

Synthetic Fuel

by

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Arch Western Bituminous Coal

Diesel Fuel vs. Synthetic Fuel

Diesel Fuel

- BTU's/lb.....18,500
- Cetane.....40-45
- Aromatics, %.....20-30
- CFPP, °C.....0 to -20
- Sulfur, ppm.....<300

Synthetic Fuel

- BTU's/lb.....19,000
- Cetane.....80
- Aromatics, %.....0
- CFPP, °C.....<-40
- Sulfur, ppm.....<1

ISO 8178

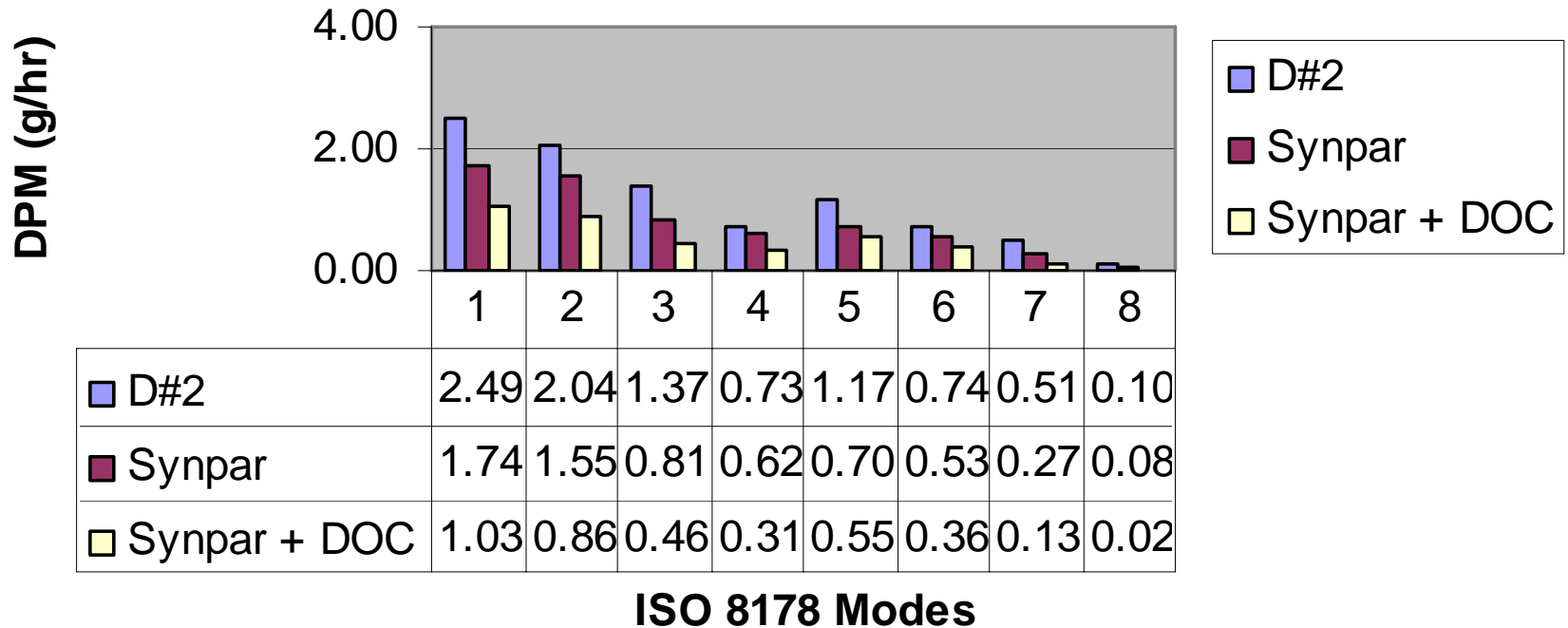
Steady State Test

Mode Number	1	2	3	4	5	6	7	8
Torque %	100	75	50	10	100	75	50	0
Engine Speed	Rated	Rated	Rated	Rated	Peak Torque	Peak Torque	Peak Torque	Idle
Weighting Factor	0.15	0.15	0.15	0.1	0.1	0.1	0.1	0.15

1st Lab Test

Isuzu 4JG1 EPA Tier 1 (50% Reduction)

DPM Isuzu 4JG1



D#2	2.49	2.04	1.37	0.73	1.17	0.74	0.51	0.10
Synpar	1.74	1.55	0.81	0.62	0.70	0.53	0.27	0.08
Synpar + DOC	1.03	0.86	0.46	0.31	0.55	0.36	0.13	0.02

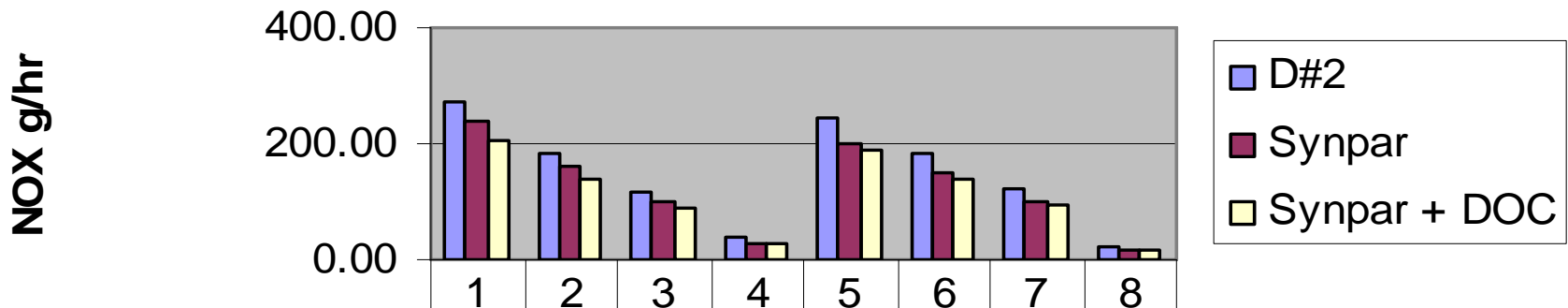
ISO 8178 Modes

1st Lab Test

Isuzu 4JG1 EPA Tier 1

(21% Reduction)

NOX Isuzu 4JG1



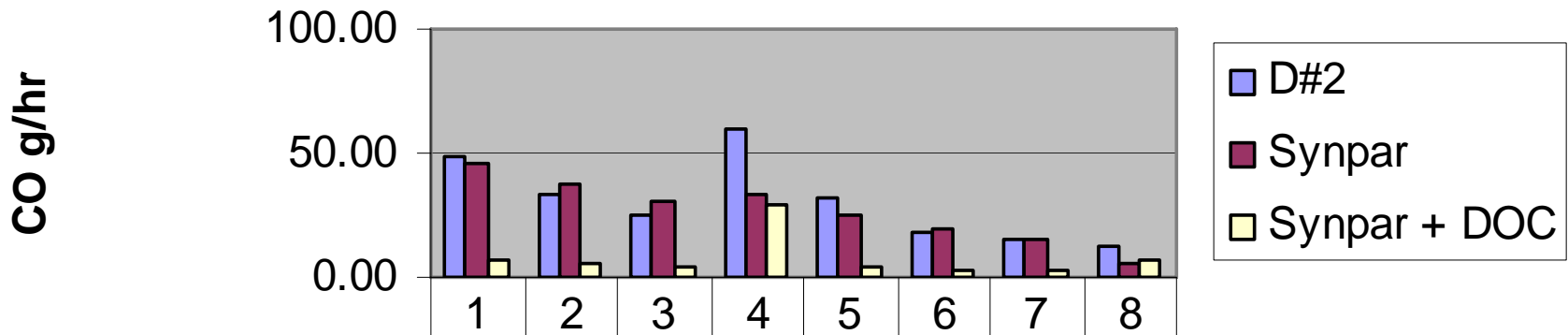
■ D#2	271.	184.	119.	39.7	246.	181.	119.	19.5
■ Synpar	238.	158.	102.	29.9	202.	147.	99.1	15.5
■ Synpar + DOC	204.	141.	90.2	25.8	189.	141.	93.2	14.6

ISO 8178 Modes

1st Lab Test

Isuzu 4JG1 EPA Tier 1 (75% Reduction)

CO Isusz 4JG1



■ D#2	48.8	33.9	25.6	59.4	32.0	17.7	15.0	12.8
■ Synpar	46.2	36.8	31.1	33.5	25.2	19.6	15.7	5.35
■ Synpar + DOC	6.46	5.17	3.89	29.7	4.30	3.00	2.35	6.47

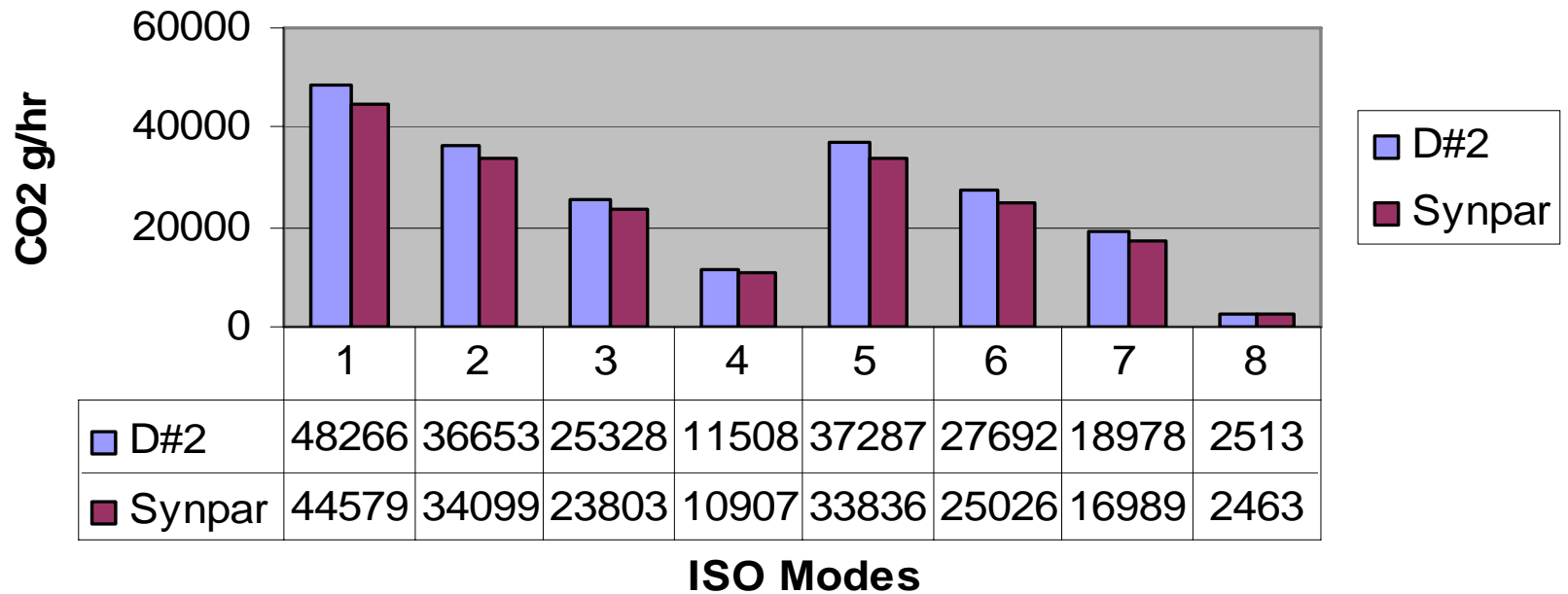
ISO 8178 Modes

1st Lab Test

Isuzu 4JG1 EPA Tier 1

(9% Reduction)

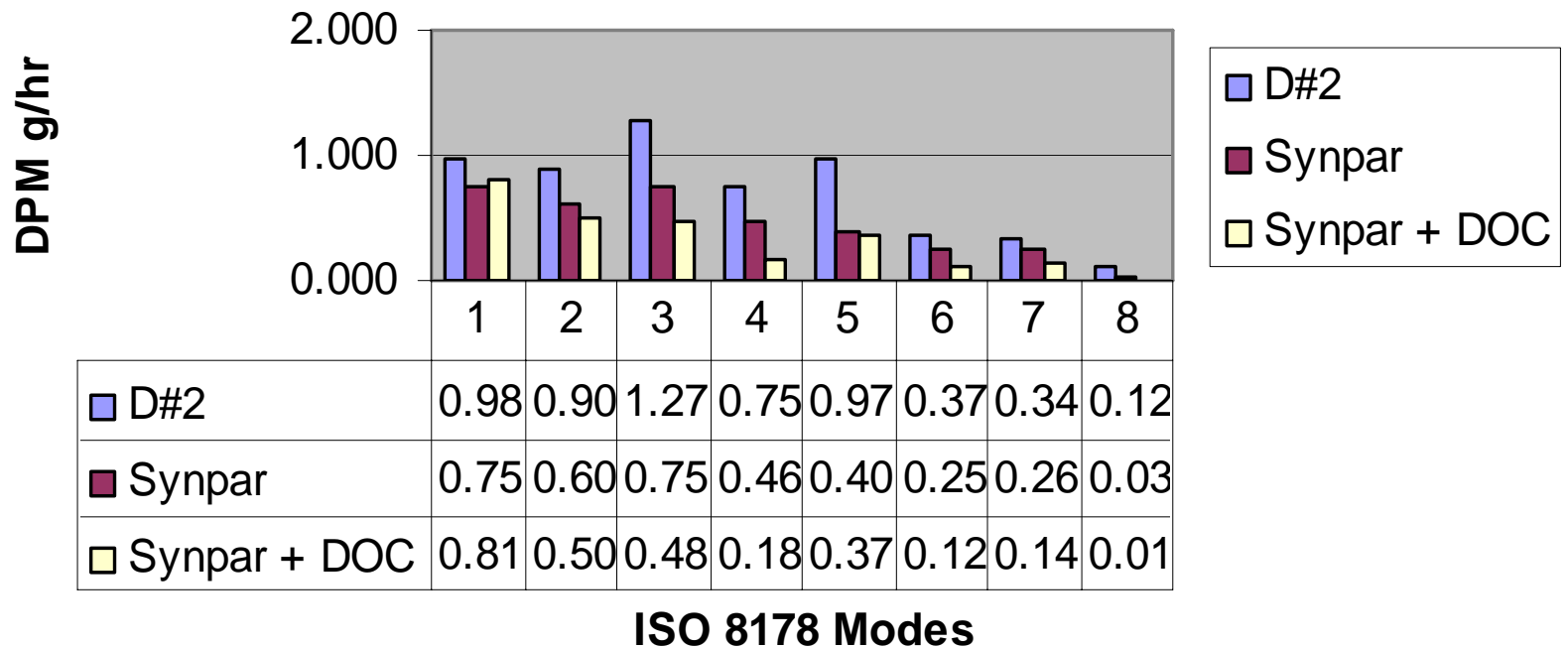
CO2 Isuzu 4JG1



2nd Lab Test

Deutz 2011 EPA Tier 2 (54% Reduction)

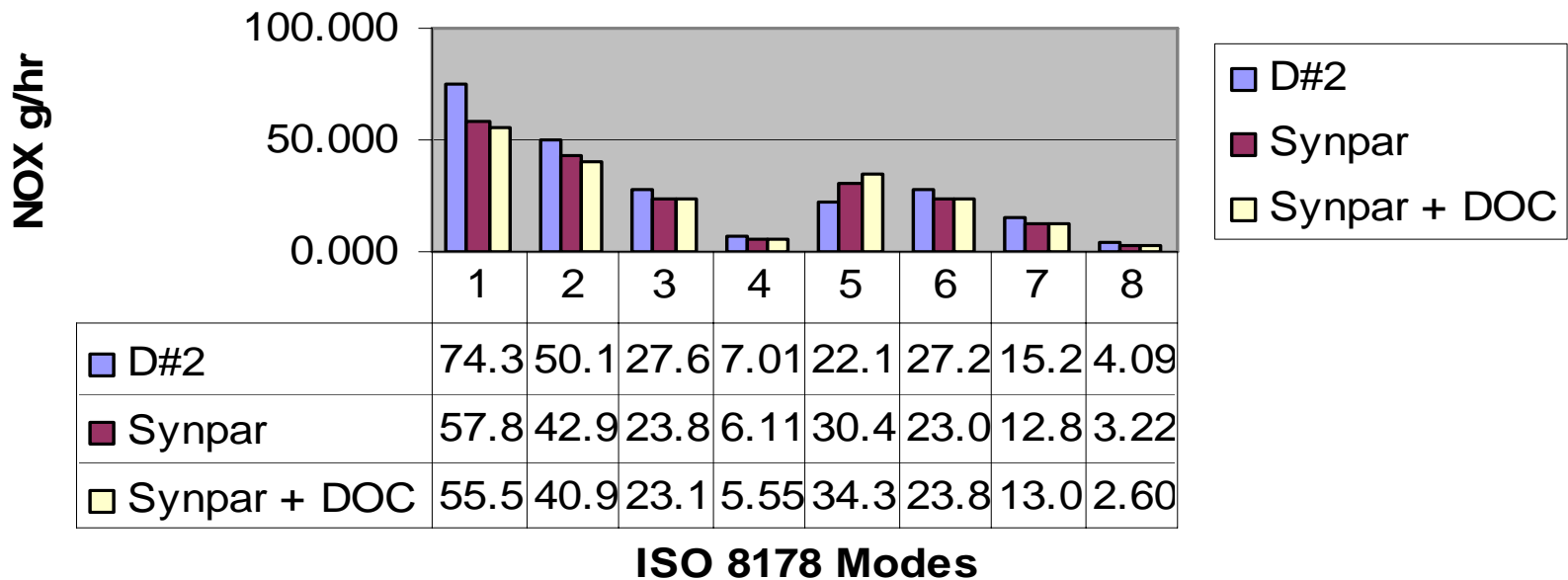
DPM Deutz 2011



2nd Lab Test

Deutz 2011 EPA Tier 2 (21% Reduction)

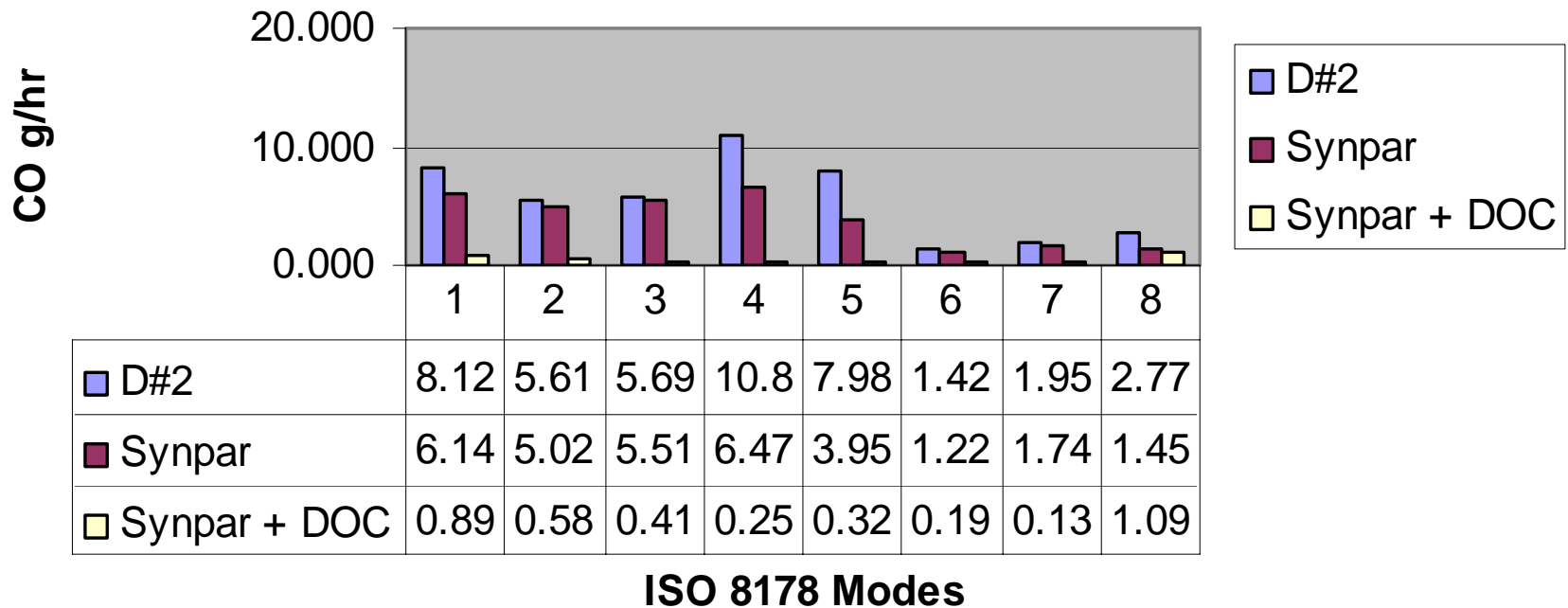
NOX Deutz 2011



2nd Lab Test

Deutz 2011 EPA Tier 2 (91% Reduction)

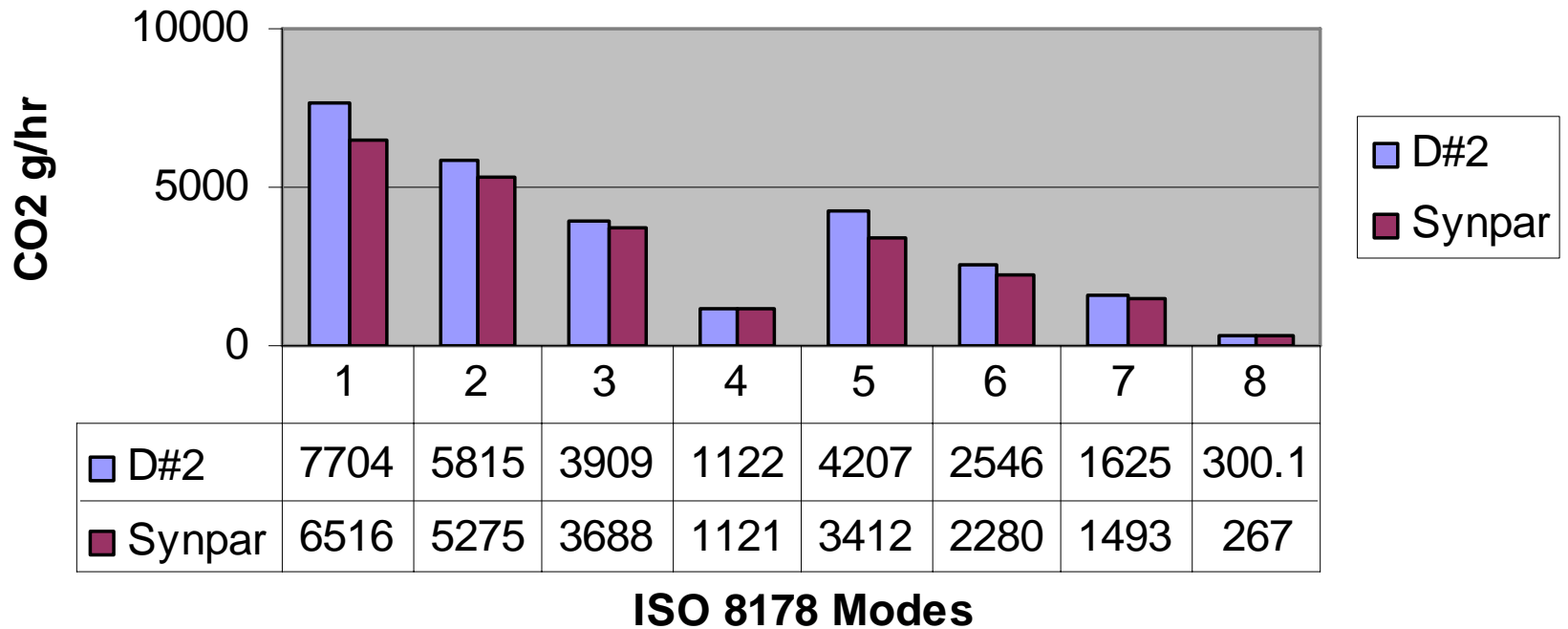
Co Deutz 2011



2nd Lab Test

Deutz 2011 EPA Tier 2 (12% Reduction)

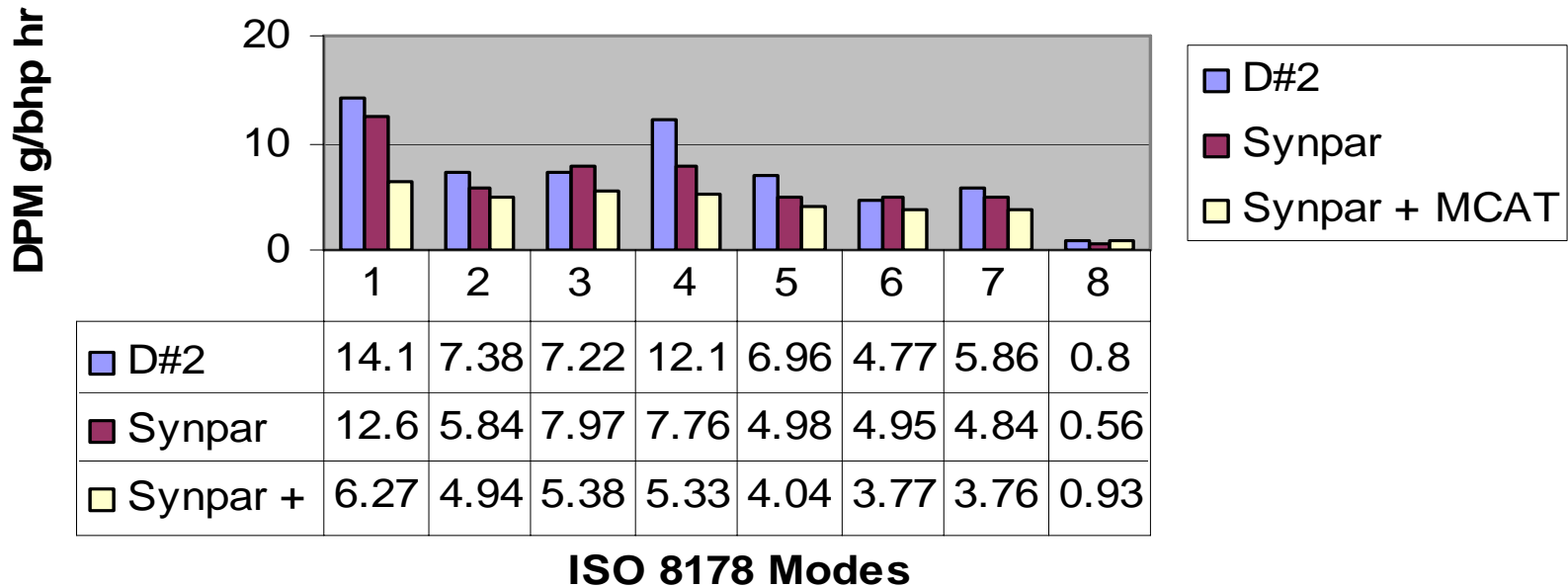
CO2 Deutz 2011



3rd Lab Test

Mercedes 904 EPA Tier 3 (41% Reduction)

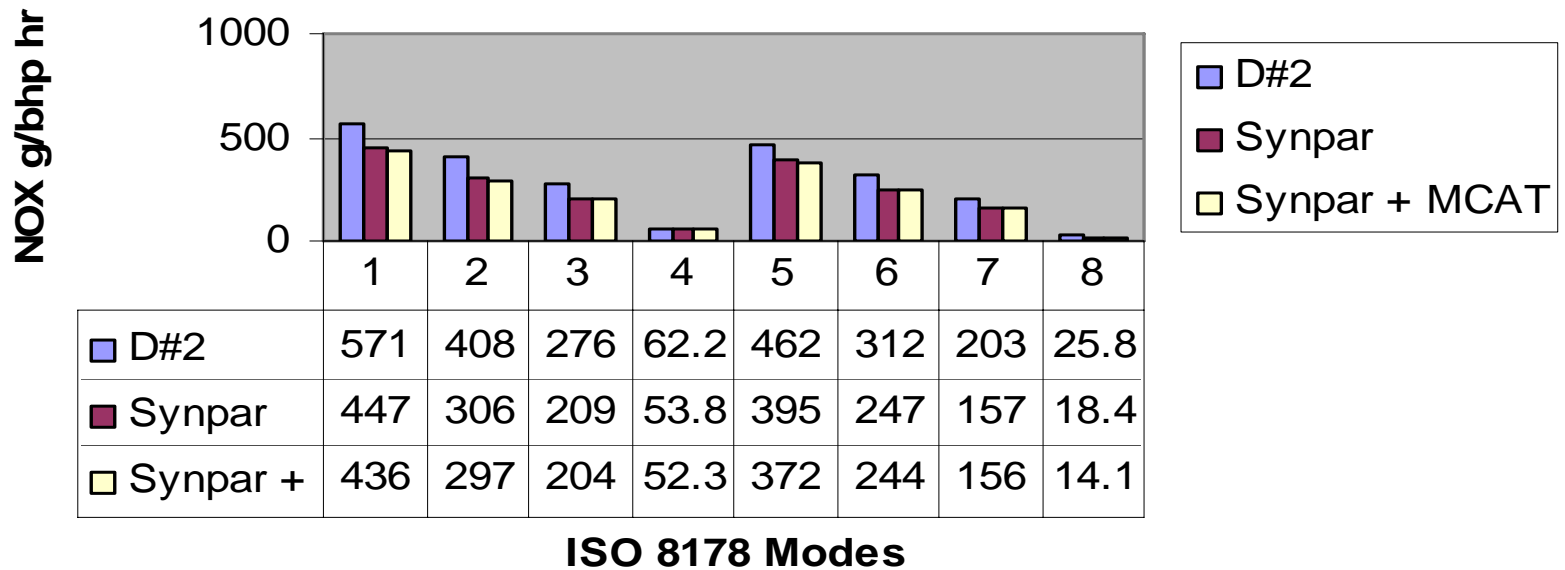
DPM Mercedes 904



3rd Lab Test

Mercedes 904 EPA Tier 3 (24% Reduction)

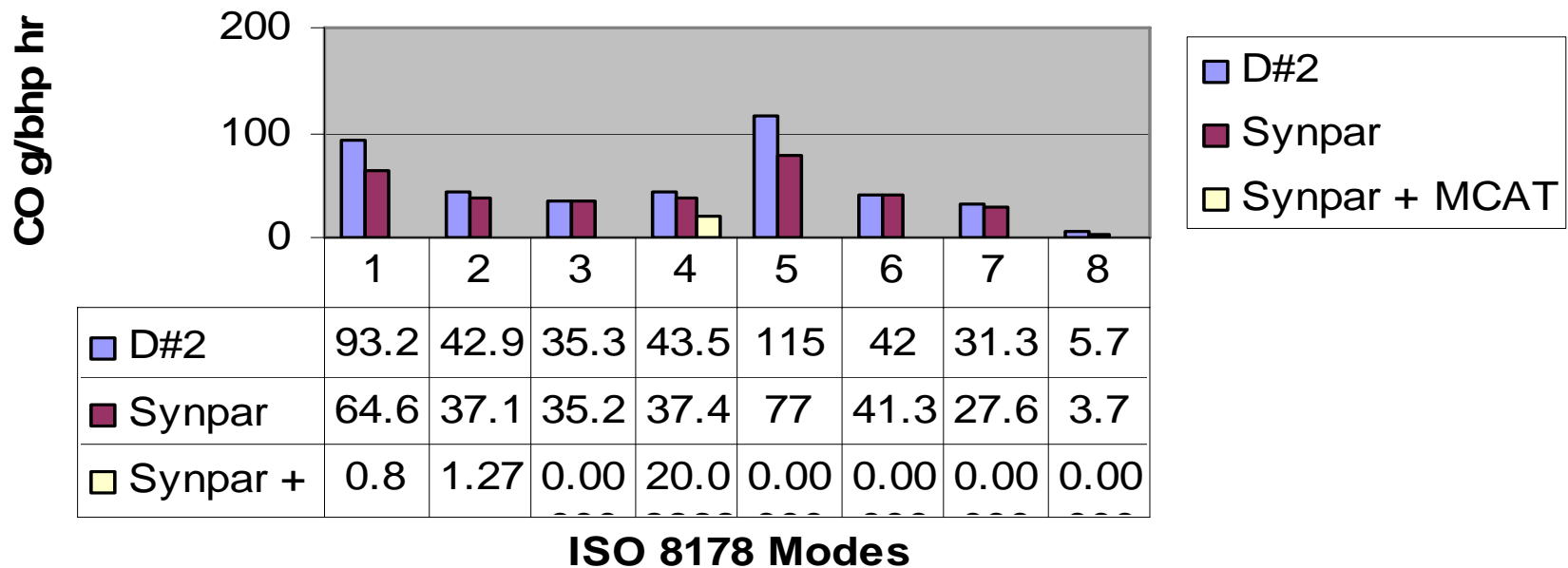
NOX Mercedes 904



3rd Lab Test

Mercedes 904 EPA Tier 3 (95% Reduction)

CO Mercedes 904



Questions?