

DAIMLERCHRYSLER

Business Case for Light Duty Diesels

Diesel Engine Emissions Reduction Conference, August 24th, 2005

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Business Case for Light Duty Diesels

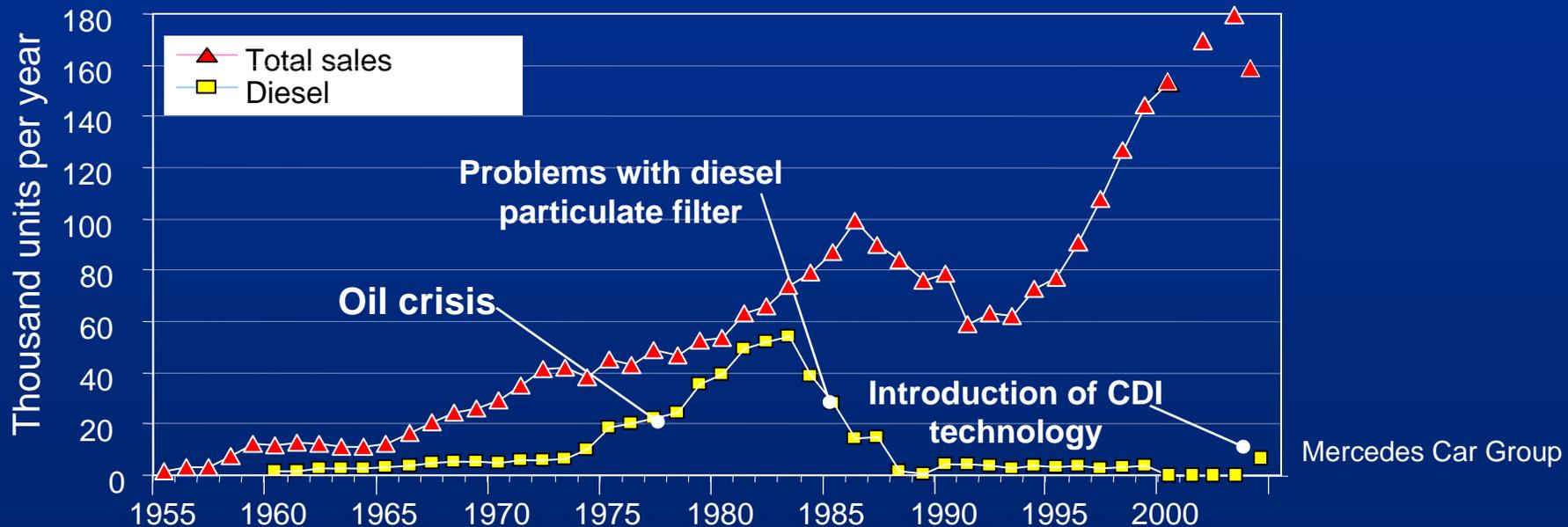
1. Introduction: Why Diesel?
2. Factors affecting diesel sales
 - Cost of technology
 - Consumer demand
3. Diesel image : impressions of policymakers and consumers
4. Conclusion



Why Consider Diesel?

MB diesel sales history in US

Total MB passenger car & diesel sales in the US

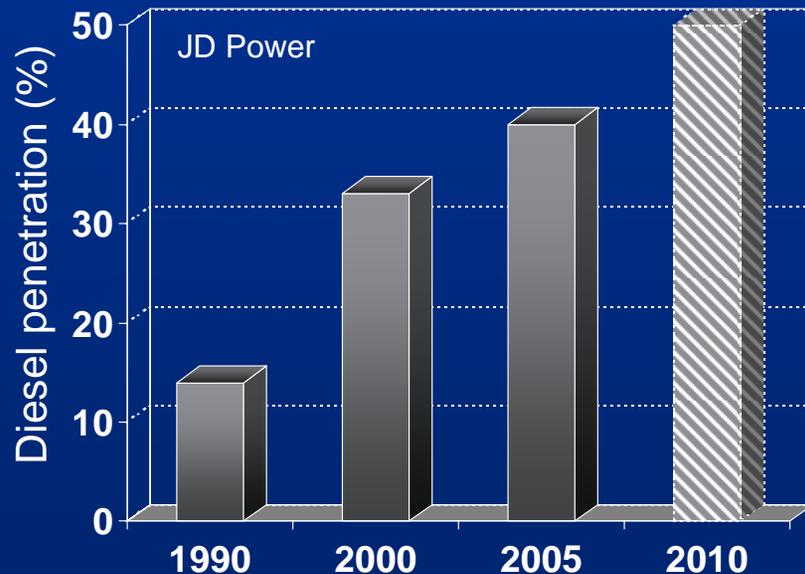


- Mercedes-Benz has a strong history of selling diesels in the US
- The price of oil has been a decisive factor in demand
- Technical issues have been influential in the supply of diesels

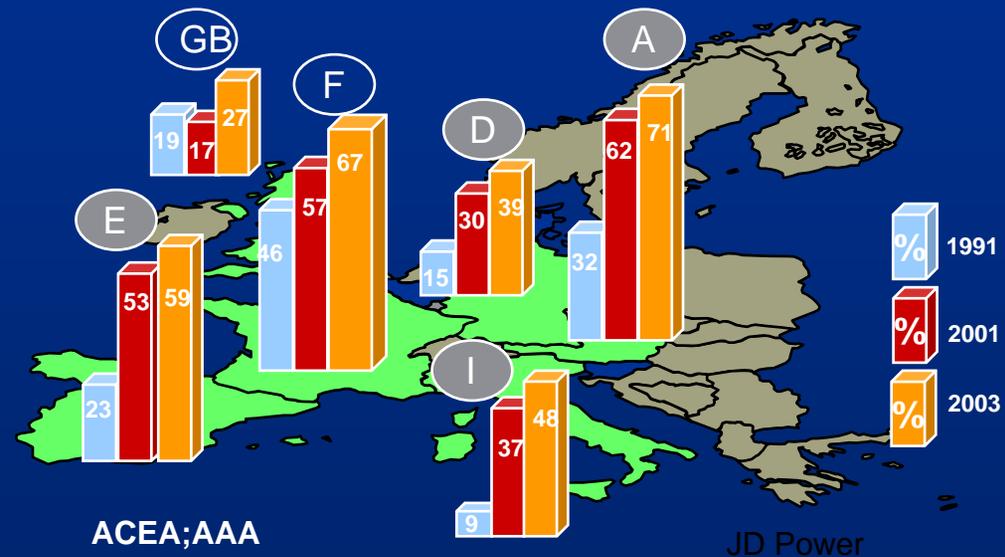
Why Consider Diesel?

European Experience

Diesel market share in EU 15

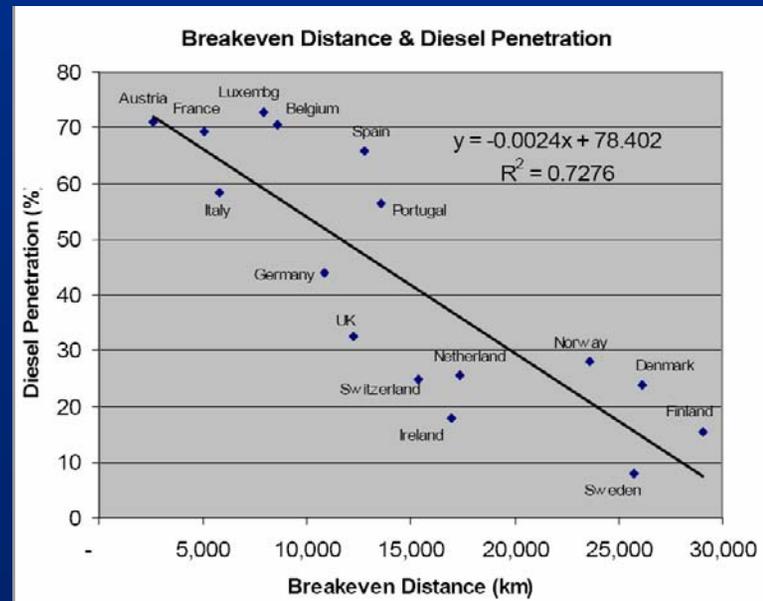


Diesel share by country



- High fuel prices and CO₂ agreement have driven EU diesel growth
- Improved technology and low sulfur, high quality fuel are the enablers for growth
- National diesel share correlates well with breakeven point

Breakeven Distances: EU Countries



Why Consider Diesel?

DaimlerChrysler's diesels

Current European diesel products



- In Europe, most Mercedes models have a high-selling diesel version
- Chrysler's diesel sales in Europe represent over 50% of total sales

Why Consider Diesel?

DaimlerChrysler's diesels

Current U.S. diesel products

E320CDI



4,000 sold in 2004 (Apr. – Dec.)
 F.E. ↑ 30% vs. gasoline
 Torque ↑ 43% vs. gasoline

Dodge Ram 2500/3500 (Cummins)



140,000 sales per year (~80% share)
 F.E. ↑ 25% vs. gasoline
 Torque ↑ 62% vs. gasoline
 Towing ↑ 2,000 / 6,000 lbs vs. gas.

Jeep Liberty CRD



6,000 sold in 2005 (Feb-July)
 F.E. ↑ 25% vs. gasoline
 Torque ↑ 25% vs. gasoline

- The E320CDI and Jeep liberty CRD are selling well in the U.S.
- The Dodge Ram has a 80% diesel share (medium duty)
- Fuel economy (↑ 25-30%) & torque (↑ 25-60%) are main attractions
- Improvement in fuel economy is a significant corporate objective

Why Consider Diesel?

DaimlerChrysler's diesel marketing



3 E-320CDIs, Laredo, Texas

30 days, 100K miles, 140 mph, 1 DPF

Laredo – Tallahassee (1039 miles)

2 days, 1 tank, 59 mpg

- MB Diesel press events – good response from journalists
- MB durability and fuel economy demonstrations
- Biodiesel association with Jeep Liberty CRD



Jeep Liberty CRD
 Factory fill B5
 biodiesel
 Local production,
 local fuel

Cost of Diesel systems?

The engine

Modern PC diesel engine



Cost-difference drivers for diesel engine

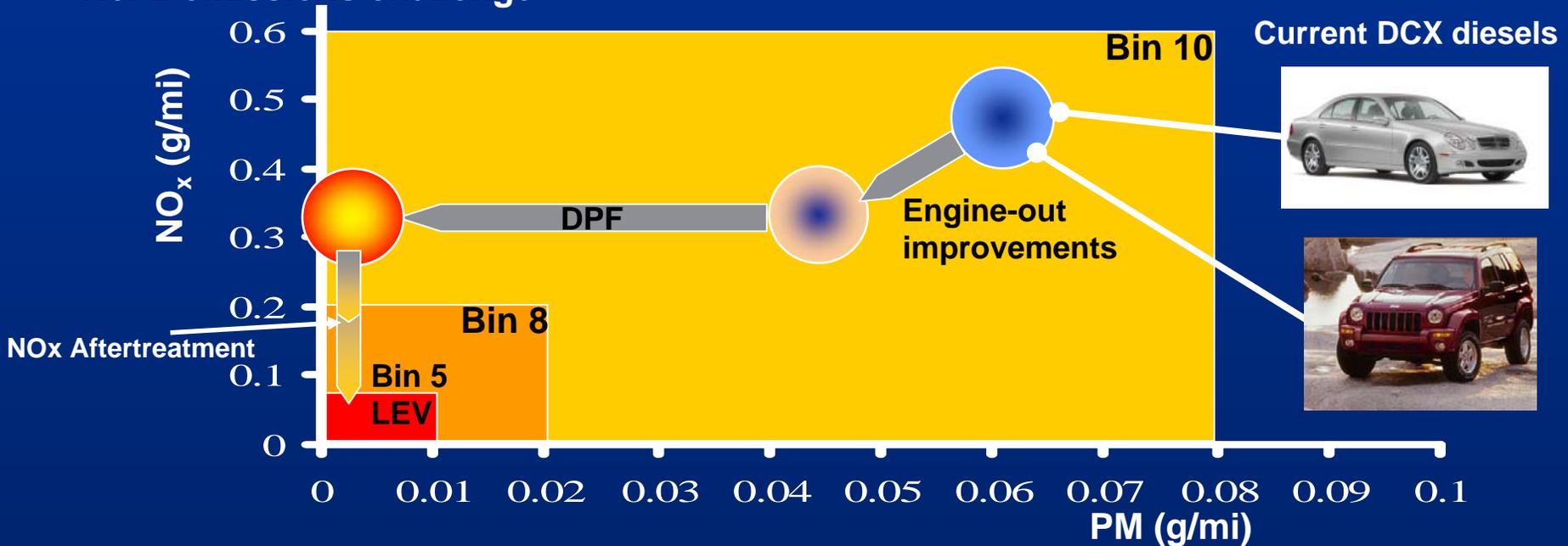
- Technology: direct injection system and turbochargers
- Components: higher mechanical load (crankcase, cylinder head etc).
- Volume effects

- These drive the price premium of diesel over gasoline in Europe
- The difference drops if gasoline engines include more technology

Cost of Diesel Systems

Aftertreatment – emissions regulations

Tier 2 emissions challenge

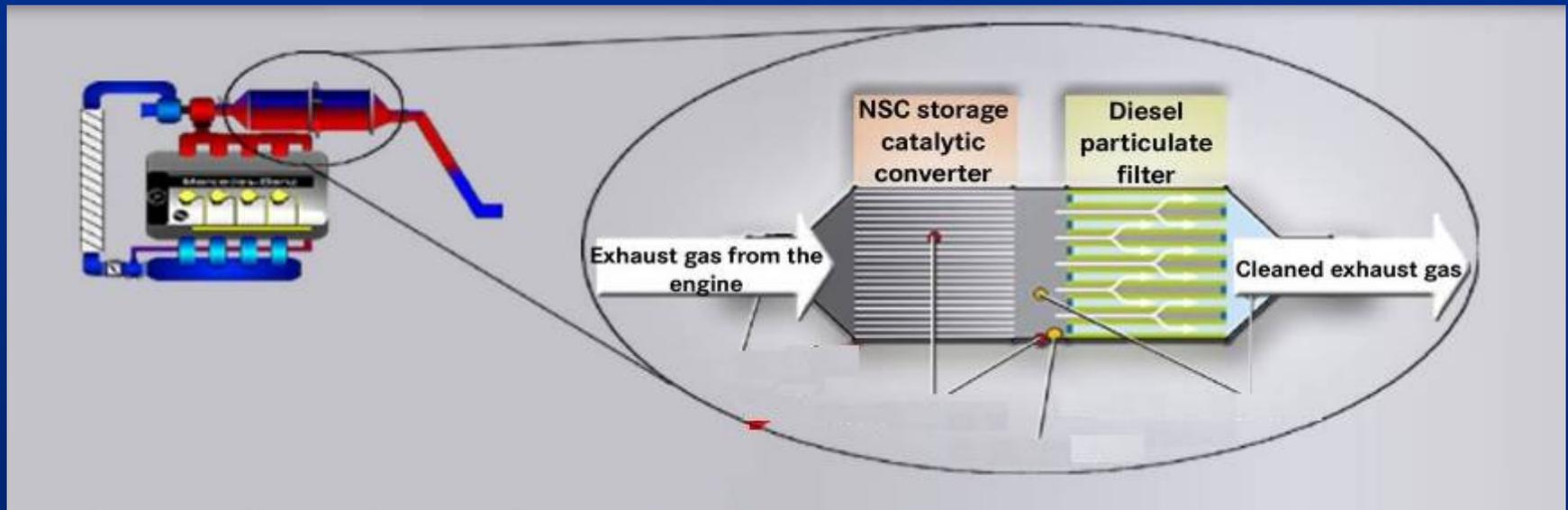


- From 2007 (cars) / 2009 (trucks), maximum Bin 8 is permitted
- For volume production and California sales, Bin 5 is desirable
- Tier 2 rule codifies emissions equivalency of gasoline/diesel and car/truck

Cost of Diesel Systems

Aftertreatment – components

Diesel particulate filter (DPF) & NOx storage catalyst (NSC)

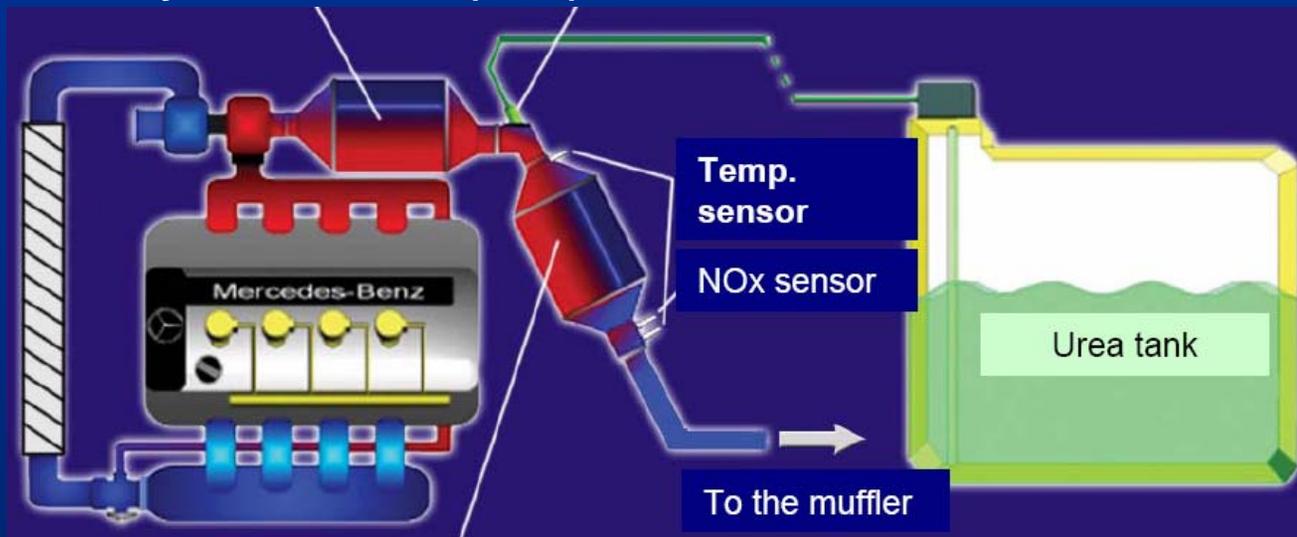


- DPF over 95% efficient in reducing PM emissions
- NSC is the primary technology for Tier 2 in MY07
- These components add to cost of diesel system

Cost of Diesel Systems

Aftertreatment - components

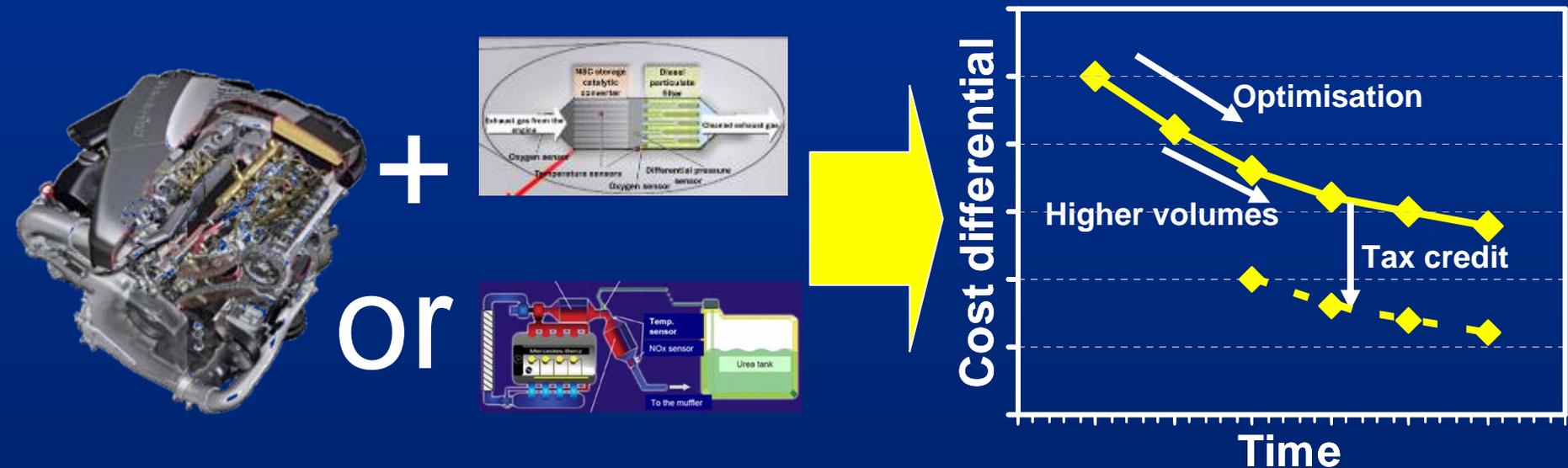
Selective Catalytic Reduction (SCR)



- SCR has a high NOx conversion rate and good durability
- Potential exists for Bin 5 for light trucks up to 8,500 lbs
- Manufacturers need SCR as an option for light duty diesel
- Provision of urea and refill compliance are challenges

Cost of Diesel Systems

Cost potential

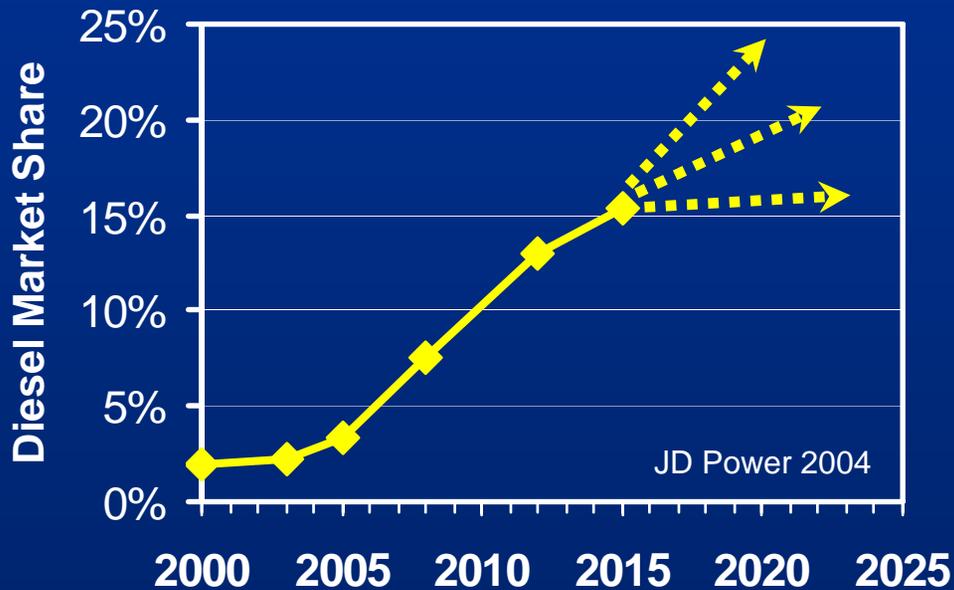


- Cost reduction comes with higher volume
- Cost potential with new aftertreatment technology
- Tax credits partially offset extra cost, encourage higher volumes

Demand for Diesels

Market studies

Diesel market share in US



What “owners” think

80% of diesel owners prefer diesel due to:

1. Familiarity (main reason)
2. Fuel economy & reliability

20-30% of gasoline owners prefer diesel due to:

- 1=. Reliability
- 1=. Fuel Economy
- 1=. Performance

JD Power 2004 CAAP

- Diesel penetration of up to 15% by 2015 predicted by JD Power
- Fuel cost will be an important driver in short and long term
- Impression of diesel differs for diesel and gasoline drivers

Demand for Diesels

What are we selling?

Fuel economy



Diesel image



Performance

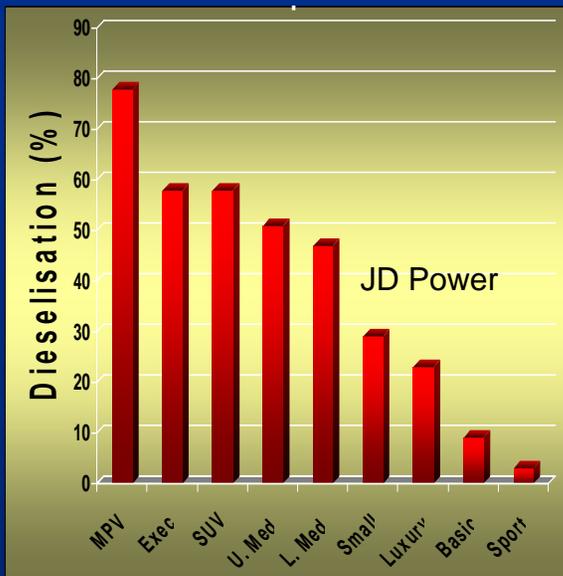


- Economic benefit depends on fuel price – variable motivation
- Performance – fixed motivation
- Diesel image – different for diesel enthusiasts & general consumer

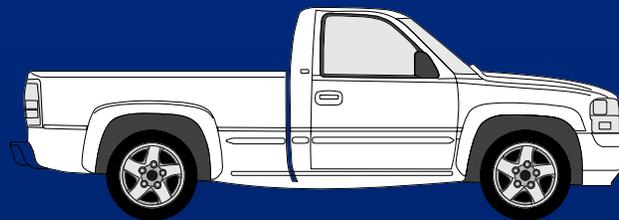
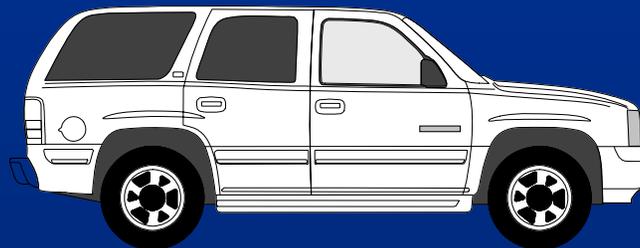
Demand for Diesels

Which U.S. products?

EU Diesels by segment



Target market: SUVs & trucks



Potential in other segments

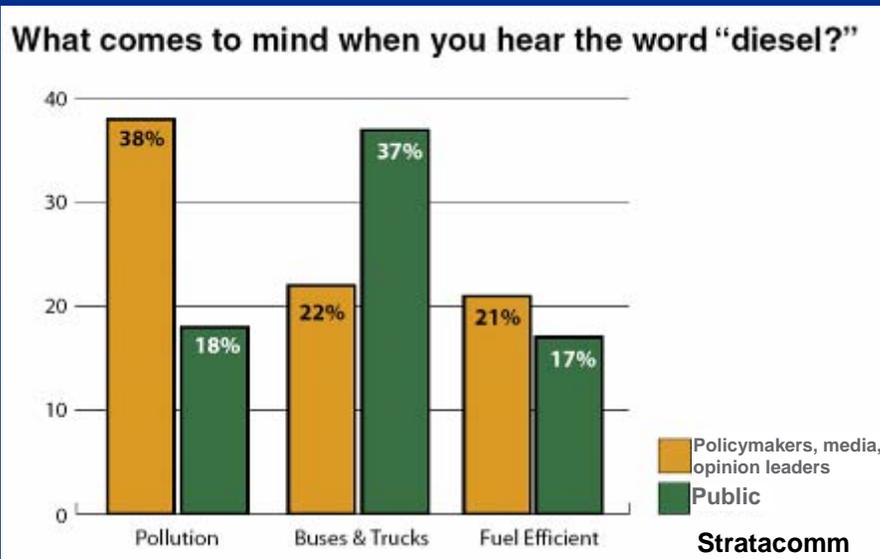


- Much OEM interest in the US has focused on SUVs and trucks
- Minivans & large cars are important European diesel segments
- Early adopters are looking for incremental sales of diesels

Diesel Image

Is “clean diesel” widely accepted?

Perceptions of diesel



Diesel advocacy

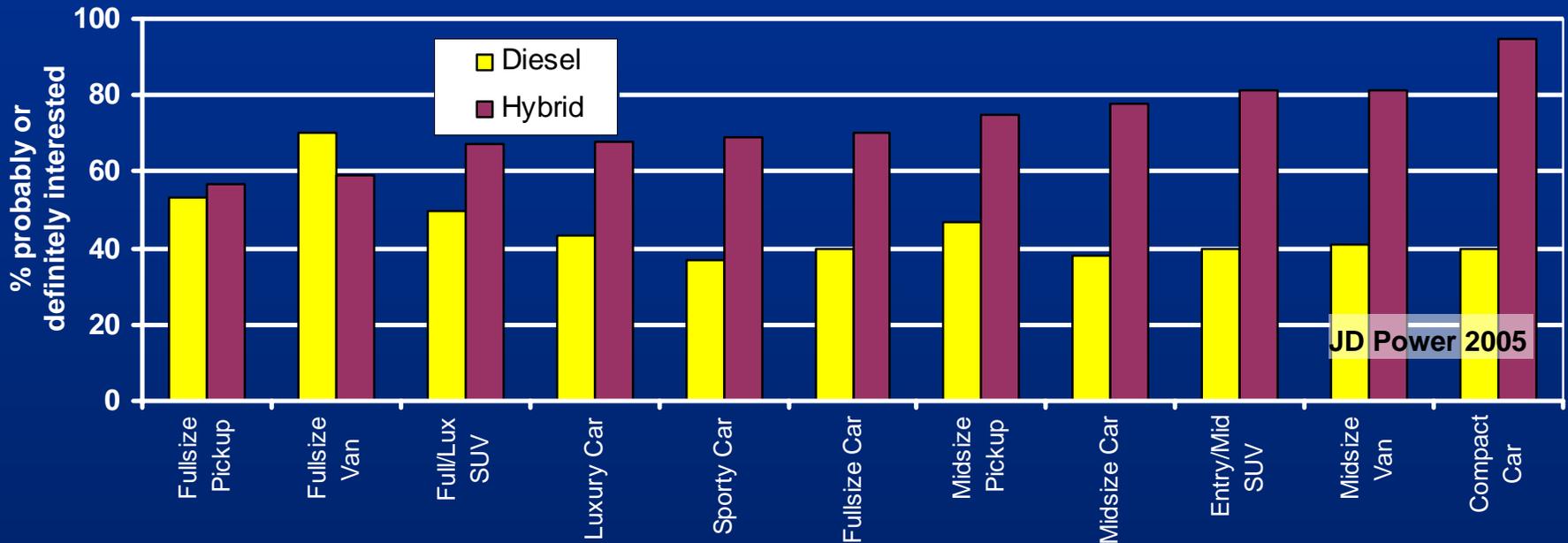


- “Clean diesel” is not yet accepted by opinion leaders and the public
- Advocacy activities have improved the situation considerably
- The comparison with attitudes to hybrids is informative

Diesel Image

Consider hybrid comparison

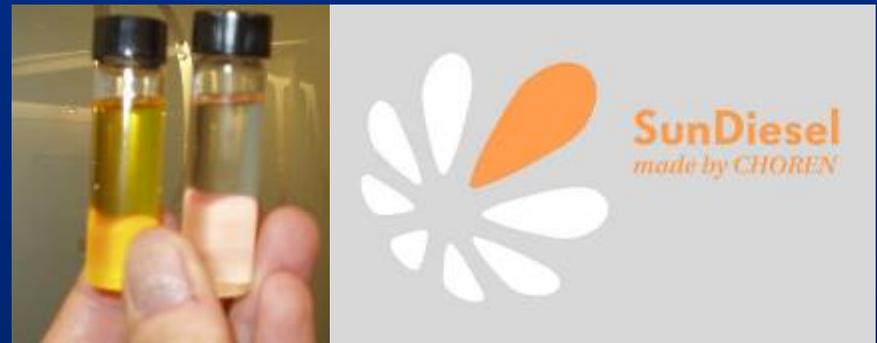
Interest of consumers in purchasing hybrids or diesels



- Hybrid is an “easy sell” – electric motors are clean
- Hybrid interest higher in smaller car segments, diesel in trucks
- Hybrid owners also have a cost/benefit decision to make

Diesel Image

What steps can be taken



- Tier 2 launch is chance to show that diesel is a “normal” technology
- Continue to tell the message to U.S. public & policymakers
- Association with biofuels is win-win proposition for diesels

Conclusion

A diesel future

- The market for diesels in the U.S. already exists and is growing
- Market projected to grow to over a million in next decade
- Emissions and cost issues are being addressed
- SCR is an option we wish to have available
- Diesel image must be improved – a market enabler
- Diesel's future is being written right now!

