ENERGY, ENVIRONMENT AND SUSTAINABLE

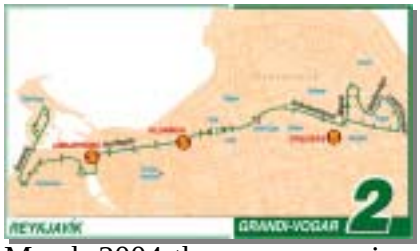
Contents

ECTOS Third Newsletter

March 2004, Issued by INE;
www.newenergy.is

EC 5th framework programme: Ecological City Transport System, Icelandic New Energy. The 3rd newsletter contains narrations about a few experiences from the H2 fuel-cell bus tests.

Three hydrogen FC buses have been in traffic in Reykjavik, since October 2003. Until



March 2004 they were running on line number 2 within the public transport system. Line 2 connects the fishing port to the centre of town, two areas of commerce and services, a popular sports facility and two large residential areas.

One morning in our office a neighbour to the bus route exclaimed:

"Is it possible that your hydrogen buses run through my part of town? They must be more silent then the normal buses, because we do not wake up around 6 o'clock in the morning anymore from the street noise. I am very grateful!"

Homologation procedures

The buses had to pass strict homologation procedures – as is the case with all public transport vehicles, and not solely because they carry a different type of fuel. The hydrogen fuel cell buses are heavier than similar diesel buses. Therefore the number of passengers they are allowed to carry is 72 people. The next lesson to be learned became the tires. The buses were delivered with sturdy EU all-year bus tires. But standards and certifications were lacking on these issues in Iceland. Therefore when it began snowing in December, which means wet and heavy snow mixed with salt and sand as well as sudden temperature variations below and above freezing point, - the tires had to be changed according to local conditions! It took a while to find appropriate tires because of the buses' weight; tires that both the local health and safety department and the insurance companies could accept. After a week of down time, new tires were mounted in late December and the buses went off again.

The annual curiosa

Early in the year 2003 an unusual request came via email from a gentleman in Germany; The person asked for digital pictures of all sides of the Fuel Cell buses in Reykjavik. He wanted to use them to make an accurate miniature model of the Citaro buses. Enjoy the evidence of his fine craftsmanship!

During the summer of 2004 INE will offer visitors in Reykjavik to attend an hours presentation about the hydrogen projects in Iceland. Ask at the tourist information centre or check our website:www.newenergy.is

Driving

A short acceptance test has been carried out amongst the bus-drivers and the staff within the fuel cell maintenance shop. The respondents claim that they had no specific expectations connected to the fuel cell technology. Most of them

volunteered to drive the buses. Yet, it is evident that their attitude towards the fuel cell buses is more positive after participating for three months in the test. Claimed reason: *Cleaner fuel is the future.*

The pump

Since the beginning of the bus demonstrations some lessons have been learned and a few findings fed into the

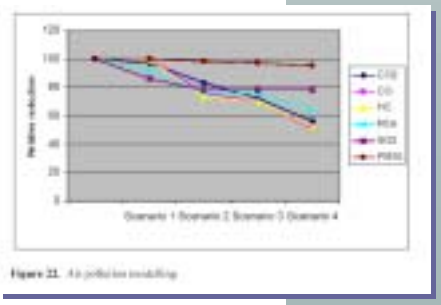
implementation of the project. The filling mechanism is simple yet sophisticated; the storage cylinders contain hydrogen gas at the pressure of 440 bars. During the filling the hydrogen flows freely into the 9 energy bottles placed securely on the strengthened roof of each bus; A little more than 50kg should be transferred each time enough to cover the distance driven during one shift, or around 230km plus heating the bus. But at the start the amount was registered in pressure. A problem arouse because monitors inside the bus and on the dispenser showed different values for the amount of transferred fuel. And no temperature readings were available. At times too little entered the bus cylinders, and a few times the buses ran out of fuel too early. In January a new dispenser was installed from Norsk Hydro Electrolysers, that registers the amount in kilos, and the problem was solved.

Social surveys

A study of the public acceptance of the ECTOS activities will be carried out in March and Dec 2004. Students are involved in the interviewing and counting of the passengers who ride FC hydrogen - and diesel buses. They talked with neighbours to the bus line and people in the street. The students are registered at either the department of Geography or the Environmental Institute at the University of Iceland. They needed to have an insight into theories behind interviewing techniques and how to process outcomes of surveys. The preliminary outcomes support former results: the public acceptance is very high.

Enviro - report

On INE's web-site, i.e. ECTOS News, delivery 7, there is a short description of the effects on air quality from the act of integrating hydrogen as a fuel for transportation in Reykjavik. It is interesting to note, that the concentration of particulate matter (PM) in the city air, would not change very much in spite of widespread use of hydrogen. The reason: PM is derived from the tires and the asphalted streets in the city, rather than the fuel.



The final ECTOS conference will be held 27th –28th of April 2005. Looking forwards to see you!