

COMPANY

HOK

LOCATION

Washington DC, USA

SOFTWARE

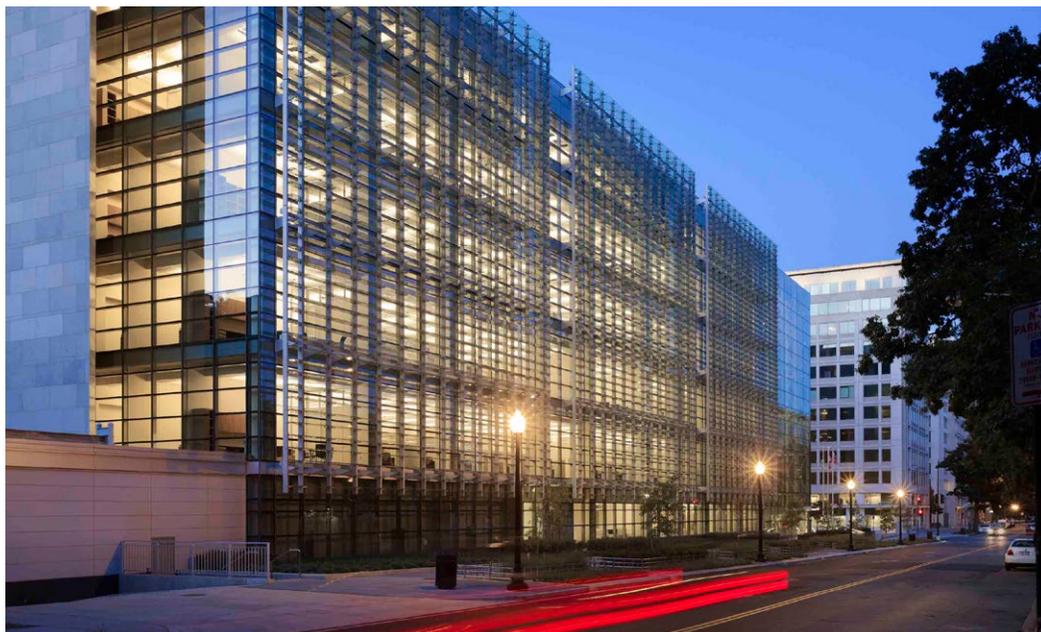
Autodesk Insight®

HOK Pursues Net Zero Carbon Design Portfolio by 2030

Autodesk Insight® Helps Them Do It

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– **Anica Landreneau**
Director of Sustainable Design
HOK



DC Consolidated Forensic Laboratory, Image courtesy of HOK, Photo © Alan Karchmer.

Introduction

HOK was founded in 1955 with the vision to use design to create places that enrich people’s lives. While the firm has grown to a global presence on three continents, and is now led by its founder’s nephew, Bill Hellmuth, its central vision has never changed. As part of that vision, the firm makes environmental responsibility a priority. HOK has been consistently recognized by DesignIntelligence for leadership and innovation in sustainability. They are also early signatories of the American Institute of Architects (AIA) [2030 Commitment](#), a framework to pursue Architecture 2030: the 2030 Challenge, which aims to achieve net zero carbon on all new buildings, developments, and major renovations by 2030.

[Autodesk Insight](#), part of [Autodesk Revit](#) and [Autodesk FormIt Pro](#), empowers HOK’s architects to model the energy performance impact of design decisions early and often, helping them extend their sustainability efforts across the client portfolio, and progress toward the 2030 Challenge ahead of schedule.

Empowering Architects with Energy Analysis

“We make sure our architects are empowered to seek feedback in terms of performance earlier and more often in the design process,” says Anica Landreneau, HOK’s Director of Sustainable Design. “That’s where the Insight tool has been really helpful. Nobody should have to work in the dark.”

As a policy, HOK aims to run energy analysis on every project. Prior to adopting Insight, the technical complexity of this undertaking proved challenging for many of the firm’s non-specialists. Vanessa Hostick, a sustainability specialist at HOK, recalls: “I think intuitively architects have always thought the architecture should have an impact on sustainability,” she says, “but the quality energy modeling data wasn’t accessible. Many felt they couldn’t read the eQuest or EnergyPlus models clearly. It created an environment where architects believed the engineers were the only ones who could affect the energy model.”

Integrating lighting, solar, and energy analysis software for a holistic approach to building performance

Insight changes that. It allows HOK's design teams to quickly and easily model the effect of design changes on lighting, cooling, and other sustainability measures. It works directly inside Revit and FormIt Pro, eliminating the time-consuming process of exporting and uploading a dedicated model for energy analysis. "Now the teams can run analysis for themselves, really fast," says Hostick. "Being able to do this directly from Revit is fantastic. So far everyone that has tried it has been very successful."

Insight helps HOK's teams leverage energy analysis as an integrated design decision-making tool, starting from the basic conceptual model, through to detailed design (often in support of a more traditional compliance energy model), and eventually through to measurement and verification. "Now, the teams aren't just running analysis for the sake of it, but are actually using it to help make and explain design decisions," says Hostick.

Accurate Feedback for Sustainability

Using Insight, HOK's design teams continue to model building performance throughout the project's lifecycle, gaining constant feedback on the impact of design changes. Insight allows them to visualize and interact with key performance indicators, benchmarks, factors, ranges, and specifications with real-time cause and effect feedback. Its simulation engines for whole building energy, heating, cooling, daylighting, and solar radiation can model a huge array of potential outcomes in the cloud, providing accurate, immediate feedback to maintain the best possible



Image courtesy of HOK, Photo © Alan Karchmer.

sustainable design outcomes. "It's accurate," says Hostick. "We checked it against around ten other whole building energy models we'd done before, and we were amazed to find how close it was: within 5 kBtu/ft²/yr in all cases. That's unbelievable."

Because all of this happens inside Revit, it's easy and fast for design teams to keep up with. "You're working in Revit every single day," Hostick says. "You don't have to leave Revit and go someplace else to run an energy model. You can run it, go to lunch, come back, and have your feedback ready when you return."

Achieving Energy Targets Across the Portfolio

To meet the 2030 Challenge, HOK has to be innovative in designing sustainability across their portfolio, staying within standard budgets and timelines. They use Insight's energy analysis tools during the marketing and bidding process to educate customers on the long-term value of sustainable design, as well as to find first cost savings on behalf of their budget-conscious clients. At the outset of each project, they set EUI targets with every client, even those for whom sustainability is not a priority.

"When we do this," says Landreneau, "and when the client is part of that discussion and everyone agrees to it, we find that regardless of changes to the design or ownership team over the duration of the project, everyone keeps working toward that target. People forget that it wasn't mandatory or contractually obligated."

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Centralized access to building performance analysis data and advanced simulation engines

Case Study: Uncovering Trade-Offs to Meet Targets

This ease of use also allows the design team to consistently look for first cost savings that can offset the potentially higher cost of sustainability features. Recently, HOK was working on the design of a core and shell building project that would be sold as soon as it was constructed. The owner had prioritized first cost over long-term performance. HOK's team nevertheless set a voluntary EUI target of 29 kBtu/ft²/yr, which was a 35% reduction from the current ASHRAE 90.1 standard.

They were able to gain the owner's buy-in on the initial EUI target, but as they entered the value engineering phase of the project, they hit a few hitches that threatened to force a downgrade in systems to meet cost restraints. This change in turn threatened the EUI target.

When this happens, says Landreneau, "We have to find design outcomes that pay for themselves in first cost. For instance, we have to ask, 'If we design a better envelope, can we reduce loads? Then can we reduce the equipment to pay for that improved envelope?'"

Using Insight and Energy Plus, HOK's design team discovered they could adjust glazing and tweak window to wall ratio to improve performance, which in turn allowed them to reduce building loads and the number of chillers. The adjusted design saved half a million dollars in first cost, keeping the client happy while achieving the voluntary EUI they had set for themselves.



Image courtesy of HOK, Photo © Alan Karchmer.

Ahead of the 2030 Challenge

"I think it's a very realistic goal to hit the net zero target before 2030, and then to keep going," says Landreneau. "And Insight removes one of the biggest hurdles to energy modeling, which is ease of use."

Landreneau manages HOK's 2030 Commitment reporting for all of its projects, annually reporting data into the AIA 2030 Design Data Exchange (DDx). "It's been a total pain chasing that," she says, "but we can now use [Insight's] automated link to DDx as an easy solution for a lot of the projects that otherwise wouldn't have been modeled."

HOK's leadership serves on several 2030 Commitment AIA Committees, where they share their best practices with peers around the industry. They encourage all firms to democratize their sustainability modeling, and to leverage energy models early and often throughout the design project using tools like Insight.

"We're not perfect, but we are hoping to help lift the profession with our work," says Landreneau. "We've got several projects right now where our clients are expecting net-zero and net-positive outcomes, and we're on target to achieve the 2030 Challenge ahead of schedule. Insight has been a big part of that."

To learn more about Autodesk Insight, visit, www.autodesk.com/products/insight-360.

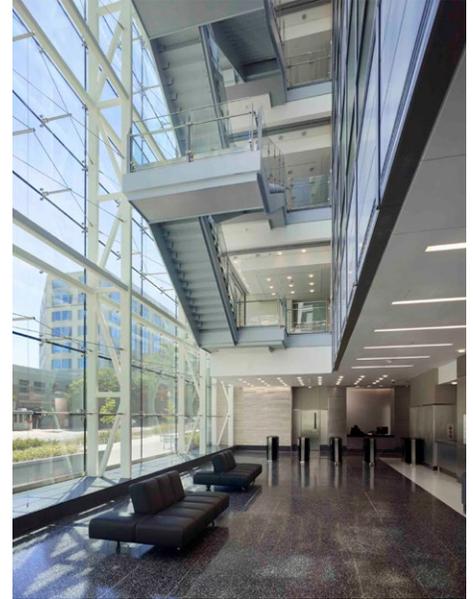


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