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Architecture and technology: Opportunities and challenges for zero emission buildings

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The building industry has a love-hate relationship with technology and has been slow to adopt it. This trend is particularly applicable to the use of computer-based analysis in support of high-performance building design with the ultimate goal of zero emission buildings. This lecture will deconstruct the current state of how industry uses technology within this domain, the opportunities that exist for the near future and the challenges in effectively implementing these opportunities. Current R&D efforts at Perkins+Will for web-based energy and daylighting simulation, optimization and visualization using cloud computing environments will be highlighted as one possible strategy for rapid, scalable, accurate and meaningful integration of technology into the architectural design process. A vision of how this strategy's success will impact and support the green energy industry as a whole and vice versa, will be presented to and interactively evaluated with the audience.

Biography

Benjamin Welle is the Director of Energy Lab at Perkins+Will. His role is to develop innovative design methods for the next generation of architects working towards the goal of zero emission buildings. His work focuses on the integration of web-based parametric design tools with energy, daylighting and thermal comfort simulation tools for use in multidisciplinary design optimization (MDO) environments using parallel and distributed computing. He has received his BS in Energy Engineering and MS in Civil and Environmental Engineering-Atmosphere/Energy from Stanford University, MS in Mechanical Engineering from the University of California, San Diego and a PhD in Civil and Environmental Engineering-Design Construction Integration from Stanford's Center for Integrated Facility Engineering (CIFE). He is a registered professional Mechanical Engineer in the State of California.

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