



The engineers at Lizardos Engineering Associates used Autodesk Building Systems to

- Generate accurate construction documentation quickly
- Save significant time on project revisions with productivity tools that automate much of the revision process
- Maintain consistent look and feel of drawings by incorporating company standards in the deployment of Autodesk Building Systems

## A better, faster AutoCAD for MEP engineering design and documentation.

Increase productivity, accuracy and co-ordination – from conceptual design through construction documentation – with Autodesk® Building Systems 2007, the AutoCAD® software-based solution for mechanical/electrical/plumbing (MEP) engineers, designers and drafters. Maximise the efficiency of your AutoCAD-based engineering workflow with an intuitive design environment. Collaborate seamlessly with architects using AutoCAD-based software applications.

Automate production of construction documents using enhanced single-line and double-line system design and layout productivity tools. And minimise documentation co-ordination errors between mechanical, electrical and plumbing engineering design teams as well as with architects and structural engineers. Autodesk Building Systems: A better, faster AutoCAD for MEP engineering, building design and documentation.

### Increase Efficiency with Improved Drafting Productivity

Reduce drafting time by working with tools designed specifically for MEP designers and drafters. Adapt and easily customise Autodesk Building Systems to existing AutoCAD-based workflows and flexibly implement it where appropriate to improve the design process. Take advantage of enhanced single-line and double-line system design and layout productivity tools and spend less time drafting and more time designing. Working in the familiar AutoCAD-based environment enables you to easily implement new design tools at your own pace.

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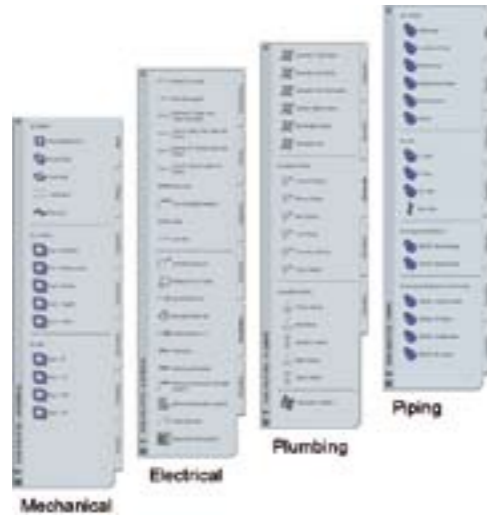
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### Discipline-Specific Tool Palettes

Provide all team members with the right tools for the job. A discipline-specific engineering tool palette displays only the relevant tools for the mechanical, electrical, or plumbing engineering user, providing consistency across project drawings. Organise the tool palette to specific company or individual preferences. Now engineers, designers and drafters can easily modify tool palette size, shape, system type and much more using in-place editing. Simply select the tools you want to change and modify the common properties at once, streamlining the design process and improving productivity.



### Style Manager

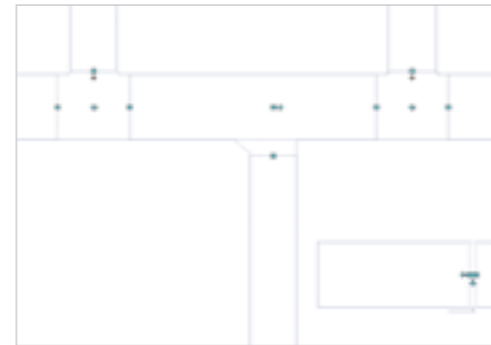
The Style Manager provides a central location for easily managing an extensive library of styles. Easily copy styles from one drawing to another, or create custom styles that suit project standards. And now designers can take advantage of version history to keep track of style changes.

### Compass

Maintain the accurate orientation of mechanical, electrical and plumbing system runs in your design. The compass provides a fast and consistent method for accurate routing of ducts, pipes, cable trays and conduit.

### Direct Grip Manipulation

Streamlining the design process by virtually eliminating dialog boxes, grip manipulation enhances design productivity by keeping engineers, designers and drafters focused on the design and documentation task at hand. With a single click, easily perform design and documentation changes, such as stretching the length of a duct or changing the Z elevation, while maintaining connectivity between objects.



### Properties Palette

The Properties palette enables engineers, designers and drafters to specify just the things that are important to them about the equipment parts they're adding. The equipment part name and size are easy to access at the top of the Properties palette.



*"We have saved a significant amount of time where design revisions are required. There have been several circumstances where we would have needed a day or two to make some design changes using our old drafting system. Using Autodesk Building Systems, we made those same changes in 15 minutes."*

– Chris Shoemaker  
Electrical Engineer  
Lizardos Engineering Associates, P.C.

## Get the Most Functionality

This table compares the features of AutoCAD and Autodesk Building Systems software products to help you make the best choice for your business. AutoCAD software is the world's leading customisable and extendable CAD application for 2D drafting and design documentation. Autodesk Building Systems is a purpose-built AutoCAD product specifically developed for mechanical, electrical and plumbing design and documentation for buildings. Autodesk Building Systems enables engineers, designers and drafters to realise immediate productivity gains within existing AutoCAD-based engineering workflows, by accelerating design and documentation productivity, accuracy and co-ordination.

Production of Construction Documentation	AutoCAD	Autodesk Building Systems
Automated sheet management	•	•
Ability to manage/update project standards	•	•
Direct editing and instant onscreen feedback	•	•
Ability to import/export data in DWG, DWF and other formats	•	•
Centralised management of project files	•	•
Ability to work in multiple views and schedules		•
Automated display support for multiple display representations		•
Automated schematic and annotation tools		•
Automatic generation of sections and elevations		•
<b>MEP Engineering Tools</b>		
Purpose-built tools for mechanical, electrical and plumbing design		•
Standards-based part libraries		•
Routing tools for ductwork, piping, cable tray and conduit		•
Built-in sizing calculators for duct, pipe and wire		•
Ability to manage electrical circuit design		•
Automated system zoning		•
Automated tools for converting sketches to system designs		•
Support for drawing connectivity through xrefs		•
Automatic generation of 3D model		•
Interference checking tools		•
Creation tools for customised symbols and parts		•
<b>Additional Features</b>		
Supports multiuser/multidiscipline project environment	•	•
Supports collaboration/workflow with professionals using AutoCAD	•	•
Customisable user interface	•	•
Supports rendering, visualisations and presentation graphics	•	•
Customisable API supports variety of in-house functions	•	•
Wide variety of third-party applications available	•	•

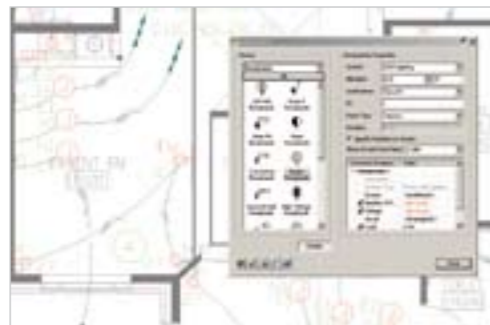
### Engineering Display Themes

Use display themes to graphically present and analyse design intent. For example, use the display theme by velocity or friction loss to validate system performance for a particular area or room. Also use the display theme by pressure class to visually show the high, medium and low-pressure per piping class to easily identify potential design flaws. Display themes are depicted as color-filled displays complete with legends.



### Electrical Devices and Panels

Quickly and easily lay out the basic circuitry for a project by placing devices on defined circuits and associating the circuits with a panel, creating logical relationships in electrical designs. Take advantage of the ability to automatically generate wiring to increase production.



### eTransmit

Share sheets, sheet sets, or complete projects with the extended design team quickly and easily with eTransmit, enabling all associated drawings files and xref files to be included. Take advantage of the option of saving designs as AutoCAD DWG files in one easy step when co-ordinating with members of the design team using various versions of AutoCAD software.

### Grids (Ceiling and Column)

Quickly lay out reflected ceiling plans with diffusers or light fixtures that can be anchored to an architecturally designed ceiling grid. Locate duct, pipe, cable tray, or conduit by offsetting components from a structurally designed column grid.

### Import/Export to gbXML (Green Building)

Import to and from Autodesk Building Systems using the industry-standard green building extensible markup language (gbXML) file format. This capability enables engineers to query the compliance of engineering systems in their design to green building standards.

### Import LandXML

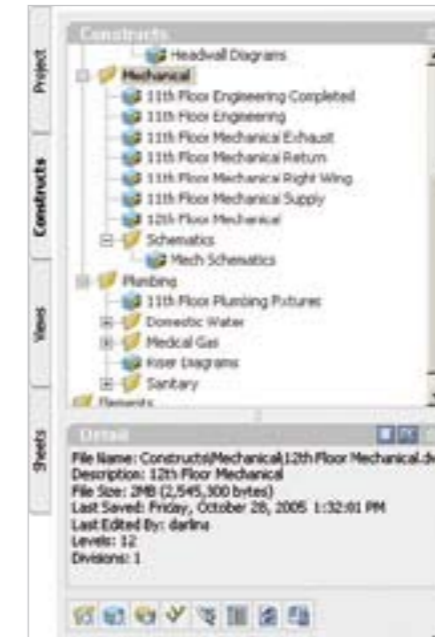
Import LandXML data from a civil application, such as Autodesk® Land Desktop, to add an accurate digital terrain to a drawing in order to accurately understand the details of the building site without having to redraw it.

### Autodesk VIZ Render

With Autodesk® 3ds Max® technology at its core, Autodesk® VIZ Render, a streamlined and simplified visualisation application that is fully integrated into the Autodesk Building Systems workflow, helps designers use the model to produce design presentations suitable for any stage of design development. This release supports 3D DWF export and batch rendering and provides additional lighting tools.

### Project Navigator – Drawing Management

Easily manage project drawings, create co-ordinated views based on designs and manage drawing sheet sets. Since the drawings are managed from a centralised project directory, everyone on the design team can consistently access the most current documents, from project templates to sections and elevations. New project standards make it easier to share project information.



### Piping Catalogue

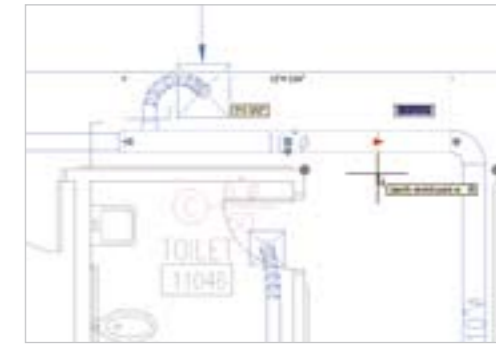
Accelerate production of piping design layout. Locate all piping system parts and connections in one easy-to-access catalogue. This new consolidated piping catalogue is organised by grouping content by commercial type (tube, cast iron), fitting type (elbow, cross, tee and so forth) and then by connection type (butt welded, flanged, grooved and so forth).

### Project Standards

Maintain consistency in project standards with the ability to establish, maintain and synchronise styles, display settings and tools across an Autodesk Building Systems project. The project is synchronised with standards throughout the design and documentation process, so that project data is always up-to-date.

### Dynamic Dimensions

As engineers, designers and drafters make changes to their mechanical, electrical, or plumbing design, they benefit from the Dynamic Dimensions feature, which gives real-time feedback on the exact location of a move or copy change within their design. This capability facilitates Heads-up Design™ functionality, speeding the production process for faster delivery of construction documents.



### Edit-in-View

Autodesk Building Systems streamlines design productivity by providing multiple views from which the user can modify the MEP systems design. Easily work in a specific area of the design in any view desired and not be constrained by working only in plan view.

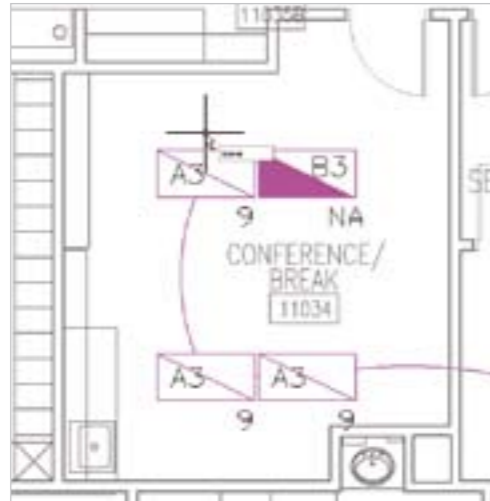


*“Autodesk Building Systems is really helping TLC take all the various pieces that go into a building and visualise them, make sure they fit and make sure they are routed in the most direct and convenient way. Having the intelligence embedded into the electronic data for the building enables us to provide our clients with a database of information that they can use to manage the building throughout its lifecycle.”*

– Winston W. (Bud) Gardner, PE  
President and COO  
TLC Engineering for Architects

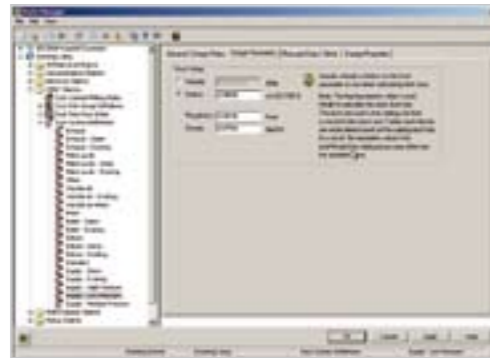
### Onscreen Design Editing

Design freely with no distractions from the workspace. No longer be constrained by command line editing and input. Now users can edit and input directly to the workspace area displaying the design.



### Systems Connectors

Take advantage of systems connectors for fast and efficient design layout. The software maintains the design integrity of the system while automatically updating layout connections. Now engineers, designers and drafters have flexibility to mix and match system connector types on one pipe or duct run. Piping connectors include flange, threaded, socket welded, glued and grooved.



### Discipline-Specific User Interface Theme

Tailor the look and feel of Autodesk Building Systems to your engineering discipline use requirements. Autodesk Buildings Systems gives you the flexibility to set up a discipline-specific theme for the user interface. This capability means that you can set up a mechanical, electrical, or plumbing-only theme for the user interface, a combination of any two of the disciplines such as mechanical and electrical, or have all three disciplines displayed.



### Single-Line Duct Design

Easily move from design development to construction documents. Lay out mechanical systems in single line with unsized parts and then quickly convert layout to a double-line representation of the system. Benefit from connectivity enhancements to automatically connect unsized sections of the design layout to sized sections.

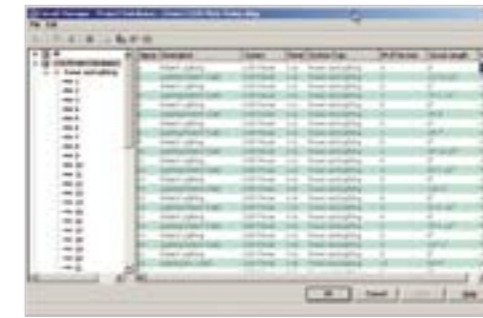


### Display Manager

Easily change the level of detail for design views with preset display options. Since each view is based on the design, any change is automatically reflected throughout all views of the design data. This release introduces support for multiple drawings and enables drag-and-drop editing of display information. It also provides project-standards support for sharing displays.

### Circuit Manager

Work more efficiently using a single location to manage and edit circuit information. Automatic prompts notify users of potential overloads and undersized wires based on conductor size, helping avoid errors and rework.



### Spaces and Zones

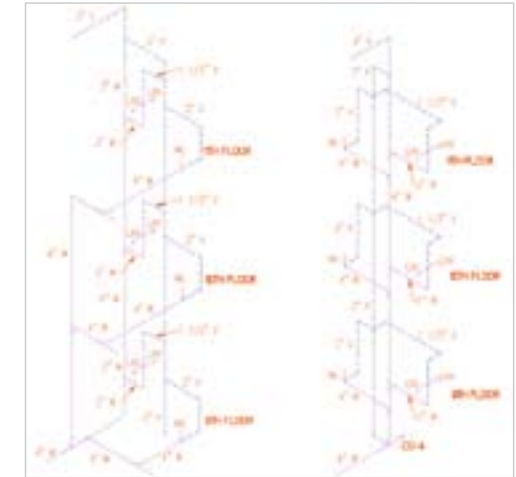
Assign engineering spaces from existing 2D architectural floor plans or design drawings and Autodesk Building Systems automatically calculates room measurements, including square footage/ square meters and volumes per room or area. Easily allocate room usage to your engineering spaces in your project, for example "Office Area," "Conference Space," "Hallway." Used with industry-leading analysis applications, Autodesk Building Systems allows you to automatically calculate load capacity and airflow rate requirements per room type or areas.

### Wiring

Graphically show the circuit path connecting electrical components, such as devices and panels, while automatically creating circuits on the fly during layout. Optional wiring display, with improved layout methods, helps avoid clutter in construction documents for clearer presentation.

### Isometric and Plan Schematics

Quickly produce schematics and riser diagrams without the hassles of trimming lines and rotating blocks. Use a customisable collection of 2D schematic lines and symbols and automated tools for easy creation and modification.



### Publishing Tools

With the click of a button, publish designs, drawings and part catalogs to share with other members of the extended design team. Save your Autodesk Building Systems design in Autodesk® Design Review (formerly Autodesk® DWF™ Composer) and allow for easy viewing of the project by members of the design team, while protecting the original data from change. Autodesk Building Systems supports the creation of 3D DWF™ files, complete with engineering data, for better communication of design intent. Publish customised part catalogs directly to the web and provide a consistent location for members of the design team to quickly access parts, helping increase productivity.

*"It takes operating efficiency and productivity to a new level, by enabling us to identify and resolve potential conflicts at design stage rather than on-site, so eliminating costly reworking and delays. This is a major step forward for us. Put simply, we know we are going to get it right first time."*

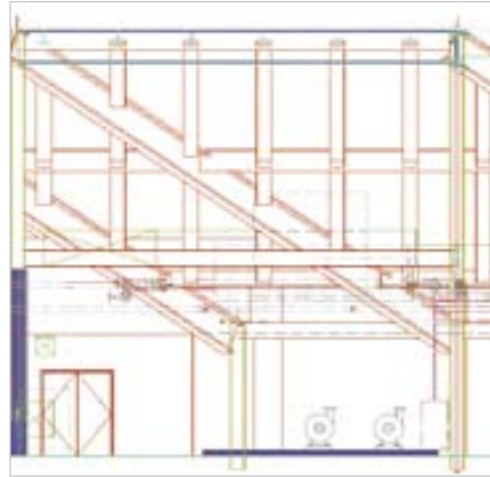
– Michael Parkinson  
CAD Technician  
Faber Maunsell

*"With Autodesk Building Systems you're creating a model just like what is constructed in the field. It's a more natural way to put a project together. We've increased our productivity and quickly realised ROI."*

– Joe Hosanna  
Vice President and Chief Engineer  
Consoer Townsend Envirodyne Engineers

### Sections and Elevations

Create sections and elevations quickly in seconds rather than hours. When designers make a change in the design, sections and elevations update automatically, saving time and helping ensure accuracy in the design. Each design change is reflected in real time, minimising tedious manual updates.



### Display by Size

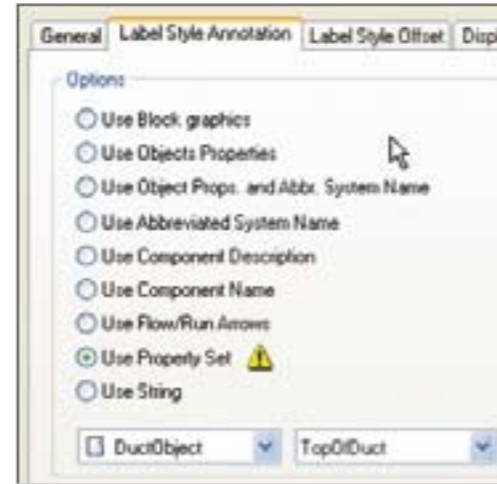
Minimise rework when creating construction documentation. Easily define the display of piping as two-line, one-line, or graphical one-line based on the size of the pipe and the system. This capability enables the user to display the piping in the desired graphical representation for the construction documentation. This capability is available in both plan and 3D display representations.

### Scheduling

Create schedules in seconds, saving hours over traditional CAD drawing processes. Schedules are automatically updated as the design changes, helping to reduce errors in construction documents. Now engineers, designers and drafters can schedule engineering system data, calculate values and use new table styles to lay out room and analysis schedules.

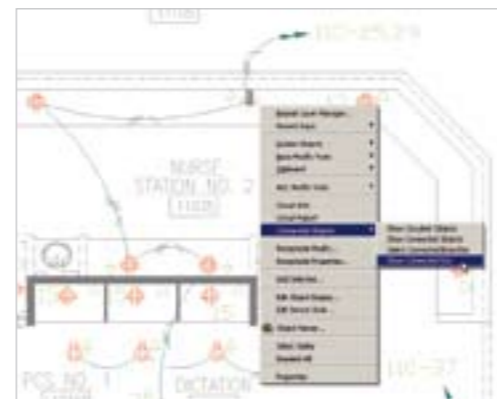
### Construction Annotation

Simplify the process of annotating construction documents with automated annotation tools. AEC dimensions and dynamic labels update automatically as the design changes, eliminating many manual updates. Hidden lines and hatch-on objects make it easy to interpret design intent. In this release, new ease-of-use tools and enhanced grips streamline the use of break marks, labels and scheduling tags. Display the schematic view of an object rather than the model-generated view. Create schematic block, annotation, or both that scale when the part size changes.



### Electrical Circuits

Minimise errors in electrical design by using circuits to track properties such as load, number of attached devices and length. Define voltage ranges to test compatibility of electrical connections, thus preventing overloads. Calculate the estimated demand loads on feeders and panels to size equipment quickly and efficiently directly in the design. And take advantage of circuit analysis tools to quickly total loads and generate reports for accurate documentation.



*"ABS is marvellous! I had been drawing in 3D in AutoCAD, building up my own parts library as I went along. ABS speeded things up tremendously. It really has made my job easier. I can't imagine going back to 2D plans, elevations and sections. It would be just too complicated and would take too much time."*

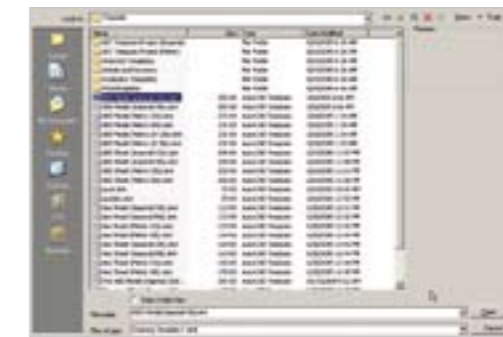
– Floyd Davis  
CAD Designer  
John Noad (building Environment) Limited

## Make a Seamless Transition from Traditional Drafting Processes

Autodesk Building Systems enables engineers, designers and drafters to move from design to documentation faster through the automated production of construction documents with discipline-specific, AutoCAD-based tools. Increase the efficiency of design development and construction documentation processes using actual industry-based content. Reuse design data by linking to industry-leading analysis, cost estimation and fabrication software applications.

### Templates

Easily create and maintain all company standards in one location for updating. The templates hold all layers, system definitions, styles, drawing setup and plotting preferences and much more. Use the template to start all drawings and projects for companywide consistency. Layer standards and system definition capabilities have been enhanced.

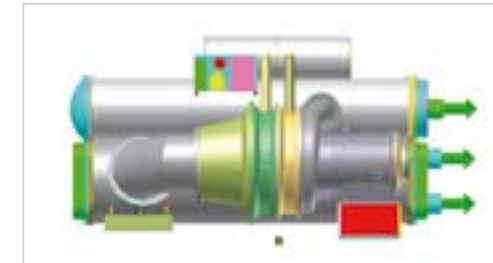


### Export to AutoCAD

Export to AutoCAD enables designers to easily generate AutoCAD DWG files to distribute to consultants who may be using various versions of AutoCAD. The export capability maintains complete graphic representation of symbols and devices as shown on construction documentation. What you see in Autodesk Building Systems is what you get when exporting to AutoCAD.

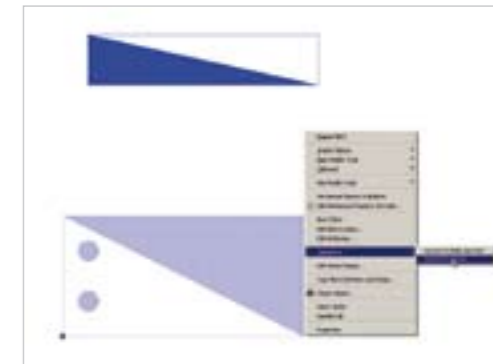
### Access Manufacturers' Content Created with Autodesk Inventor

Autodesk Building Systems now allows access to manufacturers' content created with Autodesk Inventor® software, which can now be used in your MEP design. For example, an air handling unit created in Autodesk Inventor can be directly placed into your HVAC system using i-drop technology.



### Convert AutoCAD Blocks and Symbols to Autodesk Building Systems Content

Easily migrate your existing AutoCAD symbols to Autodesk Building Systems content for production of construction documentation. Existing AutoCAD blocks and symbols are easily converted to Autodesk Building Systems content, in one easy step, using the new symbol and device converter.



### i-drop Technology

Autodesk Building Systems provides fast, simple access to additional content through i-drop® technology. Whether content is part of the extensive libraries provided with the product, created in-house and shared via an intranet, or retrieved from a manufacturer's website, i-drop technology provides a fast, simple way to access standard and custom content to increase productivity.

*"In our line of business there can be tremendous pressure to resolve site issues such as clashes very quickly, especially if the site teams are stopped. Thanks to ABS, we'll save time because they'll have been sorted out first."*

– Stuart East  
Managing Director  
John Noad (Building Environment) Limited

**AutoCAD and Autodesk Architectural Desktop Support**

Import architectural floor base plans developed in any AutoCAD-based software application to facilitate better design and documentation co-ordination. Since Autodesk Building Systems is built on AutoCAD and Autodesk® Architectural Desktop software, co-ordination among team members and design teams has never been easier within the complex building design process.

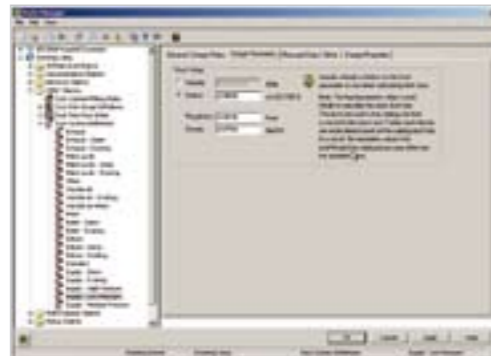


**Interference Detection**

Automatically detect spatial interferences between engineering systems, structural elements and architectural content, in the same drawing or through xrefs. Use this powerful feature to increase design accuracy and minimise errors in the field.

**Systems**

Provide a fast and consistent method for laying out parts that represent real-world building systems, such as air supply or return systems. When designers use systems during design layout, new parts inherit the current system's defaults, such as rise/drop symbology and display properties and designers can apply changes simultaneously to all connected parts. And since Autodesk Building Systems manages layers, systems can be assigned to layers, helping ensure the accuracy of designs. In addition, this release provides support for new system types.

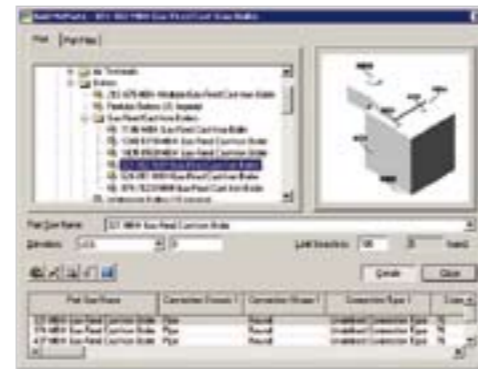


*“After implementing Autodesk Building Systems, HCE has seen a 50 percent jump in productivity. It’s giving our engineers the ability to reduce their drafting time and improve accuracy. Because of this, we’re saving time on project revisions and getting accurate construction documents completed on time.”*

– Tom Harris, PE  
President and Principal Electrical Engineer  
Harris Consulting Engineers, LLC

**Standards-Based Parts**

Autodesk Building Systems provides an extensive collection of parts, fittings and equipment based on widely adopted industry standards, helping to ensure consistency and accuracy in your designs. New content includes additional fittings and equipment, as well as support for ASME/ANSI and ASTM/ANSI standards. Autodesk Building Systems supports metric units in addition to imperial units. Metric content is located in a separate catalogue. Metric content is based on GSA (General Services Administration) U.S. guidelines and BSI (British Standards Institution) U.K. guidelines.



*“Autodesk Building Systems has created the next jump in productivity. It’s definitely faster for creating drawings, eliminating mistakes and saving on drawing time. With Autodesk Building Systems, we estimate our engineers are creating construction documents 50 percent faster and modifying those 70 percent quicker.”*

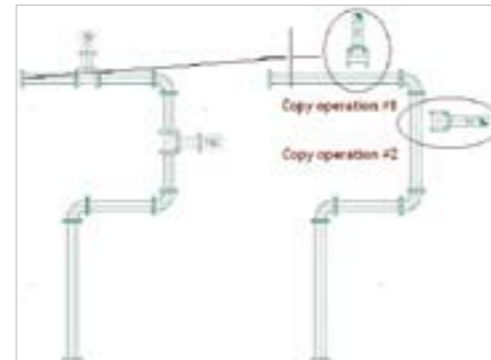
– Reg Monteyne  
Senior Vice President  
Flack+Kurtz

**Built on AutoCAD**

Because Autodesk Building Systems includes the latest version of AutoCAD software, users get all the added benefit of the features and functionality in AutoCAD. And since Autodesk Building Systems is built on AutoCAD, it supports existing AutoCAD-based custom LISP routines.

**Work with Enhanced AutoCAD Commands**

Copy, move and align all in one step with enhanced AutoCAD commands unique to Autodesk Building Systems. Automatically snap in the required orientation and view. Quickly array along duct, pipe, conduit, or cable trays and easily fillet plumbing piping.



**Connect to Industry-Leading Cost Estimation, Fabrication and Analysis Applications**

Reduce time-consuming input of existing design information. Extract engineering data created in Autodesk Building Systems using the industry-leading DWG file format or through the application programming interface (API) for use with third-party cost estimation, fabrication and analysis applications. For a complete list of partner solutions, go to [www.autodesk.com/partnerproducts](http://www.autodesk.com/partnerproducts).

**Custom Content Tools**

Create custom parts and equipment with minimal effort and time. Use the enhanced Content Builder to create AutoCAD block-based parts that can be used in your MEP systems design. Use existing standard shapes like box, cylinder, or sphere, as well as freeform modelling tools to create your custom parts.



**Setup and Deployment Options**

Flexible setup and deployment options provide for consistent standardisation and management of software installations for both network and single-user installations. And through the use of profile-based shortcuts, the software can now automatically default to specified template drawings when opened.

**Produce Accurate Construction Documentation in Less Time**

Minimise documentation co-ordination errors between mechanical, electrical and plumbing engineering design teams as well as with architects and structural engineers within an AutoCAD-based workflow. Autodesk Building Systems helps reduce requests for information (RFIs) and costly design changes in the field by enabling more accurate and consistent construction documents. Collaborate seamlessly when you take advantage of the architectural base plans developed using AutoCAD-based software applications. Autodesk's industry-leading DWG file format lets you easily share your work with your entire team.

**Single Line and Double Line**

Autodesk Building Systems facilitates routing of ductwork, piping, cable tray and conduit with intuitive design tools that automate much of the layout process. Increase productivity with automated routing solutions based on default project settings and common industry design standards. With improved connectivity between objects, automated system layout is even easier. Improved layout tools make it easier to convert one-line designs to double line through intuitive onscreen modification.

Custom fittings enable unique layouts to be designed with the creation of on-the-fly fittings. And options such as segment length help reduce time spent performing takeoffs by graphically depicting each segment piece that is required for the layout according to manufacturers' specifications.

