



## **VAN HOOL TODAY**

**60 years experience in bus design, manufacturing and service**

**Family Owned and Managed**

**80% Exports Worldwide**

**4,300 Work Force**

**1,600 buses/coaches per year**

**4,000 industrial vehicles per year**

**Over 6,000 Coaches and buses in U.S.A.**

**Product Designs and Production Flexibility to meet specific Market requirements**



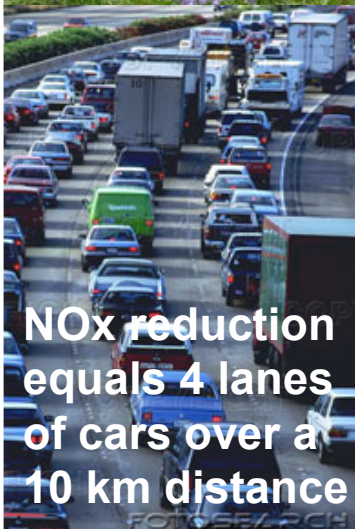


**For each 100 hydrogen buses :**

**Compared to \***

	<b>No<sub>x</sub></b> Yearly	<b>PM</b> Yearly
<b>Diesel Euro 3</b>	<b>62.5 tons</b>	<b>1.25 tons</b>
<b>CNG</b>	<b>25 tons</b>	<b>0.25 tons</b>

\* 50.000 km/yr - average 20 km/h - 50 kW/h



Fuel Cell Europe



## The Californian Experience

### The first generation

Five Hybrid Fuel Cell Buses delivered and in operation in California and Connecticut

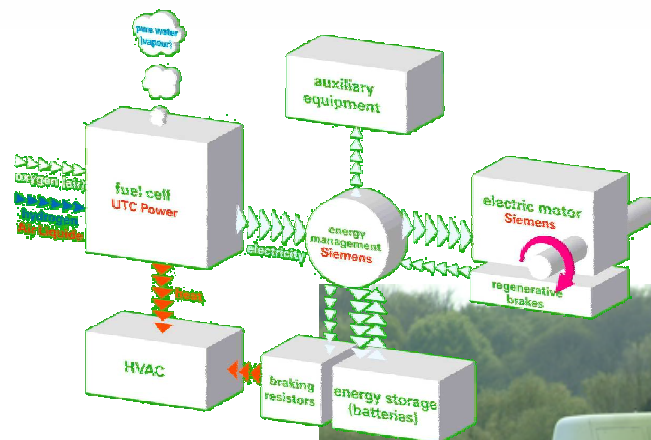


Fuel Cell Europe

AN ACTIVITY OF THE EUROPEAN FUEL CELL COUNCIL







No compromise !!

- zero tailpipe emission !
- full length 3-door low floor
- full passenger capacity (up to 94 total/34 seated)
- full operating range (up to 20 hrs/350 km)



## Summary Results of Flanders Fuel Cell Program

### THE TECHNOLOGY WORKS !!

- Excellent Fuel Efficiency thanks to :
  - Hybrid drive system
  - Brake energy regeneration
- Excellent Performance :
  - Acceleration, stop/go
  - Extremely low noise level inside and outside
- Availability solely due to Energy Storage issues
  - NiMH batteries
  - Future outlook with Lithium-ion batteries



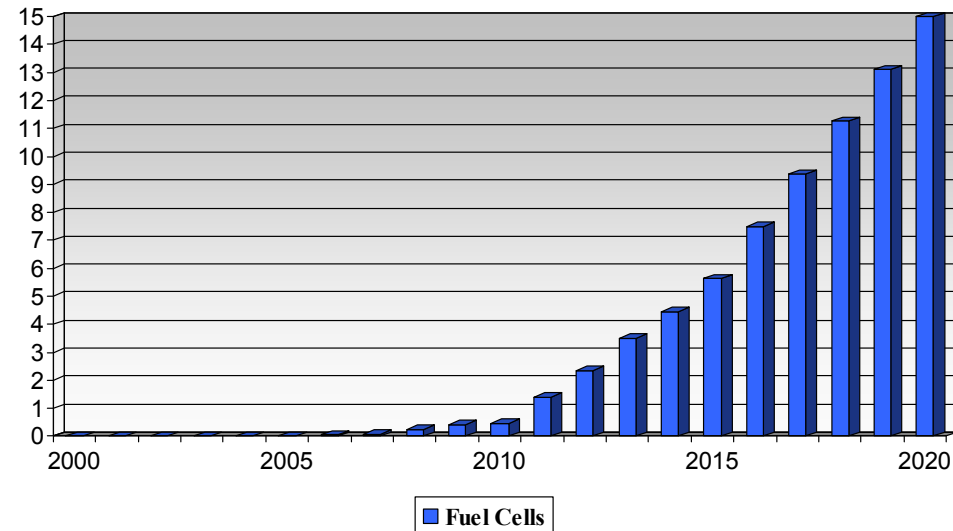
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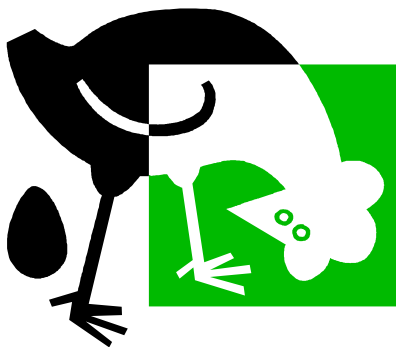


## Future Market outlook (Percentage of fleet)

2010 : 0.5%  
2012 : 2.0%  
2015 : 5.5%  
2020 : 15%



## Cost Reduction Potential



Standard diesel	: 100 > 100
Hybrid drive	: 50 > 40
Energy storage	: 40 > 30
Fuel cell	: 220 > 100
Integration:	<u>40 &gt; 30</u>
TOTAL	: 450 > 300



ChevronTexaco

Fuel Cell Europe

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