



KIVI NIRIA

# Spykerprijs 2010

ir. Niels Leermakers



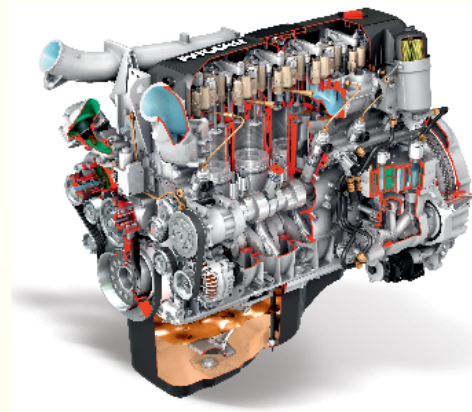
Maastricht, 17 november 2010

fuel consumption  
NOx emission

Emissions

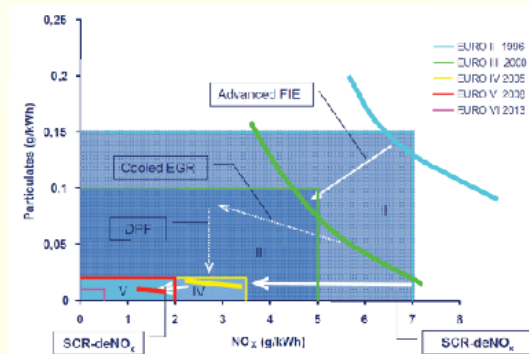
# Road transport

Heavy-duty  
Diesel



ICE

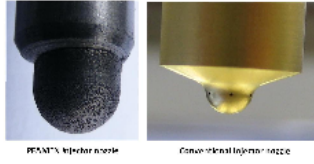
Emissions



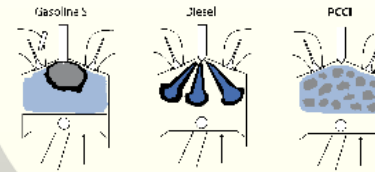
After treatment

# Technology

## Hardware



## Combustion Concepts



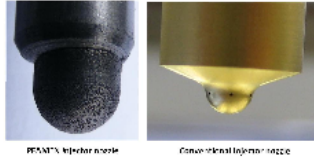
## Fuels



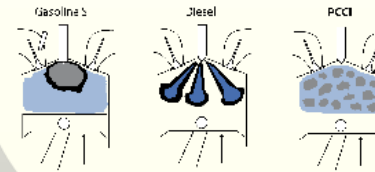
ICE

# Technology

## Hardware



## Combustion Concepts



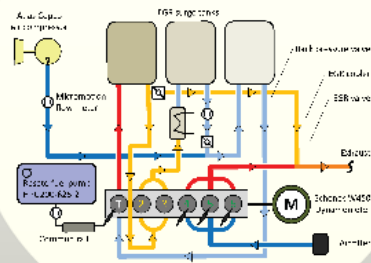
## Fuels



ICE

# Experiments

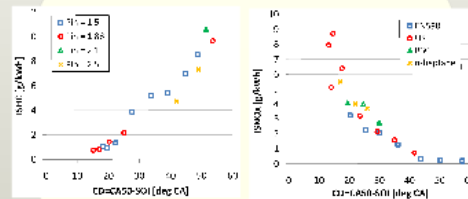
## Setup



## Parameters

- Operating conditions:
- Injection timing
  - Injection quantity
  - Intake pressure
  - Intake temperature
  - EGR percentage
- Fuels:
- European Diesel
  - American Diesel
  - n-heptane
  - Biodiesel

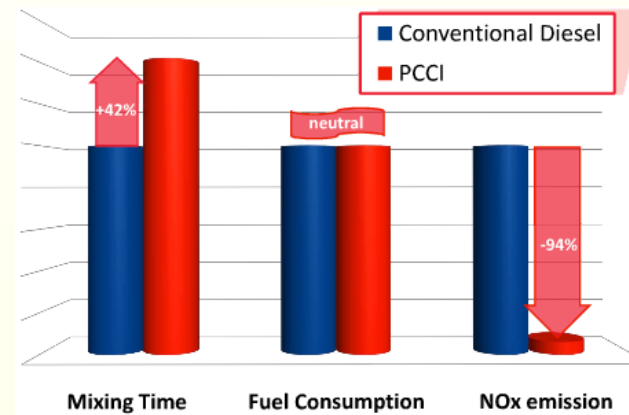
## Results



Reactive

# Conclusions

- CD dominant
- Short CD for HC/CO
- Long CD for NO<sub>x</sub>/PM
- Low load with Diesel
- Higher load with low-reactive fuel





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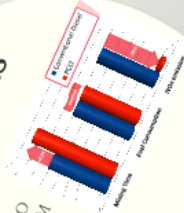
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## Conclusions

- CD dominant
- Short CD for HC/CO
- Long CD for NO<sub>x</sub>/PM
- Low load with Diesel reactive fuel

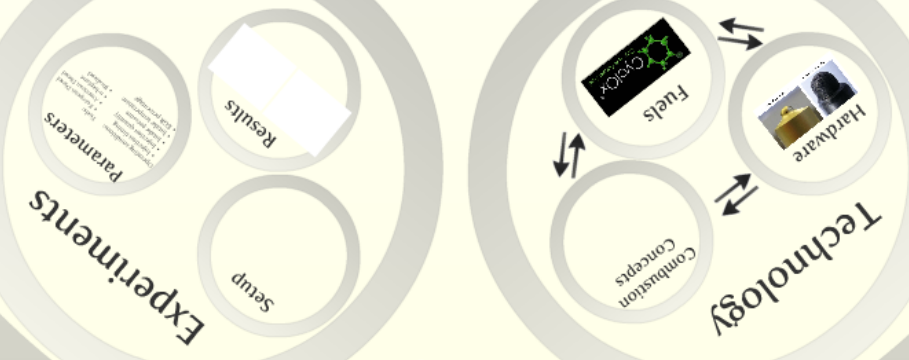


Heavy-duty Diesel Road transport

Emissions

After treatment

ICE



# Acknowledgments

Stichting Nederlands Nationaal  
Comité Motorproeven  
Smeerolie en Brandstoffen

Stichting Motoren Onderwijs Nederland



**Shell Global Solutions**

**DAF**

A PACCAR COMPANY



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