



Euro III Standard and Application of On-Board Diagnostic System (OBD)

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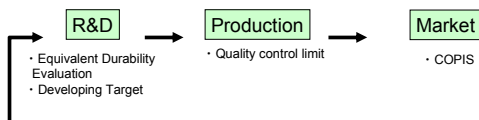
Guaranty of Vehicle emission in the Market

Nissan's Policy

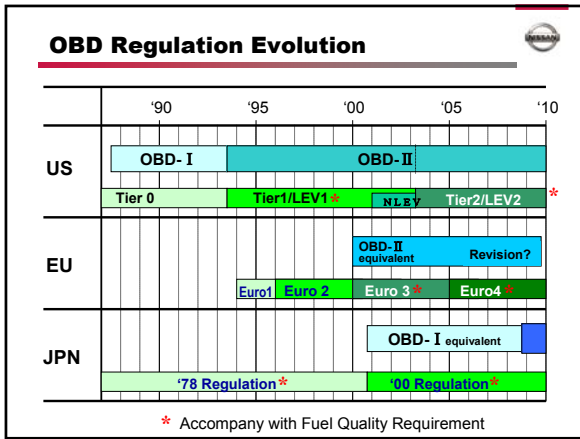
Following regulation of each country, regardless OBD, guarantees the vehicle emission for useful mileage in the market where the appropriate fuel is delivered .

The purpose of OBD is exclusion of high emitter.

Guaranty of Vehicle emission



OBD Evolution in the US, EU and Japan



OBD Threshold

	US	EU	Japan
Principle	· Detect any failure which expect to affects on vehicle emission · Towards Abolition of I&M	Detect High-emitter	Detect High-emitter
Threshold	1.5times of Emission limits	Emission Limit plus alpha	No threshold
Monitoring Item	· In-put signals to ECM · Circuit disconnect/Short · Rationality check · Emission related parts · Actuators · Circuit disconnect/Short · Rationality check · Function check	· In-put signals to ECM · Circuit disconnect/Short · Function check · Actuators · Circuit disconnect/Short · Function check	Circuit disconnect/Short Function check of EGR system and Fuel system
Out-Put	GST (Generic Scan Tool)	GST	No Requirement

Monitoring Items

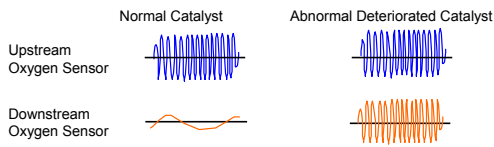
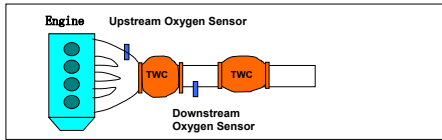
Monitoring Items		US OBD-II	EU Euro3	JPN '00
Principle Monitoring	Catalyst	✓	✓	
	Misfire	✓	✓	
	Evapo system	✓		
	Fuel system	✓	✓	✓
	Front Oxygen Sensor	✓	✓	✓
	Rear Oxygen sensor	✓	✓	✓
	EGR system	✓	✓	✓
Comprehensive Component Monitoring	Circuit disconnect/Short	✓	✓	✓
	Rationality check	✓	✓	
	Emission related parts	✓		
	Function check	✓	✓	

OBD System

(1) CATALYST MONITORING



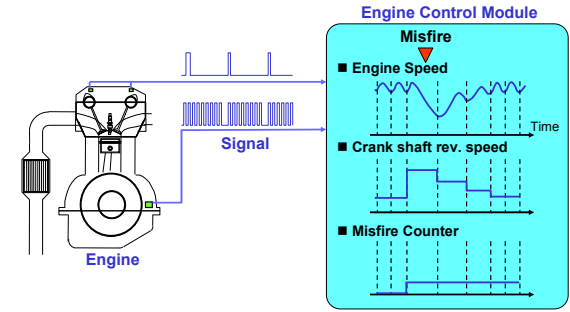
Monitored by output comparison of the upstream O₂ sensor and the downstream O₂ sensor.



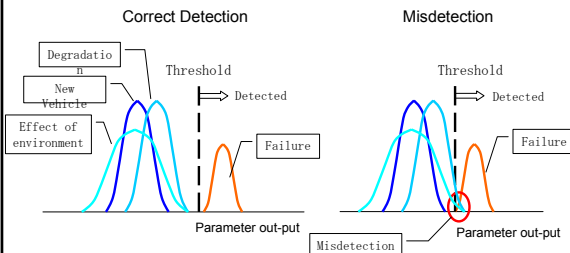
(2) MISFIRE MONITORING



Monitored by engine speed detected by the crank angle sensor



Detection of Malfunction / Failure



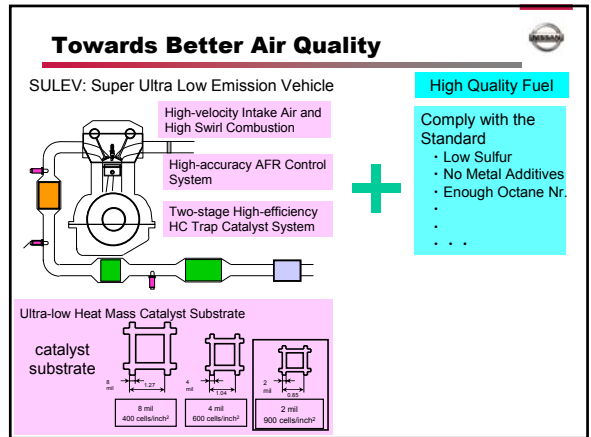
Fuel Property



Fuel Quality in China

Market Fuel vs. Fuel Standards (98/70/EC, WWFC)

Properties	Market ('03 Summer & Winter)	WWFC Cat. 3	98/70/EC	Fuel Property Influence on OBD performance
Sulfur, ppmw	44 ~ 1130	30 max	150max	→ Sulfur
RVP, kPa	Summer 38.7 ~ 72.0 Winter 44.5 ~	-	60max (summer)	
T50, deg.C	54.1 ~ 102.5 15.5	←	-	Mn
E100, deg.C	39.7 ~ 82.1	←	46 min	
Aromatics, vol%	11.4 ~ 44.0	35 max	42max	
Olefins, vol%	6.0 ~ 41.8	10 max	18max	Fe
Oxygen, wt%	0.0 ~ 22.8 (MTBE)	2.7max	2.7max	
Metals, Mn g/L	<0.1 ~ 18.0	N. D	-	Pb
Fe	<0.1 ~ 31.1	N. D	-	
mg/L Pb	<0.0001 ~ 0.0115	N. D	-	
RON	74.2 ~ 98.7	(91 min)	95min	
MON	70.8 ~ 86.5	(82.5min)	85min	



Summary

- ## Summary
- OBD system can
 - Eliminate the high emitter, without actual emission test
 - Be affected by the fuel property
 - In Order to obtain Maximum Effect of OBD,
 - Need to make the public recognize OBD
 - Prepare tools to respond at the workshops
 - Publish the service manuals which anyone can receive
 - Deliver the appropriate fuel to all market