Autodesk®
Algor® Simulation

Technical What's New

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What's New in Autodesk Algor Simulation 2011

Autodesk® Algor® Simulation software, part of the Autodesk® solution for Digital Prototyping, provides a range of mechanical simulation tools to help designers and engineers make decisions earlier in the design process. Support for multi-CAD environments and extensive finite element modeling tools help manufacturers study initial design intent and accurately predict product performance. Autodesk Algor Simulation helps you validate and optimize designs before manufacturing—increasing efficiency, minimizing reliance on physical prototypes, reducing costs, and decreasing errors.

Autodesk Algor Simulation 2011 software offers the following new features and benefits:

- Native Support for Autodesk® Inventor® Models

- Native Support for AutoCAD® Models

- Leverage Autodesk Inventor Simulation Models

- Quick, Intuitive Geometry Editing with Autodesk Inventor Fusion Technology Preview

- Intuitive Feedback about Meshing Issues

- Meshing Flexibility for Multiphysics Simulations

- Enhanced Validation of Simulation Data

- Wizard for Fatigue Analysis

- Simulate Plastic Parts Using Autodesk® Moldflow® Material Properties

- Enhanced Mechanical Event Simulation

- 2D Simulations Expanded for Computational Fluid Dynamics

- Common Navigation and Orientation Tools
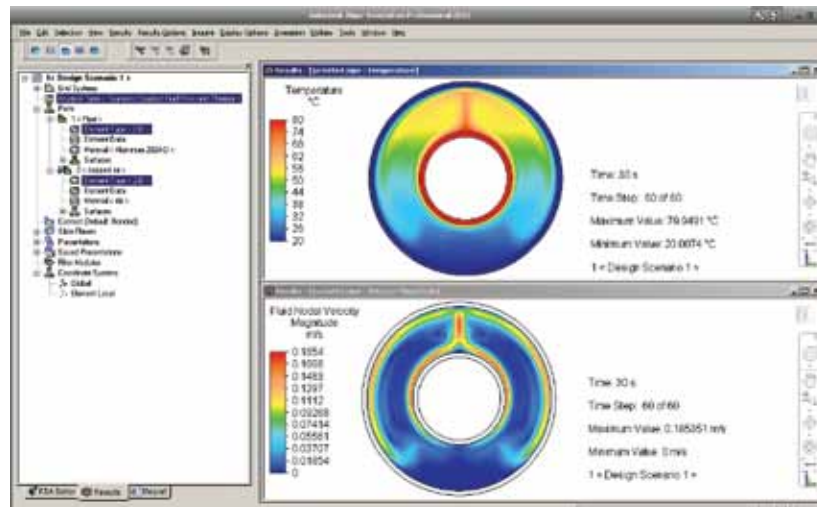
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Native Support for Autodesk Inventor Models

Autodesk Algor Simulation 2011 software can directly open native Autodesk Inventor model files (*.ipt and *.iam), making it the leading advanced simulation solution for Autodesk Inventor users.
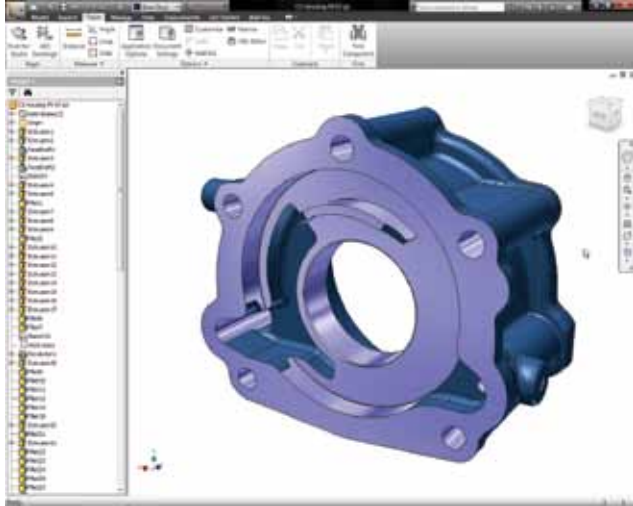
Users can make iterative design changes without redefining materials, loads, constraints, or other simulation data by working directly with native Autodesk Inventor files.
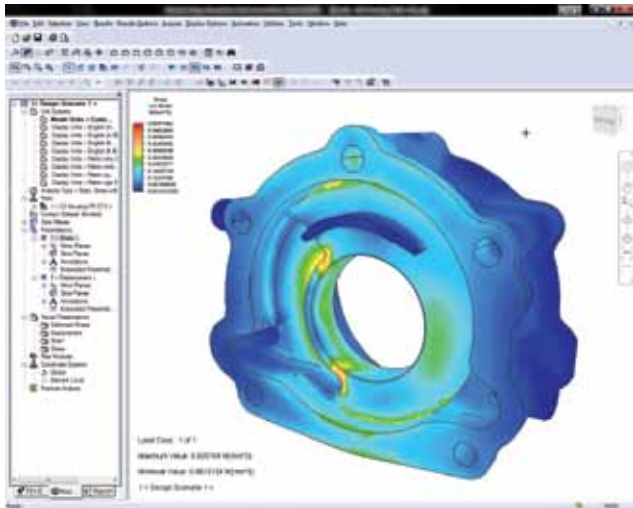

Native Support for AutoCAD Models

Autodesk Algor Simulation 2011 software provides direct support for AutoCAD design and documentation software, offering advanced simulation tools and industry-leading interoperability to AutoCAD users.
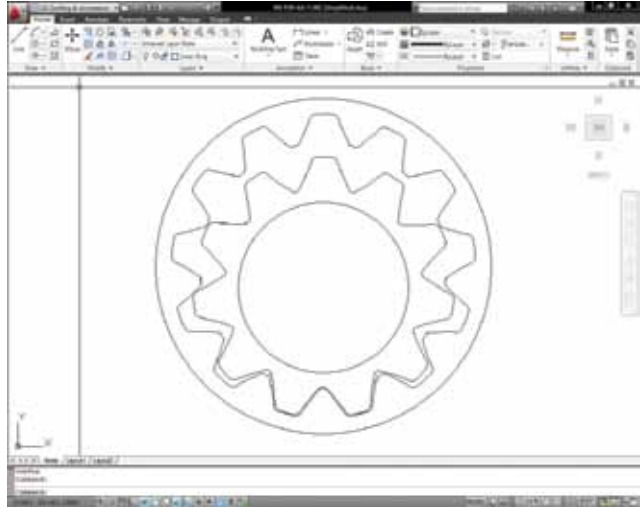
This support includes the ability to directly open native AutoCAD files (DXF™ and DWG™) containing either solid or wireframe geometry without the need to have AutoCAD software installed on the same computer.
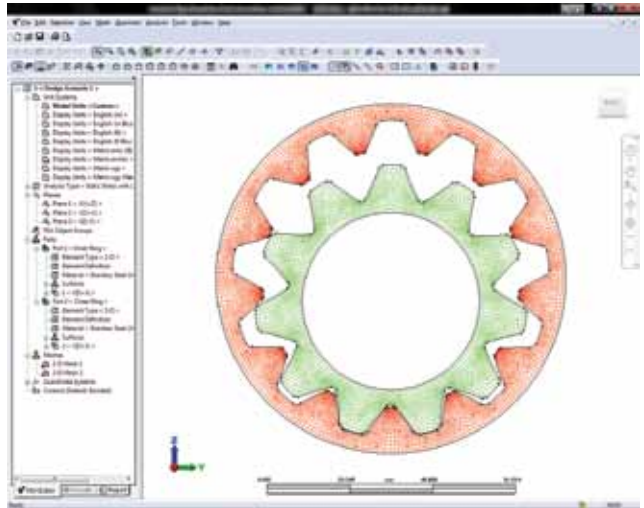
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Leverage Autodesk Inventor Simulation Models

Autodesk Algor Simulation 2011 software enables you to leverage your investment in Autodesk Inventor simulation models and provides a more streamlined simulation workflow. Users can directly read in geometry as well as loads, constraints, and contact settings from Autodesk Inventor simulation models—reducing the need to redefine simulation data that has been previously defined within Autodesk Inventor software.
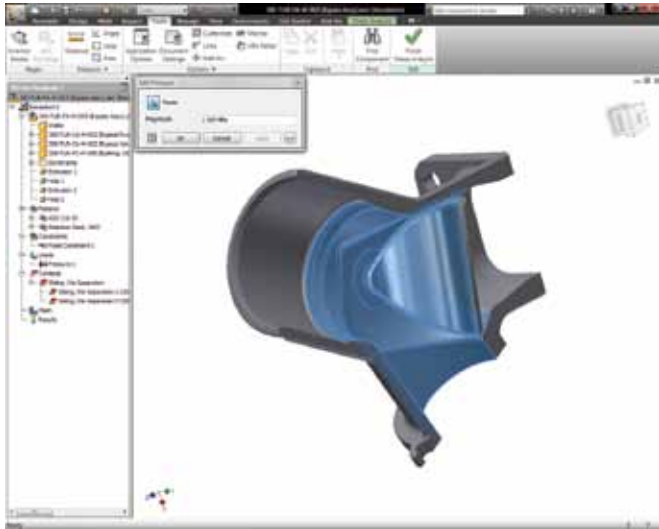
This increased scalability of the Autodesk simulation solution provides flexibility to perform advanced simulations in Autodesk Algor Simulation software—such as nonlinear, thermal, and fluid flow. In addition, users can leverage broader finite element modeling capabilities such as the ability to combine solid and plate element types.
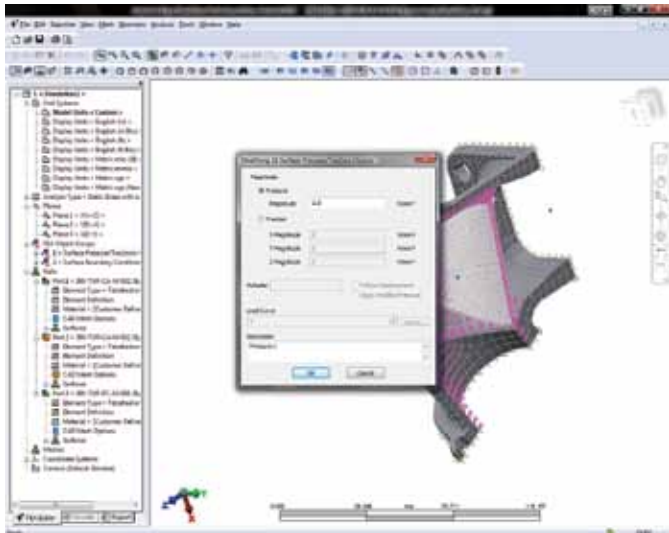
Quick, Intuitive Geometry Editing with Autodesk Inventor Fusion Technology Preview

Autodesk Inventor Fusion Technology Preview is innovative, Digital Prototyping technology that's changing the way people work with 3D mechanical design software as well as the simulation workflow.

Powered by this 3D direct modeling tool, Autodesk Algor Simulation 2011 users now have quick, intuitive geometry editing in order to make changes to 3D geometry from the most common CAD modelers and neutral file formats without the need to use an additional seat of CAD software.
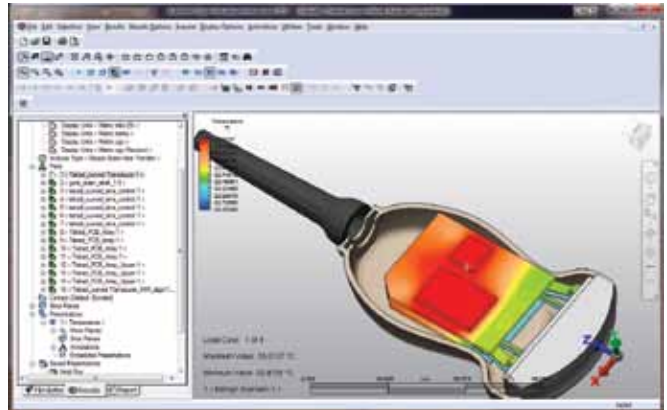

Users can make iterative design changes without redefining materials, loads, constraints, or other simulation data by working directly with native Autodesk Inventor Fusion Technology Preview files.
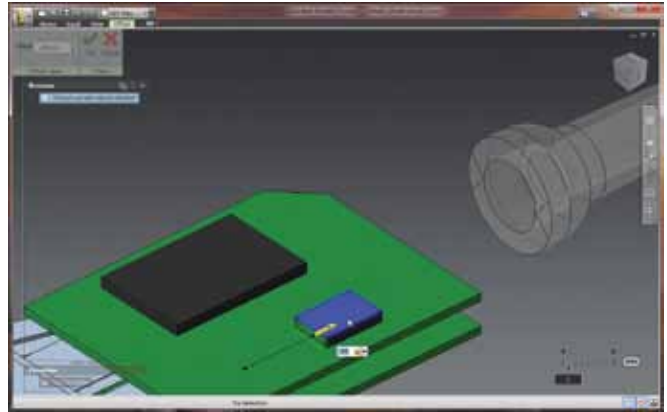
By simply clicking and dragging, you can easily modify and update CAD geometry—helping to consider a greater number of design variations and further optimize designs based on the behavior predicted by the Autodesk Algor Simulation software.

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Intuitive Feedback about Meshing Issues

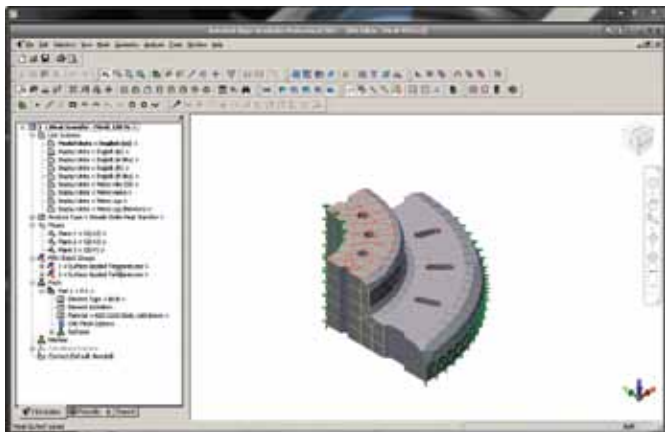Autodesk Algor Simulation 2011 software offers intuitive feedback about meshing issues as well as graphical identification and guidance to help pinpoint the specific features or locations in the model that are causing problems.
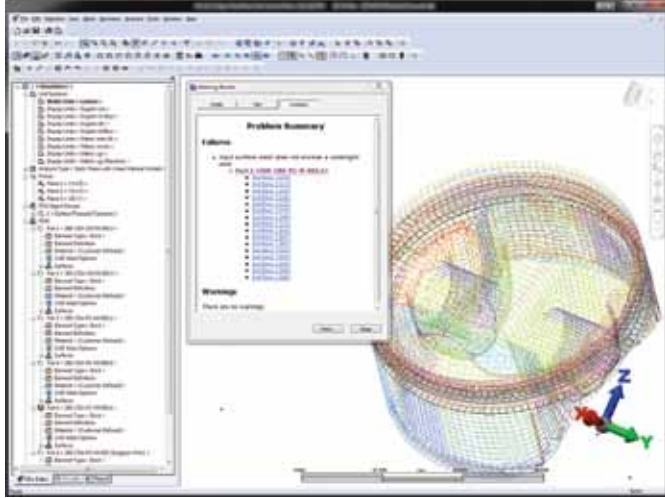

With the help of these tools, which group problems by type as well as by part and surface, you can quickly diagnose meshing problems and take corrective action to repair a mesh faster and obtain quicker, more accurate results.

Meshing Flexibility for Multiphysics Simulations

Multiphysics features in Autodesk Algor Simulation software help you study the result of multiple physical factors acting simultaneously by combining results from different analysis types to help predict a product's real-world performance.

Autodesk Algor Simulation 2011 software includes enhanced modeling flexibility for multiphysics simulations, allowing you to create meshes that are best suited for each of the different analysis types in a multiphysics simulation—optimizing model size and complexity.
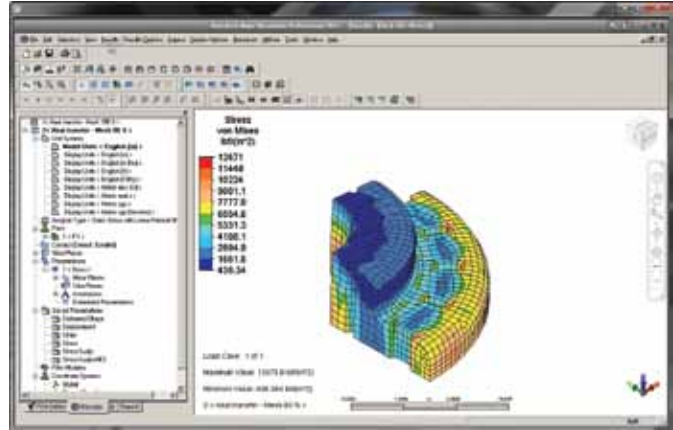
Autodesk Algor Simulation 2011 software then uses a new interpolation method to map the results between the different meshes to get more accurate simulation results while also significantly reducing solution times.

Enhanced Validation of Simulation Data

Autodesk Algor Simulation 2011 software includes enhanced tools to validate simulation data prior to performing a simulation. By checking simulation data and settings earlier in the simulation workflow, users can have greater confidence in their models and minimize costly delays due to incorrect or missing data.

The enhanced data validation tools are available prior to performing mainstream simulations, including linear static stress and heat transfer.

Wizard for Fatigue Analysis

Autodesk Algor Simulation 2011 software includes Fatigue Wizard, innovative software that uses a wizard interface to guide designers and engineers of any expertise level through the steps required to perform complex fatigue analysis—vital for products such as steel rails, beams, girders, and rotating stepped shafts that can experience mechanical failure under repeated or varying loads.

Choose between stress- and strain-based analysis types to study low- and high-cycle fatigue applications and then specify material information using an extensive, editable database. Users can also enter data to simulate real-world conditions, such as local stress concentrations and surface-finish effects.

Fatigue Wizard helps to predict fatigue-based failure and helps you design for durability by subjecting a product to cyclic stresses to determine its endurance limit and thereby increase safety.

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Simulate Plastic Parts using Autodesk Moldflow Material Properties

Autodesk Algor Simulation users designing injection-molded plastic parts can now access the extensive Autodesk Moldflow material database, containing grade-specific material properties for more than 8,000 thermoplastic resins.
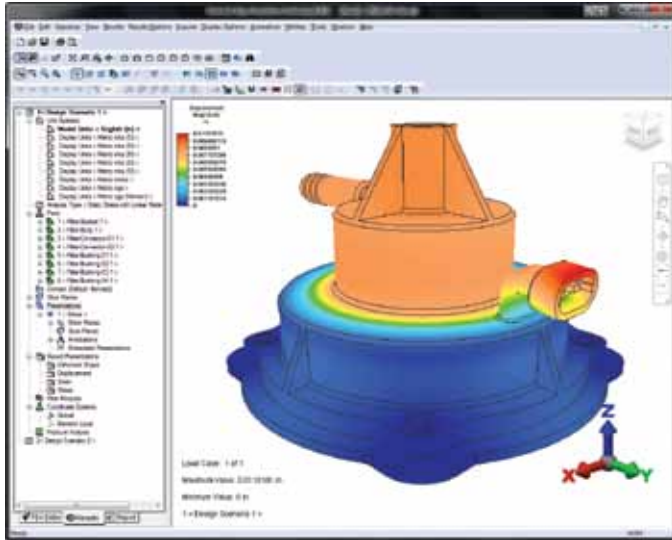
For products that use a fiber-filled material, export your Autodesk Algor Simulation model to Autodesk® Moldflow® Adviser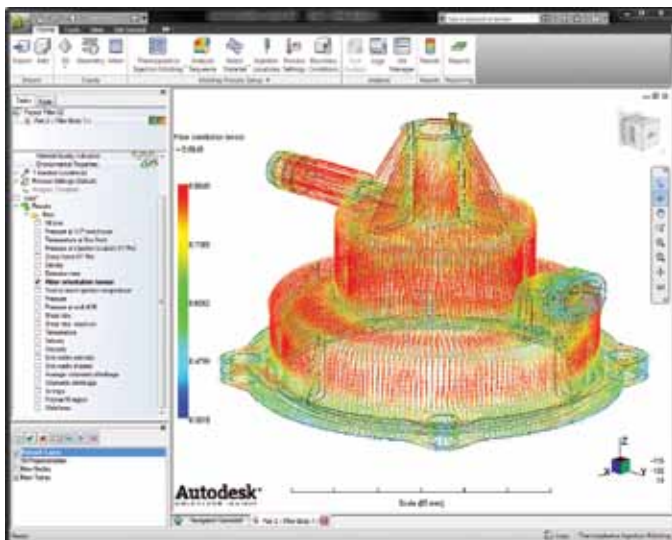 or Autodesk® Moldflow® Insight software in order to simulate the plastic injection molding process and help predict the orientation of fibers in the manufactured part.

Within the Autodesk Moldflow software, calculate and view the orientation of fibers in an anisotropic resin and then determine the proper processing conditions to help optimize the structural properties in critical areas of the part.

Then, use the as-manufactured material properties to improve the accuracy of structural simulations performed in Autodesk Algor Simulation software.

With this deep integration between Autodesk Algor Simulation and Autodesk Moldflow software, you can better predict the real-life behavior of your plastic parts because the material properties account for fiber orientations produced during the injection molding process.

Enhanced Mechanical Event Simulation

Autodesk Algor Simulation 2011 software includes enhancements to the powerful mechanical event simulation tools, helping to make the simulation workflow more intuitive and faster. These updates include:

- User interface for defining contact settings has been simplified and reorganized, making it more user friendly and helping to streamline the definition of contact

- User interface for defining settings for shell elements has been streamlined, helping to save time when defining element data

- Improved solver performance, helping to perform simulations faster

2D Simulations Expanded for Computational Fluid Dynamics

Autodesk Algor Simulation 2011 software offers expanded support for computational fluid dynamics, providing 2D planar elements for transient coupled fluid flow and thermal simulations.

For models where a 2D approximation is appropriate, support for these additional element types provides an easier modeling approach. In addition, 2D simulations often allow users to significantly reduce solution times.

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Common Navigation and Orientation Tools

Familiar navigation and orientation tools like the ViewCube®, SteeringWheels®, and Navigation Bar are also now available in Autodesk Algor Simulation 2011 software—providing an improved experience when interacting with models and a more consistent experience as you work with multiple Autodesk products.
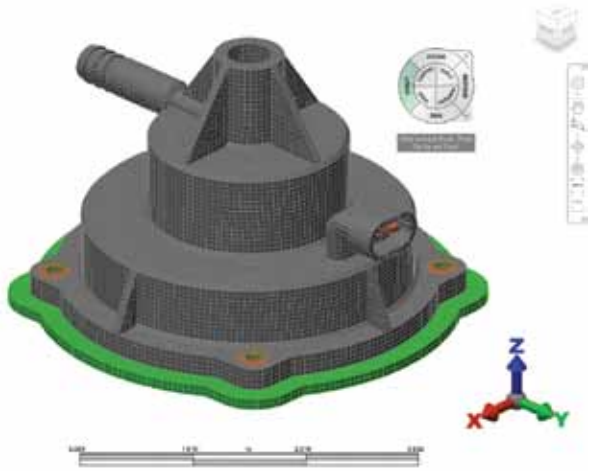
The new Navigation Bar provides access to pan and zoom tools as well as Autodesk-specific tools such as SteeringWheels and the ViewCube—an on-screen widget, shaped like a cube, that rotates as you orbit your 3D scene and provides a clickable interface to orient and re-orient the model.

These new navigation and orientation tools help to increase your productivity when creating simulation models or evaluating simulation results.

Stay Up to Date

Autodesk gives you more. Gain access to technical expertise, utilize training and support programs direct from Autodesk, stay up to date with the latest product releases, and give us your feedback. Not only does Autodesk want to help you use Autodesk Algor Simulation software more effectively but also make sure Autodesk Algor Simulation software is working effectively for you.

Subscription

Autodesk® Subscription gives you immediate access to software upgrades and exclusive access to service and support benefits designed to help you get the most out of your Autodesk software. Learn more at **www.autodesk.com/subscription**

Product Updates

If you experience an issue with Autodesk Algor Simulation 2011 software that has already been solved in a service pack or hotfix, a dialog box appears when you submit the problem to Autodesk, enabling you to immediately install the new service pack or hotfix.

Autodesk Learning and Education

From instructor-led or self-paced classes to online training or education resources, Autodesk offers learning solutions to fit your needs. Get expert guidance at an Autodesk Authorized Training Center (ATC®) site, access learning tools online or at your local bookstore, and validate your experience with Autodesk certifications. Learn more at **www.autodesk.com/learning**

Feedback

Autodesk Algor Simulation customers can provide feedback to the Autodesk Algor Simulation development team through several different avenues. For example:

• Provide tips or join newsgroups at **www.autodesk.com/discussiongroup-algor**

• Keep up-to-date on what's happening in your industry, stay in touch with other industry professionals, and take advantage of a host of online resources at the Manufacturing Community Portal at **mfgcommunity.autodesk.com**

• Talk with your Autodesk Authorized Reseller and support staff

Your input is crucial to our success and we look forward to receiving your suggestions.

Conclusion

We thank you for your continued support of the Autodesk Algor Simulation family of products and hope you feel we are listening to your needs. We added the new and enhanced functionality to Autodesk Algor Simulation 2011 software to help make you more productive, make your company more competitive, and return true value to your bottom line.

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