

SENER Engineering Group

Customer Success Story

Autodesk® Revit® Architecture
Autodesk® Revit® Structure
AutoCAD® Civil 3D®
Autodesk® 3ds Max®
Autodesk® Robot™ Structural
Analysis
Autodesk® Inventor®

Using traditional 2D software, we wouldn't have been able to finish our design entry at the same level of quality within the tight time frame required for the Cracovia competition. Combining the Revit platform with Inventor and Civil 3D has helped us ensure successful project completion.

—Ramón González
Manager of Architecture
SENER Engineering Group

Design to win.

With Autodesk BIM software, SENER Engineering Group gains a competitive advantage and positions itself for the future.



View of Soccer Field, Cracovia Soccer Stadium, Krakow, Poland

Project Summary

Active on five continents, SENER Engineering Group (SENER) is one of the world's largest and most successful engineering and technology firms. Since 1956, the firm's 4,500 professionals have completed thousands of major projects in a broad range of fields, including space, aeronautics and vehicles, marine, power and process, architecture, transportation and infrastructure development.

In response to growth within its architectural and civil engineering divisions, SENER began implementing Autodesk building information modeling (BIM) solutions in 2006. "As a firm, we're committed to delivering the highest levels of quality and innovation—and also to using state-of-the-art technology," says Ramón González, manager of architecture. "Because BIM enables our dedicated project teams to collaborate at every stage of complex multidisciplinary projects, it was the ideal choice." SENER currently integrates many Autodesk BIM software solutions, including Autodesk® Revit® Architecture software and Autodesk® 3ds Max® software for building design; Autodesk® Revit® Structure software and Autodesk® Robot™ Structural Analysis software for structural engineering; AutoCAD® Civil 3D® software for civil engineering; and Autodesk® Inventor® software for digital design-to-fabrication workflows.

The Challenge

Since adopting this new approach, SENER has completed or begun eight major BIM projects, including the 25,000-square-meter Cracovia soccer stadium in Krakow, Poland. With Estudio Lamela architects, SENER won the city-sponsored design competition to design and reconstruct the new stadium in time for the 2012 European Cup tournament.

The new stadium will increase spectator capacity from 6,500 to 15,000 and add several notable amenities, including a retractable grandstand, a VIP area, balcony seating for 250 fans in sky boxes, new offices for the club, and an adjoining indoor sports center with seating for 2,500 spectators.

To meet the project's fast-track schedule, SENER had to deliver construction documentation at the end of January 2009 so construction could begin in the spring. During construction, the stadium will remain open and provide seating for 2,500 spectators.

Autodesk®

BIM enabled SENER to deliver more reliable and more coordinated projects, with fewer problems during construction.

The Solution

Autodesk Revit Architecture software helped enable SENER to deliver a comprehensive conceptual design that met the Cracovia soccer stadium competition requirements within two weeks. Using parametric families created specifically for the project, the designers iterated multiple design options, selecting those that maximized stadium capacity while meeting local codes. “We assembled many different design alternatives very quickly,” says González.

SENER used Autodesk Inventor software to explore different options for the lighting system. “The lights must reach nine meters above the stadium to illuminate the night games,” says González. “Yet at that height they would obstruct views of the old city and Royal Palace.” Using Inventor, SENER examined a retractable lighting option as well as the fixed system, which the client ultimately selected.

Used in concert, Revit Architecture and Inventor software helped enable SENER to fabricate 3D prototypes of the facility directly from the digital file. The design team used these prototypes—as well as photorealistic renderings created with Autodesk 3ds Max software—to communicate design intent to the competition jury and prepare the final bid presentations.

“The BIM process helped us create a more accurate initial design concept and then preserve that vision throughout the entire project,” says González. The software also helped to provide vital feedback for making aesthetic design decisions, understanding potential interferences, and performing sustainable design analysis.

To optimize land use in the limited space available, SENER employed AutoCAD Civil 3D software. “It helped us make more informed decisions about site use and the design of exterior features, such as access roads and parking lots,” says González. During stadium demolition, SENER used Civil 3D to help calculate how much excess earth the construction crew needed to haul offsite.

The Result

Currently, the team is working on construction documentation, and using Autodesk Revit Structure with Autodesk Robot Structural Analysis software to test various parameters of the structural design. Using BIM, the firm’s small multidisciplinary project teams have been able to deliver higher-quality work—projects that are more reliable and coordinated, with fewer problems during construction. “BIM gives us greater agility during all phases of the design process, as well as more coherent and precise design models and documentation,” says González.

Competitive Advantage

For advanced use of the Revit platform in conjunction with other Autodesk BIM solutions, SENER recently won the Revit BIM Experience Award from Autodesk. “BIM offers undeniable advantages for all project stakeholders,” says González. “We recognize the competitive advantage BIM brings us and believe we’re well-positioned for the future.”



Various Views, Cracovia Soccer Stadium

For more information, visit www.autodesk.com/revitarchitecture, www.autodesk.com/revitstructure, www.autodesk.com/civil3d, www.autodesk.com/robot, and www.autodesk.com/inventor.



Sharing the Revit model was easy. By enabling us to share up-to-date, consistent, and more complete project information, BIM accelerated the building process and kept interferences and other design errors to a minimum.

—Ramón González
Manager of Architecture
SENER Engineering Group

On the left: Site Context, Cracovia Soccer Stadium