

Title	地熱エネルギーを用いた水素エネルギーの製造および 実用化への提案
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Utilizing Hydrogen Energy Produced from Geothermal Energy: A Proposal

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The basic target of the energy policy in Japan is realizing stable supply of energy, responding to the request of environmental preservation or increase in efficiency.

Although the thermal power generation, which is not concerned with climate or geography conditions but can be supplied stably, has already spread in Japan, it has much carbon-dioxide emission. In the Kyoto Protocol, they were promised to study, promote and develop proper technology on the energy of reproducible forms, carbon dioxide isolation technology, and progressive and innovative environment, and to expand these use. Japan depends for about 80 percent of energy on import. Therefore it has been influenced by foreign politics. Therefore, the primary energy which domestic self-support can be expected, there are few amounts of discharge of carbon dioxide and stable energy from the weather or time are called for spread and utilization. Against the background of the above, its attention is paid to geothermal energy by this research.

In this research, manufacture and utilization in hydrogen energy from geothermal energy are proposed. The proposal is based on the investigation results of the influence on the environment by energy, the situation of the primary energy in Japan, the advanced area of the energy policy in Japan, the spread of the fuel cell vehicles in Japan and the energy situation in Iceland taken case study up in the measure.

The policy for spreading clean energy is performed in advanced in the area that uses the biomass for primary energy. Therefore, it works on the subject and policy for spreading clean energy in advanced also in the area using geothermal energy.

The measure turned to manufacture and utilization of hydrogen energy from geothermal energy in Japan, will be suitable that the policy which the number of cars begin preferentially by change on a fuel cell vehicle few from the area which is easy to raise the saturation level sharply. Hydrogen energy will be able to be manufactured and put in practical use from geothermal energy if the spread of fuel cell vehicles is preferentially begun from the narrow range, and the measure that develops into the large range gradually is adopted. It is because installation of a hydrogen station is needed for spreading a fuel cell vehicle by that cause. If the saturation level of a fuel cell vehicle increases sharply, the saturation level of the car, which uses oil, will fall sharply.

If the area is pinpointed in Japan, the island with the population of the aptitude scale is suitable as mentioned above. The small island, which is performing the geothermal energy of the name of Hachijo Island, is located in Japan. Therefore, its attention is paid to the island as the area that turns to hydrogen energy utilization and tackles it. If it puts in practical use on this island, the island will be made to the model in other areas at the cause that spreads geothermal energy. If it is made such, the energy self-sufficiency rate of the Japan whole country will rise, and the ratio of clean energy will also increase. The geothermal power plant of Hachijo Island has started operation in March 1999. The amount of power generation of the geothermal energy in Hachijo Island forms 30% of the total amount of power generation. Furthermore, compared with the time of using lamp oil and heavy oil, fuel and light prices is getting about 10 percent.

It is the subject required in order that founding the new company aiming at manufacture and utilization of hydrogen energy like Icelandic New Energy also to Japan, cooperating with the government, the self-governing body, universities and research institute, geothermal power plant, automobile companies, fuel companies, equipment companies and schools, for implementing an energy policy, in order to realize clean energy society which contains hydrogen energy on Hachijo Island may build clean energy society.

There is scope for the rate of geothermal energy to increase in the Japan whole

country. Therefore, it is the future subject to put power into the policy that does not depend foreign energy situations or foreign diplomatic relations, but it is always turned to development and utilization of geothermal energy.

However, similarly the same method as Hachijo Island cannot necessarily be done in the other areas in Japan even though it is the case where it succeeds in the manufacture and utilization of hydrogen energy using geothermal energy on Hachijo Island. In order to lead the manufacture and utilization of hydrogen energy using geothermal energy to a success in other areas, there is what attention should be paid for even if it is not the problem on Hachijo Island.

There is no car in which Hachijo Island runs for the purpose of the course of other areas, and it has little number of an automobile as compared with the life area of an area with other geothermal power plants. It is easy to raise the saturation level of the part and a fuel cell vehicle for a short period of time. Moreover, it is difficult to prepare a power line from Hachijo Island and to send electricity to Honshu. Therefore, if the fuel cell type ship currently developed in Iceland is completed, an energy source will be able to be changed and conveyed to hydrogen energy. However, in a certain geothermal power plant location region, electricity can already be sent to the Tohoku district, the Kyushu district, and Hokkaido in other areas using the power line. Therefore, it is not necessary to manufacture hydrogen energy for the purpose of the transportation to the remote place from geothermal energy. Furthermore, there is also a car through which it passes for the purpose of movement between other areas. If they are taken into consideration, even if it is possible to increase hydrogen stations and fuel cell vehicles, gas stations cannot immediately be withdrawn.

However, there is sense which transforms geothermal energy into hydrogen energy. If the technical development of geothermal energy progresses, primary energy is much provided with energy with few amounts of discharge of carbon dioxide and it can send also to a remote place region. In this case, the gasoline car, which carries out the whereabouts to the area without hydrogen stations, will also run in the area that there are hydrogen stations. Hydrogen stations are utilizable in order that hydrogen energy and oil energy may build the coexistent social system. If the policy, which lowers the ratio of oil for the ratio of hydrogen energy with slight height, is tackled leaving gas stations until hydrogen stations and fuel cell vehicle spread completely nationally.

It proposes using geothermal energy, which regardless of climate and

geographical conditions, supply can be expected stably, and there are few amounts of discharge of carbon dioxide, and they can support themselves in Japan, and manufacturing and putting hydrogen energy in practical use by modeling the situation of Hachijo Island.