



## **Collaboration AgipPetroli – JRC**

**PNR Ambiente - “National Research Programme on Environment”**



- **Objectives:**

- Pollutant emission reduction by means of engines and fuels optimization
- Identification of fingerprints for particulate source apportionment:  
advanced chemical analysis of particulate samples
- Particle size related measurements:  
characterisation of particulate emissions with Low Pressure Impactor (influence of engine operating conditions and fuel quality on mass/size distribution)

## Emission test campaign: February 2002 - May 2002

- Test matrix:
  - 6 Test Fuels :  
Fuel parameters to be evaluated: Cetane Number, Oxygen Content, Composition
  - Test vehicle:  
FIAT Bravo Euro 3 equipped with a “common rail” injection system
  - Engine operating conditions  
With and without catalyst, with and without EGR

## Test Fuels:

HC 51 0 – Base fuel (Cetane Number 51, 0% Oxygen)

ME 51 2 – Cetane Number 51, 2% Oxygen

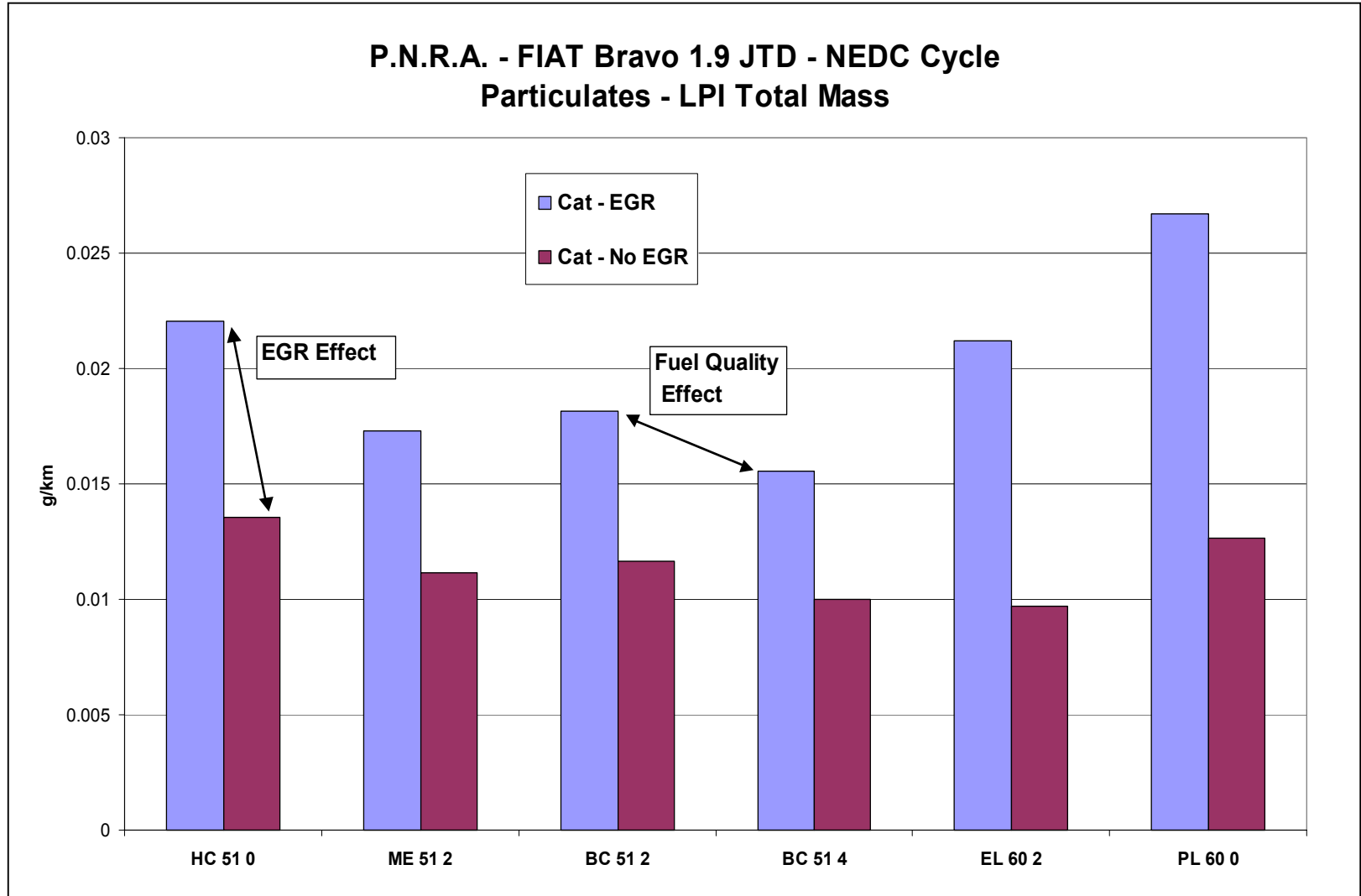
BC 51 2 – Cetane Number 51, 2% Oxygen

BC 51 4 – Cetane Number 51, 4% Oxygen

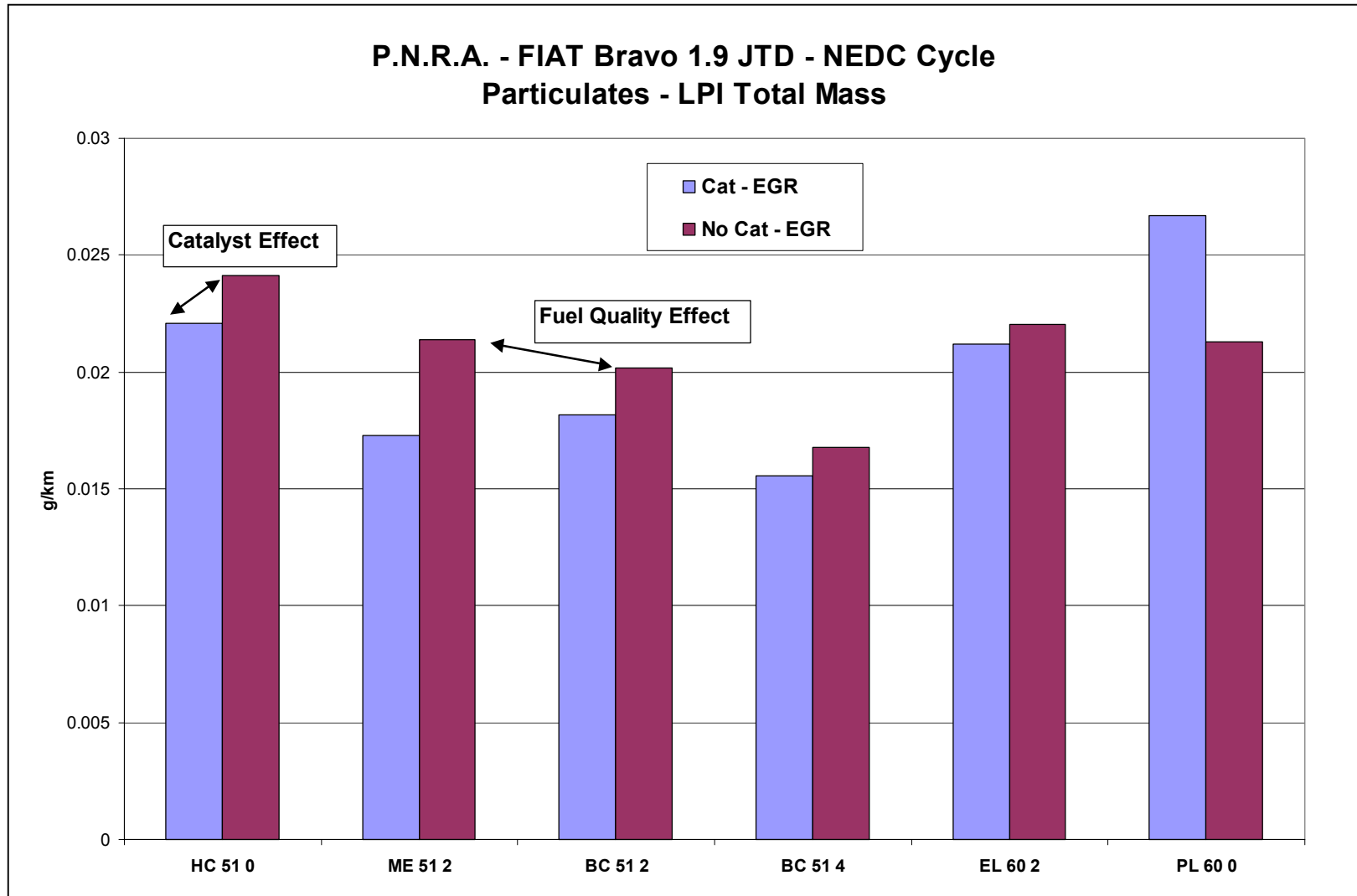
EL 60 2 – Cetane Number 60, 2% Oxygen

PL 60 0 – Cetane Number 60, 0% Oxygen

# Important effects of EGR and fuel quality on particulate emissions

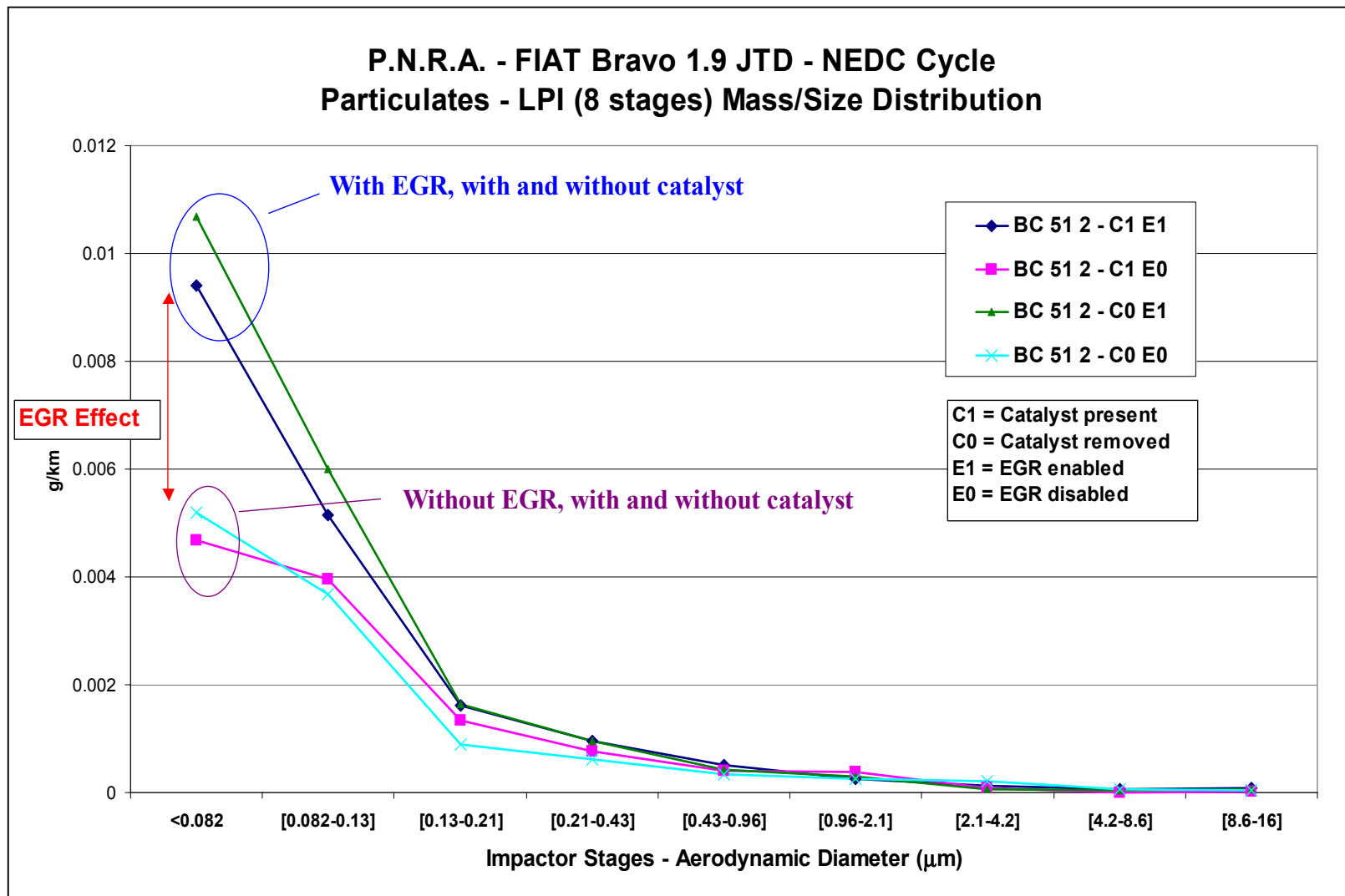


# Effect of fuel quality compared to catalyst effect on particulate emissions



# Important EGR effect on the mass/size distribution of particulates (same fuel, different engine conditions)

JRC



## Conclusions

- Measurement campaign successfully performed
- High consistency between the results obtained by JRC and by AgipPetroli
- Important effect of on particulate total mass and on mass/size distribution of:
  - Exhaust Gas Recirculation (EGR)
  - Fuel quality (oxygen content in particular)