12. Trial Designing of net Zero Energy Building with Enviroment Simulations

Masaya Iwashita

According to the new national policy about the quantitative definition of a zero energy building (ZEB), ZEB can be designed in concrete terms under the Act on the Rational Use, etc. of Energy. Programs for calculating energy consumption are already available, but there are still many design factors that cannot be quantitatively taken into account such as the amount of solar radiation under the influence of nearby buildings. Since the thermal and light environments are closely related to building energy consumption, not only energy consumption requirements but also design requirements for both environments need to be met. In this study, focusing on a multi-use building in an urban area built up with high-rise buildings as a model case, the author designed a zero energy building taking the amount of solar radiation and the spatial distributions of the thermal and light environments. On the basis of the simulation results thus obtained, it was verified at the design stage that the designed building would be a ZEB.

Key words: zero energy building (ZEB), perimeterless, temperature distribution, illuminancedistribution, simulation