

Glumac

Customer Success Story

Autodesk® Revit® MEP

Autodesk® Green Building Studio®

By using Revit MEP and Green Building Studio, we've been able to significantly reduce the time it takes for us to do our analysis. On average, we experience a 50 percent time savings.

—Skander Spies  
Energy Analyst  
Glumac

# Engineering a Sustainable Future.

Glumac uses Autodesk® Revit® MEP software for greater design insight.



Glumac engineers discuss a project in one of the large conference rooms in the Portland office, which has received LEED Silver certification.

## The Firm

Founded in 1971, Glumac provides mechanical, electrical, and plumbing consulting engineering services for its clients in the commercial, healthcare, institutional, and advanced technology market sectors. With more than 220 employees in eight offices along the western coast of the United States, the company also provides sustainable design, information technology, and commissioning services—areas of expertise that are key to enhancing its core engineering capabilities. Glumac currently employs more than 80 LEED-accredited professionals, and every project the firm undertakes is staffed with sustainable design experts.

Several years ago, Glumac made a strategic decision to adopt building information modeling (BIM) to enable more rigorous building analysis and better informed decision making, and to optimize the coordination of their designs with related building disciplines. In 2006, the firm implemented Autodesk Revit MEP software for building systems design—helping Glumac engineers to better understand the systems they are designing and the relationship of those systems to other parts of the building, such as the structural and architectural components. Today Glumac has 20 Revit MEP users and has used Revit MEP on 15 mechanical design projects and has 6 more under development. In addition, Glumac has

used Revit MEP to assist with energy modeling on approximately 25 projects.

## The Challenge

One of Glumac's recent Revit MEP projects was the 1100 Broadway building—a new 20-story LEED Silver office building to be built in Oakland, California. The high-rise glass tower will be prominently located in the downtown area and will connect to the newly renovated Key System Building façade, a National Historic Landmark. Green features of the project include photovoltaic solar panels; a high-efficiency HVAC system with underfloor air distribution; a high-performance glass façade; and green roof and rainwater collection, filtration, and reuse systems.

## The Solution

In conjunction with the eQUEST® energy simulation tool, Glumac used Autodesk Revit MEP software and Autodesk® Green Building Studio® web-based service (available as a part of subscription with Autodesk® Ecotect™ Analysis) to perform building energy use analysis. Potential savings of various green design approaches, such as daylighting shelves or window glazing, were analyzed. Glumac created the building geometry by utilizing the architect's Autodesk® Revit®-based model and then used Revit MEP to modify the model, making it suitable for energy analysis.

Autodesk®

### Energy Modeling

"By using Revit MEP and Green Building Studio, we've been able to notably reduce the time it takes for us to do our energy modeling and analysis," reports Skander Spies, an energy analyst in Glumac's Portland, Oregon, office. "On average, we experience a 50 percent time savings just for the geometry creation."

### Timely Feedback

Using this integrated modeling approach, the Glumac team can provide early feedback to the architect—quickly incorporating changes and rerunning the analysis to understand the impact of a design change. For example, on the 1100 Broadway project, the Glumac team performed "what-if" analyses for an underfloor air system versus a traditional overhead system—quantifying for both the architect and the building owner the potential energy and cost savings. "The integration of Revit MEP with energy analysis programs such as Green Building Studio and eQuest is essential for that kind of timely feedback," says Spies.

### Design Coordination

"This project was a complete building approach that needed to be treated holistically," says Aryn Bergman, a mechanical engineer and energy analyst in Glumac's San Francisco office. By coordinating its mechanical, electrical, and plumbing design with the Revit-based architectural and structural design models, Glumac could better identify issues earlier in the design phase that under normal circumstances might not have been caught until construction. For example, Glumac found an interference where a beam was cutting off the area needed for air supply. The structural engineer moved the beam, but that new location restricted the access area near a door. By "seeing" the design in the Revit MEP model,

Glumac was able to more easily identify the problem and alert the structural engineer—averting a much more serious problem if the beam was installed.

### The Result

The Revit MEP design model can embody a wealth of information necessary for multidiscipline design and coordination as well as the analyses required for sustainable design. "Before using Revit MEP, we had unconnected design instruments—a set of drawings for the design, an energy model built from scratch for our analysis, another model for CFD analysis, and so on," remarks Spies. "But now we have a centralized model that we can all leverage for our own needs: mechanical design, load calculations, CFD analysis, energy modeling, and so on."

"Given our focus on energy efficiency and sustainability, being able to leverage our design model for energy modeling and analysis is a huge advantage for us," says Bergman. "Revit MEP allows us to do a better job—providing our clients with more cost-effective sustainable designs."



The Glumac Sacramento office recently received LEED Platinum certification and stands as an example of Glumac's commitment to sustainability.

To learn more about Autodesk Revit MEP, visit [www.autodesk.com/revitmep](http://www.autodesk.com/revitmep).



The daylight harvesting area built into the Folsom office in Sacramento, which received LEED Platinum certification.

Revit MEP allows us to do a better job—providing our clients with cost-effective sustainable designs.

—Aryn Bergman  
Mechanical Engineer and Energy Analyst  
Glumac