Streamlining Green Building Design

Green Building Studio, Inc.
http://usa.autodesk.com/

Environmental Problem

The International Energy Agency estimates that existing buildings are responsible for more than 40 percent of the world's total primary energy consumption and up to 30 percent of global greenhouse gas emissions. In addition, buildings consume 20 percent of the world's available water, a resource that becomes scarcer each year, according to the United Nations Environment Programme. Therefore, the need to design buildings that minimize energy use and conserve water is critical throughout the world. To maximize impact and reduce costs, it is important for architects and building designers to incorporate sustainable elements up front in their designs rather than including them as an afterthought. Recent concern over the impacts of global climate change has caused many governments to modify regulations, requiring buildings to reduce fossil fuel use and carbon dioxide (CO_2) emissions by 50 percent with the goal of becoming carbon neutral.

In 2000, the U.S. Green Building Council (USGBC) developed the Leadership in Energy and Environmental Design (LEED®) rating system, which provides building designers, owners, and operators with a framework to identify and implement practical and measurable green building design, construction, operations, and maintenance solutions. LEED® certification provides independent verification that a building was designed and built using strategies to conserve energy and water, be healthier and safer for occupants, reduce harmful greenhouse gas emissions, lower operating

landfills. The USGBC estimates that LEED®-certified building designs are estimated to increase building valuation, decrease building vacancy, and improve retail sales by 40 percent.

SBIR Technology Solution

With support from the EPA's Small Business Innovation Research (SBIR) Program, Green Building Studio, Inc., developed a web-based modeling tool to streamline the design of sustainable buildings. The Green Building Studio® web service helps designers and architects analyze water use in a building, eligibility of the LEED® daylight credit, renewable energy potential at the building site (using photovoltaic panels and wind energy), and the natural ventilation potential of the building. It also provides the ENERGY STAR score, detailed weather data, and the potential for achieving carbon neutral building operation. The system supports not only commercial structures, but also single- and multi-family home types.

Green Building Studio web-based energy analysis software provides design alternatives analysis, so users can examine building alternatives to bolster energy efficiency. In addition, the software summarizes natural ventilation potential, comparing the hours required to mechanically cool the building versus the hours required to use outdoor air to cool the building naturally. Carbon emission reporting encompasses almost every aspect of the building, while daylighting supplies data on qualification for the LEED® daylight credit.
Application of the Green Building Studio tool can be accomplished in less than one day. Traditionally, sustainability analysis has been separate from the

building design workflow, but Green Building Studio has made it an integral part of the Building Information Modeling (BIM) process.

Commercialization Success

With support from the EPA's SBIR program, Green Building Studio developed and enhanced its web-based energy analysis software tool to streamline the design of sustainable buildings. By 2008, more than 6,000 users had registered for Green Building Studio's web service to assess their building's energy, water, and carbon emission performance. The assessment, which previously took up to several weeks, can be completed in minutes and at lower cost using today's leading BIM tools. In 2008, Autodesk, Inc., a world leader in 3D design, engineering, and entertainment software— including AutoCAD® software—purchased the Green Building Studio web service, integrating it into the Autodesk® family of solutions. With a significant percentage of the world's buildings designed in some aspect by using Autodesk software, the acquisition of Green Building Studio brings this tool to a much larger market and provides it far greater visibility. Autodesk® Green Building Studio® technology can be licensed either as a subscription entitlement to qualifying Autodesk products and suites, or as a stand-alone web service. Acquisition of Green Building Studio enables Autodesk to enhance its focus on green building and LEED® certification while advancing sustainability as one of its core values.

Company History and Awards

The Green Building Studio web service was developed by GeoPraxis, Inc., supported by funding through the EPA's SBIR program and grants from the California Energy Commission Public Interest Energy Research (PIER) Program, the Northwest Energy Efficiency Alliance, and Pacific Gas and Electric Company (Energy Design Resources Program). Based in Santa Rosa, California, GeoPraxis, Inc., was founded in 1998. Initial research and development work began in 1999, and a production version of the Green Building Studio web service was released in April 2004. GeoPraxis, Inc., was renamed Green Building Studio, Inc., in 2005. On Earth Day in April 2008, Microsoft recognized Green Building Studio as one of its five Gold Ingenuity Point award winners. In this worldwide contest for independent software vendors (ISVs), winners are chosen from entrants around the world that submit solutions to address needs in education, health care, and clean technology.

Autodesk's acquisition of Green Building Studio's assets was completed in May 2008. Autodesk is a leader in 2D and 3D design software for the manufacturing, building and construction, and media and entertainment markets. Since its introduction of AutoCAD software in 1982, Autodesk continues to develop the broadest portfolio of 3D software for global markets. Customers across the manufacturing, architecture, building, and construction industries use Autodesk's BIM software, Green Building Studio, to help create sustainable buildings and identify cost-effective ways to reduce environmental impact land improve performance.