Image courtesy Zaha Hadid Architects

AECOsim Building Designer

Unrivaled Building Information Modeling Software for Multi-discipline Teams

AECOsim Building Designer provides information-rich models for the design, simulation, analysis, and documentation of buildings. This single application includes capabilities for architectural, structural, mechanical and electrical systems design, and for construction documentation. Its innovative capabilities help users lower project costs, save time, reduce project risk, and enhance overall project quality – while providing building owners with higher returns on their investments.

### Multi-discipline Information Modeling Application

Advanced tools, a shared library of building components, and inherently interoperable workflows are delivered into one single, unified design environment for multiple building disciplines. AECOsim Building Designer uniquely provides a comprehensive set of capabilities to effectively design, construct, document, analyze, and visualize buildings of any size and complexity. With Bentley's federated approach, distributed teams of any size can work on models simultaneously, regardless of geographic location, to enable integrated project delivery. Information modeling tools are specifically suited to empower multi-discipline building teams to make informed design decisions and to effectively communicate design intent from the design phase through construction.
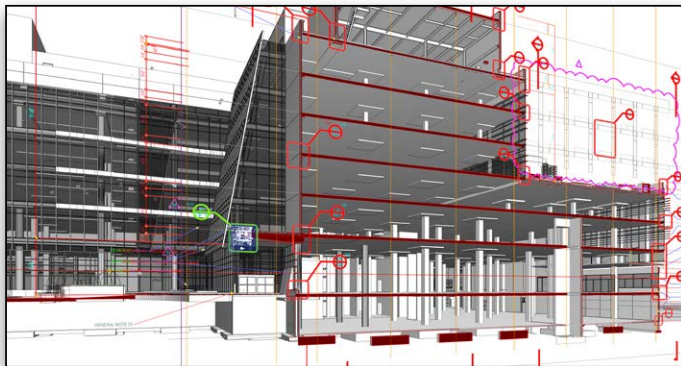
Hypermodeling presents design information within the spatial context of the 3D model.

True Interoperability

Information can be reused by incorporating existing data from an extensive range of AECO and geospatial formats. Users can view and share live design information across multiple formats in real time with project participants, regardless of location, facilitated by flexible file referencing. Using Bentley's i-models, containers for the open exchange of infrastructure information, project team members are able to share and interact with complex project data and information regardless of authoring application. Users can also employ point clouds of virtually any scale natively within the modeling environment as context for designs.
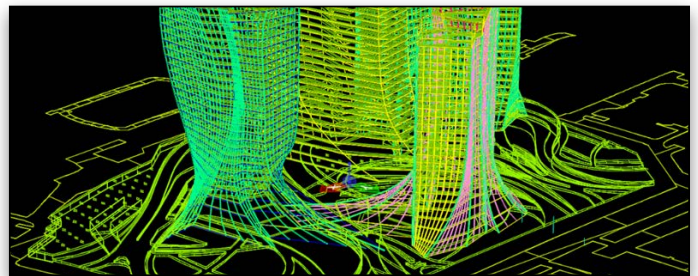
Explore more possibilities in less time, create better designs, and efficiently create and manage complex geometric relationships.

Immersive Interaction

AECOsim Building Designer enables building teams to understand and interact naturally with designs. Through hypermodeling, all manner of interrelated design information for interaction is presented directly within the spatial context of the 3D model, including: solids, surfaces, meshes, drawings, specifications, images, videos, documents, business data, reports, Web content, and more. Hypermodeling minimizes errors and miscommunication by creating a complete representation of the virtual asset and resolving the potential ambiguity of 2D drawings alone, and the inherent incompleteness of 3D models. Users can utilize discipline-specific information and associative parametric modeling tools like Bentley's GenerativeCompnents. With GenerativeComponents, users can quickly explore a broad range of "what-if" scenarios and model with total freedom, regardless of geometry or project scale, to create virtually any form, size, and complexity.

Building Performance

AECOsim Building Designer allows users to quickly discover the best design choices with the ability to predict real-world performance and produce lifelike visualizations of models. Users can explore and make informed design decisions by modeling, simulating, and exploring a range of scenarios and performing height, slope, and solar exposure and shading analysis, as well as resolve clashes with built-in clash detection.

Trusted Deliverables

AECOsim Building Designer produces the highest quality of deliverables with precision 2D and 3D plotting, as well as delivers reliable documentation in less time due to robust design and production standards management. Users can consistently communicate design intent with the ability to create 2D documentation dynamically directly from, and embedded within, the 3D model. Reviewing and sharing markups of models and documentation is made easy and possible by a unifying production environment that reflects the same up-to-date design.

AECOsim Building Designer At-A-Glance

Architectural

- Design buildings and structures with architectural and industry-leading, free-form modeling tools
- Create truly curved and double-curved surfaces, solids, and architectural assemblies
- Produce coordinated documentation directly from the building information model (plans, sections, elevations, details, and schedules)
- Leverage computational design with Bentley's GenerativeComponents
- Evaluate and simulate energy performance early in the design process
- Conduct peak loads, annual energy calculations, energy consumptions, carbon emissions, and fuel costs with integrated conceptual energy analysis

Structural

- Model steel, concrete, timber structures including walls, foundations, columns, and other structural components
- Produce plans, framing layouts, sections and elevations, and volume and weight analyses
- Integrate with detailing applications including Bentley's ProStructures, and others via ISM, CIS/2, and SDNF
- Through ISM, leverage Bentley's RAM, STAAD, and ProStructures products for structural analysis and design
- Add fireproof coatings to structural steel members

Mechanical

- Model fully parametric air-handling, piping, and plumbing systems
- Size ductwork correctly based on air flow, velocity, and friction rate manually or by utilizing automated duct sizing tools that can then rebuild the system based on the analysis calculations
- Create and configure air handling units using standard modules with the AHU Builder
- Standard user preferences allow for defining components placed automatically while routing HVAC and piping systems automated route hookups
- Route systems dynamically with slope applied or apply as a post process
- Export to Autodesk® Fabrication CAMduct 2013® and Trimble's Vulcan for fabrication

Electrical

- Design lighting and other electrical subsystems
- Model raceways including cable trays and baskets, conduits, and wireways
- Manage circuit devices, cable routes in raceways, and distribution board circuits
- Accomplish point-to-point orthogonal and raceway routed length calculations
- Achieve bidirectional interfaces with EDSA, ProDesign, elcoPower, and other industry-standard programs
- Exchange data bidirectionally with Lumen Designer, DIALux, and RELUX
- Produce plans, sections and elevations, schematic and block diagrams, labeling and drawing legends, and bills of materials

True Interoperability

- Read, store, and place RFA content while maintaining all geometry, data, and behaviors
- Share and interact with project information with i-models regardless of authoring application, and in real time
- Employ point clouds natively within the modeling environment as context for designs
- Support formats including Bentley i-models, DGN, Revit Family File (RFA), RealDWG™, IFC, DXF, SketchUp SKP, PDF, U3D, 3DS, Rhino 3DM, IGES, Parasolid, ACIS SAT, CGM, STEP AP203/ AP214, STL, OBJ, VRMLWorld, Google Earth KML, COLLADA, Esri SHP, and more
- Integrate geospatial information and ensure proper display within the proper context
- Export and open IFC2x3 Coordination View 2.0 files (buildingSMART-certified) and create COBie spreadsheets

Immersive Interaction

- Explore and interact with designs naturally with information available directly in context
- Incorporate interrelated information within spatial context of 3D model, including: drawings, images, documents, media, web links, and more with hypermodeling
- Create virtually any geometry with comprehensive modeling toolset
- Utilize discipline-specific information and associative parametric modeling tools

Building Performance

- Model, simulate, and explore a broad range of "what-if" scenarios using computational design tools
- Perform height, slope, solar exposure, and shading analysis
- Produce lifelike visualizations of models supporting point-and-shoot, photorealistic materials, lighting libraries, distributed network rendering, and key-frame and time-based animation tools
- Facilitate conceptual energy analysis with analytical space models

Trusted Deliverables

- Create 2D documentation dynamically directly from, and embedded within, the 3D model
- Produce precision 2D and 3D plotting
- Apply site, project, enterprise, and international standards throughout design and documentation
- Review and share markups of models and documentation
- Manage and sort data easily with in-place editing and bi-directional editing in excel

Model Anything

- Create virtually any building of any form, size, and geometric complexity
- Define rules to capture design intent dimensional constraints, assembly relationships, and more
- Leverage Bentley's GenerativeComponents