



Mobilizing early users

+ Five quick industry updates

EHA Annual General Meeting
Oslo, 21 June 2011

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Hydrogen Sweden



Industry



Vehicles and Users



Energy companies



Consultants



Institutes and research



Authorities



Other





Hydrogen Society

The single solution
Technocratic determinism
Contra productive vision



Hydrogen in the Society

Complementary technology
Pragmatic approach
Business opportunities

Sweden has 100+ refuelling stations for gaseous methane...

-Plenty of vehicles to choose from

-Better overall driving economy

-More than 50% biogas

-...

Still, the market growth is slow!

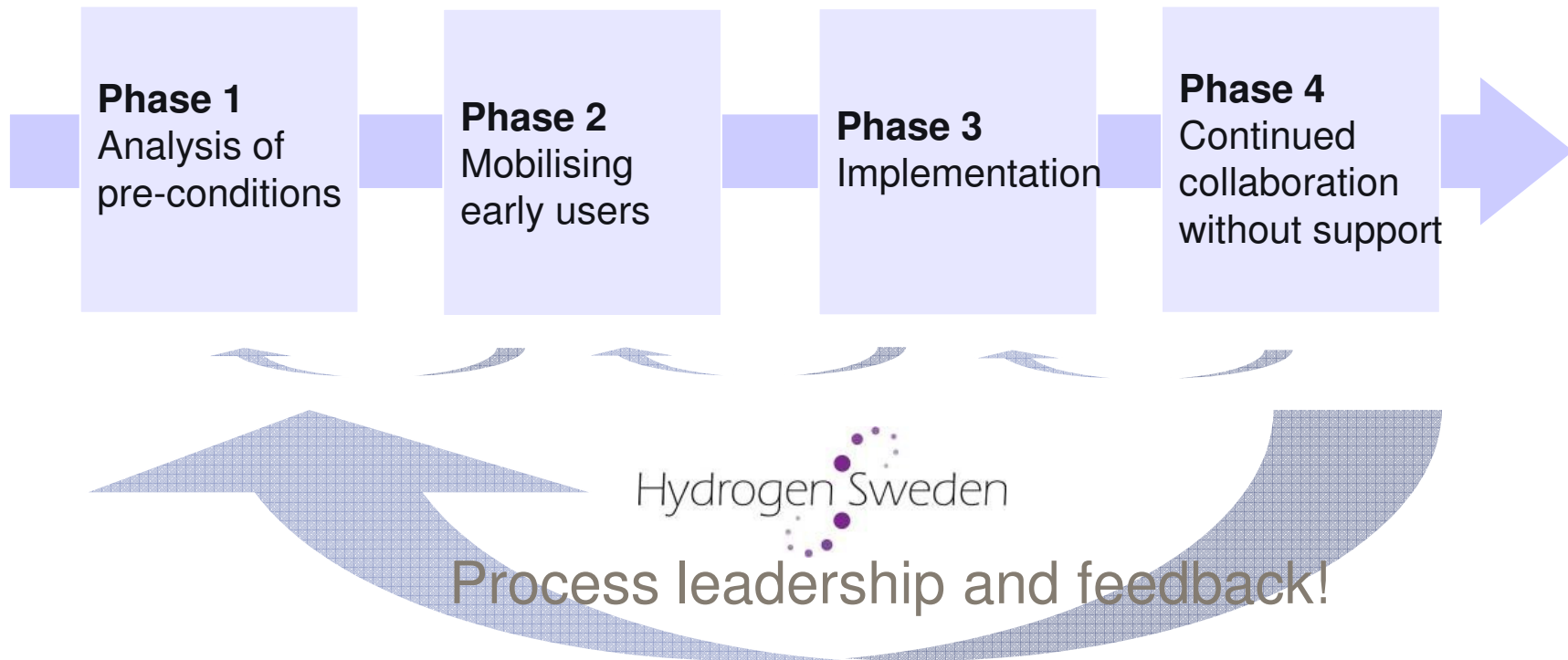
Gaining customer acceptance

- Demonstration activities
- Dissemination
- Media outreach





Supporting local and regional process



Currently supporting regional collaboration projects in Skåne, Halland, Västra Götaland and Värmland

PowerCell Sweden AB

Company Info

- Based on over 15 years of research inside AB Volvo
- Founded 2005, new owners 2009: Midroc New Technologies, OCAS Venture, Volvo Technology Transfer & FourierTransform
- 20 employees with new reformer and fuel cell labs

Products

- PEM fuel cell stack for reformat condition ($>45\%H_2$, $< 50\text{ppm CO}$) is commercially available
- PEM fuel cell stack pure hydrogen is commercially available
- Developing diesel fueled Fuel cell APU for truck and marine application
- Diesel reformer for standard low sulphur diesel under development (prototype phase)
- Diesel fuel cell APU is under development

Fuel Reformer for diesel



Fuel Cell Reformat & pure hydrogen



Fuel Cell APU



Catator Business Areas:

C · EMISSION – Emission control systems

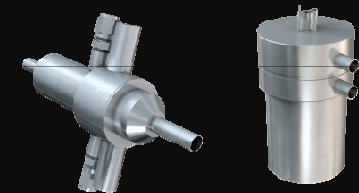
C · COMBUSTION – Heat generation

Hydrogen/Anode waste gas/ Start-up – burners



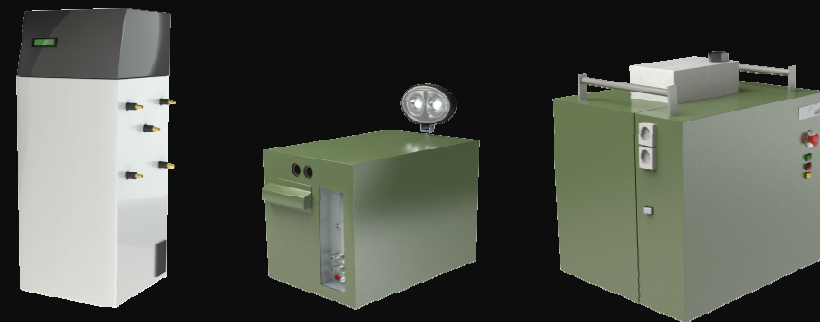
C · HYDROGEN – Hydrogen production

Reformer systems for all types of cell stack types



C · POWER – Fuel cell systems

Several demonstration units
(multifuel units!)



Please visit www.catator.se for more information



Fuel Cell projects

- H₂SusBuild (EU-program)
- H₂OME (EU-program)
- SUAV (EU-program)
- Swedish Gas Center (SGC)
- Swedish Defence Material Administration (FMV)
- Large scale field tests (Japan)
- Supplier of components and technology to partners in EU and US.



AQUAGAS

SWEDEN AB

Container assembly of H₂ filling station for 1000 bar

Deoxo/dryer for hydrogen purifying

Oslo/Drammen opened 2009

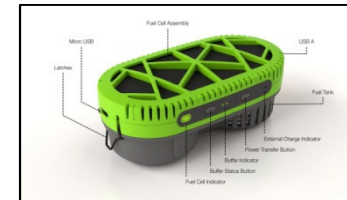
AQUAGAS is a competence company in purifying of pressurized gases.

www.aquagas.se

MYFC ABOUT.

Instant Power Anywhere – Anytime.

- myFC is a world leader in micro fuel cell, planar technology.
- Their high performance fuel cell chargers and low cost fuel cell components efficiently extend battery life of portable electronics from cell phones to lap tops
- Launched their first consumer brand and product PowerTrek at MWC in Barcelona and at the Ispo Fair in Munich February 2011.
- Received great International press this year: more then 2 000 clips (among others: Wired, Tech Crunch, Slash Gear, Times, Popular Science, The Independent, The Huffington Post, 100 000 video views, and +1000 000 hits on our homepage)
- PowerTrek will be in stores on around 20 markets in late fall 2011 (Europe, Russia, Australia and Japan). Planned launch on US market during 2012.



Products

- Electrodes with or without catalytic coatings
- for various applications such as alkaline water electrolysis, hypochlorite, electro winning, ballast water, etc.
- Complete chlorate & chlor alkali membrane cells



Competence

- Long experience of electrochemical process and the process demands
- R & D
- Manufacture of any cell design and custom made electrode structure



Capacity

- Modern coating plant with all necessary facilities
- Maintenance workshop
- Testing & assembling acc. to customer request





PLAGAZI

TURNING WASTE INTO GREEN HYDROGEN

- Production of hydrogen from waste
- More cost effective than other methods
- New application, proven technology
- Green technology without emissions