

Dynamic solar design

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ABSTRACT: Optimization of solar performance in buildings, using software for simulation and analysis of solar heat gain and daylighting, represents a way to leverage computational power in the process of design. Existing software packages offer the ability to simulate daylighting and solar radiation of a building space, but these packages lack key functionality that limits the applicability of the software-based simulation to the architecture design process. Writing custom software applications for our design process and methodology has allowed HKS LINE to implement dynamic solar design within the timeline of projects with large scope and great complexity. By using custom software applications with multi-threading capability, we can run multiple simulations concurrently and log individual datasets, enabling us to feed analysis information directly back into a parametric model for generating optimal geometry solutions. This workflow reduces the time requirement for accurate daylighting and solar irradiation simulation, enabling rapid optimization within the project design schedule.