Project „Railwind“

Content

+ It's me

+ Hydrail's background

+ Project “Railwind”

+ Provocation

+ Discussion

Schienenflieger KG/Schienenflotte GmbH
Project „Railwind”
+ It’s me - Dr. Holger Busche

+ Geophysicist

+ 1998 First publication; idea of „1st symposium on hydrogen powered trains in Northern Germany”

+ 08/2004 Schienenflieger KG for innovative railway projects

+ 06/2012 Schienenflotte GmbH for Hydrail

+ btw: rowing, cycling & chess; Hannover
Project „Railwind”
+ Background

- Energy

+ “Energiewende” Change to renewables & switch off all nuclear power by 2020

+ Wind energy most effective, some PV

+ Production in rural areas and fluctuating

+ Storing renewable surplus energy into H₂

+ Using fuel cells in vehicles

+ Everybody is thinking of cars but...
Project „Railwind”

+ Background

- Technical Adv.

+ ...trains have technical advantages

- less limitations in weight and space

- less fuel stations needed

- only qualified personnel is handling H$_2$

- higher & foreseeable consumption
Project „Railwind”

+ Background

+ ...but even more important:
   trains have economical advantages

- Economic Adv.

- the only mode of transportation where
  “hydr...” is saving infrastructure cost

40-60 ct/kWh mech + ~0 ct/kWh mech
8-11 ct/kWh mech + <300 ct/kWh mech
~12 ct/kWh mech + 50 ct/kWh mech

+ go electric w/o problems of overhead lines
Project „Railwind”

+ Background
- Economic Adv.

+ Hydrogen of same price as Diesel
- Elektrolyser investment has largest part
- Investment cost will decrease
- Same story with fuel cells („Peak Oil”)
  & even higher
  up
  up
  up
  going
- Diesel price is
Project „Railwind”

+ Project - Test

+ Former railcar (20t Pb-Rechargeable batt.)
+ Dielectric since 1995
+ Until October 2010 on duty
+ Start by Schienenflotte GmbH in 2012 as exhibition & “rail party” vehicle to promote hydравil
Project „Railwind”
+ Project - Test

+ Fuel cell 12/2013 for test rides
+ 2014/2015 regular service near Hannover
  Rinteln - Stadthagen (Northern Germany)
+ installing electrolyser & station
+ option of new energy source
Project „Railwind”
  + Project
  + Modern rail car LINT 41 H2e
  + Standard vehicle (500+ pcs)
  + ~2,5 Mio.€ each
  + owned by state of lower saxony
  + parallel development

Schienenflotte GmbH; Dr. Holger Busche
Int. Hydrail Conf., Jul.2012@Birmingham
Project „Railwind”

+ Provocation

- Motivation

+ Motivation

+ The art of talking to
  - engineers
  - politicians
  - economicals
  - manager
  - administration/civil servants
  - lawyers & judges
  - public

+ provocation
Project „Railwind”
+ Discussion

cu@ Int. Hydrail Conf.

Northern Germany 2014?