

# **R.E.T. AND SUSTAINABLE** MOBILITY

THEO KONI, INENDI, JK COORDINATOR INNOVATION R.E.T.



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# **RET, facts & figures**

**Company origins date back to 1878** 

#### **RET N.V. - Integral company**

- > approx. 3,000 employees
- Integral Public Transport network
- Public transport services and maintenance PT infrastructure

#### Operation

- 600.000 passengers/day; 185.7 mio passengers/yr
- Passengers: bus 38.7 mio; tram 59.9 mio; metro 87.7 mio
- ≻50 stations (metro, light rail)
- Punctuality: metro 95%; tram/bus 75%



# **Public transport in and around Rotterdam**



5 subway lines, 160 vehicles



10+1 tram lines, 113 vehicles



36+13 bus lines, 256 vehicles





1 ferry line, 1 vessel

# Drivers for sustainable measures ROTTERDAM.C.INITIATIVE





Gemeente Rotterdam



#### Nieuw veiligheidsplan Meer beleving op stations Klantgerichte inzet personeel Producten op maat ICT voor klantgemak (wifi, schermen in voertuigen etc.) Duurzaam Ondernemen De Perfecte Reis met de Verr

1 Optimale reizigersbeleving





# **Context sustainability Rotterdam City Region**

- SRR: Rotterdam city region
- Aim reduction GHG: 1990 2025 40%
- General aims sustainable mobility:
  - Increase use PT 60%, use bike: 30%
  - Decrease congestion
  - Use of clean, silent vehicles, using less energy



#### SRR (Rotterdam)

#### Consessiegebied

Streekvervoer Voorne-Putten / Rozenburg

Bus- en Nachtnet Rotterdam

Metro/tram Rotterdam, Randstadrail

Streekvervoer Regio Rotterdam

Treindienst Rotterdam - Hoek van Holland



#### **Target Rotterdam Climate Initiative**



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# **RET: Sustainable business in public transport**



# Improve sustainable performance



## Sustainable measure RET: Tramstore21

#### Goal:

Sustainable and efficient tram depots build for cities of the 21st Century

#### **Reasons for cooperation:**

- depot is vital for a tram network;
- cities have little experience in the construction of depots;
- > great impact on the immediate area;
- construction of new depots in Brussels (Be), Dijon (Fr), Blackpool (UK) and Rotterdam;
- ➤ total EU funding for RET: € 1.17 million.





## Sustainable measure RET: Ticket to Kyoto

#### Goal:

Introducing the principle of low CO<sub>2</sub> emissions as the new standard for public transport providers

Five partners: GMPTE (UK); moBiel (Ger); RATP (Fr); RET (NL); STIB (Bel)

➤Total EU funding for RET: € 1.2 million







# T2KImprovements and investments 2010 - 2014





## **Innovative busprojects in The Netherlands**



# Status innovative bus projects The Netherlands

- All busses as shown still in full operation
- Fuel Cell Phillias in Amsterdam in operation now

- Pilots finished, financial support stopped
  - Russes remain with the operators



# National Perspective in NL

- Zero Emission City Buses 100% reached by 2025
- Supported by NL Ministry of Infrastructure & Environment (I&M) and EU (ELENA)



# **RET Busfleet 'regular'**

Citaro					
Fabrikant	Mercedes-Benz / EvoBus, Mannheim (D)	Lengte	11,95 meter		
		Massa	11,2 ton (200-serie)		
Aantal voertuigen 89 76	89 (200-serie) 76 (300-serie)		11,7 ton (300-serie)		
		Capaciteit	34 zitplaatsen, 64 staanplaatsen – totaal 98 passagiers (200-serie)		
Bouwjaar	2006 - 2008		30 zitplaatsen, 68 staanplaatsen – totaal 98 passagiers (300-serie)		
Technische levensduur	12,5 jaar	Bijzonderheden	De voertuigen uit de 200-serie verschillen op een aantal punten van de voertuigen uit de 300-serie.		

Fabrikant	MAN, Ankara (Turkije)	Lengte	11.86 meter		
Aantal voertuigen	89 (1000-serie)	Massa	11.5 ton		
Bouwjaar	2008	Capaciteit	43 zitplaatsen, 45 staanplaatsen – totaal 88 passagiers		
Technische levensduur	12,5 jaar B	lizonderheden	De voertuigen uit de 1000-serie zijn eind 2012 overgenomen van QBuzz.		



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-CIBUSZ

BXOTOT

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# Hybrid buses at RET





# Experiences RET – MB Citaro G Hybrid (18m)

- The 2 buses are running very reliable
- 2 updates (including modified software, a new type of generator engine and new axles, but same battery pack!) for improvement
- RET Operation (especially drivers) satisfied with the concept
- Energy (Diesel) consumption in recent twin test:

Around 23 % fuel-saving, first test in 2011 showed only 9 %

Now result reached mainly by botter adjustments of the



ollution, noise of these busses

# Experiences RET – NEMS e-Busz (12m) • The 2 busses have driven less kilometers, due

- The 2 busses have driven less kilometers, due to:
  - Small software problems
  - Mechanical problems (cooling, generator engine, etc.)
  - But improved as well
- As they were unique, also many demonstrations and testing have reduced their deployment for PT services in Rotterdam



urer VDL launched the ame drive line (ZA

### **Results – passengers and staff**



Drivers: comfortable, silent, fast in 'start off', interested in fuel use, want to drive more frequently



Maintenance: extra + specific knowlegde, technology not yet proven new technology takes a lot of capacity



Passengers: positive for image RET, but not a big difference compared to conventional buses

# Long term approach for more sustainable bus operation



# Short term plans for more sustainable bus operation

- H2 busses
- Fuel Cell buses (2015-2019)
  - Purchase of 2 vehicles
  - Experiment togheter with other European cities
    - Consortium: 3Emotion
    - Co-funding by Ministry of Infrastructure, SRR & the local government
  - FCH-JU study for commercialization of H2 buses
- Electric buses, e-Buszen (2014-2018)
  - The extending of the e-Busz
    - Funding by Ministry of Infrastructure and environment & SRR
  - Zero emission busses
  - $\rightarrow$  100% Electric





# **Introduction of FC buses**

Starting purchase proces by market consultation

- introduction end 2015
- in daily operation 2016-2019

Planning busroute

- Green busroute
- Environmental zone
- Better air quality in the city of Rotterdam

Monitoring en evaluation

- Reports to funding bodies
- Air Liquide station
- Rhoon: Groene Kruisweg / A15







# **Remarks and questions**



(coordinator innovation) isor sustainability)

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