1. The purpose of testing

To test the mixture of XSNano and diesel for emissions performance and fuel economy contrast detection. The samples of XSNano provided by Xunsn International Group Limited.

2. The test basis

1. GB / T 18297-2001 "automobile engine performance test method"

2. GB / T 17691-2005 "compression ignition and gas fueled positive ignition engine and vehicle exhaust emission limits and measurement methods (China III, IV, V phase)."

The vehicle noise detection in unused traveling speed

3. Test time, place and person

Test Time: September 8, 2015 - September 17

Test Location: SEPA Motor Vehicle Emission Control Center vehicle emissions testing laboratory

(Chinese Research Academy of Environmental Sciences Automotive Laboratory)

　　　　Tianjin high-speed

Testers: Kai, Qin Hongyu

4. Test the main test instruments, equipment

No.	instruments, equipment	Type	manufacturer
1	eddy current dynamometer	GW160	Gordon-Power Testing Instrument Co., Ltd.
2	Smart Fuel Consumption	FC2210	Gordon-Power Testing Instrument Co., Ltd.
3	db tester	HT-840A，CD578	glorion technology limited company
3	engine exhaust analysis system	MEXA 7100	Japan HORIBA
4	engine exhaust particle analysis system	MDLT-1302TMA	Japan HORIBA
5	Diesel Engine	JX493ZLQ3	Jiangling Motors Co., Ltd.

5. The test content, methods and conditions

1). Test Content

No. 0 diesel pollutants, XSNANO sample of diesel fuel additives emissions and fuel consumption comparison test.

Impact on engine power and vehicle fuel additive noise XSNANO.

2). Test conditions

Emissions test uses JX493ZLQ3 diesel and BYD F3 car, test conditions meet the relevant requirements of GB / T18297-2001 and GB17691-2005 standard.

3). Test Method

a.   Check the engine ready

The tested diesel engines check to make sure its working status is normal.

b.   Subjects formulated oil

No. 0 diesel oil,and XSNANO sample, as concentration 10000 × 10-6 (v / v), mix well.

c.   Emission tests

In JX493ZLQ3 diesel test bench, respectively test with and without XSNANO in diesel, conduct the speed from **0 - 2000r / min** load characteristic test, the measured emissions take all load points and fuel consumption indicators.
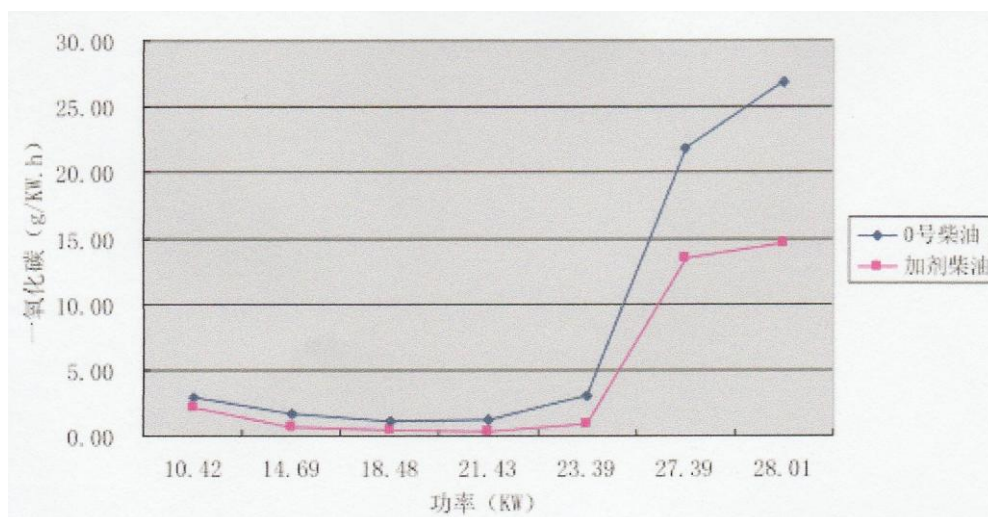
d.   The decibel tester

Different driving speed of the vehicle is monitored.

6.   Test results

1. emissions test results

0# Diesie		Diesel with XSNano	
Power (KW)	Carbon monoxide (CO) /[(g/kw.h)]	Power (KW)	Carbon monoxide (CO) /[(g/kw.h)]
10.42	2.90	12.34	2.10
14.69	1.70	17.31	0.70
18.48	1.10	20.22	0.40
21.43	1.30	27.49	0.30
23.39	3.10	29.47	0.90
27.39	21.90	32.11	13.50
28.01	26.80	34.41	14.60

0# Diesie		Diesel with XSNano	
Power (KW)	Hydrocarbons (HC) /[(g/kw.h)]	Power (KW)	Hydrocarbons (HC) /[(g/kw.h)]
10.42	0.48	12.34	0.31
14.69	0.35	17.31	0.13
18.48	0.27	20.22	0.11
21.43	0.26	27.49	0.10
23.39	0.19	29.47	0.07
27.39	0.16	32.11	0.02
28.01	0.13	34.41	0.02
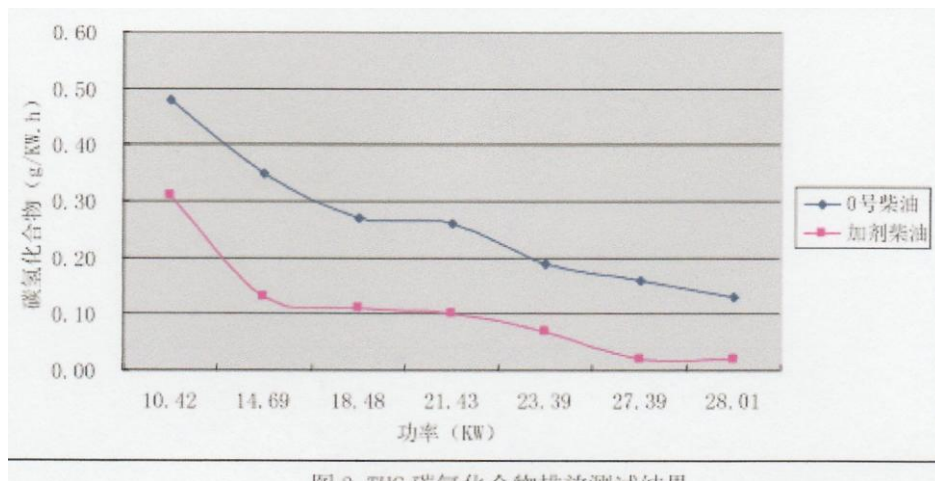
图 3 THC 碳氢化合物排放测试结果

0# Diesie		Diesel with XSNano	
Power (KW)	Nitrogen oxides (NOx) /[(g/kw.h)]	Power (KW)	Nitrogen oxides (NOx) /[(g/kw.h)]
10.42	2.60	12.34	2.00
14.69	3.90	17.31	2.90
18.48	3.60	20.22	3.00
21.43	3.70	27.49	2.90
23.39	4.20	29.47	2.20
27.39	3.70	32.11	1.70
28.01	3.20	34.41	1.50

氮氧化物（g/kw.h）

4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00

10.42　14.69　18.48　21.43　23.39　27.39　28.01

功率（KW）

0号柴油
加剂柴油
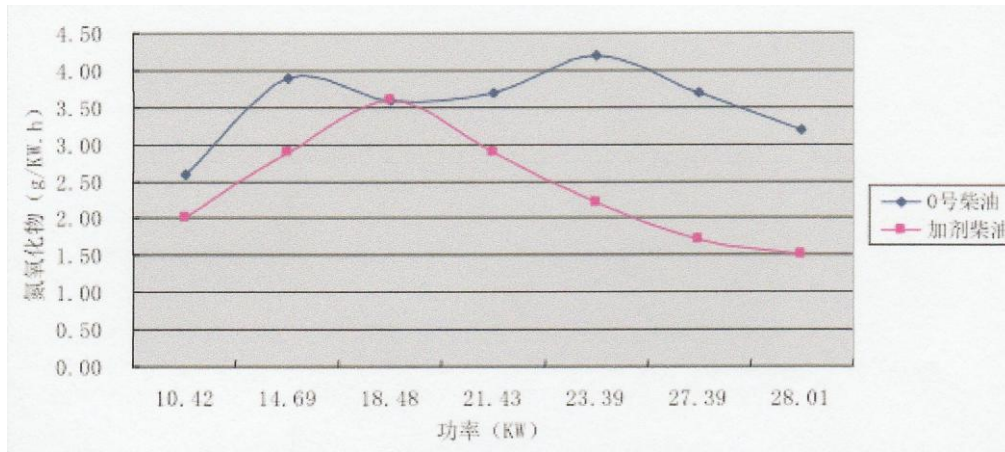
0# Diesie		Diesel with XSNano	
Power （KW）	Particulates （PM）/[(g/kw.h)]	Power （KW）	Particulates （PM）/[(g/kw.h)]
10.42	0.20	12.34	0.16
14.69	0.18	17.31	0.16
18.48	0.42	20.22	0.16
21.43	0.56	27.49	0.21
23.39	0.82	29.47	0.38
27.39	1.61	32.11	0.49
28.01	1.88	34.41	0.50

颗粒物（g/kw.h）

2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00

10.42　14.69　18.48　21.43　23.39　27.39　28.01

功率（KW）

0号柴油
加剂柴油
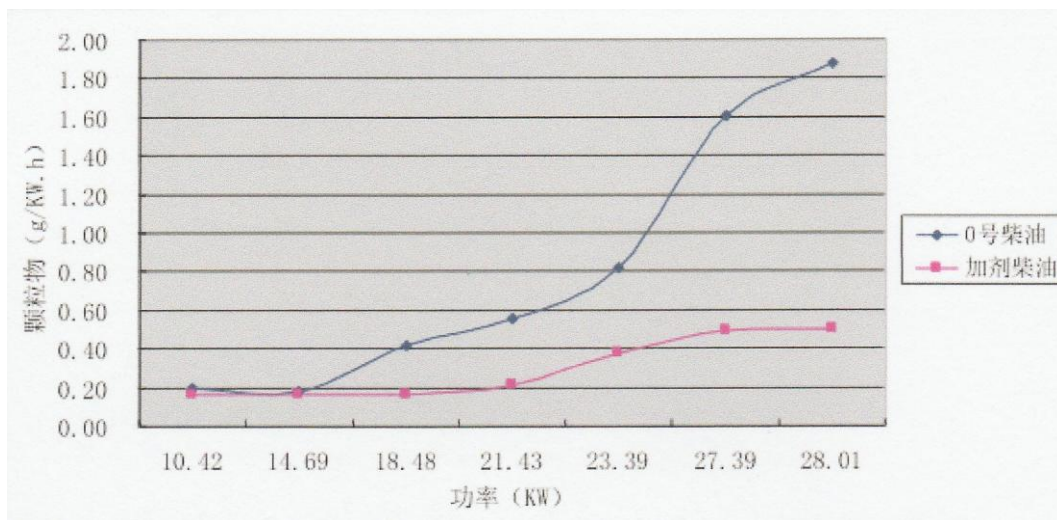
0# Diesie		Diesel with XSNano	
Power （KW）	Fuel consumption / [(g/kw.h)]	Power （KW）	Fuel consumption / [(g/kw.h)]
10.42	273.7	12.34	261.3

14.69	265.1	17.31	265.4
18.48	265.7	20.22	259.5
21.43	247.3	27.49	211.1
23.39	236.4	29.47	209.8
27.39	252.9	32.11	213.1
28.01	253.8	34.41	213.3
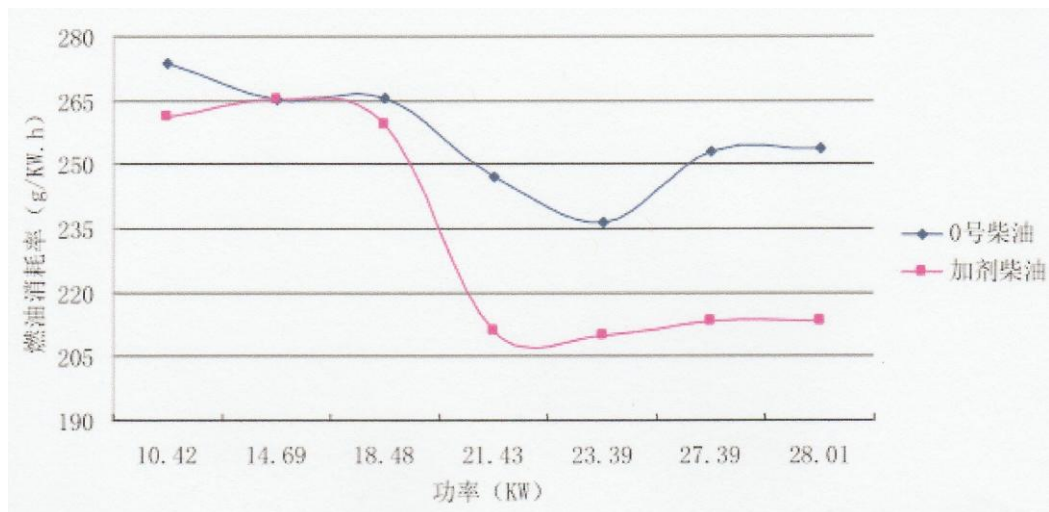
2. Noise tests

Speed	Without XSNano（db）	With XSNano（db）
0 km/h (idle speed)	55.7	37.4
60km/h	63.5	60.9
80 km/h	79.5	70.1
110 km/h	81.7	74.5

7. Experimental summary

A. at a same idle speed, you can obviously see the power to be changed after XSNano additive, maximum 28.3% increase;

B. at a same idle speed, with the power to enhance the fuel burn more fully, to reduce harmful gas emissions.

C. After use XSNANO additives, vehicles significantly reduce engine noise, when the vehicle is idling, the engine sound reducing 18.3db.