Basic Design Principles of nZEB Buildings in Scoping and Conceptual Design

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Abstract

nZEB buildings generally require integrated design in order to achieve design targets economically. Decisions and choices in early design stages may be expensive or even impossible to fix later if not successful. Missing not supporting energy-efficient design or lack of space for technical systems is typical example of potential drawbacks. It is important continuously to follow that design targets can be met. In early stages, rules of thumb and some key parameters can be used for indirect assessment, which is the method until first energy simulations can be run. Next step is to be sure that planned technical systems can be fitted in the building—there has been enough mechanical space and proper locations enabling energy-efficient design. These and other important milestones in the early stage including fenestration design, shadings and daylight are discussed in this chapter. It is not enough to design a good nZEB building, but it has to be done in a way that the building can be also operated as nZEB building. In majority of projects, designed room layouts will change already during construction, because of clients’ needs. Therefore, the HVAC systems must adapt to changed loads and partition wall locations. To enable flexible space use and adaptive systems, special considerations and the use of room modules are needed, that is, the last but not least issue discussed in this chapter.

Keywords

- Direct Solar Radiation
- Thermal Transmittance
- Office Room
- Visible Light Transmittance
- Supply Airflow

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References


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