

# Design Tool Review—Energy Scheming 3.0

BY GREG THOMSON

Imagine, as a designer, being able to see the immediate impact of your design on energy use in a building. If this were possible, would you change your design to make the building perform better? The typical answer is “yes, but...”



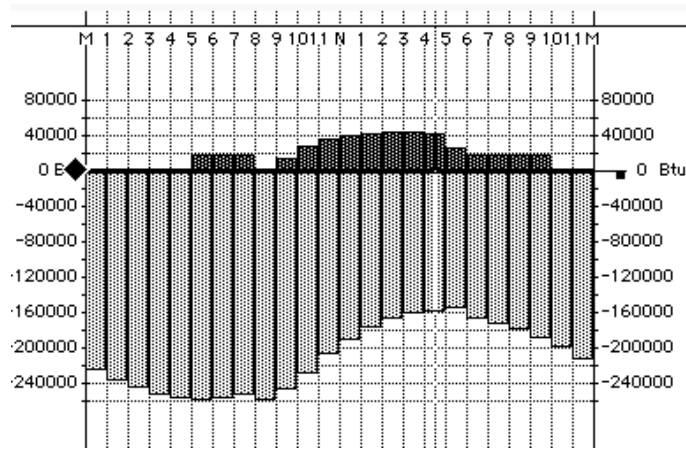
Architects and designers use this answer, in most cases, because they know their buildings are losing energy, but they don't always know the source or magnitude of those losses. In cases where

they are known, the information may come too late to make decisions that will improve efficiency without sacrificing the integrity of the design.

Imagine you were able to determine the source and magnitude of energy losses in your design in a way that was integrated with the design process, allowing you to improve not only aesthetic and spatial value, but also improve energy performance (and as a result saving your clients money). Would the answer still be “yes, but...”

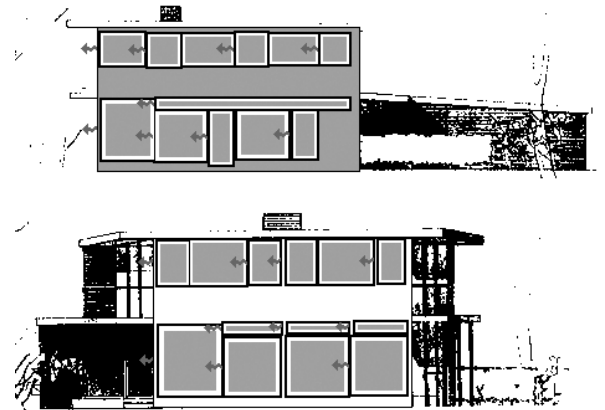
Now, imagine this was possible with software costing under \$250 and is as easy to use as most word processors. *Energy Scheming*, developed by Professor G.Z. Brown in the Department of Architecture at the University of Oregon, is a design tool rather than an evaluation or analysis tool. *Energy Scheming* was created to fit seamlessly into the flow of the design process and provide real-time feedback about design decisions. This distinction is critical, especially for architects and designers who are traditionally averse to analysis and evaluation after the design process is completed.

Prior to using *Energy Scheming*, it is necessary to collect data for local climate, determine basic construction types, and prepare drawings for input into the prog-



Screen capture showing net gains and losses in BTUs for a passive solar building designed by Louis Kahn for the Libbey-Owens-Ford *Your Solar House* book. Results can be calculated for individual building components such as windows, walls, roofs, and internal sources (people, lights, and equipment).

Thermographic imagery showing location and relative magnitude of gains and losses by building component for a passive solar building designed by Louis Kahn for the Libbey-Owens-Ford *Your Solar House* book. Takeoffs define component assembly as well as areas. Note the more intense red color indicating greater heat gains through windows and east wall, as well as the small blue arrows indicating natural ventilation occurring through windows.



ram. Architects can use freehand sketches or CAD drawings. Building data is completed with simple take-offs to indicate materials and assemblies, and calculations are performed using climate data for typical days and design conditions. *Energy Scheming* also has the flexibility to allow for more detailed analysis. During advanced design stages, more complex drawings can be imported, additional climate data can be included, and detailed reports can be output to other energy analysis programs.

Output from the software is either a simple graph, a color image, or a detailed energy report. Graphs show the number of Btu/hr gains or losses, which can be compared against other design days for the whole building or for specific building components. The color imagery is part of a design advisor, which will display heat gains and losses on the drawings as

well as advice about passive systems or changes that will improve performance.

As with other design tools, *Energy Scheming* requires thoughtful planning before, during, and after use. Like all software used in the design process, it is important to remember that it is only a tool, and not a panacea for bad design decisions. However, if it is used in early design stages, those bad decisions can be corrected before becoming permanent.

For more information about *Energy Scheming*, contact the Energy Studies in Building Laboratory at the University of Oregon Department of Architecture.

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