

RESFC REGIONAL DISSEMINATION ACTIVITIES IN ICELAND

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Introduction to the task.

The RESFC project can be seen as an important addition to the Icelandic hydrogen energy activities that have been under way in Iceland since the turn of the millennium.

It is world known that demonstration projects involving three fuel cell busses and a domestic fuelling station powered by electricity from renewables . The project which has been done in cooperation with Daimler, Norsk Hydro and Shell Hydrogen has focused on the transition of the transport system of Iceland to domestic fuel, hydrogen produced by electrolysis.

When the RESFC project was brought to our attention originally we made it clear to our potential partners in the project that in a country like Iceland where space heating was mostly taken care of by geothermal energy and most of the country was grid connected, the need for residential fuel cells would be limited to special cases. On the other hand, we have had important experience from our demonstrations with the use of fuel cells in the transport sector that might help to identify and overcome problems our neighbours in Europe might be facing.

Hence, we defined a narrower approach and visualised the use of fuel cells, either hydrogen or methanol based that would be tested in areas in Iceland where geothermal energy was not available – in other words the areas of relatively low geothermal activity, sometimes called geothermally cold areas.

Also, it has been clear throughout that the contribution of Iceland to the theme of RESFC had to be seen through the considerations above.

Dissemination activities.

After having decided to focus on the Western Fjords of Iceland where the Innovation Center of Iceland started activities in on the first of August 2007 we have had one of our experts, Ms. Dora Hlin Gísladóttir from the center working a part of her time with the project. One of the outcomes of her work was the translation of the brochure and a poster based on the brochure that was used to introduce the project to visitors to the center in Isafjordur.

Professor Sigfusson included a brief account of the RESFC and the implications for geothermally cold areas in his inauguration speech in Isafjordur on August 1st 2007. (see photograph).

In a North Atlantic Alliance meeting of parliamentarians in Iceland on October 7th 2007 where the energy security of Iceland was discussed the RESFC was introduced to a group of about 60 parliamentarians from NATO countries as well as a number of Icelandic government officials.

In the work of a governmental group on wedging down CO₂ from Iceland Prof. Sigfusson has shown RESFC as a small part of a solution for saving use of oil for heating in Iceland.

Finally the subject was brought up at the Annual meeting of the Innovation Centre held in Nordica Hotel in Reykjavik.

In association with the project a fuel cell was purchased. This is a Nexa fuel cell from Ballard Inc. in Vancouver Canada intended for demonstrations. The system did not arrive in Iceland before towards the end of the project but is, as this is written, being prepared for demonstrations and experiments.



From right to left: Energy Minister Össur Skarphedinsson and Professor Thorsteinn I. Sigfusson in Isafjordur, Western Fjords of Iceland discussing innovation in energy at the opening ceremony of the Innovation Centre, August 1st 2007.

One of the interesting deliverables of the RESFC project is increased awareness of the use of hydrogen and fuel cells outside the area of transport and even in large scale use in the fishing fleet of Iceland already threatened by the oil price shock (Photo: local newspaper in Isafjordur).

Most of our dissemination activity has been with end users of renewable energy both in the Western Fjords as well as in the capital Reykjavik.

We did go a long way comparing the use of oil based heating in the Western Fjords with our solutions. It can not be said, however that our solutions have presented a great new benefit and the potential users constantly ask for reductions in prices which are expected as the technology matures. In this way it can be said that this part of the dissemination has not broken any ground for our technology replacing the traditional systems used previously but has paved the way.

Using the results from our Danish partners as regards wind energy we have been successful in promoting its use in Iceland and recently the Energy Fund of Iceland decided to support a wind generator system in the West of Iceland where the use of hydrogen is a part of a longer term vision for the development.

Studies of hydroelectric potential of Western Fjords.

The Innovation Center has in association with RESFC and other renewable energy projects been focusing on the hydroelectric potential of the Western Fjords with in mind to map out the possibility of using hydrogen from hydroelectric power plants and fuel cells to augment the power production in the area.



Last spring a group of engineers visited Reidhjallavirkjun power plant in the Western Fjords to inspect the difficult conditions that characterise power production in the area. The power plant is based on the collection of water in a basin of only a few square kilometres with amount of water less than 200 liters/second but a very high total vertical distance of some 292 metres, the highest found in an Icelandic hydroelectric power plant. The interest of hydrogen under such circumstances has to do with varying hydro-energy due to frost and thaw conditions. The RESFC project was described and discussed during this field trip and some interesting conclusions drawn regarding power production on these outskirts of the habitable world!

Stakeholders in the Western Fjords.

The project has treated the information gathered as a first indication of the possibilities of hydrogen and fuel cells as well as methanol and fuel cells in the Western Fjords. We have approached various stakeholders at the general meetings mentioned above, in particular the regional authorities and the energy companies. At this point in time we have been discussing the possibility of setting up demonstration experiments based on the experience from HIRC in Denmark which could be realised before 2009/2010. Our eyes will be on the outcome of the Danish project with in mind to attempt similar in Iceland.

The Innovation Center plans to organise a study tour from Iceland to Jutland in Denmark early 2009 to inspect the interesting development of residential fuel cells in Herning. It is our hope that the learning gained from this trip will further the development of hydrogen for non-transport applications or even large scale marine applications in Iceland.

One of the important deliverables of our discussions is more awareness of the quality of electric energy and the need for not using it directly for space heating which is one of the worst uses of electricity possible from an exergetic point of view.

Conclusion.

The RESFC project has proven a valuable addition to the already existing rather extensive evidence and experience in Iceland from fuel cells in transport. It would be a great exaggeration to say that the prospects of the use of domestic fuel cells in the Icelandic households are very positive. On the other hand, the project has given deeper insight into the possibilities, obstacles and challenges Iceland would be faced with in the future.

On the other hand, the introduction of the concept of fuel cells into our society has spurred off more discussion on the use of fuel cells to power the fishing fleet. Again in the Western fjords this is a penetrating question (rising oil prices are causing bankruptcies among the fishing industry). Also and interestingly, the large fishing fleet provides a forum for testing fuel cells that is in many ways more related to residential fuel cells than the ones used in transport.

As a general conclusion we believe that fuel cells have, as a result of our project, come closer to the public awareness, which in itself is an important achievement of the exercise.