Development of general-purpose energy system analysis simulator "energy flow +m"? static analysis of solar collector

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Abstrak

To solve current environmental problems such as global warming and declination of fossil fuels, use of less energy is essential, particularly in the fields of refrigeration and air conditioning. Thus, simulations using complex mathematical models become vital. Simulation technology faces a major challenge because the language of simulation codes varies depending on the programmer. Thereafter, others cannot duplicate the same simulation technology used by their predecessors. To address this, a modular analysis method that generalizes simulation code has been developed. With this method, the general-purpose software analyzing energy system called “ENERGY FLOW +M,” a software enabling analyses that can be conducted without having to specify the model or the method of analysis used, has also been created. The focus of this study was on the solar collector. As the solar collector uses energy from the sun, it is friendly to the global environment. In order to understand the performance of the solar collector, the construction of a simulation model was carried out. Moreover, models of the solar collector and solar radiation were loaded into “ENERGY FLOW +M” to verify their performance. Thus, this simulator allows us to execute simulations of the solar collector from anywhere via the Internet.