

ONL [Oosterhuis_Lénárd]

Customer Success Story

Autodesk® Revit® Architecture
Autodesk® 3ds Max®

The real challenge of nonstandard art and architecture is to produce it on schedule and within budget. We achieve that by using innovative file-to-factory production processes supported by Autodesk 3ds Max and Revit Architecture software.

—Kas Oosterhuis
Principal
ONL

Maximize innovation.

Autodesk BIM solutions empower ONL to turn visionary design strategies into practical, real-world results.



Evening view of the CET. Image Courtesy of ONL [Oosterhuis_Lénárd]

The Firm

In 1989, architect Kas Oosterhuis and visual artist Ilona Lénárd founded ONL [Oosterhuis_Lénárd], a multidisciplinary design firm with offices in the Netherlands and Hungary. Since then, the firm's small staff of architects, visual artists, and programmers has completed numerous projects around the world and built a reputation for creating structures that combine visionary design strategies with innovation and implementation of mass-customization processes.

This blend of vision and technology has helped ONL to accomplish what was formerly virtually impossible—the cost-effective design and construction of geometrically complex buildings in which each constituent element is unique in form, shape, and dimension. “To better develop, understand, and build these non-standard architectures, we depend on coordinated high-quality 3D models,” says Marthijn Pool, MSc senior project architect. That is why ONL adopted Autodesk Revit Architecture building information modeling (BIM) software in 2004. ONL also integrates Autodesk 3ds Max software into its BIM workflow for conceptual design and visualization.

The Challenge

For its success in employing these Autodesk BIM solutions on several major architectural projects—including the CET mixed-use development in Budapest, Hungary, and the Ekris Utrecht BMW showroom in Utrecht, the Netherlands—ONL recently won the Autodesk Revit BIM Experience Award. Autodesk recognized ONL for its skillful application of BIM to support conceptual design of non-standard architecture in innovative digital file-to-factory workflows and a sustainable design approach.

Smooth Transition from Old to New

For the 27,000-square-meter CET project, ONL transforms three existing 19th-century warehouses into an eye-catching complex that integrates the authentic warehouses with a landmark. This futuristic double-curved glass and steel structure puts Budapest once again on the map of Central Europe.

Scheduled for completion in late 2010, CET will include boutiques, bars, large shops, restaurants, and a 1,500-square-meter event space on the second floor of the complex. The development will also provide a two-level underground parking garage with space for 250 cars. Public walkways, bicycle paths, and terraces along the Danube River make the complex a unique central meeting place.

Autodesk®

On both projects, ONL uses a digital file-to-factory workflow to mass customize every piece of steel and glass in the complex geometry of load bearing facades.

The Solution

During concept design, ONL designers use the advanced surface modeling capabilities in Autodesk 3ds Max software to model the building's advanced geometry. Subsequently the skin geometry is imported into Revit Architecture software and is populated with constituent building components.

ONL also uses Revit Architecture in the creation of an accurate 3D model of the existing warehouses to coordinate the new connections between the existing and the new building. During the design progress, Revit Architecture software's parametric change management automatically kept the architectural 2D drawings up-to-date with the integral 3D model. The mechanical engineer used Autodesk Revit MEP software to model installations and trajectories within the 3D architectural model, resulting in early phase collision detection and high workflow efficiency.

Visualize for Better Communication

ONL's BIM process offered powerful visualization capabilities. For example, to more clearly communicate the building's unique architectural design to the client and city officials, ONL regularly integrated Revit Architecture with 3ds Max software to generate high-quality, photo-realistic design visualizations.

On the Ekris project, ONL experienced additional benefits. For example, during the detailed design phase, ONL used Revit Architecture software to better visualize and coordinate the project's double-curved roofs—a task requiring far more sections than conventional 2D CAD tools would be capable of.

Instead, using Revit Architecture, the designers could dynamically “drag” section planes through the model and inspect the model.

Make the Previously Impossible Affordable

On both projects, every piece of steel and glass in the curtain walls is unique, and traditional interpretation and execution methods would make production expensive. However, using the advanced file-to-factory production process developed by ONL and supported by BIM, ONL transferred geometrical point data from the 3ds Max surface models directly into computer numerically controlled (CNC) production machines—enabling mass-customization, cost effectively creating large amounts of unique elements. This integral procedure improves quality, precision, and greatly reduces manufacturing cost.

Practice Green Design

This BIM process assists in controlling construction cost as well as in increasing project sustainability by reducing on-site material waste and minimizing energy consumption. In addition, on the Ekris project, ONL used Autodesk 3ds Max Design software's built-in lighting analysis assistant to evaluate multiple lighting scenarios. This resulted in the elimination of a secondary structural grid intended for showroom lighting and montage of cooling devices.

The Result

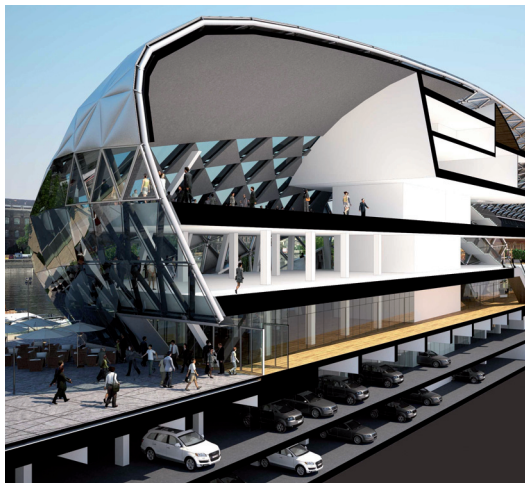
Because ONL has enjoyed tremendous success using these Autodesk BIM solutions, it now employs them on most of its building projects, exhibitions, and design competitions. As a result, non-standard architecture for standard budgets—gives the architects creative flexibility and design freedom.



Ekris Headlights project . Close-up view of the supporting structure and façade. Note the showroom lighting affixed directly to the supporting structure. Image Courtesy of ONL [Oosterhuis_Lénárd]

For more information, visit
www.autodesk.com/revitarchitecture
or www.autodesk.com/3dsmax.

Below: Rendered section view of the CET



As buildings become more complex, the need to control the huge amount of data required for engineering and production will depend heavily on data sets arising from BIM processes that include every aspect of the building. Making all this information available in a digital model enables high levels of quality control, data synchronization, and CNC-enabled production processes.

—Gijs Joosen
Senior Project Architect
ONL