Integrated Design: A paradigm for the design of low-energy office buildings

This paper presents a case study of the implementation of integrated design in an actual architectural competition. The design process was carried out at a highly esteemed architectural office and attended by both engineers and architects working towards mutual goals of architectural excellence, low-energy consumption, and high-quality indoor environment. We use this case study to investigate how technical knowledge about building performance can be integrated into the conceptual design stage. We have selected certain points during the design process that represented design challenges and describe the decision process. Specific attention is given to how the engineering input was presented and how it was able to facilitate the design development. Site and context, building shape, organization of functions and HVAC-systems were all included to obtain a complete picture of the building's performance. This article illustrates how a continuous implementation of technical knowledge early in the design process for an actual architectural competition resulted in a building design with an energy demand approximately 30% lower than Danish building regulations, yet which still maintains a high quality of indoor environment and meets the demands of architectural excellence.