

NO₂ Emissions/Air Quality

International Diesel Retrofit Advisory
Committee

Pasadena Hilton
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Transient Emission Testing

<u>Test Cycle</u>	NO ₂ /NO _x (%)	
	<u>w</u>	<u>w/o</u>
Braunschweig	33	5
ETC (city)	42	8
ETC (rural)	37	5
ETC (highway)	50	7

Steady State Emission Testing

Vehicle: Volvo Bus, Model Year 1992

Engine: Volvo THD 102 KB

Mileage: Total 530 000 km

Filter: JM CRT, Installed March 1999

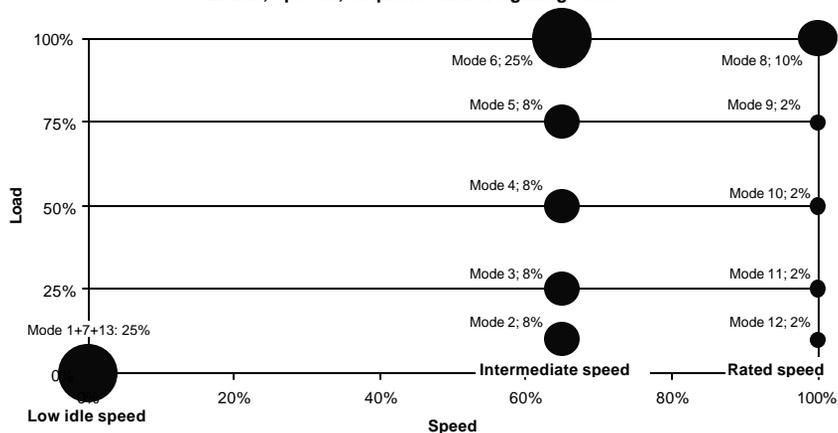
Mileage with filter: 120 000 km

Results (g/Kwh):

CO=0.12; HC=0.02; NO_x=6.8; Part.=0.04

Steady State Emission Testing

88/77/EEC TEST CYCLE
Loads, speeds, sequence and weighting factors



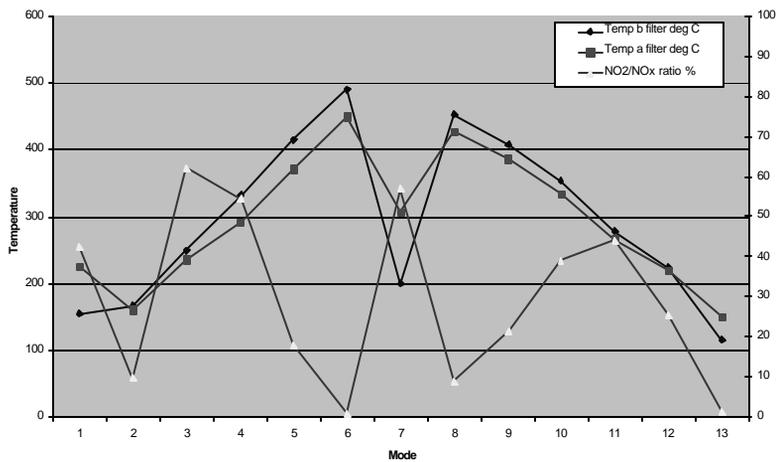
Steady State Emission Testing

<u>88/77/EEC</u>	NO₂/NO_x (%)
Mode 1,7,13 (idle)	34
Mode 2 (10% load, interm.speed)	10
Mode 4 (50% load, interm.speed)	54
Mode 5 (75% load, interm.speed)	18
Average	14

Areas to Consider

- Loading of the Catalyst
- Exhaust Temperature
- Mode of Operation
- Ageing of Catalyst

NO₂/NO_x Ratio, 88/77/EEC



Ambient Air Quality

(Swedish Environmental Research Institute
Gothenburg, Sweden)

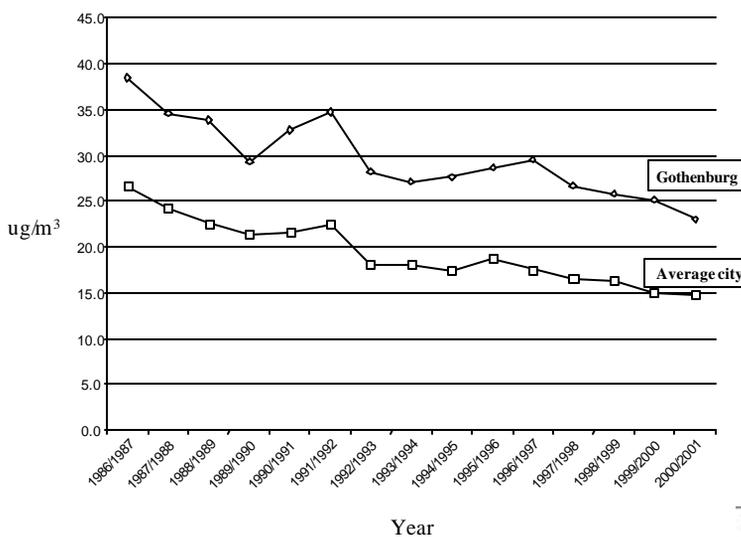
Mayor Problem Inversions Winter Time

- NO₂ Levels From Traffic at least 80 %
- Measurements in City Center
- AQ Standards max 40 microgram/m³
- A Steady Decrease Since 1986

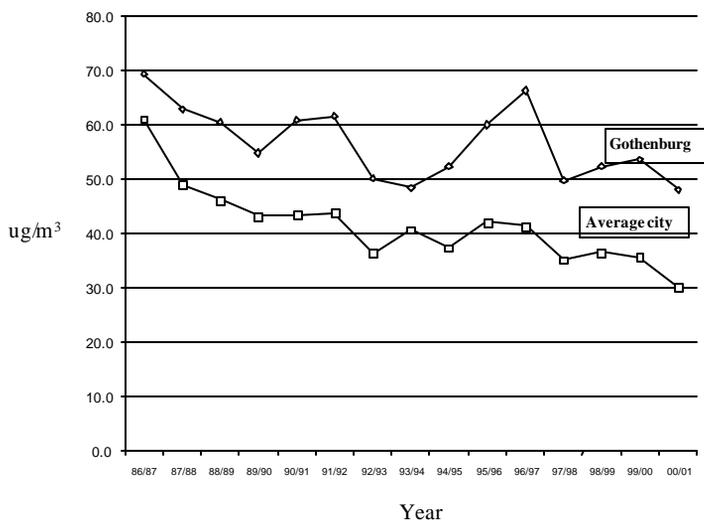
Gothenburg, Sweden

- Environmental Zone since 1996
- Size of the Zone 3 x 5 km
- People Living 100 000
- People Working 100 000
- Vehicles/day in the Zone 68 800
- HDV with filter app. 450

Trend of ambient NO₂ concentration as winter season averages for Gothenburg and the average Swedish city, 1986-2001



Trend of ambient NO₂ concentration as 98-percentile for daily averages for Gothenburg and the average Swedish city, 1986-2001



IVL

Ambient Air Quality

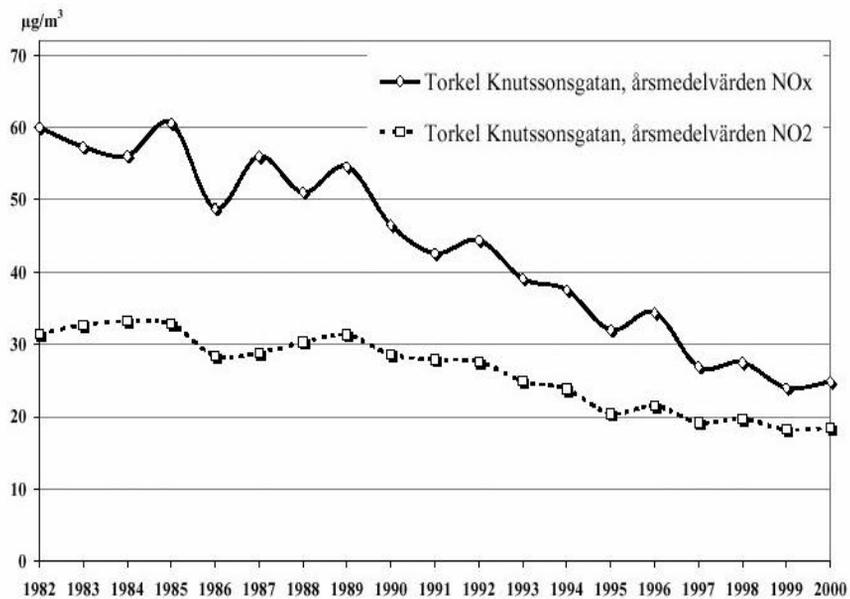
(Swedish Meteorological and Hydrological Institute
Stockholm, Sweden)

- Converters Mandatory 1989
- Most City Buses fueled by Ethanol
- Measurements in City Center
- A Steady Decrease Since 1982
- Possible influence on narrow streets and "bad ventilation"

Stockholm, Sweden

- Environmental Zone since 1996
- Size of the Zone 5 x 7 km
- People Living 250 000
- People Working 280 000

Torkel Knutssonsgatan (taknivå)



Ambient Air Quality

(Swedish Meteorological and Hydrological Institute
Stockholm, Sweden)

However,

- A recent study in a tunnel show increased ratio of NO_2/NO_x (reasons not yet clarified)