfaces for NURBS deformations, and NURBS surfaces can be "stitched and trimmed" into free-form solid shapes
- Walls: Vectorworks' sophisticated wall technology is now based on Parasolid, allowing holes of any shape to be created and accommodating unusual window shapes within walls
- Rendering: Parasolid's faceting technology results in much faster, improved rendering in Vectorworks
- Functionality enhancements: Extrude along path improvements allow users to create smooth, curved shapes like stair handrails.

Realize Your Most Inspired Visions

Regardless of the size of your practice or the complexity of your design projects, Vectorworks best-in-class 3D modeling capabilities will enable you to design more efficiently. With the industry's leading 3D modeling kernel at its core, Vectorworks lets you spend less time working on the tedious details such as verifying accuracy and completeness and more time actually designing—using the workflow of your choice. Unlike other BIM applications, Vectorworks is at its heart a design application. Whether your focus is on simple, clean design, or incorporating the most technically challenging geometric shapes into your work, Vectorworks lets you realize your most inspired visions.

Vectorworks offers unrivaled 3D modeling capabilities built on the most robust platform available today.

Vectorworks Benchmark Scores

What the integration of Parasolid means in your real-world application:

- Vectorworks is up to 12x faster for Boolean operations, including surface addition, subtraction, and intersection
- 3D modeling operations are 4-5x faster
- Viewport renderings are 2-4x faster

*All benchmarks in this document were taken from Vectorworks 2009

What is Parasolid?

Parasolid is, simply put, the best 3D modeling kernel available today. Built by Siemens PLM software, Parasolid includes unsurpassed 3D modeling capabilities—it can handle larger and more complete models, support higher levels of modeling automation, manage data accurately and consistently, and provide the interoperability necessary to facilitate the seamless exchange of data through all phases of design.

The embedded Parasolid kernel provides Vectorworks users with high performing, extremely stable, accurate modeling capabilities applied across the design lifecycle establishing Vectorworks as a best-in-class application. Based on precise boundary representation technology, the Parasolid kernel in Vectorworks supports solid modeling, generalized cellular modeling and freeform surface/sheet modeling within an integrated framework.

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