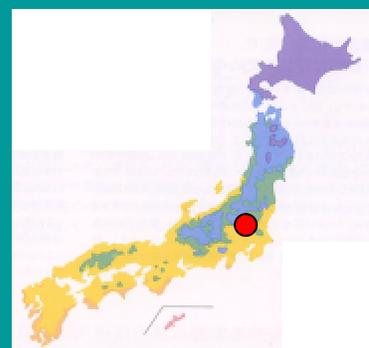
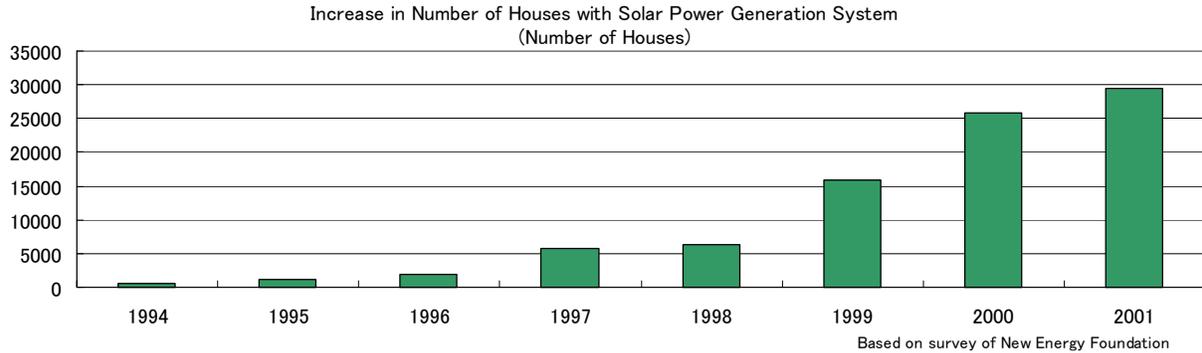


Example of a Prefabricated House with Solar Power Generation System



The project and the Objectives - Goals

The number of households using a solar power generation system in Japan has rapidly increased in the last three to four years. This trend is due to the expanded coverage of the solar power subsidy, more widespread buying by electric power companies of electricity generated by each household which is surplus to needs (hereafter referred to as “electricity sales”), and mainly due to increased consumer awareness about the importance of generating clean energy in their homes.



The solar power system consists mainly of a solar cell module and a power conditioner. Since the solar cell module used here doubles as the roofing material, it blends well with the entire building design as well as the street appearance. Furthermore, as no additional roofing material is required, the cost is lower in comparison with conventional solar cells. The direct current generated by the solar cell module built into the roof flows through the power conditioner, and after being converted to alternating current as used in general households, is distributed from the panel board to each electric appliance in the house. Since the system operates automatically (it starts operating when it receives sunlight and stops when there is no sunlight), no human intervention is required. The amount of electricity being generated and the total amount of electricity generated each month can be checked on the indoor remote control monitor. The system also comes with an environmental monitor function that indicates the amount of CO₂ emissions reduced by solar power generation, thus giving the user a sense of satisfaction about using solar power.



- ① Solar cell module
- ② Power conditioner
- ③ Panel board
- ④ Integrating wattmeter
- ⑤ Indoor remote control monitor



Technical systems

This home, completed in 2000 and located in a residential district in Maebashi, Gunma Prefecture, is fitted with a power generation system using sunlight. Solar power is a clean source of energy, and unlike oil and coal, is inexhaustible and does not produce CO₂ emissions. The home was built with many factory-prefabricated members which were then assembled at site. In recent years, house manufacturers such as ourselves who sell and build prefabricated houses have been playing a leading role in encouraging the replacement of the solar power system that must be installed on top of the roof, with roofing material that has built-in solar cells, both for improving roof designs and reducing the cost.

Marketing strategy

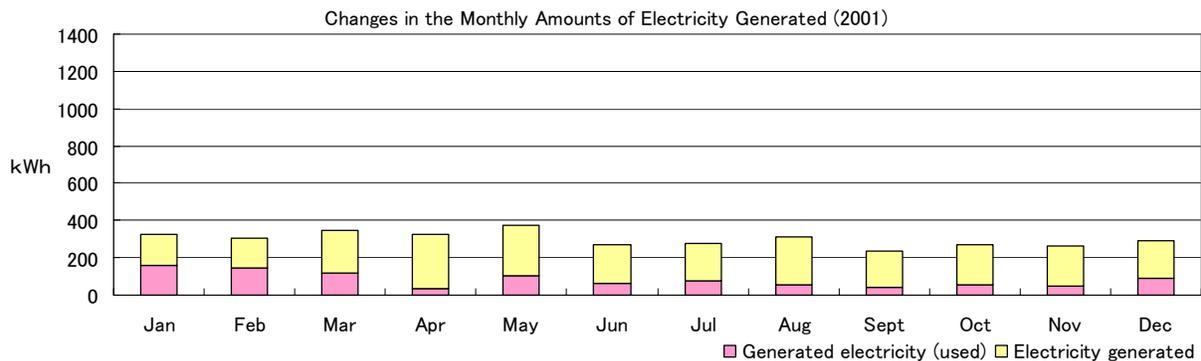
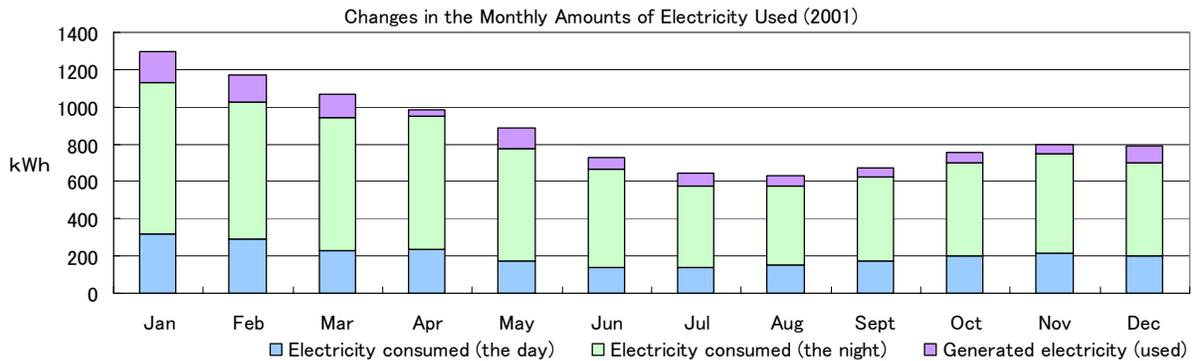
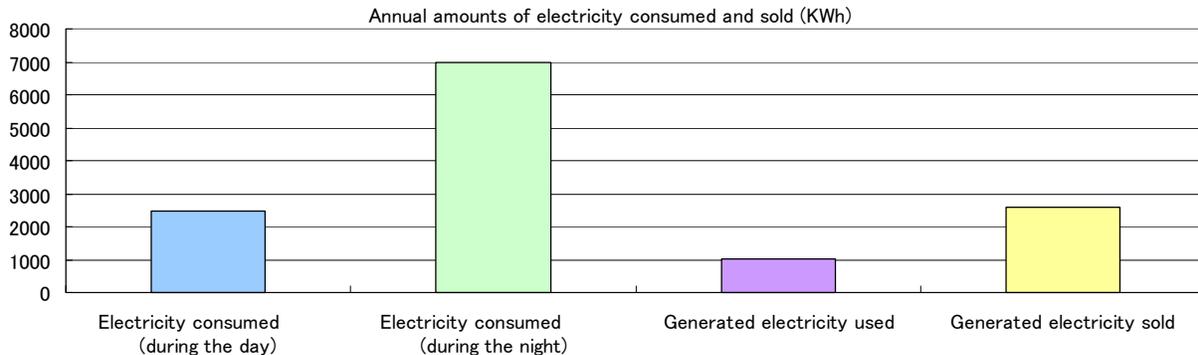
This two-story home, with a total floor area of 165.9m², is built with light-gage steel. Out of the total construction cost of approximately 30,000,000 yen the solar power system cost approximately 2,460,000 yen of which a loan of 500,000 yen was provided by NEF (New Energy Foundation). The heat insulator specifications meet the next-generation's energy saving criteria (Region III) and an entire building ventilation system was adopted.

The amount of electricity generated by the solar power system during the day usually exceeds the amount of electricity used (see the figure below). For promoting wider application of solar power generation, a system is now in place to sell surplus electricity to electric power companies (electricity sales). (During nighttime hours, however, electricity is bought from electric power companies as usual.)

Energy performance

Since such selling and buying of electric power automatically take place at almost uniform selling and buying rates, the electricity generated by the house is directly reflected on the electricity bill. Since higher rates are applied when calculating electricity charges as the amount of electricity consumed increases, introducing the solar power system helps reduce not only the amount of electricity that must be bought from the utility company, but also the buying rate, thus producing synergistic effects in reducing the cost.

During a one-year period, this home, for example, used approximately 10,500 kWh of power, of which 1,000 kWh was generated by the house, and 2,500 kWh of power was sold to the power company. This means that this household was approximately 33% self-sufficient in electricity. Degree Day(20-12) for heating : 2231, Degree Day(18-18) for heating: 2134, Degree Day(24-24) for cooling: -165



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