

Development of a Performance Evaluation Method to Support the Obligated Conformity to Energy Efficiency Standards

Housing Department

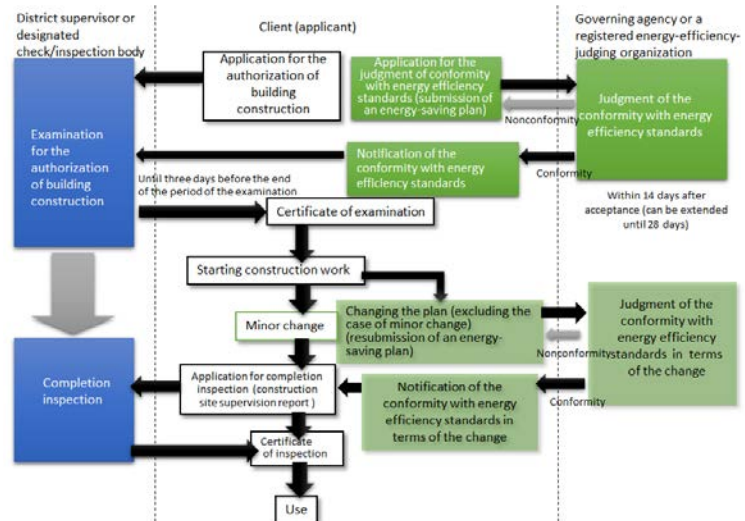
In April 2017, the Judgment of the Conformity with Energy Efficiency Standards scheme started; construction of large non-residential buildings is no longer authorized unless they conform to the standards. NILIM developed a method of calculation and a program to facilitate appropriate and smooth evaluation required for making a judgment.

Social Background and Challenges

- Efforts to reduce CO₂ emissions by the reduction of energy consumed in buildings are urgently promoted.
- As regulatory measures for the Act on Improvement of Energy Consumption Performance of Buildings enacted in 2015, conformity to energy efficiency standards is required for non-residential buildings with a floor area of 2000 square meters or above on April 1, 2017.
- Without conformity, construction work cannot be started. The system has a significant influence on workers in the construction industry.

Judgment of the Conformity to Energy Efficiency Standards

Conformity to the energy efficiency standards is judged in parallel with the authorization of building construction. An energy saving plan with such information as the specifications of equipment shall be submitted to a third party, in other words, a governing agency or a registered energy-efficiency-judging organization, and conformity is judged there. Information is entered into a web-based program for the calculation needed for the judgment. There are two methods in the program: the standard entry method requires entry of detailed information but can evaluate a variety of energy-saving technologies, and the model building method requires the entry of smaller amounts of information and can make an evaluation efficiently. The model building method is expected to be used for the confirmation of conformity with the standard, while the standard entry method is to acquire higher evaluations than mere conformance. If part of a plan that is related to the standard is changed, another judgement is required, except for a minor change. Submission of an energy-saving construction supervision report is required during the inspection upon completion.



Overall structure of the Judgment of the Conformity with Energy Efficiency Standards

Calculation Method and Web-based Program of Energy Consumption

Reliability and fairness at a high level are required for the method of calculation for the judgement of conformity to the energy efficiency standards because a wide variety of technologies must be evaluated at the same time. We conducted a verification test and investigation of actual conditions and invented a method to calculate the actual values of energy-saving effect of a building. We also developed and offer a web-based program to make data entry and calculation easier.



Energy consumption calculation method



Web-based program

It facilitates energy conservation in buildings in the whole country and realizes the reduction of energy consumption and CO₂ emissions required to address global warming.

- ☞ Related articles: - Trend in the International Standards for Energy Saving Performance and the Efforts Made by NILIM
 - Development of a Method to Evaluate the Energy-reduction Effect by the Technologies of Automatic Control over Building Equipment
 - Research on the Method to Design Façades for the Improvement of Energy Consumption Performance of Buildings