Making Progress in Hydrogen Rail Traction

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Drivers for the adoption of hydrogen for rail traction
Rail traction trials since 2006
Perceived obstacles to adoption of hydrogen
The solutions to these problems
Achieving more wide spread application by 2018
Conclusions
Drivers for adoption of hydrogen

- CO₂ and particulate emissions
- Noise emissions
- Security of oil supply
- Cost of oil
- Electric traction infrastructure costs
- Poor range of battery locomotives
2006

Railway technical Research Institute
90 kW
Fuel Cell only
Compressed gas

Photo courtesy of RTRI
Trial in USA

2009

BNSF & Vehicle Projects Inc
240 kW Fuel Cell
750kW battery
70kg Compressed gas

Photo courtesy of Vehicle Projects Inc.
Perceived Problems

- Cost
- Range
- Weight
- Space
- Refuelling
- Safety
- Lifetime
FEVE & Fenit Rail
24 kW
Fuel Cell 95kW battery
Compressed gas
Anglo American & Vehicle Projects Inc
Fleet of 5 Locos
17 kW Fuel Cell
45kW inc battery
Metal hydride

Photo courtesy of Vehicle Projects Inc.
BNSF & Vehicle Projects Inc
500kW Fuel Cell
230kW lithium ion battery
350kg compressed gas storage

Photo courtesy of Vehicle Projects Inc.
Drivers for hydrogen in railway traction are even stronger now than 6 years ago.

Trials in a number of countries have demonstrated feasibility.

Perceived problems are being countered.

Vehicle Projects in the USA continue to be the world leaders in this area of development. They have demonstrated a high power locomotive, will shortly produce the first fleet of locomotives and are building a higher powered locomotive.

Technological advances will continue but the key to widespread adoption is world-wide demonstration to gain industry confidence.