

# AutoSolids Version 3

Full 3D parametric modelling for AutoCAD users who need to use 2D as frequently as 3D, and who don't wish to move to the Autodesk's more complex MDT and Inventor.

**D**o you want the advantages of full 3D parametric modelling without having to move to Autodesk Inventor? There may be numerous reasons why this would be so. If your work consists of both 2D and 3D, you may not wish to be constrained by Inventor's new model format, which is not easily converted into 2D .dwg format. You may also be put off by the extra expense involved - or you need to introduce an easy-to-use 3D modeller with closer affinity to native AutoCAD working methods, and, hence, capable of being used by your design engineers without re-training.

AutoSolids provides just that - a 3D parametric modeller that works within and enhances the modelling performance of AutoCAD - at a very reasonable price. It also works as easily with MDT and ADT.

AutoSolids arrived on the scene in 1999, developed by Varimetric Solutions based in Florida, to provide 3D design tools for the AutoCAD environment. By the next year, with the release of the second version of the software, it was providing a full parametric solution, supported by RealView, a technology that enabled AutoCAD R14 3D models to be fully manipulated in rendered, hidden-line and wireframe modes.

It also beefed up the 3D orbit function in AutoCAD 2000/2000i. QuickDraw, another AutoSolids 2.0 utility enabled designers to create 2D drawing geomet-

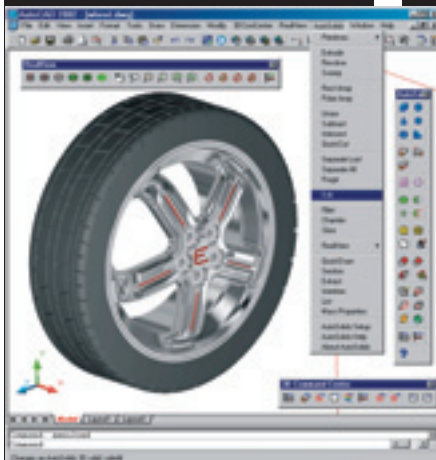
ry from single or multiple solids. The QuickDraw 3D-to-2D automation tool can create and align 2D geometry for up to 10 views at once for easily created detail drawings.

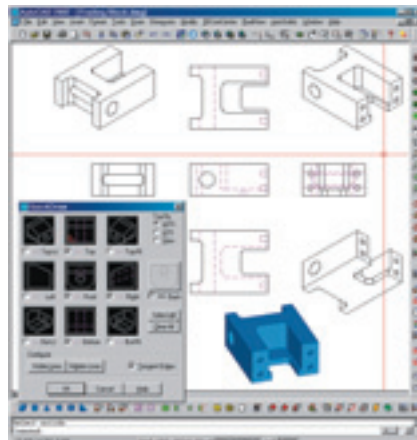
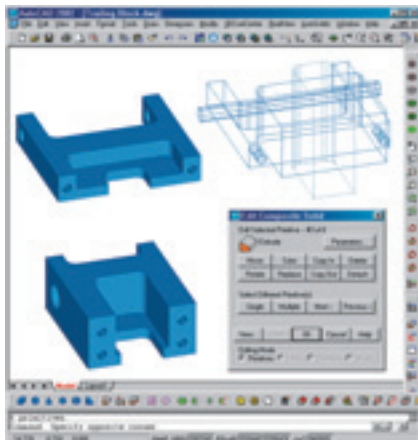
In 2001, Varimetric Solutions announced a name change to AutoSolids at the same time as releasing the next version of the software, which included support for MDT (Mechanical Desktop) 4 and 5 and all versions of ADT (Architectural Desktop). RealView was also enhanced, providing similar rendering and viewing capabilities for AutoCAD R14 as it did for AutoCAD 2000/2000i.

One of the principal advantages of AutoSolids, besides its low cost, was its AutoCAD standard interface, enabling the software to be assimilated and used effectively within an AutoCAD environment with a minimum of re-training and effort. AutoSolids, an ObjectARX application retained full 100% compatibility with AutoCAD software.

The same year (2001) AutoSolids released a yet lower cost 3D solid modelling suite, AutoSolids Express, based on the parent software, and containing much of its features, but restricted in some of its editing functions - ideal for more casual users with somewhat less complex models to deal with.

Mechanical Desktop users have been particularly keen users of AutoSolids, as it helped them overcome the complexity of the software - many of them preferring, previously, to use only the native AutoCAD commands in the software, shying away from the more complex functions. Difficulties also arose when sharing MDT data with native AutoCAD users. This phenomenon has also surfaced with Inventor which, whilst offering much improved ease-of-use over MDT,





(Far Left) AutoSolids solids are easily changed at any time

(Left) AutoSolids QuickDraw feature easily creates multiview geometry for 2D drawings

suffered from similar format incompatibilities for users working in both the 3D and 2D AutoCAD environments.

### AUTOSOLIDS VERSION 3

This month, the latest version of both AutoSolids and AutoSolids Express has been released - Version 3. Along with enhancements to RealView and QuickDraw the application now includes QuickCut, a command for slicing through single or multiple solids with both open and closed 2D profiles, for extracting 2D views of any plane through a 3D model.

The latest version is fully compatible with AutoCAD 2xxx versions up to 2002, with AutoCAD 2004 compatibility on its final testbed.

### WHY AUTOSOLIDS?

Why should anyone consider using AutoSolids? According to Scott Slavik, the principal developer of the software, Autodesk has created a gap in its range of 2D and 3D tools that deters users from upgrading. "AutoCAD" he explained, "has long been THE standard for 2D CAD. The learning curve before a designer becomes productive is very short, and the rich feature set, which far surpasses the competition for 2D, enables high quality work and high output levels to be maintained."

Scott believes that the 3D interface is much weaker, though, making it more difficult to learn. It is also limited, making it time-consuming to use, even for experienced users. AutoCAD's 3D capabilities have been neglected by Autodesk in favour of MDT and now Inventor, which offer far greater 3D capability than AutoCAD, but present hurdles for the user looking for higher 3D performance.

MDT's 3D process is completely foreign

to AutoCAD's 3D process. This is exacerbated by the complex processes involved in using MDT, presenting quite a challenge for even experienced users (some of whom eventually revert back to the AutoCAD 3D environment). Inventor overcomes some of MDT's complexity issues, but the product is even more foreign than MDT - again, a high learning curve. "Switching to one or the other means completely discarding your AutoCAD investments of both money and training", Scott argues, "and you lose significant 2D functionality - and all for a significant purchase price".

The only way, Scott suggests, that an AutoCAD user can gain greater functionality while avoiding the penalties of leaving the AutoCAD environment is to bring greater 3D functionality to AutoCAD itself - with a product such as AutoSolids.

### IMPROVED FUNCTIONALITY

AutoSolids takes the same basic approach to solid creation as AutoCAD itself - simple "primitive" shapes (extrusions, cylinders, boxes, etc.) are combined together through boolean operations (union, subtract, intersect) to form complex "composite" solid shapes. However AutoSolids creation commands offer additional options and greater flexibility than the native AutoCAD commands.

AutoSolids greatest strength is its unique ability to capture the construction history of its solids as they are created, which allows parametric editing of its solids at any time. Any primitive parameter (extrusion height, cylinder diameter, etc.) can be easily changed at any time, even after the primitive has been combined into a composite shape. Primitives within composites can be moved/copied/rotated/deleted and more,

while still within the composite solid.

Fillets and chamfers can be resized or removed, slices can be moved or deleted, and boolean operations can be undone either one step at a time or all at once. None of these editing techniques are possible without AutoSolids. With AutoCAD alone (with no changeable history), minor changes are very tedious, and major changes are often best implemented with an erase-it-all-and-start-over approach, an unthinkable scenario in the 2D realm. AutoSolids also enhances the coordinate system and viewpoint controls and adds significantly improved real-time rendering and rotation abilities.

### EASE OF USE

AutoSolids 3D commands are much friendlier than the native 3D commands. Multilevel command-line-driven commands are replaced by concise, understandable dialog boxes. AutoSolids provides constant user feedback both within the dialogs and in the graphics window with continuous previewing during geometry creation and editing.

AutoSolids commands also look, work, and 'feel' like native AutoCAD commands, making AutoSolids immediately familiar to AutoCAD users. Greater ease of use not only shortens the learning curve for new 3D users but also improves efficiency for experienced users.

### CONCLUSION

AutoSolids is a useful addition to basic AutoCAD, providing a rapid, low cost, path to full 3D parametric modelling for many companies, without throwing away years of inhouse AutoCAD experience. It is available directly from AutoSolids or one of their dealers. **CU**  
**www.autosolids.com**