Study on Introduction Method of Fuel Cell for Residence in Apartment houses

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1. Purpose and Background

After The 2011 off the Pacific coast of Tohoku Earthquake, to solve a problem of electricity supply and demand, OSG(On-Site-Generation) can be a solution. Fuel Cell Co-Generation System (FCCGS) is one of these. However, there are two problems that need to be resolved.

➢ ①No effective system design method in apartment house has been proposed.
➢ ②There are few actual surveys, and the performance of the equipment in the field is unknown.

In this research, we are making field measurements and building simulation models in order to propose better systems and control methods.

2. Research Method

We performed detailed measurements on FCCGS installed in a house in Fukuoka city. Based on the results, we constructed a simulation model that reproduces the equipment. The measurement is being continued even now(2020.04) with new targets.

3. Results and Future Tasks

The research results are shown below.

➢ For the purpose of leveling the load of electric power and hot water supply, the share of FCCGS among multiple households was examined by simulation. As a result, it was clarified that the effect can be expected.

➢ The detailed measurement revealed the problems of the existing performance evaluation test method.

In the future, we plan to conduct field experiments and expand the model, paying attention to changes in energy consumption behavior of users.
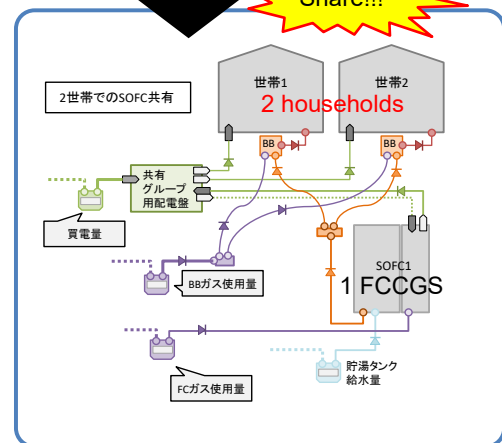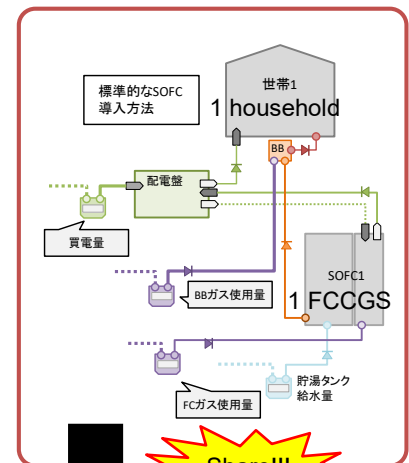
Fig1 Fuel Cell for Residence

Fig2 Proposal summary
(2households share 1 FCCGS)

Fig3 Sample Device for Energy Usage Behavior Change