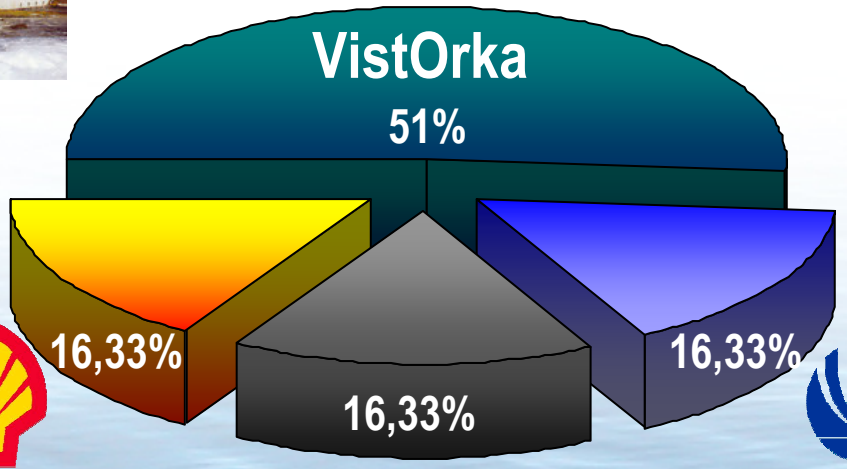
ÍSLENSK NÝORKA ehf
ICELANDIC NEW ENERGY Ltd.

H2 in Iceland
Current status and future aspects

Jón Björn Skúlason
General Manager
Icelandic New Energy

Unique INE structure / objective

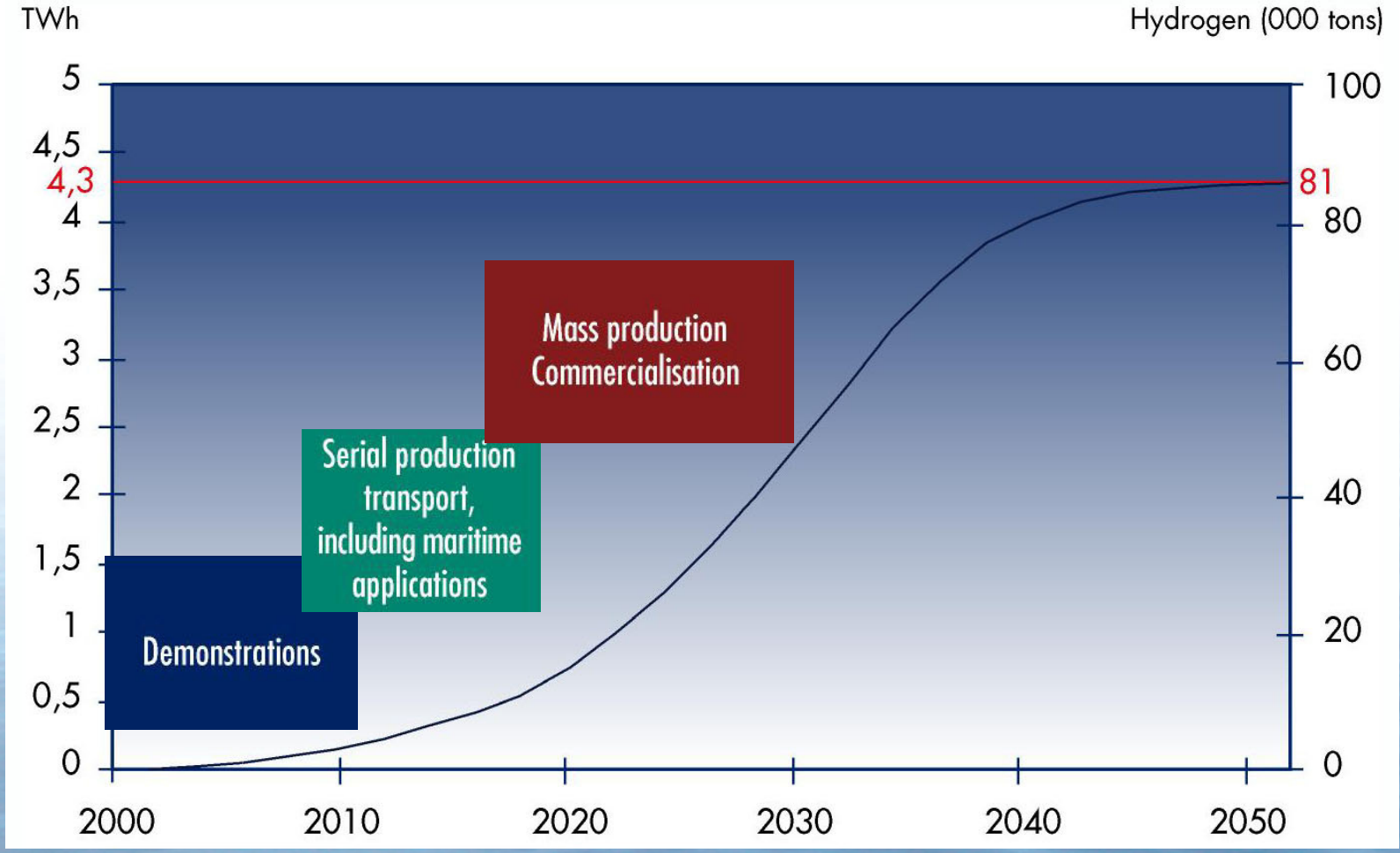


DAIMLERCHRYSLER

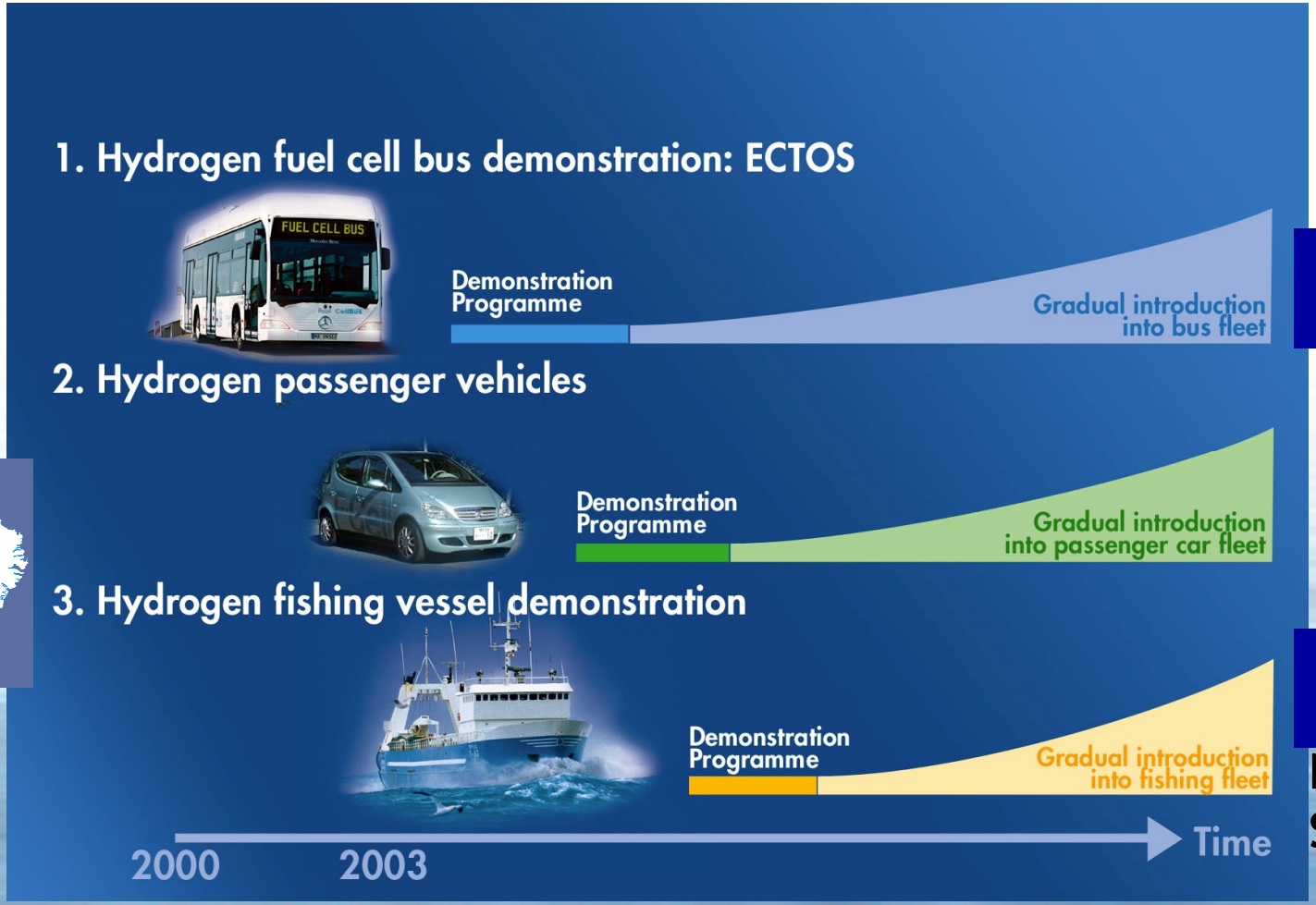
HYDRO

Icelandic New Energy Ltd

Energy use in a hydrogen society



Key Projects



SMART-H2

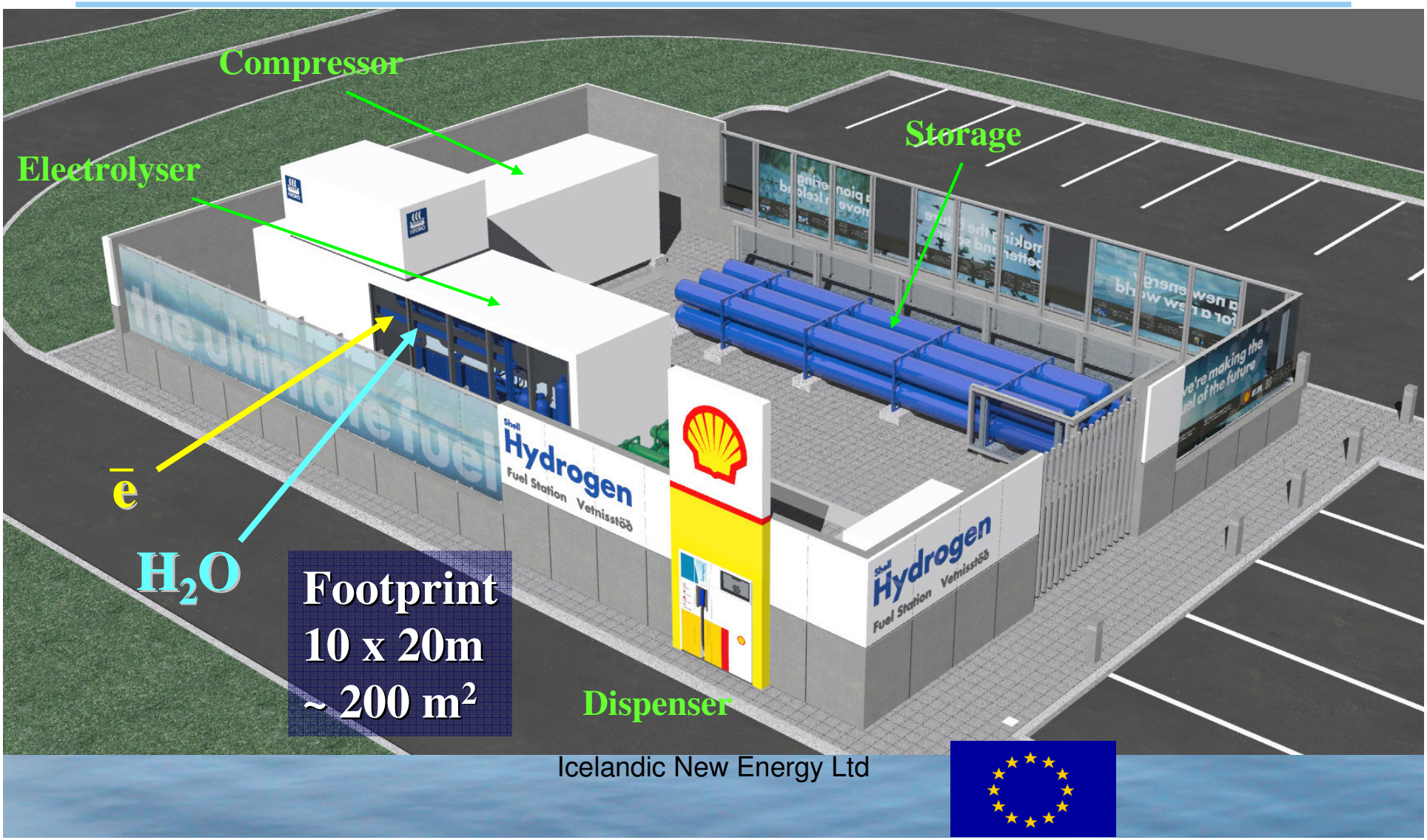
NEW-H-SHIP

Example of outcome - Public surveys

- Especially women and young people admitted that more information is needed
- 93% claimed to have a positive or very positive attitude towards hydrogen as a fuel – both in 2001 and 2004
- 40% of respondetns are willing to pay more for hydrogen than gasoline during the introductory phases

The ECTOS-hydrogen station,

An example of pre-commercial filling station



Hydrogen station

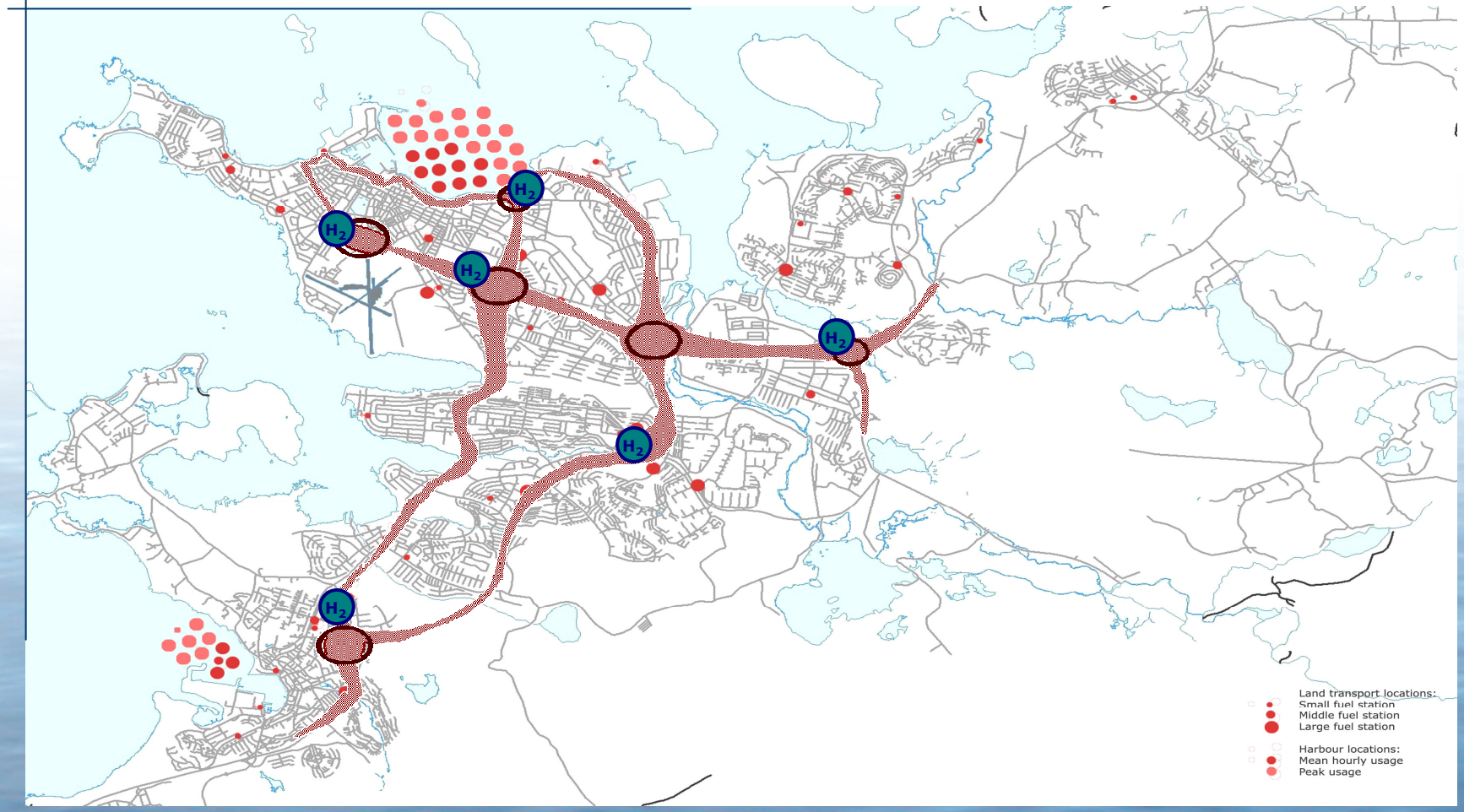
First station in the world operating at a conventional gasoline station (has full commercial license)

Permits [illegible] needed / [illegible] April 24, 2003 [illegible]

The future hydrogen infrastructure

- Evaluating the future economic- and social implications of a full scale H_2 infrastructure
- Optimisation of H_2 filling stations
  - Production capacity vs. storage
  - Production capacity vs. electric prices (off peak power)
  - Regional planning (size of future infrastructure, footprint)
- National impact (cost-benefit)
  - Foreign currency savings (no imports of fuel)
  - Domestic energy
  - Independence (incentives – taxation – other)
  - Energy security

Iceland
First hub for infrastructure
"mini-network"



The Icelandic accomplishment to date

- Results are very promising
- Operation (as of September 2006)
  - >125.000 km to date
  - >7.250 operating hours
- Pumped >25.000 kg of hydrogen
- Saved over >70.000 l. of diesel / and close to 200 tons less greenhouse gas emissions
- Indication that there is over 90% of the public positive towards the new fuel

www.ectos.is

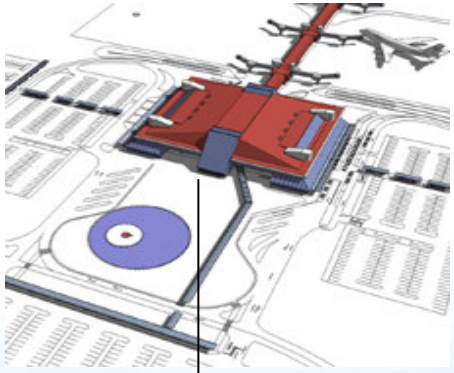
Learning

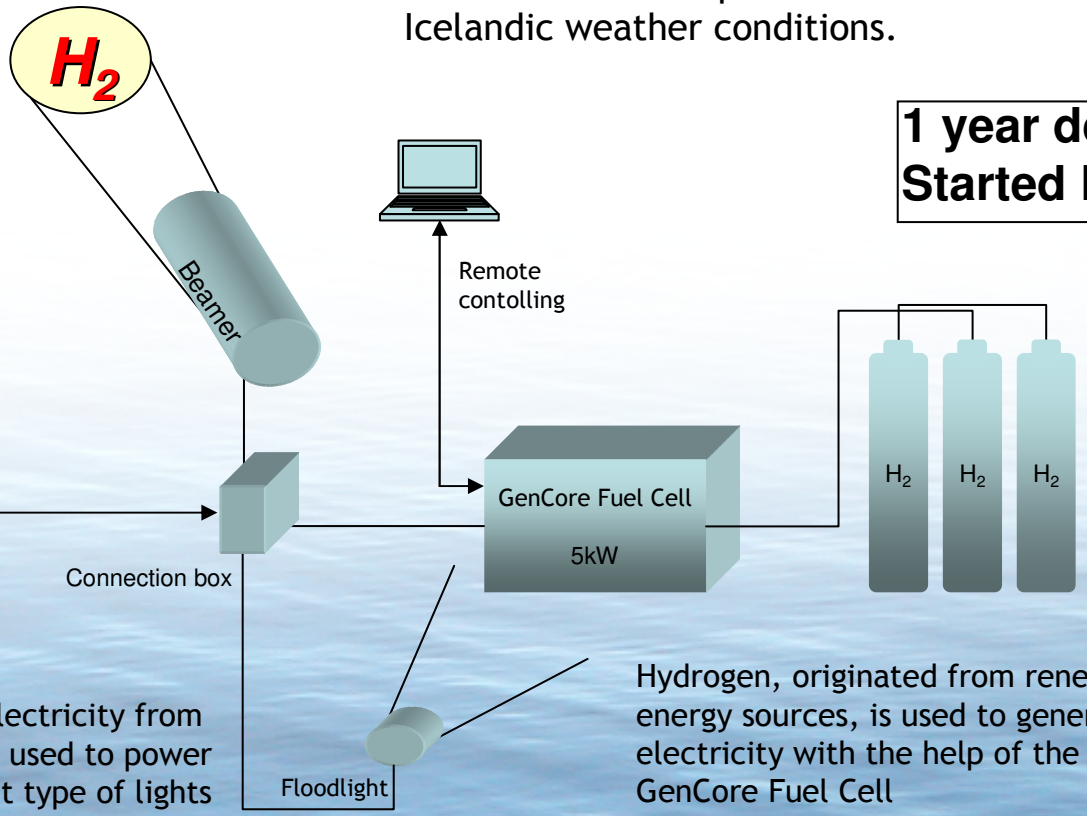
- New material development
- Underground storage has been approved
- Higher efficiency
- Smaller footprint
- Technological maturity – closer to commercialisation

Keflavik airport
US$_e$ H_2 backup

The fuel cell will operate outside in the various Icelandic weather conditions.

1 year demo
Started Dec. 05





In this setup the electricity from the fuel cell is used to power different type of lights

Hydrogen, originated from renewable energy sources, is used to generates electricity with the help of the GenCore Fuel Cell

Iceland – H_2 continuity

27 Hydrogen FC buses
In 9 European cities

CUTE

3 Hydrogen FC buses and
commercial infrastructure

ECTOS

HyFLEET:CUTE

DEMO

SMART-H_2

2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

Icelandic New Energy Ltd

Sustainable Marine & Road Transport - H_2 in Iceland

- Goal:
  - Demonstration of a fleet of hydrogen cars 20-40 cars
    - Various engine types (ICE´s/FC´s), and from different vehicle producers
  - Demonstration of an auxiliary boat engine
    - Demonstration of a 10-40 kW FC auxiliary engine on board an Icelandic boat
  - Testing of infrastructure for different users and increasing the availability of hydrogen within Reykjavik/Iceland

Objectives

- Follow up from current activities
- Continue research on infrastructure development, social, economic and environment
- Preparation for scale up of facilities
  - Infrastructure
  - Maintenance facilities (different manufacturers)
- Serial produced vehicles are expected between 2010-2015
- SMART-H_2 will bridge the gap

Current project (key activities)

- ECTOS – bus & infrastructure demonstration
  - Preparation underway to extend for 1 year (HyFleetCUTE)
- EURO-HYPORT – education, infrastructure and export of H_2
- Storage of H_2
- Geothermal hydrogen
- Hydrogen passenger vehicles (ICEH_2 &/or FC)
- Market assessment of small fuel cells
  - Stationary application (trial at Keflavik airport)
- Social acceptance – Economics ((external) cost benefit, (NEEDS))
- Marine interest (NEW-H-SHIP)
- Hydrogen Energy Technology Center (in preparation)
- Infrastructure, etc. (HyApproval)
- Consultancy
- Founder: North Atlantic Hydrogen Association (NAHA)

Red = finished projects

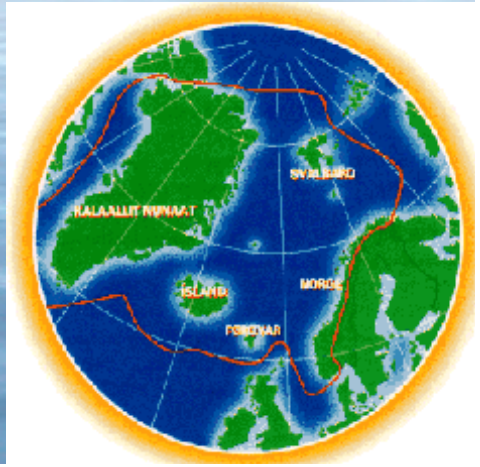
North Atlantic Hydrogen Association (NAHA)

- Regional cooperation more useful than forming local/small H_2 associations
- The main question today therefore is

Can we benefit from a regional cooperation and create a cleaner and a more environmentally sound transport/ marine societies by utilising H_2 and local resources intead of fossil fuels?

NAHA

- The purpose of NAHA is:
  - Spread information between members
    - Public information, seminars, workshops, etc.
  - Education
  - Active partner in supporting governance bodies regarding policy formation
- Membership is regional
  - The North Atlantic Region



Iceland today

& also for future generations

Icelandic New Energy Ltd

ÍSLENSK NÝORKA ehf
ICELANDIC NEW ENERGY Ltd.

We make it happen

Icelandic New Energy Ltd